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uDesigner User Guide

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Oracle Primavera Unifier uDesigner User Guide

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Contents

Introducing Unifier uDesigner 11
Before Using uDesigner 12
Business Processes Overview 15
Business Processes Types 21
Cost Type 21
Cost Type: Line Items with CBS Code 24
Cost Type: Line Item with Fund Code 29
Cost Type: Line Items with Both CBS and Fund Codes 31
Cost Type: Line Items with Both CBS and WBS Codes 32
Cost Type: Commit at Company Level 32
Cost Type: Line Items with Company Account Code 34
Generic Cost: Line Items with Multiple Codes 38
Design Requirements for Line Items with Multiple Codes BPs 41
Design Flow for Line Items with Multiple Codes BPs 41
Tips for Lease Business Process (BP) 45
Document Type 46
Text Type 48
Line Item Type 49
Preventive Maintenance 52
Simple Type 55
Request for Bid (RFB) 56
Project/Shell Creation 61
Standard Cost Manager Overview 71
Cost Management Levels 71
About Cash Flow Curves 74
About CBS Codes 75
About the Schedule of Values (SOV) 76
About Earned Value 77
How Cost Transactions Work in Unifier 81
Design Requirements for the Cost Manager 82
Generic Cost Manager Overview 87
Design Requirements for a Generic Cost Manager 89
Document Manager Overview 91
Design Requirements for the Document Manager 93
Creating Multiple Attributes Forms 94
Planning Manager Overview 99
Design Requirements for the Planning Manager 100

Portfolio Manager Overview 103
Design Requirements for the Portfolio Manager 104
Resource Manager Overview 107
Design Requirements for the Resource Manager 107
Schedule Manager Overview 111
Entering and Viewing Cost Data 112
Automating a Schedule Using Scope Management 113
Accumulating and Calculating Progress Data 116
Resource Assignment by Resource Type and Resource Effort 117
Design Requirements for the Schedule Manager 117
Design Requirements for Activity Sheet Attribute Form (AP and RAP) 122
Detail Form 123
Picker 127
Integration 127
Activity Manager Overview 131
Detail Form 131
Picker 131
Integration 132
Manually Creating New Activity Sheet and Activity Attributes Form 133
Data Elements (uuu) of Manual Activity Sheet Attributes 134
Additional System-Defined Data Elements of Manual Activity Sheet Attributes 139
System-Defined Data Elements for Activity Attribute Form 139
Custom Data Elements for Activity Attribute Form 140
Completing Activity Attribute Form 141
Importing, Exporting, and Updating Activities within Manual Activity Sheets 141
Linked Data Elements Using P6 Activity Picker 142
Manually Creating WBS Sheet 142
Earned Value Manager Overview 145
Organization Breakdown Structure (OBS) 145
Work Breakdown Structure (WBS) 146
User Administration 149
User Attribute Form 151
Creating User Attribute Form 152
Data Pickers and User Attribute Form 154
Design Requirements for User Properties Attribute Form 155
Space Manager Overview 159
Design Requirements for the Space Manager 159
Shell Manager Overview 163
Preparing a Shell for Use in Unifier 164
Dedicated Mailbox for Shells 165

Cost Management in Shells 165
Design Requirements for the Shell Manager 166
Details Block 168
Designing Your Own Managers 171
Across-Shell Functioning 172
Design Requirements for a Code-Based Manager 175
Design Requirements for a Code and Records-based Manager 177
Testing and Publishing a Manager 181
Launching a Manager 183
Design Requirements for Launching a Manager 185
Starting an Attribute or Detail Form for a Manager 186
For the Standard Cost Manager 186
For a Code-Based Manager 187
For a Code and Records-based Manager 189
Completing the launch 191
For the Document Manager 191
For a Generic Cost Manager 192
For the Planning Manager 193
For the Portfolio Manager 194
For the Resource Manager 195
For the Schedule Manager 196
For the Shell Manager 196
For the Space Manager 198
Adding Blocks to the Attribute Form 199
Modifying Blocks 204
Moving or Deleting Blocks 205
Designing a Formula for Fund or Account Codes 205
Designing a Picker 206
Designing a Log for a Manager 207
Designing a Standard Log 208
General Tab 210
Layout Tab 210
Sort Tab 211
Find Tab 211
Designing an Advanced Log 211
Dashboards 213
Creating Dashboard Setup 214
Adding Tabs in Dashboard 214
Adding Blocks in Dashboard 214
Standard Block 214
Custom Block 215
Drill Down Block 215

Analytics Block 215
Portlet Block 215
Creating a Data Structure 217
Data Structure Components 217
Data Definitions 218
About Data Pickers 222
How Data Pickers Work with Shells 223
How Data Pickers Work With Configurable Managers 224
How Data Pickers Work With the Planning Manager 225
About User Data Pickers 226
Creating a Basic Data Definition 227
Creating a Cost Code Definition 227
Creating a Data Picker Definition 228
Data Picker Filter Query Condition 229
Data Elements 231
Creating a Data Element 233
Modifying a Data Element 234
Dynamic Data Sets 234
Creating a Dynamic Data Set 236
Statuses 239
Adding a Status 240
Changing the Name of a Status 240
Activating / Deactivating a Status 240
Rearranging the Order Statuses Appear in Lists 241
Tags 241
Creating a Tag 241
Exporting the Data Structure to Primavera Unifier 242
Starting a New Design 243
Overall Steps for Creating a Design 244
Starting a New Design (Edit Studio) 246
General Tab 247
Statuses Tab 248
Options Tab 250
Consolidation Tab 260
Record Properties 264
Data Picker 266
Configure Data Picker 267
Using Filters 268
BP Line Item Data Picker 269
Data Elements 272
Unique Tab 273
Auto Sequence Tab 274

Designing a Form 279
Design Approach for a Workflow Business Process 280
Overall Steps in Designing a Form 282
About Business Process Forms 283
About Upper Forms 285
About Detail Form 285
Action Forms and View Forms 286
Designing an Upper Form 287
For Document Business Processes 289
For Line Item Business Processes 289
For Cost Business Processes 290
For Base Commits and Change Commits Business Processes (SPA of SOV Type) 291
For Payment Application Business Processes 291
For Payment Application Business Processes: Line Items with CBS Code 292
For Request for Bid (RFB) Business Processes 294
For Schedule Business Processes 294
For Resource Bookings and Time Sheet Business Processes 294
For Lease Business Processes 294
For Project/Shell Creation Business Processes 294
For Modifying Line Items 295
For Modifying Line Items (Bidder) 295
Creating Templates for Upper Forms 297
Using a Template in a Design 298
Updating an Upper Form Using a Template 299
Unlinking an Upper Form From a Template 300
Adding Blocks to a Form 301
Upper Form Options 304
Upper Form Options for Cost BP 305
Upper Form Options for Documentation BP 308
Upper Form Options for Line Item BP 311
Upper Form Options for RFB BP 312
Proposal Management (Private Bids) 313
Upper Form Options for RFB BP Action Form (Bidder) 314
Requestor: Upper Forms (Form Designer - Upper Form) 315
Upper Form Options for Simple BP 318
Upper Form Options for Text BP 319
Project/Shell Creation-Type Upper Forms 319
Resource-Type BP Upper Forms 320
Copying Upper Forms 320
Modifying Blocks 321
Designing Detail Form 322
Adding an Item Log to a Detail Form 322
Organizing Data with Multiple Tabs 326

Starting a Standard Detail Form 326
Starting Detail Forms for Multiple Tabs 327
An Extra Step for Multiple-Tab Forms 327
Mapping Line Items from References during BP Creator Auto-Creation 328
uDesigner Auto-creation Configuration 328
Creating Query-based Tabs and Summary Elements 330
Required References 331
Query-based Tabs 331
Summary Elements 333
Adding a Grid Summary to a Detail Form 333
Copying a Detail Form 334
Moving or Deleting Blocks 335
Adding Fields to the Form 336
Moving Data Elements 346
Previewing the Form 346
Making Fields Required, Editable, or Read-Only 346
Including a Map 347
Including Tooltip 347
Adding Formulas to Fields 348
Adding a Note to a Field 354
Adding a Dynamic Data Set 354
Updating Query-Based Field Values with a Trigger Element 355
Validating Field Values 356
Erasing or Resetting Field Values During a Workflow 357
Auto-Populating Fields 358
Updating Records Using Reverse Auto-Population 363
Creating an Integration Interface 366
Mapping a Field to be Updated 366
Reverse Auto-Populate Status of non-Workflow BP 367
Reverse Auto-Populate Configuration Window 368
Making a Field a Hyperlink 369
Linking Elements in Shell Hierarchies for Easy Restructuring 370
Linking Tagged Elements from a Schedule Attribute Form to Another Form 371
Linking Elements from Other Forms to a Planning Item 372
Viewing Details About Form Fields 372
Selecting Fields for an Email Notification 374
Selecting Fields for Unifier on Mobile App 376
Adding Auto-Sequencing Data Elements 376
Defining Totals (Payment Application Grid and Summary Payment Application Grid) 377
Defining Summary Totals 379
Advanced Formulas in Business Processes 381
Functions and Available Formats 383
Rules for Setting Fields as a Formula Destination 387
Adding Advanced Formulas 387

Setting Time Zone in Advanced Formula....389
Adding a Response List to a Text Business Process....390
Adding a Text Entry Area to a Form....390
Adding a Reference Process to Auto-Populate Data....391
Auto-populate on Payment Application from a Base Commits BP....394
Auto-populate on Payment Application from a Change Commit BP....396
Auto-Populate Scheduled Value and Commit Remaining Balance in Change Commits and General Spends....396
Auto-Creating a Record or Line Item from a Form....397
Auto-Populating the New Record....400
Preparing the Auto-Creation....404
Setting Up the Auto-Creation....405
Dynamically Updating an Auto-Created Record or Line Item....411
Supporting Commit Line Item Pickers During Auto-Creation of Change Commit BPs....412
Designing a Bid Comparison Sheet for an RFB....413
Saving a Version of a Design....415
Restoring a Version of a Design....416
Adding Mobile Data Elements....420

Creating a Business Process Design....421

Cost....421
Document....422
Text....423
Line Item....423
Simple....424
RFB (Request for Bid)....424
Resource (Resource Booking or Timesheet)....425
Project/Shell Creation (Simple or Line Item)....426

Adding Link Elements to a Form....429

For Re-Organizing Shells....434
For Accessing Schedule Information....435
For Including Dynamically Updated Data on Planning Items....435

Designing Workflows....437

Starting a Workflow....438
Adding Steps to the Workflow....440
Linking the Steps....444
Aligning the Steps....450
Designing a Sub-Workflow....450
Adding a Conditional Step....451
Auto-Creating a Record from a Workflow....453
Viewing a Summary of the Workflow....455
Error-Checking the Workflow....455
Arranging the Step Order to Aid the Setup Process in Unifier....456

Printing a Workflow 457
Copying a Workflow 457
Creating a Business Process Log (Standard or Picker) 461
Designing a Business Process Log (Standard or Picker) 462
General Tab 463
Layout Tab 463
Sort Order Tab 464
Find Tab 464
Group By Tab 469
Activity Attributes and Activity Picker 469
Business Process or Shells and P6 Activity Picker 470
Linked Data Elements using P6 Activity Picker 471
Testing a Component in uDesigner 473
Checking for Errors 473
Changing the Status to "Complete" 474
Deploying to the Test Environment for Testing 474
Configuring a uDesigner Component for Testing 474
Loading the Business Process or Manager for Testing 475
Modifying a Design 477
Integration 479
Creating an Integration Interface 480
Creating an Upper Interface 481
Using the Move Up/Move Down keys 482
Editing the Row column 483
Creating a Detail Interface 483
Creating an Integration Template 484
Upper Form Templates 485

Introducing Unifier uDesigner

Within the documentation, some content might be specific for cloud deployments while other content is relevant for on-premises deployments. Any content that applies to only one of these deployments is labeled accordingly.

The uDesigner module is a design tool for those customers who want to create and publish their own customized shells, managers, and business processes. The uDesigner module enables you to create your own shells and managers, and any combination of forms and workflows to automate business processes, such as funding requests, commits, spends, maintenance records, or any other process used by capital project, sustaining, or site operations personnel.

After you have created a shell, manager, business process or other entity in uDesigner, you can configure, set up, and test your designs in both the **Development** environment and **Test** environment for completeness and functionality.

> **Note**: The instructions and information presented in the documentation is based on an out-of-the-box (OOTB) setup and before being customized by the user.

The **Development**, or **Test**, environment replicates the Unifier **Production** environment.

After the element has been tested and meets your requirements, it can be imported into the Unifier **Production** environment and used by users.

> **Note**: The uDesigner users must be experienced in using Unifier and must have a solid understanding of business processes, forms, and workflows.

In uDesigner, you design and create the following Unifier components:

- Shells: Using attribute forms
- Managers: Using attribute forms
- Business processes: Using forms, workflows, logs, pickers, and other elements

To create shells, managers, and business processes, you must first define the following components, as needed:

- Data definitions
- Data elements
- Statuses
- Dynamic data sets
- Data pickers

In This Section

Before Using uDesigner.....12

Before Using uDesigner

This guide assumes that you and your company, along with the help of Oracle Consulting Services group, have completed a detailed "top-down" analysis of your business goals and needs.

Top-Down Analysis

A top-down analysis of your business goals means that you have:

1) Defined the goal of each of your business processes and designed the organization of your data, typically into shells and managers.
2) Outlined the workflow each business process should follow.

   This outline should help you see where you need a sub-workflow or a conditional routing, and clarify the soundness of the business process before you solidify it.
3) Translated this workflow into one that will be usable in Unifier.

   This will help you decide on the forms that will be necessary for each step in the process. Knowing what forms you will need at each step and what fields should be on each form will make designing the rest of the business process easier and more efficient.
4) Gained a thorough understanding of the data flow in your company so that you know where data from one business process must flow into another business process.
5) Determined the statuses each form should be in at every step in the workflow, for example, open, closed, pending, or waiting for approval.
6) Designed the forms you need to accompany the workflow, for example purchase orders, invoice approvals, document transmittals, or asset forms, including all the fields that should be on these forms.

   This should help you organize the data you want for upper and detail forms, and help you determine exactly how the form will be used in the workflow.
7) Determined the data elements that will support these fields, and how the data will be stored.

After you have completed this analysis and design, you will then be ready to create the business processes, shells, or managers with uDesigner.

Bottom-Up Design

In uDesigner, you will be creating business processes, shells, or managers from the bottom up; that is, you will be creating each piece of the business process, beginning with elemental details:

Area	Description
Data definitions	To support how data is entered and stored
Data elements	To create the fields on the forms
Statuses	For records, line items, and assets to indicate their condition or state during their life cycle in Unifier

Area	Description
Attribute or detail forms	To launch the Unifier managers (Asset, Cost, Document, and so on) and collect information about costs, funds, documents, schedule activities, resources, plans, assets, facilities, and shells that is not relevant to the steps in a workflow
Forms	For users to fill out
Workflows	To specify how a business process should proceed, from start to finish
Logs	To contain all the records that were created in Unifier during runtime

For more detailed information on these components, see ***Business Processes Overview*** (on page 15).

Business Processes Overview

A Business Process (BP) is a set of coordinated tasks and activities that lead to the accomplishment of a specific business goal. For example, creating, routing, and approving a purchase order is a business process. Most business processes include a workflow that specifies how the BP should proceed, from start to finish.

By using uDesigner, you will be launching the business process and designing its components. You will be designing forms that users fill out in Unifier. These forms drive the business process. For most BPs, these forms will become attached to the steps in a workflow that you design. As part of the workflow, users will use these forms to collaborate as a team to complete the business process. The users will fill in the forms with the "who, what, where, and when" information for each business process, as well as the information they will need to run the project—to maintain action items, manage document archiving, track workflow tasks and milestones, communicate and collaborate with project team members, and generate project reports.

In uDesigner, you will also design Logs that will list the records that were created whenever the business process completed its cycle through the workflow and whenever a record is created for a manager or shell.

To help you prepare for designing business processes, Unifier provides an outline of how to analyze your business goals and needs. Oracle Consulting Services often provides the initial analysis of these; however, it helps to re-acquaint yourself with this analytic approach whenever you must create a new business process. This outline is described under ***Before Using uDesigner*** (on page 12).

Business Process Components

To create business processes, you must design and create the following components in uDesigner:

Component	Description
Data Definitions	To support how data is entered and stored in Unifier: Data definitions are the building blocks on which you create data elements. Data definitions describe how data is entered and stored. The definition consists of the data type (whether it is an alphabetical string or a number), the data size (in number of characters for strings), and the input method (from a text box, pull-down menu, radio button, or check box). Unifier has provided multiple standard data definitions for your use in uDesigner. You can add others of your own. (Optional) To support data pickers: If you are designing a business process that will operate across shells, data pickers will help users locate and pick the correct BP records within the hierarchy. A data picker filters the information that appears on the picker so that users do not have to search through a multitude of records in the shell hierarchy.
Data Elements	To create the fields on the forms: Data elements are the fields the users see on the forms in Unifier. A data element can be a text box, where the user types in information; a pull-down menu of choices, such as dates or names; radio buttons, where the user must select one of the options presented; or a check box, where the user has the option of choosing something or not. The behavior of a data element is governed by the data definition associated with it. Using uDesigner, you can create a "dictionary" of elements that can be re-used on multiple business process forms, asset classes, and attribute forms.

Component	Description
Statuses	For records, line items, and assets to indicate their condition or state during their life cycle in Unifier: ▸ A **record status** indicates the position a form is in at any point in the business process, such as "approved," "pending," or "closed." Each business process produces at least one, and sometimes many, transactions during its workflow. At each step, a user must apply a record status to the form. The status is the action designated as the link between two steps in the workflow. The action the link takes appears as a choice the user makes on the form. This choice moves the task to the next step. When creating a business process, you will be specifying what statuses the user can choose from at the completion of each step in the workflow. You can mark a status as active or inactive when you create a business process, and you can later update the status as well. Inactive statuses are not displayed to users when they create records. ▸ A **line item status** indicates the position of a line item at any point in the business process. It is distinct from a record status, and unlike a record status, it is not a visible part of a workflow; rather, a line item status is part of the form that moves through the workflow. For example, a document BP might bundle several documents together for review. Each document in the bundle is represented as a line item and as such, can be given a separate status: One document can be approved, while another can be sent back for editing. Each line item must be given a status. ▸ **Asset statuses** differ from other statuses. Instead of affecting the disposition of a BP or line item, an asset status controls which assets are displayed on an asset class sheet. For example, a user might want the sheet to show assets that are in "Out of Service" and "Decommissioned" status.

Component	Description
Forms	For users to fill out in Unifier: Forms are what users see and fill out; they drive the business processes. For most BPs, these forms become attached to the steps in a workflow for the purpose of exchanging information. As part of the workflow, users fill in the forms with the information they will need to run the project—to maintain action items, manage document archiving, track workflow tasks and milestones, communicate and collaborate with project team members, and generate project reports.
Workflows (Optional)	To specify how a business process should proceed, from start to finish: Workflows define how records are routed and govern the behavior of each step in the business process. Each step uses the forms that you have created in uDesigner. Most business processes will include a workflow or workflows; however, some business processes have a single purpose of storing data. These business processes are called non-workflow BPs. An example of a non-workflow BP is one or more forms that record contact and other general information about a company.

Component	Description
Logs	To contain all the records that were created in Unifier for a manager, shell, or business process: Every manager, shell, and business process includes a log. This log contains all the records that were created in Unifier for this component; and for business processes, all the records that were created during the BP's runtime, from creation to archive. The logs contain one record for each transaction that occurred. Each record contains all the information that was generated during the transaction, including the forms, documents, comments, and other data that was collected. To create a tree structure for data pickers: You can design a special Picker log to create a tree structure for data pickers. This tree structure makes it easier for a user to select the correct record from a log. (For more information on this log, see ***Designing a Business Process Log (Standard or Picker)*** (on page 462). For more information on data pickers, see ***About Data Pickers*** (on page 222).)

Each business process type requires specific pieces to make up the forms it will use. The forms can consist of:

Form	Description
Upper Form	The upper form contains the basic information the form is managing, such as the name of a record and its description, who created the record and when, and so on. It also contains general data entry, informational, or reference fields for the business process form.
Detail Form	Most detail forms are for the purpose of adding or modifying line items on certain types of BPs. For planning purposes, detail forms are used to enter new planning items. For schedule purposes, they are used to enter the activities that will appear on a schedule.

Form	Description
Item Log	This list displays items at the bottom of a BP form that have been added to a BP record, such as WBS cost codes or document attachments. Line items can be organized under multiple tabs to make accessing information easy for complex processes.
Text Entry Form	This is an area at the bottom of a BP form where users can directly enter text.
Response List	This is an area at the bottom of a BP form where the user can add and organize text comments or file attachments.

Business Processes Types

A review of Unifier Business Process (BP) types will help you understand how they work and what is required to make them operate effectively.

Some BPs employ different sub-types and classifications. For these BPs, the sub-type determines what type of code the BP will use, for example, a Fund or a CBS code.

The classification dictates the behavior of the BP. For example, a Base Commit classification of a Cost Type BP can create a Schedule of Values (SOV) sheet and General Spends classification can create an invoice at the CBS level.

In This Section

Cost Type 21
Document Type 46
Text Type 48
Line Item Type 49
Simple Type 55
Request for Bid (RFB) 56
Project/Shell Creation 61

Cost Type

Cost type BPs employ different sub-types and classifications. The **sub-type** determines what type of code it will use, such as a fund or CBS code. The **classification** dictates the behavior of the BP. For example, a Base Commit classification of a Cost Type BP can create a schedule of values; a General Spends classification can create an invoice at the CBS level.

To start creation of a Cost-type BP:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) From the toolbar, click **New**, and select **Cost**.
4) On the **General** tab, select the applicable **Sub-Type**.

The following explains the sub-types, and the associated classifications, of Cost-type BPs:

Sub-Type	Classification
Commit at company level	No classification

Sub-Type	Classification
Line Items with CBS Code	▸ Generic ▸ Base Commit ▸ Change Commit ▸ Transfer ▸ General Spends ▸ Payment Applications
Line Items with Fund Code	▸ Generic ▸ Transfer
Line Items with both CBS and Fund Codes	▸ Generic ▸ Transfer
Line Items with both CBS and WBS Codes	No classification
Line Items with Company Accounts Code	▸ Generic ▸ Transfer
Line Items with Multiple Code	▸ Generic ▸ Base Commit ▸ Change Commit ▸ Transfer ▸ General Spends ▸ Lease ▸ Reservation

The following explains the Cost-type BPs classifications:

Classification	Description
Generic	Use this for miscellaneous line item BPs that do not directly relate to commitments, change commits, spends, or funding.
Transfer	Use this for transferring currency from one account or line item to another.
Base Commit	Use this for: ▸ Monies committed to be spent; for example, a contract or purchase order ▸ Creating an SOV for a general spends or pay application
Change Commit A Change Commit must reference a Base Commit.	Use this for: ▸ Changing or adding to a previous base commit ▸ Modifying a general spends or pay application SOV

Classification	Description
General Spends A General Spends must reference a Base Commit.	Use this for monies to be spent; for example, an invoice or partial payment of services, often charged against a prior commit.
Payment Applications	This BP will create an SOV from the detail form. It will also support complex calculations, such as retainage, stored materials, paid-to-date, and payment based on percentage complete. Use this for: ▸ Scheduling payments against construction contracts ▸ Tracking/viewing previous and current payments made against these contracts ▸ Rolls up to the Cost Manager

To set the status of a Cost-type BP:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) From the toolbar, click **New**, and select **Cost**.
4) On the **Statuses** tab, select the applicable status.

The **Statuses** tab of the Cost-type BPs lets you specify the following statuses for a given record, as the record moves through a workflow, or during the records use in Unifier:

- Pending
- Approved
- Rejected
- Open
- Closed
- In_Service
- Under_Maint
- Review
- Certified
- Deployed
- Certify
- Created
- Cancelled
- Original_Approved
- Change_Approved
- Error_Cancel
- Active

- Estimated
- Quoted
- Negotiated
- Final
- Final_Approved
- Inactive
- Withdrawn
- Canceled

A status indicates the condition or state of a record at any point in its life cycle. Statuses will vary according to the type of record. To include a status, click Add. You can select multiple statuses, from the list.

Statuses are necessary for a non-workflow business process to:

- Designate the record final disposition
- Keep the record active and editable
- Close it to any further activity

> **Note:** By default, all existing statuses for a non-workflow business process are defined as Active and the Inactive column is blank. Deactivating a Record Status affects a status if the user updates an existing business process record and requires the user to select a different status. (Inactive Record Statuses are not displayed to users when they create records.)

To make entering line items easier for the user, you can set a default status, such as "Pending," for all the new line items. To do so, select the status and click **Default**.

The statuses for records must include at least one terminal status; otherwise, the workflow cannot be completed. To make a status terminal, select the status and click **Terminal**. You can define more than one terminal status.

> **Note:** You can use a terminal record status to trigger certain functions outside the scope of the business process or to make external data easily accessible from the business process or form.

Cost Type: Line Items with CBS Code

The Cost Type--Line Items with CBS Code Business Process (BP) type:

- Is used for Project/Shell cost transactions.
- Directly affect the budget and relate to the Project/Shell Cost Sheet.

Use the Cost Type--Line Items with CBS Code BP type for a BP that includes a CBS picker to reference CBS codes.

Use the Cost Type--Line Items in a Shell that uses the Standard Cost Manager.

The Cost Type--Line Items with CBS Code has the following classifications:

- Generic
- Transfer
- Base Commit
- Change Commit
- General Spends
- Payment Applications

The following explains each of the classifications in detail:

Generic

- To use for miscellaneous Line Items BPs that do not directly relate to commitments, change commits, spends, or funding.
- Use it to automate fund consumption at a specific status (not necessarily a terminal status).

Transfer

To use for transferring currency from one account or line item to another.

Base Commit

- For monies committed to be spent; for example, a contract or purchase order.
- For creating a Schedule of Values (SOV) sheet for a General Spends, Payment Applications, or Summary Payment Applications.

> **Note**: In Standard Cost Manager, the Base Commit BP creates a Schedule of Values (SOV) sheet.

Change Commit

- For changing or adding to a previous Base Commit.
- For modifying a General Spends, Payment Applications, or Summary Payment Applications.

> **Note**: A Change Commit must reference a Base Commit.

General Spends

For monies to be spent; for example, an invoice or partial payment of services, often charged against a prior commit. Can be used for invoicing at the CBS or breakdown level. A General Spends BP does not calculate retainage, stored materials, and so on.

> **Note**: A General Spends must reference a Base Commit.

Payment Applications

- To create an SOV from the Detail Form.
- Supports complex construction calculations, such as retainage, stored materials, paid-to-date, and payment based on percentage complete. Use for invoicing at the CBS or breakdown level. Payment Applications auto-populate data to and from the SOV to manage balance-forward formulas.
- For scheduling payments against construction contracts.
- For tracking/viewing previous and current payments made against these contracts
- For rolls up to the Cost Manager

> **Note**: A Payment Application must reference a Base Commit.

For the Business Processes of Type: Cost, Sub-Type: Line Items with CBS Code, Classification: Payment Applications, the "**Previous Payment Calculation**" option in the BP Properties enables you to select additional data element for calculating the total previous payments from the payment application. This field (drop-down) enables you to select which value to add to the total previous payments. The values are:

- Amount
- Balance to Finish
- Completed and Stored To Date
- Material Stored Retainage Amount
- Requested This Period
- Work Retainage Amount

Total for SOV and Remaining Commit Balance

You can use the links in the Base Commit (All SOV Types except Summary payment SOV Type) and the Change Commit (All SOV Types except Summary payment SOV Type) BP form to add the total for Schedule of Value (SOV), and the remaining Commit balance, from the reference contract. This enables you to view the latest SOV, and the remaining Commit balance, when the user creates:

- A new contract is approved
- New change orders for a selected contract, at runtime.
- New invoices for a selected contract, at runtime.

When you create a Change Order (General Spends SOV type) BP, you can view the latest total contract value. This enables you to:

- Review the impact on a selected contract without having to open the SOV
- View the total contract value in the BP log

When you create a new contract (All SOV types except Summary Payment SOV Type) BP, you can view the total for the contract value and the remaining Commit balance for the selected contract without having to open the SOV.

When you create a new Invoice (General Spends SOV type) BP, you can view the:

- Total for remaining Commit balance for selected contract without having to open the SOV
- Total commit remaining balance in the BP log

When you create a Change Order (General Spends SOV type) BPs or Payment Application Record, you can view the latest total value for a specific line. This lets you:

- Create a Change Order (General Spends SOV type) BP or Payment Application Record based on the selected line.
- View the total without having to open the SOV.

> **Note:** If you select *Commit Line Item Picker / Reference* as the source for uuu_scheduled_value (Scheduled Value) or uuu_commit_remaining_balance(Commit Remaining Balance), the

standard detail form must include the uuu_sovlinum element.

Transient Record Funding Option

After a BP record reaches the terminal status (the end step of a workflow), the user cannot assign funds, even if the end step is using an Action form. For example, a user sends an invoice that is pending (a Transient Record) to the finance department for approval. The finance department approves the fund assignment. The invoice reaches the terminal status (the end step of a workflow). The process is confirmed and the invoice gets funded. In this example, after the funds have been assigned to the invoice, the funds cannot be changed and the fundings override any manual fund assignments, on an Action form, at the end step of a workflow.

The "Transient Record Funding Option" is available for the following Cost Type--Line Items with CBS Code classifications:

- Generic
- General Spends
- Pay Application
- Summary Pay Application

These classifications of Cost Type--Line Items with CBS Code allow you to design a BP that the user can:

- Assign funds to
- Route the BP record for review
- Make changes to
- Confirm the fund sources before the BP record reaches a terminal status (the end step of a workflow)

Design Requirements for Line Items with CBS Code Business Processes

For these business processes to work effectively in Unifier, you will need to create the following components in uDesigner:

- Upper form
- Detail form
- Line Item List
- Workflow
- Log

To see the same Data Elements (DEs) on the Detail Form of a Cost-type Business Process, you must add the DEs to the:

- Detail Form, or the Item Log, of the Business Process.
- Cost Code Attribute Form.

Design Flow

The following outlines, and explains, the design steps necessary to create this business process.

1. Create a data structure (if necessary)

This structure will include the data elements to be used on the forms. If the data structure has not already been created, see the instructions beginning with ***Creating a Data Structure*** (on page 217).

2. Start the design

This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).

3. Design an upper form

See the instructions beginning with ***Designing an Upper Form*** (on page 287).

4. Design a detail form

See the instructions beginning with ***Designing Detail Form*** (on page 322). Also:

For this classification:	These fields are mandatory:
Base Commit	▸ Amount (**amount**) ▸ Short description (**short_desc**) ▸ CBS picker (**uuu_cost_code**) If the transaction currency is different from project currency, include a currency picker (`currencyid`) on the form.
Change Commit	▸ Amount (**amount**) ▸ Short description (**short_desc**) ▸ CBS picker (**uuu_cost_code**) ▸ Reference (**ref_bpo_lineitem**) If the transaction currency is different from project currency, include a currency picker (`currencyid`) on the form.
Spends	▸ Amount (**amount**) ▸ Short description (**short_desc**) ▸ CBS picker (**uuu_cost_code**)
Generic	▸ Amount (**amount**) ▸ Short description (**short_desc**) ▸ CBS picker (**uuu_cost_code**)
Payment Application	▸ Scheduled value (**scheduled_value**) ▸ Amount (**amount**) ▸ Short description (**short_desc**) ▸ CBS picker (**uuu_cost_code**)
Transfer	▸ Amount (**amount**) ▸ Short description (**short_desc**) ▸ CBS picker (**uuu_cost_code**)

5. Create a line item list

See ***Adding an Item Log to a Detail Form*** (on page 322).

6. Create a workflow

See the instructions beginning with ***Starting a Workflow*** (on page 438).

7. Create a log

See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).

Data Elements Properties for Auto Populate

The **Auto Populate** window contains the following fields and options:

- **Destination Element**
- **Source Name**
- **Source Element**
- **Do not get latest SOV values when merging**

  Do not select the **Do not get latest SOV values when merging** option for `scheduled_value`, `uuu_unit_price`, and the system-defined `uuu_spa_prev_amt` because they are predefined data elements that receive the latest values from SOV, when the SOV is updated by a Change Order.

  When you select the **Do not get latest SOV values when merging** option, you will not receive the latest value from SOV, when SOV merge occurs for in-flight and draft payments. That is to state that at the run time whenever a user opens a draft or an in-flight payment record and accepts the merge alert, the data elements that have the **Do not get latest SOV values when merging** option selected in uDesigner do not get refreshed with the latest updated values from SOV.

  When the value of the **Source Name** field changes from SOV to other sources, the **Do not get latest SOV values when merging** option will not be displayed. In the **Elements Properties** window, the **Do not update latest value from SOV** field corresponds (**Yes** or **No**) to the **Do not get latest SOV values when merging** option.

Cost Type: Line Item with Fund Code

Use this type of BP for fund appropriation at the project level. With this type of BP, you can design business processes that will automatically allocate or consume funds to specific CBS codes. These transactions are for fund management and do not necessarily affect the budget. Transactions on this type of BP roll up to the Fund Manager.

You can use this BP in a shell that uses the Standard Cost Manager.

Cost type business processes employ different sub-types and classifications. The **sub-type** determines what type of code it will use, such as a fund or CBS code. The **classification** dictates the behavior of the BP. For example, a Base Commit classification of a Cost Type BP can create a schedule of values; a General Spends classification can create an invoice at the CBS level. There are two classifications of this BP type.

Classification	Description
Generic	Use this to allocate funds from the company fund master sheet to specific projects.
Transfer	Use this for transferring fund amounts from one fund code to another.

Design Requirements for Line Items with Fund Code Business Processes

For these business processes to work effectively in Unifier, you will need to create the following components in uDesigner:

- Upper form
- Detail form
- Line Item List
- Workflow
- Log

Design Flow

The following table outlines the design steps necessary to create this business process.

Step	Description
1. Create a data structure (if necessary)	This structure will include the data elements to be used on the forms. (If the data structure has not been created, see the instructions beginning with ***Creating a Data Structure*** (on page 217).)
2. Launch the design	This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).
3. Create an upper form	See the instructions beginning with ***Designing an Upper Form*** (on page 287).
4. Create a detail form	See the instructions beginning with ***Designing Detail Form*** (on page 322). Mandatory fields for the detail form are: Funding source (**row_id**) Short description (**short_desc**) Amount (**amount**)
5. Create a line item list	See ***Adding an Item Log to a Detail Form*** (on page 322).
6. Create a workflow	See the instructions beginning with ***Starting a Workflow*** (on page 438).

Step	Description
7. Create a log	See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).

Cost Type: Line Items with Both CBS and Fund Codes

Use this type of BP for fund appropriation to specific CBS codes. These transactions are for fund management and do not necessarily affect the budget. Transactions on this type of BP roll up to the Fund Manager and Cost Manager.

You can use this BP in a shell that uses the Standard Cost Manager.

Cost type business processes employ different sub-types and classifications. The **sub-type** determines what type of code it will use, such as a fund or CBS code. The **classification** dictates the behavior of the BP. For example, a Base Commit classification of a Cost Type BP can create a schedule of values; a General Spends classification can create an invoice at the CBS level. There are two classifications of this BP type.

Classification	Description
Generic	Use this for allocating funds from the Company Fund Sheet to specific projects.
Transfer	Use this for moving allocated funds within a project between fund codes.

Design Requirements for Line Items with Both CBS and Fund Codes BPs

For these business processes to work effectively in Unifier, you will need to create the following components in uDesigner:

- Upper form
- Detail form
- Line Item List
- Workflow
- Log

Design Flow

The following table outlines the design steps necessary to create this business process.

Step	Description
1. Create a data structure (if necessary)	This structure will include the data elements to be used on the forms. (If the data structure has not been created, see the instructions beginning with ***Creating a Data Structure*** (on page 217).)

Step	Description
2. Launch the design	This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).
3. Create an upper form	See the instructions beginning with ***Designing an Upper Form*** (on page 287).
4. Create a detail form	See the instructions beginning with ***Designing Detail Form*** (on page 322). Mandatory fields for the detail form are: Funding source (row_id) Short description (short_desc) Amount (amount) CBS picker (uuu_cost_code)
5. Create a line items list	See ***Adding an Item Log to a Detail Form*** (on page 322).
6. Create a workflow	See the instructions beginning with ***Starting a Workflow*** (on page 438).
7. Create a log	See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).

Cost Type: Line Items with Both CBS and WBS Codes

The Cost Type-Line Items with CBS and WBS Code Business Process (BP) is used for a project/shell cost transaction. This BP directly impacts the budget, and it relates to the project/shell WBS Sheet and Cost Sheet. That is to state: This BP rolls up cost to both WBS Sheet and Cost Sheet.

This BP enables you to breakdown the cost lines by Work Breakdown Structure (WBS).

Cost Type: Commit at Company Level

This is a company-level cost BP sub-type that you can use to track and control costs at the company level above the CBS level. It is independent of a budget or cost sheet and is used for tracking non-CBS expenses across projects. It does not use a workflow.

Use this BP to commit a money amount to a specific vendor. Unifier then validates and enforces spends against this amount.

At the company level, users can create a blanket PO (BPO) business process and store it in the Company Data Manager. They can then set up project-level Commit and Change Commit BPs to reference the BPO and charge against the remaining balance of the BPO.

Design Requirements for Commit at Company Level Business Processes

For these business processes to work effectively, you will need to create the following components in uDesigner:

- Upper form
- Detail form
- Line Item List
- Log

Design Flow

The following table outlines the design steps necessary to create this business process.

<table>
<tr><th>Step</th><th colspan="2">Description</th></tr>
<tr><td>1. Create a data structure
(if necessary)</td><td colspan="2">This structure will include the data elements to be used on the forms. (If the data structure has not been created, see the instructions beginning with Creating a Data Structure (on page 217).)</td></tr>
<tr><td>2. Start the design</td><td colspan="2">This step initializes the design process for the BP. See Starting a New Design (Edit Studio) (on page 246).</td></tr>
<tr><td>3. Design an upper form</td><td colspan="2">See the instructions beginning with Designing an Upper Form (on page 287).</td></tr>
<tr><td rowspan="4">4. Design a detail form</td><td colspan="2">See the instructions beginning with Designing Detail Form (on page 322).</td></tr>
<tr><td>For this sub-type:</td><td>These fields are mandatory:</td></tr>
<tr><td>Base Commit</td><td>amount
amount
Short description (short_desc)
CBS picker (uuu_cost_code)</td></tr>
<tr><td>Change Commit</td><td>amount
Short description (short_desc)
CBS picker (uuu_cost_code)
Reference (ref_bpo_lineitem)</td></tr>
</table>

Step	Description	
	Spends	▸ amount) ▸ amount ▸ Short description (**short_desc**) ▸ CBS picker (**uuu_cost_code**)
	Generic	▸ amount ▸ Short description (**short_desc**) ▸ CBS picker (**uuu_cost_code**)
	Payment Application	▸ Scheduled value (**scheduled_value**) ▸ amount ▸ Short description (**short_desc**) ▸ CBS picker (**uuu_cost_code**)
	Transfer	▸ amount ▸ Short description (**short_desc**) ▸ CBS picker (**uuu_cost_code**)
5. Create a line item list	See ***Adding an Item Log to a Detail Form*** (on page 322).	
6. Create a log	See ***Designing a Business Process Log (Standard or Picker)*** (on page 462) and ***Creating a Business Process Log (Standard or Picker)*** (on page 461).	

Cost Type: Line Items with Company Account Code

This BP is a cost BP type that you can use to track cost transactions at the company level for items such as resources or facility maintenance. Transactions on this type of BP can roll up to the company-level Accounts Sheet.

Cost type business processes employ different sub-types and classifications. The **sub-type** determines what type of code it will use, such as a fund or CBS code. The **classification** dictates the behavior of the BP. For example, a Base Commit classification of a Cost Type BP can create a schedule of values; a General Spends classification can create an invoice at the CBS level. There are three classifications of this BP type:

Classification	Description
Generic	Use this for miscellaneous line item BPs that do not fall into the other categories.
Transfer	Use this for transferring fund amounts from one account code to another (usually used for making corrections).
Reservation	Use this to reserve an asset, space, or shell; an object from a line item, simple, or document type business process; or an item from a configurable manager (Code and Records-based).

How the Reservation business process works

To design the Reservation type of business process, it will help to understand how it works.

This business process is meant for reserving objects from different Unifier modules:

- A record in the Document Manager
- An object from a line item type business process
- An object from a simple type business process
- An object from a Code and Records-based configurable manager

In uDesigner, these objects are made reservable (that is, "calendar-enabled") if you:

- Specify that the object is calendar-enabled when you start the design
- Include the following data elements on their attribute or detail forms:
  - **uuu_rsv_reservable** (allow item to be reserved)
  - **uuu_rsv_overbook** (allow item to be overbooked)

When you design the Reservation business process, you must design one or more data pickers and include them on the upper or detail form. These data pickers will list the objects that have been calendar-enabled so that the Unifier user can choose the object to reserve. The Reservation business process is where a user will specify the dates and times for the reservation, recurring reservation dates (if necessary), and (optionally) the auto-creation of other business processes.

When the business processes for the reservable objects reach a specific status (which you specify in the design), the object becomes available for reservation; that is, it becomes available to a data picker on the Reservation business process.

Auto-creation on a Reservation business process

You can design the Reservation business process to auto-create other business processes. The auto-creation must include a BP Creator element and certain other elements (see the Design Flow below).

You can auto-create another business process from the upper or detail form of the Reservation business process. Auto-creation on a Reservation business process works differently from most other auto-creation processes. For most auto-creations, the Unifier administrator sets up the auto-creation. However, for a Reservation business process, the end users set up the auto-creation when they create a new Reservation record. For the auto-creation, users must specify a time offset relative to the reservation event; that is, they must specify whether the auto-creation should occur before or after the reservation event, and how many days, hours, and minutes before/after the event. For example, for a room reservation, the Reservation business process could auto-create a work order for catering two days before the event, and auto-create an "action item" follow-up business process that would go to all attendees eight hours after the event.

Auto-creation and recurring reservations

The Reservation business process includes a "Recurrence" feature that users can use to make a reservation automatically occur at specific intervals. For auto-creation on a recurring reservation, Unifier re-evaluates the trigger date for each recurrence. The Reservation business process will show a hyperlink to only the last record created; however, users can see all the records created by opening the View References window.

Design Requirements for Line Items with Company Account Code Business Processes

For these business processes to work effectively, you will need to create the following components in uDesigner:

- Upper form
- Detail form
- Line Item List
- Workflow
- Log

Design Flow

The following table outlines the design steps necessary to create this business process.

Step	Description
1. Create a data structure (if necessary)	This structure will include the data elements to be used on the forms. (If the data structure has not already been created, see the instructions beginning with ***Creating a Data Structure*** (on page 217).) For a **Reservation** sub-type, you must create one or more data pickers. Users will use these data pickers to choose the objects to reserve. The data pickers will be populated with the business process records (such as a space) that have been "calendar enabled."
2. Start the design	This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).

<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td>3. Design an upper form</td><td>See the instructions beginning with Designing an Upper Form (on page 287).
For a Reservation sub-type, these fields are mandatory on the upper form:
Reserved from date (uuu_date_from)
Reserved to date (uuu_date_to)
Reservation name (uuu_rsv_calendar_item_name)
Set reservation recurrence (uuu_recurrence)
If a Reservation business process should auto-create another business process before or after the reserved event takes place, these fields are mandatory, and can be added to either the upper or detail form:
BP Creator element
When the auto-creation should occur, relative to the reservation (uuu_before_after)
Date the auto-creation should occur (uuu_rsv_trigger_date)
# of days before/after the reservation the auto-creation should occur (uuu_rsv_trigger_days)
# of hours before/after the reservation the auto-creation should occur (uuu_rsv_trigger_hrs)
# of minutes before/after the reservation the auto-creation should occur (uuu_rsv_trigger_min)</td></tr>
<tr><td>4. Design a detail form</td><td>See the instructions beginning with Designing Detail Form (on page 322).<table><tr><th>For this sub-type:</th><th>These fields are mandatory:</th></tr><tr><td>Generic</td><td>Company account code picker Amount ((uuu_company_acc_code picker))
Short description (short_desc)</td></tr><tr><td>Transfer</td><td>Company account code picker Amount ((uuu_company_acc_code picker))
Short description (short_desc)</td></tr></table></td></tr>
</table>

Step	Description	
	Reservation	If a **Reservation** business process should auto-create another business process before or after the reserved event takes place, these fields are mandatory, and can be added to either the upper or detail form: ▸ BP Creator element ▸ When the auto-creation should occur, relative to the reservation (uuu_before_after) ▸ Date the auto-creation should occur (uuu_rsv_trigger_date) ▸ # of days before/after the reservation the auto-creation should occur (uuu_rsv_trigger_days) ▸ # of hours before/after the reservation the auto-creation should occur (uuu_rsv_trigger_hrs) ▸ # of minutes before/after the reservation the auto-creation should occur (uuu_rsv_trigger_min)
5. Create a line item list	See ***Adding an Item Log to a Detail Form*** (on page 322).	
6. Create a workflow	See the instructions beginning with ***Starting a Workflow*** (on page 438).	
7. Create a log	See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).	

Generic Cost: Line Items with Multiple Codes

Business processes for a generic cost manager are line item type BPs; and to distinguish them from line item cost BPs for the standard Cost Manager, they are called "line items with multiple codes."

Note: These BPs do not use a CBS code structure. Instead, it uses a coding structure that you must create when you launch the BP.

There are several classifications of this BP type:

Classification	Description
Generic	Use this for miscellaneous line item BPs that do not fall into the other categories, including fund-related or those related to blanket purchase orders. With this type of BP, you can: ▸ Reference against a company-level commit BP ▸ Enforce the line items against a company-level commit amount ▸ Consolidate line items
Transfer	Use this for transferring currency from one account to another. With this type of BP, you can consolidate line items.
Base Commit	Use this for: ▸ Monies committed to be spent; for example, a contract or purchase order ▸ Creating an entry in the Commitment Summary With this type of BP, you can: ▸ Reference against a company-level commit BP ▸ Enforce the line items against a company-level commit amount ▸ Create a commitment summary when the BP is in a terminal status ▸ Consolidate line items From this type of BP, you can: ▸ Select only a General Spends type of commitment summary ▸ View commitment summary line items only by individual line items, or grouped by commit codes

Classification	Description
Change Commit	Use this for: ▸ Changing or adding to a previous base commit BP ▸ Modifying an entry in the Commitment Summary With this type of BP, you can: ▸ Reference against a company-level commit BP ▸ Enforce the line items against a company-level commit amount ▸ Update the commitment summary ▸ Consolidate line items From this type of BP, you can: ▸ Select only a General Spends type of commitment summary ▸ View commitment summary line items only by individual line items, or grouped by commit codes
General Spends	Use this for monies to be spent; for example, an invoice or partial payment of services, often charged against a prior commit. This BP updates an entry on the Commitment Summary.
Lease	Use this for creating payment schedules for rental properties. This BP shows users the expected payments for the lifetime of a lease according to a regular or straight-line schedule. A Lease BP automatically creates these schedules, on which users can track incoming and outgoing payments. You can design a Lease BP to auto-create other BPs, such as a payment request. Users can also create an "allocation template" to pro-rate lease payments into different amounts for multiple tenants in a building. The template will designate a breakdown of the costs for each tenant and this breakdown will be used to create the payment calculations.

Classification	Description
Reservation	Use this to reserve a space, an object from a line item, simple, or document type business process; or an item from a configurable manager (Code and Records-based). For information on how the Reservation business process works, see ***Cost Type: Line Items with Company Account Code*** (on page 34).

Note: For cost BPs of this type, you can give users permission to modify line items at any time during the workflow before the end step is reached.

Design Requirements for Line Items with Multiple Codes BPs

For Line Items with Multiple Codes business processes to work effectively in Unifier, you will need to create the following components in uDesigner:

- Upper form
- Detail form
- Line Item List
- Workflow
- Log

Design Flow for Line Items with Multiple Codes BPs

The following outlines the design steps necessary to create this business process.

1) **Create a Data Structure (if necessary)**
2) **Launch the Design**
3) **Design an Upper Form**
4) **Design a Detail Form**
5) **Create a Line Items list**
6) **Create a Workflow**
7) **Create a Log**

The following explains each step in detail:

1. Create a Data Structure (if necessary)

This structure will include the data elements to be used on the forms. (If the data structure has not been created, see the instructions beginning with ***Creating a Data Structure*** (on page 217).)

(Optional) If you are designing a business process that will roll up data across shells to a Code and Records-based manager, you need to design data pickers to help Unifier users locate and pick the correct BP records within the hierarchy. For more information on data pickers, see ***Across-Shell Functioning*** and ***About Data Pickers*** (on page 222).

For a Reservation sub-type, you need to create one or more data pickers. Users will use these data pickers to choose the objects to reserve. The data pickers will be populated with the business process records (such as a space) that have been "calendar enabled."

2. Launch the Design

This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).

3. Design an Upper Form

See the instructions in ***Designing an Upper Form*** (on page 287).

For **Change Commit** sub-type, this field is mandatory:

A reference ID (**Refid**)

You will need to link the Change Commit BP to the **Base Commit** BP using this reference ID.

For **Spends** sub-type, this field is mandatory:

A reference ID (**Refid**)

You will need to link the **Spends** BP to the **Base Commit** BP using this reference ID.

For **Lease** sub-type:

If you want the straight-line rent amount to appear on the upper form of the lease, include this field:

- `uuu_lse_sl_rent`

If you include this field on the form, the user will not have to open the Payment Schedule to see the rent amount.

If you want to allow the Unifier user to adjust the date terms of a straight-line lease, or to add or subtract a one-time currency amount to/from the lease amount, include these fields on the Upper Form:

- Commencement date (`uuu_lse_commencement_date`)
- Termination date (`uuu_lse_termination_date`)
- Lease term modifier (`uuu_lse_term_modifier`)
- Currency amount adjustment (`uuu_lse_sl_adjustment`)

For **Reservation** sub-type:

- Reserved from date (`uuu_date_from`)
- Reserved to date (`uuu_date_to`)
- Reservation name (`uuu_rsv_calendar_item_name`)
- Set reservation recurrence (`uuu_recurrence`)

If a Reservation business process should auto-create another business process before or after the reserved event takes place, these fields are mandatory and can be placed on the upper or Detail Form:

- BP Creator element
- When the auto-creation should occur, relative to the reservation (`uuu_before_after`)
- Date the auto-creation should occur (`uuu_rsv_trigger_date`)
- # of days before/after the reservation the auto-creation should occur (`uuu_rsv_trigger_days`)
- # of hours before/after the reservation the auto-creation should occur (`uuu_rsv_trigger_hrs`)
- # of minutes before/after the reservation the auto-creation should occur (`uuu_rsv_trigger_min`)

4. Design a Detail Form

If this business process is to roll up data from across shells, the following fields are mandatory on these forms to provide user navigation to records across shells:

- A data picker for each manager class
- A configurable manager picker

These fields are mandatory for the form, but are not required to be filled in at runtime. However, if these fields are left blank on the form at runtime, data rollups will not occur.

See the instructions in ***Designing an Upper Form*** (on page 287).

For **Base Commit** sub-type, these fields are mandatory:

- Manager picker (uuu_cm[1...25]_picker)
- Cost code picker (uuu_cm0_code)
- Effective date for the code (uuu_effective_date)
- Amount (amount)
- Short description (short_desc)

For **Change Commit** sub-type, these fields are mandatory:

- Manager picker (uuu_cm[1...25]_picker)
- Cost code picker (uuu_cm0_code)
- Effective date for the code (uuu_effective_date)
- Commit line item picker (uuu_sovlinum)
- Amount (amount)
- Short description (short_desc)
- Reference (ref_bpo_lineitem)

For **Spends** sub-type, these fields are mandatory:

- Manager picker (uuu_cm[1...25]_picker)
- Cost code picker (uuu_cm0_code)
- Effective date for the code (uuu_effective_date)
- Amount (amount)

- Short description (short_desc)

For **Generic** sub-type, these fields are mandatory:

- Manager picker (uuu_cm[1...25]_picker)
- Amount (amount)
- Short description (short_desc)

For **Payment Application** sub-type, these fields are mandatory:

- Manager picker (uuu_cm[1...25]_picker)
- Scheduled value (scheduled_value)
- Amount (amount)
- Short description (short_desc)

For **Lease** sub-type, these fields are mandatory:

- Manager picker (uuu_cm[1...25]_picker)
  If the lease BP is linked to a configurable manager.
- Generic Cost Manager picker (uuu_cm0_picker)
  If the lease BP is linked to a Generic Cost Manager.
- uuu_lse_start_date
- uuu_lse_end_date
- uuu_lse_frequency
- uuu_lse_pay_due_day
- uuu_lse_pay_latest_due_day
- uuu_lse_pay_creat_lead_time
- uuu_lse_pay_type
- uuu_lse_proration_method
- uuu_lse_esc_method
- uuu_lse_esc_value
- uuu_lse_esc_freq_len
- uuu_lse_esc_freq_type
- uuu_lse_add_pay_amt
- uuu_lse_pay_due_date
- uuu_lse_pay_latest_due_date
- uuu_lse_pay_creation_date
- uuu_lse_pay_amount
- Amount (amount)
- short_desc

To accommodate lease payment allocation, these fields are also mandatory:

- uuu_allocation_amount
- uuu_lse_allocation_name (this is a picker)
- The amount of lead time a payment request needs for approval and payment—uuu_lse_pay_creat_lead_time

If you want to allow the user to manually specify a first payment due date, include this field:

- uuu_lse_first_pay_due_date

For **Reservation** sub-type, f the detail form should auto-create another business process before or after the reserved event takes place, these fields are mandatory:

- BP Creator element
- When the auto-creation should occur, relative to the reservation (uuu_before_after)
- Date the auto-creation should occur (uuu_rsv_trigger_date)
- # of days before/after the reservation the auto-creation should occur (uuu_rsv_trigger_days)
- # of hours before/after the reservation the auto-creation should occur (uuu_rsv_trigger_hrs)
- # of minutes before/after the reservation the auto-creation should occur (uuu_rsv_trigger_min)

5. Create a Line Items list

See ***Adding an Item Log to a Detail Form*** (on page 322).

6. Create a Workflow

See the instructions beginning with ***Starting a Workflow*** (on page 438).

7. Create a Log

See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).

Tips for Lease Business Process (BP)

The Lease BP works best as a non-workflow BP, at the highest level of a shell hierarchy.

If you create leases at multiple levels in a hierarchy, make sure that the cost codes are consistent across shells so that the costs roll up properly to the Cost Sheet.

If you design a Lease BP with a workflow, make sure that the leases do not reach a terminal status; otherwise, you will not be able to edit or add lease amendments to the BP.

If you want the Lease BP to auto-create another BP (such as a payment request), include a BP Creator element on the standard detail form and use the line-item-to-record method of auto-creation (for more information, see ***Auto-Creating a Record or Line Item from a Form***).

> **Note**: By design, the Line Item Details, in the Lease BP, cannot be auto-created.

On the auto-created BP:

- Include a BP Picker for referencing the Lease BP. This will ensure that when users view the referenced records in the Lease BP, they will see all the auto-created BPs for the Lease.
- Auto-populate the effective date so that the costs roll up to the Cost Sheet in the right time frame.

Index rate based rent escalation:

Follow these steps if you want to include the option to escalate rent based on the index rate:

1) Create a simple BP and include these data elements: `uuu_index_rate`, `uuu_index_code`, and status.
2) Create a data picker using the BP you created in step 1.
3) Open the Lease BP.
4) From the toolbar, click **Open**, and select **General**.
5) Select the **Options** tab.
6) For the field **Index Rate Data Picker**, select the index rate data picker you created in step 2.
7) On the **Detail Form** of the Lease BP, open **Payment Setup**.
8) Under **Payment Escalation Setup**, include the index rate data picker you created in step 2.

The following data elements (DEs) only exist in group, and if the user has added any of these DEs, adding the other DEs is mandatory.

- `uuu_lse_annual_discnt_rate`
- `uuu_lse_npv_amount`
- `uuu_lse_inc_in_npv`

Additional error check will be added for this during the business process error check to check for the presence of these elements in upper form/payment setup. These DEs will not be available for any other non-standard detail form in lease type of BP.

The system will conduct error check for the presence of the above DEs in Upper Form/Payment Setup.

The above DEs are not available for non-standard Detail Form in Lease type BP.

Document Type

Document business processes are document-type BPs commonly used as "envelopes" to package a set of files—such as spreadsheets, drawings, and design documentation—that flow from one group to another. An example is a Transmittal. Unifier users have the option of having each file attachment be a separate line item, which allows additional functionality such as line item status modification. (Line item functionality is activated by creating a detail form for the BP.)

There are two sub-types of document BPs: With Folder Structure, allowing users to attach and organize documents and folders and maintain a folder structure; and Without Folder Structure, allowing attachments as a flat list only.

> **Note:** For document-type business processes With Folder Structure, you can specify that a configured folder path be appended to the folder structure. This appended path is based on the path configured in the *uuu_dm_publish_path* data element on the business process form, and the selection of the **Append Line Items Folder Structure to AutoPublish Path** option. See ***Designing an Upper Form*** (on page 287) for details.

Design Requirements for Document Business Processes

For these business processes to work effectively, you will need to create the following components in uDesigner:

- Upper form
- Detail form
- Line Item List
- Workflow
- Log

Design Flow

The following table outlines the design steps necessary to create a document business process.

Step	Description
1. Create a data structure (if necessary)	This structure will include the data elements to be used on the forms. (If the data structure has not been created, see the instructions beginning with ***Creating a Data Structure*** (on page 217).)
2. Launch the design	This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).
3. Create an upper form	See the instructions beginning with ***Designing an Upper Form*** (on page 287).
4. Create a detail form	See the instructions beginning with ***Designing Detail Form*** (on page 322). If users should be able to reserve this document record, these fields are mandatory: - Short description (short_desc) - Allow item to be reserved (uuu_rsv_reservable) - Allow over-booking (uuu_rsv_overbook)
5. Create a line items list	See ***Adding an Item Log to a Detail Form*** (on page 322).
6. Create a workflow (if necessary)	See the instructions beginning with ***Starting a Workflow*** (on page 438).
7. Create a log	See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).

Text Type

Text BPs accommodate "discussion type" business processes such as requests for information (RFIs) or action items for collaborative situations where users need to discuss issue resolution. They make dialog-driven collaboration easy and visible because the response list area shows the dialog thread.

This type of BP contains a text entry area where the person initiating the business process explains the request or issue. Below this area, the BP will show a response list. This area is where participants can add and organize text comments or file attachments.

Design Requirements

For these business processes to work effectively in Unifier, you will need to create the following components in uDesigner:

- Upper form
- Text entry form
- Response list
- Workflow
- Log

Design Flow

The following table outlines the design steps necessary to create this business process.

Step	Description
Create a data structure(if necessary)	This structure will include the data elements to be used on the forms. (If the data structure has not been created, see the instructions beginning with ***Creating a Data Structure*** (on page 217).)
Launch the design	This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).
Create an upper form	See the instructions beginning with ***Designing an Upper Form*** (on page 287).
Create a text entry form	See ***Adding a Text Entry Area to a Form*** (on page 390).
Create a response list	See ***Adding a Response List to a Text Business Process*** (on page 390).
Create a workflow (if necessary)	See the instructions beginning with ***Starting a Workflow*** (on page 438).
Create a log	See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).

Line Item Type

Line item BPs can be used for any generic data. They lend themselves well to business processes that involve miscellaneous information you may want to document for a company or project; for example, a vendor contact list. Or, they are useful for project-specific information that only needs to be documented on a single form, such as the overall project scope, or meeting minutes.

Line item BPs are also useful for collecting data that other, more restricted types of BPs cannot. For example, while a simple-type BP can be used to collect basic vendor information, a company-level line item BP can collect additional vendor information, such as multiple business addresses. At the project level, you can use a line item BP to filter large numbers of company records into smaller lists of records for your projects.

Line item BPs use a separate detail form to enter line items, which then appear on a line item list at the bottom of the form. Or, for short line items, Unifier users can enter information directly into the line item list using a "grid view" of the list.

You can design these BPs to accommodate line item status, so you can control modifications to individual line items based on their status.

There are *three* sub-types of this BP:

Generic

Use this sub-type for all line item BPs unless you want to filter BP records. To filter BP records, use the sub-type explained below.

Line Items to filter Company Business Process Records

Use this sub-type to filter company records into smaller lists of records for your projects. This BP is particularly suited for routing a list of vendors for approval for a project, thereby filtering the list of company vendors into lists of vendors who are appropriate for specific projects. Used for this purpose, this BP type can be linked (as a reference process) to an RFB to supply a project-specific vendor list for bid invitations.

Preventive Maintenance (if the module is available)

Use Preventive Maintenance to maintain assets proactively and on a regular basis, even when no issue has been reported on the asset. The Preventive sub-type has 5 classifications (Asset, Asset Template, PM Book, PM Book Template, and Meter Reading) and they are available for selection from Classification drop-down menu, after you select Preventive Maintenance as a sub-type. A Company can have more than one BP of a particular type (for example, two or more Asset BPs, two or more Asset Template BPs, and so forth).

Use Preventive Maintenance to maintain assets proactively and on a regular basis, even when no issue has been reported on the asset. The Preventive sub-type has 5 classifications:

- Asset
- Asset Template
- PM Book
- PM Book Template
- Meter Reading

These classifications are available for selection from the Classification drop-down list, after you select Preventive Maintenance.

> **Note:** A Company can have more than one BP of a particular sub-type (for example, two or more Asset BPs, two or more Asset Template BPs, and so forth).

Design Requirements

For these business processes to work effectively, you will need to create the following components in uDesigner:

- Upper form
- Detail form
- Line Item List
- Workflow
- Log

Design Flow

The following table outlines the design steps necessary to create this business process.

Step	Description
1. Create a data structure (if necessary)	For the line item sub-type Line items to filter company business process records, you will need to create a BP picker to specify the business process from which the user will select the items to include on the filtered list. Use the BP Picker data definition to build this picker. If you are designing a business process for a Generic sub-type that will roll up data across shells to a Code and Records-based manager, you will need to design data pickers to help Unifier users locate and pick the correct BP records within the hierarchy. You will also need to link the data picker to a manager picker using a formula. For more information on data pickers, see ***Across-Shell Functioning*** and ***About Data Pickers*** (on page 222). For information on linking a data picker to a manager picker, see ***Adding Formulas to Fields*** (on page 348).
2. Launch the design	This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).
3. Design an upper form	See the instructions beginning with ***Designing an Upper Form*** (on page 287).

<table>
<tr><th>Step</th><th colspan="2">Description</th></tr>
<tr><td rowspan="4">4. Design a detail form</td><td colspan="2">See the instructions beginning with Designing Detail Form (on page 322).</td></tr>
<tr><td>For this sub-type:</td><td>These fields are mandatory:</td></tr>
<tr><td>Line items to filter company business process records</td><td>▸ uuu_line_item_status to specify what status the line item should be to include or exclude the item from the filtered list.
▸ BP picker
Users will use this picker to select records from the business process this field references. The records the users select will be included on the filtered list for the project. (This picker should be the same picker that you specify on the Options tab when you start the BP design.)</td></tr>
<tr><td>Generic</td><td>If this business process is to roll up data from across shells, the following fields are mandatory on this form to provide user navigation to records across shells:
▸ A data picker for each manager class
▸ A configurable manager picker
These fields are mandatory for the form, but are not required to be filled in at runtime. However, if these fields are left blank on the form at runtime, data rollups will not occur.
If users should be able to reserve this item, these fields are mandatory:
▸ Allow item to be reserved (uuu_rsv_reservable
▸ Allow over-booking</td></tr>
</table>

Step	Description	
		(**uuu_rsv_overbook**)
5. Create a line item list	See ***Adding an Item Log to a Detail Form*** (on page 322).	
6. Create a workflow (if necessary)	See the instructions beginning with ***Starting a Workflow*** (on page 438).	
7. Create a log	See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).	
8. Link to a reference process (For sub-type Line items to filter company business process records)	Link the BP picker on the detail form to the BP that contains the list of records the users will choose from. See ***Adding a Reference Process to Auto-Populate Data*** (on page 391).	

Preventive Maintenance

> **Note**: If you do not have the Preventive Maintenance module loaded, you cannot create Preventive Maintenance business processes.

The Preventive Maintenance business process line items generate work order business process records.

A preventive maintenance type business process can be set up to create work orders for assets at periodic intervals depending on the service needs of the asset.

For example, if you wanted to use auto-creation to create a work order business process to order maintenance on a vehicle, you would first create a preventative maintenance business process (the source business process) and have your administrator set up the auto-creation of a work order for vehicle maintenance business process (the destination business process) to order the work on the vehicle.

In this example, the uDesigner user set up which business process is the source business process and which is the destination business process. The company administrator specifies the conditions and defaults for the auto-creation. End users can set up the periodic auto-creation, based on their needs.

In the Preventive Maintenance Book (PM Book), for:

- Floating Line Items holding non-terminal work orders, you cannot edit the following DEs:
  - Family Identifier
  - Line Item Status
  - Schedule Type
- Fixed Line Items holding non-terminal work orders, you can edit the following DE:

- Line Item Status

To access the Preventative Maintenance module:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, and then select **System Modules**.

To create Preventive Maintenance business processes:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) From the toolbar, click **New**, and select **Line Item** to open edit window. Proceed to complete the form as follows:
   - **ID** (Required): Enter ID.
   - **Name** (Required): Enter name.
   - **Description**: Enter description.
   - Ensure **Line Item** appears in the **Type** field.
   - **Sub-Type** (Required): Click the drop-down menu and select **Preventive Maintenance**.
   - **Classification**: **Asset** appears as default. Click the drop-down menu to select other classifications. You options are **Asset** (default), **Asset Template**, **PM Book**, **PM Book Template**, and **Meter Reading**.
   - **Configurable Manager**: Click **Select** to open **Select Configurable Manager(s)** window, select an appropriate item from the list, and click **OK**.
4) Select the appropriate choices for the **Level**, **Behavior**, and **Record Instances** fields, and when finished click **Apply**.
5) Complete the fields in the **Statuses**, **Options**, and **Consolidation**, tabs within the edit window and when finished click **OK** to complete creating a new Preventive Maintenance business process.

Preventive Maintenance Main Business Processes

Asset

Objects which need maintenance.

PM Book

Objects that hold details on maintenance schedules (usually one per **Asset**). This business process captures the copy of **PM Book Template** associated with an **Asset** record. Each **PM Book** points to an **Asset**.

Notes:

- A **PM Book** generates recurring **Work Orders** for an **Asset**, a **PM Book Template** does not
- A **PM Book** holds a picker to **PM Book Template** in its upper form

Preventive Maintenance Supporting Business Processes

Asset Template

Use the Asset Template as a basis to create several assets. This business process captures templates that can be used to create Assets.

PM Book Template

Use to create several Preventive Maintenance books (PMBs). This business process contains the Time and Meter schedules in two different detail tabs. Each schedule is captured within one line item.

Meter Reading

Use to capture readings of meters belonging to **Asset**. This business process captures meters with the readings, as line items. There might be several meters associated with an **Asset** and readings must be captured for each meter. Each **Meter Reading** record picks an **Asset** in its upper form. An **Asset** holds its **Meter Reading** records via a QBT on the **Asset** business process. The "meter schedules" on a **PM Book** capture the frequency at which work orders should be generated (via the pattern picker). Each "meter schedules" on a **PM Book** points to a **Meter Reading** record.

Preventive Maintenance Additional Line Item or Simple Business Processes

Meter Templates

Use to capture generic information about **Asset Meters**.

Job Plans

Use to plan on how a preventive maintenance activity should be performed (a set of tasks and items which might be needed to complete those tasks). This business process captures a list of tasks and materials that are needed to complete tasks.

Asset Creators

Use to create **Assets**. You can copy information from **Asset Templates**.

Work Orders

Use to capture work orders that need to be performed on assets by technicians. A **PM Book** business process generates work orders on recurring basis and based on the time or meter schedules. Since each schedule is linked to a job plan, the contents of the **Details** tab (**Tasks and Items**) of a **Work Orders** business process is generated by the **Job Plan**.

About the Designs of the PM Book Template and PM Book Business Processes

An Asset Business Process (BP) record auto-creates a PM Book BP record. As a result, the design of a PM Book BP must contain the following elements:

- The BP Data Picker must reference to the source PM Book Template BP. At runtime, the PM Book BP record displays the referenced PM Book Template BP record.
- The Line Items in the PM Book BP record must have links to the Line Items in the PM Book Template BP record.
- The integration interface must be defined for the PM Book PB record that needs to be updated.

If you link your Time and Meter Schedules within a PM Book BP, you can avoid generating multiple PM work orders if a meter-schedule occurs sooner than a time-schedule, or conversely. The following scenario provides a good example for this feature:

> A commercial vehicle is scheduled for an oil change either when it reaches 5000 miles (meter) or 12 months (time) after the last oil change, whichever is reached first. If the vehicle reaches 5000 miles prior to 12 months, the system generates a PM work order and automatically prevents a second PM work order when the 12 months time frame comes. Conversely, if 12 months passes and the vehicle does not reach 5000 miles, the system generates a PM work order and automatically prevents a second PM work order when the vehicle reaches 5000 miles.

To prevent generating an additional work order, in such a case, you can use the "**uuu_rec_related_family_id**" data element to link the meter-schedule and the time-schedule within a PM book or PM book template. To select the "**uuu_rec_related_family_id**" data element, to use for all PM Books, go to either of these locations:

- Go to the shell tab and switch to **Admin** mode. In the left Navigator, select **Setup**, and then select **Business Process Updates**.
- Go to the **Company Workspace** tab and switch to **Admin** mode. In the left Navigator, select **Company Workspace**, and then select **Business Process Updates.**

Once selected, all the PM Books will be updated with correct values from the related PM Book Template, according to the push schedule defined within this log.

Simple Type

Simple BPs consist of an upper form only and do not have a "view form vs. action form" distinction. Simple BPs are generally used to add company or project information that does not require line items. Examples might include a vendor list or a request for information (RFI).

Design Requirements

For these business processes to work effectively in Unifier, you will need to create the following components in uDesigner:

- Upper form
- Log

Design Flow

The following table outlines the design steps necessary to create this business process.

Step	Description
Create a data structure(if necessary)	This structure will include the data elements to be used on the forms. (If the data structure has not been created, see the instructions beginning with ***Creating a Data Structure*** (on page 217).)

Step	Description
Launch the design	This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).
Create an upper form	See the instructions beginning with ***Designing an Upper Form*** (on page 287). If users should be able to reserve this item, these fields are mandatory: ▸ Allow item to be reserved (**uuu_rsv_reservable**) ▸ Allow over-booking (**uuu_rsv_overbook**)
Create a log	See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).

Request for Bid (RFB)

The Request for Bid (RFB) is a type of line item BP. RFBs are unique in that the business process requires participation from personnel outside your company. For an RFB, create two sets of forms—one for the requestor (the user who creates the RFB and invites bids) and another for the bidders (the vendors) to fill out with bid information.

An RFB must include a reference process to a vendor list business process, which contains the pool of vendors to whom the RFB will be sent. This vendor reference process will populate the upper fields of the RFB at runtime. The system automatically launches this reference process when the RFB is activated.

The RFB can also include a BP Data Picker that references a line item type BP that will be used to filter the available bidders in the **Option** tab. After the additional bidder/vendor filtering ability option is set correctly, the query conditions for the data picker can also be used to filter the list of vendors.

> **Tip:** When you create the bidder's view of RFB forms, keep in mind that the bidders may or may not be Unifier users. You might want to keep some fields hidden or non-editable. You might also want to allow bidders to modify line items, but prevent them from adding or removing them.

The RFB type BP Requestor and Bidder form do not have access to pickers.

> **Note:** Ensure that you include both the first name and the last name data elements (for the vendor) in the RFB form.

The following is a workflow for a bid process:

1) Create Bid

2) Review or Approve Bid
3) Send Bid invite to Vendors
4) Compare or View Received Bids
5) Negotiate with preferred Bidders
6) Select Winning Bid
7) Create Contract with Winning Bid

Bid Comparison

The RFB business process includes a bid tabulation feature that users can use to compare all or selected bids that have been received from vendors. This feature is available after the bidding process is closed. The bid tabulation is displayed on a sheet that you can design in uDesigner. (If you do not design a bid comparison sheet, Unifier automatically provides a default sheet.)

How a Request for Bid Works

After the RFB type Business Process is active in Unifier, the bid procedure runs as follows:

Who	Action
The Unifier user	To start the procedure, the user: ▸ Opens the RFB, fills in the form, and sends it for internal review. During this process, the scope of the project might be verified, as well as other things, such as terms and conditions, architectural drawings, and structural materials. When the internal review workflow is complete, the user: ▸ Assembles the bid package and prepares the bid invitation for distribution. ▸ Sends out the bid invitations, along with a user name and password so that the vendors can log on to Unifier "Lite" and submit their bids. After the bid invitations have been sent, the user must wait for the bid due date to pass.
The vendor	▸ Logs into Unifier and opens the bid request. ▸ (Optionally) Requests clarification of any questions or issues before submitting the bid. ▸ Submits the bid.

Who	Action
The Unifier User	When the due date is reached, the user: ▸ Tabulates the bids for comparison. ▸ (Optional) Opens discussions about the bids, if necessary, with company employees. (Classic View only) ▸ Selects a winning bid ▸ Awards the bid to a vendor and creates a contract by copying details from the bid record into the awarded contract.

Design Requirements

For these business processes to work effectively, you will need to create the following components in uDesigner:

- A **vendor master** Business Process (BP) to contain vendor or supplier information. Your company is allowed only one vendor master list business process. Create this vendor master using the information under the ***Simple Type*** (on page 55).

> **Note:** You can create an "approved vendors" list for a specific project that includes a subset of the company's master list of vendors. This makes the bidding process easier because the requestor does not have to select vendors from the entire list of company suppliers. To create this list, use a Line Item BP with a sub-type of "Line Items to Filter BP Records" (see ***Line Item Type*** (on page 49)).

For the **vendor master** BP (Master Vendor BP) to work properly with the RFB, the upper form of the master list (RFB master vendor list) must include the following data elements:

- Date picker (`uuu_due_date`)
- Contact Company (`uuu_contact_company`)
- Contact Last Name (`uuu_contact_last_name`)
- Contact First Name (`uuu_contact_first_name`)
- Contact Language (`uuu_contact_lang`)
- Date Format (`uuu_dateformat`)
- Time Zone (`uuu_user_timezone_pref`)
- User ID (`uuu_user_id`)
- Status
- A Requestor form, which should include:
  - Upper form
  - Detail form
  - Line Item List
  - Workflow

  - Log
  - Reference process (to reference the vendor list business process)
- A Bidder form, which should include:
  - Upper form
  - Detail form
  - Line Item List
  - Log
- (Optional) A bid comparison sheet, which should include:
  - Upper form
  - Detail form

Design Flow

The following outlines the design steps necessary to create the RFB business process.

1) Create a data structure, if necessary.
   See the instructions beginning with ***Creating a Data Structure*** (on page 217).
2) Launch the design.
   This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).

For the Requestor:

1) Create an Upper form. See the instructions beginning with ***Designing an Upper Form*** (on page 287). The mandatory fields for the upper form is: Date picker (`uuu_rfb_due_date`) to specify a due date. This is the date on which the bid will expire. Bidders will not be able to bid after this date, and requestors will not be able to see bids before this date.
2) Create a Detail form. See the instructions beginning with ***Designing Detail Form*** (on page 322). The mandatory field for the Detail form is: Short description (`short_desc`).
3) Create a Line Item list. See ***Adding an Item Log to a Detail Form*** (on page 322).
4) (Optional) Create a workflow. See the instructions beginning with ***Designing an Upper Form*** (on page 287).
5) Create a log. See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).
6) Create a reference process. See ***Adding a Reference Process to Auto-Populate Data*** (on page 391).

For the Bidder:

1) Create an Upper form. See the instructions beginning with ***Designing an Upper Form*** (on page 287).
2) Create a Detail form. See the instructions beginning with ***Designing Detail Form*** (on page 322). The mandatory field for the Detail form is: Short description (`short_desc`).
3) Create a Line Item list. See ***Adding an Item Log to a Detail Form*** (on page 322).
4) Create a log. See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).

5) Create a reference process. See ***Adding a Reference Process to Auto-Populate Data*** (on page 391).

For the Bid Comparison Sheet:

1) (Optional) Create an Upper form. See the instructions beginning with ***Designing an Upper Form*** (on page 287). The Upper form must contain the same elements that are on the bidder upper form.
2) Create a Detail form. See ***Designing a Bid Comparison Sheet for an RFB*** (on page 413). The detail form must contain the same elements that are on the bidder detail form.

Additional information about RFB

Upper Forms

You can place the Bid Picker DE (`uuu_rfb_winning_bid`) on any Requestor Upper form of any RFB Business Process.

The Bid Picker DE:

- Can be placed in a hidden block.
- Can be designated as "Required" or "Read Only."
- Must be available in the list of "Custom" DEs, when user attempts to add the DE to a form.
- Can be added to Dynamic Dataset (behavior set).

> **Note:** The Dynamic Dataset (DDS) must not be added to any Business Process form, other than the Requestor Upper form on an RFB type Business Process.

- Can be used as source for auto-populate.

> **Note:** During the auto-population, the "Source Element" picker lists all "Bidder" Upper form DEs.

- Cannot be used as a destination for Reverse Auto-Populate.
- Cannot be set to: Formula.
- Cannot be set as: Reset.

Detail Form

You can define an additional Detail tab for the Requestor section of all RFB type Business Process forms. This second Detail tab (non-standard tab) can be used to record the lines of the winning bid, as the user copies the data from the Bid Comparison Sheet.

> **Note:** This applies to all RFB Business Process sub-types (Generic, Line Items with CBS Code, and Line Items with Generic Cost Manager).

The second Detail tab is similar to that of any other non-standard Detail tab on any other Cost type BP which allows multiple tabs.

When the RFB type Business Process has Line Item with CBS Code, the new Detail form allows you to include both the "Custom" DE "`bitemID`" and the "Standard" DE "`bi_item`" on the form.

> **Note:** If you place the DE "`bitemID`" on the form, you must designate the DE as "Required." This DE cannot be designated as "Editable."

The second Detail Form log contains the following options:

- **New**

  Allows you to create the second **Detail** tab for the "Winning Bid." When you click **New**, the **Properties** window opens which allows you to enter a name and description for the second **Detail** tab. The **Name** field is pre-populated as "Winning Bid."

  Also, you can:

  - Select Winning Bid option from New to open the properties window and create the new form. The Name field is pre-populated as "Winning Bid."

  - Select the Standard tab and select Copy to create the new form. The Name field is pre-populated as "Copy of <form name>." You cannot create more than two Detail tabs for an RFB type Business Process.

  > **Note:** For data integrity reasons, the **Winning Bid** tab cannot be deleted after the RFB BP has been deployed. You can only add or remove the Winning Bid tab before you deploy the RFB BP.

- **Copy**

  Allows you to create the second Detail tab (Winning Bid) by copying a "standard" tab. This option is available only if the Business Process has a "standard" tab. You cannot create more than two Detail forms for an RFB type Business Process.

  > **Note:** The second Detail tab will have special behavior, if a winning bid picker is placed on BP upper form. If no bid picker is placed on the Upper form, the tab behaves like any other non-standard tab.

- **Open**

  Allows you to open an existing Detail form.

- **Properties**

  Allows you to change the properties of the second Detail tab. You can use the Properties option to edit the "Name" and the "Description" fields of your form.

- **Delete**

  Allows you to delete the second Detail tab (non-standard tab). The Delete option, here, does not allow you to delete a "standard" Detail tab.

Project/Shell Creation

This type of business process creates new projects/shells from the upper form of the BP or from line items. The data necessary to create projects/shells is provided by this BP. In addition to creating a new shell, this type of business process can also be designed so that users can choose the managers and employees who should be automatically assigned to the shell when it is created.

Notes:

- This BP is not available for configurable managers.
- You cannot create multiple tabs for this type of business process.
- If the source contains a Line Item Data Picker and the Shell Attribute Form of the destination contains the same Line Item Data Picker, the value is copied during creation. If the destination has any Query conditions that are not met, the value of the Line Item Data Picker is not copied.

For example, you could use this type of BP at the company level to request a new site for a project and send the request through a review and approval workflow. After the record reaches an approved status, Unifier would create a new shell at the proper place within a hierarchy (or a new project if a shell hierarchy is not being used). Information from the BP could be passed on to the new project/shell so that users do not need to enter it.

For another example, you could use this type of BP at the company or shell level to request that multiple shells be created. Each record for this BP would collect information for the shells as line items. When the record reaches a terminal status, and each line item reaches a status (which you specify), Unifier would create a new shell at the proper place within a hierarchy. Information from each line item could be passed on to the new shell so that users do not need to enter it.

Works with Planning Items

If you include a Planning Item Picker on this business process, users can link new projects/shells with planning items. Instead of linking a planning item to a project in the Planning Manager, this BP will automatically create the link when the project/shell is created, and data will begin to roll up to the Planning Sheet from the business processes in this project.

This BP creates projects/shells using templates. For shell creation, it also uses an integration interface.

Integration Interface

If you use the project/shell creator business process to create shells, you must first create an integration interface for the shell. The interface should contain all the fields (data elements) necessary to create the shell in your environment. In operation, the BP fills in these field values in the interface. The interface then uses the template the user specifies to create the project/shell.

Integration of the project/shell via CSV import is available only for the simple-type business process (upper form).

Currency override is available for CSV import if the project currency picker field is included on the Integration form.

- The CSV import file must use a valid currency code.
- The override currency must exist in Exchange Rates.

For instructions on designing the interface, see ***Integration***.

Templates

This BP creates projects/shells using the templates that have been designed in Unifier. When you design this business process, you must include a template picker, and in the application, users will specify the template that should be used to create the project/shell. Be aware of the following:

- The entire template will be used, including any modules.
- The Project/Shell Creation BP will use the auto-numbering set up in the template, if any, to override any number manually entered by the Unifier user.

> **Note:** You cannot create an anchor shell (single-instance shell) using a template with this BP.

- The Project/Shell Creation BP will provide the project/shell name, number, location, and status for the new project/shell, and also any image and phase data elements, if they have been included in the BP.
  - If the image and phase elements have not been included in the business process, those values from the template will be used (if any).
  - If designed and configured to do so, the BP will also automatically assign a manager and employees to the project/shell.
- Currency designation:
  - For a project/shell, the currency designation can come from the template; or if the business process design includes the project currency picker (uuu_proj_currency), the user can override the template currency by using the project currency picker to select a valid currency from Exchange Rates.
  - In addition to the defined project/shell currency, users can add multiple "candidate" currencies to the project/shell template.
  - If the desired currency is not included in the list of candidate currencies, Unifier will add the override currency from Exchange Rates to the template, set the rate as Float, and create the project/shell using that currency.
- If the template includes links, these will be placed on the new project/shell.

The following pertains to auto-population in shells:

If the attribute form of the shell is designed with data elements that should be auto-populated, the elements will be populated in the following order:

1) From the project/shell template
2) From single-record business processes
3) From the Shell Attribute Form of the parent shell
4) From matching elements in the Project/Shell Creation BP

> **Note:** For shell creation, be sure you include the elements to be auto-populated on the integration interface you create.

Where to Use This BP

You can use this BP at the company, project, or shell level.

At this level:	This BP can create:
Company	Shells in or across a shell hierarchy from the upper form or a line item
Shell	Shells in or across a shell hierarchy from the upper form or a line item
Project	Projects from the upper form or a line item

Sub-Types

There are two sub-types of this BP type:

Sub-Type	Description
Simple	This sub-type creates a single project/shell from an upper form when the record reaches a terminal status.
Line Item	This sub-type creates multiple projects/shells using an upper form and line items. The projects/shells are created when the record reaches a terminal status, and each line item reaches a specific status that the user specifies. Projects/shells will be created using the values from the fields on the line item detail form; however, if the new projects/shells will contain common information, such as the location or phase, you can include the fields that are common on the upper form so they need to be filled in only once. There are two classifications for this sub-type: **Project or Shell** will create projects/shells from line items using the location the user specifies. **Shell and sub-shell** will create shells and sub-shells from line items using the location the user specifies. **Note:** Whenever a record reaches terminal status, and the line items reach the status that the user specifies, the system creates projects/shells for each line item. If a line item contains errors, the, the system ignores the entire creation and returns the record to a non-terminal status.

Design Requirements

For these business processes to work effectively, you will need to create the following components in uDesigner:

- Data elements for shell number, shell name, and project phase
- (For shells) Integration interface for the shell to be created
- Upper form
- Detail form (for a Line Item sub-type)
- Line Item List (for a Line Item sub-type)
- (Optional) Workflow
- Log

Design Flow

The following outlines the design steps necessary to create this business process.

1. Create a data structure.

   For this business process, you must create three data elements:

   - One to gather the name from the BP for a new project/shell. Use the **SYS Shell Name** data definition to build this element.
   - One to gather the number from the BP for a new project/shell. Use the **SYS Shell Number** data definition to build this element.
   - One to gather the project phase from the BP for a new project. Use the **Project Phase** data definition to build this element. The data set for this field will be specified in Unifier and will be available under the project shell as a project phase field when a project is auto-created using this business process.

   Additionally:

   - If you want the user to be able to assign managers and employees to the shell during its creation, you will need to create one or more user data pickers to place on the upper form of this business process. Use the **User Data Picker** data definition to build these elements. When the administrator configures this business process, the picker(s) can be filtered to show only certain employees. Note: If you place user data pickers on this business process form, be sure the same pickers are on the Shell Attribute Form.
   - If you want to be able to reference a project/shell from another project/shell, copy values from the referenced project/shell, or update the referenced project/shell by using the existing attribute form, add a **Shell Data Picker** to the Shell Attribute Form.
   - If you want to ensure that the related shell is automatically populated and updated, such as including views for a Cost Sheet, add the **Shell Template Picker** to the Shell Attribute Form. When a shell is created, the Shell Template Picker in the Shell Details automatically displays the template selected during the Project/Shell Creation BP process.

   See the instructions beginning with ***Creating a Data Structure*** (on page 217).

2. Design an integration interface.

   Use the integration interface to create shell creation business processes that will, in turn, create shells. See ***Creating an Integration Template***.

3. Launch the design.

This step initializes the design process for the BP. See ***Starting a New Design (Edit Studio)*** (on page 246).

4. Design an upper form.

See the instructions beginning with ***Designing an Upper Form*** (on page 287).

For this sub-type:	These fields are mandatory:
Line Item	**status** to specify the status of the business process
Simple	For a shell: ▸ **uuu_shell_creator** ▸ **uuu_shell_location** to specify where the shell should reside in the hierarchy ▸ **uuu_administrator** to specify the shell administrator ▸ **uuu_shell_template_picker** to specify the shell template for the auto-created shell ▸ **uuu_shell_status** to specify what status the shell should have when it is created the shell name (based on the **SYS Shell Name** data definition) the shell number (based on the **SYS Shell Number** data definition) ▸ status to specify the status of the creation BP. When the BP reaches this status, Unifier will create the shell. If you want to automatically link the shell to a planning item, include a Planning Item Picker (**uuu_planning_item_picker**) If you want the user to be able to assign managers and employees to the shell during its creation, include the user data picker(s) you created in Step **1**. For a project: ▸ **uuu_project_creator** ▸ **uuu_administrator** to specify the project administrator ▸ **uuu_proj_template_picker** to specify the project template for the auto-created project ▸ **uuu_shell_status** to specify what status the project should have when it is created ▸ uuu_proj_address_1

For this sub-type:	These fields are mandatory:
	▸ uuu_proj_address_2 ▸ uuu_proj_address_3 ▸ uuu_proj_city ▸ uuu_proj_state ▸ uuu_proj_country ▸ uuu_proj_zip ▸ uuu_proj_phone ▸ uuu_proj_fax ▸ uuu_project_phase ▸ the project name (based on the **SYS Shell Name** data definition) ▸ the project number (based on the **SYS Shell Number** data definition) ▸ **status** to specify the status of the creation BP. When the BP reaches this status, Unifier will create the project. **Note:** If you want to automatically link the project to a planning item, include a Planning Item Picker (uuu_planning_item_picker)

5. Design a detail form. (Simple sub-types do not need detail forms.)

   See the instructions beginning with ***Designing Detail Form*** (on page 322).

For this sub-type:	These fields are mandatory:
Project or Shell	For a shell: ▸ uuu_shell_creator ▸ short_desc ▸ **uuu_shell_location** to specify where the shell should reside in the hierarchy ▸ **uuu_administrator** to specify the project/shell administrator ▸ **uuu_shell_template_picker** to specify the project/shell template for the auto-created project/shell ▸ **uuu_shell_status** to specify what status the shell should have when it is created ▸ the project/shell name (based on the **SYS Shell Name** data definition) ▸ the project/shell number (based on the **SYS Shell Number** data definition) ▸ **uuu_line_item_status** to specify the

For this sub-type:	These fields are mandatory:
	status of the line item. When the line item reaches this status, Unifier will create the shell. **Note:** If you want to automatically link the project/shell to a planning item, include a Planning Item Picker (uuu_planning_item_picker) For a project: ▸ **uuu_project_creator** ▸ short_desc ▸ **uuu_administrator** to specify the project administrator ▸ **uuu_proj_template_picker** to specify the project template for the auto-created project ▸ **uuu_shell_status** to specify what status the project should have when it is created ▸ uuu_proj_address_1 ▸ uuu_proj_address_2 ▸ uuu_proj_address_3 ▸ uuu_proj_city ▸ uuu_proj_state ▸ uuu_proj_country ▸ uuu_proj_zip ▸ uuu_proj_phone ▸ uuu_proj_fax ▸ uuu_project_phase ▸ the project name (based on the **SYS Shell Name** data definition) ▸ the project number (based on the **SYS Shell Number** data definition) ▸ **uuu_line_item_status** to specify the status of the line item. When the line item reaches this status, Unifier will create the project. **Note:** If you want to automatically link the project to a planning item, include a Planning Item Picker (**uuu_planning_item_picker**)
Shell and Sub-Shell	▸ uuu_shell_creator ▸ short_desc

For this sub-type:	These fields are mandatory:
	▸ **uuu_shell_location** to specify where the shell should reside in the hierarchy ▸ **uuu_administrator** to specify the shell administrator ▸ **uuu_shell_template_picker** to specify the shell template for the auto-created shell ▸ **uuu_shell_status** to specify what status the shell should have when it is created (Note: Make this field a "Required/Editable" field on the design. If the shell status of the parent shell is inactive or has no value, child shells will not be created.) ▸ the shell name (based on the **SYS Shell Name** data definition) ▸ the shell number (based on the **SYS Shell Number** data definition) ▸ **uuu_line_item_status** to specify the status of the line item. When the line item reaches this status, Unifier will create the shell. **Note:** If you want to automatically link the shell to a planning item, include a Planning Item Picker (uuu_planning_item_picker)

6. Create a workflow.

   See the instructions beginning with ***Starting a Workflow*** (on page 438).

7. Create a log.

   See ***Designing a Business Process Log (Standard or Picker)*** (on page 462).

Standard Cost Manager Overview

The Standard Cost Manager is where Unifier users keep track of costs at both the Company level and Project/Shell level.

The Standard Cost Manager is typically used for construction projects and, therefore, uses a CBS code structure to break down the work. You can use a CBS code structure, as well as company account codes and fund codes, to link income and expenses on a detailed level.

The Standard Cost Manager combines multiple costing features and functions to generate the following cost management tools:

- Cost Sheets to show:
  - Company budgets and the monies that have been spent.
  - Project/Shell budgets to track costs by CBS code.

> **Note**: Costs can be added to this sheet manually or automatically using rollups from Cost-type Business Processes, Project/Shell budgets, or Worksheets.

- A Company Accounts Sheet to track company-level information, such as assets, resources, or facility maintenance. It is similar to a cost sheet, but it uses the account codes instead of CBS codes.
- Fund Sheets to track the company's income and the distribution of funds across projects/shells. Funds can be added to this sheet manually or automatically using cost-type business processes and formulas. Likewise, funds can be assigned or consumed manually or automatically using cost business processes.
- A Schedule of Values (SOV) for every blanket purchase order (Base Commits) to streamline tracking and reimbursing invoices or payment applications.
- Cash Flows to generate a variety of cash flow curves at user-specified frequencies.

In This Section

Cost Management Levels 71
About Cash Flow Curves 74
About CBS Codes 75
About the Schedule of Values (SOV) 76
About Earned Value 77
How Cost Transactions Work in Unifier 81
Design Requirements for the Cost Manager 82

Cost Management Levels

In Unifier, you can track costs at the:

- Company level
- Project/Shell level

Company level

- Cost Sheet

  The **Cost Sheets** node contains the Company Cost Sheet (a detailed accounting of the company budget and costs), broken down by project/shell. The node works much like a spreadsheet that calculates and maintains cost information on all "active" and "on-hold" projects/shells. As Project/Shell Cost Sheets are created, the Project/Shell Cost Sheet data rolls up and the data is displayed on the Company Cost Sheet.
- Funding

The **Funding** node is where the Company Funding Sheet is stored. This sheet tracks all sources of funding for all project/shells. There is only one funding sheet per company, from which monies are distributed to the project/shell funding sheets. This sheet has auditing features that disclose the details of all funding events. The Company Funding Sheet must be created before any project/shell funding sheets.

- Cash Flow

  This is a costing feature users can use to create cash flow sheets and curves. Specifically, users can:
  - Set baselines for projected spends
  - Track actual costs
  - Calculate future spends, based on a known forecast (extrapolation)
  - Calculate from trends compared to baseline curves (interpolation)

  Cash Flow values can roll up from the Project/Shell level to the company level to show cash flow data across multiple projects. Users can save generated cash flow sheets and curves and refresh them to include new data. They can also generate table data showing incremental and cumulative values and graphs displaying multiple cash flow curves.

  See ***About Cash Flow Curves*** (on page 74).

Project/Shell level

- Cost Sheet

  This node contains the Project Cost Sheet, a detailed accounting of the project's budget and costs. It works much like a spreadsheet that calculates and maintains cost information. The rows of this cost sheet display CBS codes or cost codes. These codes can be used to link project costs to the General Ledger for Finance. Cost information can be entered manually, pulled from work packages or worksheets, or rolled up automatically from business processes when transactions occur in Unifier.

  This cost sheet can work in conjunction with work packages and worksheets, if a user creates them.

  A **Work Package** is a group of cost sheet rows that is a subset of the Project Cost Sheet. Work packages provide insight into the budget without providing full access to the details of the Project Cost Sheet.

  A **Worksheet** can be created by a user to support the Project Cost Sheet. The user can use this as a separate sheet to perform complex calculations or enter other cost data not required on the cost sheet. Information from this worksheet can then be rolled up into a Project Cost Sheet column.
- Funding

This **Funding** node contains the Project Funding Sheet. This sheet tracks where project funding comes from and how it is being spent on the project. There is only one funding sheet per project. Project funding sheets work in conjunction with the company-level funding sheet, which maintains the sources of all project funding. Funding sheets are independent of cost sheets.

Funding data can be entered manually on this sheet, or rolled up automatically from business processes when transactions occur in Unifier.

Funding data for projects rolls up to the Company Funding Sheet.

- Cash Flow

  This is a costing feature users can use to create cash flow sheets and curves. Specifically, users can:

  - Set baselines for projected spends
  - Track actual costs
  - Calculate future spends, based on a known forecast (extrapolation)
  - Calculate from trends compared to baseline curves (interpolation)

  Cash flow values can roll up from the project level to the company level to show cash flow data across multiple projects. Users can save generated cash flow sheets and curves and refresh them to include new data. They can also generate table data showing incremental and cumulative values and graphs displaying multiple cash flow curves.

- Schedule of Values (SOV)

  A **Schedule of Values** (SOV) is maintained at the project level. An SOV is a way to assemble information from contract, change order, and invoice/payment application business processes into a single sheet. This SOV sheet streamlines the process of invoicing for completed phases of a project. The SOV:

  - Includes a breakdown of the contract values that has been agreed to by the owner and contractor.
  - Works in conjunction with Commit types of Business Processes (BPs), such as a purchase order. Commit-types of BPs can be designed to automatically create an SOV sheet when they reach a designated step in a workflow.

  The following is a list of SOV sheet types:

  - General Spends
  - Payment Applications
  - Summary Payment Applications

    The General Spends SOV sheet type gathers information from any contract, change order, or invoice/payment application BP into an SOV sheet.

    The Payment Applications SOV sheet type allows users to enter values directly onto the SOV sheet. Unifier then automatically adds these values to the payment application sheet.

> **Note**: Both the General Spends and Payment Applications SOV sheet types can be designed to show CBS information, either as grouped CBS codes, or as individual line items from commit BPs.

The Summary Payment Applications SOV allows users to allocate cost to line items based on the line item type (Lump Sum or Unit Cost). Use the Summary Payment Applications SOV type in association with Commit and Spends Business Processes (BPs) that are designed for Summary payment applications SOV type. The Summary Payment Applications sub-node will be available under the Schedule of Values node only if a Base Commits, or Change Commits, of SOV type Summary Payment Applications is deployed in uDesigner.

> **Note**: An error will occur after clicking Unit Cost if you do not select the Item Unit Cost and Item Quantity (uuu_unit_price and uuu_Quantity) fields in the Detail form design.

See ***About the Schedule of Values (SOV)*** (on page 76).

- Earned Value (EV)

  The Earned Value (EV) is a costing feature you can use to track quantitative information about project status using an "earned value analysis." This analysis provides specific numerical measurements for reviewing progress as the project team advances through the tasks on the project schedule. It can help project managers monitor whether projects are on schedule and on budget by providing accurate and consistent methods to estimate the:

  - Percentage of budget spent
  - Percentage of work completed
  - Percentage of time elapsed

  See ***About Earned Value*** (on page 77).

About Cash Flow Curves

Different curve types produce different cash flow curves:

This type of curve:	Does this:
Calculation	Generates a curve based on sigma and mu values.
Data from Cost Sheet column	Generates curves based on cost sheet column data. Cost sheet columns entered manually are not included in the curve.
Manual	Generates a curve based on data that was manually entered into the cash flow sheet, at the project level or CBS level. For this type of curve, users will need to specify the start and end date for the curve.

This type of curve:	Does this:
Combination Manual and Calculation	Generates a calculation curve with the option of entering values manually. This allows users to plot graphs based on manually entered forecast information, but starting at the end of actual values. This type of curve also allows users to force manually entered numbers to the foot of the column in the Cost Sheet.

Extrapolate vs. Interpolate

When users create a cash flow curve, they have the option of **extrapolating** the actual cost based on a provided data set. For example, they can estimate (extrapolate) the cash flow curve for this year based on last year's data. They will need to specify which data from last year's Cash Flow Sheet they want to base the extrapolation on.

Interpolation is estimating the cash flow curve based on known start and end values. There is not an equivalent option to "interpolate" as there is for "extrapolate based on data set," but it is possible to interpolate data by specifying end point cost data. For interpolation, the curve will be based on a specified end point. The base curve and interpolated curve will merge together if the end values are the same.

Users can show both extrapolation and interpolation by specifying an "**S Curve**" and a beginning calculation point. The curve will be generated from the last point of actual data. To create such a curve at the CBS level, Unifier calculates the extrapolated and interpolated data based on an end point and then sums all the curve points to display one curve from the period where the first value appears.

About CBS Codes

A Work Breakdown Structure (CBS) code is a number that you can apply to a task that matches the specific needs of your business. In Project Management, CBS codes are used to break down a project into manageable pieces that can be more effectively estimated and monitored. CBS codes organize the total work scope of a project. These codes are typically composed of segments that can precisely describe the cost item from a general level down to any number of specific levels. Each descending level represents an increasingly detailed definition of the project work.

A CBS code consists of 1 to 10 segments, each defined in uDesigner as a cost code definition. For example, a five segment CBS code would require five data definitions.

A CBS code becomes a row on a project cost sheet, describing a cost item. Each cost sheet row corresponds to the unique CBS codes that link costs on a project to the General Ledger for Finance.

About the Schedule of Values (SOV)

An SOV sheet streamlines the process of invoicing for completed phases of a project. It works in conjunction with commit types of business processes, such as a purchase order. The Commit-types of business processes can be designed to automatically create an SOV sheet when they reach a designated step in a workflow.

Users can define one SOV sheet per Commit-type business process (such as a purchase order). The rows on the SOV sheet are automatically populated by the CBS or account codes in the Commit BP.

For SOV creation in Unifier, the user must set up the correct column structure for the SOV sheet so that the required columns and formulas are included for validating Summary Commitments (by CBS) and a Remaining Commits Balance. In the SOV structure, the user must define a formula for Remaining Commits Balance that reflects the amount of Commits, minus Spends. This column ensures the Spend BP line items are not overdrawn from SOV breakdown amounts.

The following lists the types of Schedule of Values (SOV):

- General Spends
- Payment Applications
- Summary Payment Applications

General Spends

Use the General Spends SOV type for any Commit Business Process and associated Change Commits and Spends/Invoices.

Payment Applications

Use the Payment Applications SOV type:

- In association with Commit and Spends Business Processes that are designed for payment applications. This allows direct entry of values in an SOV sheet, which are automatically added to a payment application.
- For invoicing at the CBS or breakdown level. Payment Applications auto-populate data to and from the SOV to manage balance-forward formulas. The breakdown is similar to the General Spends SOV sheet.

The General Spends and Payment Applications SOV types can show CBS information either by grouping CBS codes (CBS mode) or as individual line items from commits (Base Commits and Change Commits together). The information that SOVs display is dependent upon the design of the Base Commits.

Summary Payment Applications

The Summary Payment Applications SOV allows users to allocate cost to line items based on the line item type (Lump Sum or Unit Cost).

Use the Summary Payment Applications SOV type in association with Commit and Spends Business Processes (BPs) that are designed for Summary Payment Applications SOV type.

The Summary Payment Applications sub-node will be available under the Schedule of Values node only if a Base Commits, or Change Commits, of SOV type Summary Payment Applications is deployed in uDesigner.

To access the Summary Payment Applications sub-node:

1) Go to the shell tab and switch to **User** mode.
2) In the left Navigator, select **Cost Manager**, select **Schedule of Values**, and then select **Summary Payment Applications**.

> **Note:** An error will occur after clicking Unit Cost if you do not the Item Unit Cost and Item Quantity (uuu_unit_price and uuu_Quantity) fields in the Detail form design.

About Earned Value

"Earned value" is a method for measuring project performance. It compares the amount of work that was planned with what was actually accomplished to determine if cost and schedule progress is as planned.

Earned value analysis is an industry standard used to measure a project's progress, forecast its completion date and final cost, and provide schedule and budget variances.

Schedule activities "earn value" as they are completed.

The earned value function calculates the following for every scheduled activity:	The results of these calculations are used by Unifier to calculate the:
▸ Budget Cost of Work Scheduled (BCWS) ▸ Budget Cost of Work Performed (BCWP) ▸ Actual Cost of Work Scheduled (ABCWP)	▸ Cost Variance (CV) ▸ Schedule Variance (SV) ▸ Cost Performance Index (CPI) ▸ Schedule Performance Index (SPI) ▸ Cost Schedule Index (CSI) ▸ To Complete Performance Index (TCPI)

> **Note:** All calculations are done from the start date of an activity to the current date.

In Unifier, the earned value sheet always represents data by CBS code. Earned value calculations depend on the Company Cost Sheet and Cash Flow, and can optionally include activities on the Schedule Sheet. Users can also view a graphical representation of Earned Value, Budget at Completion (BAC) and Actual Cost.

Example Budget Cost of Work Scheduled (BCWS) Calculation

Assume a budget of $1000 is to be consumed by an activity scheduled to be performed in one week (5 days).

- BAC = $1000.00
- BCWS = $200.00 per day
- BCWS for day 3 will be $600.00

	Mar 10	Mar 11	Mar 12	Mar 13	Mar 14	Total

	Mar 10	Mar 11	Mar 12	Mar 13	Mar 14	Total
BAC	$200	$200	$200	$200	$200	$1000
BCWS	$200	$200	$200			$600

Note: This is a simplified example. Normally, costs are incurred per CBS. BAC, % Complete, and ACWP will differ based on the CBS in consideration

Example Budget Cost of Work Performed (BCWP) or Earned Value

This is the value of the planned (not actual) work performed by the status date, measured in currency.

- BCWP = BAC * % Complete

For example, based on the previous example, if 40% of the work is completed on day 3, BCWP is $400.

	Mar 10	Mar 11	Mar 12	Mar 13	Mar 14	Total
BAC	$200	$200	$200	$200	$200	$1000
BCWS	$200	$200	$200			$600
BCWP	$200	$200	$ 0			$400

Example Actual Cost of Work Performed (ACWP) or the Actual Cost

This is the total of direct and indirect costs incurred in performing work during a given period. Assume that the task's actual cost (ACWP) at the status date is $750.

	Mar 10	Mar 11	Mar 12	Mar 13	Mar 14	Total
BAC	$200	$200	$200	$200	$200	$1000
BCWS	$200	$200	$200			$600
BCWP	$200	$200	$ 0			$400
ACWP	$250	$200	$300			$750

This earned value analysis identifies discrepancies between ACWP, BCWS, and BCWP—problems for which the user can then take immediate steps to remedy.

Earned Value and Derived Measures

From the examples above, Unifier will calculate the following values:

Value	Description
Cost Variance	Cost Variance (CV) is the difference between a task's estimated or budgeted cost and its actual cost. A negative variance indicates the project is over budget. ▸ CV = BCWP - ACWP Example: $400 - $750 = -$3
Scheduled Variance	Scheduled Variance (SV) is the difference between the current progress and the scheduled progress of a task, in terms of cost. It is a comparison of the amount of work performed during a given period of time to what was scheduled to be performed. A negative variance means the project is behind schedule. ▸ SV = BCWP - BCWS Example: $400 - $600 = -$200
Cost Performance Index	Cost Performance Index (CPI) is the ratio of budgeted costs of work performed to actual costs of work performed. A value of less than 1(less than 100%) indicates that the project is over budget; you are getting less work per dollar than planned. ▸ CPI = BCWP/ACWP Example: 400/750 = 0.53 or 53%
Scheduled Performance Index (SPI)	Schedule Performance Index (SPI) is the ratio of budgeted costs of work performed to budgeted costs of work scheduled. A value of less than 1 (less than 100%) indicates that the project is behind schedule. ▸ SPI = BCWP/BCWS Example: 400/600 = 0.67 or 67%

Value	Description
Cost Schedule Index	The Cost Schedule Index (CSI) reflects the relationship between CPI and SPI. CSI value should be close to 1.0. The farther the value from 1.0, project recovery becomes more difficult to achieve. ▸ CSI = CPI x SPI Example: 0.53 x 0.67 = 0.3551
To Complete Performance Index (TCPI)	The To Complete Performance Index (TCPI) is the ratio of the work remaining to be done to funds remaining to be spent, as of the status date. A TCPI value greater than 1 indicates a need for increased performance; less than 1 indicates performance can decrease. This helps determine how much of an increase in performance is necessary on the remaining project tasks to remain within budget. ▸ TCPI = (BAC - BCWP) / (BAC - ACWP) Example: ($1000 - $400) / ($1000 - $750) = 2.4
Estimate At Completion	Estimate at Completion (EAC) is the expected total cost of a task or project, based on the performance as of status date. ▸ EAC = ACWP + [(BAC - BCWP) / CPI] Example: $750 + [($1000 - $400) / 0.53] = $1882
Variance At Completion	VAC is the difference between the Budget At Completion (BAC) and the Estimate At Completion (EAC). ▸ VAC = BAC - EAC Example: $1000 - $1882 = -$882

How Cost Transactions Work in Unifier

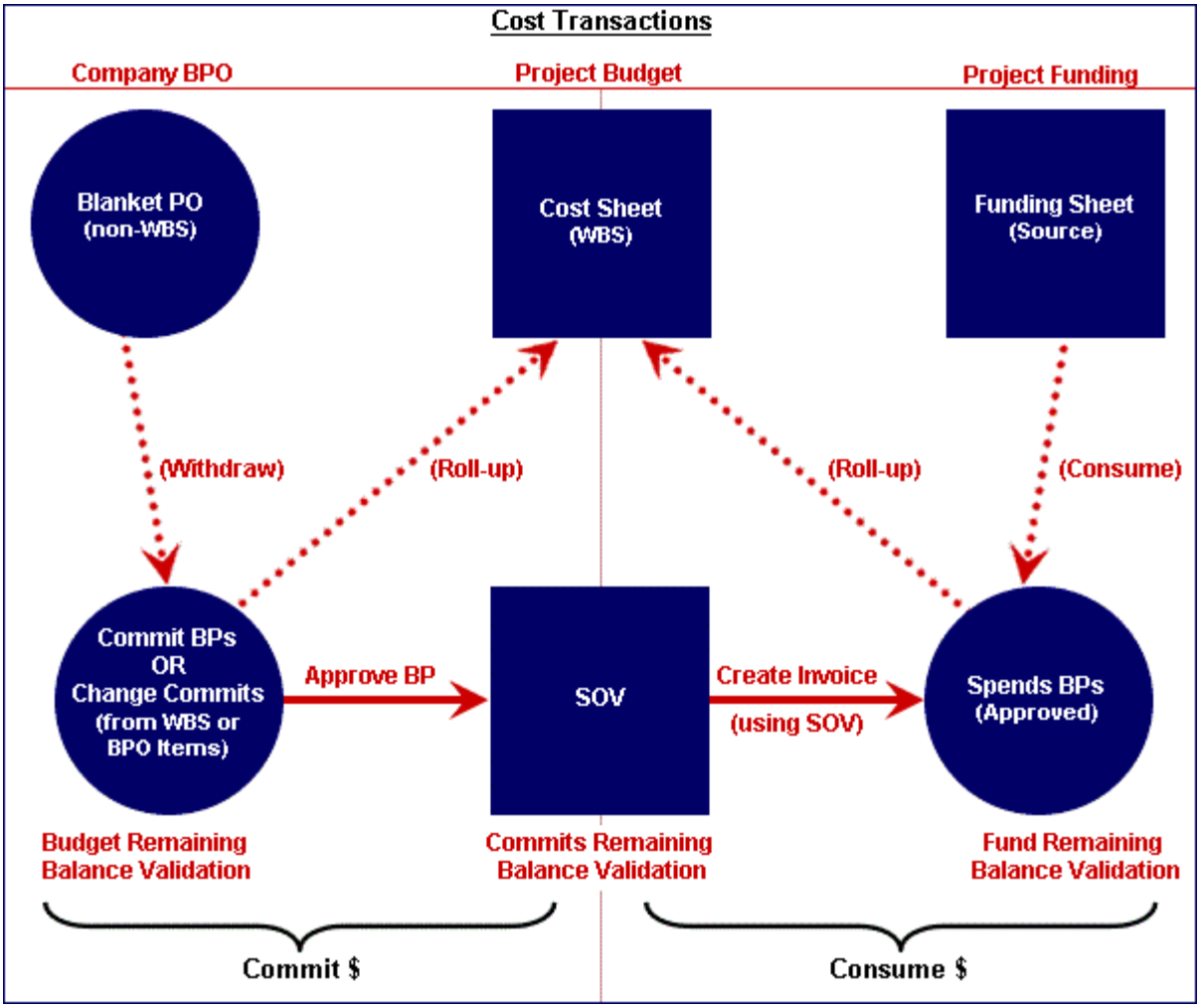
At the company level, finances are monitored on two sheets: a **Company Cost Sheet**, which shows the amounts of costs incurred; and a **Funding Sheet**, which shows how much money is available to spend, and the sources from which these monies come. To begin a project/shell, a Blanket PO or **Base Commit** is issued at the company level authorizing the spending of funds on the project/shell. As **Commit** BPs or **Change Order** BPs are approved, monies are drawn down from the Base Commit, and reflected on the Company Cost Sheet, which is broken down into CBS codes.

When a Base Commit BP is approved, it creates a Schedule of Values (**SOV**). The SOV is the "working document" on which committed monies are entered. The committed monies shown on the SOV are rolled up to the Company Cost Sheet. Change Commit BPs continue to change or add costs to the SOV during the life of the project/shell.

When a **Spends** BP is approved, three things happen:

1) An invoice or payment application is created from the SOV.
2) The monies requested on the Spends BP are rolled up and debited on the Company Cost Sheet.

3) The company Funding Sheet is changed to reflect the monies consumed by the approved Spends BP.



Design Requirements for the Cost Manager

For the cost Manager to work effectively in Unifier, you will need to create the following components in uDesigner.

Note: For more information on these components, see ***Business Processes Overview*** (on page 15).

Component	Description
Cost Attribute Form	Defines the cost codes that support the CBS breakdown of the Company Cost Sheet. The information from this attribute form appears in Unifier in the **CBS Details** window; also appears on the **CBS picker** on cost-type business processes where users must choose a CBS code from a list. To open the Picker log, users can click the **Picker** node under cost attributes. The picker log has four tabs: General, Layout, Sort Order, and Find. In the **General** tab, users can edit Name and Description. In the **Layout** tab, users can add any data elements from the Cost Attribute Form to be shown in the Picker log. In the **Sort Order** tab, users can select the sort order of the CBS code to be ascending or descending. In the **Find** tab, users can add search elements which will be used to filter CBS rows at run time. The data element values on this form automatically populate corresponding data elements in cost business process line items. The auto-population occurs when the CBS code is added to the line item in the business process.
Fund Attribute Form	Defines a fund code and its corresponding code segments. To do this, you must use a formula to build the code from the segments of the data elements that were created for your company funds. **Note:** This attribute form does not create a record; the information exists only as part of a fund sheet. Consequently, you will need to design a fund picker for this form to populate. Unifier users will see the information from this form in the **Fund Details** window in Unifier; also appears on the **Fund picker** on cost-type business processes where users must choose a fund from a list.

Component	Description
Account Code Attribute Form	Defines the codes for company-level accounts and cost accounts. These codes or accounts can then be used to track company-level costs, such as assets, resources, or facility maintenance. These account codes are independent of CBS cost codes. **Note:** This attribute form does not create a record; the information exists only as part of a cost sheet. Consequently, you will need to design an account picker for this form to populate. The information from this attribute form appears in Unifier on the **Account Sheet** at the company level; also appears on the **Account picker** on cost-type business processes where users must choose an account from a list.
Pickers for funds and account codes	Unifier populates most pickers with the records that you see in the logs on the right pane of the screen, and uses the layout of the headings on the logs for the layout of the picker. These logs show the records that were created, for the most part, with attribute forms. However, attribute forms for funds and account codes use pickers designed specifically for them because they do not create records that will appear on logs; they exist only as part of a fund sheet or cost sheet. In these cases, you will need to design a picker in the same way you would design a log.

Design Flow

The following table outlines the design steps necessary to create the attribute forms for the Cost Manager.

Step	Description
1. Create a data structure (if necessary).	See ***Creating a Data Structure*** (on page 217).
2. Launch the design for each attribute form.	See ***Launching a Manager*** (on page 183).

Step	Description
3. Create a Cost Attribute Form. **See the instructions beginning with *Adding Blocks to the Attribute Form*** (on page 199).	Mandatory fields for the Cost Attribute Form are: CBS Code (**uuu_cost_code**) Cost Type (**uuu_cost_cost_type**) CBS Item (**uuu_cost_item**) Status (**uuu_cost_status**)
4. Create a Fund Attribute Form. **See the instructions beginning with *Adding Blocks to the Attribute Form*** (on page 199).	Mandatory fields for the Fund Attribute Form are: Fund Code (**uuu_fund_code**) (must be a formula type field) Fund Name (**uuu_description**)
5. Create a Company Cost Account Attribute Form. **See the instructions beginning with *Adding Blocks to the Attribute Form*** (on page 199).	Mandatory fields for the Company Account Attribute Form are: Company Account Code (**uuu_company_account_code**)(must be a string formula type field) Company Account Name (**uuu_company_account_name)**
6. Create a Fund Picker. See ***Designing a Picker*** (on page 206).	
7. Create a Company Cost Account Code Picker. See ***Designing a Picker*** (on page 206).	

When you select an item from the CBS picker, the cost codes (in the Cost business process) will be displayed according to the order that was selected in the Cost Sheet (the selected default view set in the **Sort Order** field. The **Sort Order** field will be disabled when the **Sort By** field is set as **Cost Sheet Default View**.

> **Note:** The **Sort Order** field displays the data elements that are added in the **Layout** tab.

To view the default set for the Cost Sheet:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Cost Manager**.
3) Open the applicable Cost Code Attributes Form.
4) In the left Navigator, select **Picker**.
5) Open the Cost Code Attributes Picker.
6) Note the information listed on the **Sort Order** tab in the **Sort Order** field.

For other columns, the **Sort Order** is enabled, and you can select any column from the **Sort By** field. At run time, if you have selected any particular column in the **Sort By** field, the CBS picker log sorts the summary codes, and the leaf-level codes will be sorted based in ascending, or descending, order which was selected in uDesigner.

Generic Cost Manager Overview

Generic cost managers monitor cost-related activities for configurable shells. Unlike the Standard Cost Manager in Unifier, the data analyzed by a generic cost manager comes from the cost sheets of shells and sub-shells. The Standard Cost Manager is designed to accommodate business financing, which typically suits projects that proceed over a fixed time range. Generic cost managers, on the other hand, are well-suited for projects/shells of an ongoing nature, such as a building shell, where you would typically want to collect and analyze operating and maintenance costs for a specific building over the life of that building.

In designing a generic cost manager, you will be defining cost codes that will collect and analyze cost-related information for anything that exists under a shell. You can create cost codes for all the various projects or business needs you are likely to manage in any shell and include them in a single cost manager that will support all the various shells.

A generic cost manager works similarly to Unifier's Standard Cost Manager, but with the following differences.

Notes:

- You can create only one Generic Cost Manager. This manager can be used in all your shells.
- You cannot use both a Standard Cost Manager and a Generic Cost Manager in the same shell.

Standard Cost Manager	Generic Cost Manager
Is available for projects and shells	Is only available for shells
Used for capital projects with limited life cycles	Used for projects with extended life cycles
Uses a CBS code structure	Uses a customized coding structure; it does not use CBS codes

Standard Cost Manager	Generic Cost Manager
Cost Sheet: ▸ Has no time dimension ▸ User creates columns and rows in the sheet itself ▸ Enables forecasting adjustments via AFC and YTB values ▸ Can be viewed in flat or tree format, but cannot be changed ▸ Cannot modify the exchange rate; uses the rate defined in the shell properties ▸ Cost transaction data is shown in the project currency at the project level, and in base currency at the company level ▸ Accepts data entered manually, via business processes, from a worksheet, or generated by a formula	Cost Sheet: ▸ Has a time dimension; user must specify time scale units by which to view the sheet ▸ Has two components—sheet and structure; user creates columns and rows using the structure of the sheet ▸ Does not offer forecasting ▸ Can be toggled between flat and tree format views and offers default views of current shell, current shell and sub-shells, or sub-shells only ▸ Can modify the exchange rate; can revert to the rate specified for the shell; user can view the exchange rate history ▸ Cost transaction data is shown in the shell currency or the base currency ▸ Accepts data entered manually or generated by a formula
Rolls up only currency amounts **Note:** Shells do not support any roll-ups from the Standard Cost Manager.	▸ Rolls up quantity amounts as well as currency amounts ▸ Rolls up to the Company Cost Sheet only line items with multiple codes, including leases, base/change commits, transfers, and general spends
Includes a Funding Sheet	Does not support a Funding Sheet
Provides earned value and cash flow features	Does not offer earned value or cash flow features
Base Commit BP creates a Schedule of Values (SOV) sheet	Base Commit BP creates "Commitments Summary" rather than an SOV

In This Section

Design Requirements for a Generic Cost Manager 89

Design Requirements for a Generic Cost Manager

For a Generic Cost Manager to work effectively, you will need to create the following components in uDesigner.

Note: For a description of business processes this Cost Manager uses, see ***Business Processes Overview*** (on page 15).

Component	Description
Generic Cost Manager Attribute Form	The information from this attribute form appears in the **Generic Cost Code Details** window when a user adds a row to the cost sheet template; also appears on the **picker** on cost-type business processes where users must select a cost code from the generic cost manager.
Picker	Unifier populates most pickers with the records that you see in the logs on the right pane of the screen, and uses the layout of the headings on the logs for the layout of the picker. These logs show the records that were created, for the most part, with attribute forms. However, attribute forms for generic cost managers use pickers designed specifically for them because they do not create records that will appear on logs; they exist only as part of a cost sheet. In these cases, you will need to design a picker in the same way you would design a log.

Design Flow

The following table outlines the design steps necessary to launch the manager and create the attribute form.

Step	Description
1. Create a data structure (if necessary).	See ***Creating a Data Structure*** (on page 217).
2. Launch the manager.	See ***Launching a Manager*** (on page 183).

Step	Description
3. Create a Generic Cost Manager Attribute Form. See the instructions beginning with ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).	Mandatory fields for the attribute form are: Code name (uuu_cm0_name) Cost code picker (uuu_cm0_code) Status (uuu_cm0_status)
4. Create a picker.	See the instructions under ***Designing a Picker*** (on page 206).

Document Manager Overview

In Unifier, the Document Manager maintains all the files and documents for a project. Each project/shell includes its own Document Manager, and another Document Manager resides at the company level. The manager ensures that employees and project/shell members are always using the most current versions of documents and makes accessing and distributing documents efficient. Files in the Document Manager are stored on the Unifier file server. In the application, they can be organized into a folder structure to categorize them and make them easily available, much like a filing cabinet.

The Document Manager is integrated with business processes. Unifier users can initiate a business process directly from the Document Manager and automatically attach files and folders to it. In addition, you can design a business process to automatically publish its records, along with their comments and attachments, to the Document Manager. In effect, this produces a detailed audit trail of the record information through the business process (for both workflow and non-workflow processes). Depending on how the administrator sets up the business process, it can be automatically published to the Document Manager when it reaches a specific step in a workflow, or whenever an email notification is sent regarding the status of the business process, or both. (Refer to the uuu_dm_record_info_path element description in the *Unifier Data Reference Guide*.)

In Unifier, the **Documents** node in the navigator is where all project documents—such as drawings, spreadsheets, image files, Microsoft Office files—are stored and managed. Users can store documents directly in this node, or organize them into folders under this node. Users can upload, download, revise, or mark up all project documents from this node. The Documents node has check-in/check-out, document lock, and revision history features for version control.

The **Unpublished Documents** node is the temporary, automatic repository for files that have been uploaded from local machines and attached to business processes, but which have not yet been published to the Documents node. When a user uploads a file from a local machine and attaches it to a business process, the document is automatically stored in the Unpublished Documents node with a link to the business process to which it belongs (unless a path to a folder has been configured using the uuu_dm_publish_path data element; see note below). The link to the business process allows the administrator to review where the document originated from. This way, the administrator can control the documents that are accessible in the Document Manager. For example, a subcontractor might submit a Request for Information (RFI) with attached documents requesting input from the architect. The attached documents can be traced to the original business process through the link, and the documents will become available in the unpublished node. The administrator can then review the documents, decide where to store them, and publish them to the **Documents** node; or the administrator can decide not to publish them at all.

Notes:

- Creating Document Manager Attributes is optional and all default properties will apply.
- Drawing files are handled with the base file listed, and the associated reference files bundled with it, similar to a zip file.
- For document-type business processes With Folder Structure, you can specify that a configured folder path be appended to the folder structure. This appended path is based on the path configured in the **uuu_dm_publish_path** data element on the business process form, and the selection of the **Append Line Items Folder Structure to AutoPublish Path** option. See ***Designing an Upper Form*** (on page 287).

Document Attribute Forms can contain fields that are numbered using auto-sequencing. This functionality requires that the Document Attribute Form contain up to two data elements that are based on the SYS Auto Sequence data definition. You can create any number of data elements (fields) using this definition. Fields using this definition provide auto-sequencing of unique numbers for all documents created. The content of the field is automatically generated based on the format for the auto-sequence data elements that is configured in Unifier. Data elements that use this data definition:

- Are always read-only
- Can be placed in a hidden block
- Are available for Mobile configuration
- Can be selected as a display element of a Data Picker
- Can be added to Integration, marked as Output only
- Cannot be selected as a linked element
- Cannot auto-populate or reverse auto-populate
- Cannot use a hyperlink
- Cannot be part of a Dynamic Data Set definition

To set up SYS Auto Sequencing for the Document Manager, use **Data Elements**. See ***Auto Sequence Tab*** (on page 274) for more information on using the Auto Sequence tab.

To access Data Elements for the DM:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Document Manager**.
3) Open the **Folder and Document Attributes**.
4) From the toolbar, click **Open**, and select **Data Elements**.

In This Section

Design Requirements for the Document Manager 93
Creating Multiple Attributes Forms 94

Design Requirements for the Document Manager

For the Document Manager to work effectively in Unifier, you will need to create the following components in uDesigner:

> **Note:** For more information on these components, see ***Business Processes Overview*** (on page 15).

Component	Description
Folder Properties Attribute Form	Collects Properties related to the folders used to organize documents in the Document Manager. The information from this attribute form appears in the DMS Folder Properties window.
Document Properties Attribute Form	Collects data (including the title, name, and issue date) related to the documents that users store in the Document Manager. The information from this attribute form appears in the DMS Document Properties window
Log	Lists the document folders and documents in Unifier. Allows users to choose the document or folder they want to work with.

Design Flow

The following outlines the design steps necessary to launch the manager and create folder and document properties.

Step	Description
1. Create a data structure (if necessary).	See ***Creating a Data Structure*** (on page 217).
2. Launch the manager.	See ***Launching a Manager*** (on page 183).
3. Create a Folder Properties Attribute Form. See the instructions beginning with ***Starting an Attribute or Detail Form for a Manager*** (on page 186).	Mandatory field for the Folder Properties Attribute Form: Document Manager (uuu_dm_node_name) You must place this field in the first row of the form. You can set this field as **Editable (Required)** or **Read-Only**. If you want to allow users to rename files, select the **Editable (Required)** option.

Step	Description

4. Create a Document Properties Attribute Form.
See the instructions beginning with ***Starting an Attribute or Detail Form for a Manager*** (on page 186).
	Mandatory field for the attribute form is:
	▸ Document Manager (uuu_dm_node_name)
	▸ Mandatory field for the Document Properties Attribute Form if auto-sequencing is desired: Any data element that uses the SYS Auto Sequence data definition
	▸ If users should be able to reserve this document record, these fields are mandatory:
	  ▸ Allow record to be reserved (uuu_rsv_reservable)
	  ▸ Allow over-booking (uuu_rsv_overbook)
	▸ If you want a document URL to display in the document properties, use the data element (uuu_doc_attribute_url).

5. Create a log for the Manager.	See ***Designing a Log for a Manager*** (on page 207).

Creating Multiple Attributes Forms

The following explains how to create multiple attributes forms in the **Document Manager** node.

The Document Manager node contains the following sub-nodes:

> **Note**: You must open the existing attribute form to view the nodes.

- **Folder Properties**
- **Document Properties**
- **Log**

The following explains each sub-node in detail.

Folder Properties

To access Folder Properties:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Document Manager**.
3) Open the **Folder and Document Attributes**.
4) In the left Navigator, select **Folder Properties**.

You can create multiple attribute forms in DMS **Folder Properties** node. The following explains different functionalities available in **Folder Properties**.

The following are the menu options of the **DMS folder properties** log:

- **File**
- **Edit**
  - **Properties**
  - **Delete**
- **View**
- **Help**

The following are the toolbar options of the **DMS folder properties** log:

- **New**

  Enables you to create attribute forms. By default, when a DMS attribute design is created in **Document Manager**, the corresponding DMS Attributes - Folder properties form will be available to the user and will be marked by the system as default. The user will have the ability to create multiple attributes form either by **New** or **Copy** action. When the user clicks **New** to create Folder Properties Attribute Form, a new window opens where user must enter name and description for the form to be created. After the user clicks **OK**, the newly created folder properties attribute will be seen in the log. For example, if the user entered the form name as "test dms," then in the log the user will see the name as "test dms - Folder properties." After the folder properties attributes form is created, the corresponding Document Properties Attribute Form and document log will be created. For example, if the user has "test dms - Folder properties" form in folder properties, the user will see "test dms - Document properties," in **Document Properties** log. In the **Log** node, the user will see "test dms - Log."
- **Copy**

  When the user clicks **Copy**, the selected attribute form will be copied over. The user will see a window open where the user will enter the name and description. The **Name** field will be auto-populated with name from the original form with a prefix "Copy From." For example, if the user is trying to copy "test dms - Folder properties," then the window will show an auto-populated name for the form as "Copy From test dms." If the user clicks **OK**, the folder properties will show an entry as "Copy From test dms - Folder Properties." After the folder properties attributes form is created, the corresponding Document Properties Attribute Form and document log will be created. For example, in **Document Properties** log, the user will see "Copy From test dms - Document properties." In the **Log** node, the user will see " Copy From test dms - Log."
- **Open**

  When the user clicks **Open**, the form will open and user will be able to add various DEs to the attribute form. For a newly created attribute form, an empty form opens. For a copied attribute form, the form shows all the DEs from the original attribute form. For an existing form, the form shows all the DEs which were last saved.
- **Properties**

  When the user clicks **Properties**, the user will be able to change the description for the attribute form. The name will be read-only.
- **Delete**

When user clicks Delete, the user will be able to delete the Folder Attribute Form. After a Folder Attribute Form is deleted, the corresponding Document attribute and Document log will be deleted as well.

Important:

- The user will not be able to delete published attributes forms.
- The user will not be able to delete the system defined form as well.
- After the form is deleted, Unifier marks the DM configuration "inactive," and the user will not be able to activate this DM configuration again; however, the user will be able to delete the configuration.
- The delete option will be disabled in Production environment.
- After an attribute form is deleted, the corresponding DM configuration will be deleted as well.

The following are the columns of the **DMS folder properties** log:

- **Name**

  Displays the name of the attribute form.
- **Description**

  Displays the description given to the attribute form.
- **Last Saved**

  Displays the last saved date for that attribute form.
- **System Defined**

  The DMS attribute - Folder Properties is always the default form to be used in the DMS attribute.
- **Published Date**

  Displays the last published date for that attribute form. The published date will only be seen when a DMS Attribute Form was part of the published configuration package for production.

Document Properties

To access Document Properties:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Document Manager**.
3) Open the **Folder and Document Attributes**.
4) In the left Navigator, select **Document Properties**.

After the folder properties attributes form is created, the corresponding Document Properties Attribute Form will be created. For example, if the user has "test dms - Folder properties" form in **Folder Properties**, the user will see "test dms - Document properties" in the **Document Properties** log. After the folder properties attributes form is created (by way of copying the corresponding document properties), the attribute form will be created. For example, if "Copy From test dms - Folder Properties" was created (by way of copying the corresponding document properties), the user will see "Copy From test dms - Document properties" in the **Document Properties** log.

The existing validations for DMS Attribute Forms in Document Properties will take place across all the multiple attribute forms.

Log

To access the Log:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Document Manager**.
3) Open the **Folder and Document Attributes**.
4) In the left Navigator, select **Log**.

After the Folder Properties attributes form is created, the corresponding document log will be created. For example, if the user has "test dms - Folder properties" form in Folder Properties, the user will see "test dms - Log" in the **Document Properties** log. After the folder properties attributes form is created via copy, the corresponding document log will be created. For example: If "Copy From test dms - Folder Properties" was created (by way of copying the corresponding document properties), the user will see "Copy From test dms - Log" in the **Document Properties** log.

The existing validations for log will take place across all the multiple logs.

Planning Manager Overview

The Planning Manager is where users can plan for new projects/shells and proposals and create forecasts for those projects/shells that are already running in Unifier. They cannot administer planned projects/shells the way they administer real projects/shells; however, they can manage the planning phases for these projects/shells as business processes using the same functions used by other business processes. Planned projects/shells can include cost sheets, resource sheets, funding sheets, and other typical business processes; but certain data, such as dates and monies, can be viewed as future forecasts.

> **Note**: Because planning BPs are not "live" projects/shells, the data elements for planned projects/shells and proposals cannot be auto-populated, cannot contain formulas, and should not be part of a dynamic data set.

You can have a Planning Manager at both the company and project/shell levels.

The Planning Sheet is central to Planning Manager functions. Each planning item "type" (such as a capital plan or a campus remodel) can have one or more planning sheets that contain information about the plans of this type being considered by your company. It is from these sheets that Unifier users access, create, update, and import or export the company's plans. Business processes designed for planning items can roll up information onto the planning sheets.

In addition, using a Project/Shell Creation type of business process, you can create projects/shells for planning items when they reach a certain status or condition. If the Project/Shell Creation BP includes a Planning Item Picker, Unifier users can link new projects/shells with planning items. Instead of linking a planning item to a project in the Planning Manager, this BP will automatically create the link when the project/shell is created, and data will begin to roll up to the Planning Sheet from the business processes in this project. (See ***Project/Shell Creation*** (on page 61).)

Notes: About Rolling Up Planning Item Data:

- You can roll up values for planning items in two ways:
- Using a Project Picker or Shell Picker: If a planning item is for a specific project/shell, you must include a Project or Shell Picker on the Planning Item Attribute Form. The user can link the planning item directly to the project/shell, and business processes in the project/shell with fields that match those on the attribute form will roll up values to the Planning Sheet.
- Using a Planning Item Picker: If you include a Planning Item Picker on a Project/Shell Creation BP, the user can include a planning item in the project/shell when it is created. Business processes in the project/shell with fields that match those on the Planning Item Attribute Form will roll up values to the Planning Sheet.

Using Unifier's snapshot feature, users can take a "picture" of the planning sheet at any point in time. This is a way of "drilling down" into the planning process to expose specific plans or planning phases for particular attention.

The **Planning Items** node is where users create plans and proposals, import plans from outside applications, export a plan template, and link a plan to a running project/shell.

The **Planning Sheets** node is where users create and manage planning sheets. A planning sheet can contain data for one or multiple plans and proposals. From the planning sheets, users can automatically update individual plans with changes made on the planning sheet. Reciprocally, they can refresh the planning sheet with changes made to individual plans.

In This Section

Design Requirements for the Planning Manager 100

Design Requirements for the Planning Manager

For the Planning Manager to work effectively in Unifier, you will need to create the following components in uDesigner:

Component	Description
Planning Item Attribute Form	Describes the type of plan being considered, such as capital, IT, or resource. The information from this attribute form appears in Unifier as a record in the planning log, and can also appear on the **Planning Sheet** if it is added to the sheet. Also appears on the **Planning Item picker** on business processes where users must choose a planning item at the company level. Using the Project Picker or Shell Picker on the attribute form, users can link the planning item directly to a project/shell. If they do this, information will roll up into the planning item from the data elements (fields) that are common between BPs in that project/shell and this attribute form. Users can see the latest values for these fields by clicking the **Refresh** button on the planning sheet. **Note**: When you click **Refresh**, the last update date displays only if the data element, uuu_last_update_date, is included in the ***layout*** (see "***Layout Tab***" on page 210) of the planning sheet.
Planning Sheet Attribute Form	Describes what the planning sheet will show at the company level. The information from this attribute form appears in Unifier on the **Planning Sheet Properties** window. The attribute data appears on the **General** tab when the user opens the planning sheet Properties window from the **[planning sheet name]** located under the **Planning Manager** node.
Log for both the plan and sheet	Lists the planning items and planning sheets currently in use in Unifier. Allows users to choose the plan or planning sheet they want to work with.

Design Flow

The following outlines the design steps necessary to launch the manager and create a planning item or planning sheet.

Step	Description
1. Create a data structure (if necessary).	See ***Creating a Data Structure*** (on page 217). If the planning item types will reside across shells, you will need to create a data picker for the planning items. See ***Creating a Data Picker Definition*** (on page 228). If you intend to design business processes that will auto-create planning items, you will need to create a planning item creator data element to place on the business processes. Refer to the description of the Planning Item Creator data definition in the *Unifier Data Reference Guide* for more information.
2. Launch the manager.	See ***Launching a Manager*** (on page 183).
3. Create a Planning Item Detail Form. See the instructions beginning with ***Starting an Attribute or Detail Form for a Manager*** (on page 186).	Mandatory fields for the attribute form are: Planning Item (uuu_planning_item) If this planning item is for a shell, this field is also mandatory: Shell Picker (uuu_default_shell_picker)
4. Create a Planning Sheet Detail Form. See the instructions beginning ***Starting an Attribute or Detail Form for a Manager*** (on page 186).	Mandatory fields for the attribute form are: Planning Sheet Name (uuu_name) Last Update (uuu_last_update_date)(read-only)
5. Create a log for both.	See ***Designing a Log for a Manager*** (on page 207).

Portfolio Manager Overview

The Portfolio Manager is where the budget forecast planners in your company can gather cost and schedule information on projects (both planned and in execution) and perform analyses on "what if" scenarios. These scenarios are used to propose an optimal mix of projects for a portfolio, based on available budget targets and the strategic goals of the company.

Using the Portfolio Manager, planners can create a portfolio for a specific "planning horizon" (for example, from 2014 through 2020) and then create multiple scenarios in that portfolio. Each scenario can use forecast numbers and actuals, as well as schedule dates, for both planned and active projects in a specific shell type across a hierarchy in the company.

Budget forecast planners create these scenarios on sheets, one for each scenario. Using a query condition set up by the administrator, the scenario sheets can pull in the following data from any shell type in a hierarchy:

- Project information from the Shell Attribute Form or single-record business process
- Project start and end dates from the Shell Attribute Form or single-record business process
- Cash flow data (both forecasted and actual) from each project's Cost Manager

With this data, the planner can forecast costs over a specific time period (called a "period structure"). Planners can then manipulate scenarios by:

- Including or excluding projects
- Pushing start dates for planned projects into the future
- Modify project end dates to change the project's duration
- Proposing different cash flow distribution numbers by manually editing the cash flow columns
- Negotiating proposed budgets with project managers

> **Note**: The numbers the planner proposes in a scenario will NOT affect a project's live data. The proposed numbers are stored only in the Portfolio Manager and will not affect live project data until a scenario has been approved by your company management.

After these scenario analyses have been completed, the best (or several best) scenario(s) can be sent to the executive decision makers for approval.

When a scenario has been approved, Unifier:

- Marks the approved scenario "shared" so that project managers can see the approved dates and numbers. The scenario is set to read-only mode and can no longer be modified or deleted.
- Updates each project's original budget numbers with the proposed numbers on the approved scenario.
- Updates each project's monthly or yearly cash flow numbers with the proposed numbers on the approved scenario.
- Updates the project start date (if it was changed) for any planned projects that will begin during the portfolio's planning period.

- Updates the project/shell data with any project/shell information that was changed on the scenario sheet, and sends you an email notification of the updates.
- Locks the budget and cash flow numbers to prevent any further changes.

In This Section

Design Requirements for the Portfolio Manager 104

Design Requirements for the Portfolio Manager

Design Requirements for the Portfolio Manager

For the Portfolio Manager to work effectively in Unifier, you will need to create the following components in UDesigner:

Component	Description
Portfolio Attribute Form	Describes the type of portfolio being created, such as "capital." The information from this attribute form appears as a record in the Portfolio Manager log.
Log for the portfolios	Lists the portfolios currently in use in Unifier. Allows users to choose the portfolio they want to work with.

Design Flow

The following outlines the design steps necessary to launch the manager and create a portfolio.

Step	Description
1. Create a data structure (if necessary).	See ***Creating a Data Structure*** (on page 217).
2. Launch the manager.	See ***Launching a Manager*** (on page 183).
3. Create a portfolio detail form. See the instructions beginning with ***Starting an Attribute or Detail Form for a Manager*** (on page 186).	Mandatory fields for the portfolio form: - Creator ID—creator_id - Creation date—uuu_creation_date - Portfolio name—uuu_ppm_name - Period picker—uuu_ppm_period_picker
4. Create a log for the portfolios.	See ***Designing a Log for a Manager*** (on page 207).
5. Create an integration interface to push information from an approved portfolio to the Shell Attribute Form.	See ***Integration*** (on page 479).

Resource Manager Overview

If you have access to the Resource Manager feature, use it to:

- View or modify a company's or shell's personnel resources. Resources can also include those of a partner company.
- Classify job functions into **Roles** that can then be allocated to projects/shells.
- Assign personnel to one or more roles in projects/shells.

  For example, a construction role and a plumbing role might be served by one person who has both carpentry and plumbing skills.

Notes:

- The Resource Manager has limited functionality in generic shells.
- Users cannot allocate resources in a generic shell.

In This Section

Design Requirements for the Resource Manager..... 107

Design Requirements for the Resource Manager

For the Resource Manager to work effectively in Unifier, you will need to create the following components in uDesigner:

Note: For more information on these components, see ***Business Processes Overview*** (on page 15).

Component	Description
Role Attribute Form	Displays roles currently available in the attribute form. Roles are for work performed for specific projects, or for general administrative work not specific to any project. The information from this attribute form appears in the **Role Properties** window. The attribute form data appears on the **General** tab when a user opens the role from the **Roles** sub-node located under the **Resource Manager** node at the company level. In the Role Attribute Form, you can only view and modify current roles You cannot create roles or import roles into the attribute form.
Resource Attribute Form	Displays resources currently available in the attribute form. Resources refer to personnel that users can specify for project bookings and assignments. The information from this attribute form appears in the **Resource Properties** window. The attribute form data appears on the **General** tab when the user opens the resource BP from the Resources sub-node located under the **Resource Manager** node at the company level. In the Resource Attribute Form, you can only view and modify current resources You cannot create resources or import resources into the attribute form.
Log for the resources	Lists every resource entered into Unifier. Allows users to choose the resource they want to work with.

Design Flow

The following table outlines the design steps necessary to launch the manager and create a Role or Resource Attribute Form.

Step	Description
1. Create a data structure (if necessary).	See ***Creating a Data Structure*** (on page 217).
2. Launch the manager.	See ***Starting an Attribute or Detail Form for a Manager*** (on page 186).
3.Create a Role Attribute Form. See the instructions beginning with ***Adding Blocks to the Attribute Form*** (on page 199).	Mandatory fields for the attribute form are: ▸ Role name (uuu_role_name) ▸ Role status (uuu_role_status)
4. Create a Resource Attribute Form. See the instructions beginning with ***Adding Blocks to the Attribute Form*** (on page 199).	Mandatory fields for the Resource Attribute Form are: ▸ Resource name—uuu_resc_name ▸ Resource status—uuu_resc_status ▸ Resource code—uuu_resc_code ▸ Default resource capacity—uuu_resc_capacity This is the number of hours a person can work in a day. Can be overridden by the capacity fields noted below. If you want to calculate a resource's available hours weekly, include the following fields: ▸ Monday hours—uuu_resc_mon_capacity ▸ Tuesday hours—uuu_resc_tue_capacity ▸ Wednesday hours—uuu_resc_wed_capacity ▸ Thursday hours—uuu_resc_thu_capacity ▸ Friday hours—uuu_resc_fri_capacity ▸ Saturday hours—uuu_resc_sat_capacity ▸ Sunday hours—uuu_resc_sun_capacity
5. Create a log for the resources.	See ***Designing a Log for a Manager*** (on page 207).

Schedule Manager Overview

If you have access to the Schedule Manager feature, it is where Unifier users can create and manage schedules at the project/shell level. They can create a **Project/Shell Schedule Sheet** that is customized to the project's or shell's needs. After these sheets are created, users can then use them to create project/shell activities and tasks, assign resources to tasks, create relationships between activities, track schedule progress and variables, and calculate the schedule's critical path.

In Unifier, users can also import project schedule records from Primavera Project Planner P3 or Microsoft Project. These external project schedules can provide additional detail or supporting schedule information; for example, resource information, or subcontractor or vendor schedules. Imported schedules are editable within the application, and the data can be used in reports.

The Schedule Manager presents schedule activities as interactive Gantt charts, where users can:

- Zoom in to see tasks at the day, week, or month level
- Move activities and add dependency relationships, and automatically update the dates on the schedule
- Create critical path calculations that will flag activities that, if delayed, can cause the schedule to go beyond the planned project end date

Using the snapshot feature, users can take a "picture" of the schedule sheet at any point in time. This is a way of "drilling down" into the scheduling process to expose specific activities or milestones for particular attention. Using the Schedule Manager's baseline function, users can measure progress and determine payments against original estimates; and with the "tracking Gantt" feature, they can compare schedule dates, such as baseline estimates against the actual schedule.

If users are copying activities from one schedule to another, Unifier will immediately notify them if the change will create a schedule conflict so that they can make corrections as they work. Each change in the Schedule Manager creates a record in the application, which is useful for auditing purposes. An audit report of these records shows detailed information on dates, events, actions, and old values vs. new values, along with the user or proxy user who performed the action.

Each project/shell can have multiple schedule sheets, and one master schedule sheet. This master sheet drives project start and end dates, tracks the project's progress, and serves as the interface between the Schedule Manager and other Unifier modules. In particular, the master schedule updates resource assignment information in the Resource Manager, which affects timesheets and resource utilization figures; and it integrates cost items on the schedule with the Cost Manager. Users can refresh resource rates on the schedule sheet and post the new rates to the Cost Manager, update the cost sheet with assignment costs, and refresh costs on the sheet to recalculate labor costs and post them to the cost sheet.

In This Section

Entering and Viewing Cost Data 112
Automating a Schedule Using Scope Management 113
Accumulating and Calculating Progress Data 116
Resource Assignment by Resource Type and Resource Effort 117
Design Requirements for the Schedule Manager 117
Design Requirements for Activity Sheet Attribute Form (AP and RAP) 122

Entering and Viewing Cost Data

You can add data elements that allow users to enter and view cost data on their schedule sheets. These data elements are Activity Cost 1 (and Activity Total Cost 1 Per CBS) and Activity Cost 2 (and Activity Total Cost 2 Per CBS). The Cost and Per CBS data elements have a predefined association between them. Also, you can add a data element (Activity Latest Progress As Of) that allows users to view the date of the last activity data change.

In Unifier activity setup, users can associate one or more CBS Codes to an activity. The value carried by Total Cost data element on activity form gets passed onto these CBS codes as the result of calculations such as data rollup to a Cost Sheet, or earned value calculations. The logic used by the Activity Cost 1 and Activity Cost 2 and the associated Activity Total Cost 1 Per CBS and Activity Total Cost 2 Per CBS data elements is based on the association of an activity to a CBS code.

The values for Activity Total Cost 1 Per CBS and Activity Total Cost 2 Per CBS data elements are calculated by the system based on the corresponding Activity Cost 1 or Activity Cost 2 data element values.

These are the steps the system follows to calculate values for Activity Total Cost 1 Per CBS and Activity Total Cost 2 Per CBS data elements:

1) If the combination of Cost and Per CBS data elements are used on a Schedule Activity Attribute Form, the system will scan through all the activities and associated CBS codes.
2) The system will accumulate all the values in the Activity Cost 1 or Activity Cost 2 data elements for all activities per CBS code associated with each activity.
3) Use the total value calculated in step 2 per CBS code as the value for each Activity Total Cost 1 Per CBS and Activity Total Cost 2 Per CBS data element specified for each activity.
4) Each activity gets a total value calculated in step 2 based on the CBS code associated with it.

This example explains these calculations. For this example, the data elements Activity Cost 1 and Activity Total Cost 1 Per CBS have been added to the attribute form:

Activity Name	Activity Cost 1	Activity Total Cost 1 Per CBS
Control Account 1	$28,000.00	
Control Activity 1.1	$19,000	
Control Point 1.1.1	$10,000.00	$28,000.00

Activity Name	Activity Cost 1	Activity Total Cost 1 Per CBS
CBS - 1	$10,000.00	
Control Point 1.1.2	$9,000.00	$28,000.00
CBS - 1	$9,000.00	
Control Activity 1.2	$9,000.00	
Control Point 1.2.1	$5,000.00	$28,000.00
CBS - 1	$5,000.00	
Control Point 1.2.2	$4,000.00	$28,000.00
CBS - 1	$4,000.00	
Control Account 2	$20,000.00	
Control Activity 2.1	$20,000.00	
Control Point 2.1.1	$8,000.00	$20,000.00
CBS - 2	$8,000.00	
Control Point 2.1.2	$12,000.00	$20,000.00
CBS - 2	$12,000.00	

In the above example, Control Point 1.1.1 has a value $28000.00, which was arrived at by adding the value of CBS - 1 across all activities.

Automating a Schedule Using Scope Management

The Schedule Manager includes a schedule automation feature called "Scope Management" that you can use for those projects that can "self-manage" themselves. Scope Management creates project deliverables, assigns resources to the deliverables, and drives the coordinated completion of the deliverables. It initiates the activities that produce the deliverables based on fixed durations and the completion of dependencies; routes the activities to the responsible person or group; monitors their completion; and updates the activity's status automatically.

> **Note:** You can use Scope Management on any schedule, including a master schedule.

Any project, large or small, can benefit from scope management if it uses a set of discrete, standardized deliverables and dependencies which must be produced within specific, predictable durations. The typical volume of these projects can be in the hundreds or thousands; they might use 10 to 30 roles or participants on each project; and there are typically 10 to 1,000 deliverables per project.

The design of Scope Management particularly suits high-volume, quick-turnaround projects, such as constructing a chain of coffee houses, or installing wireless cell towers or commercial security systems. These projects typically:

- Are shorter in scope

- Have the same deliverables
- Follow activities of fixed duration
- Use the same roles and participants

In operation, Scope Management automatically creates a business process record from any activity on a schedule sheet that is set for scope management. In Unifier, users link the activity to a business process, select the users or groups that should work on the tasks, and specify what conditions the activity must meet before Scope Management can declare the activity complete. The activity BP proceeds through the workflow, where team members work on each task in the activity, and the Scope Management feature automatically sends the task to the next assignee and updates the activity status on the schedule sheet.

> **Note:** In schedule automation, a single activity can be linked to only one BP record at a time; no two activities can share the same record.

To prepare scope management for a project:

The uDesigner user must:	The Unifier administrator must:
• Add certain data elements to the Activity Attribute Form to prepare the activity for scope management • Design BPs to be used by the activity in scope management	Set up the scope management in the schedule template by: • Turning on auto-scheduling for the schedule • Entering a start date for the automated project • Specifying the name of the BP that should be launched by the activity • Specifying the users or groups that will be responsible for the completion of the activity • Specifying the conditions under which the activity will be considered "complete"

To function in Unifier, Scope Management:

- Obtains the name of the BP to launch from the activity's setup in Unifier
- Creates the BP record and copies the Forecast Duration value into the new Record Duration
- Auto-populates the appropriate data elements (fields) on the BP, including the activity's actual start date and record number
- Sets the activity's status to "In Progress"
- Sends the BP to an "initiation" step before the beginning of the workflow for assignment to the users or group responsible for its completion (For information on the initiation step, see ***Auto-Creating a Record or Line Item from a Form*** (on page 397).)

Scope Management Activity Statuses

Scope Management activity statuses are pre-defined and cannot be changed or added to. These statuses are attached to activities as they proceed through the Scope Management workflow. They are:

Status	Description
Not Started	All activities are in this status by default. This status means that a BP has not yet been launched for this activity.
In Progress	Scope Management sets the activity status to In Progress when all predecessor activities have been completed and the current activity is Not Started. When this occurs, a new BP record is created and linked to the activity.
Complete	An activity is Complete when the BP linked to the activity is complete, based on the completion conditions that were specified for the activity.
Not Applicable	This status is only available if the activity has been switched to manual mode. If a user takes the activity off "auto-update" and specifies a Not Applicable status, the Schedule Manager will ignore this activity when it evaluates predecessors and will set its successor activity to In Progress.

Assuming Manual Control

In Unifier, users can take manual control over an activity at any time by deselecting the **Auto-update Activity Data** check box on the activity's **Properties** window. If they do this:

- The link to the BP record (if any) and the activity's current status are both retained.
- Unifier continues to enforce the Scope Management update rules for the activity's status; however, the user must manually attach the status to the activity.
- The user must manually enter the actual start date, the actual finish date, and the completion date, for an activity because the system does not track those dates.

Subsequently, the user can return the activity to Scope Management mode by selecting the **Auto-update Activity Data** check box on the activity's **Properties** window. To resume Scope Management, Unifier:

- Updates the BP record status for the activity
- Checks the record for "complete" conditions
- Sets the appropriate status of the activity (either In Progress or Complete)

If an activity is not linked to a BP, the system checks the internal scope conditions.

- If the internal scope conditions are satisfied, the system launches the appropriate BP, and sets the activity status to "In Progress."
- If the internal scope conditions are not satisfied, the system sets the activity status to "Not Started."

Accumulating and Calculating Progress Data

The Schedule Manager includes the capability to capture detailed activity progress data for a project, including earned progress. You can add optional additional data elements to the Activity Attribute Form to support this detailed progress data, or the user can use the default progress accumulation that is part of the Schedule Manager.

Earned progress is a key component to calculating earned value. Earned Value Management (EVM) is a project management technique for measuring project progress in an objective manner, and combines the measurement of scope, schedule, and cost in a single integrated system. Earned Value analysis (performed in the Cost Manager in Unifier) allows project managers and project stake holders to determine whether project is on schedule and on budget. Based on the outcome of the earned value analysis, the project manager can decide if corrective action is needed to ensure that the project can be completed within defined constraints. Examples of corrective actions are changing the scope of work, extending the schedule, or adding or reassigning resources.

One of the key components of this technique or tool is to capture progress of a project. This progress is usually provided by a general contractor or the person who is in charge of the project. These progress entries are analyzed to determine the state of the project, or the earned progress. In Unifier, earned progress is captured in the context of activity progress, and the link between the Cost Manager and the activities in the Schedule Manager is provided through the CBS codes assigned to each activity. The CBS codes are assigned to activities in the **CBS Codes** tab of the activity's **Properties** window.

In Unifier, the earned progress calculation is optional. Not all users of the Schedule Manager will want to accumulate and calculate earned progress. In that case, you do not have to add the earned progress data elements (**Earned Progress** and **Earned Amount**) to the Activity Attribute Form.

To prepare progress accumulation and calculation, including earned progress data elements if needed:

The uDesigner user must:	The Unifier Administrator must:
Add certain data elements to the Activity Attribute Form to prepare the activity for progress accumulation	Import the updated Activity Attribute Form that contains the optional additional data elements

The Resource Assignment Attribute Form (described in the next section) can also contribute to the earned progress calculation.

Resource Assignment by Resource Type and Resource Effort

By default, users can select the names of hard booked resources in the Resource tab of an activity's Properties. These hard booked resources are named individual resources added through the Resource Manager or directly to an activity on the schedule sheet. Using the hard booked resources limits resource use to specific named individuals. It does not give insight into the effort expended by that resource, or the expense incurred due to that effort, both of which can be part of the calculation of activity progress. Also, this data can be captured and used as part of the earned progress calculation for use with Earned Value. See ***Accumulating and Calculating Progress Data*** (on page 116) for details on earned progress and Earned Value.

The deployment of the optional Resource Assignment Attribute Form enables users to select **Resource Types** (non-booked, such as man hours or equipment) rather than specific individual (booked) resources, and to capture effort and expense incurred due to that effort. The Resource Assignment Attribute Form allows users to assign a resource to a Resource Type, rather than to a hard booked resource. Also, it allows the capture of progress with respect to effort, and the base-lining of resource assignment. Expenses associated with resources are treated as part of the overall cost to complete an activity. As part of resource assignment Unifier will allow the accumulation of the following data:

- **Effort**: Depending on the type of resource:
  - **Labor** (number of hours)
  - **Equipment** (number of pieces of equipment)
- **Cost**: Cost associated with each resource.
- **Progress**: Progress made by each resource to complete activity with respect to effort and not by a percentage value. For example, if the effort for a resource of the Resource Type Labor is 100 hours, progress should be entered in number of hours and not by percentage. In this case the user should enter progress as 50 hours, not progress as 50%.
- **Earned Quantity**: Quantity that has been earned based on progress.
- **ETC**: Estimate to complete or estimate of effort that is still required to complete the task.
- **Baseline**: Baseline or snapshot of originally accepted effort and cost information.
- **Resource Type**: Assign a resource of a specific type (such as man hours or equipment), and not be a named user (hard booked resource).

The Activity Attribute Form can also contribute to the earned progress calculation through the addition of the **Earned Progress** and **Earned Amount** data elements to the form.

Design Requirements for the Schedule Manager

For the Schedule Manager to work effectively in Unifier, you will need to create the following components in uDesigner:

Component	Description
Activity Attribute Form	Describes information about each activity on the schedule, including its start and end dates. The information from this attribute form appears in Unifier in the **Activity Properties** window. The attribute form

Component	Description
	appears on the **General** tab when the user adds an activity to the schedule. Also appears on the **Activity picker** on project-level business processes where users must choose an activity from the master schedule sheet.
Resource Assignment Attribute Form	Describes information about resources for an activity. These resources are represented by Resource Types. This form appears on the **Resource** tab in the **Activity Properties** window, and is imported only if the user is going to assign resources by Resource Type instead of using hard booked individual named resources.
Log for the manager	Lists the schedules currently in use in Unifier. Allows users to choose the schedule sheet they want to work with.

Design Flow

The following table outlines the design steps to take to launch the manager and create a schedule activity.

Step	Description
1. Create a data structure (if necessary).	(Optional) Create tags to work with uDesigner's linked elements feature to connect schedule sheet activities with business processes, shells, spaces, and configurable manager objects. Tagged elements make it possible for a user to view key activity dates, such as milestones, on forms without having to open the schedule activity sheet. See ***Creating a Data Structure*** (on page 217).
2. Launch the manager.	See ***Launching a Manager*** (on page 183).
3. Create an Activity Attribute Form. See the instructions beginning with ***Starting an Attribute or Detail Form for a Manager*** (on page 186).	Mandatory fields for the attribute form are: Activity name (**uuu_activity_name**) Milestone activity (**uuu_flag_milestone)** Activity ID (**uuu_activity_id**

Step	Description
	Start Date (**uuu_start**) Finish Date (**uuu_finish**) Task Duration (**uuu_duration**) To accommodate any activities on which users want to enter or view cost data associated with a schedule sheet, and track the latest date of progress, these fields are mandatory: Activity Cost 1 - **uuu_act_cost1** Activity Cost 2 - **uuu_act_cost2** Activity Total Cost 1Per CBS - **uuu_act_tot_cost1_per_CBS** Activity Total Cost 2Per CBS - **uuu_act_tot_cost2_per_CBS** Activity Latest Progress As Of - **uuu_act_latest_prog_as_of** Note: If the Activity Cost 1 data element is added to a form, the corresponding Activity Total Cost 1 Per CBS data element must also be added to the form; if the Activity Cost 2 data element is added to a form, the corresponding Activity Total Cost 2 Per CBS data element must also be added to the form. Note: You can also add data elements that are based on the SYS Project Cost Data Source data definition. To accommodate any activities that may become part of a "scope management" schedule, these fields are also mandatory: "On/Off switch" to trigger automatic launching of scope management schedule and BPs (**uuu_auto_update_activity**) Actual start date (**uuu_actual_start_date**) Actual finish date (**uuu_actual_finish_date**) Actual duration (**uuu_actual_duration**) Activity status (**uuu_activity_status**) Hyperlink to the BP auto-created by the scope management function (**record_no**) Status of auto-created BP (**uuu_linked_record_status**)

Step	Description
	To accommodate any activities that may become part of the detailed progress calculation (including earned progress, if needed), these fields are also mandatory: uuu_activity_earn_progress uuu_activity_earn_amt Forecast 1 Start—**uuu_activity_fc_start_1** Forecast 1 Finish—**uuu_activity_fc_finish_1** Forecast 1 Duration—**uuu_activity_fc_duration_1** Forecast 2 Start—**uuu_activity_fc_start_2** Forecast 2 Finish—**uuu_activity_fc_finish_2** Forecast 2 Duration—**uuu_activity_fc_duration_2** uuu_activity_etc_amount Activity Percent 1—**uuu_activity_per_1** To accommodate the display of a CBS code associated with an activity in a column, this field is mandatory: CBS Codes—**uuu_activity_CBS_codes** If you want to add a Calendar drop-down menu to the form, to allow users to select a calendar to apply to a specific activity, this field is mandatory: Calendar—**uuu_activity_calendar** If you are using an Activity Attribute Form designed in uDesigner to manage activities, this data element must be added to the form if you want users to be able to select calendars. If you are not using a designed Activity Attribute Form (that is, you are using the default form provided), this data element is automatically included on the default form. If you want a add a filtered group drop-down menu to the form to allow users to enforce group activity-level editing permissions on certain restricted cells in

Step	Description
	the schedule sheet, this field is mandatory: uuu_filtered_groups
4. Create a Resource Assignment Attribute Form. See the instructions beginning with ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).	Mandatory fields for the attribute form are: Resource Picker—**uuu_resc_picker** Resource Name—**uuu_resc_name** Resource Code—**uuu_resc_code** Resource Type—**uuu_resc_type** uuu_role_name Quantity (Qty)—**uuu_resc_assign_qty** uuu_resc_assign_uom uuu_resc_assign_rate uuu_resc_assign_amt uuu_resc_assign_untper uuu_resc_assign_compl_per Baseline Quantity—**uuu_resc_assign_qty_bl** Baseline UOM—**uuu_resc_assign_uom_bl** Baseline Rate—**uuu_resc_assign_rate_bl** Baseline Amount—**uuu_resc_assign_amt_bl** Baseline% Units—**uuu_resc_assign_untper_bl** Optional fields for the Resource Assignment Attribute Form are: Earned Progress—**uuu_resc_assign_earn_prog** Earned Amount—**uuu_resc_assign_earn_amt** Progress Quantity—**uuu_resc_assign_prog_qty** uuu_resc_assign_etc_qty ETC Amount—**uuu_resc_assign_etc_amt** Resource Percent 1—**uuu_resc_assign_per_1** Role Amount - uuu_role_amt

Step	Description
	Note: In addition to Baseline data element listed above, you can also add Baseline 1 to 10 data elements to the Resource Assignment Attribute Form.
5. Create a log for the manager.	See ***Designing a Log for a Manager*** (on page 207).
6. Design the BPs that should be launched by an activity. (Optional; only for Scope Management)	Starting a New Design Designing a Form Designing a Workflow Designing a Log for a Business Process

Design Requirements for Activity Sheet Attribute Form (AP and RAP)

This section explains the design requirements for the Activity Sheet Attribute in auto-populated (AP) and reverse auto-populated (RAP) forms.

Activities in P6 have several pre-defined field attributes. In addition to the pre-defined field attributes, the P6 users can also define custom field attributes to capture more Activity related information. In P6, the custom attributes are referred to as: User Defined Fields (UDFs).

All field attributes of a P6 activities (pre-defined attributes), or UDFs, can exchange data with Unifier because in the application a user can map the P6 activity attributes to the "Activity Sheet" attributes.

To open the Activity Sheet Attributes node:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Schedule Manager**.
3) From the toolbar, click **New**, and select **Activity Sheet Attributes** to open the Edit Studio, General tab, window.

Creating a new Activity Sheet Attributes is similar to creating a Schedule Manager or Resource Manager Attribute Form.

After you create a new Activity Sheet Attributes, the system generates the following sub-nodes on the Navigator under the Schedule Manager node:

- Activity Sheet Attributes - Home
  - Detail Form
  - Picker
  - Integration
    Detail

When you click **Activity Sheet Attributes** node, the Activity Sheet Attributes log or landing page opens. The options on the landing page are similar to those in the Schedule Manager or Resource Manager Attribute Form.

Detail Form

The following options are *available* (enabled) in the **Detail Form**:

- **Adding new blocks**
- **Adding "Custom" elements to blocks**
- **Insert Row**
- **Delete Row**
- **Delete**
- **Save**
- **Undo**
- **Redo**
- **Close Window**

In addition, when you want to add a new block, the column field is read-only (with a value of "1").

For a list of Data Elements (DEs), refer to the "P6 DEs" section of the *Unifier Data Reference Guide*.

This is so the user cannot add an additional (second) column to the block. Unifier recognizes the ordering of columns when the attributes render within an Activity Sheet, during runtime.

> **Note:** Only one column can be created in a block, and you cannot hide blocks within the Detail Form.

To access uDesigner Data Structure Setup:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Data Structure Setup**.

In uDesigner Data Structure Setup, the following pre-defined Data Elements (DEs) are provided for you to manually add to a P6 Activity Sheet Attribute Form:

> **Note:** The DEs listed in the following table can be added to any other form in uDesigner, these DEs behave like any other regular DE in Unifier.

Item	P6 Activity Attribute Label	Data Element Name	Data Definition
1	Activity ID	`uuu_P6ActivityId`	SYS Short Description Text 40
2	Activity Name	`uuu_P6ActivityName`	SYS Short Description Text 120

Item	P6 Activity Attribute Label	Data Element Name	Data Definition
3	CBS Code	uuu_P6CBSCode	SYS Short Description Text 40 **Note**: The P6 User Interface (UI) does not allow the CBS Code to be more than 20 characters. The P6 database stores the CBS Code field as Varchar(40 Characters).
4	CBS Name	uuu_P6CBSName	SYS Short Description Text 120 **Note**: The P6 User Interface (UI) does not allow CBS Name to be greater than 100 characters.
5	CBS Path	uuu_P6CBSPath	SYS Description Text 500
6	Activity Status	uuu_P6ActivityStatus	SYS Short Description Text 50
7	Activity Type	uuu_P6ActivityType	SYS Short Description Text 50
8	Activity % Complete	uuu_P6PercentComplete	Decimal Amount
9	Planned Total Cost	uuu_P6PlannedTotalCost	Currency Amount
10	Actual Total Cost	uuu_P6ActualTotalCost	Currency Amount
11	At Completion Total Cost	uuu_P6AtCompletionTotalCost	Currency Amount
12	Remaining Total Cost	uuu_P6RemainingTotalCost	Currency Amount
13	Planned Start	uuu_P6PlannedStart	Date Picker
14	Planned Finish	uuu_P6PlannedFinish	Date Picker

Item	P6 Activity Attribute Label	Data Element Name	Data Definition
15	Actual Start	uuu_P6ActualStart	Date Picker
16	Actual Finish	uuu_P6ActualFinish	Date Picker
17	Start	uuu_P6Start	Date Picker
18	Finish	uuu_P6Finish	Date Picker
19	Remaining Early Start	uuu_P6RemainingEarlyStart	Date Picker
20	Remaining Early Finish	uuu_P6RemainingEarlyFinish	Date Picker
21	Planned Duration	uuu_P6PlannedDuration	Decimal Amount
22	Actual Duration	uuu_P6ActualDuration	Decimal Amount
23	At Completion Duration	uuu_P6AtCompletionDuration	Decimal Amount
24	Remaining Duration	uuu_P6RemainingDuration	Decimal Amount
25	Primary Constraint	uuu_P6PrimaryConstraint	SYS P6 Activity Constraints
26	Secondary Constraint	uuu_P6SecondaryConstraint	SYS P6 Activity Constraints
27	Cost Code	bitemID	CBS Picker

You have the option of excluding the other fields in the form, except the Activity ID and the Activity Name fields (items 1 and 2 in the preceding table) which are required and mandatory.

If you choose to exclude any of the pre-defined fields, Unifier will not receive data for the excluded field from P6.

Note: The excluded field may still be present within Gateway data mapping template, but the Activity Sheet will not receive the data for that excluded field.

The Activity Attributes in P6 can only have a limited set of DDs, which are needed for data exchange with Unifier. As a result, when you add a new DE to the Detail Form, using the "Custom" option, the resulting page (window) presents a list of DEs with the following DDs, only:

- SYS Short Description Text 32
- SYS Short Description Text 36

- SYS Short Description Text 40
- SYS Short Description Text 50
- SYS Short Description Text 120
- SYS Short Description Text 255
- SYS Description Text 500
- SYS P6 Activity Constraints
- Date Picker
- Currency Amount
- Decimal Amount
- Integer Amount
- SYS P6 Indicator

The Form Designer - Detail Form window has the following options available:

- File

  Save, Restore, and Close window
- Edit

  Undo, Redo, Define Blocks, Insert Row, Add Elements, Delete, Access, Move, and Validation

  The Define Blocks option allows you to open the Form Blocks window and add, modify, remove, or move blocks. The Blocks section of this window allows you to see the name, label, number of columns and rows, border, visibility, label width, and label position.

  The Add Elements option allows you to add Custom Data Elements to the form
- View

  Preview and Properties
- Help

  Unifier Help, Unifier Library, and About Unifier

In uDesigner, you can capture all the Activity Sheet Attributes fields by adding the fields in the form and each DE in this form maps to the corresponding element in P6 Activity attribute, within Gateway Data Mapping template.

You are not required to define the Activity Sheet Attribute Form in uDesigner for integration to work. In other words, the P6 Activity Data will get pulled into Unifier without having to create the form.

You are required to define the Activity Sheet Attribute Form and use the P6 Activity Picker Data Elements to set up auto-populate (AP) or reverse auto-populate (RAP) in uDesigner forms if you want to:

- Pick activities on Business Process or Shell Attribute Forms
- Be able to auto-populate activity data to Business Process or Shell Attribute Forms
- Be able to reverse auto-populate data into the Activity Sheet so that the updated data can be sent back to a 3rd party application

The following options are unavailable (disabled) in the Detail Form:

- Editable
- Editable Required

- Read-Only
- Validation
- Preview
- Properties
- Standard
- Linked
- Summary
- Dynamic Datasets

Picker

You can use the Picker node to define the Activity Picker log when used on a Unifier Business Process Upper form or Detail form. Defining the Activity Picker log, like other uDesigner object logs, will include the following tabs in the Log Page Design window:

- General
- Layout
- Sort Order
- Find

You can add any DEs from the Activity Sheet Attribute Form to the Activity Picker log (Picker log) and perform actions such as removing, modifying, and moving the fields.

The options available in the Activity Picker log (Picker log) window perform the same functions as in other log definition windows in uDesigner.

The Activity ID and the Activity Name fields are required and mandatory and DEs in the Add window of the Layout tab are in alphabetical order.

If you select the `bitemID` in the detail for of the Activity Sheet, the value appears in the Activity Sheet as a column that is labeled, "Cost Code."

Integration

You can define the integration form by way of the **Detail** node.

To access the Detail node:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Activity Manager**.
3) Open the applicable sheet.
4) In the left Navigator, select **Integration**, and then select **Detail**.

When you create the integration form, you must include all the mandatory elements from the Activity Sheet Attribute Form as shown in the following table:

For a list of Data Elements (DEs), refer to the "P6 DEs" section of the *Unifier Data Reference Guide*.

Item	Activity Sheet Attribute Name	Data Definition
1	Activity ID	Output
2	Activity Name	Output
3	CBS Code	Output
4	CBS Name	Output
5	CBS Path	Output
6	Activity Status	Output
7	Activity Type	Output
8	Activity % Complete	Output
9	Planned Total Cost	Output
10	Actual Total Cost	Output
11	At Completion Total Cost	Output
12	Remaining Total Cost	Output
13	Planned Start	Output
14	Planned Finish	Output
15	Actual Start	Both
16	Actual Finish	Both
17	Start	Output
18	Finish	Output
19	Remaining Early Start	Output
20	Remaining Early Finish	Output
21	Planned Duration	Output
22	Actual Duration	Output
23	At Completion Duration	Output
24	Remaining Duration	Output

The other fields for the Activity Sheet Attribute Form (including the Primary Constraint and the Secondary Constraint) must have a default direct of "Both." The integration settings define which fields are available for a Reverse Auto-Populate, from a Business Process record, to an Activity Sheet.

Note: If you do not define an Activity Sheet Attribute Form, the P6 Activity Picker will still be available on a Business Process or a CBS type Shell to pick activities from an Activity Sheet. However, you cannot use the undefined Activity Sheet Attribute Form for Auto-populate, or

Reverse Auto-populate, DEs on Business Process form or a CBS type Shell Attribute Form.

Activity Manager Overview

An "Activity" is defined as a part of the work or event that must be completed on a schedule.

An activity sheet captures scheduling data from the mapped P6 and Oracle Primavera Cloud projects and role and resource rates from the company-level Master Rate Sheet (default) or shell-level rate sheets, and calculates the Earned Values metrics and derivatives. It is the primary source of data for the Earned Value Analysis.

Unifier enables the user to create, consolidate, and monitor activities that must be completed on a schedule by way of the **Activity Manager**.

To access the **Activity Manager** sub-node:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Activity Manager** to open the **Designer - Activity Manager** log.
3) Click **Activity Sheet** in the log and open.
4) In the left Navigator, select **Activity Sheet-Home** to access the following sub-nodes:
   - **Detail Form**
   - **Picker**
   - **Integration**

In This Section

Detail Form 131
Picker 131
Integration 132
Manually Creating New Activity Sheet and Activity Attributes Form 133
Manually Creating WBS Sheet 142

Detail Form

The **Detail Form** sub-node lists the attributes available for the activity sheet in the **Activity Sheet Attributes** log.

Example

Activity Sheet-Folder Properties

Manual Activity Attributes Form

Picker

The **Picker** sub-node lists the available pickers in the Log.

Example

Activity Sheet-Picker

You can select the picker in the **Log** and click Preview (from the toolbar) to see the following details in the **Activity Sheet** window that opens:

- **WBS Path**
- **WBS Code**
- **WBS Name**
- **Activity ID**
- **Activity Name**
- **Activity Type**
- **% Complete (percent complete)**
- **Planned Start**
- **Planned Finish**

Integration

Select the **Integration** sub-node, and then select **Detail** to open the **Detail** log.

When you open **Detail**, from the **Detail** log, the **Detail Design** window opens. It has the following tabs:

- **General**

  In this tab, you can enter the name and description.
- **Data Elements**

  In this tab, you can click to add, modify, remove, or change the position of the data elements and data definitions, or labels, on the CSV template. The following columns are included in this tab:
  - **Row**
  - **Element Label**
  - **Data Element**
  - **Direction**

    You can double-click a row to open the **Modify Data Element** window and change the value for the **Direction** field to one of the following options:
    - **Both**
    - **Output**
    - **Input**

  The **Data Elements** tab enables you to define the data elements that can be part of the CSV template. Users can add all the data elements from the new Manual Activity Attribute Form defined. The data element direction can be set either as input, output, or both. Unifier ignores the import of any formula fields that have a direction set as input or both data. The data elements whose direction is set as the output will not be seen in the CSV template, for the creation and update of activities.

  Defining the integration interface is not mandatory for the CSV import of activities. If the integration is not defined, exporting CSV for activities will show all the default columns, such as uuu_P6 columns and so forth.

The uuu_P6ActivityID and uuu_P6ActivityName will be included in the exported CSV template irrespective of the data element direction set in the integration interface.

The data elements uuu_P6ActivityID and uuu_P6ActivityName are required if the user updates the integration form defined. The data elements cannot be removed from the interface, and the direction for the data elements will be **Both**.

If any of the above elements are removed from the integration interface, and the user tries to complete the attribute form design, Unifier displays an error message. Similarly, if the Direction for the data elements uuu_P6ActivityID and uuu_P6ActivityName is set as **Output**, Unifier displays an error message during error check or at the completion of the attribute design.

The following data elements that are formula columns will default to **Output** in the **Direction** segment of the integration form:

- uuu_P6ActualTotalCost
- uuu_P6ActualTotalUnits
- uuu_P6PlannedTotalCost
- uuu_P6PlannedTotalUnits
- uuu_P6AtCompletionTotalCost
- uuu_P6AtCompletionTotalUnits

Users should be able to add the custom data elements that are added to the Activity Attribute Form into the integration interface.

If the user selects the uuu_predecessor and uuu_successor data elements **Input** or **Both** for the **Direction**, Unifier displays an error message.

Manually Creating New Activity Sheet and Activity Attributes Form

You can manually create a new activity sheet and proceed to create an Activity Attribute Form that you can use to capture the activity details in your newly created activity sheet.

You can use the new activity sheet to create and maintain project schedules within Unifier. The Activity Sheet that you create manually:

- Captures the schedule of activities within a project.
- Captures the resource assignments and rates.
- Can be used to track progress of activities, over the lifetime of the project.

Multiple activity sheets can exist within a project and customer will be able to define the work tasks, the estimates of the required resources and duration for tasks and the identification of dependencies among the different work tasks within the sheet.

For any project schedule, you can use the following applications to create and manage your Activity Sheet and activity resources:

- P6
- Oracle Primavera Cloud

A project schedule is pushed to your Activity Sheet, in Unifier, where you can assign rates and calculate the costs, which will be used in cost modules such as:

- Earned Value

- Cost Sheet
- Cash Flow

To capture the attributes for activities that have been created manually (in a newly created Activity Sheet), you must define a new Activity Attribute Form, in the **Activity Manage**r node (in the **Activity Sheets** log).

To define an Activity Attribute Form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Activity Manager**.
3) Open the applicable activity sheet.
4) In the left Navigator, select **Detail Form**.
5) From the toolbar, click **New**, and select **Manual Activity Attributes**.

The new detail form enables you to define the attributes required for the creation of activities within the new activity sheets. The **New** option (in the detail form log) will be disabled after you create the Activity Attribute Form. You can use the **Detail Form** sub-node to define the attributes that are required to define the activities, or tasks, and milestones to define the project schedule.

You can create a Manual Activity Attribute Form provided that the standard Activity Attribute Form exists.

When you attempt to create a Manual Activity Attribute Form without the standard activity attributes defined, Unifier will display an error message.

Data Elements (uuu) of Manual Activity Sheet Attributes

The manually created activity sheet attributes form displays system-defined data elements (displayed below) that are mandatory and enables you to be able to add custom data elements such as currency, decimal, integer, text, and date fields in the attribute form.

The system-defined data elements will be added by default, when you create the new manually created activity sheet attributes form.

When you save the attribute form, the Detail Form log displays an entry for the new manually created activity sheet attributes form.

You can change the function of the data elements on the form, except for the mandatory data elements (such as Activity ID, Activity Name, Start, Finish, Duration, and so forth).

You can edit the block properties and rearrange the data elements in multiple columns in the form.

Data Elements (uuu) of Manual Activity Sheet Attributes	Description
Activity ID (uuu_P6ActivityID)	Editable and required (behavior of element cannot be changed)
Activity Name (uuu_P6ActivityName)	Editable and required (behavior of element cannot be changed)
Activity Percent Complete	Editable

Data Elements (uuu) of Manual Activity Sheet Attributes	Description
(uuu_P6PercentComplete)	
Performance Percent Complete (uuu_P6PerfPercComplete)	Editable
Activity Type (uuu_P6ActivityType)	Editable with data set values - Task Dependent and Start Milestone with default value 'Task Dependent'
Actual Duration (uuu_P6ActualDuration)	Editable Actual Duration will be read-only and calculated as duration between Actual Start and data date or Actual Finish.
Actual Finish (uuu_P6ActualFinish)	Editable Actual Duration will be read-only and calculated as duration between Actual Start and data date or Actual Finish.
Actual Start (uuu_P6ActualStart)	Editable Actual Duration will be read-only and calculated as duration between Actual Start and data date or Actual Finish.
CBS Code (bitemID)	Editable
Duration (uuu_P6Duration)	Editable and required (behavior of element cannot be changed)
ETC Technique (uuu_P6ETC)	Read-only and displays the ETC technique selected using uuu_cmwbs_picker.
Finish (uuu_P6Finish)	Editable and required (behavior of element cannot be changed)
Planned Duration (uuu_P6PlannedDuration)	Editable
Planned Finish (uuu_P6PlannedFinish)	Editable
Planned Start (uuu_P6PlannedStart)	Editable
Remaining Duration (uuu_P6RemainingDuration)	Editable
Remaining Early Finish (uuu_P6RemainingEarlyFinish)	Editable
Remaining Early Start (uuu_P6RemainingEarlyStart)	Editable
Start (uuu_P6Start)	Editable and required (behavior of element cannot be changed)

Data Elements (uuu) of Manual Activity Sheet Attributes	Description
Status (uuu_P6ActivityStatus)	Editable with data set values - Not Started, In Progress and Completed. Default value- 'Not Started'
uuu_P6ActualTotalCost	Read-only on form and grid and cannot be changed to editable.
uuu_P6PlannedTotalCost	Read-only on form and grid and cannot be changed to editable.
uuu_P6AtCompletionTotalCost	Read-only on form and grid and cannot be changed to editable.
uuu_P6ActualTotalUnits	Editable. At runtime, by default the summed up value from the assignments is shown (Planned Total Units will show sum of planned units from the assigned resources/roles. The same is the case with other Total units fields.
uuu_P6PlannedTotalUnits	Editable. At runtime, by default the summed up value from the assignments is shown (Planned Total Units will show sum of planned units from the assigned resources/roles. The same is the case with other Total units fields.
uuu_P6AtCompletionTotalUnits	Editable. At runtime, by default the summed up value from the assignments is shown (Planned Total Units will show sum of planned units from the assigned resources/roles. The same is the case with other Total units fields.
uuu_P6AtCompletionDuration	Read-only
uuu_P6BAC	Read-only
uuu_P6PVCost	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6CPIndex	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6CSIndex	Read-only on form and grid and cannot be

Data Elements (uuu) of Manual Activity Sheet Attributes	Description
	changed to editable. Fields show the computed values.
uuu_P6CostVariance	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6EACCost	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6ETC	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6ETCComputeType	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6ETCUserValue	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6EVCost	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6RemainingTotalCost	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6RemainingTotalUnits	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6ScheduleVariance	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6TCPIndex	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
uuu_P6VAC	Read-only on form and grid and cannot be changed to editable. Fields show the computed values.
WBS Code (uuu_P6WBSCode)	WBS Code and WBS Name - Not Mandatory elements in the default attribute form created they will be added and marked as read-only.

Data Elements (uuu) of Manual Activity Sheet Attributes	Description
	WBS Path and ETC technique - read only on the form. User can define the auto populate using WBS Attribute as source for the above data elements in Activity Attribute Form.
WBS Name (uuu_P6WBSName)	WBS Code and WBS Name - Not Mandatory elements in the default attribute form created they will be added and marked as read-only. WBS Path and ETC technique - read only on the form. User can define the auto populate using WBS Attribute as source for the above data elements in Activity Attribute Form.
WBS Path (uuu_P6WBSPath)	WBS Code and WBS Name - Not Mandatory elements in the default attribute form created they will be added and marked as read-only. WBS Path and ETC technique - read only on the form. User can define the auto populate using WBS Attribute as source for the above data elements in Activity Attribute Form.
ETC Technique (uuu_P6ETC)	WBS Code and WBS Name - Not Mandatory elements in the default attribute form created they will be added and marked as read-only. WBS Path and ETC technique - read only on the form. User can define the auto populate using WBS Attribute as source for the above data elements in Activity Attribute Form.
WBS Code (uuu_P6WBSCode)	Read-only
WBS Picker (uuu_cmwbs_picker)	Editable on the form and grid
WBS Picker (uuu_cmwbs_picker)	Editable

For details, see the *Unifier Data Reference Guide*.

Additional System-Defined Data Elements of Manual Activity Sheet Attributes

The following system-defined data elements are a part of the default *Manual* Activity Attribute Form.

Data Element Name	Data Definition	Element Label	Purpose
uuu_P6ActivityCalendar	SYS Activity Calendar	Activity Calendar	This element will be used to select an individual calendar for each calendar. It will show list of all calendars defined in custom calendars node.
uuu_activity_predecessor	SYS Description Text 2000	Predecessor	This element will display the predecessor activities for the selected activity
uuu_float	Decimal number	Float	This element will hold the float value, for each activity, calculated as a result of the Critical Path calculation.
uuu_activity_resources	SYS Description Text 500	Assigned Resources	This element will display the list of resources assigned to the activity

For details, see the *Unifier Data Reference Guide*.

System-Defined Data Elements for Activity Attribute Form

You can use the following system-defined data elements for the Activity Attribute Form:

Data Element	Data Definition	Element Label	Purpose
uuu_activity_successor	SYS Description Text 2000	Successor	This element will display the successor activities for the selected activity
uuu_activity_early_start	Date Only Picker	Early Start	This date data element will capture the early start date

Data Element	Data Definition	Element Label	Purpose
			of the activity for float calculation
uuu_activity_early_finish	Date Only Picker	Early Finish	This date data element will capture the early finish date of the activity for float calculation
uuu_activity_late_start	Date Only Picker	Late Start	This date data element will capture the late start date of the activity for float calculation
uuu_activity_late_finish	Date Only Picker	Late Finish	This date data element will capture the late finish date of the activity for float calculation
uuu_activity_constraint_type	Activity Constraint Type (Data Set: As Soon As Possible)	Activity Constraint Type	This element will show the constraints available at activity level

For details, see the *Unifier Data Reference Guide*.

Custom Data Elements for Activity Attribute Form

You can add input-type custom data elements as:

- Integer
- Date
- Decimal
- Currency
- Text

You can arrange the input-type custom data elements in different blocks, and the form will display the activity details in the sheet, at run time. The Activity Attribute Form supports all types of data pickers.

Data Element Properties for System-defined and Custom-defined Data Elements

When designing an Activity Attribute Form note that:

- Adding standard data elements and linked data elements to the form is not allowed.
- Form validations are not allowed.
- The user cannot define any custom-defined data elements (including the system-defined data elements, except the mandatory data elements) as: Read-only, editable, or required.

- Defining formulas for any of the custom-defined data elements is not allowed.
- Adding Dynamic Data Sets (DDSs) to the form is not allowed.
- Defining auto-populate (AP) for system-defined data elements and custom-defined data elements is allowed. The auto-population source must stem from a single record business process, Cost attributes, WBS attributes, or Shell attributes.
- Defining reverse auto-populate (RAP) on system-defined data elements is not allowed. The custom-defined data elements can be set to reverse auto-populate in to Shell attributes or single record business processes.
- Resetting the data elements or use hyperlink is not allowed.
- Defining a data element for mobile or summary data elements is not allowed.

Completing Activity Attribute Form

To be able to complete the Activity Attribute Form and conduct an error check, you must add the following uuu_P6 attributes and system-defined data elements to the form:

> **Note**: These are mandatory data elements for completing the Activity Attribute Form. If you remove the Activity Attribute Form, error check will result in errors. The following is a list of the required data elements:

- Activity ID (uuu_P6ActivityId)
- Activity Name (uuu_P6ActivityName)
- Start (uuu_P6Start)
- Finish (uuu_P6Finish)
- Duration (uuu_P6Duration)
- All other uuu_P6 elements, except:
  - uuu_P6WBSCode
  - uuu_P6WBSName
  - uuu_P6WBSPath
  - uuu_P6WBSType

Importing, Exporting, and Updating Activities within Manual Activity Sheets

A user must be able to:

- Import activities in to the activity sheet
- Update existing activity details into the activity sheet
- Add or update CBS Code, WBS hierarchy for the activities in the sheet

Unifier enables the user to create and update activities in an activity sheet that supports manual addition of activities (Manual Activity Sheets) in bulk and through CSV files. Updating the existing activities would include updating CBS Code or WBS Code assignments for the activities.

Linked Data Elements Using P6 Activity Picker

You can define linked data elements by using P6 Activity Picker through the Link Elements option in the business process upper form, detail form, or Shell Attribute Form. All the data elements from the attribute forms (both manual and standard activity attributes) are available to be added as linked elements using P6 Activity Picker.

The following table explains the options:

Option	Description
Source Name	Displays all the data elements that are of data definition type as P6 Activity Picker. This is a required field where user should be able to choose one of P6 Activity Picker type data element.
Source Element	Lists all the data elements from the Activity Attribute Forms (both manual and standard). The user can select one of them. This is a required field.
Destination Element	Lists all the data elements from Data Structure Setup that match the data definition of the "Source Element" selected above. The data elements which are already added as custom element in the form will not be seen in the list of matching data elements.

Manually Creating WBS Sheet

When a user receives scheduling data from a source application such as P6, Unifier creates a WBS Sheet that includes all the summary activities (WBS). Users, in this case, can view the total costs associated with the WBS in the WBS Sheet.

With the ability to create a manual activity sheet, you can create a WBS Sheet to create, update, and maintain the WBS within a Unifier project. In this case, the manually created activity sheet will associate with the WBS defined in the WBS Sheet.

A manually created WBS Sheet enables the user to do the following:

- Define the work breakdown structure for the entire project in the WBS Sheet. In this case, the work breakdown structures created in the manual WBS Sheet will be used across the manual activities.
- Define the ETC technique for WBS.
- View the rolled up costs (like planned total costs or units, actual total costs or units, at completion total costs or units, and remaining costs associated to the work breakdown structures) in this sheet.

- Define custom attributes for additional formulas like CPI, SPI calculations and so forth.
- Capture the actuals incurred from the business processes using WBS Picker.
- Assign Control Account Managers using OBS Picker
- Create variance analysis reports based on the performance of the project.

Project manager can use a manually created WBS Sheet to:

- Modify additional WBS Codes in the structure, if the WBS Codes are not associated to activity sheet.
- Add additional WBS Codes to the structure, if the WBS Codes are not associated to activity sheet.
- View the WBS Codes (hierarchy) that is associated to activity sheet, per activity sheet.
- Define the columns (from cost business processes) and to roll up of the actual units and actual costs incurred through contracts and payments.

You can add the data element "uuu_P6WBSPath" in the existing WBS Attribute Form. Unifier automatically adds the data element "uuu_P6WBSPath" when the user defines the new WBS Attribute Form. The data element "uuu_P6WBSPath" is read-only.

At runtime, the WBS Path will be populated whenever the user defines the WBS hierarchy in the Project WBS Sheet.

> **Note**: For System WBS Sheet, the WBS Path will be empty, if the user has not defined the path in the gateway mapping.

Earned Value Manager Overview

If you have access to the Earned Value Manager feature, the following topics explain how to create the forms for:

- OBS
- WBS

In This Section

Organization Breakdown Structure (OBS) 145
Work Breakdown Structure (WBS)..... 146

Organization Breakdown Structure (OBS)

A new uDesigner form (**OBS Attributes Form**) can be created under the **Earned Value Manager** node.

To create an OBS Attributes Form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Earned Value Manager**.
3) From the toolbar, click **New** and select **OBS Attributes** to open a new window in **General** tab.

   The **General** tab has the following fields:
   - **Name**
   - **Description**
   - **Type**

After you create a new design, Unifier creates the following sub-nodes under the **Earned Value Manager** node:

- **Detail Form**
- **Picker**
- **Integration**

The **Detail Form** contains the following pre-populated Data Elements (DEs):

- Record No (uuu_obs_recordno)
- Full Name(uuu_obs_fullname)
- Title (uuu_obs_title)
- Department (uuu_obs_department)
- Status (uuu_obs_status)

You can add a new system defined data element "uuu_obs_assignee" in the OBS Attribute Form.

If you delete a Record No, Full Name, or Status and proceed to change the status back to complete, Unifier displays an error message (for the missing DE).

The following functionalities are not required for the OBS sheet:

- DDS
- Summary Elements
- Rules
- Validations
- Standard
- Blocks
- Properties

The **Picker** will have a default (OBS Picker) layout in the new design, and the form will be pre-populated with the Full Name data.

The **Integration** enables you to set up the fields that you need for integration (CSV import). By default, the Name and Description fields are empty.

After you create a **Detail Form** (creating Picker and Integration is optional), you can deploy the design after:

- Performing error check
- Changing the status from draft to complete

After you deploy an OBS Sheet design, the user (and the administrator) will not have permission to delete the design.

Work Breakdown Structure (WBS)

A new uDesigner form (**WBS Attributes Form**) can be created under the **Earned Value Manager** node.

To create a WBS Attributes Form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Earned Value Manager**.
3) From the toolbar, click **New** and select **WBS Attributes** to open a new window in **General** tab.

   The **General** tab has the following fields:

   - **Name**
   - **Description**
   - **Type**

After you create a new design, Unifier creates the following sub-nodes under the **Earned Value Manager** node:

- **Detail Form**
- **Picker**
- **Integration**

The **Detail Form** sub-node:

The **Detail Form** sub-node contains the following pre-populated Data Elements (DEs):

- WBS Code (uuu_P6WBSCode)
- WBS Name (uuu_P6WBSName)
- WBS Type (uuu_P6WBSType)
- ETC Technique (uuu_P6ETCComputeType)

The **Detail Form** sub-node also contains the following hidden pre-populated Data Elements (DEs):

- Planned Units (uuu_P6PlannedTotalUnits)
- At Completion Units (uuu_P6AtCompletionTotalUnits)
- Actual Units (uuu_P6ActualTotalUnits)
- Remaining Units (uuu_P6RemainingTotalUnits)
- Planned Total Cost (uuu_P6PlannedTotalCost)
- Actual Total Cost (uuu_P6ActualTotalCost)
- At Completion Total Cost (uuu_P6AtCompletionTotalCost)
- Remaining Total Cost (uuu_P6RemainingTotalCost)

To assign a Control Account Manager to WBS, you can add the OBS picker up to two times. This will also enable you to auto-populate the DEs from the OBS Sheet to the DEs in the WBS Sheet.

> **Note**: Only OBS picker will be available for the WBS sheet design form (no other pickers will appear in the custom list of DEs).

If you add the OBS picker in the WBS attributes detail form, the form will be available in the Data Picker list (select Open, and then select Data Picker) to define a query. You can define query conditions from the Data Picker Configuration window.

You can reverse auto-populate a field in the WBS attribute (to the OBS Sheet).

> **Note**: Only OBS picker will be available for the WBS sheet design form (no other pickers will appear in the custom list of DEs).

The following functionalities are *not* required for the WBS sheet:

- DDS
- Summary Elements
- Rules
- Validations
- Linked Elements
- Standard

After you create a **Detail Form** (creating Picker and Integration is optional), you can deploy the design after:

- Performing error check
- Changing the status from draft to complete

After you deploy an OBS Sheet design, the user (and the administrator) will not have permission to delete the design.

The **Picker** sub-node:

You can create a new WBS picker, which will allow you to roll up amount from cost type BP-detail form. In this scenario, the system creates a new sub-type of cost BP.

The **Picker** will have a default (OBS Picker) layout in the new design, and the form will be pre-populated with the Full Name data. You can define the layout in the uDesigner as follows:

- *WBS ID & Name

  These are mandatory in the WBS picker. The WBS Code corresponding to an activity in activity sheet is available by way of P6, and it is not editable in Unifier.
- WBS Code, WBS Name, WBS Type, & ETC Technique

  These are pre-populated fields in the integration form. If there is no integration form defined, these will be the default DEs which will still be available with direction as both.

The **Integration** sub-node:

You can setup the fields needed for integration (reverse auto-population and CSV import) through the **Integration** sub-node. After you create a detail form, picker, and integration form, the design can be deployed after performing error check and changing the status from draft to complete. If a mandatory field is missing in the design, an error message will be displayed accordingly.

The **Integration** sub-node enables you to set up the fields that you need for integration (CSV import). By default, the Name and Description fields are empty.

Adding User Picker or User Data Picker in the WBS Attribute Form

Similar to the Cost Manager, you can add the following data elements in the WBS Attribute Form:

- SYS BP Currency Amount
- SYS BP Decimal Amount
- SYS BP Integer Amount
- SYS Date Logical Datasource
- SYS Numeric Logical Datasource

User Administration

The **User Administration** sub-node enables you to manage company and partner users.

To access Designer - User Administration:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **User Administration**.

The **User Administration** log has the following elements:

Toolbar

- **File**
  - **New (User, Copy, Import)**
  - **Open**
  - **Error Check**
  - **Deploy**
  - **Integration (Input XML, Output XML, Input CSV Template)**
  - **Export**
- **Edit**
  - **Status (Draft, Complete)**
  - **Restore**
  - **Import**
  - **Delete (Last Completed, Last Published)**
- **View**
  - **All**
- **Help**
  - **Unifier Help**
  - **Unifier Library**
  - **User Productivity Kit**
  - **About Unifier**

Menu options

- **New (User, Copy, Import)**
- **Open**
- **Error Check**

  You can click **Error Check** to detect errors. You must resolve all errors to mark a design as complete.
- **Deploy**

  Click **Deploy** to make the selected form available for testing/use in Unifier (the **Deployed** date is updated, and the **Deployed Version** is incremented every time the shell is deployed).
- **Status (Draft, Complete)**

- **Delete**
- **Integration (Input XML, Output XML, Input CSV Template)**

The **User Administration** log (**Designer - User Administration**) has the following *columns*:

The first five columns display properties, and the last six columns are related to version control.

- **Name**

  The **Name** column indicates the name of the user attributes form. Open it to view and design its components. The **Owner** column displays the name of the creator. The **Status** column indicates if a design is in draft or completed status.
- **Owner**

  The **Owner** column displays the name of the creator.
- **Status**

  The **Status** column indicates if a design is in draft or completed status.
- **Level**

  The **Level** column shows Company.
- **Type**

  The **Type** column shows User Attribute.
- **Last Saved**

  The **Last Saved** column is updated when a draft status is changed to complete.
- **Deployed**
- **Published**

  The **Published** and **Published Version** columns are populated/updated when a configuration package is published for production.
- **Design Version**

  Each time a completed design is returned to draft status, the **Design Version** is incremented.
- **Deployed Version**
- **Published Version**

  The **Published** and **Published Version** columns are populated/updated when a configuration package is published for production.

When you select an existing record from the log and click **Open**, the **User Administration** sub-node expands to display the following child-nodes:

- General User - Home
  - Additional Attributes
  - Log

    Company Users Log

    Partner Users Log
  - Integration

    Users
  - Picker

For more information, see ***Creating User Attribute Form***.

In This Section

User Attribute Form 151
Creating User Attribute Form 152
Data Pickers and User Attribute Form 154
Design Requirements for User Properties Attribute Form 155

User Attribute Form

All designs, including the User Attributes form, are designed in uDesigner and deployed to Unifier. (For more information on deployment, see **Importing Configuration Packages** in the *Unifier Modules Setup Administration Guide*.) In uDesigner, you can:

- Add additional data elements to the User Attribute Form.
- Configure Company User and Partner User logs.
- Add additional attributes to the View User Profile form and a User/Group picker.

The additional data elements appear as user properties on the **General** tab of the user administration edit studio form for Company users and Partner users as well as on the user **View Profile** form.

Example

The additional user properties can include a user's department and location, or other details.

> **Note:** The new attribute will be available only for Company users log and Partner users log and will not be available as part of custom attributes in other module designs.

To access the User Attribute Form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **User Administration**.
3) In the **Designer - User Administration** log, open the **User Attributes Form**.

In general, the User Attribute Form:

- Allows you to create a form to store metadata about a user.
- Adds user-defined fields to an existing user information.
- Allows you to define a log for owner and partner users.
- Defines picker for users.
- Is not required.

> **Note:** If you do not define a User Attribute Form in uDesigner, Unifier uses default forms, logs, and user pickers.

The **General** tab also allows you to apply the User Attributes from a project/shell directory: **Apply User Attributes from Project/Shell Directory**.

If *you select* the **Apply User Attributes from Project/Shell Directory** option, the user can use the User Attributes from a project/shell directory when the user is rendering the users log or picker details that are launched within a project/shell.

If *you do not select* the **Apply User Attributes from Project/Shell Directory** option, no data will be copied (to the User Attributes from) from the company level to the shell level. In this scenario, the administrator must manually copy the information at the shell level; otherwise, the default forms, logs, and user pickers will not have any data to display for the additional attributes.

> **Note:** If you add a user data picker in the User Attributes from, Unifier fetches values from the Company level and not the values from the project/shell level, and selecting the **Apply User Attributes from Project/Shell Directory** option would not be applicable in such scenario.

After you are done with your selection, click:

- **Apply** to save changes and keep the edit studio window open, or
- **OK** to save changes and close the edit studio window.

You can click **Cancel** to discard your changes and close the edit studio window.

The User Attributes form name, description, and type are read only fields, and their values are entered during the creation of the User Attributes form.

Creating User Attribute Form

To create a User Attribute Form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **User Administration**.
3) Click **New**, and then select **User** to open the **General** tab.
4) Enter a name in the **Name** field and add a description in the **Description** field.
   The **Type** is always **User Attributes**.

Now you can create the node that holds the components of the user attributes (the fields). The columns in the log are preconfigured.

> **Note**: You can only create one user attribute item.

Each attribute form has the following sub-nodes:

- Additional Attributes
  - User Detail Form
  - View Profile Form
- Log
  - Company Users Log
  - Partner Users Log
- Integration
  - Users

Used for integration for both *Company* as well as *Partner* users. Also, it can be used to define the data elements for integration, when exporting or importing.

- Picker

Unless you design and import your own User Administration Attribute Form for company user administration, Unifier displays:

- A default log, General User - Home (used when creating a user with the Company or Partner detail form)
- User/Group picker

The following associated functionalities exists, unless specified otherwise:

- Auto-population to form
- Auto-population from form to other objects
- Reverse auto-population from form
- Reverse auto-population to other objects

> **Note:** Reverse auto-population (RAP) is not available for the uuu_disableusermobileaccess DE.

After the integration form is created, the following attribute, and the Additional Attributes that you have defined will be added, by default, as data elements available for integration.

Note that:

- The direction is set to Output and only Company users will be created (when Import option is used). If Partners users are to be created, the direction has to be set to Input or Both.
- For the DE uuu_user_company, the direction must be set to Input or Both to be able to integrate Partner users from Partner users log in the User Administration.
- The validation applicable to company users data elements, for integration, will be applicable to partner users as well.

Name	Data Element	Direction
First Name	uuu_user_firstname	Both
Last Name	uuu_user_lastname	Both
E-Mail	uuu_user_email	Both
Home Phone	uuu_user_homephone	Both
Mobile Phone	uuu_user_mobilephone	Both
Work Phone	uuu_user_workphone	Both
Company When set to Input /Both will be available to create Partner user.	uuu_user_company	Both
Date Format	uuu_user_dateformat	Both
Fax	uuu_user_fax	Both

Name	Data Element	Direction
Pager	uuu_user_pager	Both
Time Zone	uuu_user_timezone_pref	Both
Status	uuu_user_status	Both
Title	uuu_user_title	Both
User Type	uuu_user_type	Both
Name	uuu_user_name	Output
Login User Name	uuu_user_loginname	Both
Password	uuu_user_password	Input
Proxy Name	uuu_user_proxy	Output
Proxy Configuration Allowed?	uuu_user_proxy_config	Both
Disable Mobile Access	uuu_disableusermobileaccess	Both

For more information, see ***Design Requirements for User Properties Attribute Form***.

Data Pickers and User Attribute Form

You can create data pickers based on User Attribute Form.

> **Note**: You can define filtered selection of assignees in BP Setup, based on a user data picker: **Additional conditions to filter assignees**.

You can define auto-population, or reverse auto-population (RAP), by using data picker associated with User Attribute Form.

By default, at the Company level, Unifier displays a default log, General tab (used when creating a user with the Company or Partner detail form), and User/Group picker. In uDesigner, you can add additional data elements to the User Attribute Form, configure Company User and Partner User logs, add additional attributes to the View User Profile form, and a User/Group picker. The additional data elements appear as user properties on the General tab for Company and Partner users, as well as on the user View Profile form. For example, the additional user properties can include a user's department and location, or other details.

> **Note**: Any reporting on business processes that contain a designed User/Group picker will include the attributes that are added to the designed picker.

The additional attributes are added to the existing default attributes. For example, the user properties can include a user's department and building, or other details, such as allowing or preventing the user from using the Unifier Mobile application.

Design Requirements for User Properties Attribute Form

For the User Administration properties to work effectively in Unifier, you will need to create the following components in uDesigner:

- User Detail Form

  Allows you to add additional data elements for both Company and Partner user forms. These data elements are displayed on the General tab of the User Properties for both types of users.
- View Profile Form

  Allows you to add additional data elements to display on user profiles. Any data elements you add to the User Detail Form can be selected to add to the View Profile Form.
- Log

  Allows you to design a log for user administration, as well as Find and sort order. Lists Company or Partner users in the Company Users Log and the Partner Users Log. Allows users to choose the user they want to work with. You can add navigation to these logs.
- Integration

  Sets up integration for the import of Company users, which enables Web Services and the CSV export and import of user information as well as bulk edit (edit of multiple users from the user log). Integration is not available for Partner users, but will be used for bulk edit for Partner users.
- Picker

  Allows you to define data elements displayed on the User/Group picker. You can specify the layout, sort order, and find for the picker. This design is available for the Show By User mode, but not for the Show By Group and Show By User/Group modes in the picker.

Design Flow

The following outlines the design steps necessary to design **User Administration** User Properties Attribute Forms.

Design Step	More Information
1. Create a data structure (if necessary).	See ***Creating A Data Structure*** (on page 217).
2. Create a User Detail Form.	See the instructions beginning with ***Adding Blocks to the Attribute Form*** and also ***Adding Fields to a Form***.
3. Create a View Profile Form.	The fields that you add to the User Detail Form can be selected to add to the View Profile Form. You cannot add any data elements to the View Profile Form that are not already on the User Detail Form.
4. Create a log.	See ***Designing a Log for a Manager***. This log can have navigation configured, like that of an advanced log. Optional fields for the logs, in addition to any Additional

Design Step	More Information
	Attributes: ▸ First Name—uuu_user_firstname ▸ Last Name—uuu_user_lastname ▸ Title—uuu_user_title ▸ E-mail—uuu_user_email ▸ Work Phone—uuu_user_workphone ▸ Home Phone—uuu_user_homephone ▸ Mobile Phone—uuu_user_mobilephone ▸ Pager—uuu_user_pager ▸ Fax—uuu_user_fax ▸ Timezone—uuu_user_timezone_pref ▸ Date Format—uuu_user_dateformat ▸ Proxy Name—uuu_user_proxy ▸ Company—uuu_user_Company ▸ Name—uuu_user_name ▸ Login User Name—uuu_user_loginname ▸ Password—uuu_user_password ▸ Status—uuu_user_status ▸ User Type—uuu_user_type ▸ Disable Mobile Access—uuu_disableusermobileaccess A new attribute uuu_user_type with a data definition SYS User Type will be added to list of attributes available for the Company Users Log and Partner Users Log. If this attribute is added, the attribute will be seen in the Company users log and partner users log in the User Administration node. **Note**: The attribute will be available only for Company Users Log and Partner Users Log. These should not be seen as part of custom attributes in other module designs.
5. Define Integration for Company Users.	Set up integration for the import of Company users, which enables the Web Services and CSV export and import of user information as well as bulk edit (edit of multiple users from the user log). Integration is not available for Partner users.

Design Step	More Information
6. Define a User Picker Log.	Specify data elements displayed on the User/Group picker. You can specify the layout, sort order, and find for the picker. This design is available for the Show By User mode, but not for the Show By Group and Show By User/Group modes in the picker.

Space Manager Overview

In Unifier, the Space Manager is where users can perform the tasks of facilities management.

Using the Space Manager, users can gather data about the levels in their facility (such as floors and parking lots) and the spaces that exist on each level (cubicles, offices, conference rooms, and so on). You can create categories (called types) of spaces in uDesigner, and users can add records of individual spaces to these types and manage them on an electronic sheet.

The Space Manager is a means of organizing all the square footage in your facility to make monitoring, maintaining, and reconfiguring it more efficient. You can integrate the Space Manager with other managers or business processes to give users a broader view of your company's physical capital and resources.

In uDesigner, you will be creating one attribute form for a "level" type in your facility and multiple attribute forms for “spaces” types. (Think of a level as the "platform" on which spaces reside.) With these attribute forms, users can create a hierarchy of levels and spaces within levels to store the facilities data you choose to collect. If designed so on the attribute form, a user can reserve the space for use using a Reservation type business process.

In Unifier, the **Sheets** node in the Space Manager stores the manager sheet on which all the levels in your facility are shown. The system automatically creates a level sheet for every level type that is created. From the level sheet, users can also automatically update individual level records with data added to the sheet, either manually or via a formula created for a column.

The **Stack Plans** node is where users can create stack plans to show the actual usage of the levels in the company's building(s). Users can choose the information (data elements or specific spaces) they want to see on the stack plan and update the plan periodically to keep abreast of changes in the levels' space usage. For example, users might want to know the square footage used by each department on each floor (level); or how many square feet of a floor are vacant vs. leased.

The **Levels** node lists all the levels that exist in your facility.

The **Spaces** node shows a list of all the space types, and under the space type sub-node, all the spaces that exist in your facility. This is where users can create spaces or update existing ones, import data from CSV files, or export templates to CSV.

In This Section

Design Requirements for the Space Manager 159

Design Requirements for the Space Manager

For the Space Manager to work effectively in Unifier, you will need to create the following components in uDesigner:

Component	Description
Level Attribute Form (see "***Launching a Manager***" on page 183)	Collects information about a level. Information from this form appears on the Level Properties window in Unifier. The attribute form data appears on the General tab when the user opens the level from the Space Manager node.
Space Attribute Form	Collects information about a space, including the unit of measure used to dimension it and the level to which it belongs. Information from this form appears on the Space Properties window in Unifier. The attribute form data appears on the General tab when the user opens the space from the Space Manager node.
Log for the manager(standard or advanced)	Shows a list of the level and spaces that have been created for the manager. Standard logs display fields from the manager's attribute form (level and space) that you want to monitor. For example, you might want a log for the Space Manager to include the names of all levels on your property and the square footage. Advanced logs support data pickers. An advanced log should be designed for any space type that contains records that will be displayed on a data picker. (For more information on data pickers, see ***About Data Pickers*** (on page 222).) For instructions on designing a log, see ***Designing a Log for a Manager*** (on page 207).

Design Flow

The following table outlines the design steps necessary to launch the manager and create a level or space type.

Step	Description
1. Create a data structure.	See ***Creating A Data Structure*** (on page 217).
2. Launch the manager.	See ***About Launching a Manager*** (see "***Launching a Manager***" on page 183).

Step	Description
3. Create a Level Attribute Form. See the instructions beginning with ***Adding Blocks to the Attribute Form*** (on page 199).	Mandatory fields for the Level Attribute Form are: Level name (uuu_sp_level_name) Status (status) This field is mandatory if you want to track the last date that a level record was modified. You can include this data element on logs to allow the user to sort records by the last date of modification: Record Last Update Date (uuu_record_last_update_date)
4. Create a Space Attribute Form. See the instructions beginning with ***Adding Blocks to the Attribute Form*** (on page 199).	Mandatory fields for the Space Attribute Form are: Area (uuu_sp_area) Unit of measure (uuu_sp_uom) Level picker (uuu_sp_level_picker) Space picker (uuu_phy_space_picker) This field is mandatory if you want to track the last date that a space record was modified. You can include this data element on logs to allow the user to sort records by the last date of modification: Record Last Update Date (uuu_record_last_update_date) If users should be able to reserve this space, these fields are mandatory: Allow space to be reserved (uuu_rsv_reservable) Allow over-booking (uuu_rsv_overbook)
5. Create a log for the manager.	See ***Designing a Log for a Manager*** (on page 207).

Except for the User Data pickers for Space Manager, Space-type Attribute Form, Unifier does not allow any other data pickers in the Space Manager, Space-type Attribute Form.

Note: There are no data pickers available for Space Manager, Level-type Attribute Form.

Shell Manager Overview

A "shell" is where users can assemble business information in one place to make managing it easy. Significantly, a shell can contain its own suite of tools—those functions and features necessary to manage the information in that shell, such as a Cost Manager, a Document Manager, or a configurable manager.

An example of such a shell could be a "facilities" shell where you could gather all your company campuses worldwide and incorporate the Unifier features you will need to manage them, such as a Generic Cost Manager and a Schedule Manager.

In uDesigner, you will be using the Shell Manager to:

- Create shell *types*
- Import shells
- Manage shells

In Unifier, the shells that you create in uDesigner can be arranged in hierarchies to represent your company's physical or organizational structure. For example, a physical location structure could be composed of shells for city, property, state, and building and be arranged in this hierarchy:

- State
  - City
    - Property
      - Building

There are three default shells, with anchor tabs:

- Home

  Where users can access their tasks, messages, and mail.
- Company Workspace

  Where users can access the tools, managers, and functions available under the company space.
- Projects

  Where users can access projects and the modules, managers, and functions available under the projects.

If you want users to be able to reference a project/shell from another project/shell, copy values from the referenced project/shell, or update the referenced project/shell by using the existing attribute form, add a Shell Data Picker to the Shell Attribute Form. For example, although the company administrator might create the project/shell and assign the rights, using this feature lets project/shell team members produce high-level forecasting data or generate reports across multiple projects/shells.

Shells will change the look of Unifier. For both the uDesigner user and the Unifier administrator, the **Shell Manager** appears as a node in the navigator. After the shell is operational in Unifier, the end-user will not see a Shell Manager node. The Unifier interface changes to a tab-based view.

End-users use the shell structure to move around the hierarchy and work in different shells. Each part of the hierarchy will include the features and tools they will need to accomplish their tasks in that shell.

The Shell Manager does not use business processes; rather, it uses attribute forms to create shell types and detail forms to create instances within a shell type. In Unifier, the information from the detail form becomes the General tab the administrators see when they start a new instance.

In This Section

Preparing a Shell for Use in Unifier 164
Dedicated Mailbox for Shells 165
Cost Management in Shells 165
Design Requirements for the Shell Manager 166

Preparing a Shell for Use in Unifier

What is a Configurable Shell?

Shells are:

- Designed for on-going management of any entity, from a project, to maintenance, to leasing requirements. Management in these shells is not necessarily time-limited.
- Able to use either the Standard Cost Manager (CBS based) or a Generic Cost Manager.
- Able to use hierarchies to group and manage projects, maintenance functions, leases, or any other type of entity.
- Designed in uDesigner and configured into hierarchies in Unifier.

Shell "Types," Shell "Instances," and Sub-Shells

Shell types are designed in uDesigner. A shell type could be **Building** or **Country**.

Shell instances are created in Unifier and are based on a shell type. Instances of a Building shell type could be different buildings, such as **Olympic Stadium**, **Eiffel Tower**, or **Taj Mahal**. Country instances could be **China**, **India**, or **France**.

Sub-shells do not occur until the administrator builds the shell hierarchy. Then shell types can be arranged in shell—sub-shell relationships, such as Country—Building. The Country shell would list China, India, and France. The Building sub-shell would list Eiffel Tower, Olympic Stadium, and Taj Mahal.

The uDesigner user:	The Unifier administrator:
Creates the shell types Examples: **Buildings** **Regions** **Properties**	▸ Imports the shell types and organizes them into hierarchies. For example: Regions | Properties | Buildings ▸ Creates shell instances. ▸ Specifies what functions and features will be included in the shell, such as a cost manager (standard or generic), Resource Manager, Schedule Manager, and so on.

Dedicated Mailbox for Shells

External emails are important communications that need to be included in shells. Such emails can come from project/shell members or from external users who do not use Unifier. These email communications (and any attachments) can be collected in a central repository for the shell, called the **Mailbox**, so that users can use them in managing and documenting the shell. After such emails reside in the shell's mailbox, users can view them, forward them to appropriate members, flag them for review, and reply to them. In addition, these external emails can be linked to business process records.

> **Note**: External emails that have been blind carbon-copied (Bcc'd) are not collected by the Mailbox.

When the application is installed on your system, you need to specify a dedicated email address for your company. When you create a shell, the system assigns a unique identifier to that shell. The system creates the shell mailbox by combining the dedicated email address for your company and the unique identifier for the created shell.

When the Unifier Administrator configures the shell instances, the administrator can notify all shell participants, both within and outside of Unifier, of this shell email address.

Cost Management in Shells

For cost management in a shell, you can choose either to use Unifier's Standard Cost Manager, or to create your own Generic Cost Manager in uDesigner. The generic cost manager specifically supports costing for shells that manage business information that is not of a fixed duration or cost, such as ongoing leases, building maintenance, or landscape care.

In the hierarchy of your shells, one shell might use the Standard Cost Manager while another might use a generic cost manager. There is, however, a limitation: Unifier will roll up information only from shells that use a generic cost manager; it will skip shells using the Standard Cost Manager.

> **Note**: There are some limitations to a generic cost manager. For a comparison of the generic and Standard Cost Managers, see ***Generic Cost Manager Overview*** (on page 87).

Design Requirements for the Shell Manager

For the Shell Manager to work effectively, you will need to create the following components in uDesigner:

> **Note:** Whether you include Data Elements (in one of the Log nodes for an item in the Shell Manager node in uDesigner) or not, Unifier will include the "Name" column in the log, by default, at runtime.

Component	Description
Shell Type Attribute Form	Sets up the Shell Manager and defines the shell types, the kind of cost manager that will be used in the shells, the number of sub-shells that can be created, and enables the mapping feature. The information from this attribute form appears in Unifier on the Shell Properties window. The attribute data appears on the General tab when the user opens a shell from the Shell Manager node.
Log (standard or advanced)	Lists all the records that were created for the manager in Unifier at runtime. Standard logs display fields from the manager's attribute form that you want to monitor. For example, you might want a log for the Document Manager to include the names of all documents and their creators as well as their locations. For the Resource Manager, you might want the log to include the names of all resources and their current status. Advanced logs support data pickers. An advanced log should be designed for any shell that contains records that will be displayed on a data picker. (For more information on data pickers, see ***About***

Component	Description
	Data Pickers (on page 222).) See ***Designing a Log for a Manager*** (on page 207).

Design Flow

The following table outlines the design steps necessary to launch the manager and create a shell.

Step	Description
1. Create a data structure.	You must create two mandatory data elements: ▸ Shell name (based on the data definition SYS Shell Name) ▸ Shell number (based on the data definition SYS Shell Number) The following data elements are optional: ▸ Create a data picker(s). For example, if you want users to be able to reference a project/shell from another project/shell, copy values from the referenced project/shell, or update the referenced project/shell by using the existing attribute form, add a Shell Data Picker. ▸ Create a template picker. For example, if you want to ensure that the related shell is automatically populated and updated, such as including views for a Cost Sheet, add a Shell Template Picker. Using this picker ensures that the related shell is automatically populated and updated whenever it is created through the Project/Shell Creation BP, created manually by using a template, or created through integration by using a CSV import or a REST service. See ***Creating a Data Structure*** (on page 217).
2. Launch the manager.	See ***Launching a Manager*** (on page 183).

Step	Description
3. Create a Shell Type Attribute Form. See the instructions beginning with ***Starting an Attribute or Detail Form for a Manager*** (on page 186).	Mandatory fields for the Shell Attribute Form are: ID (must begin with us_ and at least one alpha-numeric character, allows up to eight characters) Shell name Shell number Shell administrator (uuu_administrator) Shell status (uuu_shell_status) Description uuu_location If the shell status should be automatically updated, include the field uuu_au_setup_picker. If the shell will be using mapping (that is, geo-searching is chosen as an option for this shell type), the following fields are mandatory: Either: An address (uuu_address_code) Or: A latitude (uuu_latitude) and A longitude (uuu_longitude) If the shell Project Start Date will be automatically populated to the Schedule Start Date for the master schedule sheet in the Schedule Manager, the following field is mandatory: Project Start Date—uuu_project_start_date
4. Create a log for the manager.	See ***Designing a Log for a Manager*** (on page 207).

Details Block

The details block seen in the Shell Manager Standard log will be customizable based on the elements added in the **Details Block** tab, in the **Standard** log of the Shell Manager .

To view the Standard log:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Shell Manager**.
3) Open the applicable Shell Manager.
4) In the left Navigator, select **Log**, and then select **Standard**.
5) Open the applicable log, and select the **Details Block**.

By default, for new shells as well as existing shells, the following mandatory fields defined in the detail form are available in the details block:

- **Shell Name**
- **Shell Number**
- **Administrator**
- **Hierarchy Path**
- **Status**

The user can add more custom fields that are available in the details form to the details block for the new and existing shells.

Designing Your Own Managers

You can create your own managers for Unifier. You can create up to 25 managers.

Managers are a means to create, consolidate, and monitor such things as schedule activities, resource allocations, or project/shell/company costs. Managers generally use a discrete set of functions to control and provide oversight for specific purposes, such as document maintenance or scheduling. Most managers work as nodes in the Unifier navigator where users can create both the items to manage, and an electronic "sheet" where these items can be consolidated and monitored.

You can create your own managers to consolidate and monitor any entities you want. You can create your own code system and navigation for the manager, and design your own data elements for the business processes the manager will use. After you have created a manager, you can deploy it at the company or project/shell level.

In most managers, you can roll up currency amounts from BP records to a sheet, or from one sheet to another. However, in configurable managers, you can roll up not only currency amounts, but also quantity amounts. To use this feature, you will need to create specific data elements to place on the manager attribute (detail) form. These fields must be built on the following data definitions and will serve as "containers" for collecting the values from business process line items:

- SYS BP Currency Amount
- SYS BP Decimal Amount
- SYS BP Integer Amount

Using these data definitions for the fields on your attribute form, you can separately roll up currency, decimal, and integer amounts from BP line items to the manager sheet. (For information on how to create data elements, see ***Creating a Data Structure*** (on page 217).)

Using the snapshot feature, users can take a "picture" of the manager sheet at any point in time. This can be useful to expose specific items for particular attention.

You can design two kinds of managers: **Code and Records-based** and **Code-based**.

- A **Code and Records-based** manager employs both codes to create a tracking sheet and records of individual items.
- A **Code-based** manager employs only a sheet to keep track of the values it is monitoring.

From a **Code and Records-based** manager, you can drill down from the sheet to individual items but from a **Code-based** manager you cannot drill down from the sheet to individual items.

Code and Records-based

In Unifier, a Code and Records-based manager is where users can enter items and classify them into categories to make managing them more efficient. You can create categories (called classes) of items in uDesigner, and users can add records of individual items to these classes and manage them on electronic sheets. After the Unifier user creates an item under a class, it automatically appears on the sheet.

In Unifier, the [**manager**] node lists the names of every item class that was created. These nodes are where users can add items to the class, or modify them. The manager node supports multiple levels of data (such as an equipment class and equipment items) with drill-down capability.

In the **Sheets** node, users can create a new sheet (one per code class) and specify what should appear on the sheet for the class, create formulas for sheet calculations, and roll up currency and quantity values from BPs to the sheet. After the sheet is created, Unifier will automatically add a row to the sheet whenever a new item is added to any class. The application will also automatically refresh the sheet whenever an item is modified.

From the sheet, users can import and export column data in CSV format to and from other applications.

An example of a Code and Records-based manager might be an inventory or parts manager to itemize and keep track of parts for your facilities. In this manager, you could:

- Categorize parts by class
- Track inventory on hand in all locations
- Maintain basic cost information
- Track parts transactions (bought, sold, repaired, received, shipped, and so on)
- Monitor the costs generated by each transaction

In This Section

Across-Shell Functioning 172
Design Requirements for a Code-Based Manager 175
Design Requirements for a Code and Records-based Manager 177
Testing and Publishing a Manager 181

Across-Shell Functioning

Code and Records-based managers can operate across shells. An example would be warehouse managers located in various shells. In this scenario, each part could be tracked via a business process. The warehouses in the shells would stock parts and procure or replenish parts for the business processes across the shell hierarchy. In addition, stock could be moved or transferred from one warehouse to another, across shells. From the business processes for each part, quantities and costs could roll up to the appropriate warehouse; on-hand quantities could be maintained using formulas.

Such a manager, operating across shells, can accumulate a substantial number of records. With such an amount of records, users can easily make mistakes in choosing the correct one to work with. For the manager to function more efficiently, you should create data pickers to help Unifier users navigate to the correct log of records they want to work with. Using data pickers, users can pick records from the company level and from all shells in the hierarchy.

Using the functions available with data pickers, the sheets for these managers can display rollup data from across shells, and users will be able to drill down from the sheet to the business process transaction.

> **Note:** For more information about data pickers, see ***About Data Pickers*** (on page 222).

For the manager sheet, rollup data can come only from the following business processes.

At project/shell level:	At company level:
Cost - Line Items with Multiple Codes Line Item, Generic	Line Item, Generic

For this type of manager to function across-shells, create the following:

- A data picker for each manager class. When you place this data picker on a business process form, users can select a record across shells.

For this type of manager to roll up costs and quantities across-shells, create the following:

- A data picker for each manager class. With this data picker, users can select a record across shells.
- A configurable manager picker
- A formula to link the configurable manager picker to the data picker

After you have created these pieces, place the data picker and the configurable manager picker on the business process whose costs or quantities should roll up to the manager sheet. (If the user does not need to see the configurable manager picker, you can place it in a hidden block on the form.)

Code-Based Manager

In Unifier, a code-based manager provides users a sheet on which to analyze information that is gathered from business processes, or manually entered on the sheet. This manager produces no records; the values being monitored appear only on the sheet. When designing the sheet, a user can specify business processes from which column values can be collected.

In Unifier, the **[manager]** node shows the sheets that have been created. Users can open these sheets to monitor items and add additional items to the sheets.

An example of a code-based manager might be a "facilities" manager where users could monitor ongoing or preventative maintenance on the company's facilities. In this manager, you could:

- Define a facilities code structure at the company level or at each building or shell level
- Design multiple business processes to track and calculate:
  - Maintenance requirements
  - Inspections
  - Work orders
  - Repairs
  - Costs of facilities, from initial requisition through repairs and enhancements
  - Various code-based managers, such as Facility Condition Index, to monitor the condition and usability of the facilities

Summary of Differences

The following table itemizes the differences between a code-based manager and a Code and Records-based manager.

Code-Based Manager	Code and Records-based Manager
Uses an attribute form to create the codes that will appear on the sheet.	Uses an attribute (detail) form to define code "classes" for categorizing the items on the sheet and for collecting item details. Provides users a way to drill down to specific information from the sheet.
Uses a single sheet for analyzing information about the items being managed. These items are added to the sheet manually by the user. Records do not exist for code-based managers; the values collected for a code-based manager exist only on the sheet. Values on this sheet can be gathered from business processes or manually entered.	Uses multiple sheets (one for each class) for analyzing information. New items are automatically added to the sheet from item records created by users filling out an attribute (detail) form. This type of manager gathers values from Cost and Line Item types of BPs for the manager sheet.
The code structure for this type of manager is created by the administrator.	The code structure for this type of manager is created in uDesigner.
You must design a picker for the manager.	The picker for the manager is based on the log design.
Cannot operate across shell hierarchy	Can operate across the shell hierarchy. To facilitate this capability, one or more data pickers must be designed to help users navigate to records within the hierarchy. Sheets for these managers will display rollup data from across shells, and users will be able to drill down from the sheet to the business process transaction.

Code-Based Manager	Code and Records-based Manager
The manager sheet: Is created manually by the user Shows codes as rows in a flat or tree format Can show rollup values from company and shell BPs at any status; values appear as columns on the sheet Does not support time-based filtering using queries	The manager sheet: Is created manually by the user; then automatically populated with the information gathered from class records Shows the records as rows in a flat or tree format Can show rollup values from company and shell BPs at any status; values appear as columns on the sheet Can update item records directly from sheet Supports the Unifier rules engine Does not support time-based filtering using queries

Design Requirements for a Code-Based Manager

For a manager to work effectively, you will need to create the following components in uDesigner.

Component	Description
Data elements	To roll up quantity amounts to the manager sheet, create specific data elements (fields) to place on the attribute form for the manager. These fields must be built on the following data definitions: ▸ SYS BP Currency Amount ▸ SYS BP Decimal Amount ▸ SYS BP Integer Amount
Attribute form	Defines a code. Users will see the information from this form in the **Code Details** window in Unifier when they add a row to the manager sheet; also appears on the **Code Picker** on business processes where users must choose a code from a list. **Note:** This attribute form does not create a record; the information exists only as part of a manager sheet. Consequently, you will need to design a code picker for this form to populate.

Component	Description
Code Picker	Unifier populates most pickers with the records that you see in the logs on the right pane of the screen, and uses the layout of the headings on the logs for the layout of the picker. These logs show the records that were created, for the most part, with attribute forms. However, attribute forms for code-based managers use pickers designed specifically for them because they do not create records that will appear on logs; the codes exist only as part of a sheet. In these cases, you will need to design a picker in the same way you would design a log.

Design Flow

The following table outlines the steps necessary to design the coding structure and launch the manager.

Step	Description
1. Create a data structure. See ***Creating a Data Structure*** (on page 217).	For this type of manager, you must create three data elements for the attribute form: ▸ One to gather currency values from the line items of a business process. Use the SYS BP Currency Amount data definition to build this element. ▸ One to gather decimal values from the line items of a business process. Use the SYS BP Decimal Amount data definition to build this element. ▸ One to gather integer values from the line items of a business process. Use the SYS BP Integer Amount data definition to build this element.
2. Launch the manager.	This step initializes the design process for the manager. See ***Launching a Manager*** (on page 183).
3. Create an attribute form.	See the instructions beginning with ***Starting an Attribute or Detail Form for a Manager*** (on page 186). Mandatory fields for the attribute form are: ▸ Code (uuu_cm[1...25]_code)

Step	Description
	▸ Code Status (uuu_cm[1...25]_status) ▸ Code Name (uuu_cm[1...25]_name)
4. Create a picker for a code-based manager.	See the instructions under ***Designing a Picker*** (on page 206).

Design Requirements for a Code and Records-based Manager

For a manager to work effectively, you will need to create the following components in uDesigner.

Component	Description
Data elements	To roll up quantity amounts to the manager sheet, create specific data elements (fields) to place on the attribute form for the manager. These fields must be built on the following data definitions: SYS BP Currency Amount SYS BP Decimal Amount SYS BP Integer Amount
Attribute form	Defines a code class. Users will see the information from this form in the Code Details window in Unifier; also appears on the Code Picker on business processes where users must choose a code from a list.

Component	Description
Log (standard or advanced)	Lists all the records that were created for the manager in Unifier at runtime. Standard logs display fields from the manager's attribute form that you want to monitor. For example, you might want a log for the Document Manager to include the names of all documents and their creators as well as their locations. For the Resource Manager, you might want the log to include the names of all resources and their current status. Advanced logs support data pickers. An advanced log should be designed for any shell, configurable manager class, or business process that contains records that will be displayed on a data picker. (For more information on data pickers, see ***About Data Pickers*** (on page 222).)
Reference process	If you include a BP Picker on the form, a reference process is necessary to point to the BP you want to reference.
Data Picker(s)	(Optional) If you are designing a Code and Records-based manager that will operate across shells, data pickers will help users locate and pick the correct BP records within the hierarchy. A data picker filters the information that appears on the picker so that users do not have to search through a multitude of records in the shell hierarchy.

Design Flow

Following are the overall steps necessary to design the coding structure and launch a Code and Records-based manager.

- Create data elements for the purpose of populating the sheet from business processes. These fields must be included on the attribute form.

> **Note:** Do not confuse these data elements with those you choose on the **Options** tab when you launch the manager: Those elements work in conjunction with the data elements discussed here. The elements discussed here serve as "containers" on the sheet for collecting values from the data elements you specify on the Options tab, and they must be created from data definitions developed especially for these managers.

- Place a class code field on the detail form for the manager and create a pool of segment fields from which to create the code. On the detail form, you must create a concatenated formula for this class code field using segments from the pool. When you design this field, mark all these fields "editable and required."
- If the manager sheet will be in a tree format, you must include a navigation code field on the detail form and create a concatenated formula for this field.

  The fields selected in the formula of the Navigation code are used for the Navigation tree structure. The ordering of data elements, for the tree structure, will be the order that the Navigation code data element has formulated.

  Example

  The uuu_cm_navigation_code is formulated as: Manufacturer<upmManufacturerTXT120> + Material Category<umatCategoryPD> + Material Sub Category<umatSubTypePD> + Material Name<uuu_cm5_name>

  In the Formula user interface, you will see:

  Navigation Code = Manufacturer (-) Material Category (-) Material Sub Category (-) Material Name

  As a result, the data element ordering in the tree structure, in User mode, will be:

  1) Manufacturer > 2) Material Category > 3) Material Sub > Material Name

  Note: The Advance Log Navigation has no effect in Code-based and Record-based Configurable module tree structure. This is governed by uuu_cm_navigation_code. The data elements with data definition type "String" will be shown in Formula data element selection list.

The following table outlines these steps with additional details.

Step	Description
1. Create a data structure.	For this type of manager, you must create three data elements for the attribute form: One to gather currency values from the line items of a business process. Use the SYS BP Currency Amount data definition to build this element. One to gather decimal values from the line items of a business process. Use the SYS BP Decimal Amount data definition to build this element. One to gather integer values from the line items of a business process. Use the SYS BP Integer Amount data definition to build this element (Optional) If you are designing a Code and Records-based manager that will operate across shells, data pickers will help users locate and pick the correct BP records within the hierarchy. For more information on data pickers, see ***About Data Pickers*** (on page 222). See the instructions beginning with ***Creating a Data Structure*** (on page 217).
2. Launch the manager.	This step initializes the design process for the manager. See ***Starting an Attribute or Detail Form for a Manager*** (on page 186).
3. Create an attribute form.	See the instructions beginning with ***Designing a Form*** (on page 279). Mandatory fields for the attribute form are: Code (uuu_cm[1...25]_code) Code Status (uuu_cm[1...25]_status) Code Name (uuu_cm[1...25]_name) Any fields that should be used as part of the code. If the manager sheet is in a tree format, this field is mandatory: Navigation code (uuu_code_navigation_code) If users should be able to reserve this item, these fields are mandatory: Allow item to be reserved (uuu_rsv_reservable) Allow over-booking (uuu_rsv_overbook)
4. Create a log.	See ***Designing a Log for a Manager*** (on page 207).

Testing and Publishing a Manager

When you have completed designing the attribute form for a manager in uDesigner, it must be tested in **Development** environment before it can be deployed in **Test**, or **Production**, environment.

Before the manager is tested and published, it is important that you preview all the forms in the manager, check them for errors, and change the status to "Complete."

The process of testing and publishing entails:

- Checking for errors
- Changing the status to "Complete"
- Configuring a component for testing
- Deploying to the **Test** environment for testing
- Bundling designs in **Development** environment and deploying to Unifier **Production** environment for use

Launching a Manager

Before the user can use a manager, you must launch that manager in uDesigner, by using an attribute form or a detail form.

An attribute form or a detail form will enable:

- You to set up the manager for proper functioning.
- The manager to collect data.
- The application to function, by arranging or assembling the needed data.
- The adjustment of data for analyses, calculations, and other tasks.

Example

- You can design a Cost Attribute Form with fields that show additional information about a CBS code.
- You can design a Fund Attribute Form with fields that define segments and reference fields for fund codes.

An attribute form or a detail form is:

- Different from a business process form (BP form) because an attribute form or a detail form is not attached to workflows.
- For collecting information that is not relevant to the steps in a workflow.

For a company, you can design either an attribute form or a detail form, but not both.

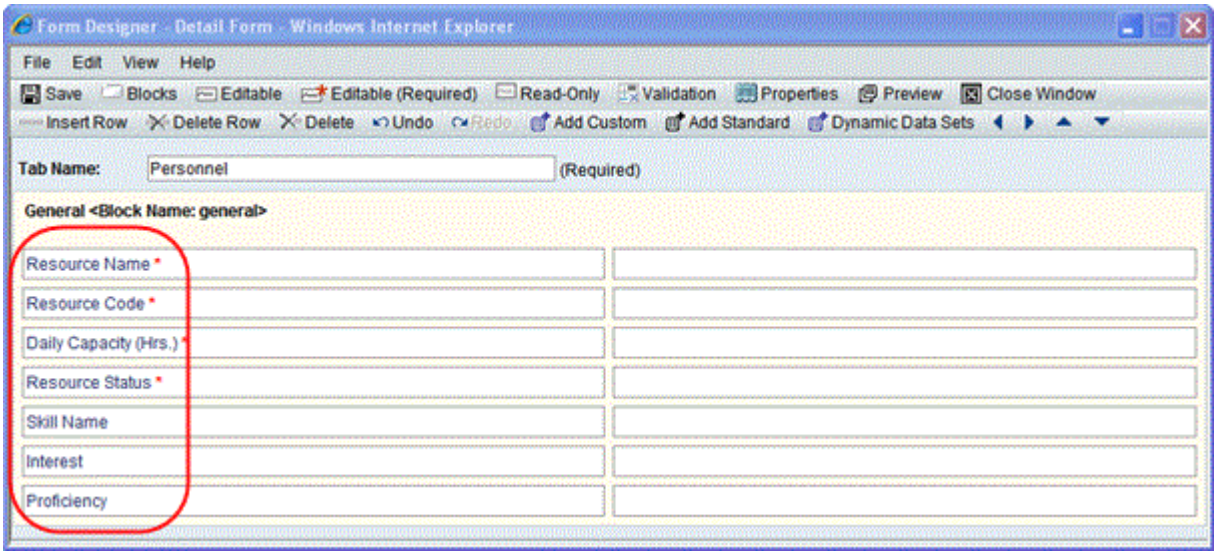
You must create an attribute form or a detail form and import the form to the production environment before you import any BP forms or other components; otherwise, the system uses a default attribute form for the company.

After you create an attribute form or a detail form:

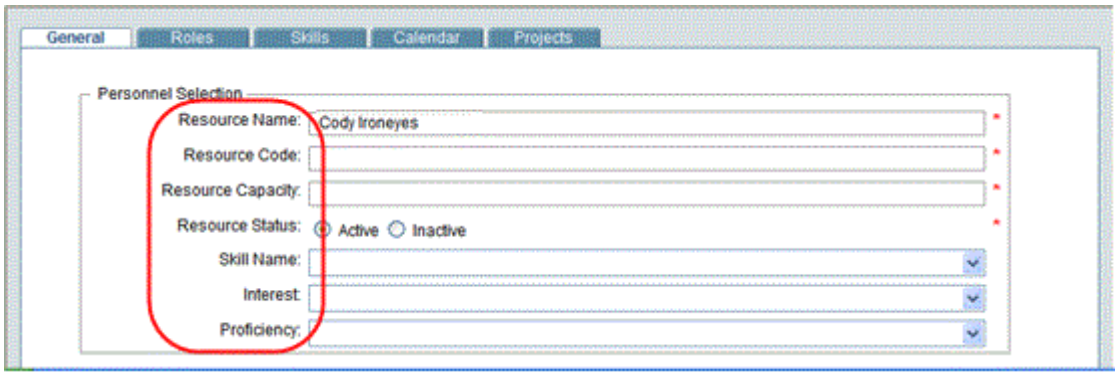
- You can modify the form.
- You cannot create, or design, a new form.

The application uses an attribute form or a detail form to populate many of the pickers on BP forms. The information collected by an attribute form or a detail form is displayed to the user when the user wants to Drill Down to an item on a sheet, or to instantly shift from an overview of data to a more detailed and granular view within the same data set. For example, in an activity on a schedule sheet, or in a CBS code on a cost sheet, if you double-click the activity or CBS code from the sheet, the system opens a "properties" window which contains specific information about the activity or CBS code. This specific information in the "properties" window comes from an attribute or detail form, usually.

For example, this Resource Attribute Form, designed in uDesigner ...



... appears as the General tab of the Create Resource form that an administrator uses to add a resource to the company's pool of resources ...



... which in turn, populates the resource picker with the names the user can choose from.

In This Section

Design Requirements for Launching a Manager 185
Starting an Attribute or Detail Form for a Manager 186
Adding Blocks to the Attribute Form 199
Modifying Blocks 204
Moving or Deleting Blocks 205
Designing a Formula for Fund or Account Codes 205
Designing a Picker 206
Designing a Log for a Manager 207

Design Requirements for Launching a Manager

For the managers to work effectively, you will need to create the following components in uDesigner:

Component	Description
Attribute Form (In some managers, this is a detail form.)	Each manager requires at least one attribute form to make it operational in Unifier. See the instructions beginning with ***Starting an Attribute or Detail Form for a Manager*** (on page 186).
Formula (For the Standard Cost Manager)	For the Cost Manager, you will need to define formulas to create codes for funds and company accounts. See ***Designing a Formula for Fund or Account Codes*** (on page 205).
Picker (For the Standard Cost Manager)	Two attribute forms—Fund Attributes and Account Code Attributes—use pickers designed specifically for them because they do not create records that will appear on logs; they exist only as part of a fund sheet or cost sheet. For these cases, you will need to design a picker in the same way you would design a log. See ***Designing a Picker*** (on page 206).
Picker (for a Generic Cost Manager)	The attribute form for a Generic Cost Manager will need a picker designed specifically because they do not create records that will appear on logs; they exist only as part of a fund sheet or cost sheet. For these cases, you will need to design a picker in the same way you would design a log. See ***Designing a Picker*** (on page 206).
Picker (for a code-based manager)	The attribute form for a code-based configurable manager will need a picker designed specifically because they do not create records that will appear on logs; they exist only as part of a fund sheet or cost sheet. For these cases, you will need to design a picker in the same way you would design a log. See ***Designing a Picker*** (on page 206).
Data Picker(s) For: A Code and Records-based manager The Shell Manager	(Optional) If you are designing these managers, data pickers will help users locate and pick the correct business process records across manager classes and shells within a hierarchy. A data picker filters the information that appears on the picker so that users do not have to search through a multitude of records in a manager class or shell hierarchy. See ***Creating a Data Picker Definition*** (on page 228).

Component	Description
Log (standard or advanced)	Standard logs display fields from the manager's attribute form that you want to monitor. For example, you might want a log for the Document Manager to include the names of all documents and their creators as well as their locations. For the Resource Manager, you might want the log to include the names of all resources and their current status. Picker logs support data pickers. An advanced log should be designed for any configurable manager class, or shell hierarchy. (For more information on data pickers, see ***About Data Pickers*** (on page 222).) For instructions on creating a log, see ***Designing a Log for a Manager*** (on page 207).

Starting an Attribute or Detail Form for a Manager

The attribute or detail form you design will prepare the manager to collect data, and assemble and arrange the data for Unifier functions. Before you can design the form, you must initialize a blank form in uDesigner. This initialization follows different steps, depending on the type of manager the form is for. The links below will take you to information on how to start the form(s) for whatever manager you are launching.

For the Standard Cost Manager

The standard Cost Manager needs attribute forms to define the codes for funds, costs, and accounts, and to customize CBS details. These codes or accounts can then be used to collect company-level costs, such as assets, resources, or facility maintenance.

> **Note**: If you do not create an attribute form for the Standard Cost Manager, Unifier will create a default one to support basic required information, such as cost and fund codes.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Cost Manager**.
3) From the toolbar, click:
   - **New**, and then select **Cost Attributes** to create a cost attributes form
   - **New**, and then select **Fund Attributes** to create a fund attributes form
   - **New**, and then select **Account Code Attributes** to create a company account code attributes form

   The Edit Studio window opens.

4) Under the **General** tab, enter a name for the form and a description. The type is pre-populated.
5) Click **OK** to save and close the window.

   After you click **OK**, uDesigner displays the name of the form on the right pane and automatically creates a detail form. At this point, you can add the content to the form. See ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).

For a Code-Based Manager

To launch a code-based manager, you need to name the manager and create a pool of data elements from which users can build codes and the sheet. Each code becomes a row on the sheet.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Configurable Modules**.
3) From the toolbar, click **New**, and then select **Code**. The Edit Studio window opens.
4) Use the information in the table below to complete the **General** tab.
5) Click **Apply**, and then click the **Codes** tab.

   Configurable managers use codes to organize the information on the tracking sheets. The Codes tab is where you create a pool of data elements. Users will pick elements from this pool to use as segments of a code. The code can be composed of one or more of these data elements. Building a code involves combining values from these data elements; for example, designing a field called "Project Identifier" using a code that includes Project, Record No., and Location data elements.

   > **Note:** Codes for code-based managers can be created from fields built only on string or pull-down data definitions. Be sure you have created these fields (data elements) before you create this pool of elements.

   Codes can be up to 250 characters long, including the delimiters (such as dashes or underscores).

   > **Note:** Do not include the name of the code in this pool of data elements. The name of the code should not be used in the code itself.

   a. Click the **Add** button. This adds a new row to the sheet.
   b. In the **Code Segments Separator** field, select a delimiter.

      The delimiter separates the code segments. For example if you select an underscore (_) for the Project Identifier example above, it would appear as Project_Record_Location.

      You can select only one delimiter.
   c. In the **Name** field, specify each data element you want to add to the pool by clicking the down arrow and choosing an element.

      Each data element you include under the Name field can be chosen by the user in Unifier as a segment, separated by the delimiter you specify in Step b.
   d. To add another element to the pool, click **Add** again and repeat step c.

6) Click **Apply** to save the elements; then click the **Options** tab.

The Options tab is where you can specify the data elements that should appear on the manager sheet. You can add any currency, decimal, or integer type data elements. If these elements are present on Cost or Line Item business processes designed for the manager, the values from these elements will roll up to the sheet.

> **Note:** Business processes designed for the Standard Cost Manager roll up only currency amounts to the cost sheet. Cost and Line Item BPs designed for a configurable manager can roll up other amounts, such as quantities, in addition to currency amounts.

These data elements work in conjunction with the data elements that were created for the manager's attribute form using the SYS BP Currency, Decimal, and Integer Amount data definitions (see ***Design Requirements for a Code-Based Manager*** (on page 175)). These data elements serve as containers for collecting the values from the data elements you specify here on the Options tab.

> **Note:** After you set these fields, they cannot be changed or removed, even if you leave them empty.

To add a data element:

a. Click the **Add** button. The Select Data Elements window opens.

b. Select the currency, decimal, or integer type element you want to include on the manager sheet and click **Open**.

(To add multiple elements, hold down the **Ctrl** key while you select the elements.)

7) Click **OK**.

After you click **OK**, uDesigner displays the name of the manager on the right pane.

8) To complete the launch, design an attribute form. Users will use this form to create the codes for the manager and build the sheet.

To start the form:

a. Switch to Design mode and click the name of the manager in the navigator.

b. Select **New**, and then select **Attribute Form**. The Edit Studio window opens.

c. Under the **General** tab, enter a name for the form and a description. The type is pre-populated.

d. Click **OK** to save and close the window.

uDesigner displays the name of the form on the right pane. At this point, you can add the content to the form. See ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).

In this field:	Do this:
Name	Enter a name for the manager. The name can be up to 64 characters long and can include alphanumeric characters, spaces, and punctuation marks.

In this field:	Do this:
Description	(Optional) Enter a description of the manager. A description is optional, but recommended.
Type	This field confirms that you are creating a configurable manager.
Sub-Type	This field confirms that the new manager is code-based.
Level	Specify whether this manager will be at the company level or project/shell level.
Sheets	Specify how many sheets the user can create for the manager. Multiple means the user can create any number of sheets for the manager to monitor. Single means the user can create only one sheet for the manager per company or per project/shell.
ID	Select an ID for the manager. You can create up to 25 configurable managers.

For a Code and Records-based Manager

A Code and Records-based manager needs an attribute form to define a code "class." Defining code classes makes it convenient for users to categorize the information that appears on the sheets.

> **Note:** Be careful about class names. Do not use the same class name that is being used by another Code and Records-based configurable manager: Unifier is unable to distinguish class names between managers. The best way to avoid redundant class names is to preface the class name with the name of the manager it belongs to, such as "Inventory—Heavy Equipment."

1) Go to the **Company Workspace** tab and switch to **Admin** mod.
2) In the left Navigator, select **uDesigner**, and then select **Configurable Modules**.
3) From the toolbar, click **New**, and then select **Code and Records**. The Edit Studio window opens.
4) Use the information in the following sections to complete the Edit Studio tabs.

General Tab

1) Use the information in the table below to complete the General tab.
2) Click **Apply**; then click the **Options** tab.

In this field:	Do this:
Name	Enter a name for the manager. The name can be up to 64 characters long and can include alphanumeric characters, spaces, and punctuation marks.
Description	(Optional) Enter a description of the manager. A description is optional, but recommended.
Type	This field confirms that you are creating a configurable manager.
Sub-Type	This field confirms that the new manager is Code and Records-based.
Level	Specify whether this manager will be at the company level or project/shell level.
Sheets	Specify how many sheets the user can create for the manager. Multiple means the user can create any number of sheets for the manager to monitor. Single means the user can create only one sheet for the manager per company or per project/shell.
Records Log	Specify whether the manager sheet should be a flat list, or a tree that will expand to show items within a code class.
ID	Select an ID for the manager. You can create up to 25 configurable managers.

Options Tab

The Options tab is where you can specify the data elements that should appear on the manager sheet. You can add any currency, decimal, or integer type data elements. If these elements are present on Cost or Line Item business processes designed for the manager, the values from these elements will roll up to the sheet.

Business processes designed for the Standard Cost Manager roll up only currency amounts to the cost sheet. However, Cost and Line Item BPs designed for a configurable manager can roll up other amounts, such as quantities, in addition to currency amounts.

These data elements work in conjunction with the data elements that were created for the manager's attribute form using the SYS BP Currency, Decimal, and Integer Amount data definitions (see ***Design Requirements for a Code and Records-based Manager*** (on page 177)). These data elements serve as containers for collecting the values from the data elements you specify here on the Options tab.

> **Note:** After you set these fields, they cannot be changed or removed, even if you leave them empty.

To add a data element:

1) Click the **Add** button. The Select Data Elements window opens.
2) Select the currency, decimal, or integer type element you want to include on the manager sheet and click **Open**.

   (To add multiple elements, hold down the **Ctrl** key while you select the elements.)
3) Click **OK**.

Completing the launch

After you have started the manager's attribute form using the steps above, uDesigner displays the name of the manager on the right pane. To complete the launch, you need to design attribute forms for the code classes the manager will use.

1) In the left Navigator, select **uDesigner**, and then select **Configurable Modules**.
2) On the right pane, double-click the manager you want to launch.
3) From the toolbar, click **New**, and then select **Class**. The Edit Studio window opens.
4) Under the **General** tab, enter a name for the class and a description. The type is pre-populated.
5) Click **Apply**, and then click the **Options** tab.
6) (Optional) On the **Options** tab, in the **Enable Calendar** field, select the check box if users should be able to reserve this item for exclusive use.

   If you select this check box, the form will display a **Calendar** button in the toolbar that the user can use to display a calendar and specify dates and times for the reservation, as well as additional information that might be necessary for the reservation.
7) Click **OK** to save and close the window.

   uDesigner displays the name of the form on the right pane. At this point, you can add the content to the form. See ***Adding Blocks to a Form*** (on page 301) and also ***Adding Fields to the Form*** (on page 336).

For the Document Manager

Attribute forms for the Document Manager collect data (including the title, name, and issue date) related to the documents that users store in the Document Manager. They also collect properties related to the folders used to organize documents in the Document Manager. Documents can be stored at both the company and project level. One attribute form is allowed for the Document Manager, and it specifies properties for both company and project level documents.

> **Note**: If you do not create an attribute form for the Document Manager, Unifier will create a default one to identify the documents in the system.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Document Manager**.

3) From the toolbar, click **New**, and then select **DMS Attributes**.

   The Document Manager—Home pane opens, and the Document Manager node in the Navigator expands.

4) In the left Navigator, select **Folder Properties** or **Document Properties** as appropriate. The DMS Properties pane opens, showing a default form.

   At this point, you can add the content to the form. See ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).

For a Generic Cost Manager

The Generic Cost Manager needs an attribute form to define the codes for costs generated under a shell. These codes can then be used to collect shell-level costs, such as assets, resources, or facility maintenance. Part of launching this manager is building the cost codes it will use from data elements (fields).

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Configurable Modules**
3) From the toolbar, click **New**, and then select **Generic Cost.** The Edit Studio window opens.
4) On the **General** tab, enter a name and description for the manager.
5) Click **Apply**, and then click the **Codes** tab.

   On the Codes tab, you build the cost codes the generic manager will use for the cost functions in the shells your users will be using. These codes are a composite of multiple segments that identify the origin of the cost in the accounting scheme. To build the code, you must concatenate the accounting segments into one identifier by designing a composite field that combines multiple data elements. You will be building the code by combining values from text box data elements and specifying a string-type pull-down; for example, designing a field called "Fund Identifier" using a formula that includes Fund Name, Fund No., and location.

   Cost codes can be up to 250 characters long, including delimiters (such as dashes or underscores).

   > **Note**: Do not include the name of the code in this pool of data elements. The name of the code should not be used in the code itself.

   a. Click the **Add** button. This adds a new row to the cost sheet.
   b. In the **Code Segments Separator** field, select a delimiter.

      The delimiter separates the elements. For example if you select a dash (-) between elements for Account Identifier, it would appear as Account-Record-Location.
   c. In the **Name** field, choose the data element (field) that should be the first segment of the cost code. Each data element you include under the Name field will be used as a segment, separated by the delimiter you specify in step b.
   d. To add another segment to the code, click **Add** again and repeat step c.
   e. Click **OK**.

      After you click OK, uDesigner displays the name of the manager on the right pane.

6) To complete the launch, design the attribute form for the cost manager.

To start the attribute form:

a. In the left Navigator, select **uDesigner**, and then select **Configurable Modules**.
b. In the right pane, double-click the generic cost manager you created.
c. From the toolbar, click **New**, and then select **Attribute form**.
d. In the left Navigator, select **Detail Form** and click **New** in the right pane.
e. Under the **General** tab, enter a name for the form and a description.
f. Click **OK** to save and close the window.

uDesigner displays the name of the form on the right pane. At this point, you can add the content to the form. See ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).

For the Planning Manager

The Planning Manager needs attribute forms to collect summary information about the type of plan being considered (such as capital or IT), and to summarize the planning sheet, including its name and the date the sheet was last updated.

Before you can design an attribute form, you need to specify a planning type in the Planning Manager. For plans and planning sheets, the "attribute form" is called a "detail form" in uDesigner.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Planning Manager**.
3) From the toolbar, click **New**, and then select **Planning**. The Edit Studio window opens.
4) Use the information in the first table below to complete the General tab.
5) Click **OK**. uDesigner displays the name of the plan type in the right pane.
6) Double-click the name of the plan type. The navigator expands to show two additional nodes.
   - For a planning item form, click **Planning Item**, and then select **Detail Form**.
   - For a planning sheet, click **Planning Sheet**, and then select **Detail Form**.

   uDesigner displays the name of the form on the right pane and automatically creates a detail form.
7) To start designing the detail form for the planning sheet, double-click the name of form in the right pane.

   At this point, you can add the content to the form. See ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).
8) To start the detail form for the planning item, highlight the form name in the right pane and click **Properties** on the toolbar. A window opens, showing a **General** tab and an **Options** tab.

   The General tab shows the name uDesigner gave to the detail form.

   a. Click the **Options** tab.
   b. Use the second table below to complete the **Options** tab.
   c. Click **OK**.

d. To start designing the detail form for the planning sheet, double-click the name of form in the right pane.

At this point, you can add the content to the form. See ***Adding Blocks to a Form*** (on page 301) and also ***Adding Fields to the Form*** (on page 336).

In this field:	Do this:
Name	Enter a name for the planning type. The name can be up to 64 characters long and can include alphanumeric characters, spaces, and punctuation marks.
Description	(Optional) Enter a description of the item. A description is optional, but recommended.
Type	This field confirms that you are creating a planning type.
Level	Specify whether this planning type will be at the company level or project/shell level.
Attachments to overall record	Add and remove attachments to the record. **Notes:** ▸ For Text type BPs, the user cannot remove attachments. ▸ To specify that users can attach files to their business process workflow e-mail responses, the Administrator must select Enable response via email in the business process setup and, in uDesigner select the Add Attachments option on the Options tab in the Action Form for the business process.
Attachment Source	Add attachments or line items from the Unifier Document Manager, or from the user's local machine.

For the Portfolio Manager

The Portfolio Manager needs attribute forms to collect summary information about the portfolio, including its name and the date the sheet was last updated.

Before you can design an attribute form, you need to create a portfolio in the Portfolio Manager. For portfolios, the "attribute form" is called a "detail form" in uDesigner.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Portfolio Manager**.
3) From the toolbar, click **New**, and then select **Portfolio**. The Edit Studio window opens.
4) Use the information in the table below to complete the General tab.
5) Click **OK**. After you click OK, uDesigner displays the name of the portfolio on the right pane. At this point, you should create a detail (attribute) form for the portfolio.
6) Double-click the portfolio name.
7) In the left Navigator, select the **Detail form** node.
8) In the right pane, click the **New** button. Unifier displays a form design window.

9) Enter a name and description for the form and click **OK**. Unifier displays the name of the form in the right pane.
10) Double-click the form name on the right pane. The Edit Studio window opens.

At this point, you can add the content to the form. See ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).

In this field:	Do this:
Name	Enter a name for the portfolio. The name can be up to 64 characters long and can include alphanumeric characters, spaces, and punctuation marks.
Description	(Optional) Enter a description of the portfolio. A description is optional, but recommended.
Type	This field confirms that you are creating a capital portfolio type.
Level	Specify whether this portfolio will be at the company level or project/shell level.

For the Resource Manager

If you have access to the Resource Manager feature, it needs attribute forms to define the roles that will be used for a project (such as "accountant," or "electrician") and to collect personnel data for the resources that will fill these roles.

> **Note**: If you do not create an attribute form for the Resource Manager, Unifier will create a default one to support basic information, such as the resource name.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Resource Manager**.
3) From the toolbar, click:
   - **New**, and then select **Role Attributes** to create a Role Attribute Form
   - **New**, and then select **Resource Attributes** to create a Resource Attribute Form

   The Edit Studio window opens.
4) Under the **General** tab, enter a name for the form and a description. The type is pre-populated.
5) Click **OK** to save and close the window.

   After you click OK, uDesigner displays the name of the form on the right pane and automatically creates a detail form. At this point, you can add the content to the form. See ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).

For the Schedule Manager

If you have access to the Schedule Manager feature, it needs attribute forms to define the activities for a project schedule, including its start and end dates.

> **Note**: If you do not create an attribute form for the Schedule Manager, Unifier will create a default one to designate start and end dates for the project.

For the Schedule Manager, you can also "tag" fields to map them to fields on business processes, shells, spaces, or configurable managers. These tags are created as part of the data structure (see ***Creating a Tag*** (on page 241)). When you map these tagged fields to fields on other forms, users can see schedule information without having to open the Schedule Manager.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Schedule Manager**.
3) From the toolbar, click **New**, and then select **Schedule Attributes**. The Edit Studio window opens.
4) Under the **General** tab, enter a name for the form and a description. The type is pre-populated.
5) Click the **Tags** tab. Then click the **Add** button. The Tag Picker window opens, showing the tags that were created in the Data Structure node.
6) Select the tag to add to the Schedule Activity Tags list, and then click **OK**.

   When you link fields from the Schedule Manager to your Business Process form or other component, you can link the tagged fields to:

   - A shell
   - A space
   - A configurable manager
   - A business process

   See ***Adding Link Elements to a Form*** for details.
7) Click **OK** to save and close the window.

   After you click OK, uDesigner displays the name of the form on the right pane and automatically creates a detail form. At this point, you can add the content to the form. For more information, see ***Adding Blocks to the Attribute Form*** (on page 199) and ***Adding Fields to the Form*** (on page 336).

For the Shell Manager

The Shell Manager uses attribute forms to define shells. In Unifier, users can create different shells, with unique names, and arrange them in a hierarchy so they can manage specific business information. Shells with the same name cannot be used in a parent-child, or a parent-grandchild arrangement.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Shell Manager**.

3) From the toolbar, click **New**, and then select **Shell**. The Edit Studio window opens, showing the General tab.
4) Use the information in the first table below to complete the fields on this tab.
5) Click **Apply**, and then click the **Options** tab.
6) Use the information in the table below to complete the fields on the Options tab.

   For information on this option and how to use it, see ***Adding Link Elements to a Form*** (on page 429).
7) Click **OK**. uDesigner displays the name of the shell type in the right pane.

   At this point, you can add the content to the form. See ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).

In this field:	Do this:
Name	Enter a name for the shell; the name must be unique. Shell names can be up to 64 characters long and can include alphanumeric characters, spaces, and punctuation marks.
Description	(Optional) Enter a description of the shell. A description is optional, but recommended.
Shell Instance	Specify whether the user can create: Multiple shells, which means the user can use this Shell Attribute Form to create any number of shells Single, which means the user can use this Shell Attribute Form to create one shell A single shell instance becomes the name of the shell node in Unifier and creates an "anchor" or "root" tab at the top of the window. The anchor tab becomes the user's access to the sub-shells in the hierarchy.
Cost Codes	Specify which type of cost manager the shell should use: CBS based (the Standard Cost Manager that is provided for projects) or Generic Cost Manager. For an explanation of the differences between CBS and generic cost codes, see ***Generic Cost Manager Overview*** (on page 87).

In this field:	Do this:
Enable GEO searching in FIND	Select this check box if you want the user to be able to search for a shell by address, latitude, or longitude in the Find window at runtime. The Unifier user will be able to see a map view of a shell showing pins on the map for each location of a sub-shell. This option is enabled for published designs for both business processes and shells.

For the Space Manager

The Space Manager needs attribute forms to define a level (such as a floor) for your facility and also the spaces that occupy each level. In Unifier, users will create spaces under each level to define each area that should be included for facilities management. You will need to create a single form for users to create levels with and multiple forms for users to create space "types" with (such as "office" or "lobby area"). Users will also add spaces to the manager sheet according to their type.

To start a level form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Space Manager**.
3) From the toolbar, click **New**, and then select **Level**. The Edit Studio window opens.
4) On the **General** tab, enter a name and description for the level.
5) Click **Apply**, and then click the **Statuses** tab.
6) On the Statuses tab, specify the statuses you want to make available for the level.
   - To add a status, click the **Add** button and choose the status from the list that appears.
   - To choose multiples statuses, hold down the **Ctrl** key and click each status you want.
7) (Optional) Make the status or statuses terminal.
   To make a status terminal, select the status and click the **Terminal** button.
8) Click **OK**.
   uDesigner displays the name of the level on the right pane. At this point, you can add the content to the form. See ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Adding Fields to the Form*** (on page 336).

To start a space form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Space Manager**.
3) From the toolbar, click **New**, and then select **Space**. The Edit Studio window opens.
4) On the General tab, enter a name and description for the space and click **OK**.

uDesigner displays the name of the space form on the right pane. At this point, you can add the content to the form. See ***Adding Blocks to the Attribute Form*** (on page 199) and also ***Designing a Formula for Fund or Account Codes*** (on page 205).

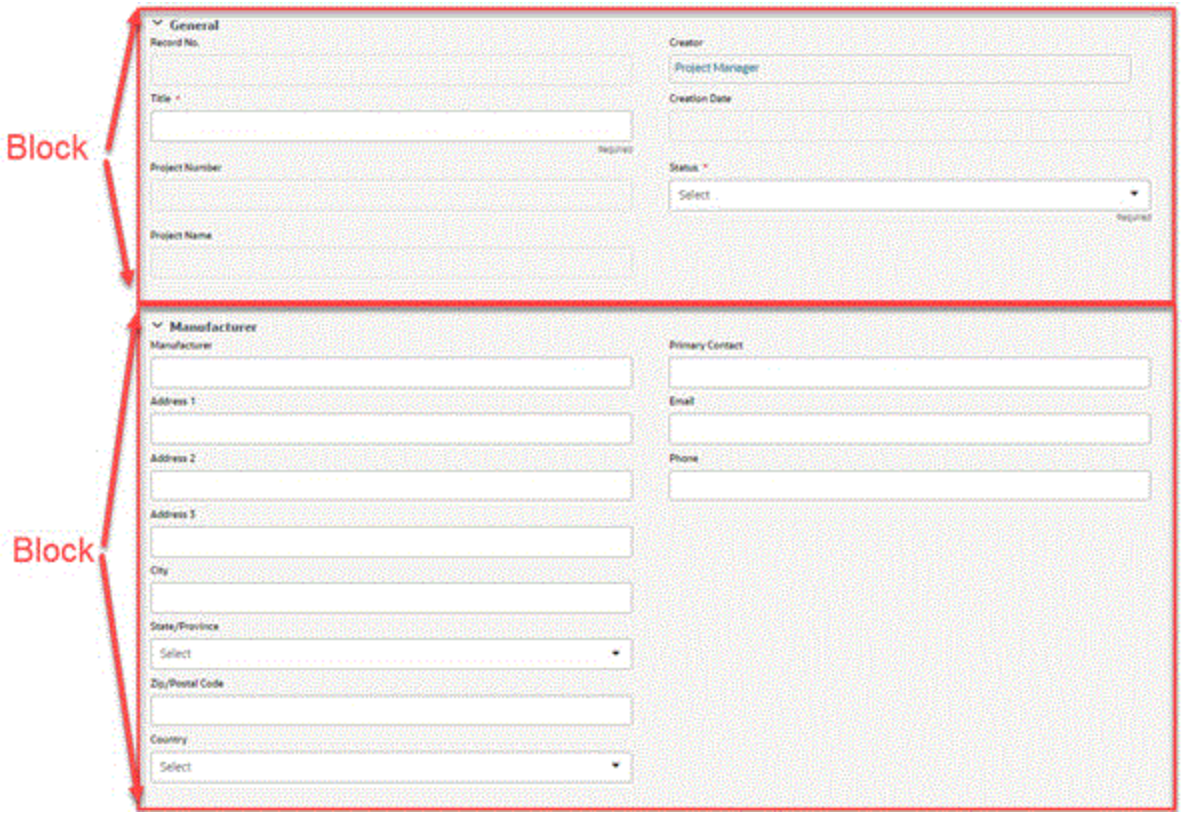
When you have finished the form design, you must return to the properties window for the form and specify an option that can be activated only after you have created the attribute form for the space. Proceed as follows:

a. Click **Space Manager** in the navigator.
b. On the right pane, double-click the name of the Space Attribute Form. The navigator displays the name of the space you created and the Edit Studio window opens.
c. Click the **Options** tab.
d. (Optional) In the **Enable Calendar** field, select the check box if users should be able to reserve this space for exclusive use.

   If you select this check box, the form will display a **Calendar** button in the toolbar that the user can use to display a calendar and specify dates and times for the reservation, as well as additional information that might be necessary for the reservation.
e. Click **OK**.

Adding Blocks to the Attribute Form

Use the following instructions to add content to the attribute/detail form. The blocks of fields you design for the form will appear in Unifier similar to the following example.



To add blocks to an attribute form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner.**
3) Open the attribute form as shown in the table below.
   A designer window opens.

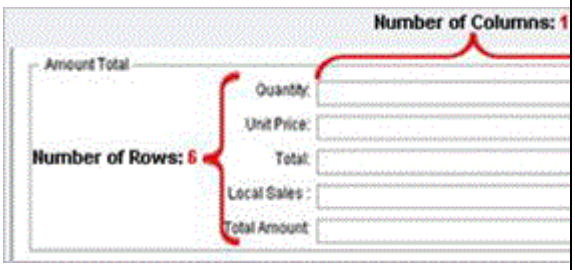
> **Note:** You can add editable data element (Editable) and editable required data element (Editable (Required)) in the hidden block. This is applicable to all types of BP forms, including attribute forms.

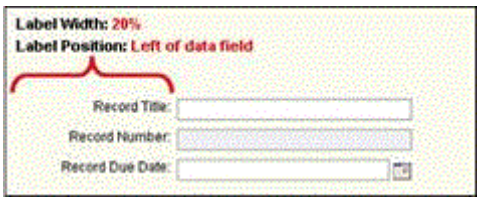
To open this form:	Do this:
Shell Attribute Form Asset Class Cost Manager forms	**1** Click the name of the manager in the left Navigator. **2** Double-click the name of the attribute form in the right pane. **3** Click **Detail Form** in the navigator. **4** Double-click the name of the form in right pane.
Resource Attribute Form	**1** Click **Resource Manager** in the left Navigator. **2** Double-click **Resource Attribute**s in the right pane. **3** Click **Detail Form** in left navigator. **4** Double-click the name of the form in right pane.
Role Attribute Form	**1** Click **Resource Manager** in the left Navigator. **2** Double-click **Role Attribute**s in the right pane. **3** Click **Detail Form** in left navigator. **4** Double-click the name of the form in right pane.
Schedule Activity Attribute Form	**1** Click **Schedule Manager** in the left Navigator **2** Double-click **Activity Detail** in the right pane. **3** Click **Detail Form** in the navigator. **4** Double-click the name of the form in right pane.

To open this form:	Do this:
Schedule Resource Assignment form	**1** Click **Schedule Manager** in the left Navigator. **2** Double-click **Resource Assignment** in the right pane. **3** Click **Detail Form** in the navigator. **4** Double-click the name of the form in right pane.
Code-based manager Code and Records-based manager	**1** Click **Configurable Modules** in the left Navigator. **2** In the right pane, double-click the name of the manager. **3** In the right pane, double-click the name of the form.

1) In the **TabName** field, enter a name. This is the title that will appear on the form.
2) Specify the blocks you want on the form as follows:
   a. On the Designer window, click the **Blocks** button. The **Form Blocks** window opens.
   b. To add a block to the form, click the **Add** button. The **Block Properties** window opens.
   c. Use the information in the second table below to complete the fields in this window.
3) After defining the block properties, click **OK** to return to the Design window. Next, you can add fields to the form (for more information, see ***Adding Fields to the Form*** (on page 336)).

In this field:	Do this:
Name	Enter a name for the block (for internal purposes only).
Description	Enter a description for the block. This description will appear on the form if you choose to make it visible.
Label	Enter the name for the block. This is the name that will appear on the form if you choose to make it visible.
Number of Columns	Enter the number of columns you want on the form. Maximum is 4; default is 2.

In this field:	Do this:
Number of Rows	Enter the number of fields that will appear in this block of the form. Each field will occupy one row. Maximum is 19 fields (rows); default is 5. After you have specified the number of rows, you cannot modify the block properties, but you can manually delete or insert rows in the Designer window. 
Show Border	Select the check box to enclose the block in a border on the form. This will visibly distinguish the fields in this block from other fields on the form. **Note:** Instead of using a border, you can also use empty fields to create spaces between rows.
Show Label	Select the check box if you want the block label you entered to appear on the form.
Show Description	Select the check box if you want the description you entered to appear on the form.

In this field:	Do this:
Hidden	Select the check box if you do not want to display the block on the form in Unifier. Use this feature to hide fields that are only used in formulas, or to hide deployed obsolete data elements from user view. If blocks are marked as hidden, the block label in the Designer window is grayed out with a pre-assigned value of "Hidden<Block Name: Hidden>." You can add fields with formulas to a hidden block. However, you cannot make the fields in a hidden block "required," and you cannot add a validation rule to the fields. **Note**: If you need to edit a hidden block, you must deselect this check box to "un-hide" the block and click OK. Then make your changes and hide the block again.
Label Width	Enter the width of the block label as a percentage of the form width. Default is 20 percent.
Label Position	Specify where the label should appear on the form—to the left or right of the field. Default is left.  You may need to adjust the label width, label position, and number of columns to get the fields to look the way you want. These three attributes affect the way the text is justified and where the red asterisk for a required field appears.

In this field:	Do this:
Notes	(Optional) Use the **Notes** field to enter details about the design of the attribute form. This can be helpful to others in understanding the information this block is intended to contain and what that information might be used for. **Note:** This field will not be visible on the log.

Modifying Blocks

To modify a block:

1) On the Form Designer window, click **Blocks**.
2) Select the block you want to modify and click **Modify**. The Block Properties window opens.
3) Make your changes and click **OK**.

> **Note**: If you are using blocks from a linked template, you can edit only the following; all other block properties are set by the template design:
>
> - Description
> - Show Description
> - Hidden
> - Notes

Collapse by Default Option in Block Properties

In the **Block Properties** window of both a BP form and a Manager Attribute Form, there is a **Collapse by Default** check box. If the check box is selected, the block is collapsed by default. If the check box is not selected, the block is expanded by default.

With the **Collapse by Default** option, you can avoid scrolling through irrelevant information.

The Block Properties are searched during the rendering of a BP form and a Manager Attribute Form to determine whether a block is collapsed or expanded at runtime.

For a block to be collapsed at runtime, the block label and the block borders must be visible.

This option is applicable only for Standard View of forms." **Collapse by Default** is applicable to the following forms: Action form, View form, Detail form, and various attribute forms. For Manager Attribute Forms, this option is available for the Activity Manager, Configurable Manager, Cost Manager, Document Manager, and Space Manager. This option is also applicable to Shell Attribute Forms as well as places where a preview of a Manager Attribute Form is displayed, such as a variety of logs.

Notes:

- If a form has only one block, the attribute of expand or collapse will not be available.
- If you change the default behavior by performing the opposite action at runtime, the default expand or collapse option is displayed when the page is reloaded.

Moving or Deleting Blocks

To move blocks:

1) On the Form Designer window, click **Blocks**.
2) Select the block you want to move and click the **Move Up** or **Move Down** button.
3) Click **OK**.

To remove blocks:

1) On the Form Designer window, click **Blocks**.
2) Select the block you want to remove and click **Remove**.
3) Click **OK**.

Designing a Formula for Fund or Account Codes

Fund codes and company account codes are usually a composite of multiple segments that identify the exact origin of the fund or account in the accounting scheme. To build the fund or account code, you must concatenate the accounting segments into one identifier by designing a composite field that combines multiple data elements. You will be building the code by combining values from text box data elements and specifying a string-type pull-down; for example, designing a field called "Fund Identifier" using a formula that includes Fund Name, Fund No., and location.

Fund and company account codes can be up to 250 characters long, including delimiters (such as dashes or underscores).

Take Extra Care with These Codes!

- Because fund and account codes are at the company level, they have a significant impact on the company's funding and accounting, and therefore, cost sheets. When you import a Fund or Account Code Attribute Form into Unifier, it immediately creates at least one fund/account and one transaction for the fund/account under the funding/account codes sheet.
- Ensure that your codes are correct before the attribute form goes into use. If inaccurate codes were put in the form, and you attempt to correct the codes, the corrected codes would only affect the new funds or accounts.

To design a formula:

1) Open the attribute form containing the field for which you want to build the formula.
2) In the left Navigator, select **Detail Form**. The Form Designer window opens.
3) From the toolbar, click **Properties**. The Elements Properties window opens.

4) Select the field and click the **Formula** button. The Formula Creation window opens.
5) Select a delimiter.

   The delimiter separates the elements. For example if you select a dash (-) between elements for Account Identifier, it would appear as Account-Record-Location.

   You must select the delimiter before adding the element to the right pane. You can select only one delimiter.
6) Select an element from the left pane
7) Click **Add Parameter** or double-click the element. The element moves to the right pane.

   If you select the wrong element, click **Undo** or **Clear All**. After you add an element, the element list is disabled and the delimiter icon is activated.
8) Click the delimiter icon to add the element into the formula creation field.
9) Continue adding other elements following the same procedure.
10) Click **OK** to save the formula and close the window.

Designing a Picker

Unifier populates most pickers with the records that you see in the logs on the right pane of the screen, and uses the layout of the headings on the logs for the layout of the picker. These logs show the records that were created, for the most part, with attribute forms. However, the following attribute forms use pickers designed specifically for them because they do not create records that will appear on logs; they exist only as part of a sheet you have designed. In these cases, you will need to design a picker in the same way you would design a log.

- Fund
- Account codes
- Code-based managers
- Generic cost managers

Each company can have only one of each of these pickers. However, you can edit these pickers as often as you want. You can design the picker so that it has a specific heading and displays the information in a specific order.

To design the picker:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
   - For a fund picker: In the left Navigator, select **uDesigner**, and then select **Cost Manager**. Open the **[fund attribute form]**. In the left Navigator, select **Picker**.

     uDesigner automatically creates a blank picker for this. Select the name of the picker, and click **Open**. The Picker Design window opens.
   - For an account code picker: In the left Navigator, select **uDesigner**, and then select **Cost Manager**. Open the **[account code attribute form]**. In the left Navigator, select **Picker**.

     uDesigner automatically creates a blank picker for this. Select the name of the picker, and click **Open**. The Picker Design window opens.
   - For a configurable manager picker: In the left Navigator, select **uDesigner**, and then select **Configurable Modules**. Open the **[manager name]**. Open the **[attribute form]**. In the left Navigator, select **Picker**.

For this manager, you must launch the picker by clicking **New**. The Log Page Design window opens.

- For a generic cost manager picker: In the left Navigator, select **uDesigner**, and then select **Configurable Modules**. Open the **[cost manager name]**. Open the **[attribute form]**. In the left Navigator, select **Picker**.

  For this manager, you must launch the picker by clicking **New**. The Log Page Design window opens.

2) To complete the picker design, follow the instructions under ***Designing a Log for a Manager*** (on page 207).

Designing a Log for a Manager

Logs designed for managers are for two purposes:

- They provide the design for pickers. The fields you use for the log are also the fields that will appear on the picker.

  Note: The following use pickers designed specifically for them because they do not use logs; their "records" exist only as part of a sheet

  - Fund Attribute Form
  - Account Code Attribute Form
  - Code-Based configurable managers
  - Generic Cost Manager

- They display fields from the attribute form that you want to monitor. For example, you might want a log for the Document Manager to include the names of all documents and their creators as well as their locations. For the Resource Manager, you might want the log under the Resource node to include the names of all resources and their current status.

For this reason, the attribute form you design should contain all the elements (fields) you want to see on the picker, as well as the manager's log.

There are two logs for a manager:

- One shows a list of every sheet that was created for the manager and is automatically created by Unifier.

  These logs show information about the sheet, such as when it was created, who created it, its status, and the date of its last modification.

- The other one shows information about the following items that were entered in to the managers:
  - Individual assets
  - Documents
  - Shells
  - Resources
  - Roles
  - Planning items
  - Levels

- Spaces

Whenever a user fills in an attribute form (which Unifier displays as a detail form), information about each item (asset, document, resource, and so on) will appear in the log.

For the Shell Manager, Planning Manager, and Code and Records-based Configurable Managers:

- Besides a standard log, you can design an advanced log for these managers. An advanced log is designed to create a tree or hierarchy structure for the records. This tree structure makes it easier for a user to view and select records from the log.
- An advanced log should also be designed for any manager if it contains business process records that will be displayed on a data picker or on a master BP log. For more information on data pickers, see ***About Data Pickers*** (on page 222).

Designing a Standard Log

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) Open the log as follows:

To open this log:	Do this:
Code and Records-based Manager	**1**. In the left Navigator, select **uDesigner**, and then select **Configurable Modules**. **2**. On the right pane, double-click the name of the manage. **3**. On the right pane, double-click the name of the attribute form. **4**. In the left Navigator, select **Log**, and then select **Standard**. **5**. On the right pane, click **New**.
Document	**1**. In the left Navigator, select **uDesigner**, and then select **Document Manager**. **2**. On the right pane, double-click the name of the attribute form. **3**. In the left Navigator, select **Log**. uDesigner automatically creates a log for the Document Manager. **4**. On the right pane, double-click the name of the log.

To open this log:	Do this:
Plan	**1**. In the left Navigator, select **uDesigner**, and then select **Planning Manager**. **2**. On the right pane, double-click the name of the planning type. **3**. For a log for a planning sheet, in the left Navigator, select **Planning Sheet**, and then select **Log**. On the right pane, double-click the name of the log. **4**. For a log for a planning item, in the left Navigator, select **Planning Item**, select **Log**, and then select **Standard**. On the right pane, click **New**.
Resource Role	**1**. In the left Navigator, select **uDesigner**, and then select **Resource Manager**. **2**. On the right pane, double-click the name of the attribute form. **3**. In the left Navigator, select **Log**. uDesigner automatically creates a log for the resource or role. **4**. On the right pane, double-click the name of the log.
Schedule Manager Resource Assignment	**1**. In the left Navigator, select **uDesigner**, and then select **Schedule Manager**. **2**. On the right pane, double-click the **Resource Assignment** Attribute Form. **3**. In the left Navigator, select **Log**. **4**. On the right pane, click **New**.
Shell Type	**1**. In the left Navigator, select **uDesigner**, and then select **Shell Manager**. **2**. On the right pane, double-click the shell type. **3**. In the left Navigator, select **Log**, and then select **Standard**. **4**. On the right pane, click **New**.

To open this log:	Do this:
User Administration	**1**. In the left Navigator, select **uDesigner**, and then select **User Administration**. **2**. On the right pane, double-click the User Attribute Form in the right pane. **3**. In the left Navigator, select **Log**, and then select **Company Users Log** or **Partner Users Log**. **4**. On the right pane, click **New**.

The Log Page Design window opens. Complete the tabs as described in the following sections.

General Tab

1) In the **Name** field, enter a name for the log.
2) (Optional) In the **Description** field, enter text that describes the log.
3) Click **Apply** to save changes.

Layout Tab

Use the Layout tab to designate what fields from the attribute form should appear on the picker and the log. The data will appear in columns.

To add a column:

1) Click **Add**. The Column Header Properties window opens.
2) Use the information in the table below to complete the column layout.
3) To add another column to the layout, repeat step 2.
4) Click **OK**.

   After you add column(s), they will appear as rows on the Design window. You can move the columns left or right to create the order you want. To move columns, select the row of the column you want to move and click the **Move Up** button to move the column left, or the **Move Down** button to move the column right.

In this field:	Do this:
Data Element Label	Choose the field you want on the log or picker. The list shows only those data elements that were on the attribute form. If you do not see the data element you want, go back to the form and add it. When you choose an element, uDesigner displays the name of the element in the Data Element Name field and also displays the element label in the Column Heading field. (You can change the column heading to a heading you prefer.)

In this field:	Do this:
Width	Enter the width (in pixels) the column should be. The default is 150.
Alignment	Choose the positioning of the data within the column, including the heading. Select Left, Center, or Right.

Sort Tab

You can determine which column to use as the default sort order for the log and picker. This allows you to choose a column to sort by initially.

1) In the **Initial Sort Column** field, choose the column to use as the default sort order for the log and picker.
2) In the **Sort Order** field, choose whether the sort order should be ascending (A-Z) or descending (Z-A).

Find Tab

In the course of work in Unifier, users will sometimes need to locate particular items among thousands in a log, and also to find particular items from a large picker list, such as a list of employees or accounts. To make it easier for users to locate a record, use the Find tab to specify field names they can use to search for particular records.

To specify search criteria:

1) On the **Find** tab, click **Add**. The Find Properties window opens.
2) In the **Data Element Label** field, select a field (data element) users can use to find a record(s).

   For example, you might want users to be able to search for all records that contain a specific resource, or schedule activity.

   When you enter a data element label, uDesigner automatically displays the database label of the element in the **Find Label** field. This field is editable.
3) If you want to change the name of the element to something more meaningful to the user, enter the name in the **Find Label** field.
4) Click **Add** to add another data element field to the find criteria, or click **OK** to close the window.

Designing an Advanced Log

An advanced log is available only for the Shell Manager, Planning Manager, User Administration, and for Code and Records-based configurable managers. This kind of log is designed to create a tree or hierarchy structure for the records. This tree structure makes it easier for the Unifier user to view and select records. The following illustration shows a manager class log for a parts manager that displays a tree structure created with the Navigation tab.

Data pickers on business processes will also use this advanced log to present records across a shell hierarchy, a configurable manager class, or a planning item type. Therefore, the instructions here include creating an advanced log for a shell. Because of their "nested" design, shells themselves will not display an advanced log. The log will be used to list shell BP records on data pickers.

To design an advanced log:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select one of the following:
   - **[the name of the configurable manager you want to design the log for]**; then double-click the name of the code class in the right pane.
   - **Shell Manager**; then, in the right pane, double-click the name of the shell you want to design the log for.
   - **Planning Manager**; then, in the right pane, double-click the name of the planning item you want to design the log for. In the left Navigator, select **Planning Item**.
   - **User Administration**; then, in the right pane, double-click the name of the attribute form you want to design the log for.
3) In the left Navigator, select **Log**, and then select **Advanced**.
4) On the right pane, click **New**. The Log Page Design window opens.
5) Complete the tabs as described under ***Designing a Standard Log*** (on page 208).
6) Click the **Navigation** tab.

   On the Navigation tab, you specify what fields from the manager, space, or shell form you will use to make the tree structure. When the manager, space, or shell is imported into Unifier, the Unifier administrator will configure these fields with a query to extract the appropriate records from the database and display them on the picker list.
7) On the **Navigation** tab, click the **Add** button. uDesigner opens the Add Data Element window.
8) In the Data Element field, select the field you want to appear in the tree structure.

   uDesigner shows the label of the element in the Data Element Name field.
9) To add another field for the tree structure, click **Add**; otherwise, click **OK**.

   The Log Page Design window displays the fields you selected for the tree structure.
10) (Optional) If you want to rearrange the order in which these fields will appear in the tree structure, highlight the fields and use the **Move Up** or **Move Down** keys until the fields are in the order you want.

> **Note**: If a field in this tree structure is removed from the business process or manager's form, the Add Data Element window will show the removed field in red.

Dashboards

To access the Dashboards log:

1) Go to the shell tab and switch to **Admin** mode.
2) In the left Navigator, select **Setup**, and then select **Dashboards**.

The **Dashboards** log enables the user to do the following:

- **Create**

  To create a new dashboard for the user.
- **Copy**

  To copy the existing dashboard for the user. This option is only available in the *gear menu* (⚙).
- **Delete**

  To delete the dashboard for the user.
- **Find**

  Opens a filter row, corresponding to each column (filter row) so the user can search for filtered results.

The **Dashboards** log has the following columns:

- **Name**
- **Description**
- **Last Modified by**
- **Last modified date**

The *gear menu* (⚙) has the following options.

- **Open**

  To open the existing dashboard for further editing.
- **Copy**

  To copy an existing dashboard.
- **Mark as Default**

  This option will be seen only when no dashboard has been marked as default. If no dashboard is marked as default, then for that shell, the **My Dashboard** will be the default dashboard to been seen on the landing page.
- **Unmark Default**

  This option will be seen against the dashboard which is marked as default. With this option the user will be able to unmark the dashboard as default.
- **Delete**

  To delete a dashboard.

When the user highlights a dashboard, the following tabs are displayed on the right pane:

- **Properties**

- The **Properties** tab lists the details (Name, Description, and so on) of the selected dashboard under **General Details**.
- **Permissions**

  The **Permissions** tab lists the users or groups that have permission set on the dashboard. The user can click the plus icon to add user permissions. After the user clicks **Save**, the permission is saved.

In This Section

Creating Dashboard Setup..... 214

Creating Dashboard Setup

When the user is creating or editing a dashboard setup, the user will be able to:

- Provide a name for the dashboard or change the dashboard name.
- Add tabs to the dashboards (using the plus icon on the left pane)
- Add blocks to the dashboard (using the plus icon on the left pane)

After blocks are added, the center pane will show a preview to the user on how the dashboard will look.

Adding Tabs in Dashboard

The user can add tabs using the plus icon. The system displays an overlay screen (**New Tab**) to allow the user to enter the tab name.

By default, no block is present in the newly added tab.

Adding Blocks in Dashboard

The user can include the following blocks in the dashboard.

- **Standard**
- **Custom**
- **Drill Down**
- **Analytics**
- **Portlet**

Standard Block

When adding or editing standard block, the user must provide Source details such as:

- **Data Type**
- **Report on**

Along with the source details, the user must provide the block details:

- Block Title: Title for Block.

- Display Type: This drop-down will support following display types.
  - Area Chart
  - Bar Chart
  - Column Chart
  - Line Chart
  - Pie Chart
  - Table
- Block Length: Values ranging from 1 unit to 6 units which will help determine how much space it will occupy on screen.
- Block Height: Values ranging from 1 unit to 6 units which will help determine how much space it will occupy on screen.
- Show Result
- Show Totals

Custom Block

When adding a custom block, the attributes required will be same as existing functionality, except for the block details.

Drill Down Block

When adding or editing a drill down block, the user must provide following Source Details:

- Title: Name for the Block (mandatory)
- Data Cube (mandatory)
- Block Filter Elements

The drill down details the required attributes will be same as existing functionality, except for the:

- Block Length
- Block Height attributes

Analytics Block

When adding or editing an analytics block, the user must provide Source details such as the URL and Block details.

Portlet Block

When adding or editing a portlet block, the user must provide Source details such as the URL and Block details.

Creating a Data Structure

In Unifier, electronic forms drive the business processes. They also run the managers and shells in Unifier. In the application, users fill in these forms with the information they need to maintain action items, manage document archiving, track workflow tasks and milestones, communicate and collaborate with project team members, generate project reports, monitor costs, and perform other tasks necessary to run projects and facilities.

By using uDesigner, you will be designing the forms for these business processes, managers, and other components. Every form you design has a data structure that supports it. This data structure defines how information is entered, stored, and distributed.

Note: Before you can design forms, you must create the data structure.

In This Section

Data Structure Components....217
Data Definitions....218
Data Elements....231
Dynamic Data Sets....234
Statuses....239
Tags....241
Exporting the Data Structure to Primavera Unifier....242

Data Structure Components

The data structure is composed of:

Data Definition (DD):

Data definition describes how data is entered and stored. The definition consists of the Data Type, Data Size, and Input method. Data Definitions govern the behavior of Data Elements.

Data Element (DE):

Data Elements is the field that the users see on the forms in Unifier, such as a text box or menu. The behavior of a Data Element is governed by the Data Definition on which it is built.

Status:

A status indicates the condition or state of a record, line item, or asset. Every record, line item, and asset must have a status indication at every step.

Dynamic Data Sets:

Dynamic Data Sets are a way of narrowing the number of possible choices a user can make. Narrowing the choices makes entering data faster and more efficient for users. Dynamic Data Sets dictate how fields behave when the user has multiple-choice options.

Tags:

Tags work with linked elements to connect Schedule Sheet Activities with Business Processes, Shells, and Configurable Manager. Tags allow a one-to-many relationship between a Data Element on the master Schedule Sheet and multiple Data Elements on a form.

Data Definitions

Data Definitions describe how data is entered and stored. Data Definitions are what Data Elements (the fields for the forms) are built on. There are three kinds of Data Definitions:

- Basic
- Cost Code
- Data Picker

Basic

For use in designing most of the fields on business process forms, attribute forms, managers, shells, and other components. See ***Creating a Basic Data Definition*** (on page 227).

Cost Code

For use in designing the layout of cost code segments. Cost codes (or CBS codes) are used on cost BPs that will affect project cost sheets. See ***Creating a Cost Code Definition*** (on page 227).

Data Picker

For use with master Business Process logs, Shells, Planning items, and Configurable Managers that function across a Shell hierarchy. Data pickers make it easier for users to choose the correct record from master business process logs or planning item type that resides across shells, a class in a configurable manager that operates across shells, or for auto-creation across shells. Data picker definitions differ from most of the data definitions you will create. For information on these definitions, see ***About Data Pickers*** (on page 222) and also ***Creating a Data Picker Definition*** (on page 228).

> **Note:** You can also create shell data pickers for use on the Shell Attribute Form. Using a shell data picker lets you reference a project/shell from another project/shell, copy values from the referenced project/shell, or update the referenced project/shell by using the existing attribute form.

Except for Data Pickers, Data Definitions consist of the following components:

- Data Type
- Data Size
- Input method

Data Type

Whether it is an alphabetical string or a number.

- **String** data contains letters, numbers, or special characters. Use string data when the criteria for the data being entered must be flexible. For example, an address field might contain letters, numbers, and special characters.

- An **integer** is a number, with or without decimals. It cannot contain letters or special characters. Use integers for data entry, such as cost or quantity amounts, where you want to prevent the user from entering letter characters.

Data Size

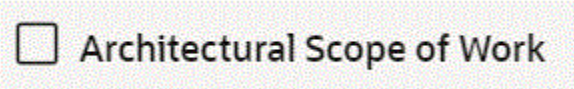
The number of characters for strings.

Input method

The method used to enter data. The following is a list of Input methods, including their functions:

- BP Creator
  - Allows users to auto-create records based on a condition, such as a dollar amount, or a time frequency, such as daily or weekly. When a Business Process reaches the condition or frequency trigger in a Workflow, the BP Creator element on the form automatically creates a new record.
  - Unlike other fields, Data Element fields built on the BP Creator definition are not visible on any form unless the auto-creation is manually initiated by the user. Instead, the auto-creation is set up in uDesigner and configured by the Unifier administrator. When this is completed, the form will show a text box with a Create button, or a hyperlink from the source record to the destination record.
- Checkbox

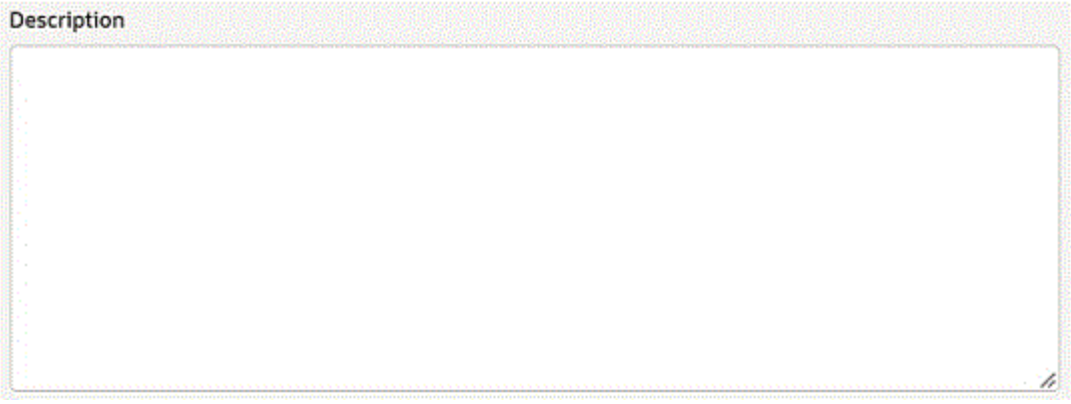
  Provides an option that the user can select ("check") or not. "Not checked" is the default value.

  > **Note**: Do not use a check box as a required field. Whether or not the check box is selected, a workflow assumes the "not checked" value and allows the record to be sent.

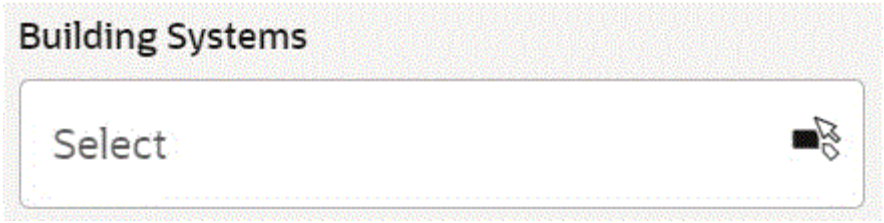
- Multi-line text

  Use this element for multiple text lines for entries up to 4000 characters long, such as descriptions or remarks. You must also set the Data Size—the maximum number of characters.

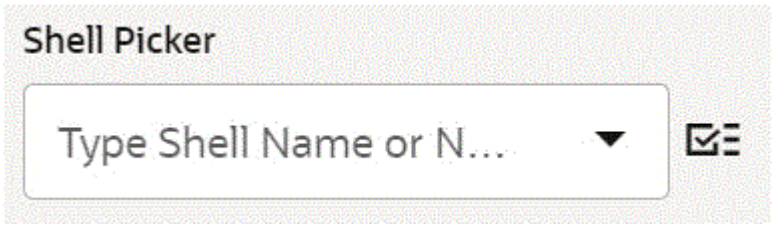
- Multi-select input

Allows the user to make multiple selections from a list. This input method automatically uses a comma as a separator between selections. The values for this definition are specified when the business process, form, manager, or other component is set up.



- Picker

  Allows users to choose from lists of items. uDesigner and Unifier are shipped with multiple predefined pickers.

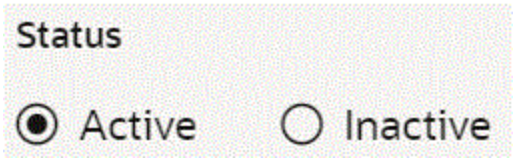


- Pull-down menu

  Provides a list of items the user can choose from but cannot change. The values for the pull-down menu choices can be up to 128 characters long and are specified when the business process, form, manager, or other component is set up.

- Radio buttons

  Use where two values are possible and one must be selected. Values of ‘one' and ‘two' are assigned by the system; the default ("true") value is "one." The actual values are set when the business process, form, manager, or other component is set up.



> **Note**: Do not use a radio button as a required field. The workflow will assume that a "true" value has been entered, even if the user makes no choice.

- Text box

Use a text box for a one-line alphanumeric text entry field, such as name or address. You must also set the Data Size—the maximum number of characters. A text box is usually used for smaller text (1 to 64 characters), but could be longer.

Notes: As you design the data structure, keep in mind that one of its purposes is to re-use data definitions throughout the life of many business processes, managers, shells, or other components. A data definition can be used in many different places in the Unifier interface—for example, for fields on a business process form, on a report, or on a cost, scheduling, or planning sheet.

- Be conservative about the number of data definitions you need, and be as generic as possible about naming them. Too many definitions can be confusing to users and can decrease your efficiency in designing forms and other components. If you need a data definition for a unique purpose, identify that purpose in the name you give the definition. This will make it easily recognizable and distinguish it from other, similar data definitions.
- Unifier has provided multiple data definitions for your use in building data elements. You can add other definitions of your own if you need them. For a list of the data definitions provided by Unifier, see the section on data definitions in the *Unifier Data Reference Guide*. Before you begin creating data definitions, review this list of definitions that already accompany the product; it will help you understand their function, and it may save you the effort of creating new definitions you might not need.

Data Definitions with Data Set Values

When working with data definitions that have data set values (for example, pull-downs, or drop-downs, multi-select inputs, radio buttons, or selections, and so forth) the status of the data set value is important.

When the status of the data set value is **Inactive**, the values will not be available for selection when you attempt to select an option manually.

Unifier ignores the status of the data set values, when the values are set by way of one of the following methods:

- **Copy**
- **Auto-populate**
- **CSV import**
- **REST**
- **SOAP**

- **RAP**
- **Auto-create**

The following explains what happens when an invalid data set value is selected:

- **Copy**

  If the data set value has been deleted, the system *accepts* the data set value that was used in the source.
- **Auto-populate**

  If the data set value has been deleted, the system *accepts* the data set value that was used in the source.
- **CSV import**

  If the data set value has been deleted, the system *does not accept* the data set value (invalid).
- **REST**

  If the data set value has been deleted, the system *does not accept* the data set value (invalid).
- **SOAP**

  If the data set value has been deleted, the system *does not accept* the data set value (invalid).
- **RAP**

  If the data set value has been deleted, the system *does not accept* the data set value that was used in the source (invalid).
- **Auto-create**

  If the data set value has been deleted, the system *accepts* the data set value that was used in the source.

About Data Pickers

Data pickers are designed to work with business process logs (including master logs), shells, planning items, and configurable managers that function across a shell hierarchy.

> **Note**: User data pickers are designed for a different purpose. See ***About User Data Pickers*** (on page 226) for details.

The purpose of a data picker is to make it easier for users to choose records:

- From a business process log
- From a class in a configurable manager that operates across shells
- From a planning item type that resides across shells
- For auto-creation across shells

> **Note**: The data displayed on data pickers is not restricted by permissions. Users will see all business processes, manager classes, or shells, regardless of their permissions.

Data pickers are designed in uDesigner and set up to query the database by the Administrator in Unifier. See ***Data Picker*** (on page 266) for more information about configuring a data picker. In operation, a data picker navigates to a specific business process, shell, planning item, or configurable manager and then extracts the records to display on the list by using a query the Unifier administrator sets up.

Data pickers work differently from the other pickers. Most pickers display a flat list of records for users to choose from.

A data picker, instead, can display a navigation structure to guide users to the correct location where a record resides, such as a specific shell, a specific class in a configurable manager, a specific planning item, or a specific business process. A data picker helps to prevent users from inadvertently choosing the wrong record from a picker list. It is also useful for filtering large amounts of records into more manageable lists to choose from.

Data Pickers Use an Advanced Log or a Picker Log

To help ensure that the user navigates to the correct record, data pickers work with the Advanced Log feature or the Picker Log feature. These features are optional, but highly recommended, as they create the tree or hierarchy structures that make data pickers easily navigable and more likely to ensure that the user selects the correct record.

An Advanced Log should be designed for any shell, planning item, or configurable manager class that contains records that will be displayed on a data picker. A Picker Log should be designed for any business process that contains records that will be displayed on a data picker.

A data picker with no Advanced Log or Picker Log shows only a flat list of all the records. There are no arrows to expand or collapse records.

A data picker with an Advanced Log or Picker Log displays a tree structure where users can drill down to more specific records. Each group can be expanded to reveal lower level items by clicking the arrow next to the record.

How Data Pickers Work with Shells

Data pickers are especially useful for auto-creating business processes across a shell hierarchy. A data picker can link to a shell picker to display only the shells you specify, which helps to prevent users from choosing the wrong shell for auto-creation. You can create a data picker for each shell type (such as buildings, regions, or properties). In operation on a business process form, a BP Creator element on the form will then know which shell to auto-create the new business process in.

If the newly created business process has the same data picker configuration as the creator step or form, the value in the data picker will be copied over to the new record. If the data picker configurations differ, the value will not be copied. For example, business process A in shell Building 100 creates business process B. On business process A, the data picker is configured to show shell Building 100. However, if the data picker on business process B is configured to a different shell, the data picker value will not be copied over.

Data pickers support both S step (workflow) and BP Creator types of auto-creation.

To facilitate auto-creation, you need to use uDesigner's formula feature to create a link between the data picker and the appropriate shell. For instructions on linking the data picker to a shell, see ***Adding Formulas to Fields*** (on page 348).

To select records from across shells:

Data pickers allow users to pick business process records across shells. When you create the data definition for each picker, you link it to a specific shell type. When placed on a business process form, the picker will show the business process records across the shell hierarchy.

Using linked elements for the picker log

If you are using linked elements in your shell hierarchies, you can use the linked element(s) as part of the tree structure in an advanced log to group the records under a navigation node. Thereafter, if the hierarchy is reorganized, the tree structure will automatically reflect the reorganization for the data picker(s) or reverse auto-population.

How Data Pickers Work With Configurable Managers

Data pickers work in several ways with Code and Records-based configurable managers.

To select records from the same class across shells:

Data pickers can aid users in picking business process records from the same manager class across shells.

By creating a data picker for a manager class, and placing it on a business process detail form, you can allow users to pick records of a class from across shells. When you create the data picker definition, you will link the data definition to a specific class. Then, from the definition that is linked to a class, you can create data pickers to place on business process forms.

To enable value rollups to Configurable Managers:

A manager picker is necessary on any form containing data you want to roll up to the manager sheet. The manager picker is the field that implements the rollup. Therefore, to implement cost and quantity rollups to a manager sheet, you need to link the manager picker to a data picker on the same form. After you establish this connection, business processes can roll up quantity information and line item costs from the data picker, via the manager picker, to the manager sheet.

For instructions on connecting pickers using a formula, see ***Adding Formulas to Fields*** (on page 348).

For the manager sheet, rollup data can come only from the following business processes.

At project/shell level:

- Cost - Line Items with Multiple Codes
- Line Item, Generic

At the company level:

- Line Item, Generic

In formulas

You can use a data picker element in a string formula to create part of a manager code or a manager navigation code.

For auto-population

You can auto-populate data elements on business process forms across shells from a data picker. You can also populate a data picker from:

- Single-record BP
- Business Process Picker
- Upper form of a business process
- Another data picker

For reverse auto-population

You can design reverse auto-population from a data picker back to a configurable manager class record at the project/shell or company level.

During the reverse-auto-population operation, Unifier will verify that the value is valid on the destination form; that is, that the user can manually launch the data picker on the destination form and select the same value. To verify this, the system will run the query for the data picker on the destination form.

How Data Pickers Work With the Planning Manager

Data pickers work in several ways with the Planning Manager.

To select records from the same planning type across shells:

Data pickers can aid users in picking records from the same planning type across shells.

By creating a data picker for a planning type, and placing it on a business process or shell detail form, you can allow users to pick records of a planning type from across shells. When you create the data picker definition, you will link the data definition to a specific planning type. Then, from the definition that is linked to a planning type, you can create data pickers to place on business process or shell forms.

Using linked elements for the picker log

If you are using linked elements on your planning types, you can use the linked element(s) as part of the tree structure in an advanced log to group the records under a navigation node.

For auto-population

You can auto-populate data elements on business process and shell forms from a planning item data picker. You can also populate a planning item data picker from:

- Single-record BP
- Business Process Picker
- Upper form of a business process
- Another data picker

For reverse auto-population

You can design reverse auto-population from a data picker back to a planning item type record at the project/shell or company level. Or, you can design reverse auto-population from a business process back to a Planning Item Attribute Form.

During the reverse-auto-population operation, Unifier will verify that the value is valid on the destination form; that is, that the user can manually launch the data picker on the destination form and select the same value. To verify this, the system will run the query for the data picker on the destination form.

About User Data Pickers

User pickers are common elements in the application. There are several user pickers available for you to choose from in the application, and you can also design your own user pickers for your business case by using the User Picker Data Definition.

Your own user pickers, which you created by using the User Picker data definition, cannot be auto-populated or updated by way of reverse auto-population (RAP).

If you want the user pickers that you created be auto-populated or updated by way of reverse auto-population (RAP), you must use a separate data picker definition that is called the User Data Picker. Refer to the *Unifier Data Reference Guide* for more details about the User Data Picker data definition.

The log displayed for the User data picker is based on the log design prepared in uDesigner.

Like other data pickers, the user data pickers are designed in uDesigner and set up to query the database by the Administrator in Unifier. They will display all company and partner users according to the query the Administrator specifies when setting up the business process or configurable manager.

> **Note**: You can create user data picker elements only if a User Attribute Form is designed in uDesigner.

In the **Data Picker Configuration** window, under the **Additional Filter** block (see ***Using Filters*** (on page 268) for more details), the **Apply User Attributes to the picker log and display element from Project/Shell directory** option enables you to fetch the User Attributes data from the project directory, when User Data Picker is launched.

The list of users displayed also will be from the project directory. In addition, the value for the display element for any auto-populate field or user data picker would be fetched from the project/shell directory.

If the **Apply User Attributes to the picker log and display element from Project/Shell directory** option is selected (checked), the values will come from the project/shell whether the user is trying to fetch data from or apply data to any particular field.

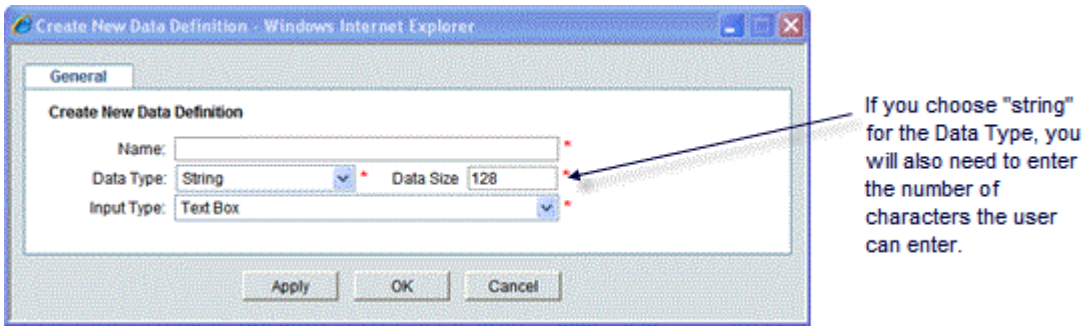
The **Apply User Attributes to the picker log and display element from Project/Shell directory** option is enabled only if the **Filter list of Users/Group based on Project/Shell Membership** option is selected.

Creating a Basic Data Definition

Use basic definitions for designing forms, managers, shells, and other Unifier components.

To create a basic data definition:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, select **Data Definitions**, and then select **Basic**.
3) Click the **New** button. The **Create New Data Definition** window opens.
4) In the **Name** field, enter a unique name for the data definition.
   - The name can include alphanumeric characters, spaces, dashes, and underscores.
   - The name will be case-sensitive.
   - The name cannot begin the name with a prefix reserved by Unifier: SYS, UUU, or Picker.
5) In the **Data Type** field, specify whether the definition will be a string or integer data type.
   When you specify the data type, uDesigner displays an additional field, **Input Type**.



6) In the **Input Type** field, select the method the user will use to enter the data.
7) Click **OK**.

Creating a Cost Code Definition

Use Cost Code definitions for designing the layout of cost code segments. Cost codes, or CBS codes, are used on cost business processes that will affect project cost sheets.

To create a cost code definition:

1) Go to the **Company Workspace** tab and switch to **Admin** mode**.**
2) In the left Navigator, select **Data Structure Setup**, select **Data Definitions**, and then select **Cost Code**.
3) Click the **New** button. The **Create New Data Definition** window opens.
4) In the **Name** field, enter a unique name for the definition.
   - The name can include alphanumeric characters, spaces, dashes, and underscores.
   - The name will be case-sensitive.
   - The name cannot begin the name with a prefix reserved by Unifier: SYS, uuu, or Picker.
5) In the **Label** field, enter the label you want to appear for this field on forms.
6) In the **Input Type** field, select the method the user will use to enter the data.

7) Click **OK**.

Creating a Data Picker Definition

Use data picker definitions for designing data picker elements to:

- Work with specific business processes, shells, planning item types and configurable manager classes that function across a shell hierarchy. For more information about data pickers, see ***About Data Pickers*** (on page 222).
- Create user pickers that can be auto-populated and updated using reverse auto-population. For information about these data pickers, see ***About User Data Pickers*** (on page 226).

To create a data picker definition:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, select **Data Definitions**, and then select **Data Picker**.
3) Click the **New** button. The Create New Data Definition window opens.
4) In the **Name** field, enter a unique name for the definition.
   - The name can include alphanumeric characters, spaces, dashes, and underscores.
   - The name will be case-sensitive.
   - The name cannot begin with a prefix reserved by Unifier: SYS or UUU.
   - The name cannot include the word "picker."
5) In the **Category** field, click **Select** and choose the component you are creating this picker definition for:
   - A **business process**
   - The **Shell Manager**
   - The **Planning Manager**
   - A configurable manager (listed by name)
   - User attributes
   - The Resource Manager

   > **Note**: The role data picker is only available for use on the Resource Assignment form in the Schedule Manager. It is used to calculate the role rate based on the exchange rate. If hard booked resources are allocated, the total cost = (role rate) x (currency rate) x (quantity.) If the resources are not allocated, the total cost is manual entry (from a formula). Roles displayed in the role data picker will be the complete list of company roles that are set up in Unifier (Admin mode.) For more information, refer to the *Unifier General Administration Guide*.

   This ties the data picker to a specific business process, configurable manager, planning item, shell, or User Attribute Form. After you have created this data definition, you can build multiple data picker elements to use on that business process, manager, shell, or user.
6) In the **Data Source** field, select the source the picker information should come from.

- For a business process category, choose the business process the data should come from (list will not include single-record BPs).
- For a configurable manager, choose the class the data should come from.
- For the Shell Manager, choose the shell the data should come from.
- For the Planning Manager, choose the planning item type the data should come from.
- For a User Picker data definition, Unifier will automatically populate the data source field with "New User."
- For a role data picker, choose Role Attributes.

7) In the **Display Element** field, select the element (field) whose value should appear on the data picker list.

   The list will show only string-type data elements and will not show linked data elements or standard elements.

   The Data Element field will show the label of that field.

8) Click **OK**.

Data Picker Filter Query Condition

When you are setting up a business process, you can filter the condition for the *data picker* according to:

- Contains
- Does not contain
- Exists in
- Does not exist in
- Equals
- Does not equal
- is empty
- is not empty

In the BP Data Picker configuration window, you can also select the **Include only current Project/Shell records** option to allow users to view and select only current project/shell records that meet the query conditions. This option is available only for the BP Data pickers whose source is a project level business process. However, if the project level BP Data picker is added in company business process, the system ignores above option. By default, this option is deselected.

> **Note:** If both the **Show results matching any condition** option and the **Include only current Project/Shell records** option are selected in the BP Data Picker Configuration window, the system displays only those records that match either the **Include current Project/shell records** option or any of the specified query conditions.

The following is an example of query evaluation. The workflow setup follows these policies for selecting users.

Assuming business process BP A has a Data Picker DP1 defined in the Upper Form which brings in records from BP B. A query condition in defined on the string attribute Country where expected user-defined values are, for example, San Jose, CA.

Below is the partial list of records for BP B:

- Record Number: 001 > Country: United
- Record Number: 002 > Country: United States
- Record Number: 003 > Country: United Kingdom
- Record Number: 004 > Country: United States of America

When the conditions are defined, using *Exists in* and *Does not exist in* operator, then:

Condition/Operator	**Business Process Form (Field value)** Example of the data source used.	**Filtered List in User Mode**
Exists in	Country exists in (United States of America)	This will show a list of filtered records where Country value has records where substring from 'United States of America' exists.
Does not exist in	Country does not exist in (United States of America)	This will show a list of filtered records where Country value has record where substring from 'United States of America' does not exist.

The difference between *Contains* and *Exists in* are:

Query Condition	**Filtered List of Records from BP B**
Contains in	Empty list of records
Does not contain	001, 002, 003, 004 , 005 , 006, 007
Exists in	001, 002
Does not exist in	003, 004

The following is another example of query evaluation.

Data Picker	**Query Location**
Destination BP where Data Picker is placed	Action Items
Data source of Data Picker placed in Action Items	Meeting Minutes

Data Picker	Query Location
Query condition set for Data Picker	Description' field of Meeting Minutes exists in Action Items / Upper form / Description

Runtime query evaluation Case 1:

- Description field value in Action Items / Upper form: Design Phase 2
- Meeting Minutes Record R1 has Description field value: Design
- Meeting Minutes Record R2 has Upper Form / Description field value: Design Phase 2 items

Then, only R1 will be seen in the list of Data picker records.

Runtime query evaluation Case 2:

- Description field value in Action Items / Upper form: Design Phase 2 items
- Meeting Minutes Record R1 has "Description" field value: Design
- Meeting Minutes Record R2 has "Description" field value: Design Phase 2

Then, both R1 & R2 will be seen in the list of Data picker records.

Notes:

- If the workflow setup has any of the new operators, the list of *data pickers* that the user sees at runtime retains the stated query parameters.
- The list of records which the BP data picker points to shows a filtered list of records based on the query conditions defined using "Exists in" or "Does not exist in" operators.

The "Or" Condition

In the scenarios mentioned above, you configured Data Picker query to show records where the Country was USA. If you wanted to conduct another query to configured Data Picker query to show records with title ABCDEF, the configured Data Picker query would have satisfied both of the queries: Country = USA and Title contains ABCDEF.

You can also find records based on an individual query, instead of all queries. That is to state that you can apply the "Or" condition between two, or more, query conditions.

That is to state: If you apply the "or" condition, the Data Picker shows records which have Country as USA (and Title may or may not contain ABCDEF) as well as records that have Title as ABCDEF (and Country may or may not be USA).

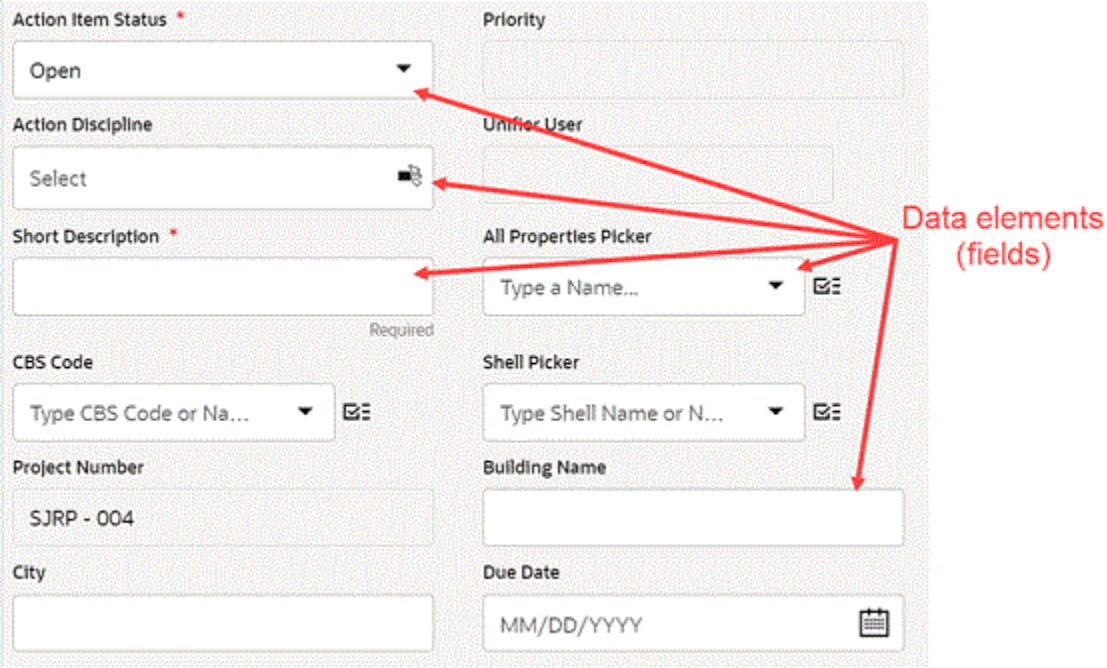
Data Elements

A data element combines a data definition with a field label to become what users see on forms in Unifier. A data element (field) can be a text box, where the user types in information; a pull-down menu of choices, such as dates or names; radio buttons, where the user must select one of the options presented; or a check box, where the user has the option of choosing something or not. Data elements can also be read-only fields containing auto-populated or default data.

When creating a data element, you are defining the name and form label only—the element is essentially a container that will not contain values until users enter them.

By using uDesigner, you can create a "dictionary" of elements that can be re-used on multiple forms for different purposes.

> **Note**: Be sure you plan your form design in detail before creating the elements. After you have used a data element on a form, Oracle recommends that you do not change the data definition for the element.



Keep in mind that the purpose of the data structure you are creating is to re-use data elements throughout the life of many business processes, managers, shells, or other components. A piece of data (a field) from one form can be presented in many different places in the Unifier interface—for example, on multiple business process forms, on a report, or on a cost, scheduling, or planning sheet.

Be conservative about the number of data elements you need, and be as generic as possible about naming them. Too many elements can be confusing to users and can decrease your efficiency in designing business processes. If you need a data element for a unique purpose, identify that purpose in the name you give the element. This will make it easily recognizable and distinguish it from other, similar data elements.

Unifier has provided multiple data elements for your use in designing forms. You can add other data elements of your own if you need them. For a list of the data elements, see the section on data elements in the *Unifier Data Reference Guide*. Before you begin creating data elements, review this list of elements that already accompany the product; it will help you understand their function, and it may save you the effort of creating new elements you might not need.

Creating a Data Element

To create a data element:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, and then select **Data Elements**.
3) Click the **New** button. The New Data Element window opens.
4) In the **Data Element Name** field, enter a unique name for the element.
   - The name cannot be longer than 22 characters. The name for currency amount fields on payment application detail forms cannot be longer than 21 characters.
   - The name can include alphanumeric characters.
   - The name cannot include spaces or dashes; instead, separate words with an underscore (_).
   - The name will not be case-sensitive.
   - The name cannot begin the name with a prefix reserved by Unifier: sys, or uuu.
5) In the **Data Definition Source** field, select the data definition you want to build this element on.

   If you choose **description text**, you will need to enter the number of lines you want to allow for the text.

   If you choose **Image Picker**, you will need to specify the height of the image in pixels. (The horizontal size of the image is automatically adjusted by the size of the form column.)
6) In the **Form Label** field, enter the label you want to appear on the form for this element.

   If you leave this field blank, the data definition name will be used.
7) (Optional) Use the **Description** field to enter details about the design of the data element.

   This can be helpful to others in understanding how to use this element.

   (For a data element based on the Decimal Amount data definition) In the **Decimal Places** field, specify how many decimal places the amount should display.

   On some manager sheets and forms, particularly on Payment Application forms, the decimal places of the values used in formulas will be limited by the browser.

   You can use this field to limit the number of decimal points Unifier displays, and thereby, make it easier for users to read the value of the amount. If you specify fewer decimal places, the system will round the decimal amount. However, this will also be the amount actually stored in the data element. If your process needs to maintain an exact decimal amount, specify eight decimal places; otherwise, you will lose data.

   The decimal places you specify in this field will affect this decimal amount throughout Unifier operations, logs, formulas, reverse auto-population, email notifications, conditional routings, RFB bidder forms, and so on.

   > **Note**: The Unifier administrator has the option of specifying the number of decimal places to be displayed on manager sheet columns. The decimal amount you specify here will override the decimal amount defined for the sheet column.

8) Click **OK** to save your changes and exit the window.

   The Data Elements log displays the name and details of the data element you created.

About Images

If you create a data element using the Image Picker data definition, a preview of the form will show a "virtual box" to help you judge the look of the form. The virtual box will be the maximum size you specify using the Number of Lines field. At runtime, Unifier will render the image as follows:

- If the image fits the virtual box, the image will display as is.
- If the image is smaller than the virtual box, the application anchors the image to the top-left corner of the box.
- If the image is larger than the virtual box, the application adjusts the image to fit the size of the box and preserves the aspect ratio of the image.

Modifying a Data Element

After you have created a data element, you can only modify the data definition source and form label. You cannot change the data element name.

Be aware of the following before you modify a data element:

- If you need to change a data element, Oracle recommends that you see where it is used first, as the changes you make can affect business processes in ways you might not expect.
- To see where the data element is being used, highlight the data element in the log, and from the toolbar, click **Usage**. uDesigner displays a list of all business processes and other forms that are currently using the element.

To modify a data element:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, and then select **Data Elements**.
3) Select the data element and click **Open**. The Modify Data Element window opens.

> **Note**: Rather than search through the entire list of data elements, you can use the Find feature to narrow your search by the element's name, the data definition it was built on, the form label of the element, or words from the element's description.

4) Select a new **Data Definition Source** or enter a new name for the **Form Label**
5) Click **OK**.

Dynamic Data Sets

Dynamic data sets are a way of narrowing the number of choices a user can make on a form field. By narrowing a user's choices, they can enter data faster and more efficiently. You can also use dynamic data sets as a way of eliminating fields that are not necessary for specific situations. For example, instead of asking a user to choose one city among hundreds in a list, you can narrow the list of cities by state. Or, instead of asking the user to fill in every field in a form, you can "disable" those fields that are not necessary.

Dynamic data sets are governed by a master element (field) that dictates what some fields in the set will show and how others will behave. Data sets are considered "dynamic" because the values of the elements in the set change, depending on what the user chooses in the master element field. For example, on a form that requires a state and city designation, the list of cities changes, depending on the state the user chooses. The state and city elements become a dynamic data set, and the master element (state) dictates what cities will appear in the list.

Dynamic data sets work with pull-down lists and radio buttons. In Unifier, the administrator will populate the pull-down lists, and will also specify the behavior (enabled or disabled) of the fields in the data set.

For example, a form might require both national and international addresses. Some countries or states within a country require a postal code with a mail stop extension; others do not. The country, state, and postal code fields become the dynamic data set. In this dynamic data set, the country is the master element; it dictates which states the user can choose from and whether the user must enter a mailstop extension.

> **Note**: Before you create the dynamic data set, be sure you have designed all the data elements you need for the set.

Dynamic data sets are composed of the following:

- Master Element

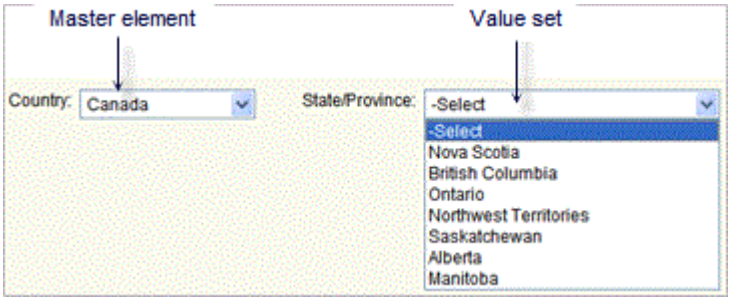
  Controls the content or behavior of the other data elements (fields) in the set.
- Value Set

  Data elements (fields) whose values is controlled by the master element. For example, if the master element is "Country," then a value set may be a pull-down list of states.
- Behavior Set

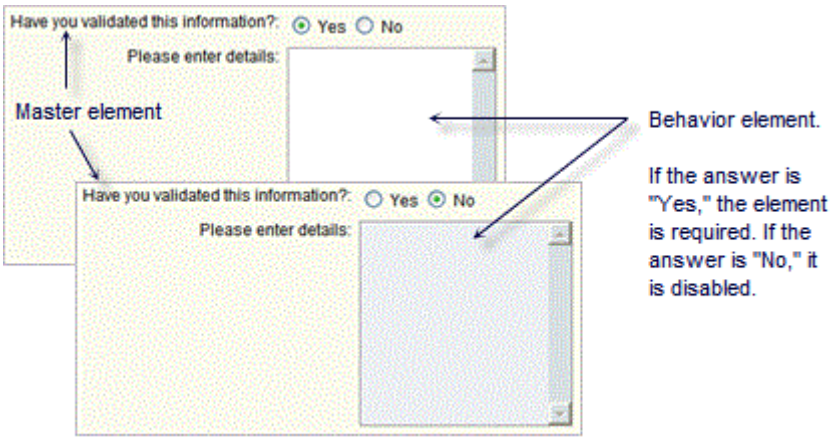
  Data elements (fields) whose behavior is controlled by the master element. The master element determines if the fields are **Required** (makes the data element a required field), **Disabled** (the data element is read-only), or **Disabled and Clear** (the data element is disabled and any previously entered text is cleared). For example, if the master field is an "Attachments" radio button, the behavior set may include "Web files" and "Emails." Both are disabled until you select the "Attachments" radio button. Behavior sets must be editable.

The value set and behavior set are independent of each other. However, the elements you select for a value set cannot be used as part of a behavior set. The master element controls the value of one field(s) and the behavior of another (or others). You must have a master element for a dynamic data set, but you do not need both a value set and a behavior set.

For example, you could use the master element and only a value set to create a country and state/province dynamic set.



Or, you can create a data set using the master element and only a behavior set to show or disable a field.



Using Multiple Dynamic Data Sets

You can include multiple dynamic data sets on a form so long as any single data element is used for only one dynamic data set. Multiple dynamic data sets can use the same master element, but the data elements in the value sets and behavior sets must be different from those in any other dynamic set on the form.

Creating a Dynamic Data Set

To create a dynamic data set:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, and then select **Dynamic Data Sets**.
3) From the toolbar, click **New** to open the **Properties** window.
4) On the **General** tab, enter a name and description for the data set.
   Use alphanumeric characters only; no special characters or spaces.
5) In the **Master Data Element** field, click the **Select** button and choose the data element (field) that will control the content and behavior of the other data elements (fields) in this set. The Select list will show only those data elements that are pull-downs or radio buttons.

For example, you could use a radio button for "Attachments" as a Master Data Element to enable additional options for a user to choose. If the user clicks the Attachments button, additional radio buttons become active so the user can choose what type of attachments to include.

- The Status data element, as well as all standard data elements, cannot be used as a master data element.
- Data elements based on the Data Picker data definition cannot be used as the master element.
- You can make the Master Data Element Editable, Editable (Required), or Read-Only in uDesigner.
- After you have chosen the master data element, uDesigner will show the Data Definition and Form Label of the master element.

6) Click the **Value Set** tab.
7) To add the other elements to the data set, click the **Add** button.

   The **Select Value Set Data** Element window opens, showing a list of those elements available for dynamic data sets—pull-downs or radio buttons.

   The elements you select here are the elements whose *values* will be controlled by the master element. For example, if the master element is "country," then a value set might be a pull-down list of states that belong to the country.

   - The elements you select for a value set cannot be used as part of a behavior set.
   - If any field in the value set is marked "required," the master element must also be marked "required."
   - Data elements based on the Data Picker data definition cannot be used in a value set.

8) Select **In a Business Process, auto-select the value if there is only one value in the Value Set data element** so the system auto-selects the data in the **Value Set** DE, if there is only one possible value. See below for more details.
9) Select the elements and click **OK**.
10) Click the **Behavior Set** tab, and then click the **Add** button.

    The **Select Behavior Set Data Element** window opens, showing a list of those elements available for dynamic data sets.

    The elements you select here are the elements whose *behavior* will be controlled by the master element. These are the elements that will be either **required** or **disabled** by the master element, and they must be marked "editable" on the form.

    For example, if the master data element is Attachments, as in the example in step 4, the elements whose behavior is controlled would be Text Files, Video Files, and emails.

> **Note**: Do not use asset codes in a behavior set.

11) Click **OK**.

Before Modifying a Dynamic Data Set

If you need to change a dynamic data set, Oracle recommends that you see where it is used first, as the changes you make can affect business processes in ways you might not expect.

To see where the data set is being used:

1) Highlight the data set in the log.
2) From the toolbar, click **Usage**.

   uDesigner displays a list of all business processes and other forms that are currently using the set.

> **Note:** Be aware that if you change a dynamic data set that is already on a form, the changes you make to the set will not cascade to the form. You must delete the set from the form, save the form, insert the fields again, and click the Dynamic Data Set button.

Select In a Business Process, auto-select the value if there is only one value in the Value Set data element **Option**

If this option is selected, at runtime the **Value Set** pull-down DE value will get auto-selected if it has only single value to select. The same function will apply if the **Value Set** DE has only one value to select. The existing DDS does not have any impact on the existing behavior, unless the user changes the selection at DDS setup level. If the **Value Set** DE has only one value to select, the user will not be able to change or clear this selection.

In **User** mode, all the following BPs that can have DDS on their Upper Form or Detail Form, or both, will be impacted by this selection:

- Company-level workflow and non-workflow BPs
- Shell-level workflow and non-workflow BPs
- Action with preview and without preview
- Auto-population and Reverse Auto-population
- Email response

The following BPs will not be impacted by this selection:

- Copied records of workflow and non-workflow BPs
- Copied line item of workflow and non-workflow BPs
- Line Item consolidation
- Attribute forms of all kinds and types

The BP Templates that have been created after the 22.10 release will have auto-selection of the **Values Set** DEs, if the option is selected. The BP Templates created prior to 22.10 will remain unchanged; however, you can edit these templates to have auto-selection of the **Values Set** DEs.

RESTful Web Service

When the user creates, or updates, a BP record through RESTful web service call, if the input request-file has a value for the Master Data Element field and if the Value Set pull-down value has only one value in the hierarchy of DDS, the system will auto-select the only value on the BP form. If the Value Set DE has only one value to select, the user will not be able to change or clear this selection.

Statuses

A status indicates the condition or state of a record, line item, asset, shell, manager, or other Unifier component.

A **record** status indicates the position a form is in at any point in a business process, such as "approved," "pending," or "closed." Each business process includes at least one, and sometimes many, steps during its workflow. At each step, the Unifier user must apply a record status to the form. The status is the action that links two steps in a workflow. The action the link takes appears as a choice the user makes on the form. This choice moves the task to the next step.

When designing a business process, you will be specifying what statuses the user can choose from at the completion of each step in a workflow. Inactive record statuses are not displayed to users.

A **line item** status indicates the position of a line item at any point in the business process. Unlike a record status, it is not a visible part of a workflow; instead, it is part of the form that moves through the workflow. For example, a document BP might bundle several documents together for review. Each document in the bundle is represented as a line item and as such, can be given a separate status: One document can be approved, while another can be sent back for editing. Each line item must be given a status. You can use the Default button to change the Default setting of Line Item Statuses for business processes.

Asset statuses differ from other statuses. Instead of affecting the disposition of a BP or line item, an asset status controls which assets are displayed on an asset class sheet. Plan to include statuses that will be appropriate for use in asset management. For example, on your asset class sheet, you might want to include the statuses of the portable generators in your facilities.

You can include statuses only in the upper portion of a form or in a log, but the status will be reflected in the BP log.

When you create a company, uDesigner automatically creates a list of default statuses. As administrator, you can add statuses to this list or modify, activate, and deactivate them.

> **Note**: You cannot remove a status value after it is created. However, you can deactivate it if you no longer want it to be available.

Adding a Status

To add a status:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, and then select **Statuses**.
3) Under **Statuses**, choose:
   - **Record Statuses** to add statuses for records
   - **Line Item Statuses** to add statuses for line items
   - **Asset Statuses** to add statuses for assets
4) Double-click the status list in the log. The **Status Definition** window opens.
5) Click the **Data Set** tab, and at the bottom of the window, click the **Add** button.
   uDesigner adds a row with a text box in the **Value** field.
6) In the **Value** field, enter a name for the new status.
   Use only alphanumeric and underscore (_) characters for the name; 20 characters maximum.
7) To add another record status, click the **Add** button.
8) When you are finished, click **OK**.

Changing the Name of a Status

To change the name of a status:

1) Open the **Status Definition** window and click the Data Set tab.
2) Under the **Value** column, double-click the status name and make your changes.
3) Click **OK**.

Activating / Deactivating a Status

When you add a new status, it automatically becomes active. Deactivating a Line Item or Asset Status prevents it from appearing as a selection on a list, but does not affect a status that has already been assigned to a workflow or asset already in use. Deactivating a Record Status affects a status if the user updates an existing business process record and requires the user to select a different status. (Inactive Record Statuses are not displayed to users when they create records.)

To activate or deactivate a status:

1) Open the **Status Definition** window and click the **Data Set** tab.
2) Highlight the status on the list. When you double-click the status, a pulldown menu appears.
3) Click the down arrow of the pulldown menu and select **Inactive** or **Active**.
4) Click **OK**.

You can also activate and deactivate a Record Status on the Statuses tab during creation or update of a shell template or business process.

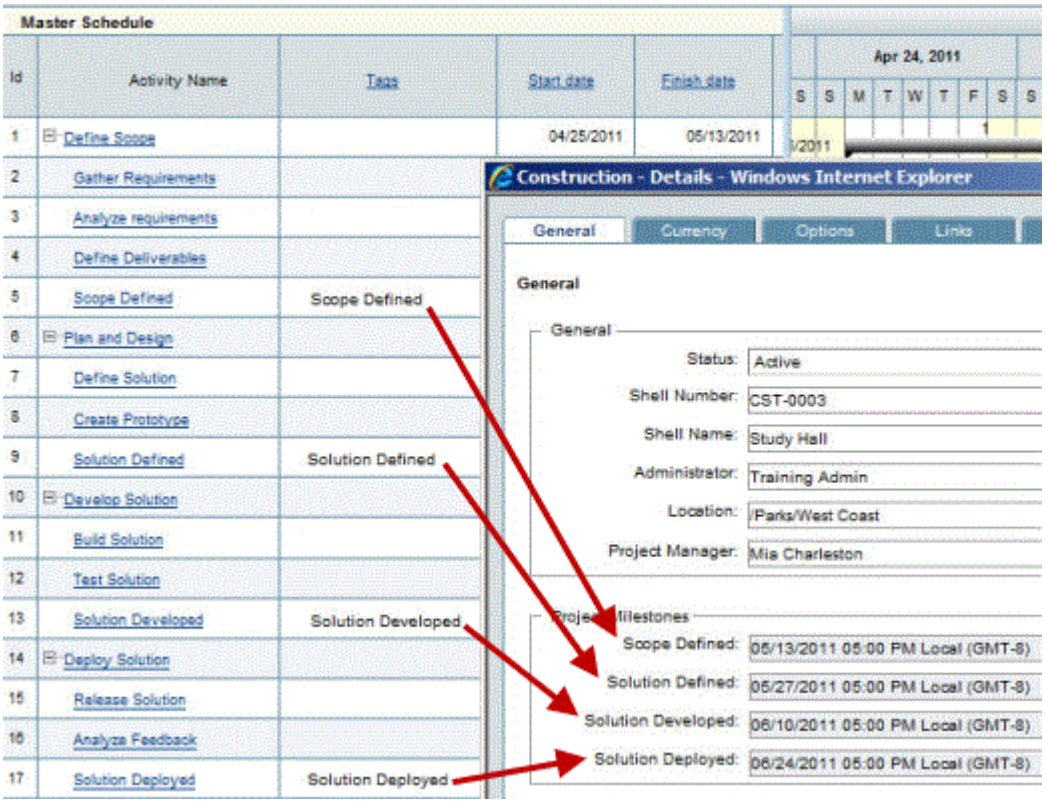
Rearranging the Order Statuses Appear in Lists

To rearrange the order in which the statuses will appear on drop-down lists:

1) Open the Status Definition window and click the **Data Set** tab.
2) Highlight the status on the list and click **Move Up** or **Move Down**.
3) Click **OK**.

Tags

Tags work with uDesigner's linked elements feature to connect schedule sheet activities with business processes, shells, and configurable manager. Tags allow a one-to-many relationship between a data element on the Schedule Attribute Form and multiple data elements on a form, if the data elements have the same data definition. This feature lets a user view key activity dates, such as milestones, on forms like project "details," without opening the schedule activity sheet, as shown in the illustration below.



Creating a Tag

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, select **Statuses**, and then select **Tags.**
3) Select **Designer Tags**, and click **Open**. The **Modify Tag Status** window opens.
   The **General** tab is read-only.

4) Click the **Data Set** tab, and then click the **Add** button. uDesigner activates a new row.
5) In the **Value** field, add an alphanumeric value. Alphanumeric characters, spaces, hyphens, and underscores (_) are allowed.
6) Click **Apply** to save the entry. Click **OK** to close the window.

Exporting the Data Structure to Primavera Unifier

The data structure is included when you export business processes, shells, managers, and other components from uDesigner to Unifier. However, there may be times when something—a data definition, data element, or status—requires modifying after it has been exported. When this happens, you can export the components again in CSV format. The export process, by function, will include all the original definitions, elements, or statuses, as well as the new ones.

To export data definitions:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, and then select **Data Definitions**.
3) Click **Basic** or **Cost Codes**, depending on the definitions you want to export. The panel on the right lists the definitions.
4) From the toolbar, click **Export**.
   uDesigner converts the definitions into a CSV file and prompts you to save or open the file.
5) Save the file to the directory from which you want to export it.

To export data elements:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, and then select **Data Elements**. The panel on the right lists the elements.
3) From the toolbar, click **Export**.
   uDesigner converts the definitions into a CSV file and prompts you to save or open the file.
4) Save the file to the directory from which you want to export it.

To export statuses:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Data Structure Setup**, select **Statuses**, and then select **Asset Statuses**, **Line Item Statuses**, **Record Statuses**, or **Tags**. The panel on the right lists the statuses.
3) From the toolbar, click **Export**.
   uDesigner converts the definitions into a CSV file and prompts you to save or open the file.
4) Save the file to the directory from which you want to export it.

Starting a New Design

After you create the data structure for a design, you can start the design process. This section provides an overview and instructions on starting the designs for the components that will be used by the users in Unifier:

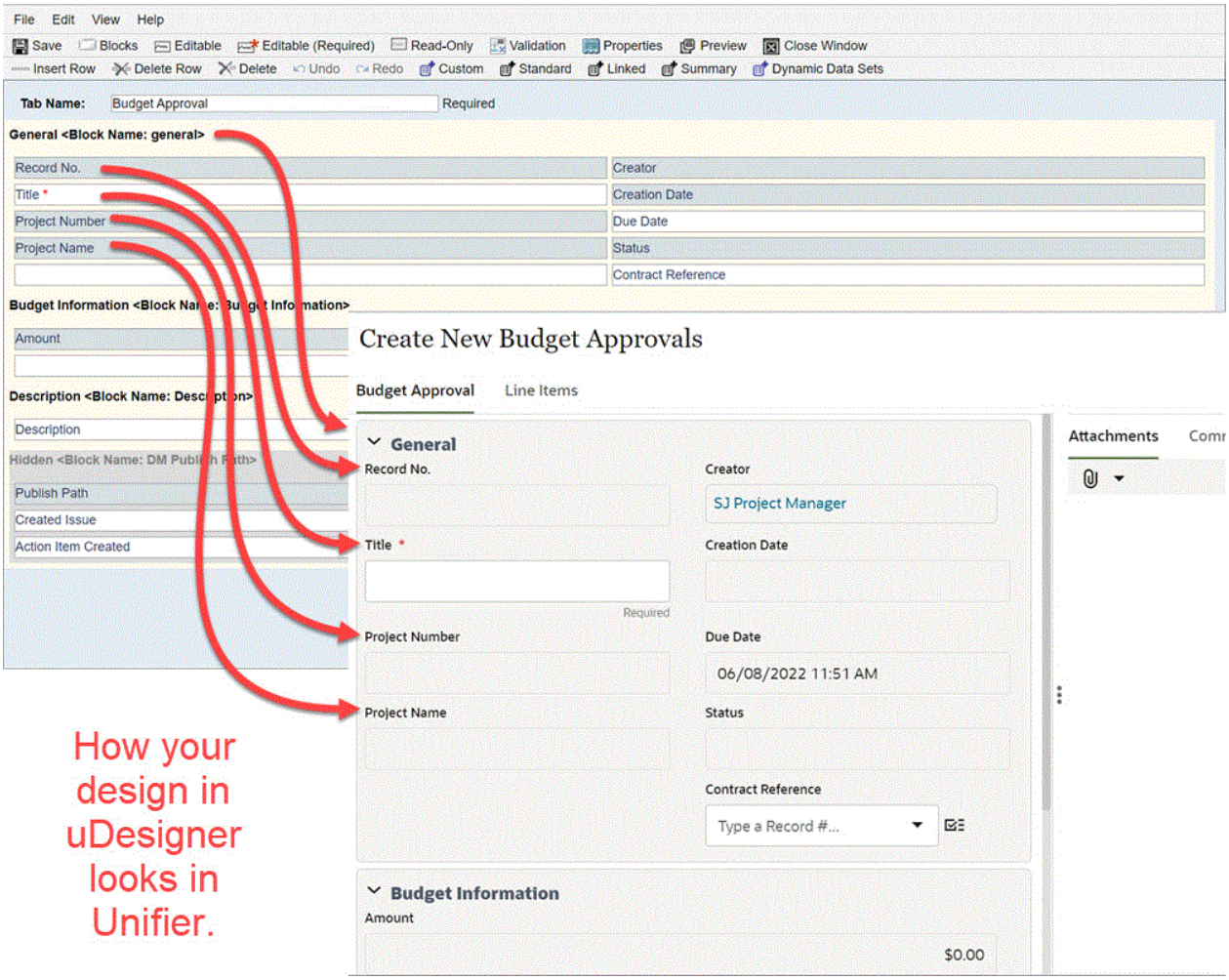
- The projects/shells
- The configurable managers
- The business processes
- The asset classes
- The plans
- The resources
- The spaces and levels for facilities management

Starting a new design begins a different process, depending on what you are creating—a project/shell, manager, business process, asset class, plan, or spaces and levels.

- Most of your designs will be for business processes, and for most of these, the design routine includes creating the forms and workflows that will dictate how your business activities function. For example, a complex business process can dictate how costs move through the approval process
- For other designs, you will create single records to collect company or project information necessary for the proper operation of components in Unifier.
- For managers, the design process can include creating a pool of resources or classes of assets.
- For configurable managers, you will be designing the sheets on which users will track items and a pool of codes for organizing the items.
- For shells, you will be designing a pool of shell types that can be organized into a hierarchy.

Before you continue further, it may help to review ***Business Processes Overview*** (on page 15). That topic contains links to descriptions of each business process type and what it needs, design-wise, to operate effectively. What each manager needs to become active in Unifier is described in the topics describing each manager.

You will be using uDesigner to build the forms, workflows (where required), and logs that constitute a business process or other Unifier component. What you create in uDesigner is what the user will use in Unifier.



In This Section

Overall Steps for Creating a Design 244
Starting a New Design (Edit Studio) 246

Overall Steps for Creating a Design

For business processes, shells, and other components to work effectively in Unifier, you will need to use the following steps to create the designs for them in uDesigner. It is always helpful to gather all requirements for the business process, shell, or manager before you begin creating data structures or starting the design.

Step	Description
1. Create a data structure.	This structure will include the data elements to be used on the forms. The data structure must be in place before you start the design process. (See ***Creating a Data Structure*** (on page 217).)
2. Launch the design.	This step initializes the design process. (See ***Starting a New Design (Edit Studio)*** (on page 246).)
3. Design the forms.	These forms will be used to collect and store data for the business process, shell, manager, or other component. (See the instructions beginning with ***Designing a Form*** (on page 279).)
4. Create the workflow (for appropriate business processes only).	As you design the workflow, you will assign the forms you design to each step. (See the instructions beginning with ***Starting a Workflow*** (on page 438).)
5. Specify a reference process.	(Optional) Reference processes link business processes and forms together for the purpose of sharing information. They must be included on any form that uses a BP picker, line item picker, account code picker, or fund picker. Reference processes populate the fields on these pickers. (See ***Adding a Reference Process to Auto-Populate Data*** (on page 391).)
6. Design a log for the business process.	This log is what users see in the right pane of the workspace screen. (See the instructions beginning with ***Creating a Business Process Log (Standard or Picker)*** (on page 461).)

Tips on Designing Good Business Processes and Forms

Users are more willing to use business processes and forms that are well-designed. Design is a balance of many factors, and high usability requires thinking "in the shoes" of the users. You can greatly enhance your forms' usability by using the following suggestions:

- Before you begin designing a business process, sketch out the workflow on paper. A sketch can help you see where you might need a sub-workflow or a conditional routing, and can clarify the soundness of the business process before you solidify it in production. This will also show you what kind of forms you will need for each step of the workflow.

- Before you create your forms, sketch them out on paper. This will help you organize the data you want for upper and detail forms, and help you determine exactly how the form will be used in the workflow. This can also help you avoid creating form areas that require too much scrolling (particularly helpful for log layouts!)
- Add borders around blocks. They make information stand out clearly and more readably.
- Use auto-population whenever you can so that users do not have to complete every field of the form.
- Plan field labels carefully. If they are too long, they will wrap awkwardly if there is not enough room. Make the labels succinct and meaningful.
- Make tab labels descriptive. A label that reads RFI says little. Instead, use a label such as Description or RFI Comments.
- For log layouts, watch the widths of columns: Too many wide columns means columns on the right might be clipped, and the user will have to scroll to see information. Try to keep column titles to one line.

Starting a New Design (Edit Studio)

The steps involved in starting a new design differ, depending on what you are creating—a shell, manager, business process, plan, or spaces and levels. For example, for some forms, you will have the option of consolidating line items; for others, this will not be an option.

To begin a new design:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select one of the following:
   - For a new plan, select **Planning Manager**. The Planning Manager log opens.
   - For a new business process, select **Business Processes**. The Business Processes log opens.
   - For a shell, select **Shell Manager**. The Shell Manager log opens.
   - For a configurable manager, select **Configurable Modules**. The Configurable Modules log opens.
3) From the toolbar of the applicable log, click:
   - **New** and from the list, choose the business process type you want to design.
   - **New**, and then select **Planning** to start a new plan and accompanying planning sheet for the Planning Manager.
   - **New**, and then select **Shell** to start a new shell for the Shell Manager.
   - **New**, and then select **Class** to start a new class for a Code and Records-based configurable manager.

   The Edit Studio window opens.
4) Complete the tabs as described in the following sections.
   - ***General Tab*** (on page 247)
   - ***Statuses Tab*** (on page 248)
   - ***Options Tab*** (on page 250)
   - ***Consolidation Tab*** (on page 260)
   - ***Record Properties*** (on page 264)

To add a link element to a form, see ***Adding Link Elements to a Form*** (on page 429).

After Starting the Design

When you have completed these initial steps in launching a new design, you can begin ***About Business Process Forms*** (on page 283).

Starting a Design from an Existing Form

After a form has been created in uDesigner, you can quickly start similar form designs by copying the first one and making modifications.

To start a design from an existing form:

1) On the log, select the form to copy.
2) From the toolbar, click **New**, and then select **Copy**.
3) Select the form from the list and click **OK**.

General Tab

The **General** tab displays different fields, depending on the type of component you are designing. These fields and what to enter in them are listed in the following table.

> **Note:** The **General** tab is the only tab you will see consistently, no matter what design you are starting. The other tabs discussed here may or may not appear, depending on the type of design you are starting; and they will not appear until you click the Apply button

1) Use the information in the table below to complete the **General** tab.
2) Click **Apply**.

If the General tab shows this field:	Do this:
ID	The ID code is used to facilitate data base functionality. Enter a code of your own creation. The code must start with "ux."
Name	Enter a name for the component. The name can be up to 64 characters long and can include alphanumeric characters, spaces, and punctuation marks. **Note:** Make the name intuitive for users. For multi-record BPs, always make the name plural, such as Vendor**s**, Action Item**s**, RFI**s**, or Design Review**s**. For single-records, make the name singular, such as "Project Information."
Description	(Optional) Enter a description of the business process or other component. A description is optional, but recommended.
Level	Specify whether this is a company-level or a

If the General tab shows this field:	Do this:
	project/shell-level component.
Behavior	Specify whether this business process will include a workflow.
Record Instances	Specify how many records the user can create for the business process or other component. **Multiple** means the user can create any number of records. **Single** means the user can create only one record for the component per project/shell.
Type	The field shows the type of business process you selected.
Sub-Type	Choose the business process sub-type, such as Line Items with Fund Codes (for a Cost PB), Simple (for a Project/Shell Creator BP), or Line Items with Both CBS and WBS Codes.
Classification	Choose the sub-type classification, such as Base Commit, General Spends, or Lease (for a Cost BP), or Projects or Shells Only, or Shell and Sub-Shells (for a Project/Shell Creator BP).
Configurable Managers	If you are designing a business process for a configurable manager, click **Select** and choose the manager. You can select multiple managers for these business processes.

Note: Always click the Apply button when you have completed the General tab. Other tabs may not appear until you do so.

Statuses Tab

On the **Statuses** tab, specify the statuses you want to make available for the records. A status indicates the condition or state of a record at any point in its life cycle. (For more information about statuses, see ***Statuses*** (on page 239).) These are the statuses the user will apply to this record as it moves through a workflow, or during its use in Unifier.

Statuses will vary, according to the type of record it is. For a cost record, the user might need "estimate pending," "approved as noted," and "approved" statuses. For a simple BP, the user might need only "open" and "closed" statuses. For an asset class record, the status controls which assets are displayed on an asset class sheet, and could include statuses such as "Out of Service" and "Decommissioned."

Notes:

- Statuses are necessary for a non-workflow business process to

designate the record's final disposition—to keep it active and editable, or to close it to any further activity. By default, all existing statuses for a non-workflow business process are defined as Active and the Inactive column is blank. If you want to deactivate a status, select the applicable Status, and click the Inactive button.

- Scope Management uses only the following predefined statuses: Not Started, In Progress, Complete, Not Applicable

To include a status:

1) To add a status, click the **Add** button and choose the status from the list that appears. To choose multiple statuses, hold down the **Ctrl** key and click each status you want.

Notes:

- For Setting a Default Status: To make entering line items easier for the user, you can set a default status, such as "Pending," for new line items. To do so, select the status and click the Default button.
- For Terminal Record Statuses: You can use a terminal record status to trigger certain functions outside the scope of the business process or to make external data easily accessible from the business process or form (see table below).

The statuses for records must include at least one terminal status; otherwise, the workflow cannot be completed. To make a status terminal, select the status and click the **Terminal** button.

2) Click **Apply** or **OK**.

About Terminal Statuses

A terminal status indicates the end of a business process, usually on a workflow. A terminal status for a record has a significant affect in that it can trigger an automatic action in Unifier. You can use a terminal record status to trigger certain functions outside the scope of the business process or to make external data easily accessible from the business process. You can define more than one terminal status.

A terminal status on this:	Can do this:
Change Commit BPs	Update SOV sheet and SOV line items. If you use this feature, users will be able to access the SOV directly from the change commit form. On change commit BPs linked to a general spends SOV, a terminal status is not necessary for updates. It is necessary, however, on a change commit linked to a payment application BP.

A terminal status on this:	Can do this:
Base Commit BPs	Create an SOV sheet and SOV line items. If you use this feature, users will be able to access the SOV directly from the base commit form. On base commit BPs linked to a general spends SOV, a terminal status is not necessary for updates. It is necessary, however, on a base commit linked to a payment application BP.
Commit and Spends BPs	Automate project fund consumption or appropriation. On Commit BPs, it can also update an SOV sheet. On Spends BPs, it can update the SOV. If you use this feature, users will be able to access the SOV directly from the commit or spends form.
Payment application BPs	Allow users to accept line item history directly from the record.
Resource Booking BPs	Assign (hard book) a resource and update the booking sheet.
Timesheet BPs	Roll up time and monies to the master timesheet, as well as the project cost sheet.

Options Tab

For some components, uDesigner displays an **Options** tab. The **Options** tab displays different fields, depending on the type of design you are starting. These fields and what to enter in them are listed below.

> **Note**: If you are creating a form with multiple tabs, the options you set here will apply to the line items for all the tabs.

The following explains the actions that you can take in each of the **Options** tab fields:

Add All SOV Lines

If you select this check box, the grid on the Line Items tab (also referred to as a line item grid) of a Payment Application BP displays all SOV lines. If the grid contains more than 3000 line items, the user can use pagination controls to control the number of lines displayed, which improves system performance.

Add only edited SOV Line Items

The Summary Payment Application Grid will display only those SOV lines which have been edited and saved. By default, this option is not selected for use.

Add Company Records to filtered list when line item status equals

If this BP type filters company records into a list, use this field to specify that when the line item reaches the status you designate here, Unifier should add the selected company record to the list.

Allow Future Cost Adjustment

Select the check box if you want the users to be able to adjust the costs. To allow the users to forecast their anticipated commits, select Label for Yet to Buy. To allow users to forecast contingency spending, select Label for Contingency.

Allow Commitment based Funding and Assignment

Select If this is a Base Commit BP, select this check box to enable funding on individual base commit records. If you select this, you must also select the **Create SOV** check box.

If you select this check box, be sure you also enable fund assignment on the forms on which you want to allow access to the Commitment Funding sheet.

Display 'Total Amount' sum of line items at bottom of System Defined tab

Select the check box if you want users to be able to see the total amount of the sum of the line items at the bottom of the system-defined tab.

Allow public bidding (no pre-defined bidders)

Select the check box if you want users to be able to send bid invitations to the vendors on your company's master vendor list (vendor master list).

Display bid responses before RFB Due Date

If you select this option, at run time the **Proposal** column in the **Proposal Management** tab will have the **View** link to view the submitted bid response.

If you do not select this option, the **Proposal** column would be available only after the RFB due date.

> **Note**: The above is applicable only to the Private Bids; it is not applicable to the Public Bids.

Referenced Line Item BP to filter bidders

Select the available BP data picker elements on the upper form.

Auto populate this vendor picker with value from winning bid picker

To indicate which Vendor Picker to auto-populate whenever a winning bidder is picked in the upper form. The option would list all the BP Pickers and Data pickers referencing to master vendor list or BPs added in the upper form of the RFB BP.

Select from a list of vendor picker elements on the upper form. The option would list all the BP Pickers and Data pickers referencing to master vendor list or BPs that have been added in the upper form of the RFB BP.

The BP pickers which reference to the Vendor BP and also the data pickers which reference to the master vendor list are displayed here. You can select the BP which the user can auto-populate, based on the selection made, or the value in winning bid picker.

Data Picker Configuration > Contract Awarded To

If a condition is defined for the selected picker, which is selected for auto-populate based on the winning bid selection. Once selected, Unifier ignores the existing conditions.

When the user selects a BP Picker for auto-populate based on winning bid picker selection:

The application ignores the condition setting:

- When the condition for the BP Data Picker is set to as not equal to “Active,” and the vendor record status is equal to “Inactive.”
- When the condition for the BP Data Picker is set to as vendor name not equal to “Oracle,” but the selected vendor record has vendor name equals to “Oracle.”
- When the user selects a BP Data Picker for auto-populate based on winning bid picker selection

Reset the values of these fields of the Requestor Detail Form when line items are viewed by a bidder.

Resetting just a field of formula data entry type will not reset the field value. The fields used in the formula definition must be added to the list of fields that are to be reset.

Click **Select** to open the list of data elements from the Requestor Detail Form. Select the fields for which the requestor wants to reset the values.

The list of DEs from the Requestor Detail Form will not include Pickers. At runtime, when the bidder views the **Request for Bid** record, the Line items that are seen in the Requestor Package, and the Line Items (when the Bidder is creating the bid) will not display values for fields that have been reset. For example, if the **Amount** (Unit Price multiplied by Quantity) must be hidden from the bidder's view, adding the Amount field to the list will not hide the value from the bidder. In such a case, either the Unit Price or the Quantity must be added to the list of Reset DEs.

When a bidder logs into the Bidder Portal, the fields that are selected in uDesigner will have blank values.

To view the selected fields:

1. Go to the **Company Workspace** tab and switch to **Admin** mode.
2. In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3. Open the **Requests for Bid** BP.
4. From the toolbar, click **Open**, and select **General**.
5. Select the **Options** tab.

Example

If the Amount (which is Unit Price multiplied by Quantity) must be hidden from the bidder's view, adding the Amount field to the list will not hide the value from the bidder. In such a case, either the Unit Price or the Quantity must be added to the list of Reset DEs.

When you click Select, a list of all the data elements from the Requestor's Detail Form will be displayed in the Data Elements from the Requestor Detail Form window. The page title will be: Reset the values of these fields in line items when viewed by a bidder.

The list displayed will not contain picker data elements, for the detail form.

At runtime, when the bidder views the Request for Bid record, the line items that are seen in the Requestor Package, and the Line Items when the bidder is creating the bid, will not have values for the fields.

Total Amount Changes

If the design of the Requests for Bid business process has fields hidden from the bidder's view, the following is applicable:

The Line Item tab in the "Requestor Package" will not have the Filtered Total amount.

The "Total Amount" seen in the Line Item tab will only total the sum of the Amount fields per page regardless of the number of pages existing in the tab.

Example

If there are 10,000 line items, and the pagination has been set to 200 items per page, the Total Amount will only show the sum of the 'Amount' field for 200 items.

For users who can access the option: **Do not copy the values of these Bidder Detail Form fields from Requestor Detail Form**

This field is incorporated in Unifier 21.4. The values of the fields selected in the will be hidden from the bidder. The customers who have leveraged the option of "Do not copy the values of these Bidder Detail Form fields from Requestor Detail Form" introduced Unifier 20 (above) will see the following changes in the bidder portal:

- The line Items seen in the Standard tab in the Requestor Package will have blank values for fields. This is applicable to all the previously submitted and closed bids RFB records.
- If a bidder has already started creating the bid package post acceptance of the bid invitation, and in between the design has changed in uDesigner, the line items in the "Your Proposal" tab will still show the values in the fields that were not meant to be copied over. The Bidder line items are inserted from the Requestor Line Items into the database, after the bidder accepts the bid invitation. Subsequently, the line item values are fetched from the database. Changes made in uDesigner will not get reflected in the line items that are already coming from the database; however, if the bidder is creating new line items, the uDesigner options will be applicable.
- If there have been no changes in the design post-upgrade, all the data elements mentioned in the uDesigner will continue to be preserved while the bidder is creating new line items in the "Your Proposal" tab. The data element may have existed only in the Bidder detail form.
- The undo accept behavior post-upgrade, if the bidder decides to withdraw the bid participation and does an Undo Accept, then all the line items that may have existed in the line item tab of "Your Proposal" will be deleted. The next time that the bidder chooses to accept the bid invitation, the new line items that will get inserted into the "Your Proposal" tab will retain the latest designs in the uDesigner.

Enable Map View Feature

Select the check box to enable the map feature for Line Item, Simple, Text, Document, and some Cost business process records and logs. You can view location maps for projects or facilities. The map feature uses addresses or latitude and longitude coordinates (the data elements which you must include on the design of the BP form.

Allow adding users/groups in Unifier User mode

Use this option for automatic email notifications when a **non-workflow** record is created or modified. Select this check box if you want the user to be able to add users or groups to the email. If you check this box, the form will display an additional area at the bottom where the Unifier user can choose additional users or groups to notify. (This area is pre-defined in Unifier and will not be visible in uDesigner when you design the form.)

Automatic Update of YTB should add the amount instead of subtracting

Select the check box if you want to enable a Base Commit, Change Commit, or Generic cost type business process to generate a data source of "Unaccepted" for use in the logical data source called Forecasts (Unaccepted) in the cost Sheet. This option will add scope to the YTB.

Auto-populate on Payment Application

If the BP is a Payment Application, select this check box to auto-populate the Payment Application with the line items from both *Base Commits* and *Change Commit* BPs. This option is available on the:

- SOV type Payment Applications
- SOV type Summary Payment Applications (*Base Commits* BP)
- SOV line item type individual commit line items

See ***Auto-populate on Payment Application from a Base Commits BP*** (on page 394).

The runtime auto-populate occurs for the: Summary lines and Costed lines.

Company Business Process Records Picker

If the BP is a line item type that will filter company records into a smaller list, select the picker you want to appear on the form. Users will use this picker to filter the records for the project list. For example, if this BP will filter vendor names for a project vendor list, you would select the vendor picker you created for this BP.

Consume funding when terminal status equals

If the BP is a general spends type and you want the BP to automate project fund consumption, select the check box. When the BP reaches its terminal status (the last status in the workflow), the fund is consumed. Specify which funds to consume by selecting the appropriate terminal status (for more information, see ***Statuses Tab*** (on page 248)). For new cost business processes, the list of available statuses should be limited to those marked Active. If a terminal status is subsequently marked Inactive, an error message should be displayed during completion of the business process.

Cost Rollup

If the BP is a timesheet, use this field to designate that the costs should be rolled up to the Cost Manager; otherwise, the timesheet will not roll costs up to the company/project cost sheets and actuals sheet.

These rolled-up costs will be reflected in the Resource Actuals column on the Cost Sheet.

Create Commitment Summary

If the BP is a base commit line item type with multiple codes, select this check box if you want the BP to automatically create a commitment summary. Select the **Commitment Summary Type** and the **Commitment Summary Line Items** that should be included on the summary. Specify which line items to use on the summary by selecting the appropriate **In terminal status** (see ***Statuses Tab*** (on page 248)).

Create Project/Shell when record reaches terminal status

If this is a Project/Shell Creation BP that should create a project/shell, select this check box.

If the sub-type is Simple, when the BP record reaches the terminal status you specify here, Unifier will automatically create a project/shell. You can specify multiple terminal statuses for the record.

If the sub-type is Line Item, you must specify both a terminal status for the record and a status for the line item before a new project/shell can be created. You can specify multiple record statuses, but only a single line item status.

(See ***Statuses Tab*** (on page 248).)

Create SOV

Select the check box if you want to automatically create an SOV from the BP. Especially for use on Base Commit BPs (Base Commit - Line Items with CBS Codes).

Select the **SOV Type** and the **SOV Line Items** that should be created. The options available for the SOV Type are:

- General Spends
- Payment Applications
- Summary Payment Applications

If the user selects the SOV Type, "Summary Payment Applications," the SOV Line Items drop-down list will be auto-populated with the value: Individual commit line items.

> **Note**: The user will be unable to select any other option or to deselect this option.

Specify which line items to create by selecting the appropriate terminal status (for more information, see ***Statuses Tab*** (on page 248)). For new cost business processes, the list of available statuses should be limited to those marked Active. If a terminal status is subsequently marked Inactive, an error message should be displayed during completion of the business process.

Select **Auto-populate on Payment Application** to auto-populate specific fields on the Payment Applications Detail form from the *Base Commits* BP.

Click the **Select** button and choose the payment app fields (Data Elements) you want to populate. For more information, see ***Auto-populate on Payment Application from a Base Commits BP*** (on page 394). The runtime auto-populate occurs for the: Summary lines and Costed lines.

To allow commitment funding on the Base Commits, select **Allow Commitment based Funding and Assignment**.

> **Note**: For any given project, there can be only one Base Commit type of

business process that can generate a Schedule of Values (SOV) for payment. If you try to deploy another Base Commit BP in the same project, with the intent to generate SOV for payment, the system will prevent you from deploying the business process in uDesigner.

Create Snapshots automatically whenever status changes to

If the BP is a line item type with multiple codes, select this check box if you want Unifier to automatically take a snapshot of the BP when it reaches a specific status. Click the down arrow and select the status.

Disable manual fund assignment when record workflow is closed

Select this check box if funds should **not** be manually assigned after the workflow is closed (reaches the end step).

Note: This option does not disable automatic fund assignments. However, it does override any manual fund assignments on an action form at the end step of a workflow.

Disable manual fund assignment when record reaches terminal status

Select this check box if funds should **not** be manually assigned after the record reaches a terminal status. (This is for non-workflow Cost BPs.)

Note: This option does not disable automatic fund assignments.

Display "Total Amount" sum of line items at bottom of Standard tab

If the BP is a line item type, select this check box if you want Unifier to automatically sum the line items and display the total at the bottom of the **Standard** tab.

Note: This option is not available for Lease business processes.

Enable Calendar

Select this check box if users should be able to reserve this business process record for exclusive use. If you select this check box, the form will display a **Calendar** button in the toolbar that the user can use to display a calendar and specify dates and times for the reservation, as well as additional information that might be necessary for the reservation. In addition, the data picker(s) created for a Reservation type business process will include this business process on the picker list.

Enable Cost Sheet Forecasting

Select the check box if you want to enable a Base Commit, Change Commit, or Generic cost type business process to generate a data source of "Unaccepted" for use in the logical data source called Forecasts (Unaccepted) in the cost Sheet. This option will subtract scope from the YTB.

Enable for Portal

Select the check box if you want this business process to be available for use in the Self-Service Portal.

The portal is available only for Simple type BPs that are:

- At the company level
- Non-workflow
- Multi-record

Enable Map View Feature

Select the check box to enable the map feature for Line Item, Simple, Text, Document, and some Cost business process records and logs. With this feature, users can view location maps for such things as projects or facilities. The map feature uses addresses or latitude/longitude coordinates—data elements which you must include on the design of the BP form.

Enable design for Mobile Form Factor

If you have enabled a business process for mobile application, and you do not want your users to see the standard web application form in the native application, you have the option to selectively add data elements to the form. You can do this by using the **Enable design for Mobile Form Factor** in the **Options** tab of the business process design.

Applicable to all the BPs that are currently supported in the native mobile application, this option will enable lightweight forms in the native mobile applications.

This option, when selected, will render the Mobile Form Data elements in a single stacked column. Blocks will not be rendered.

You can enable or disable this option whether or not the BP design is published.

When this option is enabled for the user, upon error check, all the existing validations for the required fields, Dynamic Data Set (DDS) definitions, and so forth will take place.

Enforce against CBS Budget using Budget Remaining Balance

Select the check box if Unifier should fulfill payment for the CBS line items on a Base Commit BP against the individual line item budgets using the remaining balance of each.

Fund Picker to show only allocated funds

For cost BPs of sub-type **Line Items with Fund Codes** or **Line Items with Both CBS and Fund Codes**, use this field to limit the funds shown on the picker to only those funds that have been allocated to the project; otherwise, the picker will list all the active fund codes at the company level.

Hard Booking Status(es)

If the BP is a resource booking, use this field to specify that, when the resource reaches one (or more) terminal statuses, Unifier should consider the resource to be assigned and no longer available to other bookings (see ***Statuses Tab*** (on page 248)).

> **Note**: If you specify other terminal statuses for a resource, but you do not include them as "hard-booked" statuses here, the resource booking will be considered "rejected."

Record Editor

Specify the business process form that Unifier should display for a record editor who has been given the ability to modify a record at any step. This form will differ from the form the step assignee will see. This form will be for editing purposes only and the edits will be recorded in the audit log. The editor will not be able to send the form on to the next step or perform other actions, such as transferring ownership of the business process.

In addition, this editing form will not perform any rollups. Rollups, if any, will occur only when the step assignee sends the record on.

This form must be specified before the administrator can designate editors for the record.

Reference against company-level commit

If your company is using blanket purchase orders, select the check box to allow users to choose a blanket PO to reference against. If you want the BP to verify that the amount is not exceeding the remaining balance of the referenced BPO, select the **Enforce against company-level commit amount** check box.

Remove Company Records from filtered list when line item status equals

If this BP type filters company records into a list for a specific project, use this field to specify that, when the line item reaches the status you designate here, Unifier should remove the line item information from the list.

Reservations in these statuses are confirmed

If the BP is a reservation, click the **Select** button and specify the status or statuses that will designate that these reservations are confirmed.

At runtime, reservations that are in any of these statuses will be considered confirmed and will affect the object's calendar, its availability and overbooking status.

Reservations in these statuses are canceled

If the BP is a reservation, click **Select** and specify the status or statuses that will designate that these reservations are canceled.

At runtime, reservations that are in any of these statuses will be dropped from the calendar.

Resource Assignment

If the BP is a schedule type, use this field to specify that, when the resource reaches the status you designate here, Unifier should add the resource to the Master Schedule Sheet.

Rollup Status(es)

If the BP is a timesheet, use this field to designate that, when the resource reaches a specific status(es), Unifier should roll up the hours and costs into other cost sheets.

Show Assets in Asset Picker when status equals

If the BP is an asset class, use this field to specify that, when the asset reaches the status you designate here, Unifier should list the asset on the Asset Picker. You must specify at least one status, and multiple statuses are allowed.

Straight Line Payment Schedule

The Lease BP automatically generates a Regular Payment Schedule to allow users to view future lease payments. These reports use the start and end dates, frequency, and amount to calculate the payments; and these fields are displayed on the report.

This option is useful if your leases must allocate payments for multiple tenants of a property and you want to see the amount allocated for each property.

Use this option to add additional fields to the report.

Click **Select** and choose the fields you want to appear on the Regular Payment Schedule. The Select list displays fields from the upper form of the lease business process and the lease payment lines. These fields will be appended to the right side of the schedule.

> **Note**: You cannot specify these fields until you have designed the upper form for the lease. You will need to return to this tab after you have designed the form.

Update filtered list of Company Records when terminal status equals

If this BP type filters company records into a list, use this field to specify that, when the BP reaches the status you designate here, Unifier should update the record information on the list.

Update SOV

Select the check box if the BP is a Change Commit or Payment Application. Select the **SOV Type** (such as Payment Application or General Spends) and the **SOV Line Items** that should be updated. Specify which line items to update by selecting the appropriate **terminal status**. If the selected terminal status is subsequently marked Inactive, an error message should be displayed during completion of the business process.

> **Note**: The **SOV Type** must match the SOV of the referenced Base Commit, and the **SOV Line Items** must match the setting of the referenced Base Commit.

Update Commitment Summary

If the BP is a Change Commit Line Item type with Multiple Codes, select this check box if you want the form to automatically update the commitment summary. Select the **Commitment Summary Type** and the **Commitment Summary Line Items** that should be included on the summary. Specify which line items to update by selecting the appropriate **terminal status** (see ***Statuses Tab*** (on page 248)).

Use this process as RFB master vendor list (vendor master list)

Select the check box if you want to use this form as a master list of vendors for RFB business processes.

When you open a Cost Type-Line Items with CBS and WBS Code Business Process and click the **Options** tab, you can see the following:

Settings block

- Classification (For example: Generic - Line Items with CBS and WBS Codes)
  - Enable Map View Feature

    To enable the map feature for Line Item, Simple, Text, Document, and some Cost business process records and logs.

    With this feature, users can view location maps for projects or facilities.

The map feature uses addresses or latitude and longitude and coordinates data elements which you must include on the design of the BP form.

- Record Editor
  - Edit Form

The **Allow adding users/groups in Unifier User mode** option is used for automatic email notifications, when a non-workflow record is created or modified. Select this option if you want the user to be able to add users or groups to the email. If you select this option, the form will display an additional area at the bottom where the user can choose additional users or groups to notify.

> **Note**: This area is predefined in Unifier and will not be visible in uDesigner when you design the form.

Consolidation Tab

For some business processes, uDesigner displays a **Consolidation** tab, where you can consolidate the line items from multiple records into a single record. When you consolidate line items, you can also opt to copy the line item attachments. In addition, you can consolidate line items according to their status so that you can exclude those line items that are not necessary, such as line items that are closed or rejected.

For example, over a period of time, a project might incur 15 change order requests for a cost estimate that could change the scope of the contract. Ultimately, management might want to issue a change order that encompasses the scope of all 15 change order requests. Using the consolidation feature, the final change order would copy the line items from the change order requests and would encompass the scope and costs of all 15.

Company and project/shell level BPs are distinct. At the company level, you can consolidate line items only from other company-level BPs. At the project/shell level, you can consolidate line items only from other project/shell level BPs. The following table shows the consolidation relationship between business process types.

The Consolidation tab will only appear for the following business process types:

- Cost (except for General Spends, Payment Applications and Summary Payment Applications)

  For the Consolidation of Base Commits and Change Commits BPs:
  - The user is able to consolidate into the Summary Payment Applications SOV type BP.
  - The Summary Payment Applications SOV type BP can be selected as source of consolidation into other BPs. In this case, at runtime, the Summary line item is consolidated without the Costed amount and Quantity breakdown details.
- Advanced Document
- RFB (Request for Bid)
- Line Item

> **Notes:**
>
> - To consolidate line items, you must allow the user to add, remove,

and copy line items on every form you want to include in the consolidation. To do this, see the instructions on completing the Options tab for an Upper form.

- At runtime, Unifier uses the new Standard Data Element "uuu_li_consolidated" (Field Label: Consolidated), to automatically capture whether a line item has been consolidated on the source record.
- The Line Item BP remains in draft mode, and the application prevents the user from consolidating the Line Item BP, if the user does not either:
- Save the consolidated Line Item BP
- Send the consolidated Line Item BP to the next Workflow step

1) On the Edit Studio window, click the **Consolidation** tab.

   The Consolidation tab displays any business processes that have already been selected for consolidation.

2) In the **Line Item Consolidation** area of the window, use the information in the following table to complete the fields.

In this field:	Do this:
Do not allow consolidation from [*business process*]	This field will display the name of the business process you are designing. Select this check this box if you do NOT want users to consolidate line items from this business process. If you select this check box, the business process will not appear in the list of BPs from which users can choose line items to consolidate.

In this field:	Do this:
Previously consolidated lines are available when terminal status equals	By default, after a user copies a line item for consolidation, that line item is no longer available for other consolidations. Use this field to override the default and specify that, after the consolidated business process reaches a terminal status, the line items from the source BP(s) will be available again. For example, if a Change Order that has contributed line items to a consolidated BP reaches a "rejected" status, all the line items on the Change Order will be available so you can consolidate them again in another business process. Click **Select** and choose the BP status at which the line items can again be available for consolidation. You can select one or more statuses marked "terminal." (The list of statuses on this window shows a blank first line. You can use this blank line to clear any previous status selections.) **Note:** Line items will also be available again for consolidation if the line item is deleted from the consolidated business process or is terminated.

1) In the Consolidation Setup area of the window, click the **Add** button. The Select Business Process window opens.
2) Select the business process that contains the line item(s) you want to consolidate and click **OK**. uDesigner displays the business process in the list.
3) Highlight the business process that contains the line item(s) you want to set up for consolidation.
4) Use the information in the following table to complete the fields and click **OK** when finished.

In this field:	Do this:
Exclude records with status	(Optional) Use this field to exclude line items from the consolidation according to their status. Click **Select** and choose the status or statuses you want to omit from the consolidation. (The list of statuses on this window shows a blank first line. You can use this blank line to clear any previous status selections.)

In this field:	Do this:
Data element to show consolidated line source	Use this field to specify a data picker (if the BP form includes one). At runtime the data picker will be populated with information from the record from which the line item originated. This data picker will make it easier for the user to see exactly which record the consolidated line item comes from.
Prevent consolidating the same line item across multiple records	Select this check box to prevent a user from consolidating line items that have already been consolidated. Unifier will ensure that line items can be consolidated only once across all the business process records (and under all shells). **Note**: If this option is selected, the line Items cannot be edited, later. Unifier ensures that the line items can be consolidated only once, across all the business.

In this field:	Do this:
Auto-update consolidated line items	This option is available only if you check the **Prevent consolidating the same line item across multiple records** option. Select this check box if you want the destination line item (the one on the consolidated BP) to be updated whenever the source line item changes. **Exception**: Even if this auto-update option is checked, the line item on the consolidated BP will not be updated with any new attachments that have been added to the original line item. Line items on the consolidated BP will be read-only if you choose this option. Updates will not occur if the consolidated line item BP reaches a terminal status or if the line item is deleted on the source (the originating) business process. You cannot use this auto-update option if a cost line item contains a YTB (Yet to Buy) data source, or an AFC (Allow for Change) data source. Unifier will not update fund codes and amounts on line items consolidated from Cost business process sub-types of Line Items with Fund Code or Line Items with Both CBS and Fund Code.

Record Properties

You (the designer) can use the **Record Properties** tab to specify which tabs will be visible or hidden in all business processes (at the company and project/shell levels) made available to your users in User mode.

The **Record Properties** tab enables you to hide the properties tabs from an Upper Form, or Detail Form, or both. All business processes (at company and project/shell levels) have the **Record Properties** tab in their **Properties** window.

Hide Upper Form Properties

This block in the **Record Properties** tab enables you to hide the following tabs from a selected BP record properties (Upper Form):

- **Attachments** (not applicable to only Document type BPs)
- **Comments**

- **Linked Records**
- **Linked Mail**
- **Workflow Progress**
- **Audit log**
- **Reference Records**
- **Integration Log** (visible only if Oracle Integration is being enabled at the Company level)

By default, these options are not checked. You can select one or more check boxes to hide additional tabs seen in the business process record at runtime.

Based on your selection, the upper form properties seen will be applicable to the following types of BPs (at the company and project/shell levels):

- Text BP
- Simple BP
- Line item type BP
- Cost type BP
- RFB BP - Requestor Forms
- Time Sheet BP
- Document type BP

For example, if you select **Attachments** in the **Hide Upper Form Properties** section, the **Attachments** tab will not be visible when the user accesses the BP record from a browser or through the mobile app. However, the user can still:

- Add attachments using the CSV import or RESTful services
- Retrieve attachments using the `getCompleteBPRecord` call

> **Note**: When the Upper Form properties are checked in uDesigner, the corresponding tabs will be hidden at runtime in the business process record. The visibility of the tabs are applicable to the user interface only.

Hide Detail Form Properties

This block in the **Record Properties** tab enables you to hide the following tabs from a selected BP record properties (Detail Form):

- **Attachments**
- **Linked Records**

These additional tabs are available for each line item tab selected in the record at runtime. By default, these options are not checked. You can select a check box to hide the additional tab seen for the line items per line item tab at runtime.

Based on your selection, the detail form properties seen will be applicable to the following types of BPs (at company and project/shell levels):

- Line item type BP
- Cost type BP
- RFB BP - Requestor Forms
- Time Sheet BP

- Document type BP

> **Note**: When the Detail Form properties are selected in uDesigner, the corresponding tabs will be hidden at runtime in the business process record. The visibility of tabs are applicable to the user interface only.

Additional information regarding the **Hide Detail Form Properties**:

- The **Linked Mail** option will not be seen for the company level business process.
- The **Workflow Progress** option will not be seen for the non-workflow BPs.
- The **Attachments** option will not be available for the Document type and text type BPs. For the Document type BP additionally
- The **Attachments** and **Linked Records** properties will be disabled for the Payments with SPA type BP standard tab.
- The **Record Properties** tab will be editable in the published designs. You can change the visibility of the tabs in the design for unpublished and published designs.
- In the RFB BP, the record tabs restrictions will be applicable only to requestor forms.
- The **Hide Requestor Detail Form Properties** section will only show detail forms that are defined in the requestor.
- The selected tabs will be hidden only when the requestor is accessing the records in user mode.
- The bidders will always see both the **Attachments** and the **Linked Mail** tabs when they receive the bids—whether the bidders are viewing the requestor or the bid form.
- In the **Detail Form Properties** for the system-defined tab, the **Attachments** option will be disabled since "attachment" is a line item in the Document type BP. You cannot hide attachments from the system-defined line item tab.

Data Picker

Data pickers work with the master business process logs, shells, and configurable managers that function across a shell hierarchy. The purpose of a data picker is to make it easier for the user to choose records:

- From a master business process log
- From a class in a configurable manager that operates across shells
- For auto-creation across shells

In operation, a data picker navigates to a specific business process, shell, or configurable manager, and then extracts the records to display on the list by using a query the Unifier Administrator has set up.

Data pickers, including user data pickers, must be configured to examine and extract the records that should appear on the picker list. To do this, you need to create a database query.

After you have set up the query or queries for a data picker, and the picker is active in Unifier, the queries will be launched whenever:

- The user clicks the data picker field on a form
- The business process or line item is auto-created
- A record is created or updated through integration (both CSV and Web Services)

- The data picker is updated via reverse-auto-population

In addition to setting up queries to extract records for the picker, you can configure the picker to filter the records that the query returns so that only certain records appear on the picker. This is particularly convenient, for example, if the form contains a user data picker that automatically assigns users to a business process as it is created.

For more information on data pickers, see ***About Data Pickers*** (on page 222) and ***About User Data Pickers*** (on page 226).

Configure Data Picker

To configure a data picker:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes** to open the **Designer-Business Processes** window.
3) Select your BP (the BPs have been imported into your company) and click **Open** to open the window with the BP **Description**.
4) From the toolbar, click **Open**, and select **Data Picker** to open the **Data Picker Configuration** window. This window has two panes. The left pane lists a hierarchy of the data elements. The right pane displays the details of the query conditions for a selected data element. The query will search the database and extract the records to display on the data picker. The query will filter the records returned from the database according to a condition or conditions you specify. The condition(s) will "test" a field on the form to see if it passes or fails the criteria. If the field passes the criteria, Unifier will include it on the data picker.
5) Select a data picker from the left pane to see the **Query Condition** block on the right pane.
6) Click **Add** to open the **Add Query Condition** window. This window displays the following fields:
   - **Data Element**
   - **Condition**
7) Click the **Data Element** drop-down and select the field on the business process that you want to test with the condition. Depending on your selection, the fields in the **Add Query Condition** window will change. That is to state that the remaining fields on this window vary, depending on the data element and the condition you specified. The query will search the database and extract the records to display on the data picker. The query will filter the records returned from the database according to a condition or conditions you specify. The condition tests a field on the form to see if it passes or fails the criteria. If the field passes the criteria, Unifier will include it on the data picker. For example, the condition might be that the status field on the shell must be "Active." The window expands to show an active Condition field and additional fields where you can specify the query criteria.

   Note: If any field in the query or queries is subsequently removed from the Configurable Manager Attribute Form, the entire query operation will be ignored. That is, if one query fails because a field was removed from the design, Unifier will ignore all the queries. If a field has been removed

from a design, you must amend the query.

8) Click the **Condition** drop-down and select the condition the value in the field must meet.
9) If applicable, provide other values.
10) Click **OK**.

To include additional query conditions, repeat the steps above. You can select an added query condition and select the **Show results matching any condition** to include other available conditions.

To modify a data picker, select the data element in the **Query Condition** block on the right pane, and click **Modify**.

To remove a data picker, select the data element in the **Query Condition** block on the right pane, and click **Remove**.

Using Filters

In a user data picker (see ***About User Data Pickers*** (on page 226) for more details) accessed through the **Data Picker Configuration** window, you have the option of setting filters, under the **Additional Filter** block. This filtering option appears on Configurable Manager Attribute Forms that contain user data pickers. This option will filter the list of groups or users that appear on the picker. Use the instructions in the table below to filter the returned records. Use the information included in the following tables to determine filtering:

Additional Filter

Option	Description
Filter list of Users/Groups based on Project/Shell Membership	Select this check box if you want to filter the list of users on the picker to show only those with project/shell membership. In operation, Unifier will auto-populate and reverse-auto-populate the data picker with all users or groups, regardless of this check box. However, at runtime, the system will filter the picker for the user if you select this check box. **Note**: If you select this option, the rest of the filtering options will be disabled.

Option	Description
Apply User Attribute to the picker log and display element from Project/Shell directory	Select this option to enable the system to apply the user attribute values of the project/shell directory to the picker log, display element of the data picker, auto-population, and reverse auto-population fields that use this data picker as their source. The system uses the same user attribute values in both the CSV file and the Web Service integration.
Group Membership	Select the group from which you want to specify a user or users. The drop-down list shows all the groups that are at the company level.

Project/Shell Membership

Note: To select any of the following options, the user data picker must be on the upper form, not the detail form.

Option	Description
Add user to Project/Shell.	Select this option if you want Unifier to add this user to the shell membership.
Add user as a member to the selected group.	Select this option if you also want to add this user to the group selected above in the **Group Membership** list.

BP Line Item Data Picker

Upon configuration, the BP Line Item Data Picker can reference any BP Data Picker available in the BP design.

If the BP Line Item Data Picker is added in a detail form, it can be referenced to any of the BP Data Pickers added in the upper as well as detail forms of BP design.

If the BP Line Item Data Picker is added to the upper form, it can only be referenced to those BP Data Pickers that are added in the upper forms of BP design.

If the BP Line Item Data Picker is added to the Shell Attribute Form, it can reference any line item of the corresponding BP Data Picker.

Notes:

- You cannot assign the same Line item Data Picker to more than one BP Data Picker.
- If a BP Data Picker is moved to the line item after being associated to a Line Item Data Picker and the Line Item Data Picker is defined in upper form, completing the BP causes an error. The BP Data Picker cannot be placed in a detail form if the associated Line item Data Picker is in the upper form.

The following table indicates which forms and sheets support the BP Line Item Data Picker.

Form/Sheet	Supports BP Line Item Data Picker?
Activity Sheet	No
Business Process	Yes
Configurable Modules, Code and Records-based Manager	No
Configurable Modules, Code-based Manager	No
Configurable Modules, Generic Cost Manager	No
Cost Code Attribute	No
Document Attribute	No
Fund Attribute	No
Organization Breakdown Structure (OBS) Sheet	No
Planning Manager	No
Portfolio Manager, Capital Planning	No
Resource Manager, Resource Attribute	No
Resource Manager, Role Attribute	No
Schedule Manager, Activity Attribute	No
Schedule Manager, Role Attribute	No
Shell Attribute	Yes
Space Manager, Space Type	No
Space Manager, Level Type	No
User Attribute	No
Work Breakdown Structure (WBS) Sheet	No

To configure a BP Line Item Data Picker:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes.** The **Business Process** window opens displaying the BPs.
3) From the right pane, open a BP.
4) From the toolbar, click **Open**, and then select **Data Picker.** The **Data Picker Configuration** window opens.
5) In the left pane, click a data element.
6) In the right pane, select **Allow Line Item Referencing** to enable you to refer to specific line items.

> **Note:** You should be able to select this option only if the data source (source BP) of the BP Data Picker has line items.

The line items are:

- **Destination Element:** Select the data element (of Data Definition "BP Line item DP") that should be populated. The list displays all the BP Line item data pickers that are added to the upper or detail form of the BP design, depending on the position of the Line Item Data Picker. If DP is added to the detail form and the Line Item Data pickers added in the upper form are linked, an error is displayed.

> **Note:** After the Business Process having this data picker configuration is published, destination element changes to read-only. You cannot change the Line Item Data Picker Data Element after design is published. This is to avoid showing incorrect data in line item data picker at run time.

- **Source Element:** Select the field in the referenced line items. The list displays all the fields in line items of the data source (Source BP) of the BP Data Picker.

> **Note:** Source Element does not show linked data elements and standard data elements.

- **Source BP:** This field is auto-populated with Source BP name once you select **Allow line item referencing**. If the Source BP design is in Draft status, an error is displayed during error check.
- **Source Referencing Element:** Select the field or picker on the referenced line item that should be updated with the ID of the record from which the line item was selected. This displays a list of BP Pickers, BP Data Pickers, and BP Creators on the Reference Process BP that have a type of the current BP.

> **Note:** At runtime, if you use a BP Line Item Data Picker to select a line item and send the record forward, the source referencing element will be updated to show the ID of the record from which you picked the line item. At runtime, if you delete the line item that updated this source referencing element, or clear the line item picker, the system clears the field.

7) All **Line Item** tabs (not QBTs) of the source BP should be listed in the Query Conditions for the Line item Data Picker.
8) Query Condition for Line Item Data Picker should show all line item tabs of the source BP in the left pane. In the right pane you should be able to define query conditions based on data elements defined in that line item tab.
9) If the Hide option is selected, the **Line Item** tab will not be displayed at run-time for selection. You cannot hide all tabs in the configuration. At the least one tab should be visible.
10) Define queries for each Line Item in the same way that queries are defined for Data Pickers.
11) On selecting a Line item from the list, you can define the Query condition for the particular LI. On clicking **Add**, the **Add Query Condition** window is displayed.
12) In the **Data Element** field, all the Data Elements for the specific Line Items are available for selection. The values in the **Condition** field are dependent on the data element selected.
13) In **Values,** if **Dynamic** is selected, in **Data Source**, all existing data sources of Data Pickers such as Destination BP Upper Form, or Detail Form, or Single record BPs, or Shells are selected.

> **Note:** You cannot change the Line Item Data Picker DE itself in the Data Picker Configuration once the design is published and there are records at runtime. If you change to a different Line Item Data Picker DE in the destination element or deselect **Allow Line Item Referencing**, the system displays the message: "Cannot change Line Item Referencing Destination Element <Line item Data Picker DE> in published Data Picker configuration <BP Data Picker DE>." BP Data Pickers that are linked to Line item data pickers cannot be reset.

Data Elements

The **Data Elements Configuration** window enables you to setup for both unique (Unique) and auto sequence (Auto Sequence) Data Elements. To access the **Data Elements Configuration** window:

1) Go to the **Company Workspace** tab and switch to Admin mode.
2) In the left Navigator, select **uDesigner** node, and then select **Business Processes** to open the **Designer-Business Processes** window.
3) Select your BP (the BPs have been imported into your company) and click **Open** to open the window with the BP **Description**.
4) From the toolbar, click **Open**, and select **Data Elements** to open the **Data Elements Configuration** window. The window displays the following tabs:
   - **Unique**

- **Auto Sequence**

The following explains details about each tab.

Unique Tab

Business processes can have values specified on the upper form only that enable unique values in fields. This feature is available for Company level and project/shell level, and can be used on workflow and non-workflow business processes.

You can configure unique value validation on data elements on business process upper forms. For example, if a business process has a field called Invoice, and you need to enforce that each invoice number is a unique string, you can configure this field to have a unique value. If the user attempts to enter a string that is not unique (has been entered on another business process), the user will get a warning message that an alternate value must be entered.

You can use up to five data elements on a business process upper form that enable unique values. This feature is available only on upper forms.

> **Note**: You can specify that a field that has been configured for auto-sequencing also have a unique value.

Field value uniqueness is validated when:

- Records are created through integration (CSV or Web Services)
- Auto-population occurs
- A business process is routed
- Reverse auto-population occurs

To configure the unique values for your data element:

1) Go to the **Data Elements Configuration** window and click the **Unique** tab.
2) Click **Add** to open the **Select Data Element with Unique Value** window.
3) Select a data element to configure for unique values (**Data Element** drop-down). The text string data elements from the business process Upper Form are listed.

> **Note**: The unique value option is not available on Detail Forms.

4) Select a level (Company or **Project/Shell**).

   If you select **Company**, the system enforces unique values in the selected data elements on all records in the entire company.

   If you select **Project/Shell**, the system enforces unique values across all records in the current project/shell.
5) Click **OK**.
6) Click **Apply** and then **OK**.

To modify the unique values:

1) Go to the **Data Elements Configuration** window and click the **Unique** tab.
2) Click the data element that you want to modify, to select.
3) Click **Modify** to open the **Select Data Element with Unique Value** window.

4) Modify the fields that you want.
5) Click **OK**.
6) Click **Apply** and then **OK**.

To remove the unique values:

1) Go to the **Data Elements Configuration** window and click the **Unique** tab.
2) Click the data element that you want to remove, to select.
3) Click **Remove**.

> **Note**: Data elements that are removed from the design in uDesigner are listed in the **Data Elements Configuration** window in red and can be selected and removed.

Auto Sequence Tab

Business processes can have values specified on the upper or lower form that enable auto-sequencing. This feature is available at company, shell, and project levels and can be used on workflow and non-workflow business processes.

You can configure auto-sequencing for certain data elements (DEs) on a business process (BP) form. This is in addition to the standard BP numbering, and allows you to number up to two fields on an upper form, and two fields on a lower form. For example, you can specify that a Name field uses auto-sequencing to number BPs that have similar names.

The DEs that support auto-sequencing use the **SYS Auto Sequence** data definition configured in uDesigner. You can use up to two data elements on a business process upper form and lower form that enable auto-sequencing.

Auto-sequencing generation occurs when the user clicks:

- **Send** on workflow business processes
- **Save** on non-workflow business processes
- **Finish Editing** on non-workflow business processes for line items
- **Apply** or **OK** for line items

Notes:

- The new records will pick up the new start value.
- The auto-sequence DEs, at both record level and line item level, are generated when a record is routed. When the formula is calculated during the creation of line items, the auto-sequence DE is blank. When the record begins the routing process, the auto-sequence DEs are created. When other DEs use an auto-sequence DE in a formula, subsequent updates to the line item through any means will recalculate the formula.
- Formulas that use an auto-sequence DE will calculate only when a record advances. Retrigger the formula by updating the record or line item.

To configure the auto-sequencing for your DE:

1) Go to the **Data Elements Configuration** window and click the **Unique** tab.
2) Click **Add** to open the **Select Data Element for Auto Sequence** window.
3) Select a data element to configure for auto-sequencing (**Data Element** drop-down).
   - All upper and lower form data elements of the type **String** and that were created using the **SYS Auto Sequence** data definition are listed.
   - The upper form data elements are distinguished by the list format Upper Form or <data element>. The detail form data elements are listed by the data element names only.
4) Select a level (Company or **Project/Shell**).

   If you select **Company**, the system generates the auto-sequencing across all records in the entire company.

   If you select **Project/Shell**, the system generates the auto-sequencing across all records in the current project/shell. Per Record indicates data elements at the line item level (detail form).
5) In the **Start** field, specify that the start date is a numeric value. The default start number is 0001. This value is required. The sequence number generated for the field will start with this number. If you modify the numbering sequence, it will apply only to future projects, and current projects for which no records have been created yet.
6) From the **Format** block, click **Create** to open the **Formula Creation** window. You can specify the format for the auto-sequencing in this window.

   The **Formula Creation** window shows a list of **String** type data elements available from the form, and an additional system-defined data element, **SYS Sequence Counter**. This counter represents the value you entered in the **Start** field on the **Add Auto Sequence Data Element** window. You must use this counter when you build your formula for auto-sequencing.
7) Choose **Delimiter**, choose a data element from the list, and click **Add Parameter.** Add the delimiter, choose the **SYS Sequence Counter**, and click **Add Parameter** to build a formula to increment the auto-sequence counter. Build the formula by using the data element, the delimiter, and the **SYS Sequence Counter** in combination. The **SYS Sequence Counter** can appear first or last in the formula. For example:

   Data Element 1 - SYS Sequence Counter.

If the data element is a document name, an example of the resulting auto-sequenced data element could be Building Specification-0001

After the auto-sequence value is generated by the system, it cannot be modified, however you can modify the auto-sequencing configuration. See the procedure below.

Notes:

- An auto-sequence value will not be generated if any of the DEs that are part of the formula you specify do not have values. This includes the **SYS Sequence Counter** value.
- In the BP design includes formula data elements that depend on **SYS Auto Sequence**, Unifier will not have sequence DE value until the record or line item is updated. Sequence number is generated only after the record is submitted or line item is created. Line items can be updated via REST API so that the formula based on SYS Auto sequence DE will be evaluated.
- When a DE is added to the lineitem form and configured using the SYS Auto Sequence DD for a Summary Payment Application (SPA) BP, the sequence counter increments the sequence based on the line items present in the SPA BP. When the user adds lines to the SPA BP, the sequence is applied per line item regardless of any cost breakdowns that might have been added to any of the lines. (That is, the individual cost breakdown entries are not counted in the sequence and are not sequentially numbered.)

8) Click **OK**.
9) Click **Apply** and then **OK**.

To modify auto-sequencing configuration:

1) Go to the **Data Elements Configuration** window and click the **Auto Sequence** tab.
2) Click the data element that you want to modify.
3) Click **Modify** to open the **Select Data Element for Auto Sequence** window.

   You can modify the **Level**, **Start**, and **Format** as needed. Changing these values affects new records only. Existing auto-sequenced records are not changed. Any changes will take affect based on level selected before the change.

   - If Company is the initial level and data was created, and the level is changed to project/shell, the format will be the only value that will take affect
   - If project/shell is the initial level and data was created, changing the start value will affect the sequence created under new project/shells
   - Changing the format will affect existing and new project/shells.
   - If you change the level to Company then the sequence number will be created across project/shells and any modification to the start value will be ignored.
   - For data elements on the detail form, you cannot modify the level; the only level applicable is per record.

You cannot remove auto-sequencing data elements unless the data element has been previously removed from the design in uDesigner. Data elements that are removed from the design in uDesigner are listed in the Data Elements Configuration window in red, and can be removed.

4) Click **OK**.
5) Click **Apply** and then **OK**.

To remove auto-sequencing configuration:

1) Go to the **Data Elements Configuration** window and click the **Auto Sequence** tab.
2) Click the data element that you want to remove, to select.
3) Click **Remove**.

When setting up auto-sequencing, you have the option of defining how the sequencing can be incremented:

- Based on the unique value of the combination of the values in the formula
- Not based on the unique value of the combination of the values in the formula

When the **Generate number based on unique values of the parameters used in the format** option is selected in uDesigner, the user can increment the auto-sequencing pattern. For example, in your documentation, for your electrical designs, you can select to generate one of the following auto-sequencing formats, or patterns:

Discipline + Doc Type + <seq no> which would result in:

- Electrical-Design-00001
- Electrical-Feasibility-00002

Discipline + Doc Type + <seq no> which would result in:

- Electrical-Design-00001
- Electrical-Feasibility-00001

In the **Select Data Element for Auto Sequence** window, you can select the **Generate number based on unique values of the parameters used in the format** option (deselected by default) when there are more than one parameter in the auto-sequence definition (the definition should have a parameter other than just the SYS_Sequence_Counter). This option is available for BPs, and it can be changed at any time including when the design is published.

The first time that you select this option, the sequence numbering will start from the value specified in the **Start** field of the **Select Data Element for Auto Sequence** window. Subsequently, the numbers will get incremented based on the last generated number.

If you deselect this option (not to generate the number based on values in the parameters), the sequence will continue from the previously generated number, unless the value in the 'Start' field has changed. For example: Document Number = Company > Discipline > Report Period > SYS_Sequence_Counter

Unifier ignores the parameter values when a sequence number is incremented. For example: Architectural and architectural will be treated the same.

Note: Unifier ignores spaces in the values of the parameters.

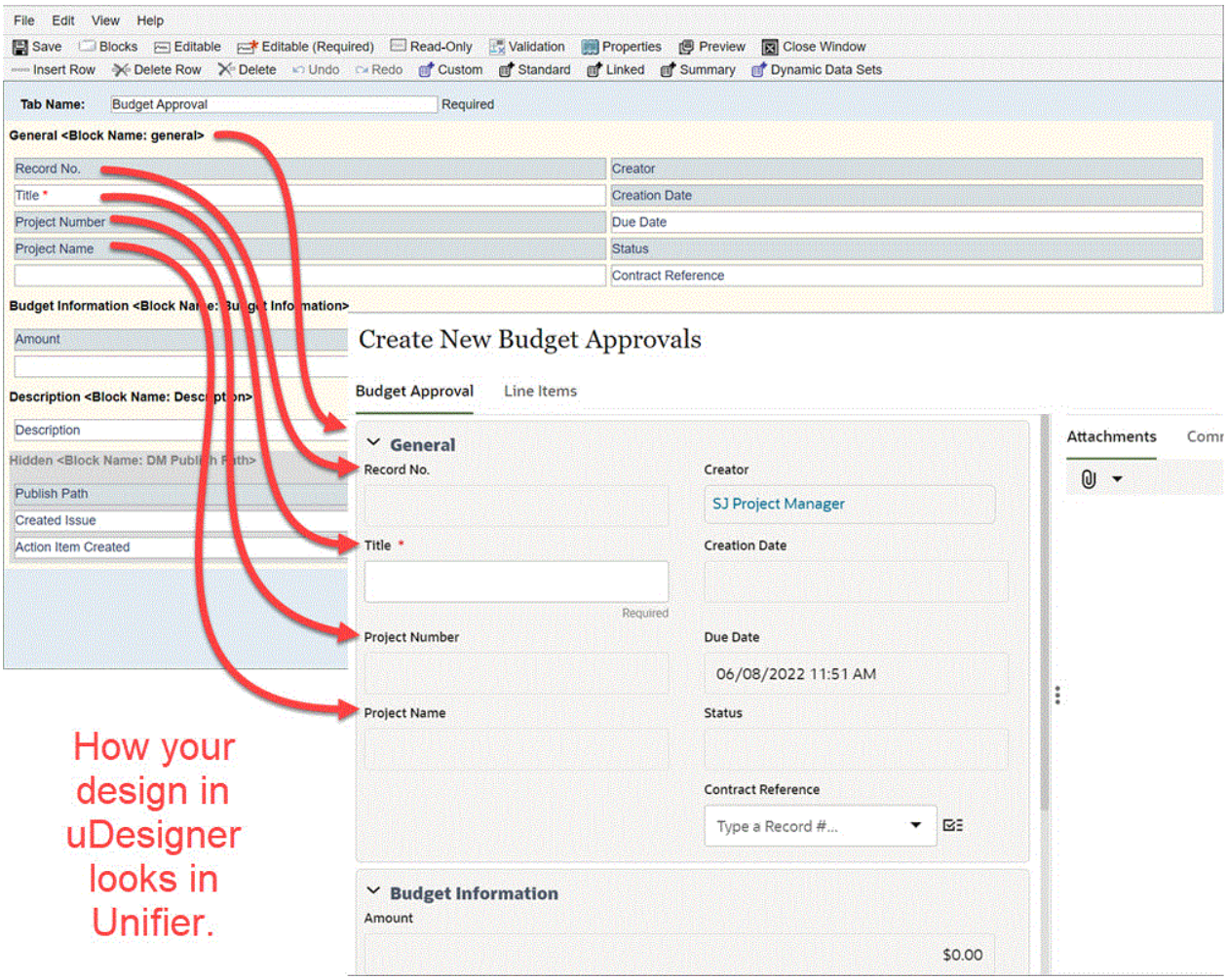
Gaps in Generated Business Process Record Number

The Business Process (BP) record number is sequentially generated when you create a new record. The newly generated record number is locked so that other records (being created at the same time) cannot use that number. If the BP record cannot be created for any reason (for example, Cost Sheet rules or validations that exist at the SOV level), Unifier only voids the generated record number and does not reset the record numbering sequence to allow another BP record to pick up that generated number. This operation generates gaps in BP record number generation.

Designing a Form

All Unifier components (business processes, shells, managers, asset classes, plans, and so on) are presented to the user as forms. In the application, these forms drive the business processes and contribute most of the data that will be used. Forms differ according to their purpose. Most forms will become attached to the steps in a workflow; others define and create components such as asset classes, plans, resources, shells, and managers.

For most business processes, forms will become attached to the steps in a workflow for the purpose of exchanging information. As part of the workflow, users will use these forms to collaborate as a team to complete the business process. The users will fill in the workflows with the "who, what, where, and when" information, as well as other information they will need to run the project—to maintain action items, manage document archiving, track workflow tasks and milestones, communicate and collaborate with project team members, and generate project reports. The form you create in uDesigner is what the user will use in Unifier.



In This Section

Design Approach for a Workflow Business Process 280
Overall Steps in Designing a Form 282
About Business Process Forms 283
About Upper Forms 285
About Detail Form 285
Action Forms and View Forms 286
Designing an Upper Form 287
Creating Templates for Upper Forms 297
Adding Blocks to a Form 301
Upper Form Options 304
Copying Upper Forms 320
Modifying Blocks 321
Designing Detail Form 322
Moving or Deleting Blocks 335
Adding Fields to the Form 336
Adding a Response List to a Text Business Process 390
Adding a Text Entry Area to a Form 390
Adding a Reference Process to Auto-Populate Data 391
Auto-populate on Payment Application from a Base Commits BP 394
Auto-populate on Payment Application from a Change Commit BP 396
Auto-Populate Scheduled Value and Commit Remaining Balance in Change Commits and General Spends 396
Auto-Creating a Record or Line Item from a Form 397
Designing a Bid Comparison Sheet for an RFB 413
Saving a Version of a Design 415
Restoring a Version of a Design 416
Adding Mobile Data Elements 420

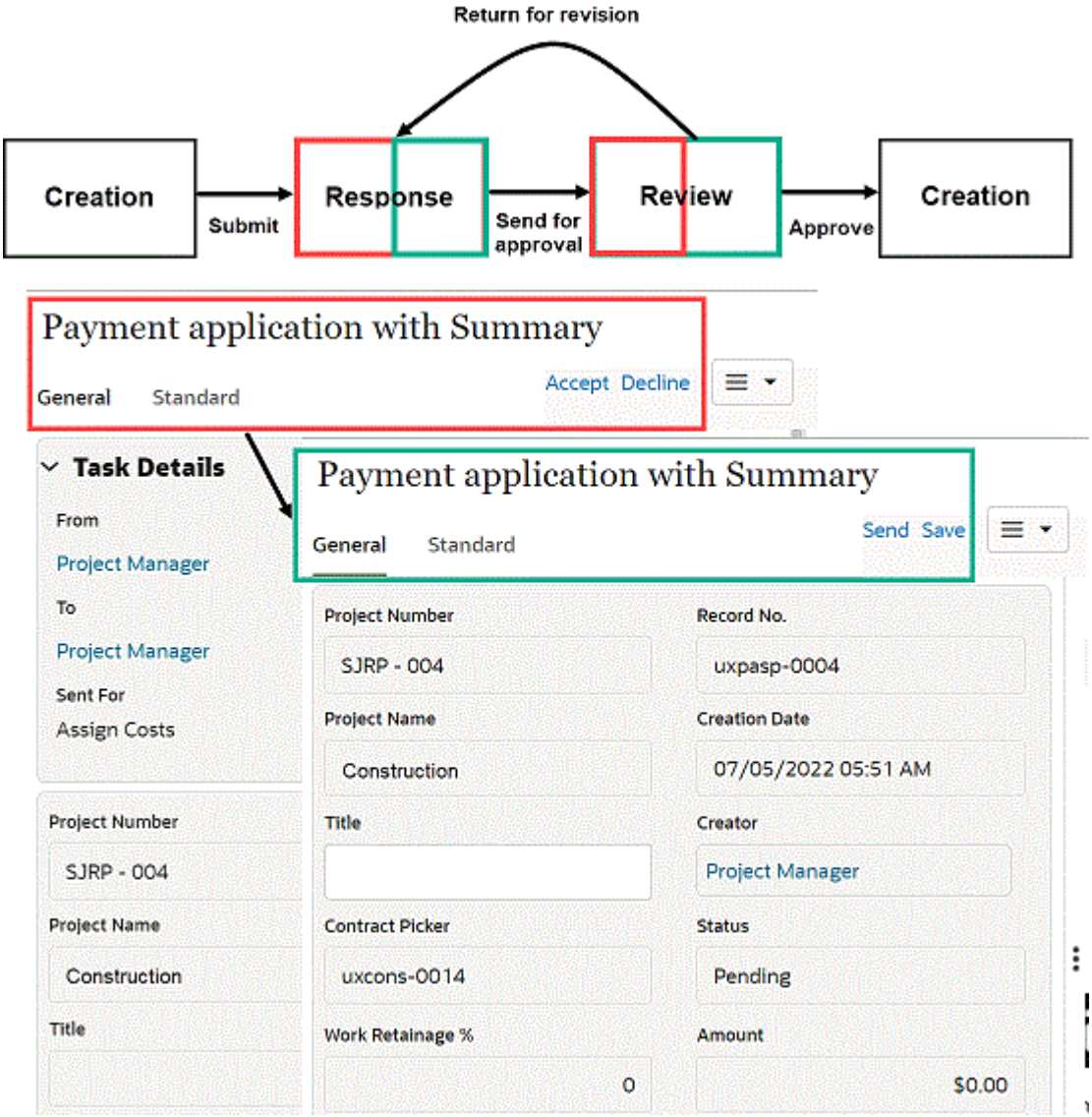
Design Approach for a Workflow Business Process

Many forms use workflows; a good design approach is to outline the workflow first to understand what kind of forms you will need at each step. After you have a good understanding of the workflow and what forms will be necessary, you can create the forms and then assign them to the appropriate steps as you create the workflow.

View vs. Action Forms in a Workflow

Part of understanding the workflow is considering each phase of a step. For most steps, there will be a "viewing" phase and an "action" phase. As a business process arrives at each step in a workflow, Unifier notifies the appropriate users if they are involved in the step. When they open the notification, the application displays a view-only form of the step's task. Each user can choose to accept or decline the task implicit in this form. If the user declines the task, the step ignores the user. If the user accepts the task, the form becomes an action form where the user can enter or edit information and attach comments, line items, or documents, and forward the form on to the next step in the workflow.

You will be designing the "view" and "action" forms for each step in a workflow. In the example below, the view phase is the first half of the step, marked in red, and the action phase is the second half of the step, marked in green. The toolbar options change from **Accept** and **Decline** to **Send** and **Save**. Clicking **Send** on the action form will route the record to the recipient in the view phase once more, for acceptance or rejection.



What Users Can Do

On a view form	On an action form
▸ Accept the task ▸ Decline the task ▸ Print the form ▸ Terminate the record ▸ Send email ▸ Transfer ownership of the record ▸ Add an assignee to the current step ▸ Copy users to the current step ▸ Audit the progress of the record	▸ Undo the task acceptance (decline the task) ▸ Select the step's next action ▸ Add or edit form content ▸ Save a draft of the record ▸ Terminate the record ▸ Transfer ownership of the record ▸ Display the view form of the BP ▸ Audit the progress of the record ▸ Spell check the record content ▸ Add attachments, line items, and so on ▸ Send the form to the next step

Overall Steps in Designing a Form

Here is an overview of the steps involved in designing a form:

> **Note**: Oracle recommends that you have a draft of each form at hand; this will make creating the form easier.

1) ***Designing an Upper Form*** (on page 287).
   - Name the form.
   - Specify what the user can do with this form.
   - Add content to the form (blocks and data fields).
   - Include formulas for appropriate fields.
   - Auto-populate fields, if appropriate.
   - Add linked elements from Shell Attribute Forms, single record BPs, or activity sheet.
2) ***Designing Detail Form*** (on page 322), if appropriate. Include optional features:
   - ***Adding an Item Log to a Detail Form*** (on page 322)
   - The information entered into this list appears at the bottom of a form.
   - Starting Detail Forms for Multiple Tabs
   - These tabs are an effective way to organize business data into separate line item lists.
   - ***Adding a Text Entry Area to a Form*** (on page 390) (for a Text business process)
   - The information entered into this form, such as meeting minutes, appears at the bottom of the form.
   - ***Adding a Response List to a Text Business Process*** (on page 390) (for a Text business process)
   - The information entered onto this list, such as text comments or file attachments, appears at the bottom of the form

- ***Selecting Fields for an Email Notification*** (on page 374)
- Select fields to include on email notifications to employees who are out of the office regarding workflow tasks.
- ***Selecting Fields for Unifier on Mobile App*** (on page 376)
- Select fields to include on mobile devices for users who are working out of the office.
- ***Auto-Creating a Record or Line Item from a Form*** (on page 397)
- Automatically create a new record or line item based on a condition, such as a dollar amount; a frequency, such as a daily or weekly time frame; or both a condition and a frequency.
- ***Adding a Reference Process to Auto-Populate Data*** (on page 391) for any form that uses a BP picker or line item picker.
- Reference processes populate the fields on the picker.
- Other features, such as maps, ***Validating Field Values*** (on page 356), ***Adding Formulas to Fields*** (on page 348), ***Updating Records Using Reverse Auto-Population*** (on page 363), and ***Auto-Populating Fields*** (on page 358) linking fields from Shell Attribute Forms, or single record Business Processes.

About Business Process Forms

There are two types of Business Process (BP) forms:

- Workflow
- Non-workflow

Workflow Business Process Form

The workflow BP has three sections:

- Upper Form
- Workflow
- Content

Upper Form

The Upper Form section of a Workflow BP form contains the basic information the form is managing, such as the name of a record and its description, who created the record and when, and so on. It also contains general data entry, informational, summary, or reference fields.

Workflow (Task Details)

The Workflow or Task Details section of a Workflow BP form shows the details of the step the form is currently on, including the last person who acted on the form, the status of the step, the due date for the task, and any notes that have been included at this step. Depending on how the workflow has been set up, the next assignee(s) for the task may be pre-determined (as in the example above), or the user may need to specify the next assignee or send a copy of the form to another user.

Content (Lower Form)

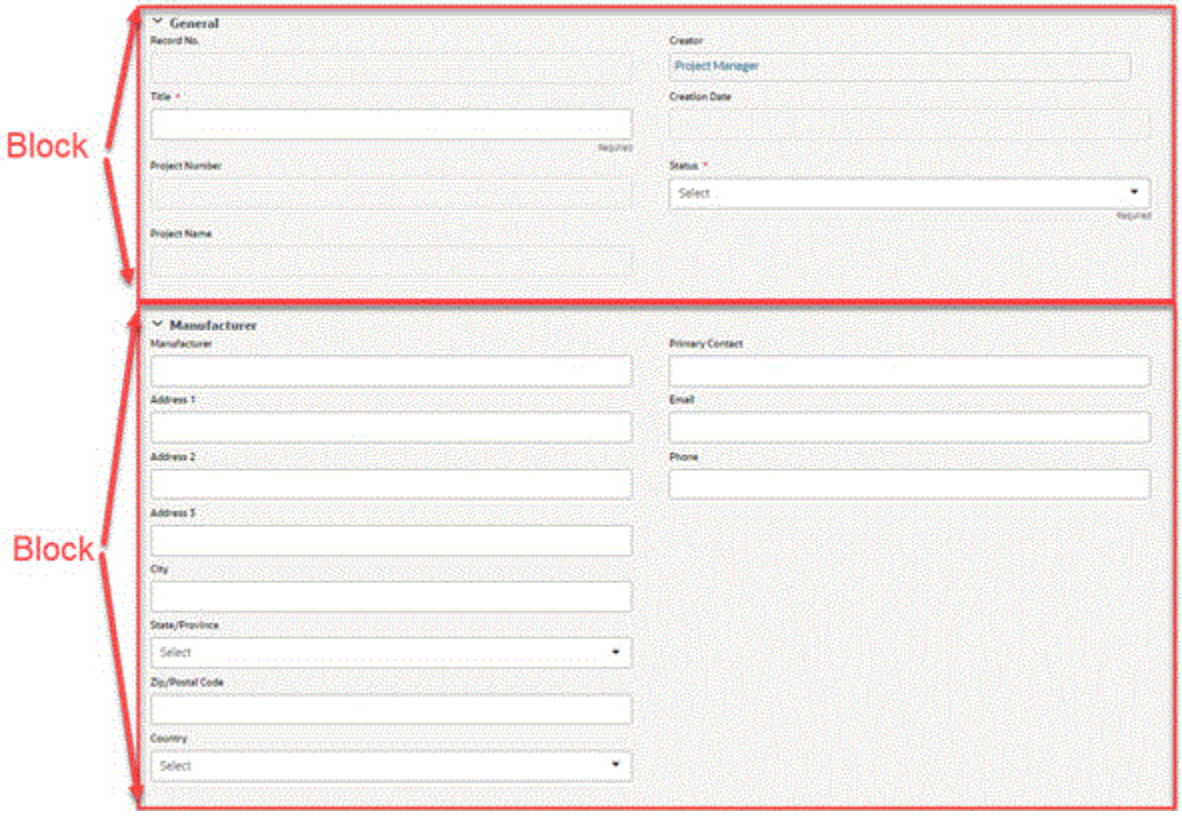
The Content or Lower Form section of a Workflow BP form shows information that has already been attached to the form, such as a line item, a document, or response comments for an RFI. The information displayed in this part of the form is entered by way of a Detail Form that the user completed when the user accepted the task.

Non-workflow Business Process Form

In terms of the form construction, the non-workflow BP form is similar to the workflow BP; however, the non-workflow BP form allows you to toggle between Read-only and Edit modes.

What Goes on a Form

Forms are composed of blocks and fields. Each block can contain one or more fields which you can fill with data elements.



Data Elements (DEs)

A Data Element (DE) can be:

- A text box, where the user types in information.
- A drop-down (pull-down) menu of choices (also known as a picker) such as dates or names.
- Radio buttons, where the user must select one of the options presented.
- A check box, where the user has the option of choosing something or not.

Refer to the *Unifier Data Reference Guide* for a list of these elements, along with a description of what they do and where to use them.

You can also add new elements as your company requires them. (For instructions on creating new data elements, see ***Creating a Data Element*** (on page 233).)

Pickers

Unifier contains a substantial number of pickers. These pickers are important elements for forms and a basic understanding of them will help you know where to include them on your forms. Refer to the *Unifier Data Reference Guide* for a list of these pickers, along with a description of what they do and where to use them.

About Upper Forms

Business processes must contain an upper form. This part of the form holds the basic information the business process is managing, such as the name of a record, its status, a description of the business process or step, who created the record and when, and so on. It also contains general informational or reference fields.

For business processes with workflows, you can design multiple upper forms—a different one for each step in the workflow, if necessary. Different upper forms are often necessary to accommodate cases where fields on the form must change from enabled to disabled, or where some fields should appear or not appear, depending on whether they are relevant to the step.

> **Note**: If your business process includes multiple workflow schemas, the number of different upper forms can increase in proportion to the number of steps in every schema. The one constant, however, is that **the upper form at the end step of all schemas must be the same**.

About Detail Form

Unifier provides detail forms in cost, line item, Request for Bid, schedule, resource, and document management business processes, as well as asset classes, plans, shells, and configurable managers. Users use them to enter information for these elements, such as line item details for a business process, new plan information for the Planning Manager, or new activity information for schedules. For shells, detail forms are for creating new sub-shells in a hierarchy. For configurable managers, they are for entering new items onto the manager's tracking sheet.

Detail forms can also be used to create multiple tabs for organizing line item information. For more information, see ***Organizing Data with Multiple Tabs*** (on page 326).

A detail form opens as a separate window in Unifier, where users enter or modify information. The fields on the detail form, and the information the users enter, are then displayed:

- At the bottom of the form.
- On a line item list, attached document, or response area.
- Other parts of the Unifier interface, such as a planning item log or a schedule.

The application automatically creates a detail form whenever you create these types of business processes, generic managers, or other components, except for document BPs: Detail forms are optional for document BPs.

Action Forms and View Forms

Action Form

The Action form is the version of the business process form that opens when the recipient accepts the task implicit in the form. As a business process arrives at each step in a workflow, Unifier notifies the appropriate users if they are involved in the step. When the users open the notification, the application displays a view-only form of the step task. If the user accepts the task, the form becomes an action form where the user can enter or edit information and attach additional documents.

View Form

The View form is the read-only version of a business process form that appears when the recipient first opens the form. The fields cannot be edited. A View form may also be used when the designer does not want the user to be able to change the data on the form.

> **Note**: Business process forms can only be printed from a View form.

To accommodate both view-only and action forms for a workflow step, you will need to create both forms and then specify which form should be used at the step's entry and which form should be used when the user accepts the task (see ***Adding Steps to the Workflow*** (on page 440)).

A quick way to create the action and view-only forms is to copy one form from another and change the fields to "editable," "required," or "read-only" as necessary. You can also add or remove fields as appropriate for the form.

You (the designer) can create a View form so that based on the user persona, the data that is seen in the form can be controlled at runtime.

For a non-workflow business process can have multiple view forms. This is so you can create multiple view forms and for each of the view forms you can decide what data can be put in the form.

> **Note**: Previously, a non-workflow business process had only one form that held all the data. This form was the Action form.

A non-workflow BP design (in uDesigner) will be similar to a workflow BP design, except that a non-workflow BP can only have one Action form and there will be no workflows.

You can create View forms for:

- Non-workflow BPs regardless of the Type
- Non-workflow BPs existing at both Project and Company Level
- Non-workflow BPs of both Single Record and Multiple records

> **Note**: Unifier validations are applicable to all of the above.

If you have any custom data elements in the View form, those custom data elements must be added to the Action form.

Designing an Upper Form

An upper form is the upper portion of a business process form. The upper form contains the basic information that the form is managing, such as the name of a record and its description, who created the record and when, and so on. The upper form also contains general data entry, informational, or reference fields for the business process form.

For certain business process types, the upper form can also show a consolidation of the line items from a detail form.

> **Note**: You can define validation rules on an upper or detail forms; however, when you want to set validation rules for the Currency Amount or Decimal Amount data elements, Oracle recommends that you use conditions such as data element less than 0.001 (or greater than -0.001) instead of using zero, in the validation rule definition. The conditions such as the data element equal to zero can be set on the Integer type data elements.

To design an upper form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process for which you want to create the upper form.
4) In the left Navigator, select **Upper Forms**. The **Forms** log or pane opens.
5) On the **Forms** pane, click the **New** menu option and choose **Manual**. The **Form Design** window opens showing the **General** tab and **Options** tab.

   You can design an upper form by way of selecting the other options listed in the **New** menu option and:

   - Creating an upper form from a copy of another business process form.

     To do so, click **New**, and then select **Copy From** to open the **BP Upper Forms** window. Select a BP that you want to copy its upper form, from the list, and click **Copy** menu option.

     - In the **General** tab, enter a valid upper form name in the **Name** field, provide a brief description, and specify whether this will be an action form (**Action Form**) or a read-only view form (**View Form**).
     - In the **Options** tab, select the required actions and click **OK** after you finish selecting the options for **Attachments to overall record**, **Source**, **Publish to Document Manager**, **Document Manager Attributes**, and **Additional** fields. You can see your copied upper form on the **Forms** pane.

   - Creating an upper form from a snapshot of another form in the business process.

     To do so, click **New**, and then select **From Snapshot** to open the **Select Snapshot** window. Select a BP snapshot that you want to copy its upper form, from the list, and click **Open** menu option. In the **General** tab, enter a valid upper form name in the **Name** field, provide a brief description, and specify whether this will be an action form (**Action Form**) or a read-only view form (**View Form**). For more information about snapshot, see ***Restoring a Version of a Design*** (on page 416).
6) On the **General** tab, enter a name (required field) and description for the new upper form.

7) Specify whether this will be an action form (**Action Form**) or a read-only view form (**View Form**).
8) Click the **Options** tab.

   This tab displays different options, depending on the form you are creating and whether it is a view form or an action form. For more information, see the ***Upper Form Options*** topic and subtopics.

   For view forms, the **Options** tab appears only on line item type and cost type BPs.
9) Use the following information to complete the **Options** tab and click **OK** when finished.

   uDesigner displays the name of the form on the Forms pane. To complete the form, use the instructions in the following sections:
   - ***Adding Blocks to a Form*** (on page 301)
   - ***Adding Fields to the Form*** (on page 336)
   - ***Adding Link Elements to a Form*** (on page 429)

If the **Options** tab shows the following fields, proceed to select the check boxes as described for each field, below:

Allow linking Mailbox

Select the check box if you want the user to link Mailbox messages to the form.

Attachment Source

Add attachments or line items from the Unifier Document Manager, or from the user's local machine.

Attachments to overall record

- Add, remove, and copy attachments to line items (see Attachment Source below).
- Also, for Document Type business processes only, the ability to **Append Line Items Folder Structure to AutoPublish Path**. This means that if a Document Type business process has a folder structure, the automatic publishing path specified in uuu_dm_publish_path is appe*nded to the path des*ignated by that folder structure. For example, if the Document Type business process has the folder structure State/County/City, and the automatic publishing path is Street/Builder, the complete path would be: Street/Builder/State/County/City.

Comments

- Add comments to the record
- Mark comments as "final," and therefore, not changeable

Funding Options

- For General Spends and Payment Applications, you can specify these options:
  - **View Fund Assignment** to allow users to view funding assignments.
  - **Allow Fund Assignment** to allow users to assign funds. To assign funds, the user must also be able to view fund assignments. If you give the user fund assignment permission here, the user will be able to assign funds when the record reaches a terminal status, even if the record has not reached the end of the workflow.
- For Base Commits and Change Commits, you can fund by contract by specifying these options:

- **Allow Viewing of Fund Information** to allow users to view funding information.
- **Allow Funding** to allow users to create and access Commitment Funding sheets.

- In all cases where funding is available, a Funding button appears on the form toolbar at runtime.

Send bid invitations and allow bid receipt

If this is an RFB, use this feature on the Requestor form you create for the workflow step that makes the form available to bidders. This field should appear on the Requestor action form only; not the Bidder action form. See ***Request for Bid-type (RFB-type) BP Upper Forms*** (on page 312).

Use Master Vendor list filtered at Project level

If you have designed a BP that filters the company's vendor list (Master Vendor List/Vendor Master List) into a subset of vendors, you can use this feature on the Requestor form. This option bypasses the company's master vendor list and uses the project vendor list instead.

> **Note**: For an RFB that goes out for public bidding, Unifier will ignore this option and use the company's master vendor list.

Do not allow viewing received bids

Use this option to:

- Hide the Show Bids button, and thereby, prevent anyone (including the requestor) from viewing the received bids.
- Satisfy a business need where you do not want anyone to view the received bids unless a specific condition is met; for example, that bids must be received from a certain number of bidders.

Line Items

> **Note**: For some line-item type BPs, the line items can be grouped under **multiple tabs**. To specify the options for the line items under each tab, click the name of the tab on the left and specify the options on the right.

If the tab should be hidden (for example, if the user should not see the tab at a particular step in the workflow), select the **Hide current tab** check box.

The following sections explain the specific selections.

For Document Business Processes

Add, remove, and copy line items

Modify the line item status

Modify line items, unless the line item has a specified status

For Line Item Business Processes

Add, remove, and copy line items

Add attachments to line items

Add summary line item amounts

> **Note**: If you select this check box, a summary of line item amounts will become an automatic column (titled "Sm") on the line item log. This column may or may not be empty, depending on whether there are any amounts to summarize.

Modify the line item status

Modify line items, unless the line item has a specified status

For Cost Business Processes

Add, remove, and copy line items

Allow modify line items: If compatible with the Cost BP classification, modify line items at any time during the workflow before the end step is reached

Add attachments to line items

Add summary line item amounts

Generate Payment Schedule (for Lease BPs)

Costed Amount must be equal to the line item Amount (Base Commits and Change Commits BPs with Schedule of Values [SOV] Summary Payment Applications type)

In the form design Properties window, Options tab (in the Line Items block), the **Display line item group total amount** option is made available for the **Line Item** tab in **Action Forms** (in Cost type and Line Item type of BPs.

> **Note**: For SPA type BPs, and the classic payment application BP, the **Display line item group total amount** option is not available for the standard tabs.

The **Display line item group total amount** option is enabled and unchecked by default.

You (the designer) can select the **Display line item group total amount** option:

a) To allow the display of the line item total amount by each group.
b) When the **Allow Add/Remove/Copy line items** option is not selected.

In case of the Line Item type BP, if the **Amount** data element is not a part of the **Detail Form** design, and if the **Display line item group total amount** option is selected, then when completing the business process, Unifier will display the following message: `Deselect the option 'Display line item group total amount' in form <upper form name> as the amount data element is not added to the detail form <detail form name>`.

The **Display line item group total amount** option is available in view forms. Use this option to show the group totals in a view form. By default, the **Display line item group total amount** option is not selected.

For Base Commits and Change Commits Business Processes (SPA of SOV Type)

The following additional options are available for the **Standard** tab in **Line Items**:

- Allow Cost Breakdown

  The Upper Forms must have the Allow Cost Breakdown option selected to allocate costs to a given line item.

  This option allows the user to:

  - Add/remove/copy cost distribution details with cost code allocations to a line item in User mode.
  - Add the remaining quantity, or cost, with a cost code allocation to a line item in User mode.
- Costed Amount must be equal to the line item Amount

  Ensures that the sum of amounts of distribution lines equals the summary line amount (User mode).

The Allow Add/Remove/Copy line items option only allows the user to add the Summary line item.

The Allow Modification of line item option only allows user to modify the Summary line item.

If the user does not check the Allow Modification of line item option, but the user selects the Allow Cost Breakdown option , then:

- The Costed line items, added in the Cost distribution grid, modify the Line item at the Summary level.
- The editable fields, at the Summary line item, cannot be modified.

Additional Information:

- You can hide the Standard detail tab; however, you must keep one tab (at least) unhidden in a Business Process that supports multiple tabs.
- After you deploy a Base Commits BP of Summary Payment Applications SOV type, you cannot modify the SOV type in uDesigner.
- You are not allowed to place the Unit Cost Contract (`uuu_unit_cost_contract`) data element in the Upper Forms for Base Commits, or Change Commits, type BPs with SOV type "Summary Payment Applications."
- An error will occur after clicking Unit Cost if you do not include the Item Unit Cost and Item Quantity (`uuu_unit_price` and `uuu_Quantity`) fields in the Detail Form design.

For Payment Application Business Processes

The following additional option is available for the **Standard** tab in **Line Items**:

Costed line item total must be equal to the line item total

- If this option is selected, the total amount for the editable Amount fields, from all the paid Costed line items, equals the total amount at the Summary line item level, at runtime.
- For the Payment Application BP that the DE Reference ID (refid) is set to point to a Base Commits BP of Summary Payment Applications type, you can include the DEs for Cost Code/Code Name on the Standard detail tab.

Note: If the sum of costed lines ranges between a -0.01 to 0.01 difference from the originating line item values, the system does not generate an error or prevent the BP record from moving to the next step.

For Payment Application Business Processes: Line Items with CBS Code

The following options could vary between the various forms that are used in the Workflow. At runtime, the respective form properties will be retained.

Note: The form design must include DE Reference ID (refid) set to point to a Base Commit BP of SOV type Summary Payment Application.

The following options can vary between the various forms that are used in the Workflow. At runtime, the system displays the respective form properties

Attachments to overall record

- Add Attachments
- Remove Attachments

Line Items on Standard tab

- Hide current tab
- Allow Add/Remove line items
  - Allow attachments to line items
- Allow Modification of line items

  This option enables the user to edit the line items once they are created.
- Allow viewing of Costed line items

  By selecting, or deselecting this option the user can control the visibility of the costed line items. Also, the user will have the option to edit the costed line items. This option, when selected, enables viewing of costed line items.
  - Allow Modification of Costed line items

    By selecting, or deselecting this option the user can control the editability of the costed line items. This option is only available if the Allow viewing of Costed line option is selected.
- Total the Cost Breakdown values to the line item

  This option (in conjunction with the **Summary Total** property defined for a field in the detail form) will roll up the costed lines total to the corresponding line item field. See ***Defining Summary Totals*** (see "***Defining Totals (Payment Application Grid and Summary Payment Application Grid)***" on page 377).
- Costed line item total must be equal to the line item total

  When selected, this option enables the user to perform validations for totals. The existing selected option, for the Costed line item total, must be equal to the line item total.

Runtime Record Behavior

The runtime record behavior for Payment Application business processes of Summary Payment Application of SOV type are as follows:

uDesigner Option	Runtime Record Behavior
Allow Add / Remove / Copy Line items - Checked Allow Modification of Line items - Checked Allow viewing of Costed line items - Unchecked Allow Modification of Costed line items - Unchecked	Users will be able to: ▸ Add new line items ▸ Modify the existing line items Users will not be able to: ▸ View the Costed line items ▸ Modify the Costed line items
Allow Add / Remove / Copy Line items - Unchecked Allow Modification of Line items - Checked Allow viewing of Costed line items - Unchecked Allow Modification of Costed line items - Unchecked	Users will be able to: ▸ Modify the existing line items Users will not be able to: ▸ Add new line items ▸ View the Costed line items ▸ Modify the Costed line items
Allow Add / Remove / Copy Line items - Checked Allow Modification of Line items - Checked Allow viewing of Costed line items - Checked Allow Modification of Costed line items - Unchecked	Users will be able to: ▸ Add new line items ▸ Modify the existing line items ▸ View the Costed line items Users will not be able to: ▸ Modify the Costed line items
Allow Add / Remove / Copy Line items - Checked Allow Modification of Line items - Checked Allow viewing of Costed line items - Checked Allow Modification of Costed line items - Checked	Users will be able to: ▸ Add new line items ▸ Modify the existing line items ▸ View the Costed line items ▸ Modify the Costed line items
Allow Add / Remove / Copy Line items - Unchecked Allow Modification of Line items - Unchecked Allow viewing of Costed line items - Checked Allow Modification of Costed line items - Checked	Users will be able to: ▸ View the Costed line items ▸ Modify the Costed line items Users will not be able to: ▸ Add new line items ▸ Modify the existing line items
Allow Add / Remove / Copy Line items - Unchecked Allow Modification of Line items - Unchecked	Users will be able to: ▸ View the Costed line items Users will not be able to:

uDesigner Option	Runtime Record Behavior
Allow viewing of Costed line items - Checked Allow Modification of Costed line items - Unchecked	▸ Add new line items ▸ Modify the existing line items ▸ Modify the Costed line items

For Request for Bid (RFB) Business Processes

Add, remove, and copy line items

Add attachments to line items

Modify line items only

For Schedule Business Processes

Add, remove, and copy line items

Add attachments to line items

Add summary line item amounts

For Resource Bookings and Time Sheet Business Processes

Add, remove, and copy line items

Add attachments to line items

Add summary line item amounts

For Lease Business Processes

Add, remove, and copy line items

Add attachments to line items

Add summary line item amounts

For Project/Shell Creation Business Processes

Add, remove, and copy line items

Add attachments to line items

Add summary line item amounts

Modify the line item status

Note: Select this check box; otherwise, the user will not be able to

change the line item status at runtime in Unifier.

For Modifying Line Items

Unless the line item has a specified status, you can allow users to add an attachment to the record only and prevent the users from adding attachments to line items.

Check the following items on the **Options** tab:

- Attachments to overall record: Add and (optional) Remove attachments
- Line Items: Allow Modify Line Items, except when there is a specified status.

For Modifying Line Items (Bidder)

Applicable to bidder line items in an RFB type business process (both private and public bids), since a created bid, or a revised bid, can have multiple line items and those line items can have information, or updates, instead of creating, or updating, each line item manually (from Grid View or Form View), Unifier allows the bidder to update the fields in the multiple line items, or to add attachments, by using a CSV template to import the updated line items into the bid request. As a result, at runtime, the user can use the Export and Import options to export and import multiple line items.

This feature enables the bidder to create or update line items in bulk using CSV import during the creation or update of their bids. There will be an additional Export and Import options available in bid request record when creating or revising bid.

The **Export** option has two sub-options:

- **Export Line Item Template**

  Use to export the CSV template with all the data elements that are in bidder detail form.
- **Export All Line Items**

In this scenario:

- The existing bid line items are those line items that are received from a requestor, and the line items that are saved by bidder.
- A new bid line items are those line items that are newly created by the bidder.

This is related to the Bidder: Request for Bid type (RFB-type) BP Upper Forms-Action Form (AF). See ***Request for Bid-type (RFB-type) BP Upper Forms*** (on page 312) (Bidder: Request for Bid type (RFB-type) BP Upper Forms-Action Form (AF)) for fields.

To access an RFB-type BP:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the RFB BP.
4) In the left Navigator, select **Bidder**, and then select **Upper Form**.
5) Select the applicable form.

6) From the toolbar, click **Properties**, and then select the **Options** tab.

Line Items block

Left pane

Names of the line items.

Right pane:

- **Allow Add/Remove/Copy line items**
  - **Allow attachments to line items**
- **Allow modifying line items**
  - **Allow attachments to the saved line items**

Prior to upgrading to the Unifier 20.9 release:

- If the **Allow attachments to line items** and the **Allow modifying line items only** were checked, then from the 20.9 release the application will automatically check and enable the **Allow attachments to the saved line items**.
- If the **Allow attachments to line items** *was checked* and the **Allow modifying line items only** *was not checked*, then from the 20.9 release the application will automatically deselect and disable the **Allow attachments to the saved line items**.
- If the **Allow attachments to line items** *was not checked* and the **Allow modifying line items only** *was checked*, then from the 20.9 release the application will automatically uncheck and enable the **Allow attachments to the saved line items**.
- If the **Allow attachments to line items** *was not checked* and the **Allow modifying line items only** *was not checked*, then from the 20.9 release the application will automatically uncheck and disable the **Allow attachments to the saved line items**.

> **Note**: The above applies to the published RFB designs.

If you do not check the **Allow modifying line items**, the **Allow attachments to the saved line items** will be unchecked and disabled. The **Allow attachments to the saved line items** will be enabled only when the **Allow modifying line items** is checked.

When you select the **Allow attachments to the saved line items** option, the user will be able to add, revise, or remove attachments (when updating the line items both from the user interface or CSV import).

When the **Allow attachments to line items** option (under the **Allow Add/Remove/Copy line items** option) is checked, the user can add attachments to both:

- The new line items created by the bidder.
- The existing line items coming from requestor.

> **Notes**:
>
> - After the upgrade to 20.9, the bidders can add, revise, or remove attachments only when the **Allow attachments to the saved line items** option is selected.
> - Unifier does not support the inclusion of the image picker field in the CSV import.

Creating Templates for Upper Forms

For most companies, the upper forms in business processes contain many of the same fields. It can be difficult to ensure that forms are consistent, with fields in the same location for similar forms. To make creating upper forms easier, and reduce the chances of errors when modifications are made, you can create templates for upper forms so that you do not have to design and edit each one manually. When you add blocks from a template to an upper form, the template becomes linked to the upper form so that any changes you make to the template can be quickly and automatically "pushed" to the upper form.

A template provides only a layout of fields for the upper form. After a template layout is on the form design and linked to the template, you can use all the design features for the fields, such as formulas, auto-population, and dynamic data sets; but you:

- Cannot add, remove, or rearrange the template fields.
- Cannot move fields into or out of the template block.
- Cannot link template elements.

The procedure that follows explains how to create a template. For information on how to use these templates to design an upper form, see ***Adding Blocks to a Form*** (on page 301).

Creating a template

You can create a template manually, from a snapshot of the template, or copy a template from another business process.

Template "Cans" and "Cannots"

When you are creating a template, be aware of the following:

- The template provides only a layout of fields for the upper form.
- You can make fields in the template editable, required, or read-only.
- You cannot create dynamic data sets in a template.
- You cannot link elements in a template.
- You cannot validate the fields in a template.
- You cannot see a preview of the template design.
- You cannot use any of the functions that are available on the layout properties, such as formulas or auto-population.

To create a template manually:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process for which you want to create a template.
4) In the left Navigator, select **Templates**, and then select **Upper Forms**.
5) From the toolbar, click **New**, and then select **Manual**. A Form Design window opens.
6) Enter a name and description for the template.
   The name must be unique. A description is optional, but recommended.
7) Click **OK**. uDesigner displays the name of the template on the right pane.

8) Double-click the template name to open the design window. The Form Designer window opens.
9) Create the template using the instructions under ***Adding Blocks to a Form*** (on page 301) and also ***Adding Fields to the Form*** (on page 336).

To create a template from a snapshot:

These steps assume that a snapshot has been made of a previous template design.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process for which you want to create a template.
4) In the left Navigator, select **Templates**, and then select **Upper Forms**.
5) From the toolbar, click **New**, and then select **From Snapshot**. The Select Snapshot window opens, showing snapshots that have been taken of the template.
6) Select the snapshot from the list and click **Open**. A Form Design window opens.
7) Enter a name and description for the template.

   The name must be unique. A description is optional, but recommended.
8) Click **OK.**

   uDesigner copies the layout of the snapshot to the template you are designing. At this point, you can edit the template by adding, removing, and rearranging fields on the form. To edit the template, use the instructions under ***Adding Blocks to a Form*** (on page 301) and also ***Adding Fields to the Form*** (on page 336).

To copy a template from another business process:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process for which you want to create a template.
4) In the left Navigator, select **Templates**, and then select **Upper Forms**.
5) From the toolbar, click **New**, and then select **Copy From**. The BP Template Forms window opens, showing a list of the upper form templates that have been created for this business process.
6) Select an upper form from the list and click **Open**. A Form Design window opens.
7) Enter a name and description for the template.

   The name must be unique. A description is optional, but recommended.
8) Click **OK**.

   uDesigner copies the layout of the template to the template you are designing. At this point, you can edit the template. To edit the template, use the instructions under ***Adding Blocks to a Form*** (on page 301) and also ***Adding Fields to the Form*** (on page 336).

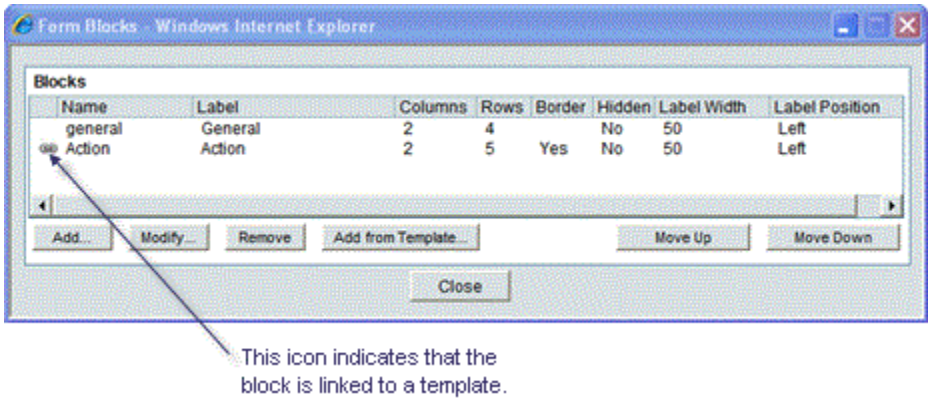
Using a Template in a Design

After you have created a template, you can add it to the design of the upper form when you add blocks to the form. Adding block layouts from a template automatically links the form to the template.

To add a template layout to an upper form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process.
4) On the Form Designer window, click the **Blocks** button. The Form Blocks window opens.
5) Click the **Add from Template** button. The Upper Form Templates window opens, showing a list of the templates available for this business process.
6) Select the template you want to use and click the **Select** button.

   uDesigner adds the template block(s) to the bottom of the design and links the form to the template.



7) On the Form Blocks window, click **Close**.

   uDesigner returns to the Form Designer window. After a template layout is on the form design and linked to the template, you can use all the design features for the fields, such as formulas, auto-population, and dynamic data sets; but you:

   - Cannot add, remove, or rearrange the fields in the block.
   - Cannot move fields into or out of the block.
   - Cannot link elements.

> **Note**: If you do not want to keep this block linked to a template for automatic design updates, you can unlink it (see ***Unlinking an Upper Form From a Template*** (on page 300)). Once unlinked, the fields in this block will behave as any other field you manually add to the form.

Updating an Upper Form Using a Template

After a template has been used in the design, you can change that template and push those changes to any upper form that is linked to the template.

To push template changes to upper forms:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process with the upper form(s) you want to update.

4) In the left Navigator, select **Templates**, and then select **Upper Forms**.
5) On the right pane, select the name of the template you want to use to update the form(s).
6) Click the **Update Forms** button. uDesigner will ask you to confirm the update. Click Yes.

   uDesigner updates all upper forms in the business process that are linked to this template. Here is what the template will update:

   - Any block label name, width, or position change
   - Show or hide setting for the block border or label
   - Blocks added to the template will be added at the end of the form
   - Field positions, to reflect a change in the template (however, field settings, such as editable or read-only, will not be updated)
   - Fields added to the template will be added to the form and will reflect the editable, required, or read-only settings from the template.

> **Note**: This is an "all or nothing" operation. If uDesigner finds any errors, it will not update any of the upper forms. For example, if the template does not exist in an upper form, or if you have added a field to the template that already exists on the form, the update will fail and uDesigner will display a window listing the errors.

Unlinking an Upper Form From a Template

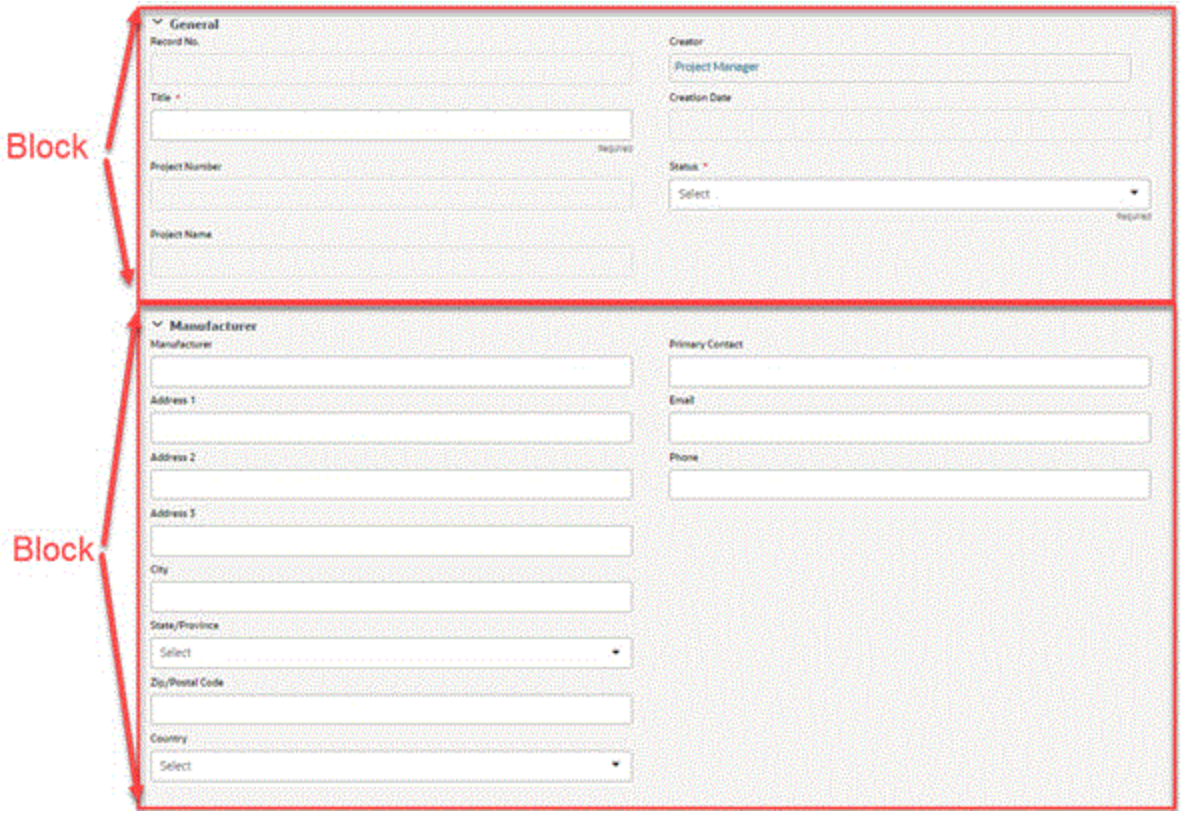
When you unlink a form from a template, uDesigner leaves the block on the form design; however, the fields in the block are now available for any of the field functions, such as formulas or auto-population.

To unlink the form from a template:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process with the template you want to unlink.
4) In the left Navigator, select **Templates**, and then select **Upper Forms**.
5) On the right pane, select the name of the template you want to unlink from the form.
6) Click the **Usage** button. The Template Usage window opens, showing a list of all the upper forms the template is linked to.
7) Select the upper form you want to unlink and click the **Unlink** button.
8) Click **Close Window**.

Adding Blocks to a Form

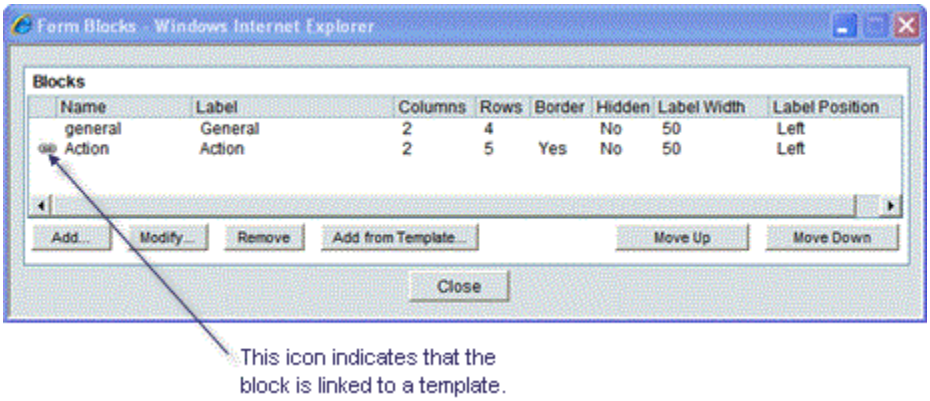
Use the following instructions to add blocks to an upper form, detail form, or template. The blocks of fields you create for the form will appear in Unifier similar to the following example.



To add blocks to a form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process.
4) In the left Navigator, select **Upper Forms** or **Detail Form**.
5) On the Forms pane, double-click the name of the upper (or detail) form you started. A designer window opens.
6) In the **Tab Name** field, enter a name. This is the title that will appear in the upper or detail form in Unifier.

7) On the Form Designer window, click the **Blocks** button. The Form Blocks window opens.



8) To add a block to the form, click the **Add** button. The Block Properties window opens.

9) Use the information in the table below to complete the fields in this window.

10) After defining the block properties, click **OK** to return to the Design window. Next, you can add fields to the form (see ***Adding Fields to the Form*** (on page 336)).

In this field:	Do this:
Name	Enter a name for the block (for internal purposes only). If you are modifying a block from a template, do not change the name. Forms are linked to templates via this name. If you change the name, the link from the template to any forms using it will no longer work.
Description	Enter a description for the block. This description will appear on the form in Unifier if you choose to make it visible.
Label	Enter a name for the block. This is the name that will appear on the form in Unifier if you choose to make it visible.
Number of Columns	Enter the number of columns you want on the upper form. Maximum is 4; default is 2.
Number of Rows	Enter the number of fields that will appear in this block of the form. Each field will occupy one row. Maximum is 19 fields (rows); default is 5. After you have specified the number of rows, you cannot modify the block properties, but you can manually delete or insert rows in the Designer window.

In this field:	Do this:
Show Border	Select the check box to enclose the block in a border on the form. This will visibly distinguish the fields in this block from other fields on the form. Instead of using a border, you can also use empty fields to create spaces between rows.
Show Label	Select the check box if you want to block label to appear on the form.
Show Description	Select the check box if you want to description to appear on the form.
Hidden	Select the check box if you do not want to display the block on the form. Use this feature to hide fields that are only used in formulas, or to hide obsolete data elements. If blocks are marked as hidden, the block label in the Designer window is grayed out with a pre-assigned value of "Hidden<Block Name: Hidden>" You can add fields with formulas to a hidden block. However, you cannot make the fields in a hidden block "required," and you cannot add a validation rule to the fields. **Note:** If you need to edit a hidden block, you must deselect this check box to "un-hide" the block. Then make your changes and hide the block again.
Label Width	Enter the width of the block label as a percentage of the form width. Default is 20 percent.
Label Position	Specify where the label should appear on the form—to the left or right of the field. Default is left. Note: You may need to adjust the label width, label position, and number of columns to get the fields to look the way you want. These three attributes affect the way the text is justified and where the red asterisk for a required field appears.

In this field:	Do this:
Notes	(Optional) Use the Notes field to enter details about the design of the block. This can be helpful to others in understanding the information this block is intended to contain and what that information might be used for. **Note:** This field will not be visible on the log.

Upper Form Options

For each type of BP, there are two types of **Upper Forms** sub-nodes. One **Upper Forms** sub-node is under the **Templates** node, and the other **Upper Forms** sub-node is under the **Requestor** node. Both **Upper Forms** have the same tabs and fields. The following explains the **Upper Forms** sub-node that is under the **Requestor** node.

To access the Upper Forms sub-node that is under the Requestor node for most BPs:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the applicable BP.
4) In the left Navigator, select **Upper Forms**.
5) Select the applicable form.
6) From the toolbar, click **Properties**.

   The upper form design has the following tabs:
   - **General** tab
   - **Options** tab

To access the Upper Forms sub-node that is under the Requestor node for the RFB BP:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the applicable RFB BP.
4) In the left Navigator, select **Templates**, **Requestor**, or **Bidder**; and then select **Upper Forms**.
5) Select the applicable form.
6) From the toolbar, click **Properties**.

   The upper form design has the following tabs:
   - **General** tab
   - **Options** tab

> **Note:** The following applies to both workflow and non-workflow type

BPs.

The **General** tab has the following fields:

In the **General** tab, enter a valid upper form name in the **Name** field, provide a brief description, and specify whether this will be an action form (**Action Form**) or a read-only view form (**View Form**).

- **Name** (contains the name of the upper form)
- **Description** (contains a brief description for the upper form)
- **View Form** (indicating a read-only view form)
- **Action Form** (indicating an action form)

The **Options** tab has the following fields, based on the following BP types:

- Cost
- Document
- Test
- Line Item
- Simple
- RFB
- Resource
  - Resource Booking
  - Timesheet
- Project/Shell Creation
  - Simple
  - Line Item

The following explains the **Options** tab for each BP type, above.

Upper Form Options for Cost BP

The fields in the **Options** tab of a Cost BP upper form are distributed according to:

- Upper Form for Cost BP (Creation)
- Upper Form for Cost BP (Modify)
- Upper Form for Cost BP (View Form)

Upper Form for Cost BP (Creation)

The **Option** tabs fields are distributed in blocks, as explained below:

Attachments block

- **Add Attachments to record**
- **Remove Attachment from record**

Source for Record and Line Item Attachments

- **Document Manager**
- **My Computer**

- **Republish if Publish Path is different from current Location**

  This option is not available for the Text-type BPs (since these types of BPs do not support attachments), and RFB BPs bidder upper action form.

  - **Move**
  - **Copy**

Document Manager Attributes for Record and Line Item Attachments

- **Update attributes for already published documents**

Line Items block

Left pane

Names of the line items.

Right pane:

- **Hide current tab**
- **Allow Add/Remove/Copy line items**
  - **Allow attachments to line items**
  - **Allow adding of summary line items**
- **Allow Cost Breakdown**
- **Costed Amount must be equal to the line item Amount**
- **Allow Modification of line item**

Funding Options block

- **Allow viewing of Fund Information**
  - **Allow Funding**

Additional block

- **Allow linking uMail**

Upper Form for Cost BP (Modify)

Attachments

- **Add Attachments to record**
- **Remove Attachment from record**

Source for Record and Line Item Attachments

- **Document Manager**
- **My Computer**
- **Republish if Publish Path is different from current Location**

  This option is not available for the Text-type BPs (since these types of BPs do not support attachments), and RFB BPs bidder upper action form.

  - **Move**
  - **Copy**

Document Manager Attributes for Record and Line Item Attachments

- **Update attributes for already published documents**

Line Items block

Left pane

Names of the line items.

Right pane:

- **Hide current tab**
- **Allow Add/Remove/Copy line items**
  - **Allow attachments to line items**
  - **Allow adding of summary line items**
- **Allow Cost Breakdown**
- **Costed Amount must be equal to the line item Amount**
- **Allow Modification of line item**

Funding Options block

- **Allow viewing of Fund Information**
  - **Allow Funding**

Additional block

- **Allow linking uMail**

Upper Form for Cost BP (Action Form)

Attachments block

- **Add Attachments to record**
- **Remove Attachment from record**

Source for Record and Line Item Attachments

- **Document Manager**
- **My Computer**

Publish to Document Manager

- **Republish if Publish Path is different from current Location**

  This option is not available for the Text-type BPs (since these types of BPs do not support attachments), and RFB BPs bidder upper action form.

  - **Move**
  - **Copy**
  - **Automatically select all existing Record and Line Item Attachments for Republish**

Document Manager Attributes for Record and Line Item Attachments

- **Update attributes for already Published Documents**

Line Items block

Left pane

Names of the line items.

Right pane:

- **Hide current tab**
- **Allow Add/Remove/Copy line items**

        - **Allow attachments to line items**
        - **Allow adding of summary line items**
    - **Display line item group total amount**
    - **Allow Modification of line item**

Funding Options block

- **Allow viewing of Fund Information**
    - **Allow Funding**

Additional block

- **Allow linking uMail**

Upper Form for Cost BP (View Form)

Attachments block

No fields in this block.

Line Items block

Left pane

Names of the line items.

Right pane:

- **Hide current tab**
- **Display line item group total amount**

Funding Options block

- **Allow viewing of Fund Information**
    - **Allow Funding**

Upper Form Options for Documentation BP

The fields in the **Options** tab of a Document BP upper form are distributed according to:

- Upper Form Options for Documentation BP With Folders
- Upper Form Options for Documentation BP Without Folders
- Upper Form Options for Documentation BP Without Folders (View Form)

Upper Form Options for Documentation BP With Folders

Attachments block

Source

- **Document Manager**
- **My Computer**

Publish to Document Manager

- **Republish if Publish Path is different from current Location**
    - **Move**
    - **Copy**

- **Automatically select all existing Record and Line Item Attachments for Republish**

Document Manager Attributes

- **Update attributes for already Published Documents**

Line Items block

Left pane

Names of the line items.

Right pane:

- **Hide current tab**
- **Add/Copy line items**
- **Enforce validations on Detail form -** Selecting this option allows your users to check for errors in the **Validate Attachments** dialog after uploading the attachments in bulk during runtime, only by way of the **Grid View**.
- **Allow Modification of Line Item, except when status is:** You can select a status based on your need.
- **Allow Line Item Status to be modified**
- **Add Attachments**
- **Append Line Item Folder Structure to Auto Publish Path**
- **Make Attachment to a Line Item mandatory**
- **Allow comments**
- **Remove Line Items**
- **Remove Attachments**
- **Allow marking of comments as 'Final'**

Additional block

- **Allow linking uMail**

Upper Form Options for Documentation BP Without Folders

Attachments block

Source

- **Document Manager**
- **My Computer**

Publish to Document Manager

- **Republish if Publish Path is different from current Location**
  - **Move**
  - **Copy**
  - **Automatically select all existing Record and Line Item Attachments for Republish**

Document Manager Attributes

- **Update attributes for already Published Documents**

Line Items block

Left pane

Names of the line items.

Right pane:

- **Hide current tab**
- **Add/Copy line items**
  - **Enforce validations on Detail form**: Selecting this option will enable uploading the attachments in bulk during runtime, only by way of the **Grid View**.
- **Allow Modification of Line Item, except when status is:** Must select a status
- **Allow Line Item Status to be modified**
- **Add Attachments**
- **Append Line Item Folder Structure to Auto Publish Path**
- **Make Attachment to a Line Item mandatory**
- **Allow comments**
- **Remove Line Items**
- **Remove Attachments**
- **Allow marking of comments as 'Final'**

Additional block

- **Allow linking uMail**

Upper Form Options for Documentation BP Without Folders (View Form)

Attachments block

Source

- **Document Manager**
- **My Computer**

Publish to Document Manager

- **Republish if Publish Path is different from current Location**
  - **Move**
  - **Copy**
  - **Automatically select all existing Record and Line Item Attachments for Republish**

Document Manager Attributes

- **Update attributes for already Published Documents**

Line Items block

Left pane

Names of the line items.

Right pane:

- **Hide current tab**

Additional block

- **Allow linking uMail**

Upper Form Options for Line Item BP

The following explains the options for:

- Upper Form Options for Line Item BP (Action Form)
- Upper Form Options for Line Item BP (View Form)

Upper Form Options for Line Item BP (Action Form)

Attachments block

- **Add Attachments to record**
- **Remove Attachments from record**

Source for Record and Line item Attachments

- **Document Manager**
- **My Computer**

Publish to Document Manager

- **Republish if Publish Path is different from current Location**
  - **Move**
  - **Copy**
  - **Automatically select all existing Record and Line Item Attachments for Republish**

Document Manager Attributes for Record and Line Item Attachments

- **Update attributes for already Published Documents**

Line Items block

Left pane

Names of the line items.

Right pane:

- **Hide current tab**
- **Add/Copy/Group line items**
  - **Allow attachments to line items**
  - **Allow adding of summary line items**
- **Display line item group total amount**
- **Allow Modify Line Item, except when status is**: Must select a status.
- **Allow Line Item Status to be modified**
- **Remove Line Items**

Additional block

- **Allow linking uMail**

Upper Form Options for Line Item BP (View Form)

Attachments block

No fields are in this block.

Line Items block

Left pane

Names of the line items.

Right pane:

- **Hide current tab**
- **Display line item group total amount**

Upper Form Options for RFB BP

The following explains the options for:

- Upper Form Options for RFB BP (Action Form)
- Upper Form Options for RFB BP (View Form)

Upper Form Options for RFB BP (Action Form)

Attachments block

Attachments

- **Add Attachments to record**
- **Remove Attachment from record**

Source for Record and Line Item Attachments

- **Document Manager**

  This option is not available for Request for Bid (RFB) Bidder type BP upper form.
- **My Computer**

  Publish to Document Manager
  - **Republish if Publish Path is different from current Location**

    When the user selects **Document Manager**, the **Republish if Publish Path is different from current Location** sub-option becomes available.

    This option is not available for the Text-type BPs (since these types of BPs do not support attachments) and for Request for Bid (RFB) Bidder type BP upper form.
    - **Move**
    - **Copy**
    - **Automatically select all existing Record and Line Item Attachments for Republish**

Document Manager Attributes for Record and Line Item Attachments

- **Update attributes for already published documents**

Line Items block

Left pane:

Names of the line items.

Right pane:

- **Hide current tab**
- **Allow Add/Remove/Copy line items**
  - **Allow attachments to line items**
- **Allow modifying line items only**

Upper Form Options for RFB BP (View Form)

Attachments block

No fields in this block.

Line Items block

Left pane

Names of the line items.

Right pane:

- **Hide current tab**

Bids block

- **Do not allow viewing received bids**

Proposal Management after bid closure block

- Hide Proposal Management tab

Proposal Management (Private Bids)

The **Proposal Management** tab settings are applicable only to the *Private Bids*. The **Proposal Management** tab settings are not applicable to the Public Bids.

Proposal Management prior to bid opening block

Manage vendors (includes adding or removing vendors)

Enables the user to access the **Proposal Management** tab before the option **Send bid invitations and allow bid receipt** is selected. The user has access to **Add** and **Remove** which are enabled in the **Proposal Management** tab.

Do not allow modification of vendors

This option prevents the user from making changes (add or remove) to the list of vendors on the **Proposal Management** tab. If you select the **Manage vendors (includes adding or removing vendors)** option, this option will be selected automatically.

Use the Master Vendor List filtered at project level

To display the vendor list at project level, when the user clicks the Add option on the Proposal Management tab. If you select the **Manage vendors (includes adding or removing vendors)** option, this option will be selected automatically.

Proposal Management during bidding block

Send bid invitations and allow bid receipt

To display the **Send bid invitation and allow bid receipt** option on the **Proposal Management** tab.

If you select this option, all the options on the **Proposal Management** tab will be available to the user.

If you select this option, the **Manage vendors (includes adding or removing vendors)** option, and the **Do not allow modification of vendors** option, the user will not see the add or the remove options on the **Proposal Management** tab.

Do not allow modification of vendors

This option prevents the user from making changes (add or remove) to the list of vendors on the **Proposal Management** tab. The **Send Invitation**, **Actions** (**Send Mail)**, **Refresh**, and **Find on Page** options will be available.

Use the Master Vendor List filtered at project level

To display the vendor list at project level, when the user clicks the **Add** option on the **Proposal Management** tab. If you select the **Manage vendors (includes adding or removing vendors)** option, this option will be selected automatically.

Proposal Management after bid closure block

Hide the Proposal Management tab

To hide the **Proposal Management** tab, similar to the **Do not allow viewing received bids** (under the **Bids** block).

Add all Record Attachments of the winning bid to Requestor's Record Attachments

To add all the record attachments of the winning bid to the requestor's record attachment.

Add only Line items Attachments from the winning bid to the Line Items of Winning Contract

To add all the winning bid line items attachments to the line items of the second tab.

Additional block

Allow linking uMail

Upper Form Options for RFB BP Action Form (Bidder)

The upper form options for RFB BP Action Form (Bidder) are as follows:

Attachments block

Attachments

- **Add Attachments to record**
- **Remove Attachment from record**

Source for Record and Line Item Attachments

- **Document Manager**

  This option is not available for Request for Bid (RFB) Bidder type BP upper form.

- **My Computer**

Document Manager Attributes for Record and Line Item Attachments

- **Update attributes for already published documents**

Line Items block

Left pane

Names of the line items.

Right pane:

- **Allow Add/Remove/Copy line items**
  - **Allow attachments to line items**
- **Allow modifying line items**
  - **Allow attachments to the saved line items**

Requestor: Upper Forms (Form Designer - Upper Form)

To access the **Upper Forms** for **Requestor**:

1) Go to the Company Workspace tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) In the **Designer - Business Processes** log, select the request for bid BP.
4) In the left Navigator, expand the selected request for bid BP node.
5) In the left Navigator, select **Requestor**, and then select **Upper Forms**.
6) In the Forms log, select a form.
7) From the toolbar, click **Open**.

The following lists the fields for the **Upper Forms** for **Requestor**:

General block

Field Name	Description
Record Number	This is a read-only field that Unifier populates when you send the form to the Approval step.
Title	This is a required field - Enter a name for the bid record.
Project Number	This field is auto-populated from the project.
Project Name	This field is auto-populated from the project.
Due Date	This is a read-only field. This field is pre-populated from the workflow setup.
Status	This read-only field is blank while on the Creation step. The status will change when the task is accepted on the next step in the workflow.

Bid Package Details block

Field Name	Description
Bid Package Revision Number	This is a required field - Enter the revision number of the bid package.

Field Name	Description
RFP Due Date	This is a required field - Use the calendar icon to select the date the RFB is due.
Bid Sponsor	To select the bid sponsor from the list that becomes available when you click the **Select** button.
Sponsor Phone	To enter the sponsor's phone number.
RFB Initiate Date	To capture the date when the first ever invite for the bid was sent out. Enables the user to determine how much time the bidders had before submitting their bids. Whether or not the DE is present on any of the upper forms, after the first invitation is sent out, system should capture the date and time of the invitation sent out on this DE. If this DE is added on any of the upper forms, the value would be reflected. The DE will automatically get added in read-only mode.
Order Delivery Date	This is a required field - Use the calendar icon to select the date a date for the order delivery.
Question Cut Off Date	This is a required field - Use the calendar icon to select the cutoff date for questions about the bid requirements.
Sponsor Email	To enter the sponsor's email address.
Bidders Count	This is a read only field. Initially the value is 0.
Bid Count	This is a read only field. Initially the value is 0.
Bid Priority	This is a required field - Select a value from the field's drop-down menu.

Bid Scope block

To capture detailed description and requirements of the overall bid package. All bidders can see this.

Field Name	Description
Bid Scope	To enter a detailed description of the overall Bid Package and requirements. This will be visible to all Bidders.

Instructions block

To capture detailed instructions to assist the bidders with completing and submitting the bid package.

Field Name	Description
Bid Package Instructions	To enter detailed instructions to assist bidders in completion and submittal of Bid Package.

Vendor Requirements block

To capture detailed qualifications or criteria that need to be satisfied by the vendor for the bid to be evaluated.

Field Name	Description
Qualifications	To enter any qualifications or other criteria that needs to be satisfied by vendor for bid to be evaluated.
Certifications	To enter any required certifications.
Insurance Coverage	To enter the insurance qualifications that you expect the vendor to carry.

Bidder Meeting Details block

Field Name	Description
Location	To enter a where you can meet with the bidder; for example, teleconference, virtual meeting space, or physical address.
Date and Time	To enter a date and time for the meeting.
Dial-in Instructions	To enter the instructions to call into the meeting.
P6 Activity	To select a P6 activity to associate with this record.
P6 Planned Cost	This is a read-only field.
P6 Planned Start	This is a read-only field.
P6 Planned Finish	This is a read-only field.

Hidden block

To include fields that must be hidden.

Field Name	Description
Publish Path	To enter publishing path within Unifier.

The following lists the fields for the **Item Logs** (**Log Items** tab) for **Requestor**:

General block

Field Name	Description
Cost Code	This is a required field -Enter the cost code for this line item. You can either enter it directly or use the cost code picker.
Short Description	This is a required field - Enter a brief description for the line item.
Code Name	This read-only field is auto-populated from the cost code.
Item Unit Cost	This is a required field - Enter the price of the item specified on the line item.
Item Quantity	This is a required field - Enter the number of items specified on the line item.
Unit of Measure	To select the Unit of Measure for the item specified on the line item line item.
Amount	This read-only field is auto-calculated using the formula (Item Quantity X Item Unit Cost).

Upper Form Options for Simple BP

The following explains the options for:

- Upper Form Options for Simple BP (Action Form)
- Upper Form Options for Simple BP (View Form)

Upper Form Options for Simple BP (Action Form)

For BP types that do not have line items (for example: Simple, Project/Shell Creation, Resource, and Resource Booking), the **Options** tab has the following actions (**Select Actions**):

Attachments to overall record block

- **Add Attachments**
- **Remove Attachments**

Source

- **Document Manager**
- **My Computer**

Publish to Document Manager

- **Republish if Publish Path is different from current Location**
  - **Move**
  - **Copy**
  - **Automatically select all existing Record and Line Item Attachments for Republish**

Document Manager Attributes

- **Update attributes for already Published Documents**

> **Note:** There are no line items for the Simple-type BP.

Upper Form Options for Simple BP (View Form)

There is no **Options** tab in the upper form of the Simple BP (View Form)

Upper Form Options for Text BP

For BP types that do not have line items (for example: Simple, Project/Shell Creation, Resource, and Resource Booking), the **Options** tab has the following actions (**Select Actions**):

Attachments to overall record block

- **Add Attachments**
- **Remove Attachments**

Source

- **Document Manager**
- **My Computer**

Document Manager Attributes

- **Update attributes for already published documents**

Additional block

- **Allow linking uMail**

Project/Shell Creation-Type Upper Forms

For BP types that do not have line items (for example: Simple, Project/Shell Creation, Resource, and Resource Booking), the **Options** tab has the following actions (**Select Actions**):

Project/Shell Creation-Type BP Upper Forms-Action Form (AF)

Attachments to overall record block

- **Add Attachments**
- **Remove Attachments**

Source

- **Document Manager**
- **My Computer**

Document Manager Attributes

- **Update attributes for already published documents**

> **Note:** There are not line items for the Project/Shell Creation-type BP.

Additional block

- **Allow linking uMail**

Project/Shell Creation-Type Upper Forms-View Form (VF)

There is no **Options** tab.

Resource-Type BP Upper Forms

For BP types that do not have line items (for example: Simple, Project/Shell Creation, Resource, and Resource Booking), the **Options** tab has the following actions (**Select Actions**):

Resource-Type BP Upper Forms-Action Form (AF)

Attachments to overall record block

- **Add Attachments**
- **Remove Attachments**

Source

- **Document Manager**
- **My Computer**

Document Manager Attributes

- **Update attributes for already published documents**

> **Note:** There are not line items for the Resource-type BP.

Additional block

- **Allow linking uMail**

Resource-Type Upper Forms-View Form (VF)

There is no **Options** tab.

Copying Upper Forms

To copy Upper Forms from another Business Process:

1) From the **New** menu, choose **Copy From**. The BP Upper Forms window opens, showing a list of upper forms for all the BPs in uDesigner (in both draft and complete mode).

2) Select the upper form you want to copy from the list and click **Copy**. The Form Design window opens.
3) On the **General** tab, you can change the name of the upper form and add a description for the form.
4) Specify whether this will be an action form or a read-only view form.
5) Click the **Options** tab. Then follow the instructions for the Options tab above.

Notes:

- If you copy an upper form that uses a template, the upper form you are starting will be linked to that template, and any changes made to that template will also appear on this upper form. Any data elements that are not compatible with the business process you are designing will be dropped.
- Also note for RFBs—If you copy an upper form that uses a template from a Requestor form to a Bidder form, the Bidder upper form will also be linked to the template.

Modifying Blocks

To modify a block:

1) On the Form Designer window, click **Blocks**.
2) Select the block you want to modify and click **Modify**. The Block Properties window opens.
3) Make your changes and click **OK**.

Note: If you are using blocks from a linked template, you can edit only the following; all other block properties are set by the template design:

- Description
- Show Description
- Hidden
- Notes

Collapse by Default Option in Block Properties

In the **Block Properties** window of both a BP form and a Manager Attribute Form, there is a **Collapse by Default** check box. If the check box is selected, the block is collapsed by default. If the check box is not selected, the block is expanded by default.

With the **Collapse by Default** option, you can avoid scrolling through irrelevant information.

The Block Properties are searched during the rendering of a BP form and a Manager Attribute Form to determine whether a block is collapsed or expanded at runtime.

For a block to be collapsed at runtime, the block label and the block borders must be visible.

This option is applicable only for Standard View of forms." **Collapse by Default** is applicable to the following forms: Action form, View form, Detail form, and various attribute forms. For Manager Attribute Forms, this option is available for the Activity Manager, Configurable Manager, Cost Manager, Document Manager, and Space Manager. This option is also applicable to Shell Attribute Forms as well as places where a preview of a Manager Attribute Form is displayed, such as a variety of logs.

Notes:

- If a form has only one block, the attribute of expand or collapse will not be available.
- If you change the default behavior by performing the opposite action at runtime, the default expand or collapse option is displayed when the page is reloaded.

Designing Detail Form

Detail forms open as separate windows in Unifier, where users enter or modify information, such as line item details for some business processes, new plan information for planning items, new activity information for schedules, or a new item for a Manager Attribute Form. The fields on the detail form, and the information the users enter, are then displayed on a line item list at the bottom of the form, or other area of the Unifier interface, such as a planning item log or a schedule.

After a detail form is in use, you cannot delete it. You can add elements to the form in uDesigner, but you cannot delete the original elements, nor can you hide them.

At run time, the detail form creates a tab at the bottom of the form that contains a line item list.

uDesigner automatically creates one blank "standard" detail form whenever you start these types of business processes. You will need to design this detail form (see ***Starting a Standard Detail Form*** (on page 326)). To this standard detail form, you can add a line item list (see ***Adding an Item Log to a Detail Form*** (on page 322)).

Note: You cannot delete this Standard detail form, nor its line item list.

For Base Commits and Change Commits BP of Summary Payment Applications type, the Data Elements (DEs) for the following are not available to be included in the Standard detail tab:

- Cost Code/Code Name,
- Commit Line Item Picker
- Work Package picker
- Standard elements of CBS type BP, for example, CBS_cost_type and CBS_cost_attribute.

Adding an Item Log to a Detail Form

You can add an item log to the form for line item, document, and cost type business processes.

Item logs appear in the lower section of the form. When the user adds line items to a record, they appear in this log. In addition, to organize the details of your business process, you can create multiple tabs, up to eight, to collect and organize items into categories.

When a user opens a new cost or line-item business process, Unifier automatically opens a "standard" item log using the naming convention "Standard - Line Item List." (This name can be changed if you want.) In addition, some features of the line item list are added by default. For cost BPs, these include the number of items, pagination, number of lines to be displayed per page, transaction currency, and total amount.

When a user opens a document business process, Unifier also opens a line item list; however, the list behaves differently, depending on whether the user activates the detail form. If the detail form is not activated, the Line Item list serves as a document attachment area, where users can attach documents or folders. If the detail form is activated, the user can add documents as line items.

Designing the line item list consists of specifying the data elements you want to display for each line item that a user adds. Columns correspond to the data elements you placed on the detail form.

Designing the List

To design the item log:

1) Open the business process form for which you want to add an item log and click **Item Logs** in the navigator. The Item Logs log opens.

> **Note:** You can sort Item Logs using the Name, Last Saved, or Type column. You cannot sort the log using the Tab Name, Tab Order, or System Defined column.

2) Select a tab from the log and click **Open**.
3) Complete the tabs as described in the following sections.

Specifying the Layout

Use the Layout tab to designate what data from the line item list should appear on the log. The data will appear in columns on the log.

> **Note:** For Cost-Type, multiple-tab Forms, If you include an "amount" field on the log for a line item list for a tab, a total of the line item amounts will appear at the bottom of each numeric column on the form.

1) In the **Tab Name** field, enter the name you want to appear for the tab on the form.
2) To add a column to the list log, click the **Add** button. The Layout Header Properties window opens.
3) Use the table below to complete the fields in this window.
4) Click **Apply**.

   uDesigner displays the columns on the Layout window.
5) (Optional) To change the order of the columns on the list, use the **Move Up** and **Move Down** buttons. These buttons move the columns left or right, respectively, on the line item list.
6) To add another column to the layout, repeat steps 2 through 4.
7) Click **Apply**.

Note: One additional column may appear on the log. When you started the upper form, you filled in an Options tab. On this tab, under **Line Items**, if you selected the **Add summary line item amounts** check box, a summary of line item amounts will become an automatic column on the log, titled **Sm.**

In this field:	Do this:
Data Element Label	Select a **Data Element Label** from the list of available data elements. This is the name that will appear as the field name on the form. The list is generated from the detail form. If you do not see the data element you want, go to the detail form and add it. The **Data Element Name** field shows the database name of the data element you chose.
Column Heading	Enter the column heading you want to appear on the line item form. The field is pre-populated with the data element label, but you can edit it.
Width	Enter the width (in pixels) of the column. The default is 150 pixels.
Alignment	Choose the positioning of the data (and column heading) within the column: **Left**, **Center**, or **Right aligned**.

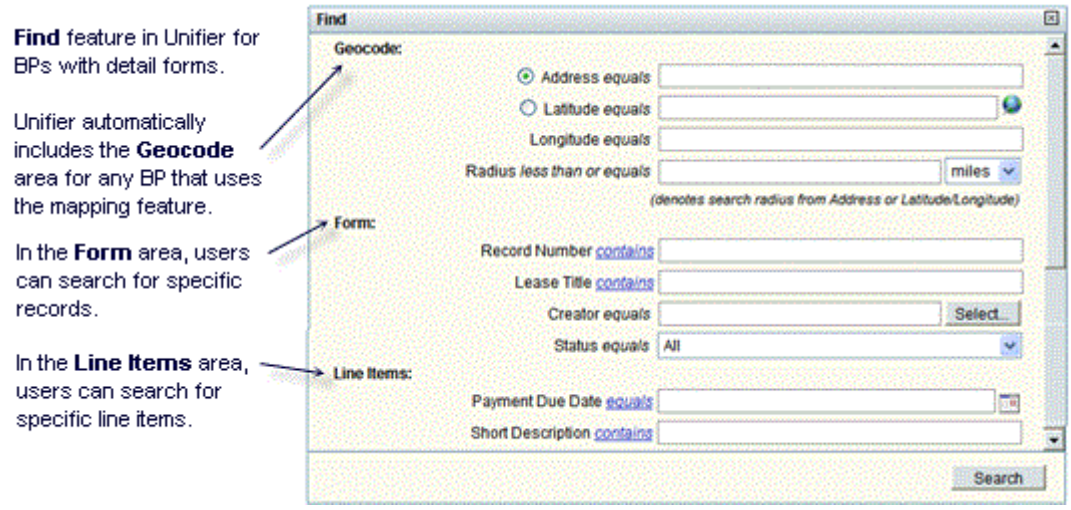
Sorting the List by Column Order

You can determine which column to use as the default sort order for the line item list log. This allows you to choose a column to sort by initially.

1) Click the **Sort Order** tab.
2) In the **Initial Sort Column** field, choose the field by which you want to sort the list.
3) In the **Sort Order** field, choose whether the sort order should be ascending (A-Z) or descending (Z-A).
4) Click **Apply**.

Specifying Search Criteria for the Find Feature

Users will sometimes need to locate particular line items in a business process, often for the purpose of task management or milestone tracking. To make it easier for users to locate a line item, use the Find tab to specify field names on the form that they can use in their search. The user can also narrow a search by using operators on the fields, such as "contains" or "equals."



To specify search criteria:

1) Click the **Find** tab, and then click **Add**. The Find Properties window opens.
2) In the **Data Element Label** field, select a field (data element) users can use to find a line item.

   When you select a data element label, uDesigner automatically displays the database label of the element in the Find Label field. This field is editable.
3) If you want to change the name of the element to something more meaningful to the user, enter the name in the **Find Label** field.
4) Click **Apply**.
5) To add another element for searching, repeat steps 2 through 4. Then click **OK**.
6) On the Line Items window, click **OK**.

Organizing Items Under Tabs

If your business process generates many line items, you can create tabs along the bottom of the form for organizing data into categories for quick retrieval. You can create up to eight tabs for a form. In uDesigner, a tab is composed of a detail form and a line item list. When you create the tabs with the detail forms, uDesigner automatically creates a blank line item list for each detail form.

Specifying the Tab Order

After you have designed the line item lists for each tab, you can specify the order in which you want the tabs to appear across the bottom of the form.

To specify the tab order:

1) Open the business process form and click **Item Log** in the Navigator.

2) From the toolbar, click **Tab Order**. The **Tab Display Order** window opens.
3) Select the tab name and click the **Move Up** (Left) or **Move Down** (Right) button to move the tabs into the order you want them to appear on the form.
4) Click **OK**.

Organizing Data with Multiple Tabs

You can use detail forms to create multiple tabs on a business process. These tabs are an effective way to organize the details of your business process. For example, for a lease management type of business process, you could create tabs to group lease details for easy tracking, such as Payments Setup, Options, Contacts, Clauses, and Insurance.

Business processes that support multiple tabs include:

- Any line item-type business process
- Cost business processes of the following types:
- Line Item with CBS Code
- Line Item with Company Account Code (Generic only)
- Line Item with Multiple Codes (Generic and Lease)

You will need to design a detail form for each tab. In addition to the "standard" detail form, you can design up to seven additional detail forms to create a total of eight tabs. After you create the tabs with the detail forms, you can design the line item lists for them.

Multiple Tabs on Cost BPs—Line Items with CBS Codes.

- You can place CBS codes on the standard tab only.
- Line items on non-standard tabs are not eligible for funding.
- Amounts from non-standard tabs can be rolled up to the upper form of the business process.
- Users can consolidate line items on non-standard tabs.
- You can place any picker on non-standard tabs, except for the CBS Picker, CBS Code Picker, Fund Picker, Generic Cost Code Picker, or any configurable manager picker.

Multiple Tabs on Cost BPs—Payment Application classification.

- Users cannot consolidate line items on non-standard tabs.
- Users can copy line items only onto non-standard tabs.
- Users can use the Grid View to add line items on non-standard tabs.

Multiple Tabs on Cost BPs—General Spends classification.

- Users cannot consolidate line items on non-standard tabs.

Starting a Standard Detail Form

To start the detail form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, expand the **uDesigner** node.
3) Open the business process, manager, or other component for which you want to design the detail form.

4) In the left Navigator, select **Detail Form**. The Forms pane opens, showing the standard detail form uDesigner automatically launched.

   uDesigner displays the name of the form on the right pane. To complete the form, use the instructions under ***Adding Blocks to a Form*** (on page 301) and also ***Adding Fields to the Form*** (on page 336).

Starting Detail Forms for Multiple Tabs

To launch an additional detail form to create a new tab:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process for which you want to design another tab.
4) In the left Navigator, select **Detail Form**. The Forms pane opens, showing the standard detail form uDesigner automatically launched.
5) From the toolbar, click **New**, and then select **Manual**. The Form Design window opens.

> **Note:** If you prefer, you can create the form from a snapshot of another form. To do so, click **New**, elect **From Snapshot**, and then follow the instructions under ***Restoring a Version of a Design*** (on page 416).

6) On the **General** tab, enter a name and description for the detail form, and click **OK**. uDesigner includes the name of the new detail form on the list in the right panel.
7) To create additional tabs (up to fifteen total), repeat steps 3, 4, and 5.
   - uDesigner displays the name of the form on the right pane. To complete the form, use the instructions under ***Adding Blocks to a Form*** (on page 301) and also ***Adding Fields to the Form*** (on page 336).
   - For each of the detail forms you start, uDesigner automatically creates a blank line item list. To design the line item lists, see ***Adding an Item Log to a Detail Form*** (on page 322).

An Extra Step for Multiple-Tab Forms

Designing forms with multiple tabs requires that you return to the properties window for the upper form and specify options that can be activated only after you have designed the detail forms for this component.

To specify upper form options for line item tabs:

1) Open the business process that contains the multiple tabs.
2) In the left Navigator, select **Upper Forms**. The Forms pane opens.
3) On the Forms pane, select the name of the upper form and click the **Properties** button. The Form Design window opens.
4) Click the **Options** tab.
   - For View forms, Unifier lists tab names on the left side of the Options pane, in the Select Actions section, under Line Items. When you click a tab name, the available option for that tab is **Hide current tab**.

- For Action forms, more options are available. The Line Items section shows the names of the tabs that have been created, and the list of the available Line Items options.

  Note: If a standard tab is hidden in the design, it will not be displayed at runtime. The standard tab name will be dependent on the tab name specified in the Line item list of Item logs.

a. Click the tab name on the left, and specify the line item options on the right as follows:

   If the tab should be hidden (for example, if the user should not see the tab at a particular step in the workflow), select the **Hide current tab** check box.

   Select other check boxes if you want to allow users to:

   - Add, copy, and remove line items
   - Add attachments to line items
   - Add summary line item amounts
   - Modify line items Modify the statuses of line items

b. Click **OK**.

Mapping Line Items from References during BP Creator Auto-Creation

During auto-creation using a BP Creator, you can copy line items from a source (referenced) business process onto an auto-created (destination) business process, when:

- BP Creator is on the upper form, source (reference) is a picker on the upper form.
- BP Creator is on a detail tab, source (reference) is a picker on the upper form.
- BP Creator is on a detail tab, source (reference) is a picker on the same detail tab.

For example:

> An Asset business process references a Motor Template in a line item (via a BP Picker, BP Data Picker, or a BP Creator.) The line item auto-creates another business process, Motor based on the Motor Template (via a BP Creator.) In doing so, all line items from the Motor Template's detail tabs are copied onto Motor's detail tabs.

In addition to being able to copy line items from detail tabs of a parent business process record to the detail tabs of an auto-created business process record, you can copy line items from tabs of another business process record that is referenced by the parent business process record to the selected tabs of the auto-created business process record.

uDesigner Auto-creation Configuration

Upper and Detail configuration windows display a tabbed Business Processes section with two tabs:

- Current
- Referenced
  - The purpose of this tab is to specify source and destination tabs for the referenced business process.
  - The Referenced tab has four columns for Row, Source, Source Tab Name, and Destination Tab Name.

- Use the Add and Remove options to add or remove mappings in rows.

In the Source list of Detail Configuration, select current business process name, or any BP picker or data picker on the upper or detail form of the business process. (Note Upper Configuration will display only those from the upper form.) In the Source Tab Name list, select a tab from the referenced business process. Destination Tab Name provides a list of all tabs in the business process being created (see Auto-create Records field). These are the same as the values in Destination Tab Name in Current tab. Select any tab in which the line items from the referenced business process will be created.

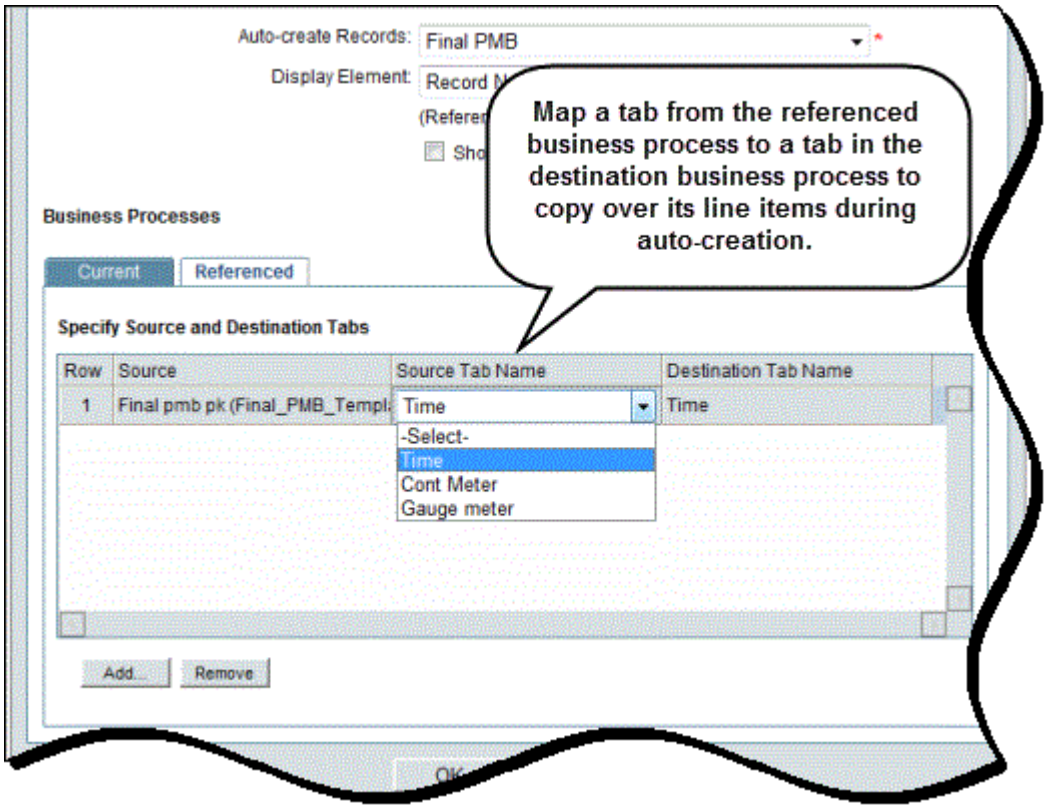
In the Source Tab Name list, select a tab from the referenced business process.

- Destination Tab Name provides a list of all tabs in the business process being created (see Auto-create Records field).
- These are the same as the values in Destination Tab Name in Current tab.
- Select any tab in which the line items from the referenced business process will be created.

To configure line item mapping in upper or detail form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the applicable line item type BP in which you want to set up line item mapping from a referenced business process to an auto-created business process.
4) In the left Navigator, select **Auto-creation Processes**, and then select Upper or Detail.
5) From the toolbar, click **New** to configure auto-creation on the selected BP Creator field placed on the upper or detail form.

6) Complete line item mapping in the Referenced tab, associating tabs in the source business process to tabs in the destination business process.



Creating Query-based Tabs and Summary Elements

A query-based tab (QBT) is a mini business process log within a business process form that displays a filtered list of specific business process records in the tab line item list.

You can create multiple detail forms for a Document type, Line Item type, and Cost type business processes, in uDesigner. Each advanced Document-type business process enables you to include/create up to fifteen tabs, including the query-based tabs.

> **Note**: The first detail form in Document type business process must be used to define only a Document-type standard tab that has a folder structure. The subsequent detail forms must be used to define either the Line Item type or the query based tabs.

You are required to add a Reference Picker in the Upper Form of a business process that the user wants to run the query.

You can use a query-based tab to:

- View a filtered list of business process records associated with the parent business process.
- Create a new business process from the QBT.
- Copy a business process either with or without attachments.
- Search for business process records based on user-entered criteria.

For example, a contract's QBT can display all change orders issued against that contract. Another QBT on the same contract record can display all invoices against it. The records displayed in the QBT's line item list are from the same level (project or company.)

Business Processes that do not support query-based tabs include Simple, Resource, Text, RFB, and Project/Shell Creation.

Under the corresponding business process, Query Items has two sub-nodes:

- Query Tabs define the query-based tabs that will be added to the business process. You can create Query tabs if the maximum number of tabs (fifteen) has not been reached.
- Summary Elements define the summary data elements to be added to the Upper Form of the business process. They specify the type of summary information (Average/Count/Total/Maximum/Minimum) that will be shown from the selected Query tab, for example, the total amount of records, or the count of records in the tab.

The Item Logs log accommodates both detail form line items lists and query items. The logs contains:

- Type column to help distinguish between Detail Forms and Query Items.
- Tab Name column appears before Name column.

> **Note:** You can sort Item Logs using the Name, Last Saved, or Type column. You cannot sort the log using the Tab Name, Tab Order, or System Defined column.

Required References

You must define references in the source business process from which you want to display information. For example, if Meeting Minutes is the destination business process in which you want to display Action Items data, then:

- Action Items (the source business process) must have:
  - A Meeting Minutes reference defined in its Reference Processes.
  - A business process picker on the Upper form that you can use to select the Meeting Minutes record in which you want to show Action Items data.

Query-based Tabs

The **Query Tabs** enable you to define the query-based tabs (QBTs) that you want to be added to a business process.

You can define query conditions in uDesigner.

1) Got to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) From the **Designer - Business Processes - Current View** window/log, locate and open an existing Cost-type BP that is in **Draft** status.
4) From the toolbar, click **Status** to check the status. If the business process status is **Complete**, you can click **Draft** so you can edit the business process forms.

5) (Optional) In the left Navigator, select **Detail Form** to open the **Detail Form - Current View** window/log. The log lists previously created tabs. You are allowed fifteen tabs, including the query-based tabs.
6) In the left Navigator, select **Query Items**, and then select **Query Tabs** to open the **Query Tabs - Current View** log. The system allows you to create a total of fifteen Query-based Tabs (QBTs) on a business process.
7) From the toolbar, click **New** to open the Select Business Process window.
8) Under the **Select Business Process/Attribute** field click the drop-down list to see all the available business processes.
9) Select the source business process and click **OK** to open the **Query Tab** window, **General** tab.
10) Enter values in the **Name** and **Description** fields.
11) Click the drop-down list of the **Reference Picker** and select a reference for the source business process.
12) Click **Apply** and then **OK**.
13) In the left Navigator, select **Item Logs** to open the **Line Item List - Current View** window/log.
14) Select the name and click **Open**. The **Query items** window opens which has two tabs: **General** and **Query**. The **General** tab shows the tab name (**Tab Name**).
15) Click the **Query** tab and define the query by following these steps:

> **Notes**:
>
> - You can add only one query per QBT.
> - If a Query tab is configured using a query condition, the same query condition has to be implemented within the UDR. For example, if a query-based tab (QBT) has a condition, Status = Approved, create a corresponding query condition in the UDR as: BP A/QBT BP B/Status = Approved.

   a. Click **Add** to open the **Query Condition** window.
   b. Under **Add Query Condition**, the **Data Source** is displayed. This is the name of the business record from which you want to pull data and show in the destination record.
   c. Click the drop-down list of the **Data Element** and select a data element from the Upper Form of the source business process. For example, you can select **Status** to show all source records of that type in a particular status. In the **Values** section, select either:
      - **Dynamic**: This option requires a Data Source and a Data Element selection.

        Or
      - **Constant**: This option requires that you select a data definition from the list of available data definitions.
   d. When finished, click **OK** to go back to the **Query items** window.
16) Click **Apply** and then **OK** to save your query.

Summary Elements

If you want summarized information from the query tab displayed in the upper form, define the summary data elements and then add them to the upper form of the business process.

To define Summary Elements:

1) Click the Summary Element node (beneath the Query Tabs node). The Summary Element log opens.
2) Click the New button in the log toolbar. The Summary Element window opens.
3) Enter an Element Name. The Summary Element Name is concatenated from the Element Name you enter and the Summary Type you select, with a system-defined prefix. Unifier only allows alphanumeric characters.
4) Enter a Form Label. You will add this element to the upper form.
5) Select a Summary Type. Available options are Average, Count, Total, Maximum, and Minimum. The interface changes dynamically for the type selected.
6) Select the Query Tab on which you want to display this information.
7) Click **OK** when done.

To add Summary Elements to the Upper Form:

1) Open the Destination business process Upper form.
2) Select a cell into which you will add the Summary Element.
3) Click the Summary button on the Upper form toolbar. The Summary Element Picker opens.
4) Select a Summary Element and click **OK**.
5) Click **Save**.
6) Click **Close Window**.
7) Follow the same steps to add the Summary Element to any other Upper forms on which you want to include the Summary Element.
8) When finished designing the business process, change the **Status** to **Complete**.
9) Click **Deploy** to make the business process available in Unifier.

Adding a Grid Summary to a Detail Form

You can add line item grid summary to a line item business process and use it to track and display, for example, the number of hours performed on a project on a daily basis. You can configure the summary to display Total and average amounts. Summary is allowed only for numeric data elements.

To configure a grid summary on a detail form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**. The Business Processes log opens.
3) Open the cost or line-item type business process for which want to configure a Summary for Total Amount and/or Average Amount.

   You can use the **Find** feature to locate the business process in the Business Process log.
4) In the left Navigator, select **Detail Form**. The Detail Form log opens.

Select the detail form to which you want to add the grid summary.

5) Open the Detail form by either selecting it and clicking the **Open** button, or by double-clicking the form. The Detail form opens.
6) In the Detail form toolbar, click the **Properties** button. The Elements Properties window opens.
7) Select an element for which you want to add a summary
8) Click the **Summary** button. The Summary dialog box opens.
9) Select the options you want to use; you can use both average and total summary selections, or just one selection, for the grid summary.
   - Display on Total Line — Use this selection to create a summary row at the bottom of the line item grid at run time.
   - Display on Average Line — Use this selection to create an average row at the bottom of the line item grid at run time.
   - Show Negative Numbers as — Use this selection to define the negative number format.
   - Click the **OK** button to save your selections.
   - You will see your selections for the numeric data element in the Summary column on the far right of the Elements Properties window.

   At run time, you will see real time updates in the Grid View at the bottom of the window.

Copying a Detail Form

You can copy an existing detail Form and create a new detail form.

To copy an existing workflow:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open a business process.
4) In the left Navigator, select **Detail Form** to open the **Detail Form** log.
5) From the toolbar, click **New**, and select **Copy From** to open the **BP Detail Forms** window.

In the **BP Detail Forms** window you have the following menu options that enable you to copy a detail form or find a detail form that you want to copy:

- **Copy**

  Use this option after you select the detail form that you want to copy to the destination BP design. You can only copy one detail form at a time.
- **Find**

  Use this option to find and search for detail forms based on Business Process, Form Name, and Description fields.
- **Close Window**

  To close the window.

In the **BP Detail Forms** window you have the following columns that provide details for each available detail form:

- **Business Process**

This column displays a list of BPs which support line item tabs. The BPs can be Company-level or the Project-level BPs. In addition, the BPs have matching type. That is to state, a Cost-type BP can receive detail forms from another Cost-type BP. The source of the BP design can be in draft (Status = Draft) or complete (Status = Complete). Published detail forms are also listed.

Note: The query-based tabs (QBT) are not listed. So if a BP has five tabs (three non-standard, one standard, and one QBT), the list will include only the non-standard tabs.

- **Form Name**

  The name of the detail form.

- **Description**

  The description of the detail form, if available.

When creating a new detail form by using a copied one, the following data will be copied from the source detail form:

- All detail form elements (custom, linked, and standard).
- Tooltips, if any.
- Detail form properties such as auto-population, reverse auto-population, and so forth.
- Data pickers and the pickers part of the design.

  Note: The references for all the pickers must be established in the destination BP after copying is complete. Also, the referenced BPs will not be copied.

When copying an existing detail form (from a Business Process (BP) form) and creating a new detail form:

- If the destination BP has a detail form with the same name as the one copied, Unifier adds the words "Copy of" to the beginning of the detail form name.
- If the destination BP has 15 tabs, Unifier displays: "Up to fifteen detail forms or query based tabs can be defined per business process."
- If the destination BP has a data picker and the data picker has a picker configuration, Unifier retains the data picker query conditions of Q3, Q4, and Q5 in the destination BP.

You can copy an existing detail form (from a Business Process (BP) form) and create a new detail form. This is similar to a copying and existing Upper Form (from a Business Process (BP) form) and creating a new Upper Form. When creating a new detail form by using a copied one, Unifier alerts the user when any Data Element (DE) specific to the process is missing in the form.

Moving or Deleting Blocks

To move blocks:

1) On the Form Designer window, click **Blocks**.
2) Select the block you want to move and click the **Move Up** or **Move Down** button.
3) Click **OK**.

To remove blocks:

1) On the Form Designer window, click **Blocks**.

2) Select the block you want to remove and click **Remove**.
3) Click **OK**.

Adding Fields to the Form

After you have created the blocks for the form, you can insert fields in the blocks.

To insert fields, you will be choosing data elements from the following lists:

- Custom Data Elements
- Standard Data Elements (Not applicable for **Folder Properties** or **Document Properties** in the **Document Manager**
- Linked Elements

You can also auto-populate these fields from outside elements (see ***Auto-Populating Fields*** (on page 358)).

To add custom or standard elements to the form:

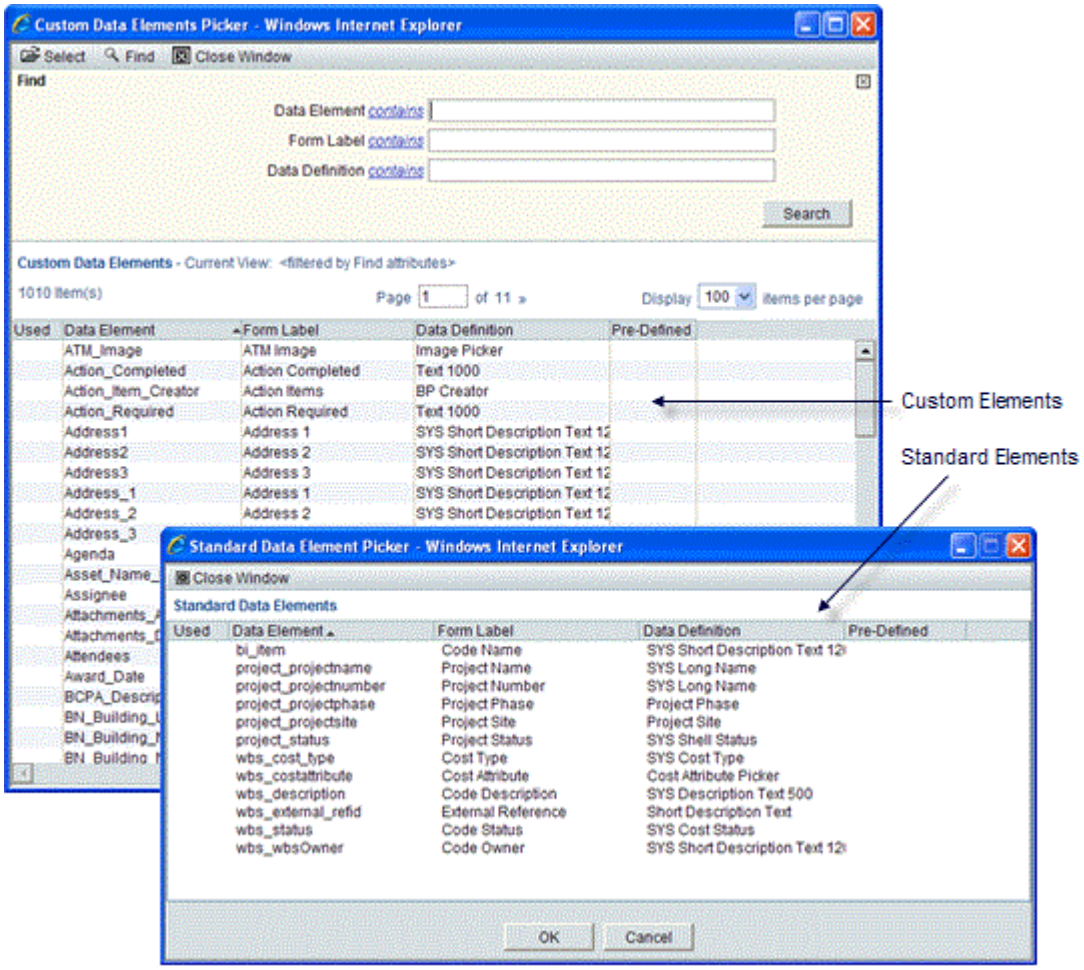
The Standard elements are not available for:

> **Note**: The standard elements do not support reverse auto-population (RAP).

- Planning items
- Planning sheets
- Asset classes
- Folder properties
- Document properties
- Shells

1) In the Upper Form (or Detail Form) Design window, select an empty cell, and then do one of the following:
   - To add a custom data element, click the **Custom** button.
   - To add a standard data element, click the **Standard** button.
   - To add a linked data element, click **Linked**. See ***Adding Link Elements to a Form*** (on page 429).

One of the following windows opens:



2) Highlight a data element from the list.
3) From the toolbar, click **Select**. uDesigner adds the data element to the selected cell on the form and enters a check mark on the picker window in the **Used** column beside the data element.

   To add multiple data elements at once, press the **Ctrl** key and click the element names.

> **Tip**: Be sure there are enough empty cells to accommodate all the elements you have chosen. If you are short on cells, click the **Insert Row** button on the Designer window toolbar to add cells to the form. Then select the data elements.

   The Data Element Picker window remains open, but uDesigner brings the Form Designer window to the front.
4) To add more elements to the form, select another cell on the Form Designer window and repeat step **2**.
5) When you have added all the fields to the form, click **Close Window** to close the element picker.
6) To exit the designer window, click **Close Window**.

To find a specific data element:

The list of data elements designed for your company can be large. To quickly display the element you want to use, you can use the Find feature at the top of the window. You can search for a data element by the element name, its form label, or its data definition. You can narrow each of these search options by using operators on the fields, such as "contains" or "is empty."

> **Note**: Only the **Custom Data Elements** window includes a Find feature; the **Standard Data Elements** window does not.

1) In any of the search fields—**Data Element**, **Form Label**, or **Data Definition**—click the underlined operator and choose the operator you want to use to narrow the search.
2) If you have chosen any operator except "is empty" or "is not empty," enter the text the operator should look for.
3) Click **Search** (or press the **Enter** key on your keyboard). uDesigner will list all the elements that meet the search criteria you entered.

How this Find Window Works

When you open the Custom Data Elements window, uDesigner assumes you will want to search for elements and displays the Find feature at the top of the window. You can close the Find area of the window at any time by clicking the x in the upper-right corner, and reopen it by clicking the Find button.

When you use the Find feature, uDesigner displays the elements it finds. If you close the Find area thereafter, the list will return to normal, showing all data elements. If you open the Find feature again, it will clear the list, assuming that you are going to enter more search criteria.

To sort the list:

The list of data elements shows:

- The name of the data element
- The label of the element that appears on the form
- The data definition on which the data element is built
- Whether the element was shipped with Unifier (Pre-Defined), or was created by your administrator

To make finding a data element easier, you can sort the list by any of the columns. For example, if you are more familiar with the elements by their form labels, you can sort the list alphabetically by the Form Label column; or if you are looking for a picker, you might sort the list alphabetically by the Data Definition column.

To sort the list by a column order, click the column heading. uDesigner displays the list in alphabetical order by that column. To see the list in reverse-alphabetical order, click the column heading a second time.

To move data elements:

After you have added elements to the fields on the form, you can drag and drop the elements from one location to another and one block to another block. To do so, position your cursor over the name of the field, right-click, and drag the field to its new location.

> **Note**: You cannot move an element into a cell that is already occupied by another element. To make room for rearranging elements, insert an extra row. When you are through moving elements around, delete the extra row.

To preview the form:

After you have defined the form, you can preview it to see how it will look in Unifier. On the open form in the Designer window, click **Preview**. uDesigner displays the form in a new window.

> **Note**: The layout and the interface seen in the preview depends on the availability of the Standard View for the selected business process. If the Standard View is not supported, them the preview will be seen in the Classic View.

To preview the log:

The **Preview** option is available both in **Standard** and **Picker** logs.

Enhancing the Field's Behavior

After you have added a field to a form, you can enhance the behavior of the field by:

- ***Adding a Note to a Field*** (on page 354)
- ***Making Fields Required, Editable, or Read-Only*** (on page 346)
- ***Adding Formulas to Fields*** (on page 348)
- ***Validating Field Values*** (on page 356)
- ***Auto-Populating Fields*** (on page 358)
- ***Erasing or Resetting Field Values During a Workflow*** (on page 357)
- ***Adding a Reference Process to Auto-Populate Data*** (on page 391)
- ***Adding a Reference Process to Auto-Populate Data*** (on page 391)
- ***Linking Elements in Shell Hierarchies for Easy Restructuring*** (on page 370)
- ***Viewing Details About Form Fields*** (on page 372)
- ***Making a Field a Hyperlink*** (on page 369)

Adding More Functions to the Form

For some business processes, you must add additional pieces to the form for users to use in collaborating on a task. For example, you might need to organize business process line items, by creating multiple tabs for the forms to make it easier to locate business details. You might also need to add a reference process or an email notification to the form. In addition, you can auto-create records from certain forms.

Similar to the Action form, you can add email notification data element to a non-workflow BP View form. The user can select the fields, from a View form, to include in the email notification.

Users who receive email notification (based on events triggered) will see the data elements based on email notification elements setup in uDesigner which is across all view forms for Workflow BPs. For Non-workflow BPs, the email notification received will show all the data elements based on email notification elements setup across all upper forms in uDesigner.

Similar to the BP View Form, you can create multiple View forms in a shell type, similar to non-workflow business process.

> **Note**: In uDesigner, you can only have one Action form for a shell type.

You can create multiple View forms manually or by using the Copy option.

To create View forms:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Shell Manager**.
3) Open the applicable BP.
4) In the left Navigator, select **Upper Forms**.
5) Select the applicable shell.
6) In the left Navigator, select Detail Form.
7) From the toolbar, click one of the following:
   - **New:** To create multiple View forms.
   - **Copy:** To copy existing forms and create View forms.

> **Note**: You can create both Action and View forms in any order, but the design must have only one Action form.

When creating a new View form manually, in the **Form Design** window, **General** tab:

- If an Action form exists for the shell design, the **View Form** option will be automatically selected, and the **Action Form** option is disabled.
- If an Action form does not exist for shell design, when creating a new form, you will have the option to select the new form an Action form or a View form.

When creating a new View form by way of **Copy**, , in the **Form Design** window, **General** tab:

- If an Action form exists for the shell design, the copied version will have the **View Form** option automatically selected and disabled.
- If an Action form does not exist for the shell design, the copied version will have both the **Action Form** and the **View Form** options enabled, and you can select one of the form options.

You can create multiple View forms and a single Action form in shell design, and the system does not place any restrictions regarding the sequence of the created forms.

After your design is deployed, deleting a View form will remove the form the **View Forms** tab, in the Shell Details window.

Custom data elements that you add to a View form must be present in Action form; otherwise, the shell design cannot be completed.

SYS Rich Text type Data Element

The data elements of SYS Rich Text type are allowed to be placed on the upper forms of all types of BPs. You can put a maximum of five data elements, of the SYS Rich Text type, within the BP design. There are no limits for the number of columns in a block that contains the SYS Rich Text type data element, within the BP form.

The following table explains the expected behavior when you place the SYS Rich Text type data element on a BP:

BP component	Any impact?	Expected behavior
Data Picker Configuration	Yes	DE of SYS Rich Text should not be available in setting query conditions for the data picker
Data Elements Configuration	Yes	Unique: DEs of SYS Rich Text type should not be available to be added as 'Unique' Data Elements on a BP. Auto-Sequence: Not applicable.

BP component	Any impact?	Expected behavior
Integration (in the BP properties)	Yes	**Input XML**: If the Rich Text DE is set to input/both in integration setup within the BP, it should show up in the input xml file with proper tags. When the user does an input into Unifier using this XML, the input for the SYS Rich Text DE can be plain text or in HTML. The DE will be supported in REST calls only. The DE will not be supported in SOAP services. **Output XML**: If the Rich Text DE is set to output/both in integration setup within the BP, it should show up in the output xml file with proper tags. Note: When data will be extracted via xml, the value of SYS Rich Text DE will be in HTML. **Input CSV Template**: If the Rich Text DE is set to input/both in integration setup within the BP, it should show up the input CSV Template. When creating data via the csv template, user can input the SYS Rich Text DE value as plain text or HTML. **Note**: In both SOAP and CSV import/Export of Rich Text type DEs, only HTML format of content will be supported (JSON will stay unsupported).

BP component	Any impact?	Expected behavior
Templates	Yes. The DE should be allowed to be placed on the Form Templates.	When blocks are added to a BP form by copying from Template, the DE should get copied over correctly. When related forms are updated using the template, the DE should get pushed to blocks correctly.
Upper Forms	Toolbar: Yes	**Link Elements**: This DE should not be allowed to be set as a Linked Data Element on BP forms. **Tooltip**: DEs of this type should be available for adding a tooltip. **Note**: The remaining options on the toolbar are not applicable for this DE.

BP component	Any impact?	Expected behavior
Upper Forms	Action Form: Yes View Form: Yes	This DE should be allowed to be placed on the upper forms of all types of BPs. **Access**: The user has the ability to mark SYS Rich Text DEs in all three access types (Editable, Required, and Read-only). **Email Notification Elements**: This DE cannot be added as an Email Notification element. **Formula**: This DE cannot create formulas in source or in destination. **Auto-populate**: This DE cannot be auto-populated (AP), as per matching DD. The user cannot set a constant value in this DE. **Reverse-Auto-populate**: This DE cannot be reverse auto-populated (RAP) as per matching DD. **Reset**: The user can reset this DE. **Add Note**: The user can add note to this type of DE. **Mobile**: The user can add this DE to mobile DEs. **Note**: The remaining properties are not impacted by this DE.
Detail Form	Not applicable	Not applicable
Query Items	Not applicable	Not applicable

BP component	Any impact?	Expected behavior
Item Logs	Not applicable	Not applicable
Workflows	No	This DE is not available to be used as a Trigger Element or Action Name (or in any other place) within a Workflow.
Log (Standard)	Yes	**Layout**: This DE cannot be placed in the **Layout** tab. **Sort Order**: Not applicable. **Find**: This DE cannot be added for "**Find**."
Log (Picker)	Yes	Same as Log (Standard), above. **Note**: This DE cannot be added in the **Group By** tab.
Reference Process	Yes	**General** tab: This DE cannot be a Source element in this tab. (This applies to both the 'Source Element' drop-downs in this tab.) **Query** tab: Yes **Note**: This DE cannot be used to create queries.
Integration (setting of DEs inside the BP)	Yes	**Upper**: This DE cannot be added in integration and set as Input, Output, or both. **Detail**: Not applicable.

BP component	Any impact?	Expected behavior
Auto-creation Processes	Yes	**Upper**: The DEs of SYS Rich Text type cannot be included in the Display Element drop-down in the auto-creation configuration for BP creators **Detail**: Not applicable.
Bid Comparison Sheet (Applies to RFB type BPs only.)	Yes	This DE cannot be added to the sheet from the Bidder form or as a custom element.

Moving Data Elements

After you have added elements to the fields on the form, you can drag and drop the elements from one location to another and one block to another block. To do so, position your cursor over the name of the field, right-click, and drag the field to its new location.

> **Note**: You cannot move data elements in a block that comes from a linked template.

You cannot move an element into a cell that is already occupied by another element. To make room for rearranging elements, insert an extra row. When you are through moving elements around, delete the extra row.

Previewing the Form

After you have designed the form, you can preview it to see how it will look in Unifier. On the open form in the Designer window, click the **Preview** button. uDesigner displays the form in a new window.

Making Fields Required, Editable, or Read-Only

As you define the purpose of each form, you will often want to specify whether fields are required (the user must enter information), editable (the user can change the information in the field), or read-only (the user cannot change the information in the field).

If you are using a dynamic data set on the form, the Master Data element can be marked as Editable, Editable (Required), or Read-Only.

To specify a field's behavior:

Select the cell, and then click **Editable** or **Required** or **Read-Only** as appropriate.

Any field used in a formula must be marked "required;" otherwise, the calculation cannot be performed.

Including a Map

For shells and some projects, you can include a map that will show the user a map of the project/shell location. The map is an aid to identifying and visualizing the project/shell in Unifier.

You can offer the map option to the user in two ways:

- By entering an address
- By using latitude and longitude coordinates

To provide the mapping feature, you must include on the form either:

- An address field: **uuu_address_code**

  This field can be a manual-entry field, or you can create the field with a string formula. For example, if you had separate data elements for City, State, and Zip Code, you could combine them as a string formula for the address code.

  If you are using a formula to create the code, be sure to include the delimiter (such as a space or comma) between the fields; otherwise, the map might not appear.
- Both a latitude and longitude field: **uuu_latitude** and **uuu_longitude**

  The latitude field is accompanied by a globe icon, which users can use as a latitude picker.

Including Tooltip

To add a tooltip to a business process form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process for which you want to create the upper form.
4) In the left Navigator, select **Upper Forms**. The **Form Designer - Upper Form** window opens.
5) From the toolbar, click **Tooltip** to open the Tooltip window.
6) Double-click a Data Element to open the **Edit Tooltip** window, where you can change the tooltip.

If a data element in a BP form contains a tooltip (associated in the design), at runtime a question mark (?) symbol appears next to that field.

When you click the **Tooltip** option, the **Tooltip** window opens which displays the following information in columns:

- **Data Element**: The name of the data element.
- **Form Label**: The label for the data element.
- **Tooltip**: The description of the tooltip.

The **Tooltip** window has the following toolbar options:

- **Open**
- **Find**
- **Update from Data Element Properties**

When you open the **Tooltip** window from the **Upper Forms**, all unique data elements from across all the **Action** and **View** forms are displayed.

> **Note**: If a data element exists in multiple forms, the data element will only appear on this window once.

The data elements can be read-only or editable.

When you open the **Tooltip** window from the **Detail Form**, the data elements from across all the line item detail forms are displayed.

When you open the **Tooltip** window from the **Attribute** form, the data elements present in the **Attribute** form are displayed.

When you click the **Update from Data Element Properties**, the **Update tooltip Description** window opens which contains the following information in columns:

- **Data Element**
- **Form Label**

You can select multiple items from the list.

The list of data elements are filtered based on the data elements available in the **Tooltip** window. You can select one or multiple fields and click **Update**. When you click **Update**, Unifier processes the changes and updates the tooltip contents.

Existing Designs

If a design existed prior to including the tooltip option and you decide to use the tooltip feature at runtime, you must perform the following:

- Enter the tooltip in the **Data Element** properties.
- In uDesigner, in the tooltip window, click the **Update from Data Element Properties** option to get the updated tooltip from the data element properties.
- Deploy the design to see the tooltip at runtime.
- Alternatively, you can open the data element in the tooltip of the design and manually enter the tooltip and then redeploy the design.

Adding Formulas to Fields

Using uDesigner, you can create formulas for fields that, in Unifier, will calculate the value of the field and display it. Calculated fields usually will be read-only fields. You can also build composite fields that combine string text data elements into one field.

> **Notes**:
>
> - As a best practice, any field used in a formula should be marked "required"; otherwise, the calculation cannot be performed.
> - User-defined formulas are prioritized over system-defined formulas. If

you create a user-defined formula that references a system-defined formula, it may not always be honored and can lead to miscalculations or failure. Therefore it is recommended that you avoid creating user-defined formulas that rely on or reference system-defined formulas. A warning message is displayed when you error check a form or change the form status to *Complete* or *Deploy*.

- You cannot designate a multi-select field as a formula field; however, you can use a multi-select field as an element in a string formula.
- Linked and Summary Elements are not allowed in defining the formula.

Creating Formulas using String (Text) Data

In uDesigner, you can create a composite field that combines multiple data elements. String building involves combining values from text box data elements and specifying a string-type pull-down. For example, you can create a field called "Project Identifier" using a formula that includes Project, Record No., and location.

You can define a string formula only for text box and multi-line text field data elements. This feature is typically for building fund code segments, but you can also use it to build an address code field to ***Including a Map*** (on page 347).

String formulas can be up to 250 characters long, including the delimiters (such as dashes or underscores).

To create a string formula:

1) Open the form containing the field for which you want to build a formula. The **Form Designer** window opens.
2) From the toolbar, click **Properties**. The **Elements Properties** window opens.
3) Select the field and click the **Formula** button. The **Formula Creation** window opens.
4) Select the delimiter.

   The delimiter separates the elements. For example if you select a dash (-) between elements for Project Identifier, it would appear as Project-Record-Location.

   You must select the delimiter before adding the element to the right pane.
5) Select an element from the left pane and click **Add Parameter**. The element moves to the right pane.

   If you want to change your selection, click **Undo** or **Clear All**. After you add an element, the element list is disabled and the delimiter icon is activated.
6) Click the **delimiter icon** to add it into the formula creation field.
7) Continue adding other elements following the same procedure.
8) Click **OK** to save the formula and close the window.

Creating Numeric Formulas

You can use any integer, currency, or decimal amount data element to create a formula. The field that holds the calculated value must be numeric with decimals, and there must be other numeric data elements on the form. The formula is based on calculations that you assign to the field by selecting from a list of the numeric data elements on the form. A numeric formula can include a logarithmic function.

Besides integer, decimal or currency amounts, you can also use the values in pull-down menus, radio buttons, and check boxes for numeric formulas. For pull-down menus in calculations, the value of the chosen data set will be used. For radio buttons, the value of the button will be used (1 or 2 are the default values, but the formula will use whatever values are specified when the business process is set up). For check boxes, 1 or 0 will be used in the formula. If the check box is checked, the value will be 1; if it is not checked, the value will be 0.

Numeric formulas can be up to 250 characters long, including the delimiters (such as dashes or underscores).

To create a numeric formula:

1) Open the form that contains the field for which you want to create a formula. The Form Designer window opens.
2) In the Form Designer window, select the field for which you want to create the formula.
   When the calculation is performed, this field will appear as read-only on the form and is automatically updated whenever the fields that make up the formula change.
3) Click the **Formula** button. A Formula Creation window opens.
4) In the **Formula Type** field, choose **Formula** from the list.
5) Click the **Create** button. Another Formula Creation window opens.
6) In the **Element** pane, select the data element and click **Add Parameter** to add it to the Formula pane.
   Only those fields that can be used in a formula will appear in this list.
7) Use the numeric keypad to enter the calculating operators to create a formula, or to enter numeric values to use on the element.
   Each time you enter an operator, the elements become available again to add to the formula.
8) Continue Steps 6 and 7 until you have completed the formula.
9) Click **OK** to save your changes and close the window.

To create a numeric formula with a logarithmic function:

The log function supports fields on business process forms only, not attribute forms, attribute/detail forms for managers, or manager sheets. Also note: uDesigner calculates base 10 logarithms, so the base is assumed.

1) Follow steps 1 through 5 explained in the previous procedure.
   You can start the formula using the log function, or start it using an element or numbers and operators, followed by the log function. For example:
   log(SQ Footage) * Unit Cost
   or
   100*Quantity/log(Cost) + 75

2) However you start the formula, you must click the **log** button to enter the logarithm. When you do so, uDesigner enters **log(** (into the formula box.
3) To continue the log formula, you can use an element from the **Element** list, or enter numbers and operators using the number pad.
4) At the end of the log function, click the end-parenthesis (**)**) button on the numeric pad.
5) To complete the formula, add other operators and numbers to the formula, if necessary.
6) Click **OK**.

Creating formulas that use dates

You can create two types of date formulas:

- A date plus/minus formula will produce a date from a date element, plus or minus a specific number of days, or plus/minus the value in another date or numeric element on the form.
- A date-difference formula will produce the number of days between two date fields. This numeric operation is useful for calculating payment due dates.

Formulas Using Date Fields

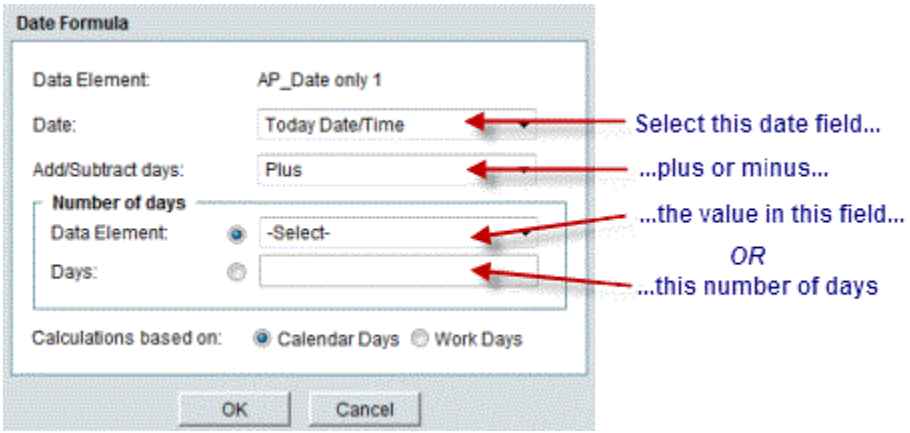
uDesigner provides two data definitions upon which date pickers can be built: Date Picker, which includes the date and time, and Date Only, which does not include the time. For example, to create a date-add formula for a date-and-time type of field, you can add an integer only to another date-and-time element; you cannot use a date-only type of element in the equation.

> **Note**: Data elements built on these definitions cannot be mixed in a formula. Combining Date Picker and Date Only Picker in a formula will lead to unexpected results. For example, if the source is Date Picker, set the destination data element to Date Picker. If the source is Date Only Picker, make sure the destination Date DE is also the Date Only Picker data definition.

To create a date plus/minus formula:

1) Open the form that contains the date field for which you want to create a formula. The Form Designer window opens.
2) In the Form Designer window, select the date field for which you want to create the formula.
   When the calculation is performed, this field will appear as read-only on the form and will be automatically updated whenever the fields that make up the formula change.

3) Click the Formula button. A Date Formula window opens.



4) For Calculations based on, choose:
   - **Calendar Days** to calculate the formula based on calendar days. This option does not take company non-working days into account.
   - **Work Days** to calculate the formula based on the company calendar working and non-working days.

   Example:

   When: Date 2 = Date 1 + 1 working day
   - If Date 1 is a working day, the system calculates from the selected date and adds the number of working days. So, if Date 1 = 01/23/2023 (working day), then Date 2 = 01/24/2023.
   - If Date 1 is a non- working day, the system calculates from the next working day and adds the number of working days. So, if Date 1 = 01/21/2023 (non-working day), then Date 2 = 01/24/2023 because the system calculates from 01/23/2023 at 12.00 AM

To create a date-difference formula:

1) Open the form that contains the field for which you want to create a formula. The Form Designer window opens.
2) In the Form Designer window, select the date field for which you want to create the formula.

   When the calculation is performed, this field will appear as read-only on the form and will be automatically updated whenever the fields that make up the formula change.
3) Click the Formula button. A Formula Creation window opens.
4) In the Formula Type field, choose Date Difference from the list.

   The window expands to show additional fields, as shown in the table below.
5) Click **OK** to save your changes and close the window.

In this field:	Do this:
Latest Date	Click the down arrow. uDesigner displays a list of all the numeric fields on the form. From this list, choose the field that contains the later of the two dates that will be used in the calculation.

In this field:	Do this:
Earliest Date	Click the down arrow. From this list, choose the field that contains the earlier of the two dates that will be used in the calculation.
Calculations based on	Choose **Calendar Days** to include all the days of the week in the calculation. Choose **Work Days** to use only the work days of the week in the calculation.

Linking Data Pickers Using a Formula

Data pickers can be linked to corresponding pickers to make available to the user the functionality of the data picker and also of the linked picker.

- Shell data pickers can be linked to shell pickers to facilitate shell auto-creation
- Configurable manager data pickers can be linked to configurable manager pickers to enable quantity and cost rollups to configurable manager sheets
- User Pickers can be linked to user data pickers to offer the functionality of both types of picker on a business process form. To do this, place the user data picker on the business process upper or detail form and place the linked User Picker in a hidden block on the form; then link the two types of pickers as described in the following steps.

To link a data picker:

1) Open the form on which you want to link the pickers.
2) In the Form Design window, click the Properties button. The Elements Properties window opens.
3) On the Elements Properties window, select the shell picker, the code picker of a configurable manager, or the user picker you want to connect to a data picker.
4) Click the Formula button. The Formula Definition window opens.
5) In the **Data Picker Element** field, select the data picker element on the form that you want to link to the picker or shell you selected.
   - **For rollups to a configurable manager sheet:** The configurable manager data picker will populate the code picker for the manager with the value and the data will roll up to the code on the sheet. The field becomes read-only. Anytime the data picker value changes, it will be automatically reflected on the code picker.
   - **For BP auto-creation across shells:** The shell will use the shell data picker to tell it where to create the business process.
   - **For business processes, a Configurable Manager, and shells:** The user data picker, when linked to the User Picker, will provide the functionality of both the User Picker and the User Data Picker. Refer to the *Unifier Data Reference Guide* for descriptions of the picker data elements.

Using a Formula in a Required Field

You can define a formula for a required field in your form.

If you create a BP record or line item by way of CSV/Excel or RESTful web services, if the required elements are set as formulas, and the required elements are not included in the Integration tab (company or shell), the system will not complete the BP record or line item creation.

> **Note:** In the Bidder detail form, the short description (short_desc) DE is a required field. You cannot add the (short_desc) DE in a hidden block.

Adding a Note to a Field

Using a note, you can enter details about this element and what it is designed to do. Adding a note to a field on the form is optional, but can be helpful to others in understanding how this element works on this form, particularly if it has a special behavior, such as automatically creating another record.

To add a note:

1) Open the form for which you want to add a field note.
   The Form Designer window opens.
2) From the toolbar, click **Properties**. The Elements Properties window opens showing a list of the fields (data elements) on the form.
3) Select the field you want to add a note to.
4) Click the **Add Note** button. A Notes window opens.
5) Add the note in this window and click **OK**.
   - You can enter up to 4000 characters.
   - uDesigner will display the note in a Notes column on the Elements Properties window.
   - To read the note, scroll over to the Notes column, or double-click the data element to open another Element Properties window that shows the entire note.

Adding a Dynamic Data Set

A dynamic data set will not be visible on the form as a "set" in a single cell, but rather as separate data elements that will act with a specific behavior in Unifier. Consequently, you cannot click a dynamic data set and see it in the cell you select. Instead, you must add the set's data elements to the cells individually. Then, to make the elements a dynamic data set, click the Dynamic Data Set button. Although you will not see any indication at that point, the dynamic data set will instruct Unifier to use the elements named in the set in the behavior the set specifies.

For more information on dynamic data sets, see ***Dynamic Data Sets*** (on page 234).

To add a dynamic data set:

1) Open the form for which you want to create a dynamic data set.
2) In the Form Designer window, add the data elements specified in the dynamic data set by choosing from either the custom or standard elements.
3) Click the **Add** button. The Dynamic Data Sets List window opens, showing the dynamic data sets that have been created.

4) Select the set you want and click **OK**. uDesigner displays the set in the Dynamic Data Set window.
5) Click **Close**. Unifier will use the elements named in the set in the behavior the set specified.

Updating Query-Based Field Values with a Trigger Element

Data elements built on the SYS Numeric Query Based data definition extract data from any business process (BP) or manager sheet. These elements prompt Unifier to run a query to extract the information. (This query is created by the administrator at the time the BP is configured.) These elements are updated:

- When a user opens the BP in edit form.

  Unifier runs the query and displays the latest value in the query-based field, if the conditions are met.

  Unifier only updates the system numeric Query Based Data Elements (QBDEs) of a BP form in edit mode. Also, you must save (or send) the updated value to ensure that the value is committed to the database, displayed when viewing the form, and displayed in the BP log.
- When a user changes the value in a "trigger element" on a BP form.

  The trigger element prompts Unifier to run the query again and dynamically update the value in the query-based field.

The instructions in this section show you how to assign a trigger element to a query-based field.

Notes:

- Because the system evaluates QBDEs in a random order, Oracle recommends that you do not create a QBDE that uses a formula that references another QBDE.
- DEs that have been defined as a QBDE trigger element should not be evaluated as part of QBDE calculation.
- This feature is not available for a single-record BP at the company level.

To assign a trigger element to update a field value:

1) Open the form that contains the field you want to update. The Form Designer window opens.
2) From the toolbar, click **Properties**. The Elements Properties window opens showing a list of the fields (data elements) on the form.
3) Select the query-based field(s) you want to update and click the **Trigger Elements** button. uDesigner displays the Trigger Elements window.
4) Click the **Add** button. The Trigger Column Header window opens.
5) In the **Data Element Label** field, select the data element you want to act as the trigger that will update the value in the query-based field(s) you selected in Step 3.

   The **Data Element Name** field will show the name of the data element you selected.

> **Note:** The trigger element must be an editable field, such as the **refid** element that references a contract BP.

6) Click **OK**.
7) On the Trigger Elements window, click **OK**.

To remove a trigger element from a field:

1) Open the form that contains the query-based field currently being updated. The Form Designer window opens.
2) From the toolbar, click **Properties**. The Elements Properties window opens showing a list of the fields (data elements) on the form.
3) Select the field(s) you want to remove the trigger element from.
4) Click the **Trigger Elements** button. uDesigner displays the Trigger Elements window.
5) Select the trigger elements you want to remove and click the **Remove** button.
6) Click **OK**.

Validating Field Values

For many situations, you might want to place limits on the values the application will accept for numeric fields on a form.

Example

A budget transfer might move monies from one CBS code to another. In this situation, the transfer must show a net zero amount. For this case, you would want to validate the amount field to verify that it equals zero. At runtime, the application will validate the value in the amount field and display an error message if the value exceeds zero.

For some situations:

- You might require that the user fill out one or more fields before leaving a form.

  Example

  For a list of five check box items, you might require users to check at least three out of the five. So for validation, you could include a hidden field on the form containing a formula that adds the value of each check box (checked = 1, unchecked = 0). If the value of this hidden field is less than 3, the user will not be allowed to leave the form. By data definition, check boxes are integers, and you cannot place a formula on an integer field; however, you can use integer fields in formulas. The hidden field in this example must, therefore, be a decimal field that holds the total value of the check boxes. That decimal field must be greater than or equal to 3 for this validation. At runtime, the application will validate the value in the hidden field and display an error message if the value is not greater than or equal to 3.

You require that the user includes at least one associated attachment.

Example

Submittals are used to track items that are produced by an outside supplier or subcontractor and are delivered to a contractor for use in a project, so Submittals would require to include attachments in the record or line item to support the process. In such cases, you might require users to include at least one attachment. So for validation, you could include a read-only DE on the forms to display the attachment count.

This DE (uuu_attachment_count) can be placed in any form, whether the form allows including attachments or not.

To validate fields, you need to create validation rules and then apply them to the field when you design the form.

To create a validation rule:

1) Open the form that contains the field you want to validate. The Form Designer window opens.
2) From the toolbar, click **Validation**. The **Validation Rules** window opens.
3) Click the **Add** button. A **Validation Rule** window opens.
4) In the **Name** field, enter a name for this rule.
5) In the **Expression** field, click the **Formula** button. The **Formula Creation** window opens.
6) On the left pane, double-click the element you want to validate to move it to the right pane. Then click **OK** to close the window.
7) In the **Condition** field on the Validation Rules window, click the down arrow and choose the criteria the field value must meet, such as "Greater than or equal to."
8) In the **Value** field, enter the value the field must not exceed.
9) In the **Show this message** field, enter the error message the user should see if the field value exceeds the value you specified. You can enter up to 400 alphanumeric characters.
10) Click **OK**.

To apply a validation rule to a field:

1) In the Form Designer window, select the cell containing the field you want to validate.
2) From the toolbar, click **Validation**. The **Validation Rules** window opens.
3) Select the rule you want to place on this field and click **Close**.

Erasing or Resetting Field Values During a Workflow

At some point in a workflow, you might want to force users to re-enter data into a field; for example, if a form is rejected and returned to a previous step, where the user must enter new data in the field for the form to be approved. Or, you might want a field to return to a default value whenever a step is revisited in the workflow. In such cases, you can erase, or reset the field when it arrives at the next step so that either the user must re-enter the data, or Unifier must recalculate the field. (If a formula field is dependent on the reset value, the system recalculates the formula.)

This feature applies only to required upper form fields in BPs with workflows and is applicable for the following Data Element (DE) types:

- Text
- Pull-down

- Radio button
- Check box fields
- Hidden blocks
- Date Picker (Only non-uuu date pickers)
- Date Only Picker (Only non uuu-date only pickers)
- Data Picker (all types)
- User Picker

You *cannot* use the above DE types for the following:

- Read-only fields
- System elements such as due_date, creator_id, and "uuu" elements, *except* if the DE is of Custom type
- SYS type data definition, *except* if the Data Definition (DD) is of SYS string data type

> **Note**: If you use this feature, be aware that the field will be erased or reset at each step of the workflow in which it is used. For those steps in which you want the value of the field to "stick," use another action form where the field is not set to Reset.

To erase or reset a field value:

1) Open the form that contains the field you want to erase or reset. The Form Designer window opens.
2) From the toolbar, click **Properties**. The **Elements Properties** window opens showing a list of the fields (data elements) on the form.
3) Select the field(s) you want to erase or reset.
4) Click the **Reset** button.

Auto-Populating Fields

Using uDesigner's auto-population feature, you can automatically populate fields on a form at the time the form is created. You can populate the fields on the new form with:

- Data from fields on other forms or Unifier sources
- A constant value or boiler-plate text you specify (see "Auto-populating fields with a constant value," below.)

Dynamic Data Sets

- You can auto-populate only the master element of a dynamic data set.
- You cannot auto-populate the fields in a value set or behavior set.
- You cannot auto-populate a dynamic data set on a Payment Application.
- You cannot auto-populate role name data pickers.

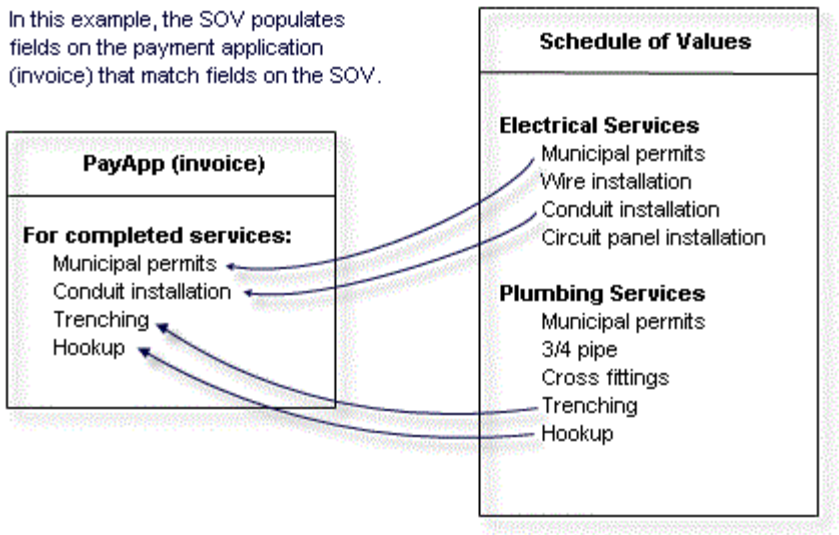
This can save time for users because they do not have to complete every field of the form. For example, you could use this feature to automatically fill in a "Plant Location" field from an attribute form. For another example, you could set up the date field on a time sheet to default to the server date and time so that users do not need to use a date picker. You could also set up a field to automatically display a title or other boilerplate text for common forms users need to fill in on a frequent basis. In addition, auto-population can be used with the Unifier portal. When a user logs into the portal to submit a form, such as a work order, the user's information, such as his/her location and department, can be automatically populated on the work order. Or, when an employee "move" request is created, the current location of the employee can be auto-populated onto the move request form.

Auto-population works similarly to reference processes: It links a field on a form to outside data by "mapping" the field to a field on the outside source. In operation, the field you want to auto-populate will point to the outside source and use the value in that field to populate the field on the new form. After the mapping link is created, you can use the outside source to populate any fields that the outside source and the new form have in common.

> **Note:** To auto-populate fields, the data definition of both fields—the one on the current form as well as the one on the outside source—must match.

Auto-population occurs on the creation step

The new form will be populated only once with the field values, during the creation step in the workflow. Therefore, the field you want to populate must be included on the form(s) that will be attached to the creation step in the workflow. If you do not want this field to be visible on the creation step form, put it in a hidden field or block on the form. After the field is auto-populated in the creation step, it remains static in all subsequent workflow steps; the values will not be updated by this feature.



Auto-population can be triggered whenever a business process is created using auto-creation (S-step or I-step) integration, CSV files, Unifier on mobile devices, or portal submissions. In some cases, you can design the auto-population to be triggered by a user data picker. (This is a type of data picker you can create. See ***About User Data Pickers*** (on page 226).) For instance, you can design an office move order for an employee to be auto-populated with the employee's current location when the user chooses the employee from a user data picker.

Use auto-population for text boxes, text areas, pickers (including user data pickers), pull-down lists, check boxes, and radio buttons.

Notes:

- Although uDesigner supports the inclusion of Pull Down DEs (string or integer) on the payment detail form for use with Auto Population from an SOV Sheet, the Pull Down DE column cannot be added to the SOV Sheet from the SOV Structure. Because of this, the Pull Down DE in a line item cannot auto-populate a value from the SOV Sheet when a classic Payment BP record is created. Auto Population is *only* supported for decimal or current amount DEs.
- Auto-population from Data Picker DE: When you use Bulk Create or Bulk Update, you start by exporting the BP design structure to a Microsoft Excel or CSV file and then populating the required fields. During a Bulk Update, in cases where one or more DEs in the Upper Form selected as the Integration Form is configured for auto-population from a Data Picker DE, the system allows these DEs to be auto-populated from the data picker or updated independently. To allow for auto-population, the DEs should be excluded from the Integration Data Elements tab; in this case, if the value of the data picker is updated during Bulk Update, the configured auto-population is applied. However, if the DEs are included in the Data Elements tab, the auto-population is ignored, which allows these DEs to be updated individually.
- When a workflow BP record is created and a field is set to auto-populate through a Data Picker, such as User Picker, this auto-population only occurs for the original selection. If the value of the Data Picker is updated via workflow action, any auto-population configured through the Data Picker does not overwrite the prior value. If you want to trigger the auto-population again, you can use the Data Picker in Unifier or add the corresponding data element (DE) to the integration interface and run an update that provides the value for the DE.

You can populate fields on a form from the following sources:

- Fields on an attribute form for managers (except a code-based configurable manager)
- Fields on another (referenced) business process form
- Fields on a User Attribute Form (via a user data picker)
- Shell Attribute Forms
- Fields from an upper form (to fields on a detail form)

- Fields on single-record BPs at the company, shell, or project level
- User data picker on a referenced business process (from a user data picker on the source business process)
- Fields on an SOV (for a payment application BP)
- Fields from document properties of a line item attachment
- The total value from a line-item numeric field (can populate a field on an upper form; becomes a read-only field)
- A constant value you enter when you set up auto-population for the field

You cannot auto-populate:

- BP pickers
- Multi-select fields
- The master element of a dynamic data set

When BP records and line items that have auto-populate data elements defined from pickers (all data pickers, BP picker) are updated through integration (REST API and Excel update), the auto-populate data elements from the picker are *not* updated when the input request does not include a picker value.

> **Note:** Auto-population is also not triggered if the picker element is in the Main form of the record, when the input request (REST API and Excel update) includes the same value for the picker.

Additionally, when a picker (destination picker) in a detail form is designed to be is auto-populated from another picker (source picker) from the **Upper** form, the system auto-populates the data elements from the former picker (destination picker) when a line item is created, only if a picker value (from the source picker) exists in the **Upper** form.

To auto-populate a field:

1) Open the form that contains the field you want to auto-populate. The Form Designer window opens.
2) From the toolbar, click **Properties**. The Elements Properties window opens showing a list of the fields (data elements) on the form.
3) Highlight the field you want to auto-populate and click the **Auto-populate** button. The Auto Populate window opens.

   The **Destination Element** field shows the data element that you are populating on this form.
4) In the **Source Name** field, specify the outside source where the data should come from.

   The source of the populating data depends on the type of component you are designing. For example, for a payment application business process, you could auto-populate a field using data from:
   - A BP picker on a referenced business process
   - A line item picker on the upper or detail form of a referenced business process
   - A fund or CBS picker on the detail form of a Fund Attribute or Cost Attribute Form
   - A single-record BP
   - The upper form or detail form of the BP you are creating
   - The detail form of a Base Commit or Change Commit BP

- The referenced SOV line item in General Spends BP detail form
- The schedule of values (SOV)
- A Shell Attribute Form

For another example, you could auto-populate the location field on an employee re-location business process by using a user data picker. When the re-location form is created, the employee name chosen from the data picker will auto-populate the location field with the employee's current location.

5) In the **Source Element** field, click the **Select** button and choose the name of the data element that contains the data you want to populate this field.

   The source elements you can choose depend on the Source Name you specified. The list will show the data elements the source and destination forms have in common; that is, those elements whose data definitions match.

6) Click **OK**.

Auto-Populating Fields with a Constant Value

If you are populating a field with a constant value, the **Auto Populate** window works differently. When you highlight the field you want to populate and click the **Auto-populate** button, the **Auto Populate** window opens.

> **Note:** You cannot use a constant value for pull-down lists, check boxes, or radio buttons.

To auto-populate a field with a constant value:

1) Open the form that contains the field you want to auto-populate. The Form Designer window opens.
2) From the toolbar, click **Properties**. The Elements Properties window opens showing a list of the fields (data elements) on the form.
3) Highlight the field you want to auto-populate and click the **Auto-populate** button. The Auto Populate window opens.
4) In the **Destination Element** field, enter the name of the data element you want to populate.

   Enter the data element name; not the field label.

5) In the **Source Name** field, click the **Select** button and choose **ConstantValue**.

   When you choose Constant Value, the Source Element field changes to read **Source Value**. See the table below.

6) Click **OK**.

If you entered this as the Destination Element:	The Source Value field will show:
A date field	A single read-only value—**Today Date/Time**. This means the Destination Element will be populated with the current server date and time. **Note**: This option is not available for any **due_date** element, or any data element built on the **SYS Date Picker** data definition.
A text field	A text area where you can enter the text you want to populate the destination element field. For example, if you want the field populated with the attendees of a regular meeting, enter a list of the attendee names.
A numeric field	A text area where you can enter the numbers you want to populate the destination element field. For example, if you want the field to contain a numeric ID for a type of document, enter that ID here. You can enter up to 13 digits; 15 if you include a fraction or a decimal.
The name of a user data picker	"**Login User**." At runtime, the field will display the name of the user who has signed in and is using the business process. The field will be read-only.

Updating Records Using Reverse Auto-Population

In much the same way you use the ***Auto-Populating Fields*** (on page 358) feature to populate fields on other forms, you can use reverse auto-population (RAP) to **update** fields on records, as well as attribute forms and line items, including auto-created business processes. This can streamline the use of forms by keeping the information on them up-to-date with the latest Unifier data from components inside or outside the business process.

Notes:

- Fields that use formulas are not eligible for updating with reverse auto-population.
- To update fields, the data definition of both fields—the one on the current form as well as the one on the outside source—must match.
- You cannot use this feature to update single-record BPs unless they exist under child shells, where they can update single-record BPs

under any parent shell in the hierarchy.

- Supported on auto-created BPs.

Example

You could design a "preventive maintenance" business process that auto-creates "work order" records for your assets. The work orders, in turn, could update the asset information on the original preventive maintenance record.

Example

You could create an "office move order" that uses a data picker to reference a User Attribute Form. In Unifier, the user would use this user data picker to specify the user who is moving. The data picker, in turn, will trigger the reverse auto-population once the move is complete and update the attribute form with the user's new location. (For information on creating this data picker, see ***About Data Pickers*** (on page 222).)

Reverse auto-population can be set as a condition. If no condition, the Reverse auto-population happens at *every status change* of the source Business Process Record. If you select a condition, only the status of the selected source will be updated. When a Workflow, or a non-Workflow, in a Business Process record is routed to the next step, and contains a DE set to Reverse Auto-Populate (RAP) in the form:

- If you do not select a source status for RAP, Unifier RAP the DE value after each status change.
- If you do select a source status for RAP that meets the specified status, for example, you select RAP to occur at status A and B, as soon as the status of the record changes, the DE value RAP as per configuration.

Note: The RAP must be evaluated, and occur, after a status change and not before.

Reverse auto-population is the process of passing data from a "destination" object back to a "source" object. It is the reverse of auto-population, which passes data from a source object to a destination object.

Reverse auto-population works similarly to reference processes. It links a field on the form or line item to outside data by "mapping" the field to a field on the outside source. In operation, whenever the value of the field on the outside source changes, it will update the field on the form or line item you are designing. The update occurs when a user fills in the form and:

- (for a workflow BP) routes the form to the next step
- (for a non-workflow BP) clicks **Finish Editing**

Reverse auto-population can be triggered whenever a business process is created using auto-creation (S-step or I-step), integration, CSV files, Unifier on mobile devices, or portal submissions. For some reverse auto-population cases, the update can be triggered by a user data picker. (This is a type of data picker you can create. See ***About User Data Pickers*** (on page 226).) For instance, you could create an "office move order" that uses a data picker to reference a User Attribute Form. In Unifier, the user would use this user data picker to specify the user who is moving. The data picker, in turn, will trigger the reverse auto-population once the move is complete and update the attribute form with the user's new location.

Setting up reverse auto-population is a two-part process. You need to:

1) Create an integration interface for the form that will be updated. The interface will push the updated information to the BP form.
2) Map the fields to be updated.

Use reverse auto-population for text boxes, text areas, pickers, drop-down lists, check boxes, and radio buttons. You cannot use the reverse auto-population for the role name data picker.

You can update fields as follows:

You can update from this:	**To this:**
The upper form of a business process	Upper forms of BPs specified in reference processes The attribute form for a Code and Records-based manager An Asset record A Resource record A Planning Item record A line item on the source record that is linked using a line item picker
A line item form	Upper forms specified in reference processes A line item form linked using a Line Item picker An Asset record A Resource record A Planning Item record
A child Shell Attribute Form	A parent Shell Attribute Form
A child shell business process	A parent Shell Attribute Form The upper form of a single-record business process in a parent shell
A company-level business process	A Code and Records-based Manager's Attribute Form
A project/shell-level business process	A Code and Records-based Manager's Attribute Form

You can update from this:	To this:
User data picker	A field on the upper or detail forms of BPs specified in reference processes A user data picker on a referenced business process Reference BP creator elements on upper or detail forms Upper or detail forms of single record business processes Code and Records-based Configurable Manager Attribute Forms
Shell data picker	A Shell Attribute Form

Creating an Integration Interface

To use the data transfer function of the integration feature, you will need to create an integration interface.

For "Direction," be sure it is either **Input** or **Both**.

Notes:

- You must create the integration interface first; otherwise, you will not be able to map the fields for reverse auto-population. This type of auto-population takes place via the integration interface, not via Unifier.
- Data Elements of DD = "Record Status Pulldown" can only be set as "Output" in Business Process integration settings.

Mapping a Field to be Updated

To map a field to be updated:

1) Open the form you want to be updated.
2) In the left Navigator, select:
   - **Upper Forms** to update fields on the upper form.
   - **Detail Forms** to update fields on a detail form.
   - **Line Item List** to update fields on a line item list.
3) On the right panel, double-click the name of the form to open the **Form Designer** window.
4) From the toolbar, click **Properties**. The Elements Properties window opens, showing a list of the fields (data elements) on the form.
5) Highlight the field you want to be updated and click the **Reverse Auto-populate** button. The Reverse Auto Populate window opens.

6) Review the content of the **Source Element** field.

   The Source Element field displays the field name (DE) on the form that will update the field on the destination form. When the value in the field changes in Unifier, the destination element is updated.

7) In the **Destination Name** field, choose the name of the form that contains the field you want to be updated.

   The Destination Name is the name of the Business Process or Attribute Form that contains the field you want to be updated.

8) In the **Destination Element** field, click the **Select** button and choose the name of the data element you want to be updated on the form or line item.

   The Destination Element is the name of the DE you want to be updated on the Business Process, Attribute Form, or Line Item.

   In operation, when you enter the **Destination Name**, uDesigner checks the integration interface you created for the form you want to update. It locates any fields with data definitions that match those of the **Source Element** and displays them when you click the Select button.

9) In the **Status(es)** field, click **Select** and select the status of the source record that you want to be updated by way of the RAP.

   Notes:

   - If you do not select a specific status, RAP occurs on every status.
   - The list of statuses reflects those that are currently Active. If a status is selected that is subsequently set to Inactive, an error message will be displayed when the business process is completed.

10) Click **OK**, and then click **Close** on the Elements Properties window.

11) On the Form Designer window, click **Save**, and then click **Close Window**.

Reverse Auto-Populate Status of non-Workflow BP

The Status DE on a non-Workflow Business Process (BP) can be Reverse Auto-Populated (RAP) from another non-Workflow or Workflow Business Process.

Example

A non-Workflow Asset Business Process (BP) (a non-workflow BP) record is in an "In_Service" status. Another Business Process goes through approvals to shut down that Asset. As a result, the Asset BP status changes to "Inactive."

You can use the "Record Status Pulldown" Data Definition (DD) to create the Data Elements (DEs) that can RAP in the "Status" DE of a non-Workflow BP. The "Record Status Pulldown" DD is a drop-down menu type that is available in the list of "Custom" DEs.

The following list the behavior of DE when you add it to a form:

- Can be marked as Editable / Editable Required / Read Only
- Cannot be used in Validations
- Cannot be set as Formula
- Cannot be set for Auto-populate

- Should be available for "Reset"
- Is not available when defining "Linked' Elements"
- Is not available to be added to "Dynamic Datasets"

Notes:

- The DEs of the DD = "Record Status Pulldown" can be set as "Output" in Business Process integration settings.
- The DEs of the DD = "Record Status Pulldown" will be opened for Mobile.
- The DEs of the DD = "Record Status Pulldown" will not be opened for Bulk Edit or Bulk Action settings.
- Only Active statuses will be shown in the RAP configuration.

Reverse Auto-Populate Configuration Window

You can define the runtime picker data set, and default value, in the RAP configuration window.

The Reverse Auto-Populate (RAP) configuration window contains the following fields:

Source Element

(Read-only) Contains the name of the DE, which will be the source of reverse auto-population.

Source Dataset

To configure the statuses that can be reverse auto-populated into the destination BP "Status" element.

Note: Only select values that are valid statuses for the destination BP.

The selected statuses will be available as drop-down data set values during runtime.

Add

To select one Status, or more (Same as in a BP Properties, Statuses tab).

Remove

To remove one Status, or more (Same as in a BP Properties, Statuses tab).

Default

To select one Status and set the Status as default. Once set as default, the system populates the "Default" column with the "Yes" value. This option overrides previous selections. You cannot set more than one Status as default. You can clear the default status by selecting the status and removing it.

Destination Name

This field lists all possible destinations for the reverse auto-population from "Record Status Pulldown" DE. The Destination Name drop-down list contains all the pickers (BP or Data) that point to a non-Workflow type BP. You cannot configure a picker to a Workflow type BP.

> **Note**: You can select a RAP destination as a Data Picker and then remove that Data Picker from your form.

Destination Element

(Read-only) Contains the name of the DE that is impacted by RAP.

Status(es)

In the Status(es) field, click **Select** and select the status of the source record that you want to be updated by way of the RAP.

> **Notes:**
>
> - If you do not select a specific status, RAP occurs on every status.
> - The list of statuses reflects those that are currently Active. If a status is selected that is subsequently set to Inactive, an error message will be displayed when the business process is completed.

Additional information about configuring RAP

Add the "Status" element of Destination BP in the Integration settings as "Input" or "Both". If the DE is not added, RAP will fail with an error.

Example

If "Asset" BP is a non-Workflow BP and you want to RAP the status of "Asset" BP from another BP, you need to add the "Status" element of Destination BP in the Integration settings as "Input" or "Both".

To access the Integration settings:

1. Go to the **Company Workspace** tab and switch to **Admin** mode.
2. In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3. Open the applicable BP.
4. In the left Navigator, select **Integration**, and then select **Upper**.
5. Open the applicable form.
6. Select the **Data Elements** tab.
7. Add or update an existing Data Element for which the **Element Label** is **Status**, the **Data Element** is **Status**, and the **Direction** is **Both.**

Making a Field a Hyperlink

If the form you are designing includes a data picker field, you can make this field a hyperlink. After you make the field a hyperlink, the data picker will operate as follows:

	On an Action Form		On a View Form
If the data picker	If the field is editable	If the field is read-only	

	On an Action Form		On a View Form
Has a value	Show as a picker with a value	Show the picker as a hyperlink	Show the picker as a hyperlink
Does not have a value	Show as a picker field	Show as blank	Show as blank

To make the data picker field a hyperlink:

1) Open the form that contains the data picker you want to make a hyperlink. The Form Designer window opens.
2) From the toolbar, click **Properties**. The Elements Properties window opens showing a list of the fields (data elements) on the form.
3) Select the field you want to make a hyperlink.
4) Click the **Hyperlink** button. uDesigner makes the field a hyperlink and enters Yes in the Hyperlink column on the window.

   To disable the hyperlink, highlight the field and click the Hyperlink button.

Linking Elements in Shell Hierarchies for Easy Restructuring

Companies, such as banks, that often move sites from one division, region, or market to another, need to be able to restructure the shell hierarchies in Unifier without having to re-enter a lot of information on attribute forms and business processes. Linking data elements (fields) between shells and other forms makes it easier for the user to rearrange shell hierarchies by automatically reflecting new field values on the forms as the shell is moved. This feature ensures that data referenced from parent shells to child shells and business processes is correctly reflected in the new hierarchy so that reporting is accurate and Unifier's operation is not interrupted.

- This feature works only on attribute forms for child shells, or for single-record BPs at the project/shell level. You cannot use this feature for an anchor shell.
- You can place linked elements on upper forms only; not detail forms.
- You cannot link elements that are from a template that is linked to the form.
- You cannot link elements that are part of a dynamic data set.

Using this feature, you can create a dynamic connection from a field on the following forms to a field on the attribute form of any parent shell in the hierarchy.

- Child Shell Attribute Form
- Business process forms in child shells

The field on the form you are designing will automatically display the current value of the field you link to on the parent shell's form, regardless of where the child shell is moved.

> **Note**: Before you can link elements on the form you are designing here, the linkable elements from the Shell must be specified when you start the shell design.

To link an element:

1) Open the shell or single-record business process you want to work with.
2) Open the upper form in the Form Designer window; for a configurable manager, open the detail form.
3) On the Form Designer window, highlight an empty cell and click **Linked** on the toolbar. The Linked Data Element Picker window opens, showing a list of the fields that you chose for linking when you started the design for this shell or business process.
4) From the list of data elements, select the field(s) on the attribute form that you want to link to this form and click **OK**.

   uDesigner links these fields so that the current value of the field you link to always appears on the form you are designing, regardless of where the shell is moved.

In operation, when the user moves a child shell, the linked field on the form will not display the current value until the user clicks Finish Editing and reopens the record.

Linking Tagged Elements from a Schedule Attribute Form to Another Form

Linking a tagged field from a Schedule Attribute Form maps it to one or more fields on another form. When you link a tagged field to a destination field, you must specify the data element that will receive the information. For example, if you want to show multiple activity start dates from the Schedule Sheet on the destination form, you would link the source element **uuu_start** with the fields on the form that will display that information. In this way, you can link **uuu_start** with multiple fields on the form.

After you link these elements, the element on the form you are designing will automatically display the current value of the field you link to on the Schedule Attribute Form.

> **Note**: Before you can link elements on the form you are designing here, the linkable tagged fields from the Schedule Attribute Form must be specified when you start the Schedule Manager design (see ***Starting an Attribute or Detail Form for a Manager*** (on page 186)).

To link an element from the Schedule Attribute Form to a business process form:

1) Open the business process you want to work with.
2) Open the upper form in the Form Designer window.
3) On the Form Designer window, highlight an empty cell and click **Linked** on the toolbar. The Linked Data Element Picker window opens, showing a list of the fields that you chose for linking when you started the design for the schedule activity.
4) From the list of data elements, select the field(s) that you want to link to this form and click **OK**.

   uDesigner links these fields so that the current value of the field you link to always appears on the attribute form or BP you are designing.

Linking Elements from Other Forms to a Planning Item

While working with planning items, users often need access to the latest information from other Unifier components. For example, users might need information about the shell under which the planning item resides, or information about a schedule activity that is involved in this planning item. You can link elements from the Shell Attribute Form or the schedule activity form to a planning item form so that the planning item form will always show the current value for these elements from other forms.

By linking elements, you can create a dynamic connection from a field on the following forms to a field on the planning item:

- A Shell Attribute Form
- A single-record business process
- A Configurable Manager Attribute Form
- A Schedule Activity Attribute Form

At runtime, the field on the planning item form you are designing will automatically display the current value of the field you link to on these forms.

Linking elements is a two-part process. First, you must specify the elements on the Shell Attribute Form, single-record BP, Configurable Manager Attribute Form, or schedule activity that can be linked. (See ***For a Code and Records-based Manager*** (on page 189), ***For the Schedule Manager*** (on page 196), ***For the Shell Manager*** (on page 196), and the ***Adding Link Elements to a Form*** (on page 429).) Then you place those elements on the planning item form using the Linked button on the Form Designer window as follows.

To link elements from another form to a planning item:

1) Open the planning item detail form you want to link.
2) Open the upper form in the Form Designer window.
3) On the Form Designer window, highlight an empty cell and click **Linked** on the toolbar. The Linked Data Element Picker window opens, showing a list of the fields that you chose for linking when you started the design.
4) From the list of data elements, select the field(s) that you want to link to this form and click **OK**.

   uDesigner links these fields so that the current value of the field you link to always appears on the planning item you are designing.

Viewing Details About Form Fields

After a form is complete, you or another designer might need to re-check field details to see how they behave. An easy way to see an overview of the fields and how they have been designed is to open the Properties window from the Form Designer window.

On the Elements Properties window, double-click the name of the element. A second element Properties window opens. This window displays the following information about the field:

This field:	Shows this information:
Name	The system name of the data element

This field:	Shows this information:
Label	The name of the field as it will appear on the form
Type	Where the element came from—the Custom Elements list or the Standard Elements list. If the data element is linked, for instance, to a field on an attribute form, this field will display "Linked Data Element."
Data Definition	The data definition on which this element is built
Access	How a user can interact with this field. If it is: ▸ **Read-only**, the field displays information; the user can do nothing in the field ▸ **Editable**, the user can enter text or numbers in the field, or select it if it is a radio button or check box ▸ **Editable (Required)**, the user must enter something in the field, or select an option
Block	The name of the block in which the elements appears on the form
Data Entry	How data will be entered into this field. If it is: ▸ **Manual**, the user should manually enter the data ▸ **Formula**, Unifier will calculate the value for this field and automatically enter it. ▸ **Auto-Populate**, Unifier will automatically populate this field with data
Formula	If the data entry type is **Formula**, uDesigner will show the formula here.
Auto-Populate Source	If the data entry type is **Auto-Populate**, uDesigner will show the source the auto-populated data comes from (such as a referenced business process or a constant value).

This field:	Shows this information:
Source Element	If the data entry type is **Auto-Populate**, uDesigner will show the name (not the label) of the data element the auto-populated data comes from. If the source of the auto-population is a constant value, the content of that value will appear in this field.
Reverse Auto-Populate Destination	If the field on the form is configured to update other information using the **Reverse Auto-Populate** feature, uDesigner will show the name of the record, form, or line item that will be updated.
Destination Element	If the field on the form is configured to update other information using the **Reverse Auto-Populate** feature, uDesigner will show the name (not the label) of the data element that will be updated.
Notes	Any notes that were included when the field was added to the form, such as the field's behavior, or how it is populated.

Selecting Fields for an Email Notification

If your company's employees are often out of the office, Unifier can keep the workflow moving and avoid delays by automatically notifying employees via email of tasks they are responsible for. For example, your company might have facilities managers who are usually in the field and cannot access Unifier; however, they do have a laptop or other access to email. Email notification can include details of the task and a workflow task action, such as "Approve" or "Reject." Employees can review the information and click the Approve/Reject link in the email to respond. When Unifier receives the email, it verifies their identities, processes their responses, and moves the workflow forward.

For another example, project/shell administrators can receive email notification whenever a new project/shell has been created. This notification occurs whether the project/shell was created manually, through Web Services or a CSV file, or by auto-creation. For this example, you could include data elements that pertain to the project/shell creation. The system includes the project/shell details (project/shell name, number, and location) in the email, automatically.

Additionally, project/shell managers can receive email notification whenever a business process is auto-created, or when an auto-creation fails. For these notifications, the following location information will be included, automatically:

- Project/shell name and path

- BP number and both the location of the originating BP and the destination where the BP was created, or failed.

Also, a user can receive email notification that action has been taken on a business process through the Self-Service Portal.

If the user has designated a proxy user in his/her absence, the email notification will also be sent to the proxy.

In uDesigner, you can select the fields from a view form of a workflow or non-workflow business process to include on the email notification. When the form is published to production, the administrator will configure the step that uses this form to enable an email response. To select the fields for an email notification Open the view form that contains the fields you want to include on the email notification. From the View menu, choose Email Notification Elements. uDesigner opens an Email Notification Data Elements window. Use the information in the following table to complete this window.

> **Note:** This feature works with view forms only, except for business processes that are enabled for the Self-Service Portal.

To select the fields for an email notification:

1) Open the view form that contains the fields you want to include on the email notification.
2) From the **View** menu, choose **Email Notification Elements**. uDesigner opens an Email Notification Data Elements window.
3) Use the information in the following table to complete this window.

To:	Do this:
Add fields from the view form to the email	1. Click Add to open the Add Data Elements window. 2. Click the arrow beside the Element Label field and choose the field you want to include on the email notification. **Note:** Do not choose fields that are pictures or images; they will not show up on the email. 3. Click OK. 4. Repeat steps 1 through 3 to add other fields, if necessary.
Remove fields you do not want to include on the email	1. Highlight the data element and click Remove. 2. Repeat this step to remove other fields, if necessary. 3. Click OK.

To:	Do this:
Put the fields in a different order for the email	1. Highlight the data element and click the Move Up or Move Down button. 2. Repeat this step until you arrange the fields in the order you want for the email. 3. Click OK.

Selecting Fields for Unifier on Mobile App

If you are abbreviating a form layout for a mobile device:

- You must include at least one field from each action or view form.
- You must include all the required fields on an action form.

If you include any field that is part of a dynamic data set, you must include all the fields in the set.

To select the data elements for mobile devices:

1) Open the form that you want to make available on the mobile device (business process, asset class form or Shell Attribute Form).
2) In the Form Designer window, click the **Properties** button. The Elements Properties window opens.
3) Click the **Mobile** button. The Mobile Elements window opens.
4) Click the **Add** button. A Column Header Properties window opens.
5) In the **Data Element Label** field, select the field you want the form to show on the mobile device.
6) Click **Add** to add another field, or click **OK** to close the window.
7) On the Mobile Elements window, you can move the fields into the order you want them to appear on the mobile device. Click **OK** to close the window. As shown, the **Mobile** column will display a **Yes** value for every field that appears on the version of the form shown on the mobile device.
8) On the Elements Properties window, click **Close**.

Adding Auto-Sequencing Data Elements

Business process forms can contain data elements that are numbered using auto-sequencing. This functionality requires that the business process upper form or lower form contain up to two data elements that are based on the SYS Auto Sequence data definition.

You can create any number of data elements (fields) using this definition. Fields using this definition provide auto-sequencing of unique numbers for all business processes or line items created. The content of the field is automatically generated based on the format for the auto-sequence data elements that is configured in Unifier. Data elements that use this data definition:

- Are always read-only
- Can be placed in a hidden block
- Are available for Mobile configuration
- Can be selected as a display element of a Data Picker
- Can be added to Integration, marked as Output only
- Cannot be selected as a linked element
- Cannot auto-populate or reverse auto-populate
- Cannot use a hyperlink
- Cannot be part of a Dynamic Data Set definition
- Do not apply to cost breakdown entries

See ***Auto Sequence Tab*** (on page 274) for more details.

Defining Totals (Payment Application Grid and Summary Payment Application Grid)

In uDesigner, you can define the Total property for a particular Data Element (DE) (in case of Payment applications Business Processes (BPs) and Summary Payment Application BPs) for the Standard Tab form.

> **Note**: This feature is not available for other types of BPs.

You can define the Total in three ways:

- **Blank:** There will be no value (empty) in the Total column when the Total field is defined as "Blank" for a data element, within the element properties.
- **Sum of All Rows:** The Total column will contain the value for the "Sum of All Rows" when the Total field is defined as "Sum of All Rows" for a data element, within the element properties.
- **Use Formula Definition:** The Total column will contain the value for the "Formula Defined" when the Total field is defined as "Use Formula Definition" for a data element, within the element properties.

The following table shows the default values in the Detail form, based on the DEs:

Data Definition (DD)	Default Value
Currency Amount	Sum of All Rows
Integer Amount	Sum of All Rows
Decimal Amount	Sum of All Rows
Pickers (all types)	Blank
BP Creator	Blank
Drop-Downs (Pull-downs) (all types)	Blank
String description (all types)	Blank
Short description (all types)	Blank

For DEs having Data Definitions (DDs) other than the Currency Amount, Integer Amount, and Decimal Amount, when you try to add/modify the total property, Unifier displays an alert message: This data entry is not suitable for defining total.

This condition is also applicable to DDs such as:

- Date pickers
- Data pickers
- BP pickers
- BP Creator
- Drop-Downs (Pull-downs) (all types)
- String description (all types)
- Short description (all types)

When you click **Total**, in the element properties, a new window opens and based on the data element (where the Total property has been modified), the default value will be selected.

For DEs having the DDs Currency Amount, Integer Amount, and Decimal Amount, Unifier enables the options "Blank" and "Sum of All Rows," and the default selection will be "Sum of All Rows."

If the data element contains a formula that has been defined in the element properties, the Use Formula Definition is enabled.

If you select "Use Formula Definition," then the same formula that is defined on the data element is used to calculate the Total.

If you reset the DE that has a defined formula (formula defined) to manual, the Total is reset to "Sum of All Rows."

For Amount DE, the blank option is always disabled; therefore, the Amount DE is calculated by using "Sum of All rows" and "Use Formula Definition."

> **Note**: The value 0 (zero) is used as the preference for data elements that:
>
> - Have the following data definitions set to "Blank" in uDesigner: Currency Amount, Integer Amount, Decimal Amount
> - Are used in any formula
> - Are used to auto-populate in the upper form or details form.

Unifier does not allow you to define a formula, in the Element properties, for the special DEs in Payment applications BPs and Summary Payment Application BPs that have predefined formula.

If you try to define a formula, Unifier displays an alert message: This data entry is not suitable for defining formula. The following is a list of special DEs:

- %Complete to Date (uuu_spa_per_comp)
- Amount This period (uuu_spa_amt_tp)

If there are any exiting custom-defined formulas on % (percent) Complete to Date (uuu_spa_per_comp), the exiting custom-defined formulas are retained.

If the DE is reset to Manual, Unifier displays the confirmation message: <DE name> will not be available for defining formula after resetting the data element to Manual. Do you want to continue?

After reset, the values for the DEs (in run-time) are calculated based on the system predefined formula, and you will not be able to add a formula after the reset.

For %Complete to Date (uuu_spa_per_comp), the "Use Formula Definition" option is enabled whether it is DE-defined as Manual Entry or Formula.

For existing BP records, if you had added a custom formula, and the total was being calculated as "Sum of All Rows," you will have the option to use the formula definition, if needed.

For existing BP records, if you use the predefined system formula, you will have the option to calculate Total based on the system based formula.

Defining Summary Totals

If you add a DE "**refid**" that has been configured to point to a **Base Commit BP of SOV type Summary Payment Applications** to the **Upper Forms** of a **Cost-type BP** (*sub-type*: **Line Items with CBS Code** and *classification*: **Payment Applications**), the **Elements Properties** window (of the **Detail Form**) displays these additional elements:

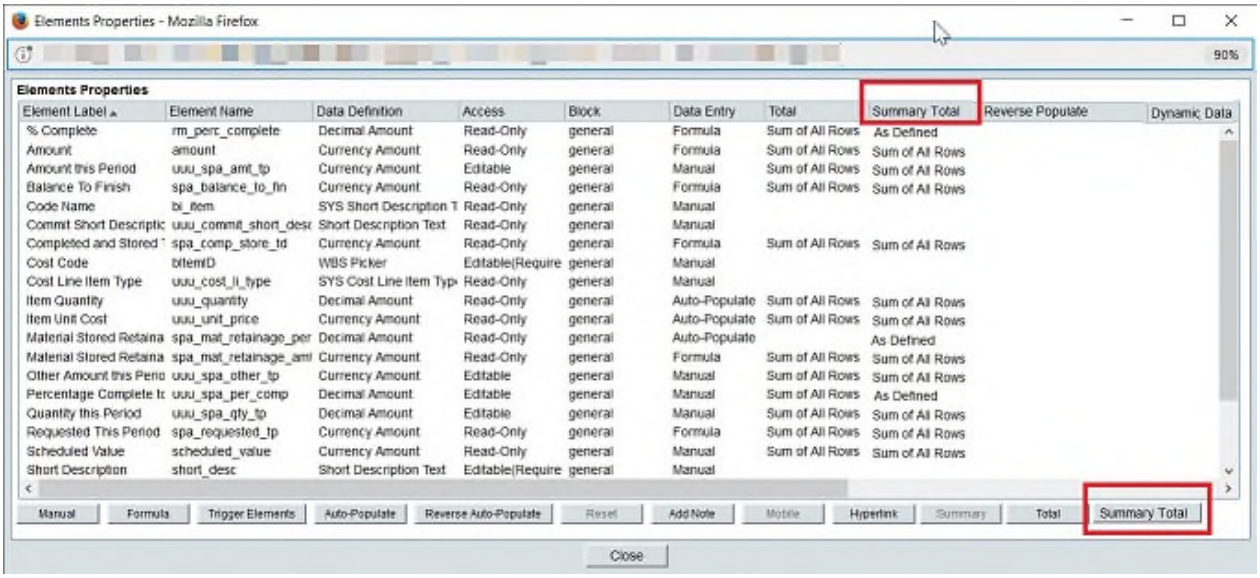
- **Summary Total** column (appearing after the **'Total'** column, highlighted on the image below)
- **Summary Total** option (at the bottom of the window, highlighted on the image below)

> **Note**: The **Summary Total** option is only available to define the Summary Total calculation for the Payment Applications of SOV Type = Summary Payment Applications. This option is not available for Payment Applications Business Process (BP) or any other BP types. Also, if the DE "**refid**" has not been configured to point to the Upper Forms, or it has not been configured to point to some other type of BP, the **Summary Total** option will not be available.

To view the properties:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the applicable Payment Applications with Summary BP.
4) In the left Navigator, select **Detail Form**.
5) Select the applicable form.

6) From the toolbar, click **Properties**.



When you select DEs that only correspond to the **Decimal Amount**, **Currency Amount**, or **Integer Amount** Data Definitions (DDs), the **Defining Summary Total for Column** window opens which enables you to select the following options under in the **Summary Total** block:

- **As Defined**
- **Sum of All Rows**

In the **Defining Summary Total for Column** window:

- If the **Data Entry** for a **Data Element** is set to **Manual**, the option of **Sum of All Rows** is selected, by default.
- If the **Data Entry** for a **Data Element** is set to **Formula** or **Auto-Populate**, the option of **As Defined** is selected, by default.

> **Note**: If the DE is set as **Formula**, select the option **As Defined** for **Summary Total**.

The following examples explain how Unifier processes the **Summary Total** value when the **Data Entry** for a **Data Element** is set to **Manual**:

If:

Requested this period = 69,000.00

Total previous claim = 118,600.00

And:

Total completed to date = Requested this period + Total previous claim

Then:

Total completed to date = 69,000.00 + 118,600.00 = 187,600.00

Result:

This is calculated correctly because this is how the **Summary Total** value is calculated when the **Data Entry** for a **Data Element** is set to **Formula**.

If:

Scheduled value = 165000.00

Total completed to date = 187,600.00

And:

Balance to finish = Scheduled value - Total completed to date

Then:

Balance to finish = 165000.00 - 187,600.00 = -22600.00

Result:

This is calculated correctly because this is how Unifier processes the **Summary Total** value when the **Data Entry** for a **Data Element** is set to **Formula**.

The system-defined field "amount" is an exception to the rules above. That is to state, when the user selects this field and clicks **Summary Total**, the option **As Defined** is selected by default.

The users have the ability to select the other option (**Sum of All Rows**) and click **OK**. Clicking **Cancel** cancels the operation, and closes the window, without making any changes to the selected option.

If the user selects a data element of data definition other than **Currency**, **Decimal**, or **Integer Amount** and clicks **Summary Total**, Unifier displays an error.

If the user selects any of the following system defined DEs and then clicks **Summary Total**, Unifier displays an error:

- scheduled_value
- uuu_spa_prev_amt
- uuu_spa_per_comp

If the user selects no DE and then clicks **Summary Total**, the standard uDesigner error is displayed.

The column **Summary Total** displays the option as selected by the user in the **Summary Total** window. For DEs of Data Definition other than **Currency**, **Decimal**, or **Integer Amount**, the column **Summary Total** displays as blank.

In addition, the **Element Properties** page for a DE on the detail form of a Payment Application BP which refers to a Base Commit of SOV Type = Summary Payment Applications, displays the **Summary Total** field.

> **Note**: This field is not visible for Payment Applications of other types.

Advanced Formulas in Business Processes

In uDesigner, you can create formulas for fields to calculate the value of the fields and display the values, during runtime. The calculated fields are read-only fields. You can also build composite fields that combine string text data elements into one field. Formulas can be created for Numeric, String, and Date fields.

Important Information Regarding Advanced Formula

Advanced formulas are available for hyperlink pickers as a string data element. Hyperlinks are only validated at runtime, not during formula creation.

The advanced formula is not available for the Summary Payment Application (SPA) SOV type BPs (Base Commit Type BP Line Item, Change Commit Type BP Line Item) and Payment Application Business Processes.

When a formula definition includes fields (for example: Record Number, Status, and so forth) that get evaluated after the record has been submitted:

- In case of Workflow BPs, the formula will get re-evaluated upon sending the record to the next step in the workflow and the new value will be seen only when the record is on the next step of the workflow
- In case of Non-workflow BPS, the formula will get re-evaluated when the record is submitted.

In Unifier, you can go beyond simple arithmetic functions and use expression languages when developing formulas.

The advanced formula supports:

- If-then-else conditions on string, numeric, and date DEs
- Complex conditions, for example: ((a or b) and (c and d)) or (e and f)

You can edit, or update, the fields that are a part of an advanced formula definition. The advanced formula fields get re-evaluated after a successful update.

Adding Advanced Formula

The field is an input text field that is editable and required.

You can either type in the Data Element name while building the formula or insert the data elements and functions using their respective fields.

There is no limit to the maximum number of characters allowed in the formula definition field.

Commonly used keyboard shortcuts such as Ctrl+C, Ctrl+V, Ctrl+Z, Ctrl+Y, Ctrl+A, and so forth, will be supported. You can copy and paste the content from other formulas on to the formula that you are designing.

When the formula definition passes error checks, the validation result box will have the following message:

"There is no syntax error in the formula definition. However, there might be calculation errors. The "Sample Calculations" tab is now available next to the Definition tab. Oracle recommends that you review the sample data and fix any calculation errors before saving the formula definition."

Sample Calculations tab

The **Sample Calculations** tab will enable you to look at possible calculation errors resulting from the formula definition.

All the fields that make up the formula definition will be seen as columns in the grid. Sample data will be generated based on the data type.

If there are any errors, the error column will be populated with the error message. Unifier does not have control over the error messages seen.

A user can modify the content of the sample fields and post-cell focus, the values will be recalculated.

An additional Error Check is also provided for the user to re-verify for errors.

The sequence of the columns seen is based on the formula definition.

If the user chooses to save the formula in spite of the formula having calculation errors, the following alert will be seen: There are some calculation errors. Do you still want to save the formula?

When formulas cannot be evaluated, Unifier will try to evaluate the formula. In case the formulas cannot be evaluated, the following values will be set:

- String = blank;
- Date = blank,
- Numeric = blank or 0

Runtime

You can place fields that have advanced formula definition, and evaluate the definitions during runtime, in:

- The business process forms, line item detail form and in grid.
- The business process logs and line item logs.
- The field value: Any time a field value that is part of the formula definition is changed, per below, the destination formula will also get evaluated:
  - Manual edits to data
  - Web service methods (REST only)
  - Mobile app
- When formula fields are used as search parameters in the BP log and Line Item list log, the records will be returned correctly.
- Any form-level validation (the upper form or detail form) which may have designed based on the fields that have advanced.

The following explain the functions and their available formats.

Functions and Available Formats

The following is an overview of the functions and their available formats:

String

Function	Tooltip
(indexOf(String, int))	Starting point of a string within another string starting at a defined point in the string.

Function	Tooltip
(indexOf(String))	Starting point of a string within another string starting at the beginning of the string.
(length())	Length of a string. Formatting a numeric field to a string, for example: numeric value of 9 with a format of "00000.00" would result in a string of "00009.00".
(startsWith(String, int))	Checking to ensure if a string starts within a defined string starting from a defined index. Needs to support indexOf.
(startsWith(String))	Checking to ensure if a string starts within a defined string.
(endsWith(String))	Checking to ensure if a string ends with a defined string.
(substring(int))	Pulling a substring from another string starting at a defined point till the end. This needs to support indexOf.
(substring(int, int))	Pulling a substring from another string starting at a defined point till a defined point in the string. This needs to support indexOf.
(concat(String))	Concatenating stings including being able to define numeric fields as strings.
(contains(String))	Checking to ensure if a string contains another string.
Comparing strings	Not available.

Numeric

Function	Tooltip
(toString(format))	Converting a number or currency to a string with a defined format.
(abs())	Absolute value of a number
(sqrt())	Square root of a number.
(power(int))	Raised to the power.
(log())	Logarithm Base 10.
(ln())	Natural Logarithm.

Function	Tooltip
(min(number, ….))	Minimum of a set of numbers.
(max(number, ….))	Maximum of a set of numbers.
(ceil())	Round up to the smallest integer that is greater than or equal to the value of the field.
(floor())	Round down to the largest integer that is less than or equal to the value of the field.
(round(int))	Round to the number of decimal places.
Comparingnumbers =, !=, >, >=, <, <=	Not available.

Date

Function	Tooltip
(toString(format))	Converting a date to a string based on a defined format.
Converting a datetime to a date only	Not available.
Add or subtract number of days from a date	Not available.
Add or subtract number of months from a date	Not available.
Add or subtract number of years from a date	Not available.
Extracting day, month, or year from a date.	Not available.
Comparing Dates =, !=, >, <	Not available.

The following provides the list of functions:

> **Note**: Use the tooltip to learn more about each function.

String Functions	Numeric Functions	Date Functions
▸ compare(str1,str2) ▸ compareIgnoreCase(str1,str2) ▸ concat(str1,str2) ▸ contains(str,search) ▸ containsAny(str,search1,search2,...)	▸ abs(num) ▸ max(num1,num2) ▸ min(num1,num2) ▸ ceil(num) ▸ floor(num) ▸ log(num) ▸ log10(num)	▸ date(year,month,day) ▸ day(date) ▸ edate(date,months) ▸ eomonth(date,months) ▸ month(date) ▸ now() ▸ today()

String Functions	Numeric Functions	Date Functions
containsIgnoreCase(str,search) endsWith(str,suffix) endsWithIgnoreCase(str,suffix) indexOf(str,search) indexOfAny(str,search1,search2,...) indexOfIgnoreCase(str,search) isAlpha(str) isBlank(str) isEmpty(str) isNumeric(str) isNumericSpace(str) lowerCase(str) upperCase(str) matches(str,regex) left(str,len) leftPad(str,size) leftPad(str,size,padStr) mid(str,pos,len) right(str,len) rightPad(str,size) rightPad(str,size,padStr) replace(str,search,replacement) replaceAll(str,regex,replacement) replaceFirst(str,regex,replacement) startsWith(str,prefix) startsWithIgnoreCase(str,prefix) size(str) strip(str) substring(str,start) substring(str,start,end) truncate(str,maxlen)	pow(base,exponent) round(num,places) sqrt(num) isNumber(num) numberFormat(num,pattern) toDouble(num) toInt(num) toLong(num) cos(num) sin(num) tan(num) acos(num) asin(num) atan(num) cosh(num) sinh(num) tanh(num)	weekday(date) weeknum(date) year(date) addDays(date,amount) addHours(date,amount) addMonths(date,amount) addWeeks(date,amount) addYears(date,amount) dateDiff(start,end) dateFormat(date,pattern) isSameDay(date1,date2) toLong(date) toDate(long)

Rules for Setting Fields as a Formula Destination

The fundamental rules that currently exist in the product for defining formulas on various types of fields will remain the same. The data elements that cannot be set as a formula, will continue to be unsuitable for defining formula.

Example

Data elements such as QBDE, BP Creator, Record Number (record_no), and so forth. If you (designer) select a QBDE as a formula destination, and the user has selected "Pending Changes" (which is a QBDE) with the intent to define a formula on it, Unifier prevents the action.

The data definition of the following Input types will be blocked from being defined as a formula:

- Checkbox
- Pull-down Menu (drop-down list)
- Radio buttons
- Multi-Select Input
- All pickers including Data Pickers

> **Note**: All previous formatting will be lost if you change the data entry method, or type, from Auto-populate to Advanced Formula.

Adding Advanced Formulas

When designing the upper form, in the **Elements Properties** window, you can use the **Advanced Formula** option to set up your advanced formula. The option will be available for "Published" designs, as well.

> **Note**: To reduce the design time, you can set a formula definition, and copy it on to other fields that have similar formula definitions.

You can add any type of formula in the **Advanced Formula** window.

In the **Elements Properties** window, select the data element that allows formula definition to open the **Advanced Formula** window for **<Data Element Name> - <Data Element Label>**. The data element name and label seen in the window title comes from the previous screen of **Elements Properties** window, where you selected a data element that can have a formula definition.

Design Example

To add a formula with delimiters, when you do not see the option of delimiters, you must add Delimiters as string constants.

Submittal number = Project # + " - " + Project Type + " - " + Submittal unique #

In this example, the various parameters that form the formula definition need to be separated by a hyphen. While designing the formula " - "will have to be added. At runtime: Submittal number = San Jose Recreation Park - New Construction - SUB009

Data Elements in the Formula Definition Window

The formula definition window will have the following attributes:

> **Note**: When you save the formula definition, Unifier checks to ensure that there is no circular referencing.

String Data Elements	Numeric Data Elements	Date Data Elements
The list will be alphabetically sorted. The list of all the string type fields that exist in the current form will be displayed. This list will *include* the following: ▸ String Pull Down type fields ▸ Multiple Text Lines fields ▸ Text Box fields ▸ Radio Buttons fields ▸ Multi-Select Input fields The list will *exclude* the following: ▸ The data element for which the formula is being defined	The list will be alphabetically sorted. The list of all the numeric data types that exist in the current form will be displayed. This list will *include* the following: ▸ Numeric Amount fields such as Decimal Amount, Integer Amount, and Currency Amount ▸ Checkbox type fields ▸ Integer Radio button type fields ▸ Integer Pull Down type fields The list will *exclude* the following: ▸ BP creators ▸ All types of Pickers including Data Pickers and Fields of Rich Text Field type ▸ The data element for which the formula is being defined	The list of all the date fields that exist in the current form will be displayed. The list will be alphabetically sorted. The list will *exclude* the following: ▸ The data element for which the formula is being defined

Additional Information

- Unifier does *not* allow linked elements and summary elements to be a part of the formula definition.
- The Type-ahead and list features are supported in all the data elements fields.
- Each function will have a tooltip that will enable you to understand what the function entails.
- The fields are classified based on the type of function.
  - String Functions

- Numeric Functions
- Date Functions

- The functions fields will list all the functions available to be defined. See ***Functions and Available Formats*** (on page 383) for additional details on the functions.

Setting Time Zone in Advanced Formula

The **Time Zone** field is a required field that must be set by you (the designer).

> **Note**: The system by default will always set the time to 5 PM.

At the time of designing the formula, your time zone (the designer's time zone) will be populated into the Time Zone field. As an example, when the designer is in the process of designing the form and if the user's time zone is set to Pacific Time (US & Canada), this field will be populated with this time zone, but you can change it to suit the customer's time zone.

This **Time Zone** field is used only for formula calculation. That is to sate: When an Advanced Formula is using a date function such as 'date diff' with a combination of Date Only Picker and Date Picker, the Time Zone set in the Formula Definition will be used for calculation.

A tooltip will be provided in the Time Zone field with the following content:

> "The Time Zone specified here will be used for any formula calculations involving Date and Date Only Picker fields. In addition, certain Date Functions will also use this value. At runtime, Unifier converts the formula evaluated value to retain the Time Zone of the logged-in user."

Similarly, for date functions such as today(), the time zone specified in the formula definition will be used. At runtime, the logged-in user's time zone will be used for further calculating the resultant value.

In the server, all date objects in Java use the Server time zone, and the code is adjusted to use the user's time zone preference.

Unifier adjusts the time zone of Date Pickers to be set as the server time zone, but does not adjust for the Date-Only picker. Therefore, the result derived from the date difference is adjusted to fit the logged-in user's time zone.

The following scenario provides information about the variety in setting up the time zones options involving date operations (for example formula calculations involving date operations such as 'Date Diff' and 'Date Add'), when the data elements that make up the formula are a Date Picker and a Date-Only Picker.

User A's Time Zone in CA - 2 PM PDT

User B's Time Zone in NY- 5 PM EDT

Server Time Zone in London- 10 PM GMT - Stored in database

For Date Picker fields

When the user A opens the form, the system does the time zone conversion from the server time zone to PDT. In the above example, the time in the server location is 10 PM. The system will deduct 8 hours to adjust to User A's location and set the value as 2 PM PDT.

For Date-Only Pickers fields

Unifier does not do any adjustments, and the time internally is always treated as 12 AM (that is, the time stamp is 00:00). No time stamp is visible to the user.

When a user sees both of these fields, the time stamp is seen as 12:00 AM and 2:00 PM respectively for Date-only. When a 'date diff' is done, the value returned maybe 0 days. When the calculation for date formula is done, the system converts date only picker to have a time stamp of 2:00 PM

Problems could arise based on the time zone when "date difference" kind of operations are performed. The value seen varies depending on the user's preferred time zone.

> **Note**: Data elements built on these definitions cannot be mixed in a formula. Combining Date Picker and Date Only Picker in a formula will lead to unexpected results. If the source is Date Picker, set the destination data element to Date Picker. If the source is Date Only Picker, make sure the destination Date DE is also the Date Only Picker data definition.

Adding a Response List to a Text Business Process

In Unifier, text business processes automatically include a response list that appears at the bottom of the form. This area is where the user can add and organize text comments or file attachments. The response list is designed at the time the text business process is designed. uDesigner creates a default response list for business processes, and only the tab name (the label for the response list area) is editable.

To edit the response list tab name:

1) Open the text form you want to edit.
2) Select the response list in the Response List pane and click **Open**. The Responses window opens.
3) Enter a new name for the Tab Name of the Response List. This is the name that will appear on the tab of the Response List section on the form.
4) Click **OK**.

Previewing the Response List

You can preview the response list at any time to get a picture of how it will look on the form.

To preview the response list:

1) In the Responses window, click **Preview**. A preview of the Response List opens.

   If there are a lot of blocks on the form, you may not see all the fields when you open the form. To see them, expand the form by clicking the tab name or the expand button on the top right of the tab section.
2) Click **Close** to return to the Responses window.

Adding a Text Entry Area to a Form

Text BPs contain a text entry area that appears at the bottom of the form if the business process requires an action. This area is where the user enters the requested text.

uDesigner creates a default text entry form for BPs, and only the tab name (the label for the text entry area) is editable.

To edit the text entry form tab name:

1) Open the text form you want to edit.
2) Select the text entry form in the right pane and click **Open**. The Text Entry Form Designer window opens.
3) Enter a new tab name and click **OK**.

Adding a Reference Process to Auto-Populate Data

Unifier populates the data in some pickers with a *reference process* form. Reference processes are necessary for any form that uses BP or line item pickers. Users use these pickers to call data from another—a *referenced*—business process. The reference establishes a link between the records (for example, an invoice record to a purchase order). Because of this link, record to record, you can populate one form with data from other forms.

To make these pickers effective, you must connect both forms by "mapping" a field on the picker to one on the referenced form. In operation, the picker will point to the referenced form and use the values in the fields you specify to display data on the picker. After the reference link is created, you can use the referenced form to populate any data elements that the referenced and current form have in common.

Likewise, if a form includes a line item picker, the user can select specific line items from a referenced form. To make a line item picker effective, you must specify what line items the user can select from the referenced form. After you do this, the referenced line items will automatically populate those line item fields that the referenced and the current form have in common.

- For asset classes, you can reference only other company-level business processes.
- To populate pickers, the data definition of both fields—the one on the picker as well as the one on the referenced BP— must **match**.

To specify a reference process or line item for a picker:

1) Open the form and click **Reference Processes** in the left Navigator.
2) Click the **New** button. The Select Business Process window opens.
3) From the menu, select the form to which you want the picker or line item to point.
4) Click **OK**. The Reference Process window opens.
5) To complete the **General** tab, use the information in the first table below.
6) Click the **Query** tab.

> **Note:** Unifier lets you select only one Data Element: Status. No other Data Elements are available for selection.

7) Click the **Add** button. The Query Condition window opens.

   Use the information in the second table below to complete the Query tab.
8) Click **OK**.

In this field:	Do this:
Name	Enter a name for the reference process.
Description	(Optional) Enter a description of the purpose of the picker in referencing this process.
Destination Element	Select the data element (the picker) you want to populate. The list displays the fields on the upper form of the BP you are creating. For example, if you are creating an invoice form and you want to link the PO picker to a Base Commit, choose the PO picker.
Reference Process	Shows the name of the form you selected in Step 3. This is the source from which the data will come.
Source Element	Select the field on the referenced form that you want to link to. The list displays the fields on the upper form of the BP you are referencing. **Note:** The field names of the source and destination fields do not have to match, but the data definitions supporting these fields must match.
Location Element	Select the shell where the form you are pointing to resides.
Show reference value as a hyperlink	Select the check box to display the field name as a hyperlink. Users can use this hyperlink to open the referenced form from the detail form you are designing. For example, if an invoice references a purchase order contract, the name of the referenced purchase order will appear as a hyperlink on the invoice form and allow users to open the PO record.

In this field:	Do this:
Allow Line Item Referencing	Select the check box to allow users to refer to specific line items on a detail form. For Destination Element, select the data element (line item) you want to populate. The list displays the fields on the upper or detail form you are designing. For Source Element, select the field in the referenced form. The value in this field will populate the line item field on the form you are designing. The list displays the fields on the upper or detail form you are referencing.
Source Referencing Element	Select the field or picker on the referenced line item that should be updated with the ID of the record from which the line item was selected. At runtime, when a user uses a BP Line Item Picker to select a line item and sends the record forward, the source referencing element will be updated to show the ID of the record from which the user picked the line item. **Note**: You cannot use a BP Line Item Picker in an Activity Attribute Form. At runtime, if the user deletes the line item that updated this source referencing element, or clears the line item picker, the system will clear this field.
Data Element	Select the field you want to appear on the picker.
Condition	Select the condition the field must meet to be included on the picker.
Value	Click the **Select** button and choose the value the data in the field must show to be included on the picker.

Connecting Records in the Same Business Process

Some business circumstances require that records in the same business process be connected hierarchically. For example, a master lease may need to be connected to sub-leases, or a master work order may need to be connected to work order line items. In uDesigner, you can design a business process to create this hierarchy (parent record to child record) by using the Reference Process feature. Using this feature, you can design a business process that will reference itself for the purpose of populating the BP pickers and line item pickers that a user can use to create the records and, along with them, the hierarchy.

As an example, you could create a data element for the BP form, such as a check box, that users could check to indicate that the record they are creating is a master record. Records that should be "child" records to the master would use a BP picker to reference the master record and a line item picker to display the records that were extracted by the reference process query.

To connect records within the same business process, create a reference process using the instructions above, under **To specify a reference process or line item for a picker**.

Auto-populate on Payment Application from a Base Commits BP

You can use the method described in the topic ***Auto-Populating Fields*** (on page 358) to auto-populate a Payment Application with the line items from a Base Commits and Change Commits BP, or you can do it in one step when you design a Base Commits BP. To accomplish the auto-population in one step, you can use the **Options** tab to map the fields when you launch the Base Commit BP.

> **Note:** If you select to auto populate the Payment Application with the line item fields from the Base Commits BP (Auto-populate on Payment Application option on the Options tab), the fields will be available as columns in the SOV sheet. If there are any picker fields that refer to other sources, those fields cannot be added as columns.

You can use this feature only on:

- SOV type Payment Applications
- SOV type Summary Payment Applications (*Base Commits* BP)
- SOV line item type individual commit line items

In operation, the *Base Commits*, *Change Commit*, and *Payment Application* BPs work as a "set." The Payment Application reflects the Base Commit and Change Commit line items. When you design the Base Commit BP to auto-populate the Payment Application, at runtime, Unifier will automatically check any Change Commits for the same field(s) and include their values as well on the Payment Application.

The runtime Payment Application detail form grid receives the auto-populated values from *Base Commits* source into its costed as well as summary lines.

You can configure the Data Elements (DEs) in the Payment Application to receive auto-populated values from:

- Base Commits BP
- Schedule of Values (SOV)

- Any other source (Upper Form, Detail form, Constant Value, Single Record BPs, and so on)

If a DE on the Payment Application is configured to receive auto-populated values from the *Base Commits*, and it is also configured to receive auto-populated values from other sources within the Payment Application, Unifier overrides the auto-populated values received from *Base Commits* in the Payment Application (PayApp). The override applies to the auto-populated values in the costed and summary lines.

When a DE is set to auto-populate from a Base Commit, Change Commit, or an SOV, the auto-populated values takes precedence when 0 value is sent for those DEs in CSV, Excel, or REST API. Any value specified in the input request is ignored and the auto-populated values from Base Commit, Change Commit, or SOV will be used.

When the auto-populated values comes from the Base Commits and auto-populates the costed lines values, other columns may be generated in the PayApp grid. The formulas for those columns are based on the auto-populated costed column.

Auto-populating values are completed in spite of any merge from the Change Commit (SOV and new lines).

All the DEs in the Summary Payment Application grid accept auto-population, and the costed rows receive auto-populated values from Base Commits source, in all instances.

Notes:

- For auto-populating a Payment Application, the data element names must **match**.
- If you configure specific DEs to auto-populate from a Base Commit BP, do *not* configure the same auto-population using CSV, Microsoft Excel, or REST API in an SOV sheet for General Spends, Payment Applications, or Summary Payment Applications.

Caveats

- If the Payment Application is auto-populated using both methods, the "usual" method will override this method.
- You cannot auto-populate the following fields on a Payment Application:
  - amount
  - uuu_quantity
  - bitemid
  - any picker, except a date picker
  - short_desc
  - uuu_unit_price
  - any data element that is part of a dynamic data set on the Base or Change Commit BP

Auto-populate on Payment Application from a Change Commit BP

You can set the values of an auto-populated data element (for Payment Application) to be updated when a line item is referenced in a Change Commit BP. This enables users to see the latest values of the payment records, from the Change Order, when the Change Order is referencing an existing SOV line item that contains the data elements defined in the auto-populate on Payment Application from a Base Commit BP.

In the **Options** tab, the **Settings** block for **Change Commit - Line Items with CBS Code**, you can select to update the data elements that auto-populate on Payment Application. This selection is applicable for the:

SOV Type: Payment Applications or Summary Payment Applications

SOV Line Items: Individual commit line items

As a part of the Change Order business process design, if you (the designer) select this option, and at runtime when a Change Order references an existing SOV line item, the data elements defined in **Auto-populate on Payment Application** are updated and then the SOV is updated.

Auto-Populate Scheduled Value and Commit Remaining Balance in Change Commits and General Spends

To auto-populate the **Schedule Value** and **Commit Remaining Balance** from the referenced SOV line item into the **Detail** form of the Change Commit BPs, select **Scheduled Value** (uuu_scheduled_value) and **Commit Remaining Balance**(uuu_commit_remaining_balance) in the **Source Elements** window. The **Element Properties** log of the Standard **Detail** form displays **Commit Line Item picker/ Reference** as an additional source to auto-populate.

This selection is applicable for:

BP Types: Change Commit (All SOV Types having line item with CBS Code) , General Spends

SOV Types: General Spends, Payment Applications, and Summary Payment Applications

> **Note**: To ensure **Commit Line Item Picker/Reference** displays as a source for auto-population, ensure you include the data element, `uuu_sovlinum`, in the standard **Detail** form.

To auto-populate the **Schedule Value** and **Commit Remaining Balance** from the referenced SOV line item into the **Detail** form:

1) In the Change Commit Detail form, add the **uuu_sovlinum** data element,
   or
   In General Spends BP, add the **bitem** data element.
2) Select a custom data element and click **Auto-populate** from the **Element Properties** window.
3) In Change Commit BP Detail form, select the source as *commit line item picker/label of uuu_sovlinum data element*
   or

In the General Spends BP, select the source *SOV Picker/ label of data element bitemid*'

4) In the **Source Elements** window select **uuu_scheduled_value** or **uuu_commit_remaining balance.**
5) 5.Click **OK**.

Auto-Creating a Record or Line Item from a Form

There are several ways to automatically create records in Unifier. If a business process has a workflow, a new record can be created when the form reaches a specific **status**. (For information on this method, see ***Auto-Creating a Record from a Workflow*** (on page 453).) If you use the Scope Management feature in the Schedule Manager, an activity on the schedule sheet can create a new business process record for a self-managing project. (For information about this method, see ***Automating a Schedule Using Scope Management*** (on page 113).) For information about copying line items from a source BP to a destination BP, see ***Mapping Line Items from References during BP Creator Auto-Creation*** (on page 328).

> **Note:** Because a Summary Payment Application (SPA) BP contains two sub-tabs—Line Item and Cost Breakdown—on the Detail Form, the system does not support I-Step or S-Step auto-creation of line items from a non-SPA BP to an SPA BP.

Using another method—the one described here—you can manually or automatically create a new record based on:

- A **condition**, such as a dollar amount
- A **frequency**, such as a daily or weekly time frame

> **Note:** Line items cannot be created with a frequency trigger.

- Both a **condition** and a **frequency**

When the form reaches the trigger(s), the form will automatically create a new record. (Or a line item on the form will create a new record or line item.)

For example, you could auto-create a new record for a lease that automatically generates payment requests on appropriate days, using a pregenerated payment schedule, and routes them for approval. Or, you could auto-create a record that generates work orders for your company's assets at periodic intervals, depending on the service needs of the asset. You could also auto-create a planning item when an initiative business process has been approved. The planning item could then be fleshed out with details, such as budgets, locations, personnel.

After a new **workflow** record is created, it is sent to the assignees as an **initiation task (I Step)** that appears on the user's Tasks log and the BP log to which the record belongs. If a new record is sent as an initiation task, the user must accept the task to manually launch the record.

After a new **non-workflow** record is created, it is sent to the designated creators as an **initiation task (I Step)** that appears on the user's Tasks log and the BP log to which the record belongs. The user must accept the task to view the record.

> **Note**: Regardless of the number of assignees or creators, only one user

may accept the I Step task.

The difference between condition-based auto-creation and workflow auto-creation:

Upper/detail form auto-creates a record (using a BP Creator element):	**Workflow link auto-creates a record (S-Step):**
Creates a new record from an upper form or from a line item list	Line item lists are ignored
Creates a new record when the workflow reaches a specific condition or time frequency (or both)	Creates a new record when the form reaches a specific step
Creates multiple records if records are generated from the detail form (line item list); individual line items can be copied or ignored	Creates one record that contains an exact duplicate of the information in the original record—all information that was contained in that transaction, including forms, and attachments
Can specify where the new record will reside (such as a project, or shell)	New record will reside in the same place as the source record
Can specify who will own the new record	User who owns the original record becomes the owner of the auto-created record

Upper/detail form auto-creates a record (using a BP Creator element):	Workflow link auto-creates a record (S-Step):
After being created, a new record (workflow or non-workflow) appears as an initiation step (I Step) on the user's Tasks log and the BP log. The user must accept an initiation step task to launch the record into the workflow. For non-workflow records, the user must accept the task to view the record. If the I Step is bypassed: Workflow records are sent automatically to the next step in the workflow. When the record is created, data will roll up to manager sheets unless Unifier encounters errors (in which case, the record will remain at the Create step until the user resolves the errors). Non-workflow records are auto-created and appear in the BP log in either an "edit" or "finish edit" mode. If it appears in an "edit" mode, the user will have to open the record and add or correct information on the form. If it appears in a "finish edit" mode, the record is considered complete, and data will roll up to manager sheets.	After being created, the new record is sent automatically to the next step in the workflow.

Bypassing the I Step

During a business process setup, the administrator can set up an auto-created workflow BP to skip the initiation step and send the record directly into the workflow, where it normally arrives at the first step after the Create step (or the first step in a conditional routing). For a workflow BP, the administrator can specify the schema, the step in the workflow that the record should use as its first step, the workflow duration, and the name of the person or group who will be the owner of the auto-created record. When the record is created, data will roll up to manager sheets at the appropriate status; however, if Unifier encounters errors or invalid data, the record will remain at the Create step, and rollups will not occur until the user resolves the errors.

For a non-workflow BP, the administrator can set up an auto-created record to skip the initiation step. In this case, the non-workflow BP will be created and will appear in the BP log in either an "edit" or "finish edit" mode. If it appears in an "edit" mode, the user will have to open the record and add or correct information on the form. If it appears in a "finish edit" mode, the record is considered complete, and data will roll up to manager sheets.

Auto-Creation Protocol for Bypassing the I Step

Auto-creation uses details specified in the BP Creator element to create the record. If these details are not present in the BP Creator element, the auto-creation feature will use the following protocol to attempt to create the record.

For a Non-Workflow BP	For a Workflow BP
Checks for owner specification: ▸ Checks the source BP setup ▸ Checks the destination BP setup If no owner can be identified, sends an error notification to those specified in source BP. Checks for status: Checks the destination BP setup If no status found, creates the record and puts it into "edit" mode for user to correct.	Checks for owner specification: ▸ Checks the source BP setup ▸ Checks the destination BP setup If no owner can be identified, sends an error notification to those specified in source BP. Checks for a workflow schema: Checks the destination BP setup If no schema is specified, the record will be sent as an I Step to the user's Tasks log and the BP log to which the record belongs. The user must accept the task to manually launch the record. Checks for an action specification: Checks the destination BP setup If no action is specified, the record will be sent as an I Step to the user's Tasks log and the BP log to which the record belongs. The user must accept the task to manually launch the record.

Auto-Populating the New Record

Auto-creating a record includes auto-populating fields (data elements) on the new form. To auto-create a new record using this method, you must decide how you want to auto-populate the new record—using the upper form or the detail form of the source record. Unifier offers three types of auto-creation:

- Record-to-record creation
- Line-item-to-record creation
- Line item creation

> **Note**: Auto-populated field values will override any field values that have migrated with the auto-creation.

Record-to-record Auto-Creation

Record-to-record auto-creation has the following characteristics:

- Creates a single record.
- The source record populates any upper form fields on the destination record that the two records have in common (that is, their data element names match).
- By mapping, you can move the contents of the tabs on the source record to tabs on the destination record. The tab names do not have to match. The source record populates any fields that the tabs on the destination record have in common with it.

Line-Item-to-Record Auto-Creation

Line-Item-to-record auto-creation has the following characteristics:

- Each line item that contains a creator element will auto-create a new record. For example, if source tab **A** has a creator element on 10 line items, and source tab **B** has the same creator element on 7 line items, 17 new records will be auto-created.

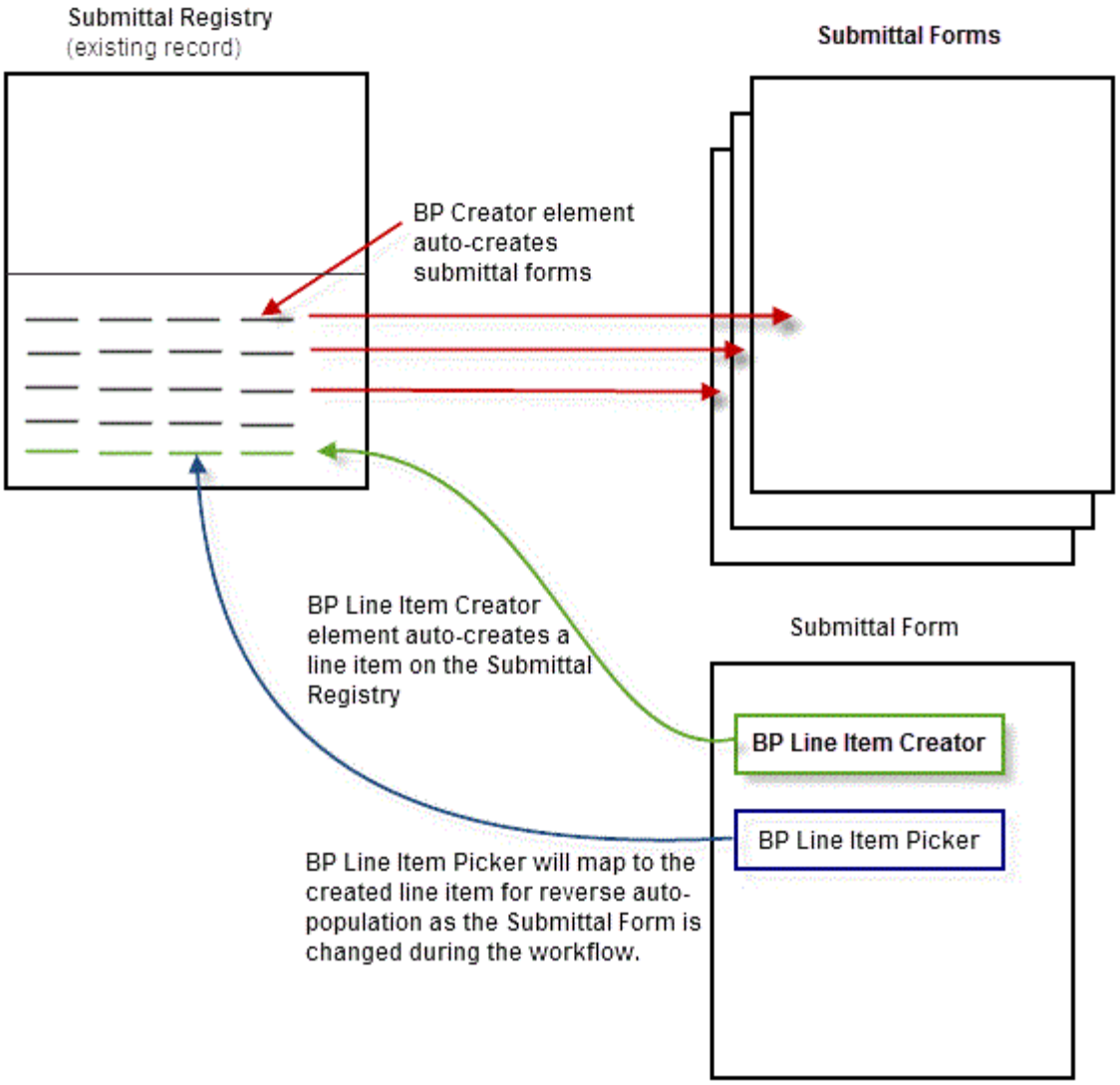
  Sometimes creating a record for every line item is cumbersome. You can end up with 17 records that differ in only one aspect, such as a color. For cases like this, administrators can group line items for auto-creation to create fewer generated records. In a simple example for a lumber yard order, you might have doors made of wood or steel, both in colors of white and red. You could group the line items according to the material (wood or steel) and color (red or white) to create fewer work order records. This kind of grouping for auto-creation is set up by the Unifier administrator. For more information about setting up business processes, refer to the *Unifier Modules Setup Administration Guide*.
- The source record populates any upper form fields on the destination record that the two records have in common.
- You can use line items on the source record to populate fields (data elements) on the upper form of the new record if the data element names match.
- If you map the contents of any tab on the source record to tabs on the new record, this type of auto-creation will also copy the line items of those mapped tabs to tabs on the new record. The tab names do not have to match. The source line items will populate any fields that the tabs on the destination record have in common with it.

Line Item Auto-Creation

Line item auto-creation is useful for adding new line items to an existing record. For example, a submittal registry record could contain line items that auto-create separate submittal business process forms for each contractor on a project. In the course of work, someone might realize that the original submittal registry record is missing a submittal for an architectural drawing. That person could submit a new submittal record that would add the missing architectural drawing submittal to the original registry record.

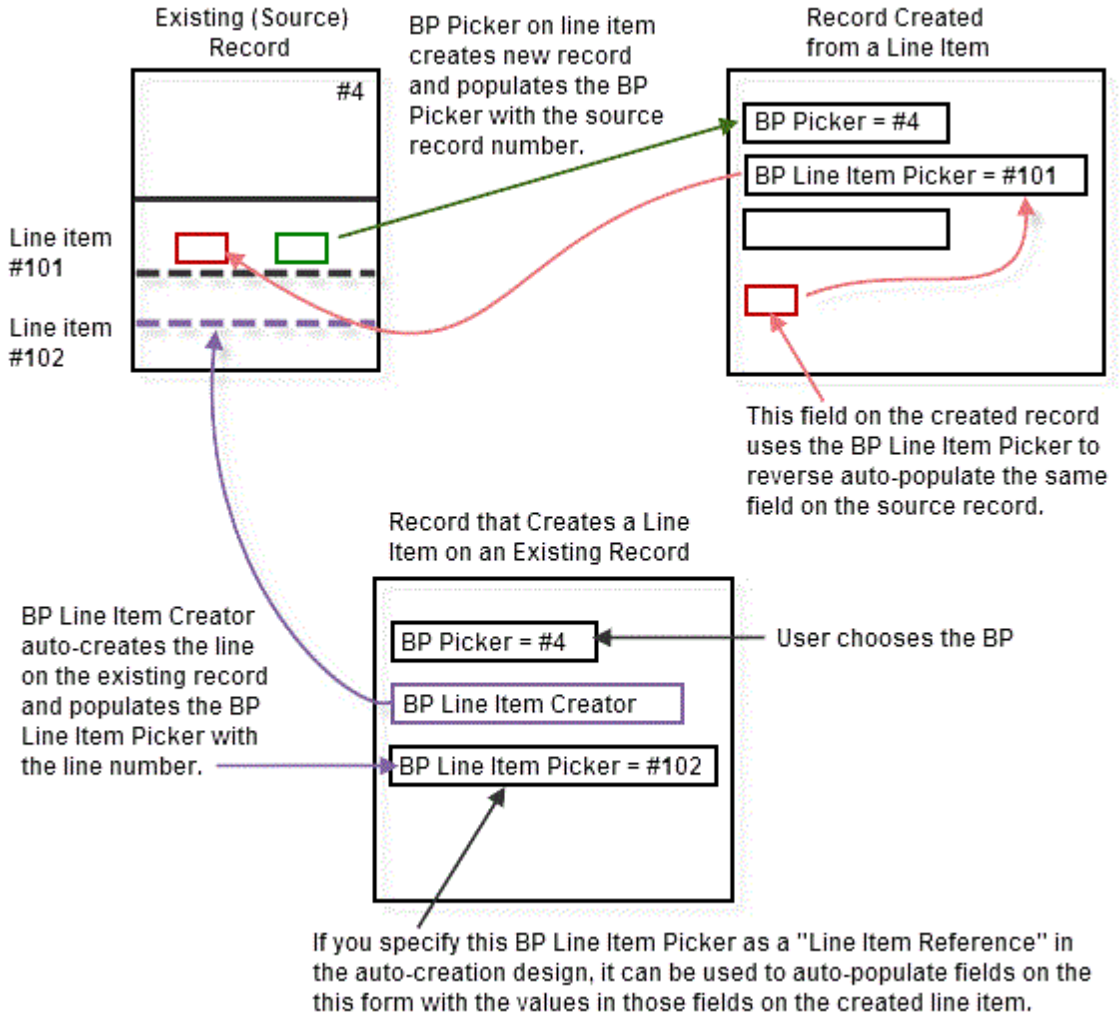
uDesigner provides a BP line item creator element to auto-create line items. You can place this creator element on either an upper or detail form. This element will auto-create a new line item on another, existing, record and populate the fields of that line item with the values of the fields on the form (upper or detail) that auto-created the line item.

You can set up reverse auto-population so that the line item added to the existing record can be updated with information as the record that created the line item moves through subsequent steps in a workflow.



How Creator Elements and Pickers Function in Line Item Auto-Creation

Pickers and creator elements work together to auto-create line items.

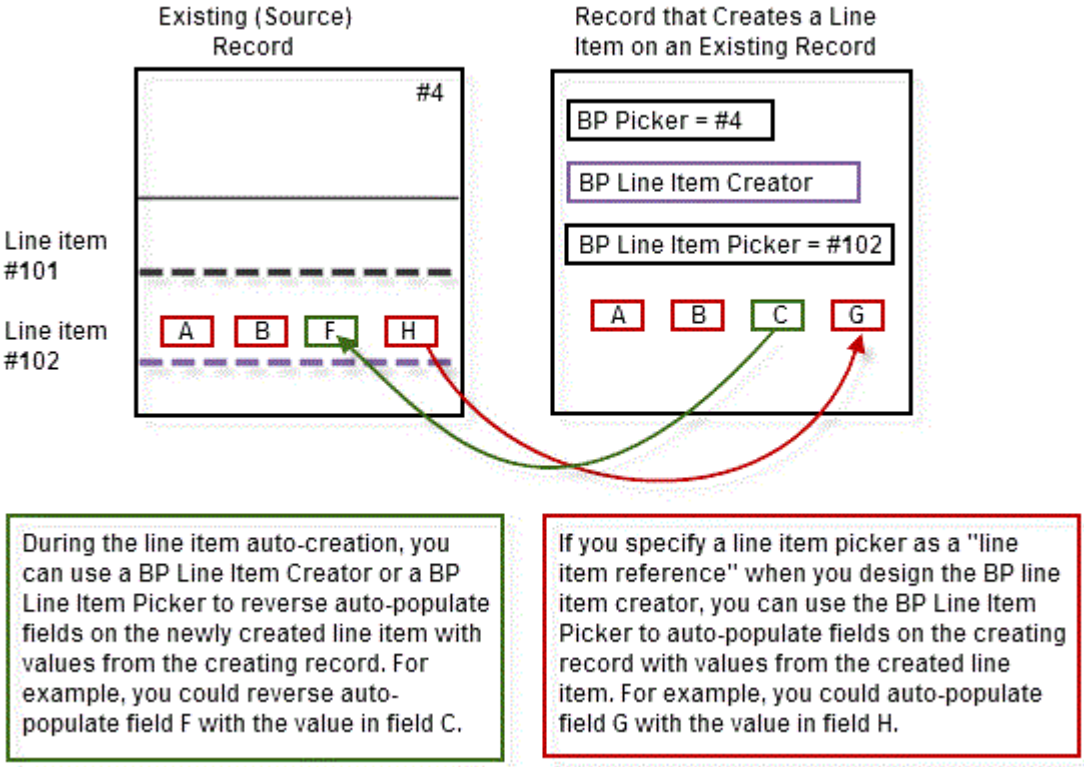


Auto-Population and Reverse Auto-Population in Line Item Auto-Creation

To populate and reverse auto-populate fields on business processes and line items with line item creation, you can use the following data elements in collaboration:

- BP Line Item Picker

- BP Line Item Creator



Note: You cannot use a BP Line Item Picker in an Activity Attribute Form.

Preparing the Auto-Creation

To use this method of auto-creation, you must first:

1) Create data elements based on these data definitions:
   - **BP Creator** (for creating a business process record)
   - **Planning Item Creator** (for creating a planning item record)
   - **BP Line Item Creator** (for creating a line item on another, existing, business process record)

   These elements use built-in intelligence to create records or line items and create hyperlinks from the original record to the new records or line items that have been generated.

   For example, to auto-create a work order record, you might create a BP creator data element called "Work Orders." To auto-create a planning item from a business process, you might create a Planning Item Creator element called "Type."

   Note: For more information on the BP Creator, BP Line Item Creator, and Planning Item Creator data definitions, refer to the section on data definitions in the *Unifier Data Reference Guide*. For instructions on

creating data elements, see the information beginning with ***Creating a Data Structure*** (on page 217).

2) Create the forms for both the source record and the destination record (the record or line item that will be generated). You cannot map the elements from one record/line item to the other until they both exist.

   The best practice is to first create the destination form (the one that will be auto-created); then create the source form and set up the auto-creation processes for it. For this, you must determine exactly what the destination form should contain. After you have determined the look of the generated form, you can then design and create the source form that will automatically populate the generated form.

3) Place the BP Creator element(s), BP Line Item Creator element(s), or the Planning Item Creator element(s) on the upper or detail form of the source record from which you are going to generate the new record or line item.
   - If you want **record-to-record** auto-creation, place the creator element on the upper form.
   - If you want **line-item-to-record** creation, place the creator element on the detail form.
   - If you want **line item creation** on an existing record, place the line item creator element on either the upper or detail form.

You can use multiple different creator elements on a single form to auto-create different types of business process, line items, or planning item records. For example: A user wants to create a service request that is routed for approval, upon which a work order is auto-created. When the service request is complete, the work order will automatically create the charges against the work order.

Creator elements:

- Cannot be copied
- Cannot be used in a dynamic data set (DDS)
- Cannot be placed on a RFB bidder form

Setting Up the Auto-Creation

When you auto-create records or line items from an upper or detail form, you can specify multiple creation criteria in uDesigner:

For an auto-created record:

- The owner of the new record
- The workflow duration of the new record
- The location where the new record should reside
- The auto-creation method to be used (record-to-record or line-item-to-record)
- The record that the creating record should populate
- A link from the source record to the new record
- Line item auto-population onto the new record

For an auto-created line item:

- The record on which the new line item will be created

- A line item picker that will reference the line item being created, which can then be used to reverse-auto-populate the new line item
- The tab on which the line item will be created
- Other fields that will be populated with a reference to the record that created the line item

To set up the auto-creation:

1) Open the form from which you want to generate a new record or line item.
2) In the left Navigator, select **Auto-creation Processes**.
   - Click **Upper** to auto-create a record record-to-record.
   - Click **Detail** to auto-create a record from the line item list (line-item-list-to-record).
   - Click **Detail** to auto-create a line item to add to an existing form.

   The right pane lists the creator elements that were placed on the upper or detail form. The log also shows:
   - The name of the business process that will be created, or the name of the business process to which a line item will be added
   - What the auto-creation process creates: a record or a line item
3) Double-click the name of the creator element you want to configure. An **Auto-Creation** window opens. This window differs depending on whether you are auto-creating a record or a line item.
4) Use the information in the table below to fill in the fields in this window.
5) Click **OK**.
6) Repeat steps 3, 4, and 5 for any remaining creators on the form.

In this field:	Do this:
Trigger Element	Shows the name of the creator element you selected in Step 3.
Record Owner Element	(Optional) Choose the user or group who should receive this task. If you leave this field blank, the administrator can specify a default owner when he/she sets up the auto-creation. The list will get populated with all the user pickers existing in the form. **Note**: If the user's status is not active, if a group name contains no active members, or if the user does not exist in the group, the auto-creation will fail.
Location Element	Select the location where the new record should reside, such as at company level, or in another project/shell. If you leave this field empty, Unifier will spawn the new record in the same location as the source record.

In this field:	Do this:
Duration Element	Select the duration (in days) of the workflow for the new record. Use this to override the workflow duration specified in workflow set up If you leave this field blank, the new record will use the duration that is specified in the workflow setup. The field gets populated with all the integer amount fields existing in the form. (This field is not applicable if you are creating a non-workflow record.)
Due Date Element	Select a **Date Picker** data element that will be used to populate the **Record Due Date** in the auto-created destination workflow BP. If a date picker is not selected before auto-creation, the created record will use the **Duration Element** instead only if the **Due Date Element** and **BP Creator** have been selected in the same form. Depending on the entries made in the uDesigner forms, Auto-creation Setup, Unifier Admin, and the source record in user mode, the **Record Due Date** in the auto-created destination BP will be populated as explained later in this topic.
Creation Method	Shows whether the auto-creation is being made record-to-record (using the Upper form) or line-item-to-record (using the Detail form)
Auto-create Records	Select the destination record where this record should populate.
Display Element (appears for both business process and line item auto-creation)	Select the field you want to appear as the link from the source record to the new record being auto-created. The list displays all the fields on the source record. The field you specify here will appear on the source record as a hyperlink to the new record. If the auto-creation creates a line item on an existing form, the field you specify here will appear on the creating record, showing the name of the line item that was created.

In this field:	Do this:
Show reference value as hyperlink	Select the check box to display the field name as a hyperlink. Users can use this hyperlink to open the new records that have been generated from this form. For example, if a payment request record was auto-created from a lease record, the name of the payment request record will appear as a hyperlink on the lease form and allow users to open the auto-created record.
Auto-populate from Line Item to upper form	Select this check box if you want to include line items on the upper form of the new record. If you check this box, data elements on the upper form of the new record will be populated with line item data from the source record, but only if the data elements—the one on the line item of the source record as well as the one on the new record—**match**.

In this field:	Do this:
Specify Source and Destination tabs	Use this part of the form to map line items to data elements on the new record for auto-population. Note: Data will not be copied into any tabs that are hidden. **Record-to-record auto-creation**: If you map a tab on the source record to a tab on the new record, all the line items from the tab on the source will be copied into the tab on the destination (new) record. **Line-item-to record auto-creation**: With this method, a user can selectively choose which line items should generate new records. **Source tab name** lists the tabs on the source record. **Destination tab name** is a drop-down list of the tab names on the destination record. This is where you can map the contents of a source tab to a different tab on the destination record. **Note**: Line items will not be copied if either the source tab name or destination tab name that displays in the auto-creation processes - Upper or Detail setup is incorrect. If you update a source or destination tab name of a BP from the **Item Logs** navigation menu, it will auto-remove it from the auto-creation settings, and during error check, a warning message to verify the tab-name mappings for auto-creation displays. If you are using **record-to-record creation**, the new record will show the tabs and line items you mapped here. If you are using **line-item-to-record creation**, one record for every mapped line item on the source record will be created. So, if source tab **A** has 10 mapped line items and source tab **B** has 7 mapped line items, 17 records will be created.

In this field:	Do this:
Target Record Element (line-item creation)	Select the field (usually, a BP picker) on the form that identifies the record where the line item should be created. This field is part of establishing the link between the line item on the existing record and the record that created it. **Note:** If a shell picker and the BP picker you specify here are linked, if the user resets the shell picker value, the BP picker will also be reset, as will the BP Line Item Creator. Unifier will re-populate any fields that were auto-populated from the BP picker, and will also recalculate any formulas on these fields.
Line Item Reference (line-item creation)	Select the line item picker that references the created line item. This field links the line item on the existing record to the record that created it for auto-population and reverse auto-population purposes.
Destination Tab (line-item creation)	Select the tab on which the record containing the line item to create resides.
Source Record Element (line-item creation)	Select the BP Picker, BP Creator, or BP Data Picker that will be populated with a reference to the record that created the line item.

Due Date Behavior in Auto-Creation Settings

uDesigner Auto-Creation Setup (Due Date or Duration Element)	Duration Value in Admin Mode (Auto-Creation Setup)	Due Date Behavior
Neither Due Date nor Duration Element is specified	Not defined	The system assigns a Due Date based on Workflow Settings of the auto-created BP record.
Neither Due Date nor Duration Element is specified	Defined	The Due Date is calculated based on the defined Duration days in Admin mode.

uDesigner Auto-Creation Setup (Due Date or Duration Element)	Duration Value in Admin Mode (Auto-Creation Setup)	Due Date Behavior
Due Date Element is specified	Defined	If the source record includes a Date Element, the auto-created BP record inherits the source record's Due Date.
Due Date Element is specified	Defined	If the source record does not include a Date Element, the Due Date is calculated based on the Duration value in Admin mode.
Duration Element is specified	Not defined	If the source record does not include a Date Element, the Due Date is calculated based on Workflow Settings of the auto-created BP record.

Dynamically Updating an Auto-Created Record or Line Item

You can design the source business process (the one that auto-creates new BP records or line items) to update a field on the auto-created record or line item whenever the value of a field changes on the source BP. In operation, the source BP will "push" field value changes to the auto-created BP records or line items.

> **Note**: This feature is not available for planning item records.

To dynamically update auto-created records and line items, you need to use the Reverse Auto-Population feature in the business process design.

To update an auto-created record or line item:

1) Open the business process containing the creator element that auto-creates the new business process or line item.
2) Open the form (upper or detail) that contains the creator element.
   The Form Designer window opens.
3) From the toolbar, click **Properties**. The Elements Properties window opens, showing a list of the fields (data elements) on the form.
4) Highlight the field you want to update the auto-created business process or line item and click the **Reverse Auto-Populate** button. The Reverse Auto Populate window opens. The **Source Element** shows the field on this form that will update the field on the auto-created form. When this field value changes in Unifier, it triggers the update of the **Destination Element**.

5) In the **Destination Name** field, choose the name of the business process or line item that will be auto-created by the creator element on this form.

   This field creates the link between the source business process and the auto-created business process or line item created by the creator element.

6) In the **Destination Element** field, click the **Select** button and choose the name of the data element you want to be updated on the auto-created business process p or line item.

   In operation, when you enter the Destination Name, uDesigner checks the integration interface you created for the form you want to update. It locates any fields with data definitions that match those of the Source Element and displays them when you click the Select button.

7) Click **OK**, and then click **Close** on the Elements Properties window.

8) On the Form Designer window, click **Save**, and then click **Close Window**.

Supporting Commit Line Item Pickers During Auto-Creation of Change Commit BPs

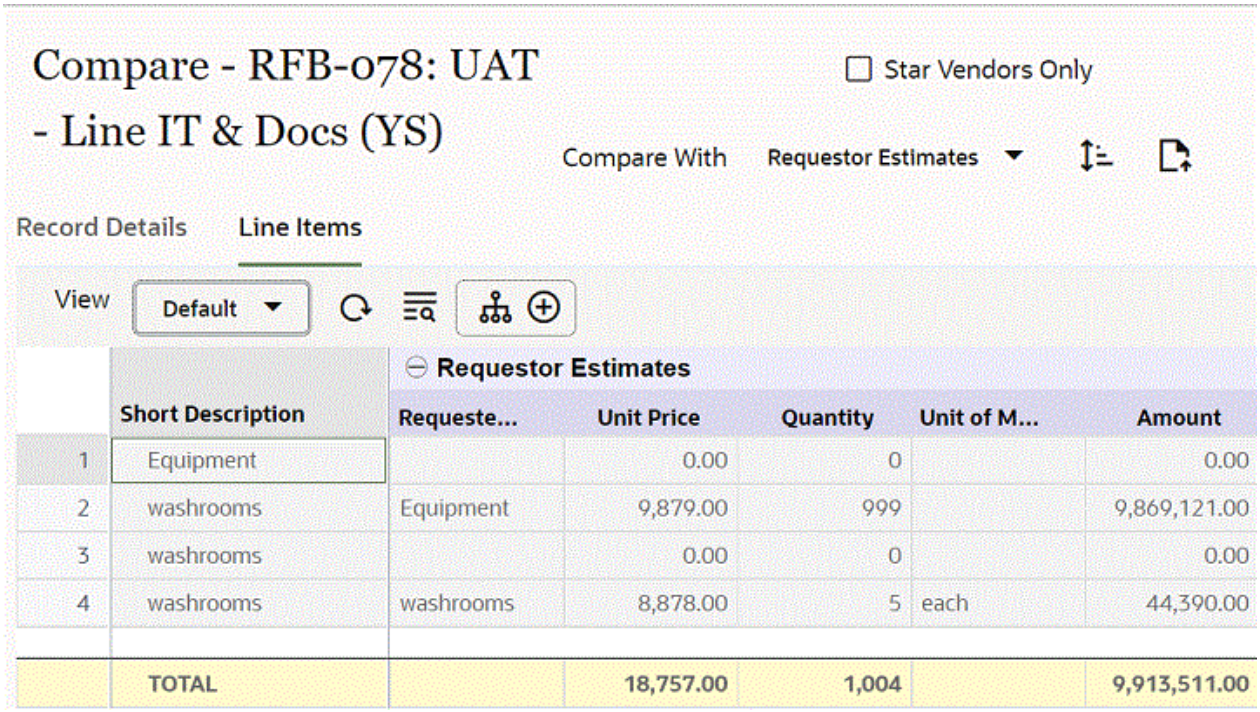
To ensure your users can copy commit line items picker values into auto-created line items in the destination record that refer to the same contract in the same shell, ensure that the:

- Source and Destination BPs belong to the Classification, **Change Commit**.
- Source and Destination records refer to the same contract.
- The Destination BP record is auto-created in the same shell.
- Source and Destination BPs have commit line item picker in the **Detail** Form.

For example, for Change Orders (Destination BP) that are auto-created from Pending Change Orders (Source BP) which refer to the same contract, the Reference value (**uuu_li_sovnum**) will be copied from the source into the destination record line items.

Designing a Bid Comparison Sheet for an RFB

For the Request for Bid (RFB) business process, Unifier includes a bid tabulation feature. This feature provides a default comparison sheet with which users can compare the bids they receive from vendors.



	Short Description	Requestor Estimates				
		Requeste...	Unit Price	Quantity	Unit of M...	Amount
1	Equipment		0.00	0		0.00
2	washrooms	Equipment	9,879.00	999		9,869,121.00
3	washrooms		0.00	0		0.00
4	washrooms	washrooms	8,878.00	5	each	44,390.00
	TOTAL		18,757.00	1,004		9,913,511.00

The default bid comparison sheet (shown above) shows only the bid dollar amounts for each line item for which the vendor submitted a bid.

Alternatively, you can design a custom bid tabulation sheet in uDesigner that can include more information in a layout specific to your company's needs. Using a custom bid comparison sheet, you can compare vendors on criteria besides price, such as certifications and re-negotiated line item prices. You could also add comments to the submitted bid that can be displayed on the bid tabulation. This sheet becomes part of the RFB process; users can view this sheet from the RFB when the bidding has ended.

> **Note**: You can design only one custom bid comparison sheet for your company.

To design the bid comparison sheet, you will create upper and detail forms, as you would any business process. You must design the bidder form first, as uDesigner automatically enters the fields from this form on the sheet design. In addition, you can add other elements to the design from the Custom Data Elements list.

> **Note**: The bid comparison sheet must match the upper and detail forms of the bidder's BP. When you create the design for the sheet, uDesigner automatically adds the data elements from these forms. If you later add or remove an element from the bidder forms, you must also add or

remove it from the sheet.

The custom-designed bid comparison sheet shows the following:

- General bid information from each vendor who submitted a bid.
- Each line item from the RFB that the vendor has bid on. If the vendor adds line items of their own to the bid, these line items will appear on the sheet as well.

To design a bid comparison sheet:

Note: You cannot use the following on a Bid Comparison Sheet: Dynamic data sets, Formulas, Auto-population, and the Value reset feature.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the RFB business process.
4) In the left Navigator, select **Bid Comparison Sheet**.
5) Click **Upper**, and then click **New** on the right pane. The Upper Design Properties window opens.
6) On the **General** tab, enter a **Name** and **Description** for the form.
7) Click the **Data Elements** tab. uDesigner displays a list of the data elements that were included on the upper form of the bidder form. uDesigner automatically adds these elements to the upper form of the comparison sheet. These elements will be read-only.

   You can add other data elements to the Bid Comparison Sheet if you want.
8) To add additional data elements to the sheet, click the **Add** button and choose:
   - From Bidder Form to add elements from the bidder form. Fields from the bidder form will be read-only.

     Note: uDesigner automatically includes the elements from the bidder form. Use the **From Bidder Form** option if data elements were added to the bidder form after the bid comparison sheet was designed and activated. Because the sheet must match the bidder form, if new elements were added, use this option to add them to the sheet.
   - The Add Data Element window opens. In the **Element Label** field, select the data element you want to include on the comparison sheet and click **Add**.
   - **Custom** to add elements from the list of custom data elements available for designing all business processes. Fields you choose from this list will be editable.

   Select the element you want to include on the comparison sheet and click **OK**.
9) On the Upper Design Properties window, click **OK**.
10) In the left Navigator, select **Detail**, and then click **New** on the right pane. The Detail Design Properties window opens.
11) To design the detail form, repeat steps 3 through 6.

Hiding a Data Element on the Sheet

After a Bid Comparison Sheet is in use in Unifier, you cannot remove any data elements from it. You can, however, hide the custom data elements if you no longer want them visible.

> **Note**: You cannot hide the data elements that came from bidder forms. You can hide only those data elements that have been added from the Custom data elements list.

To hide an element:

1) Open the RFB business process.
2) In the left Navigator, select **Bid Comparison Sheet**, and then select **Upper** or **Detail**, depending on where the element you want to hide is.
3) Click the **Data Elements** tab.
4) Select the data element you want to hide and click the **Hide** button.

To "unhide" an element:

1) Open the RFB business process.
2) In the left Navigator, select **Bid Comparison Sheet**, and then select **Upper** or **Detail**, depending on where the element you want to show is.
3) Click the **Data Elements** tab.
4) Select the data element you want to show and click the **Show** button.

Saving a Version of a Design

As a designer, you will often be asked to change a business process or manager and then redeploy it to production. Especially with business processes that evolve over time, many changes can result in a muddle of form and workflow variants, some with major changes and others with fine-tuning tweaks.

uDesigner offers a versioning feature with which you can save distinct versions of a design (including template designs), and, if necessary, restore all or part of a published design to a previous version. This feature makes the ongoing evolution of a manager or business process design easier to track and control.

To save a version of a design, you will be using uDesigner's snapshot function. The snapshot function creates a version of a business process that includes the upper and detail forms as well as the workflow(s), if any. For managers and shells, the snapshot function includes the detail form and any other components that were designed for the manager. When you take a snapshot, uDesigner will time stamp it with the date and time it was created.

Using the snapshot function, you can create distinct versions of a design and, thereby, create an audit trail of the changes you have made to it.

Taking a Snapshot

You can take a snapshot of a BP design at any time during the design process, when the BP is in draft status. uDesigner will add the snapshot to a log of snapshots that you will see only if you choose to restore a BP version (see ***Restoring a Version of a Design*** (on page 416)).

> **Note**: uDesigner automatically takes a snapshot of a design whenever it is marked "Complete" and also whenever it is published to production.

To take a snapshot of a design:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes** or the manager or shell you want to work with.
3) From the log on the right pane, open the BP/manager/shell you want to take a snapshot of.
4) From the **File** menu, choose **Snapshots**. The Snapshots Log opens.
5) Click **New**. The snapshot Properties window opens.

> **Note**: The New option will not be enabled unless the user is signed in as the owner of the business process.

6) Enter a name and description for the snapshot and click **OK**.

   uDesigner creates a snapshot of the business process's, manager's, or shell's forms and the workflow(s), if any, and displays the name of the shot on the Snapshot Log along with the date and time it was created.

Restoring a Version of a Design

As you try out versions of a business process, manager, or shell design, you might find that an earlier version of it worked better, or that an earlier version contained components that you need to revive; or that you just want to start over at a specific point in the design. With this feature, you can use a ***Saving a Version of a Design*** (on page 415) to restore a previous version of a design, replace a design with another design, or create a new form or workflow in an existing design.

There are two restore scenarios: **complete** and **partial**.

- **Complete**:
  - Restores the entire business process, manager, or shell, including all the forms, workflow(s), attribute forms, statuses, data elements, reference processes, logs, and so on.
  - You can make a complete restoration from the last published version (the one that is currently in use in Unifier), or from the last version marked "Complete" in uDesigner (**Development**).
- **Partial**

  Restores any of the following components of a BP:
  - Upper form
  - Detail form
  - Workflow

  A partial restoration can be made from any snapshot that was made of the business process/manager. You can also use a partial restore to replace a form or workflow with another design.

> **Note**: Partial restorations are only for business processes, since managers and shells do not include upper forms and workflows.

Restoring a Complete Version of a Design

In this scenario, you can restore an entire business process, manager, or shell, including all the forms, the workflow(s), attribute form, statuses, data elements, reference processes, logs, and so on.

To restore a complete version of a design:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, expand the **uDesigner** node.
3) Open the business process, manager, or shell you want to work with.

> **Note**: If you are currently working on another draft of the design, be sure to take a snapshot of it if you want to keep it!

4) From the **Edit** menu, select:
   - **Restore**, and then select **Last Completed** to restore the last version of the design that was marked "Complete."

     This will overwrite any draft version of the form you are currently working on.
   - **Restore**, and then select **Last Published** to restore the last version of the design that was published.

     This will overwrite any draft version you might currently be working on, but it will not overwrite the last version of the design marked "Complete."

Restoring or Replacing an Upper Form

Use a partial restoration if you want to restore or replace only the **upper form** of a business process. For upper forms, you can use the restore feature to restore a previous form layout, or replace the form layout with that from another snapshot.

To restore/replace an upper form from a snapshot:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**.
3) Open the business process, manager, or shell you want to work with.

> **Note**: If you are currently working on another draft of the design, be sure to take a snapshot of it if you want to keep it!

4) In the left Navigator, select **Upper Forms**. In the right pane, uDesigner displays a list of the upper forms that have been created.
5) Double-click the name of the upper form to open it in the Form Design window.
6) From the **File** menu, select **Restore**. The Snapshot Log opens.
7) Highlight the name of the snapshot containing the upper form you want to use and click **Open**.

   uDesigner replaces the layout with the one from the snapshot you specified.

Restoring or Replacing a Detail Form

Use a partial restoration if you want to restore or replace only the **detail form** of a business process. For detail forms, you can use the restore feature to restore a previous form layout, or replace the form layout with that from another snapshot.

> **Note**: You can restore/replace a Standard form (tab) only from a snapshot of another version of the Standard form.

To restore or replace a detail form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**.
3) Open the business process, manager, or shell you want to work with.
4) In the left Navigator, select **Detail Forms**. In the right pane, uDesigner displays a list of the detail forms that have been created.
5) Double-click the name of the form to open it in the Form Design window.
6) From the **File** menu, select **Restore**. The Snapshot Log opens.
7) Highlight the name of the snapshot containing the detail form you want to replace the current form and click **Open**.

   uDesigner replaces the layout with the one from the snapshot you specified.

Restoring or Replacing a Workflow

Use a partial restoration if you want to restore or replace only the **workflow** of a business process. For workflows, you can use a snapshot to restore or replace a workflow layout with a layout from another snapshot.

To restore or replace a workflow:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**.
3) Open the business process you want to work with.
4) In the left Navigator, select **Workflows**. In the right pane, uDesigner displays a list of the workflows that have been created for this BP.
5) Double-click the name of the workflow to open it. The workflow Design window opens, showing the current workflow layout.
6) From the **File** menu, select **Restore**. The Snapshot Log opens.
7) Highlight the name of the snapshot containing the workflow layout you want to replace the current workflow and click **OK**.

   uDesigner replaces the layout with the one from the snapshot you specified.

Creating a New Form or Workflow From a Snapshot

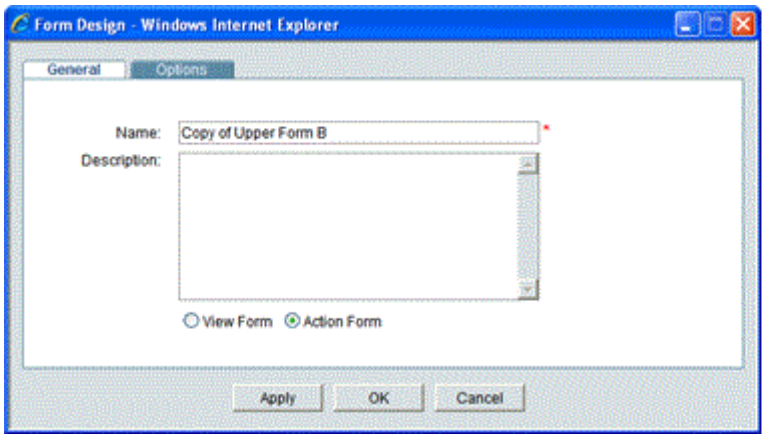
You can use a snapshot to insert a new form or workflow into a design.

To create a new upper form from a snapshot:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**.

3) Open the business process you want to work with.
4) In the left Navigator, double-click **Upper Form**.
5) From the toolbar, click **New**, and then select **From Snapshot**. The Snapshot Log opens.
6) Highlight the name of the snapshot containing the upper form you want to use and click **Open**.

   uDesigner opens the form's Properties window.



uDesigner assumes that you want to give the form a different name, so it automatically titles the form **Copy of...**

If you want to create the form with the original name, enter the original name.

7) On the **General** tab, enter a name and description for the new form.

   If this is to be a read-only form, click **View Form**, and then click **OK**.

   If you want the reader to be able to edit the fields on this form and include attachments or line items, click **Action Form**, and then click **Apply**.
8) Click the **Options** tab.

   This tab displays different options, depending on the BP type you are creating. To complete the Options tab, use the instructions in the topic "***Designing an Upper Form*** (on page 287)."
9) Click **OK**.

   uDesigner creates the new upper form and displays the name on the upper form log.

To create a new detail form from a snapshot:

If you are designing a form with multiple tabs to organize the data, you can use a snapshot to create a detail form for a new tab.

> **Note**: You cannot create a new tab from a Standard form.

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**.
3) Open the business process you want to work with.
4) In the left Navigator, select **Detail Form**.
5) From the toolbar, click **New**, and then select **From Snapshot**. The Select Snapshot window opens.
6) Double-click the name of the snapshot you want to use for the new tab. The Form Design window opens.
7) On the **General** tab, enter a name for the new form and click **OK**.

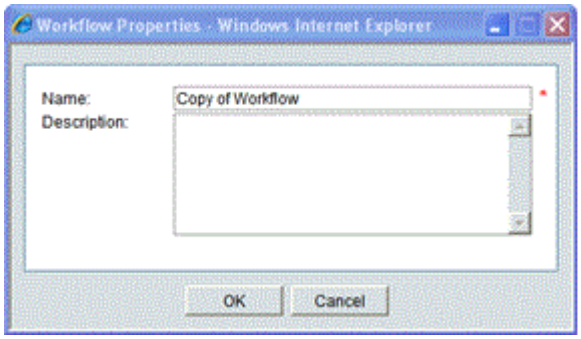
uDesigner adds the new detail form to the list of forms on the right pane. The new detail form will be a replica of the one from the snapshot.

8) To edit the form, double-click the name of the form on the log. The Form Designer window opens.

To create a new workflow from a snapshot:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**.
3) Open the business process into which you want to insert a new workflow.
4) In the left Navigator, select **Workflows**. In the right pane, uDesigner displays a list of the workflows that have been created for this BP.
5) From the toolbar, click **New**, and then select **From Snapshot**. The Snapshot Log opens.
6) Highlight the name of the snapshot containing the workflow you want to insert and click **Open**.

   uDesigner opens the workflow's properties window.



uDesigner assumes that you will give the workflow a different name, so it automatically titles the workflow **Copy of...**

If you want to create the workflow with the original name, enter the original name.

7) Enter a name and description for the new workflow and click **OK**.

   uDesigner inserts the new workflow and displays the name on the workflow log.

Adding Mobile Data Elements

Hidden blocks in the form will not be displayed in the mobile app. If you place a required field in a hidden block, the app will not display the required field. As a result, if the required field does not have a value, the user will not be able to submit the record. In a scenario that you must place a required field in a hidden block, you can set up the mobile data elements list in a way that it can include the auto-populated value of the required field in the hidden block.

In such scenario, you must ensure that you include the auto-populate source in the mobile data elements list. The same rule will be applicable to formula fields, in addition to using auto-population. You must ensure that the elements added to the mobile form meet all the validation rules for a successful record submission.

The following BPs cannot be enabled for mobile app:

- RFB
- Project/Shell creation

The "Payment Application" BP is partially supported in the mobile app.

Creating a Business Process Design

To create a business process (BP) form:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes** to open the **Designer-Business Processes** log.
3) From the toolbar, click **New** to open a list of BP form types, and select the desired BP. The tables in the following subtopics list the BP form types and their fields.
4) In the window (**Edit Studio**) that opens, **General** tab, enter or select values.
5) Click **Apply** and then click **OK**.

After you click **Apply** or **OK**, Unifier will display other tabs that help you define the other properties of the Business Process. The tabs displayed are:

> **Note**: The tabs might vary depending on the type of the Business Process, but in general the following are the tabs that are available for most Business Process types (Workflow or Non-Workflow).

- **General** (default tab)
- **Statuses**
- **Options**
- **Consolidation**

In This Section

Cost....421
Document....422
Text....423
Line Item....423
Simple....424
RFB (Request for Bid)....424
Resource (Resource Booking or Timesheet)....425
Project/Shell Creation (Simple or Line Item)....426

Cost

The **Cost** BP form type contains the following fields:

- ID
- Name
- Description
- Type

  Cost (read-only)
- Sub-Type

- Commit at company level
- Line Items with CBS Code
- Line Items with Fund Code
- Line Items with both CBS and Fund Codes
- Line Items with both CBS and WBS Codes
- Line Items with Company Accounts Code
- Line Items with Multiple Codes

- Classification

  If you do not select a sub-type, you have two options:
  - Generic
  - Transfer

  If you select a sub-type, this field is disabled.
- Configurable Managers
- Level
  - Company
  - Project/Shell (selected by default and read-only)
- Behavior
  - Workflow
  - Non-Workflow
- Record Instances
  - Single
  - Multiple (selected by default and read-only)

Document

The **Document** BP form type contains the following fields:

- ID
- Name
- Description
- Type

  Document (selected by default and read-only)
- Sub-Type
  - With Folder Structure
  - Without Folder Structure
- Level
  - Company
  - Project/Shell
- Behavior
  - Workflow
  - Non-Workflow

- Record Instances
  - Single
  - Multiple (selected by default and read-only)

Text

The **Text** BP form type contains the following fields:

- ID
- Name
- Description
- Type

  Text (selected by default and read-only)
- Level
  - Company
  - Project/Shell
- Behavior
  - Workflow
  - Non-Workflow
- Record Instances
  - Single
  - Multiple (selected by default and read-only)

Line Item

The **Line Item** BP form type contains the following fields:

- ID
- Name
- Description
- Type

  Line Item (selected by default and read-only)
- Sub-Type
  - Generic
  - Line items to filter company Business Process records
  - Preventive Maintenance
- Classification

  If you select Preventive Maintenance as Sub-Type, you have the following classifications:
  - Asset
  - Asset Template
  - PM Book
  - PM Book Template
  - Meter Reading

- Configurable Managers

  If you select Preventive Maintenance as Sub-Type, regardless of the classification type, the Configurable Managers window opens, which enables you to select one or more configurable managers.
- Level
  - Company
  - Project/Shell
- Behavior
  - Workflow
  - Non-Workflow
- Record Instances
  - Single
  - Multiple (selected by default and read-only)

Simple

The **Simple** BP form type contains the following fields:

- ID
- Name
- Description
- Type

  Simple (selected by default and read-only)
- Level
  - Company
  - Project/Shell
- Behavior
  - Workflow
  - Non-Workflow
- Record Instances
  - Single
  - Multiple

RFB (Request for Bid)

The **RFB** BP form type contains the following fields:

- ID
- Name
- Description
- Type

  RFB (selected by default and read-only)
- Sub-Type

- Generic
- Line Items with CBS Code
- Line Items with Generic Cost Manager

- Level
  - Company
  - Project/Shell (selected by default and read-only)
- Behavior
  - Workflow (selected by default and read-only)
  - Non-Workflow
- Record Instances
  - Single
  - Multiple (selected by default and read-only)

Resource (Resource Booking or Timesheet)

The **Resource** BP form type is divided into the following forms:

- **Resource Booking**
- **Timesheet**

The **Resource Booking** BP form type contains the following fields:

- ID
- Name
- Description
- Type

  Resource (selected by default and read-only)
- Sub-Type
  - Resource Booking (selected by default and read-only)
- Level
  - Company
  - Project/Shell (selected by default and read-only)
- Behavior
  - Workflow (selected by default and read-only)
  - Non-Workflow
- Record Instances
  - Single
  - Multiple (selected by default and read-only)

The **Timesheet** BP form type contains the following fields:

- ID
- Name

- Description
- Type

  Resource (selected by default and read-only)
- Sub-Type
  - Timesheet (selected by default and read-only)
- Level
  - Company (selected by default and read-only)
  - Project/Shell
- Behavior
  - Workflow
  - Non-Workflow
- Record Instances
  - Single
  - Multiple (selected by default and read-only)

Project/Shell Creation (Simple or Line Item)

The **Resource** BP form type is divided into the following forms:

- **Simple**
- **Line Item**

The **Simple** BP form type contains the following fields:

- ID
- Name
- Description
- Type

  Project/Shell Creation (selected by default and read-only)
- Sub-Type
  - Simple (selected by default and read-only)
- Classification
- Level
  - Company
  - Project/Shell
- Behavior
  - Workflow
  - Non-Workflow
- Record Instances
  - Single
  - Multiple (selected by default and read-only)

The **Line Item** BP form type contains the following fields:

- ID
- Name
- Description
- Type

  Project/Shell Creation (selected by default and read-only)
- Sub-Type
  - Line Item (selected by default and read-only)
- Classification
- Projects or Shells only
- Shell and sub shells
- Level
  - Company
  - Project/Shell
- Behavior
  - Workflow
  - Non-Workflow
- Record Instances
  - Single
  - Multiple (selected by default and read-only)

Adding Link Elements to a Form

For some components, uDesigner displays a Link Elements option on the Forms toolbar. Linking creates a dynamic connection between a field on a source form, such as a Shell or Schedule Attribute Form, and a field or fields on a destination form, such as a child Shell, or a Business Process.

> **Note**: This feature does not work like Auto-Population. Auto-population is static; it happens only once at the creation step of a Business Process. Element-linking is dynamic; the elements always reflect a current value as the value in the source element changes.

This section explains the following topics:

- Business Process Upper Forms and Linked Elements
- Business Process Detail Form and Linked Elements
- Business Process and Linked Elements Errors
- Shell Attribute Forms and Linked Elements
- Other uDesigner Objects and Linked Elements

Business Process Upper Forms and Linked Elements

The Business Process Upper Forms and Detail Form toolbars contain the Link Elements option. The Link Elements option in the Upper Forms toolbar is used to define the DEs that need to be linked to a source and become the linked DEs to an Upper form. The following explains the fields related to the Business Process Upper Forms. The fields related to the Business Process Detail Form are explained later in this section.

The Linked Elements window has the following options:

- **Add By Shell**: This option replicates the Link Elements by using the "Add" functionality from the Business Processes "Properties" tab.
  - When the user clicks Add By Shell, the same window as the Business Processes "Properties" tab window opens. Go to Link Elements and the Add option appears.
  - By using this option, the user can add Linked Elements from a single record Business Process or Shell Attribute Forms.
  - When an element is added by way of Add By Shell option, the element appears in the Linked Elements window.
- **Add By Picker**: This option enables you to select a P6 Activity Picker element from all available P6 Activity Picker DEs (Data Elements in Data Structure Setup) and map a P6 Activity Attribute to another uDesigner Data Element.
  - Similar to Auto-populate functionality for form Data Elements, the mapping via this window will be as per matching Data Definitions. Select values for the fields in the Link Elements window as described below:

a. **Source Name**: Select the P6 Activity Picker Element that you want to be the source of Linked DE on the Business Process form. This field is required and lists all the DEs from the Data Elements in Data Structure Setup whose DD = P6 Activity Picker.

b. **Source Element**: Select the actual P6 Activity attribute whose value you want to be mapped to the Linked DE on The Business Process form. This field is required and lists all the "Form Label" for all the attributes in the P6 Activity Attribute Sheet form (Source Element in Schedule Manager), in alphabetical order.

c. **Destination Element**: Select the DE that you want to get updated dynamically by way of receiving the value from a P6 Activity Attribute Form as the value changes within an Activity Sheet. This field lists all DEs from the Data Elements in Data Structure Setup that:

   - Match the DE of the "Source Element" selected above, and

   - Have not already been placed as a "Custom" Element on any of the Upper forms that will contain the elements.

   Click **OK** to add the element to the Linked Element window.

- **Remove**: This option allows you to remove a linked element from the list. You can select the element and click Remove.

Whether you add an element by way of "Add by Shell" or by way of "Add by Picker" options, the element appears in the Linked Elements window, and the Linked Elements window provides the following information:

- **Data Element**: Displays the name of the uDesigner Data Element which is being added as a linked element.
- **Form Label**: Displays the Form Label of the linked DE.
- **Source Name**: Displays the name of the source of the linked uDesigner DE.
  - If the linked element is added by way of "Add by Shell" option, this column corresponds to the "Name" column of the existing linked elements (Link Elements in Properties) and displays the name of the P6 Activity Attribute.
  - If the linked element is added by way of "Add by Picker" option, this column displays the name of the P6 Activity Attribute Form, from uDesigner (Activity Sheet Attributes in Schedule Manager).
- **Source Type**: Displays the type of source.
  - For linked elements added by way of "Add by Shell" option, this column corresponds to the "Type" column of the existing linked elements (Link Elements in Properties) and displays the source type as "Single Record BPs" or "Shell Attribute Form" as applicable.
  - For linked elements added by way of "Add by Picker" option, this column displays the source type as "P6 Activity Attribute."
- **Source Picker**: Displays the P6 Activity Picker DE "Label" (the Form Label of the "Source Picker" if the linked element is being added by way of "Add by Picker" option).

  This field will be blank if the linked element is being added by way of "Add by Shell" option.
- **Source Element**: Displays the actual Source Element that is being linked to the uDesigner DE.
  - For linked elements added by way of "Add by Shell" option, this column corresponds to the "Source Label" column of the existing linked elements (Link Elements in Properties).

For linked elements added by way of "Add by Picker" option, this column displays a list of "P6 Activity Attribute" labels that the user selected, when adding the linked element. On the destination form, the linked field:

- Will be read-only
- Cannot be auto-populated, nor can it auto-populate other fields
- Cannot update (using reverse auto-population) any other fields, nor can it be updated
- Cannot be used in formulas
- Cannot be used in form rule validation
- Is only available for integration output via Web Services

As explained in detail below, the Linked Elements are suitable for business cases such as:

- Shell re-organizing
- Quick access to schedule information
- Including dynamically updated data on planning items

After you define the linked elements by using the "Linked Elements" option, the user can add the linked elements to the Business Process Upper form and perform the following:

When the user opens an Upper form and clicks Linked Elements, the resulting window displays all linked elements as defined by way of "Linked Elements" option, in the Upper form toolbar.

> **Note**: When the user clicks Custom to add custom DEs to the Upper form, the resulting window does not display any of the DEs that have been defined as available linked element for the Business Process Upper form.

All the linked elements that have been added by way of "Add By Picker" option have the same properties as those of an existing linked elements. These added linked elements:

- Cannot be used in formulas
- Are not available for Auto-Population
- Are not available for Reverse Auto-Population

For all types of Business Processes which support linking elements, the Linked Elements option is available on the toolbar of the Upper Forms and Detail Form logs.

For all types of Shells which support linking elements, the Linked Elements option is available on the toolbar of the Detail Form log.

For all other objects in uDesigner (Space Manager, Portfolio Manager, and so forth) that support linking elements, the Linked Elements option is available on the toolbar of the Forms log.

You cannot use this feature for an anchor shell or at the company level.

You cannot use this feature for Request for Bid (RFB) and Resource Booking business processes.

You cannot link elements that are from a template that is linked to the form.

You cannot link elements that are part of a dynamic data set.

System-defined Data Elements

In the Linked Data Element Picker window, use the following system-defined data elements (DEs) in the upper form for the Change Commit CBS type (which updates the General Spends type SOV), and the General Spends BP CBS type (which updates the General Spends type SOV):

- uuu_scheduled_value
- uuu_commit_remaining_balance

To access the DEs:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the applicable BP.
4) In the left Navigator, select **Upper Forms**.

You cannot include the predefined Scheduled Value and Commit Remaining Balance DEs as linked DEs in the upper form

If the predefined Scheduled Value and Commit Remaining Balance DEs are not referenced in the General Spends type SOV, you cannot include those DEs as linked DEs in a BP upper form.

The linked elements:

- Are not allowed for auto-population or for Reverse Auto-population (RAP).
- Cannot be a source, or a destination, for formula fields, and you cannot reset the linked data elements.
- Cannot be included in advanced formulas.
- Cannot be included in validation rules.

You can add linked data elements to any BP upper form by using the **Linked Elements** option.

The data element will be read-only, once added to the upper form, and the data element can be updated by way of selecting the referenced Commit BP record.

Business Process Detail Form and Linked Elements

Similar to the Business Process Upper Forms, the Detail Form toolbar contain the Link Elements option. The Link Elements option in the Detail Form toolbar is used to define the DEs that need to be linked to a source and become the linked DEs to a Detail form.

The "Add by Shell" option is not available for a Detail form.

The available options under the Link Element option in a Detail form are:

- **Add By Picker**: Same as Upper form. See the "Business Process Upper Forms and Linked Elements" topic above.
- **Remove**: Same as Upper form. See the "Business Process Upper Forms and Linked Elements" topic above.

Business Process and Linked Elements Errors

As mentioned, the Linked Elements, or Dynamic Linking, is available for a Business Process Upper Forms and Detail Form. Users will receive error messages:

- If a form (Upper or Detail) holds Linked Elements which have been defined by way of "Add By Picker" option, but the source P6 Activity Picker element does not exist on the form.
- If you define a linked element on a Business Process, and you remove linked element source field from the "Activity Sheet Attribute" form.
- If a Business Process picker, used as an Auto-Populate source (for a DE of DD = P6 Activity Picker), is pointed to a record outside of the Shell that the Business Process resides. A Business Process picker must point to a record that resides within the same Shell.

Shell Attribute Forms and Linked Elements

You can include the DEs of DD = P6 Activity Picker on CBS type Shells. When you define the link elements for a Shell Attribute Form, the resulting window displays the following options:

- **Add By Shell**: See "Add By Shell" part of the "Business Process Upper Forms and Linked Elements" topic above.
- **Add By Picker**: See "Add By Picker" part of the "Business Process Upper Forms and Linked Elements" topic above.
- **Remove**: See "Remove" part of the "Business Process Upper Forms and Linked Elements" topic above.

After you define the link elements, the user can add the elements to the Shell Attribute Form. If you include a linked DE on a form by do not include the source picker element, an error message will be generated by the system.

Other uDesigner Objects and Linked Elements

For the following objects in uDesigner that support Link Elements on their Detail forms by way of Properties window, the process is similar to that of a Business Process and Linked Elements

- Shell Manager
- Code and Records-based Manager
- Planning Manager
- Portfolio Manager
- Schedule Manager

The Link Elements window for these objects has the following options, only:

- **Add By Shell**: See "Add By Shell" part of the "Business Process Upper Forms and Linked Elements" topic above.
- **Remove**: See "Remove" part of the "Business Process Upper Forms and Linked Elements" topic above.

> **Note**: You cannot link elements by way of "Add by Picker" to uDesigner objects.

Additional Information about Linked Elements

- If "Linked" is enabled on a form, the form toolbar contains the "Linked Elements" option.
- If "Linked" is enabled on a form that belongs to any Shell object, the Detail Form toolbar contains only the "Linked Elements" option.

- If "Linked" is enabled on a form that belongs to an Attribute Form, both "Add By Picker and "Add By Shell" options are available.
- If "Linked" is enabled on a form that belongs to any other object, only the "Add By Shell" option is available.

In This Section

For Re-Organizing Shells 434
For Accessing Schedule Information 435
For Including Dynamically Updated Data on Planning Items.....435

For Re-Organizing Shells

Some companies, such as banks, that often move sites from one division, region, or market to another, need to be able to restructure the shell hierarchies in Unifier without having to re-enter a lot of information on the forms in the child shell(s). Linking data elements (fields) among the forms used in shells makes it easier for the user to rearrange shell hierarchies by automatically reflecting new field values on the child shell's forms as the shell is moved. In addition, anytime the value in a linked field changes on the parent Shell Attribute Form, it is immediately reflected on the child shell's forms. This feature ensures that data referenced from parent to child shells is correctly reflected in the new hierarchy so that reporting is accurate and Unifier's operation is not interrupted.

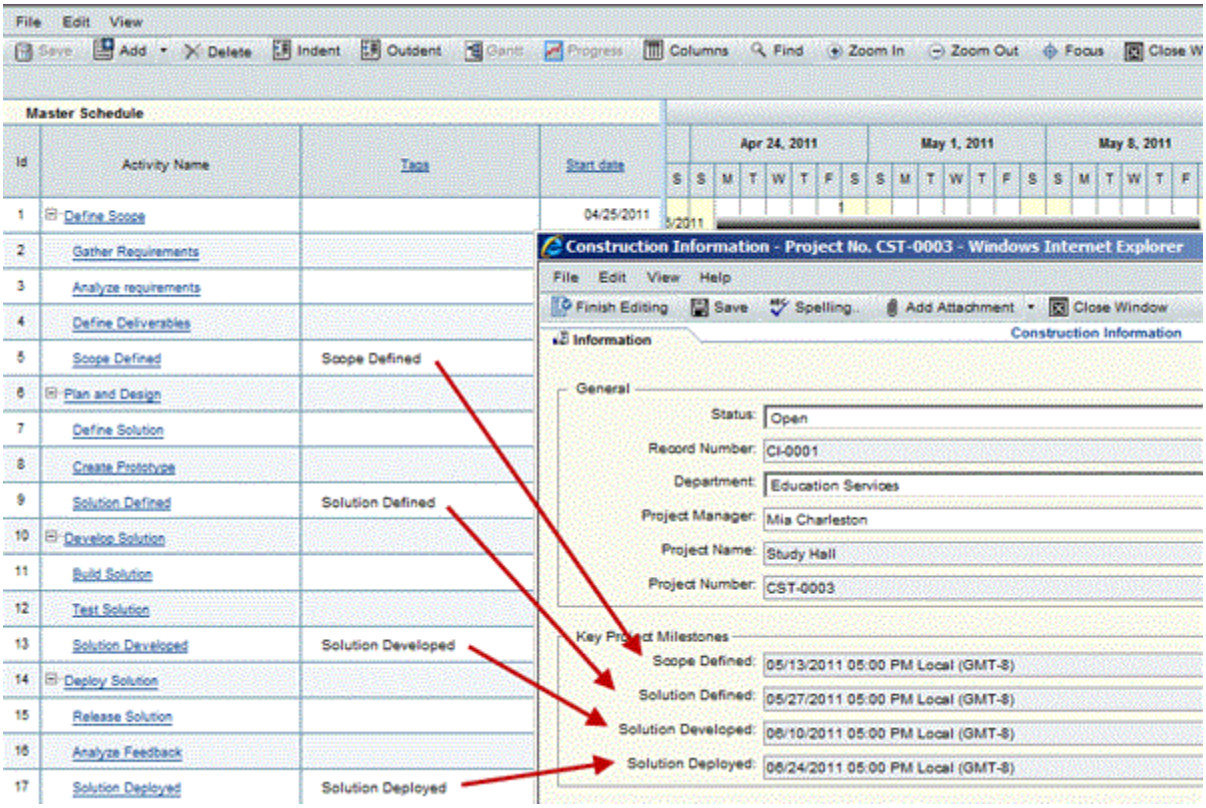
Specifically, you can link fields on a parent Shell Attribute Form or single-record BP to:

- A child Shell Attribute Form or single-record BP
- The upper form fields of any multiple-record business process in a child shell

Linking elements in this manner is for shell movements. Using this feature, you will be creating a dynamic connection from a field on a child Shell Attribute Form, single-record BP, or business process form to a field on the attribute form or single-record BP of any parent shell in the hierarchy. The field on the form you are designing will automatically display the current value of the field you link it to on the parent Shell Attribute Form/single-record BP, regardless of where the shell is moved.

For Accessing Schedule Information

Users on schedule-driven projects need to access schedule data without having to open the Schedule Manager. Using tags, you can link a "tagged" activity from a schedule sheet to one or more linked elements on forms and show current schedule data, such as start dates or milestones.



You can link tagged fields from a Schedule Attribute Form to:

- A Shell Attribute Form
- An attribute form for a configurable manager
- Any business process at project/shell level

For Including Dynamically Updated Data on Planning Items

While working with planning items, users often need access to the latest information from other Unifier components. For example, users might need information about the shell under which the planning item resides, or information about a schedule activity that is involved in this planning item. You can link elements from other forms to a planning item form so that the planning item form will always show the current value for these elements from other forms.

You can link fields from the following forms to a planning item:

- A Shell Attribute Form
- A single-record form
- An attribute form for a configurable manager

- A schedule activity form
- Any business process at the project/shell level

To link elements:

Linking elements is a two-part process. First, you must specify the elements on the Shell or Schedule Attribute Form/single-record BP or business process that can be linked. The steps here show you how to specify those elements. You can place these elements on the form later (when you design the form for a child shell, business process, or shell).

1) Click **Linked Elements** option from the Forms toolbar. The Linked Data Element Picker opens.
2) From the **View** drop-down list, choose the attribute form or tag you want to link to.

   uDesigner displays the fields from the chosen attribute form or tag that can be linked to the form you are designing.
3) Select the fields you want to link to the destination form.

> **Note**: To add a Data Element (DE), click **Add**. To remove a DE, select the DE and then click **Remove**.

4) Click **OK**.

To link the elements in the design, see:

- ***Linking Elements in Shell Hierarchies for Easy Restructuring*** (on page 370)
- ***Linking Tagged Elements from a Schedule Attribute Form to Another Form*** (on page 371)
- ***Linking Elements from Other Forms to a Planning Item*** (on page 372)

Designing Workflows

Business processes can include one or more workflows to specify how a BP should proceed from start to finish. This section explains how to design the workflows that are part of business processes and other components that will be used by the users in Unifier.

Workflows are optional.

About Workflows

Workflows illustrate each step in a business process, and each step will utilize the forms that you have created in uDesigner. Like business processes, you can create workflows at both the project/shell and company levels.

Workflows define how forms are routed and govern the behavior of each step in the business process. Using uDesigner, you will be creating the workflow schemas—the flow of business process steps and the forms the users will use at each step.

In Unifier, the administrator will fill in the workflows with the who, what, where, and when information for each business process, and users will fill in the forms with the information they will need to run the project, such as maintaining action items, managing document archiving, tracking workflow tasks and milestones, communicating and collaborating with project team members, and generating project reports.

Non-workflow BPs

Most business processes will include one or more workflows; however, some business processes have a single purpose of storing data. These business processes are called non-workflow BPs. An example of a non-workflow BP is one or more forms that record contact and other general information about a company. Non-workflow BPs are editable after the form is complete, unless you place a terminal status on the form at completion.

Overall Steps for Workflow Design

It is important that you design your workflows on paper before designing them in uDesigner. Workflows will often need modifying before they satisfy all the requirements of a business process.

After you design the workflow for a business process in the **Development** environment, Oracle recommends that you do not delete the workflow, as it may cause unexpected results. You can, however, deactivate your workflow in the **Development** environment, and then republish the business process with a new workflow.

Overall steps for designing a workflow

1) Name the workflow.
2) Add the workflow steps.
3) Specify each step's properties.
   - The name and description of the step
   - Any read-only forms that are available to the recipient at this step

- Any action item forms the recipient must respond to at this step

4) Link the steps.
   - Specify each link's action (such as send, reject, or approve).
   - Specify the status the task should be in after the team member completes the action (such as approved, rejected, or closed).
5) Group any sub-workflows (if any).
6) Add conditional steps (if any).

Specify the step properties, including any situation at this step that might trigger a conditional step that must be resolved before the workflow can continue.

For designing a successful workflow, follow these instructions:

- Create all the action and view forms of a business process before you design the workflow.
- Be mindful that every action in a workflow creates a potential email notification. The fewer steps, the better.
- Do not recycle actions to users unnecessarily.
- Use multiple-approver steps rather than serial approvals whenever possible.
- For the workflow steps, use a noun, such as Customer Approval or Finance Review.
- For the links between steps, use a verb that designates the action being taken, such as Send Back for Clarification or Reject.
- If a step's inbound action has a terminal status, all outbound actions from that step must have the same terminal status.
- For a business process with multiple workflows, use the same form for the end step of each workflow. This ensures that the same final form will be generated each time a BP record is complete, regardless of the workflow that is used.

In This Section

Starting a Workflow 438
Adding Steps to the Workflow 440
Linking the Steps 444
Aligning the Steps 450
Designing a Sub-Workflow 450
Adding a Conditional Step 451
Auto-Creating a Record from a Workflow 453
Viewing a Summary of the Workflow 455
Error-Checking the Workflow 455
Arranging the Step Order to Aid the Setup Process in Unifier 456
Printing a Workflow 457
Copying a Workflow 457

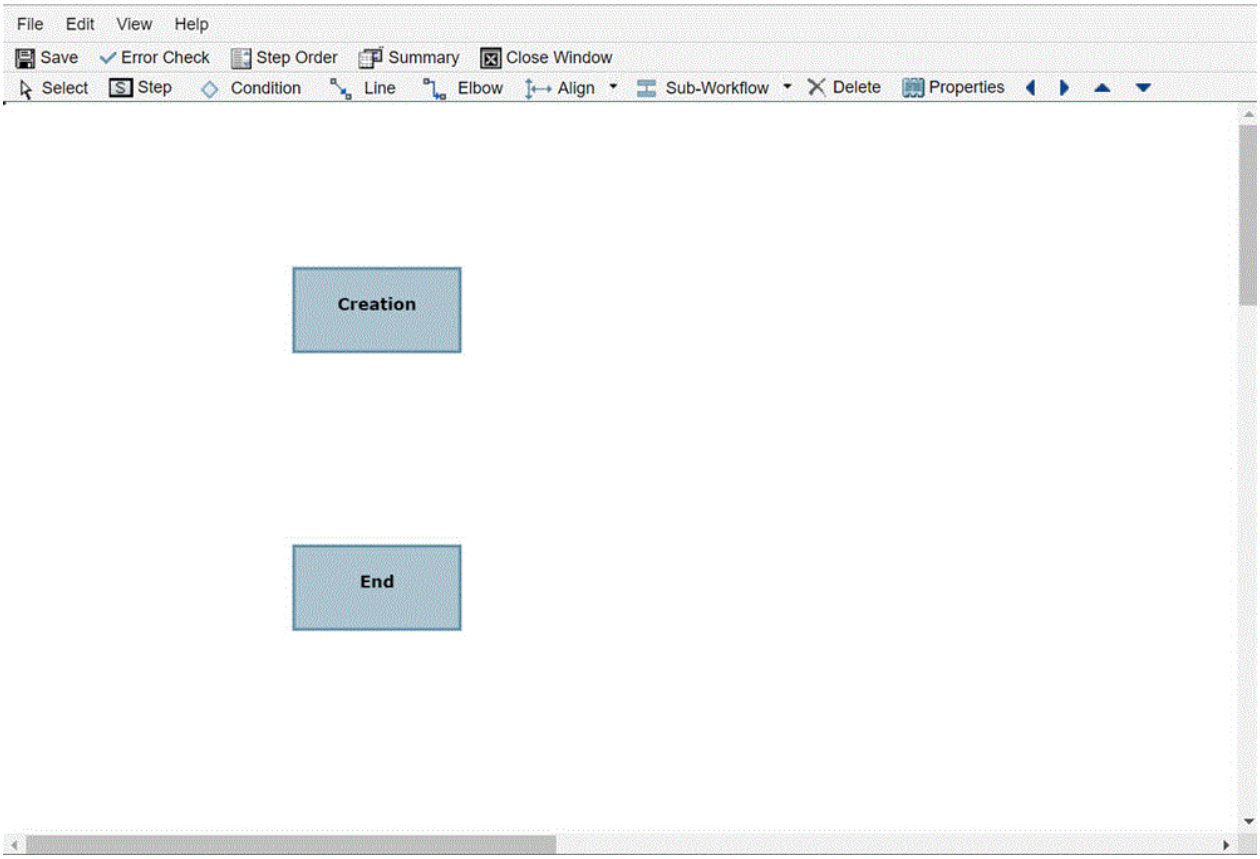
Starting a Workflow

To create a new workflow, you begin by naming the workflow. Then you can open the workflow "canvas" to design the workflow.

To begin a workflow:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the BP for which you want to design a workflow.
4) In the left Navigator, select **Workflows**.
5) From the toolbar, click **New**, and then select **Manual**. The Workflow Properties window opens.
6) Enter a **Name** for the workflow and (optional) a **Description**.
7) Click **OK**. The new workflow appears in the **Workflows** pane.
8) Select the workflow in the Workflows pane and click **Open**.

   uDesigner opens a canvas where you can build the workflow. By default, the workflow has a Create and End step. This is your starting point for designing a workflow.



Workflows can often be very large. If you are designing a large workflow, you can enlarge the canvas screen to make it easier to add steps to the workflow progression.

To enlarge the canvas, you can drag the window sides until the workflow fits in the window, or you can quickly maximize the canvas. To maximize the canvas, click the icon in the upper-right corner of the window. To restore the canvas window to its normal size, click the Restore icon.

About Create and End Steps

The Create and End steps in a workflow have unique characteristics you should be aware of during the design and setup of the workflow.

For the Create step in uDesigner:

- You can rename the Create step to something else if you want.
- You can place only outgoing links on the Create step.
- You can attach only action forms to the Create step.
- You cannot send a link back to the Create step. If the workflow requires that a form be sent back to the creator (Create step), add a separate "back step" or "revision step" that will send the form back to the creator.

For the End step in uDesigner:

- You cannot rename the End step.
- You can place only incoming links on the End step
- You can attach either an action form or a view form to the End step.

For the Create Step in Unifier:

- You cannot "Cc" users on the Create step.
- A workflow cannot send a link back to the Create step. If the workflow requires that a form be sent back to the creator (Create step), the workflow design should include a separate "back step" or "revision step" that will send the form back to the creator. If your workflow includes such a "back step," specify match step <Creation> for the Assignees on that step.

For the End Step in Unifier:

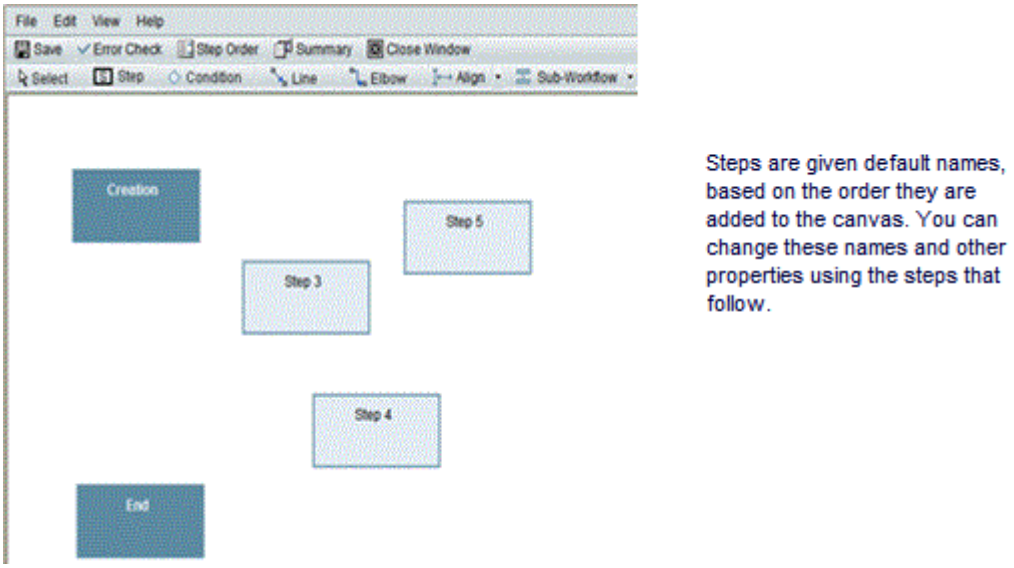
- You can "Cc" users on the End step.
- You can send the form to the editors who have been assigned to the form.
- You can add comments to a business process at the End step, and also at any status in a workflow, including "terminated."

Adding Steps to the Workflow

To add steps to a workflow:

1) Click the **S Step** button.

2) To add a workflow step, click anywhere in the canvas area of the window.



3) Continue to add as many steps as necessary by clicking the canvas again.
4) When you have added all the steps, click the **S Step** button again.
5) Adjust the layout of the workflow as follows:
   a. Click the **Select** tool.
   b. Click a step and, while holding down the mouse button, drag the step to its new position.
   c. Continue to move the steps into place until you are satisfied with the layout.

> **Note:** You may need to return to this step during the workflow design process.

Specifying the Steps' Properties

Specifying a step's properties is where you will give the step a name and designate the forms attached to this step. Be sure you have created all necessary action and view versions of these forms before you start these procedures.

To specify a step's properties:

1) On the Workflow Designer window, click the **Select** tool.
2) Double-click a step.
   The Step Properties window opens.
3) Use the information in the table below to complete the step properties.
4) Click **OK**.

In this field:	Do this:
Step Name	Enter a name for the step. Use a noun, such as "Customer Approval" or "Finance Review." To help you determine a name, fill in the end of this sentence: "Sent for ____" You can enter up to 50 alphanumeric characters for the name. **Note:** You can give a creation step a name, but you cannot rename the End step.
Description	Enter a description of what the step entails.
View Form	Select which read-only forms should be available to the recipient at this step. (View forms are not available for the creation step because the only purpose of the creation step is to begin an action.) **Note:** For business processes with multiple workflows, use the same form for the end step of each workflow. This ensures that the same final form will be generated each time a BP record is complete, regardless of which workflow is used.
Edit Form	Select the name of any action-item forms the recipient should respond to at this step. **Note:** For business processes with multiple workflows, use the same form for the end step of each workflow. This ensures that the same final form will be generated each time a BP record is complete, regardless of which workflow is used.
Sub-Workflow Name	If this step is part of a sub-workflow, enter the name of the sub-workflow to which it belongs.

In this field:	Do this:
Trigger Element	Optional) Click the Add button and select the field (data element) that will serve as the trigger for a conditional step that must be resolved before the workflow can continue. The value of the data element at runtime will dictate whether the conditional step must be resolved. You can specify multiple data elements. If you do so, the values of all the data elements must be met to trigger the conditional step. **Note:** You cannot use a multi-select data element as a trigger element because the trigger element feature does not recognize the commas that separate the values in these elements.
Add additional task assignees from the following data elements	To add additional task assignees when the BP record reaches this step, select this check box. To access list of all User Data Picker and User Picker entries for all action forms included in the workflow, click **Select** next to **Upper Form**, select the applicable pickers, and click **OK**. To access list of all User Data Picker and User Picker entries for the Detail Form of the Line Item tab included in the workflow, click **Select** next to the applicable tab name, select the applicable pickers, and click **OK**. **Note:** This feature is not available for Creation and End steps.

In this field:	Do this:
Add additional Cc users from the following data elements	To copy additional users when the BP record reaches this step, select this check box. To access list of all User Data Picker and User Picker entries for all action forms included in the workflow, click **Select** next to **Upper Form**, select the applicable pickers, and click **OK**. To access list of all User Data Picker and User Picker entries for the Detail Form of the Line Item tab included in the workflow, click **Select** next to the applicable tab name, select the applicable pickers, and click **OK**. **Note:** This feature is not available for the Creation step.

Linking the Steps

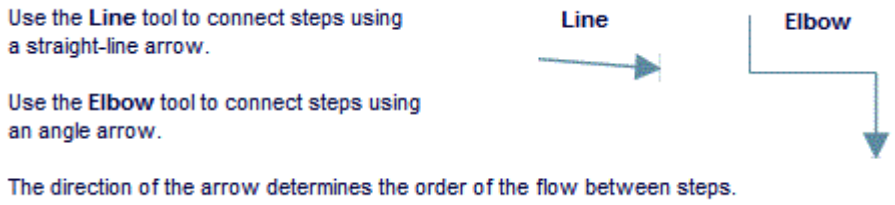
In this procedure, you will be:

- Connecting the steps
- Specifying each link's action (such as send, reject, or approve)
- Specifying the status of the BP (form) after the step action is taken; for example, "Pending" for a transmittal in the approval process, or "Approved" for a transmittal *enroute* to the end step in the workflow

> **Note**: These statuses are drawn from the statuses that you specified for the BP form being used at this step.

When you link steps, you can also "stamp" the form with information about the action that was taken at that point in the workflow. For example, a project manager might want to see who has reviewed the record on a step, or who has made final approval of the record, as well as the date and time of the action. This information can also be included on the business process log so that users can see this information quickly, without having to open a record.

You can link steps using two types of connectors:



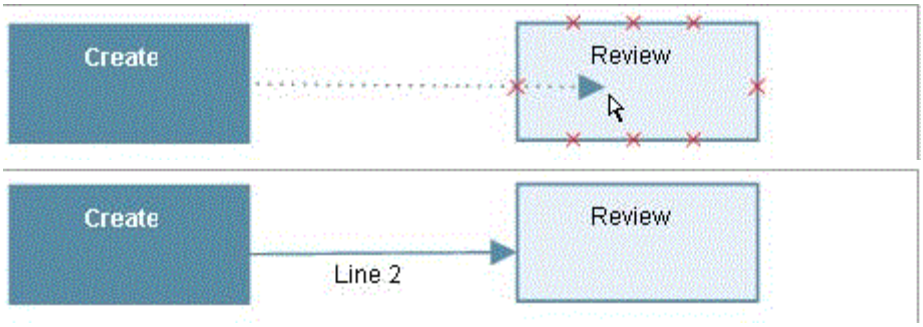
Connecting the Steps

The Create step can have only one outgoing line; the End step can have multiple incoming lines, but only one incoming line from any single step.

To connect the steps:

1) Click the **Line** or **Elbow** tool.
2) Hover over the step until you see a border of red x's. These points (x's) indicate where you can attach a connector line.

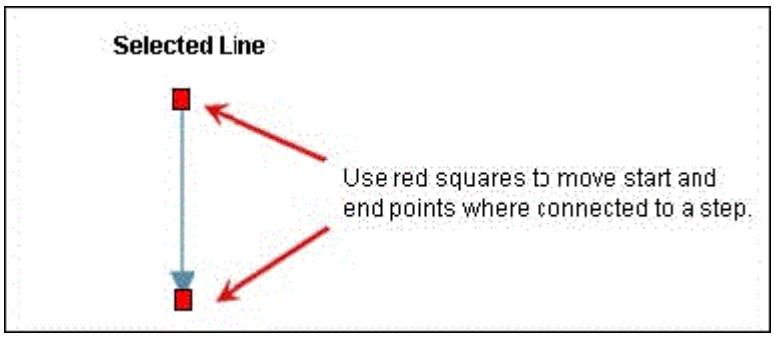
3) Click the step and hold, and then drag the arrow to the next step. When you see a red border of x's, release the mouse.



4) Continue to add lines until you have connected all the steps in the workflow.

To modify a line:

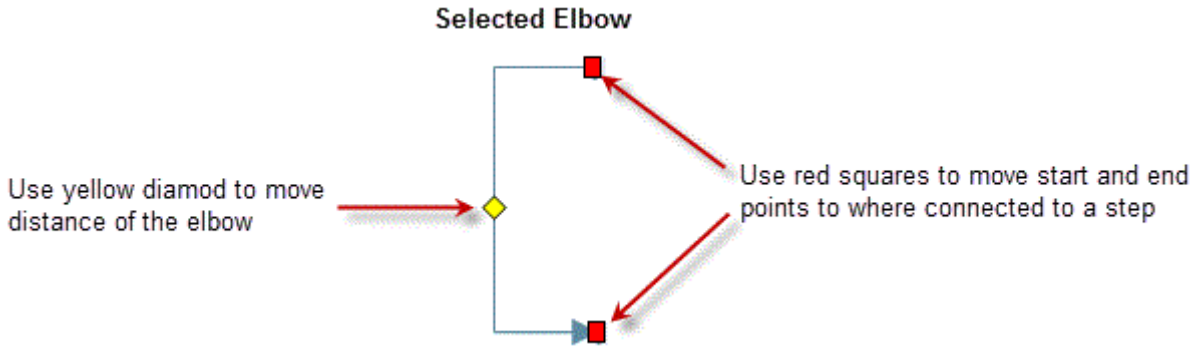
1) Click the **Select** tool, and then click the line you want to modify.
2) Click and hold the red squares to move the start and end points of the line.



To modify an elbow:

1) Click the **Select** tool, and then click the elbow you want to modify.

2) Click and hold the yellow diamond to expand the distance of the elbow, or click the red square to move the start and end points connected to the step.

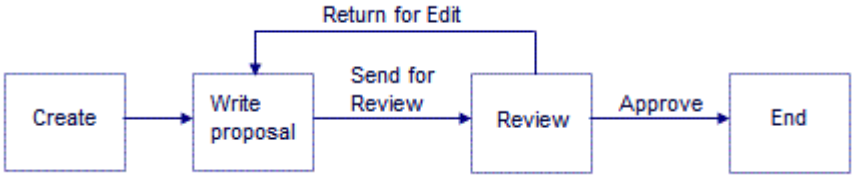


To delete a line or elbow:

1) Click the **Select** tool, and then click the line or elbow you want to delete.
2) Click the **Delete** button.

Specifying Each Link's Action

Each link between steps denotes the progression of the business process through the workflow.



The action the link takes (Approve, Return for Edit, and so on) appears in Unifier as a choice the user makes on the business process form. This choice moves the task to the next step.

> **Note**: A link can also automatically create other records. If the action of the workflow should include creating another record, see the instructions under ***Auto-Creating a Record from a Workflow*** (on page 453) to accommodate this.

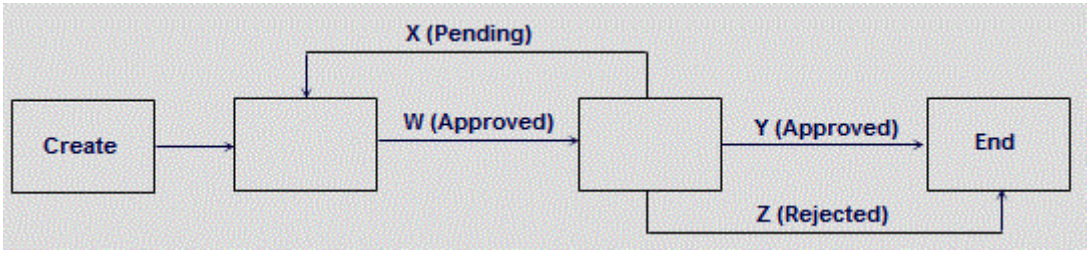
How Terminal Statuses Affect Workflows

Every record, line item, and asset must have a status indication at every step in Unifier. The status is what moves the record forward in the workflow. A terminal status indicates the end of the workflow or the end of a step within the workflow.

Here are the rules that govern terminal statuses:

- The status of any link leading to an end step must be a terminal status. When you choose the statuses for these links, uDesigner will display only those statuses that have been specified as terminal.
- If a step's inbound action has a terminal status, all outbound actions from that step must have the same terminal status.

- A terminal status creates a permanent record that populates each BP log, line item, or asset with all the information that was generated during the workflow (or step, if it uses a terminal status), including the forms, documents, comments, and other data that was collected during runtime.
- For this reason, once a record, line item, or asset reaches a terminal status, that status cannot change.



- Statuses assigned to links Y and Z must be terminal; they reach the end step.
- If link W has a terminal status (Approved) and link X has a non-terminal status (Pending), the workflow will produce an error because the status of the step changed from a terminal to a non-terminal status.
- Likewise, if link **W** has a terminal status (Approved) and link Z has a terminal status (Rejected), the workflow will produce an error because the record changed from terminal status Approved to terminal status Rejected.
- A terminal status for a record can have a significant effect on business processes in that it can be made to trigger an automatic action in Unifier. You can use a terminal record status to trigger certain functions outside the scope of the business process or to make external data accessible from the business process (see ***Statuses Tab*** (on page 248)).

To specify the link's action:

1) In the Workflow Designer window, double-click a line or elbow connecting two non-conditional steps. The **Action Properties** window opens.
2) Use the information in the table below to complete the fields on this window.
3) Click **OK**.

In this field:	Do this:
Action Name	Enter a name that describes the action the link is taking. Use a verb that designates the action being taken, such as "Send for Review," or "Return for Clarification." You can enter a total of 40 characters for the Action Name.

In this field:	Do this:
Description	(Optional) Enter details about this action and what it is designed to do. This can be helpful to others in understanding how this action works, particularly if it has a special behavior, such as automatically creating another record. You can enter up to 4000 characters.
Record Status	Choose the status of the record at this point in its progress through the workflow; for example, "Pending" for a transmittal in the approval process, or "Approved" for a transmittal enroute to the end step in the workflow. This is the status that will appear on the form the users see whenever they open a task. The list of possible record statuses resides in uDesigner's Administration mode under the Data Structure node of the Navigator. If the status you want is not on the list, return to Administration mode and create it. **Note:** For non-workflow business processes, inactive statuses are not displayed to users when they create records.

In this field:	Do this:
Select data elements to capture action taken	(Optional) Include these data elements if you want to gather information on the action that was taken on this link. By using these options, you can "stamp" the form with this information This information can also be included on the business process log so that users can see this information quickly, without having to open a record. Taken By Specify the user picker or a data picker (one based on the User Attribute Form) on the upper form of the business process that will contain the name of the user (or the last user) who accepted the task. Action Name Specify the name of the field that describes this link's action. Taken On Specify the date picker on the form that will contain the date and time the action was taken. **Note:** When a workflow BP record is created and a field is set to auto-populate through a Data Picker, such as User Picker, this auto-population only occurs for the original selection. If the value of the Data Picker is updated via workflow action, any auto-population configured through the Data Picker does not overwrite the prior value. If you want to trigger the auto-population again, you can use the Data Picker in Unifier or add the corresponding data element (DE) to the integration interface and run an update that provides the value for the DE.
Generate Event Notification	This is a check box. If selected, it will have an impact on the business process record during runtime. When checked for an action in the workflow, in uDesigner, (when the action is taken during runtime) Unifier generates a notification for the users. You can select this option for more than one action within a given Workflow.

In this field:	Do this:
Auto-create other record	Use this check box to instruct this action to automatically create another record. For more information about this setting and how to use it, see ***Auto-Creating a Record from a Workflow*** (on page 453).

Aligning the Steps

After you have created and linked the steps, you can align the steps to improve the appearance of the workflow. You can align the steps both horizontally and vertically.

To align steps:

1) Select all the steps you want to align by pressing **Shift** and clicking the left mouse button on each of them.
2) Click the **Align** tool on the toolbar and select **Vertical** or **Horizontal**.

Designing a Sub-Workflow

A sub-workflow is a grouping of one or more steps into a mini-workflow. Sub-workflows can simplify workflow configuration and setup in Unifier by allowing you to assign workflow properties to a group of steps at once. You can identify a sub-workflow by color-coding it.

> **Note**: You cannot create a sub-workflow within another sub-workflow or create parallel sub-workflows.

To create a sub-workflow:

1) In the Workflow Designer window, select the steps to include in the sub-workflow by holding down the **Shift** or **Ctrl** key and clicking the steps.
2) Click the **Sub-workflow** button and select **Group**. The **Sub-Workflow Properties** window opens.
3) Enter a **Name** for the sub-workflow.
4) (Optional) Enter a **Description** for the workflow.
5) To help identify it from the rest of the workflow, you can color code it. To color-code it, click the **Select** button and select a **Color**.
6) The selected steps will be outlined in the chosen color, and the sub-workflow steps will appear as a barred rectangle:

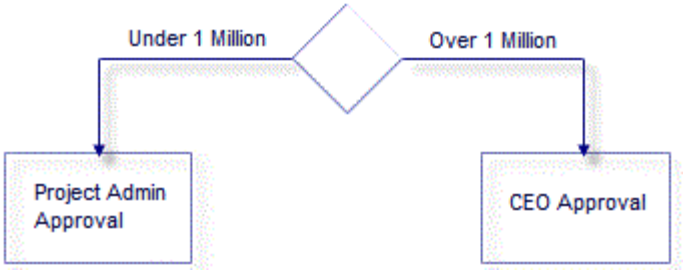
7) Click **Ok**.

To add or remove a step from a sub-workflow:

1) Select the sub-workflow.
2) Click the **Sub-Workflow** button and select Ungroup.
3) Select the steps to add or remove.
4) Click the Sub-Workflow button and select Group (to add) or Ungroup (to remove).

Adding a Conditional Step

A workflow can contain a conditional step that must be resolved before the workflow can continue. Conditional steps entail separate (conditional) routing. This routing is triggered at the step by a field condition or situation you can specify in uDesigner. An example of conditional routing is a purchase order that follows one path through a workflow if the total amount is less than a certain amount, and follows another path if it is equal to or greater than that amount. (The trigger value for the field on the conditional step's form is assigned when the business process is set up in Unifier.)



When the workflow reaches a conditional step, the business process tests the value of the field on the form to see whether it meets the trigger value.

To design a conditional routing, in uDesigner, you need to specify:

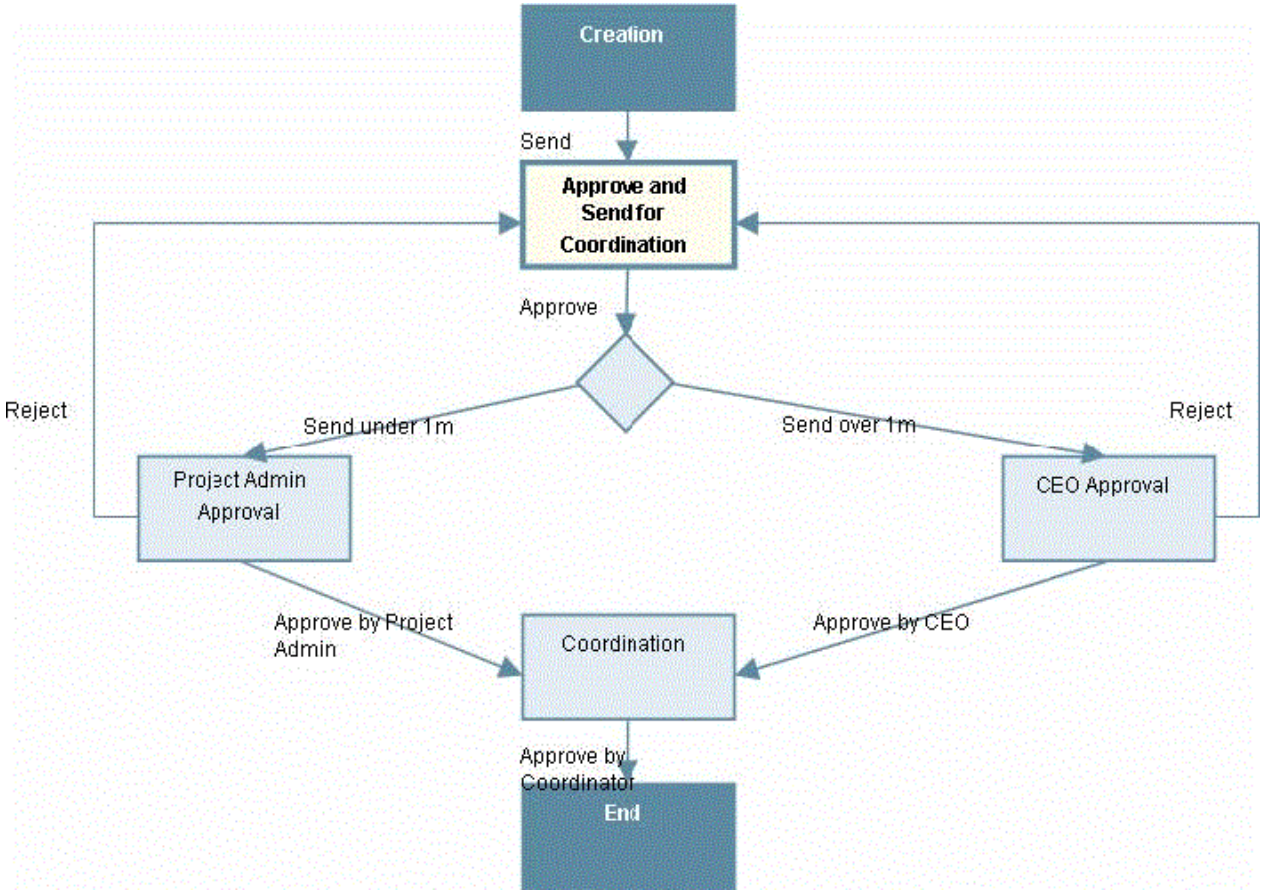
- Which step spawns the conditional routing
- Which field(s) in the form attached to the step contain the trigger value(s) that will be tested by the BP

When you define the trigger condition, you can specify the data elements that must be satisfied to activate the trigger. For example, on a purchase order, conditional steps could be triggered by a combination of the dollar amount and the region where the purchase is being made. A cost above $500,000 in New York may not trigger a conditional step, whereas a cost above $500,000 in Georgia may.

> **Tip**: If you are creating a business process that allows users to add line items, keep in mind that users may be able to add line items after the conditional routing step. For instance, using the purchase order example, if the P.O. is under $1000 and is routed appropriately, a subsequent user could add line items that push the total over $1000, thereby bypassing the "over $1000" workflow. A way to prevent this is to create an additional Action form for the BP that prevents adding line items and use that as the Action form for the workflow steps that follow the conditional routing step.

To add a conditional step:

1) In the Workflow Designer window, click the **Condition** button.
2) Click the canvas. The conditional step appears as a diamond shape.
   You can include multiple conditional routings in a workflow, but only one condition per step.



3) Specify the conditional step's properties.
   Use the instructions under ***Adding Steps to the Workflow*** (on page 440).
4) In the **Trigger Element** field of the Step Properties window, click the **Add** button and select the field (data element) that will serve as the trigger for the conditional step.

This is the trigger that must be resolved before the workflow can continue. The value of the data element at runtime will dictate whether the conditional step must be resolved. (These trigger values are assigned when the business process is set up in Unifier.)

You can specify multiple data elements. If you do so, the values of all the data elements must be met to trigger the conditional step.

Notes:

- You cannot use a multi-select data element as a trigger element because the trigger element feature does not recognize the commas that separate the values in these elements.
- You can use data elements that have been linked in shell hierarchies.

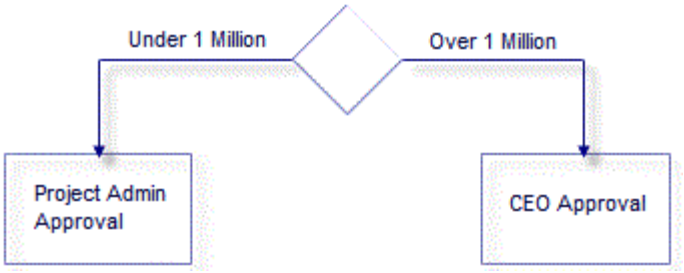
5) Connect the conditional step to other steps as appropriate.

   A conditional step must have one incoming connector and two outgoing connectors.

6) Denote the links as conditional:

   a. Double-click the line or elbow connecting the conditional step (the diamond) to another conditional step. The **Conditional Properties** window opens.

   b. In the **Conditional Name** field, enter a name for the action of the conditional link; for example, "Under 1 Million" to route an invoice approval to one authorizer, or "Over 1 Million" to route it to another authorizer.



Auto-Creating a Record from a Workflow

Unifier maintains a record of each business process once it reaches a terminal status. This record contains all the information that was generated during the business process, including the forms, documents, comments, and other data that was collected during the BP's runtime.

Note: You cannot auto-create company-level or single-record BPs.

For workflows that would benefit from this feature, you can design a workflow that will automatically create a new record after the form reaches a specific step. The new record will contain an exact duplicate of the information in the original record—all the information that was contained in that transaction, including forms, attachments, and comments. In Unifier, the user who owns the original record becomes the owner of the auto-created record. After being created, the new record is sent automatically to the next step in the workflow.

> **Note:** If the Completion Policy for a step is set to **All-Consensus** and **Auto Creation** is enabled, automatic creation of the applicable items begins after *all* assignees have agreed on the action.

For example: A user wants to create a service request that is routed for approval, upon which a work order is auto-created. When the service request is complete, the work order will automatically create the charges against the work order.

Another example: A user wants to create a Request for Bid (RFB) that is routed for approval, upon which a bid is auto-created and sent to vendors. After the submitted bids are collected, a contract will be auto-created and sent to the winning vendor.

In addition to creating a new record, you can direct the original record to automatically populate the upper form and detail form information on the new record. This auto-population works only if the data elements of the form fields are the same on both records; that is, if a field using the same data element appears on both records, the text in the original record can be entered automatically in the new record.

- For multi-tab forms, only the system-defined Standard tab will be auto-populated. None of the data in user-defined tabs will migrate to the new record.
- The fields will not show auto-populated values until the user accepts the task.

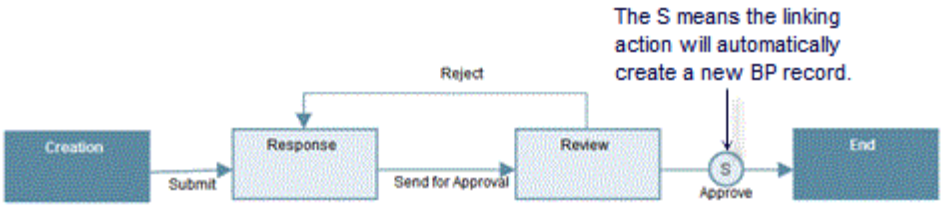
To auto-create one record from another:

1) On the Workflow Designer window, double-click a line or elbow connecting two non-conditional steps. The Action Properties window opens.
2) Select the **Auto-create other record** check box.
3) Click the **Add** button. uDesigner displays a list of all the business processes to which you have access.
4) From the list, choose the business process you want the record to create.
5) If you want to auto-populate fields in the new record, click the **Auto Populate** drop down list and choose what you want to auto-populate—upper form (header) fields only, or both upper and detail form fields for the Standard tab.

> **Note:** Auto-populated field values will override any field values that have migrated with the auto-creation.

6) Click **OK** to save your changes.

To indicate that the linking action will automatically create a new record, uDesigner inserts an S icon in the link.



If an action is not going to auto-create a new record, you can select the **Do not evaluate condition cased autocreation** check box to avoid using unnecessary processing power of executing or evaluating BP creator conditions when there are no BP creators on this action. This option is unchecked by default.

Viewing a Summary of the Workflow

To help you verify the workflow, you can view it as a text summary in a table format if you prefer.

To view a summary of the workflow:

From the Workflow Designer window, click the **Summary** button. The Workflow **Summary** window opens, displaying all workflow steps, including sub-workflows, the forms attached to each step, as well as the links and conditions attached to the step. A blue circle appears next to any action name that is marked as a "resolving action." This format can help you verify the workflow against your outline.

The Workflow Summary window has the following columns:

- **Step Name**
- **View Form**
- **Edit Form**
- **Action Name**
- **Record Status (after action)**
- **Event Notification (after action)**
- **Condition Name**
- **Next Step**

Error-Checking the Workflow

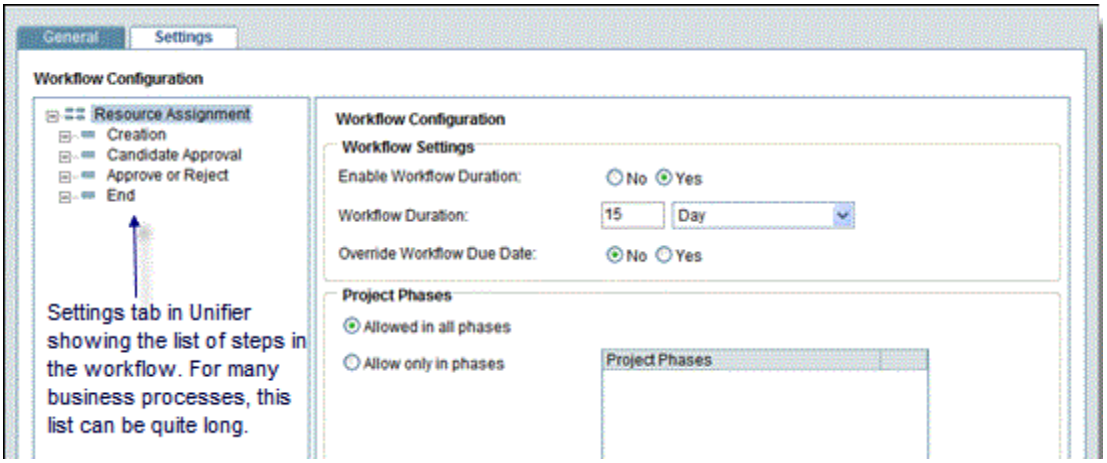
Error-checking the workflow validates it for completeness. If the check finds errors, uDesigner displays a window listing them. for more details, see ***Checking for Errors*** (on page 473).

To error-check the workflow:

1) On the Workflow Designer window, click **Error Check** on the toolbar. If there are errors in the workflow, an Error Check window opens.
2) Fix any errors listed, and then click **Error Check** again to recheck the workflow.
3) Repeat step 2 until the window shows no error messages.

Arranging the Step Order to Aid the Setup Process in Unifier

As you design a workflow, you are likely to add steps to the canvas in a random order and rearrange them as you work on the design. This is usually how workflows are designed; however, it has an inconvenient effect on the process of setting up the workflow in Unifier. When you configure the workflow, the steps appear on the Settings tab in the order you added them to the canvas. This is not likely the order they were in by the time the workflow design was finished, nor the chronological order an administrator needs to see them in when configuring the workflow.



To ease the configuration process, uDesigner provides a "Step Order" feature you can use to arrange the steps in chronological order for an administrator. This feature is for ease of use; it makes no changes to the workflow itself.

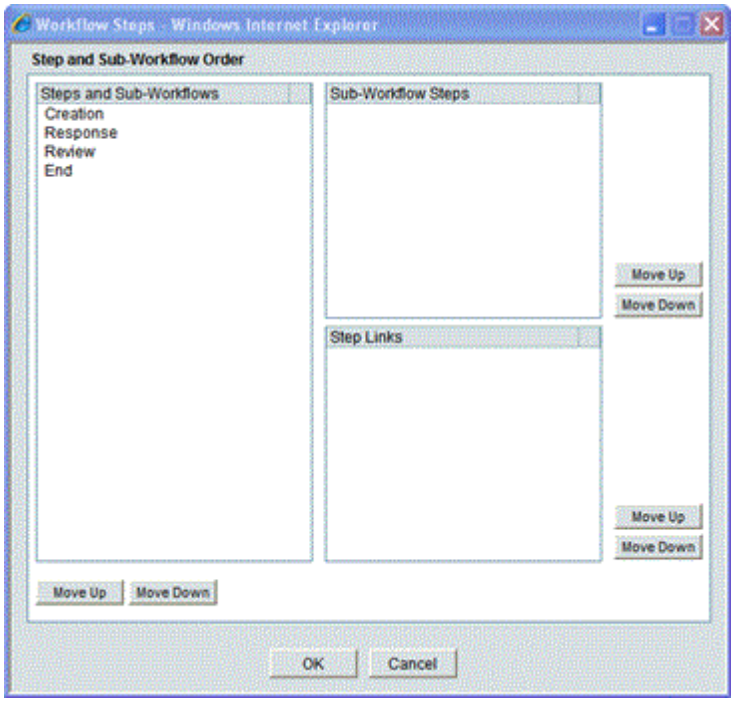
The Step Order feature includes another advantage: It can organize the workflow actions into a logical, easy-to-use list for the user. The **Workflow Actions** option on a BP form may list an extensive number of actions.

By listing the actions in descending order by "most-used," you can increase the user's efficiency and prevent them from scrolling through long lists for the actions they will be using most often.

To arrange the step and link order:

1) In the Workflow Designer window, click the **Step Order** button. The **Step and Sub-Workflow Order** window opens.

The window divides the workflow into steps, sub-workflow steps, and link actions.



2) To arrange the steps in their logical workflow order, highlight each step and use the **Move Up** or **Move Down** buttons.
3) Use the **Step Links** section to arrange the actions into a more usable order for the list that appears when the user clicks the **Workflow Actions** drop-down list on the form.
4) Click **OK**.

Printing a Workflow

You can create a PDF copy of the workflow, which you can then print or save to your local drive.

To print a workflow:

1) On the Workflow Designer window, click the **File** menu and choose **Print to PDF**.
2) Choose to **Save** the PDF file to your local system, or **Open** the file (as a PDF file).
3) From the PDF file, click **File>Print**.

Copying a Workflow

You can copy an existing workflow and create a new workflow.

To copy an existing workflow:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the applicable business process.
4) In the left Navigator, select **Workflows** to open the **Workflow** log.

5) From the menu, click **Copy** and select **Copy From** to open the **Business Process workflows** window

In the **Business Process Workflows** window you have the following menu options that enable you to copy a workflow or find a workflow that you want to copy:

- **Copy**

  Use this option after you select the workflow that you want to copy to the destination BP design. You can only copy one workflow at a time.
- **Find**

  Use this option to find and search for workflows based on Business Process, Workflow Name, and Description fields.
- **Close Window**

  To close the **Business Process Workflows** window.

In the **Business Process Workflows** window you have the following columns that provide details for each available workflow:

- **Business Process**

  This column displays a list of BPs that are workflow BPs. The BPs can be Company-level or the Project-level BPs.
- **Workflow Name**

  The name of the workflow. The workflow can be in draft (Status = Draft) or complete (Status = Complete). Published workflows are also listed.
- **Description**

  The description of the workflow, if available.

When you select a workflow from the **Business Process Workflows** window and click **Copy**, the **Workflow Properties** window opens. In this window you have the following fields:

- **Name**

  The name of the copied workflow. If the destination BP contains a workflow with the same name as the one copied, Unifier adds the words "Copy of" to the beginning of the workflow name.
- **Description**

  Enabling you to provide a brief description about the copied workflow.

When creating a new workflow by using a copied one, the following data will be copied:

- All the steps and their names.
- All action links.
- All sub-workflows, if any exists in the source BP design.
- The S-Step auto-creation process, if any, along with the BP name,
- Data associated with each of the steps:
  - Step Name
  - Description
  - View Form
  - Edit Form

- Trigger Element

  If the trigger elements, and the workflow action fields such as the ones stated below, do not exist in the destination BP, these Data Elements (DEs) will not be brought over; however, if the DEs exist, the workflow will have these DEs.

  - Select Data Elements to capture Action Information
  - Taken By
  - Action Name
  - Taken On

When creating a new workflow by using a copied one, the following data will *not* be copied:

The action forms and view forms, associated with the workflow.

To ensure that the action forms and view forms, associated with the workflow, are copied to the destination BP, the user must access the individual step and do the setup of the forms again.

When creating a new workflow by using a copied one, Unifier will notify you whether or not:

- All the forms defined in the workflow exist.
- Any trigger elements exist in the Business Process (BP).
- Any of the Data Elements (DEs) that exist in the BP are updated.

Creating a Business Process Log (Standard or Picker)

This topic explains how to create logs for business processes.

> **Note**: The default elements and fields (log layout, view, search, and so on) that are defined in the Standard Log, in uDesigner, determine the Standard user interface elements and fields of all logs.

Logs appear in the right pane in Unifier. Each business process and spaces type populates its own log with all the records that were created whenever the business process completed its cycle through a workflow. The logs contain one record for each cycle of the workflow.

> **Note**: For instructions on creating a log for a manager, see ***Designing a Log for a Manager*** (on page 207).

Each record contains all the information that was generated during the cycle, including the forms, documents, comments, and other data that was collected during runtime.

Purposes of logs

Logs are for two purposes:

- To allow users to select a particular record to work on, monitor the record status quickly, and monitor the record content.
- To allow users to populate pickers.

  Unifier populates most pickers with the records that you see in the logs and uses the layout of the headings on the logs for the layout of the picker. These logs show the records that were created, for the most part, with attribute forms.

Example log:

Record #	Title	Due Date	Reference ID	Status	Creator	Creation Date
DR-004	Comments on line items	10/29/2021 ...		Pending		10/22/2021 05:23 AM
DR-003	Material required for p...	12/04/2018 ...		Pending		11/27/2018 11:47 AM
DR-002	Design Review for Park...	10/22/2018 ...		Pending		10/15/2018 08:06 AM
DR-001	ps test 01 9-2	02/15/2018 ...		Pending		02/08/2018 02:52 PM

Types of logs

There are two types of logs you can design for any business process:

- **Standard log**

  This kind of log displays a flat list from which you can select a BP record, or a shell, to work with. The standard log is the most common log display.
- **Picker log**

  This kind of log displays a tree, or hierarchy, structure for BP records. This tree structure makes it easier for the you to view and select BP records from a log of business processes.

A picker log must be designed for any business process that contains records that will be displayed on a data picker, or on a master BP log (master log). For more information about data pickers, see ***About Data Pickers*** (on page 222).

For simple project logs, Oracle recommends that you design a standard log.

If you design a picker log, that picker log is displayed in the application.

Example

You can create a picker log for work order records that could be displayed by their status, such as "pending," or "complete."

A standard log shows only a flat list of all the records, which cannot be expanded or collapsed.

A picker log displays a tree structure where users can drill down to more specific records by expanding or collapsing records.

In general, the only difference between a standard log and a picker log is that the picker log includes a grouping structure, but the standard log does not.

In This Section

Designing a Business Process Log (Standard or Picker) 462
Activity Attributes and Activity Picker 469
Business Process or Shells and P6 Activity Picker 470
Linked Data Elements using P6 Activity Picker 471

Designing a Business Process Log (Standard or Picker)

Since the steps are the same, use the following procedures to design either a standard or a picker log.

Important information about a business process log in Standard View

For the user to be able to filter for a particular field or fields, you (the designer) must add the fields to the standard log design manually, and then re-deploy the log business process; otherwise, the user will not be able to filter a record per added fields in a business process log, in Standard View.

To design a business process log:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process for which you want to design the log and click Log; then select the **Standard Log** or the **Picker Log** node.
4) Click **New**. The Log Page Design window opens.
5) Complete the tabs as described in the following sections.

The following topics explain the:

- General tab
- Layout tab
- Sort Order tab

- Find tab
- Group By tab

General Tab

1) In the **Name** field, enter a name for the log.
2) (Optional) In the **Description** field, enter text that describes the log.
3) (For RFB logs only) In the field titled RFB view form seen by bidders, specify the view or action form that was designed when the bidder form was designed.
4) Click **Apply**.

Layout Tab

Use the Layout tab to designate what data (fields) from the record should appear in the columns of the log. Only the fields from the upper form (including linked elements) are eligible for the log.

For Cost-Type, Multiple-Tab BP Forms

If you include an "amount" field on the log for a line item list for a tab, a total of the line item amounts will automatically appear at the bottom of each numeric column on the BP form.

To add a column of data to the log:

1) Click the **Layout** tab.
2) Click **Add**. The Layout Header Properties window opens.
3) Use the information in the table at the end of the procedure to complete the column layout.
4) Click **OK**.

   uDesigner displays the columns on the Log Page Design window.
5) (Optional) To change the order of the columns on the log, use the **Move Up** and **Move Down** buttons.

   These buttons move the columns left or right, respectively, on the log.
6) To add another column to the log layout, repeat steps 1 through 4.
7) Click **Apply**.

In this field:	Do this:
Data Element Label	Click the down arrow and choose from the list of data elements. The list shows only those data elements that were on the upper form of the BP. If you do not see the data element, go to the upper form of the BP and add it.
Data Element Name	No entry required. This field automatically shows the database name of the element you selected.

In this field:	Do this:
Column Heading	This field automatically shows the data element label. You can change this field to show a different heading on the log.
Width	Enter the width (in pixels) the column should be. The default is 150.
Alignment	Choose the positioning of the data within the column, including the heading. Select **Left**, **Center**, or **Right**.

Sort Order Tab

Use the Sort Order tab to sort the log by column order. You can determine which column to use as the default sort order for the Log. This allows you to choose a column to sort by initially.

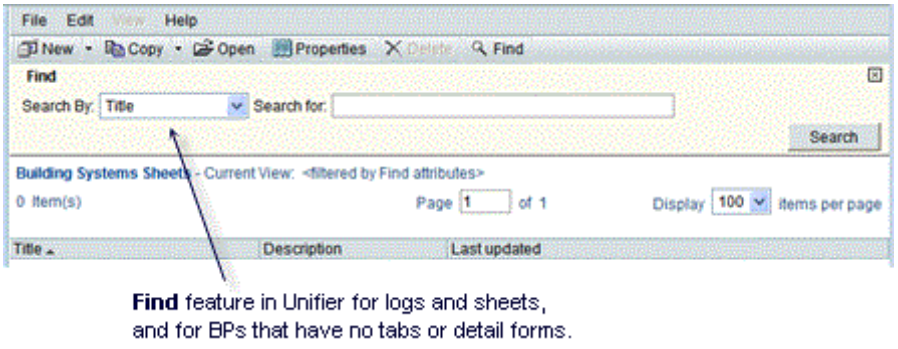
1) Click the **Sort Order** tab.
2) In the **Initial Sort Column** field, choose the field by which you want to sort the log.
3) In the **Sort Order** field, choose whether the sort order should be ascending (A-Z) or descending (Z-A).
4) Click **Apply**.

Find Tab

Use the Find tab to specify search criteria for the Find feature.

In the course of a user's work in Unifier, he or she will sometimes need to locate particular business process records or line items in the logs, often for the purpose of task management or milestone tracking. To make it easier for users to locate a record, use the Find tab to specify field names they can use to search for particular records. The user can also narrow a search by using operators on the fields, such as "contains" or "equals."

The following images show the **Find** field in Classic view at runtime.



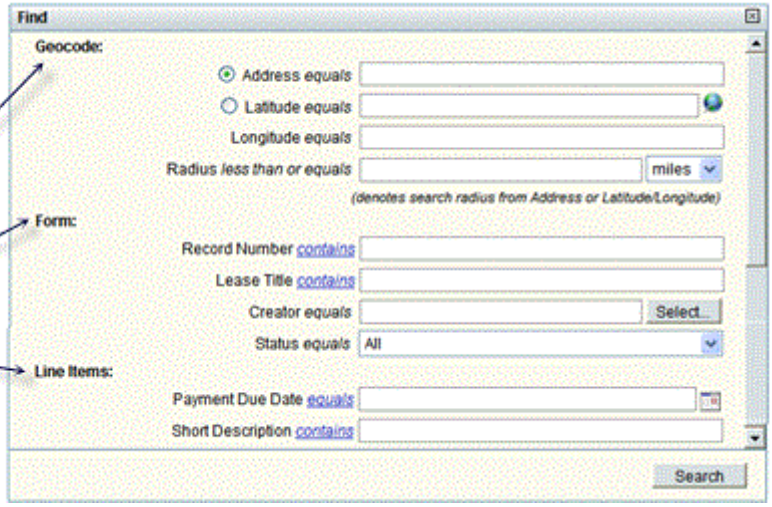
Find feature in Unifier for logs and sheets, and for BPs that have no tabs or detail forms.

Find feature in Unifier for BPs with detail forms.

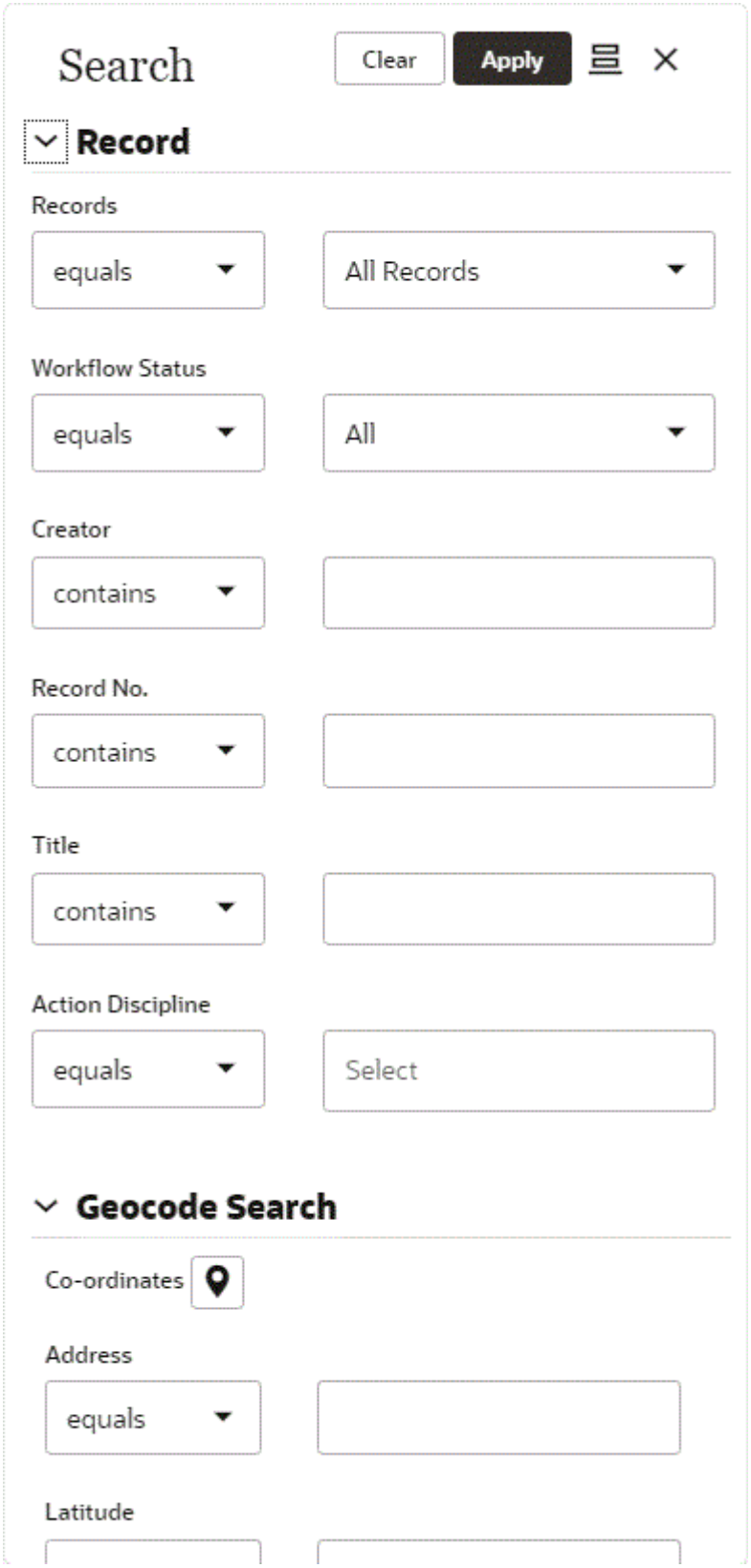
Unifier automatically includes the **Geocode** area for any BP that uses the mapping feature.

In the **Form** area, users can search for specific records.

In the **Line Items** area, users can search for specific line items.



The following image shows the **Search** window in Standard view at runtime.

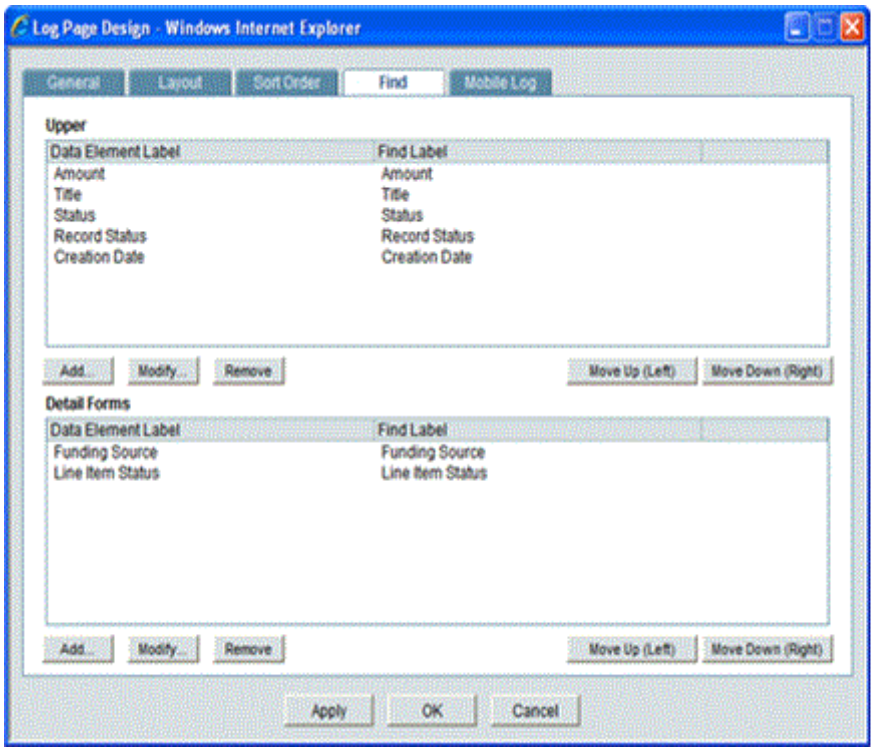

Search
Clear
Apply
Record
Records
equals
All Records
Workflow Status
equals
All
Creator
contains
Record No.
contains
Title
contains
Action Discipline
equals
Select
Geocode Search
Co-ordinates
Address
equals
Latitude

> **Note**: Users can search for tasks in the various Tasks logs using the field names you specify in the Find tab. You might take this into account when deciding which field names to include on the Find tab. If no fields are specified on the Find tab for a business process, the Find window displays the default search criteria fields, which are **From** (Company), **From** (User), **Record Number Contains**, and **Record Title Contains**. As a general rule, Oracle recommends that you use all the fields you included on the forms.

To specify search criteria:

1) Click the **Find** tab.

   Use the Find tab to specify the fields on both the upper form and detail forms that can be used in a search.



The Upper area shows the fields from the upper form of the BP.

The Detail Forms area shows the fields from all the tabs (detail forms) on the BP.

2) To add a field to the search list, click **Add** in either area of the window. The Find Properties window opens.
3) In the **Data Element Label** field, select a field (data element) users can use to find a record(s) or line item(s).

   When you enter a data element label, uDesigner automatically displays the database label of the element in the **Find Label** field. This field is editable.
4) If you want to change the name of the element to something more meaningful to the user, enter the name in the **Find Label** field.
5) Click **Add** to add another data element field to the find criteria, or click OK to close the window.
6) On the Log Page Design window, click **OK**.

Group By Tab

This tab appears only if you are designing a picker log for a data picker, or a master BP log. This is where you can create a tree or hierarchy structure for the business process and space records. When a user opens a data picker on a form or a master BP log, this tree structure appears and makes it easier for the user to view and select records from the log.

For more information on data pickers, see ***About Data Pickers*** (on page 222).

On the Group By tab, you specify what fields from the form you will use to make the tree structure. When the business process or space type is imported into Unifier, an administrator will configure these fields with a query to extract the appropriate records from the database and display them on the data picker list or the log.

To create the tree structure:

1) On the Group By tab, click the **Add** button. uDesigner opens the Add Data Element window.
2) In the Data Element field, select the field you want to appear in the tree structure.
   uDesigner shows the label of the element in the **Data Element Name** field.
3) To add another field for the tree structure, click **Add**; otherwise, click **OK**.
   The Log Page Design window displays the fields you selected for the tree structure.
4) (Optional) If you want to rearrange the order in which these fields will appear in the tree structure, highlight the fields and use the **Move Up** or **Move Down** keys until the fields are in the order you want.

> **Note**: If a field in this tree structure is removed from the business process form or Space Attribute Form, the Add Data Element window will show the removed field in red.

Activity Attributes and Activity Picker

You can include activity attributes in a business process, change the activity attributes values (such as actual dates: actual start, actual finish, and duration) from the business process, and update the activity sheet. In such a business process, you can use the activity picker and:

- Update (auto-populate) the values of the activity attributes of the System Activity Sheet.
- View the activity attributes from custom or manual activity sheets.

Also, you can:

- Conduct a reverse auto-populate (RAP) the activity attributes values (such as actual start, actual finish, and duration) from the business process and into the custom or manual activity sheets.
- View updated activity attributes on a business process record as the activity attributes get updated using linked data element.

To include activity attributes in a business process:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Activity Manager**.

3) Open the Activity Sheet.
4) In the left Navigator, select **Picker** to open the **Log Page Design** window.
5) Go to the **Layout** tab.
6) Click **Add** to open the **Column Header Properties** window.
7) From the **Data Element Label** field, click the drop-down arrow and select a data element label.

Use the **Picker** sub-node, which you use to define the activity picker log on a business process upper or detail forms in Unifier, select data elements from the Manual Activity Attribute Form.

You can add the data elements from both Activity Attribute Forms (Standard and Manual) into the picker log.

You can move (or reorder) the data elements that need to be seen in the picker log using the move up or move down options. The list of data elements shown in the picker log will be a union of data elements seen in both attribute forms.

You can define the "Sort Order" and "Find" attributes within the picker log configuration window.

The fields Activity ID (uuu_P6ActivityID) and Activity Name (uuu_P6ActivityName) are mandatory in the picker log.

Business Process or Shells and P6 Activity Picker

You can add a data element of data definition = P6 Activity Picker in any project/shell-level business process (upper form or detail form).

> **Note**: This feature does not apply to the bidder form, project/shell creation business process, and any resource-type business process.

You can also add a P6 Activity Picker data element in any CBS-type Shell Attribute Form.

> **Note**: You cannot add a P6 Activity Picker data element in any other attribute forms.

Auto-Populate (AP) and Reverse Auto-Populate (RAP)

You can use a P6 Activity Picker data element as a source and define auto-populate and reverse auto-populate relationship. All the P6 Activity Picker data elements that are a part of the Activity Attribute Forms can be used as a source, if the data definitions match that of the destination data definitions.

You can reverse auto-populate all the supported data elements int the Activity Attribute Form that has the direction of **Both** or **Input**. If the user attempts to define a reverse auto-populate relationship for an Activity ID or Activity Name, Unifier displays the following error message: This data entry is not suitable for defining reverse auto-population.

Linked Data Elements using P6 Activity Picker

You can define linked data elements by using the P6 Activity Picker field through the Link Elements option in a business process upper form, business process detail form, or a Shell Attribute Form. All the data elements within an Activity Attribute Form (both Manual and Standard Activity attributes) are available to be added as linked data elements by using the P6 Activity Picker field.

The following table explains the options that are available:

Source

The Source field shows all the data elements that are of data definition type as P6 Activity Picker. This is a required field where you can select one of the P6 Activity Picker type data element.

Source Element

The Source Element field lists all the data elements from Activity Attribute Form (both Manual and Standard Activity attributes). This is a required field.

Destination Element

The Destination Element field lists all the data elements from Data Structure Setup that match the data definition of the Source Element field.

The data elements that have been added as custom data elements, in the form, will not be shown in the list of matching data elements.

Testing a Component in uDesigner

When you have completed a business process, attribute form, shell, manager, or other component in uDesigner, it must be tested in **Development** environment before importing and deploying it into the **Test** or **Production** environment.

Before the component is tested and published, it is important that you preview all the forms in the process, check them for errors, and change the status to "Complete."

In This Section

Checking for Errors 473
Changing the Status to "Complete" 474
Deploying to the Test Environment for Testing 474
Configuring a uDesigner Component for Testing 474
Loading the Business Process or Manager for Testing 475

Checking for Errors

The uDesigner error check feature validates the form for completeness. All errors must be corrected before you can change the status of the form to **Complete** and deploy the component to the **Test** or **Production** environment.

The validation verifies that:

- Any business process that is referenced on the form being validated has been imported
- Business process pickers are referenced correctly
- For existing BPs, the Source and Destination tabs are mapped to auto-create line items correctly
- At least one workflow has been created for a workflow business process
- The auto-created BP design has been imported for any workflow that auto-creates a business process
- All action and view forms that appear in the workflow steps are included
- Trigger elements have been defined for conditional steps
- Statuses, including terminal statuses, have been properly defined, and Inactive statuses have not been selected
- Formula fields have been properly defined
- Auto-populated fields have been properly defined, and referenced processes are present
- Form validation rules have been correctly defined
- Unique data elements with duplicate values, leading or trailing spaces are not included

To check for errors:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**.

3) Click the object that you want to work in, such as **Business Processes** or a specific manager like **Cost Manager**.
4) In the right pane, select a record in the **Name** column.
5) From the toolbar, click **Error Check** to view a list of errors in the **Error Check** window, if applicable.
6) Open the form and fix the listed errors.
7) Repeat the above steps until you have corrected all errors.

Changing the Status to "Complete"

During the design process, the form is in draft status. When you finish creating and error-checking the form and are satisfied with it, as well as any workflow(s), log, and so on, change the status to "Complete." The form must be complete before you can deploy it into the **Test**, or **Production**, environment.

> **Note**: You cannot edit a form with a status of "complete." You can, however, change a completed form back to "draft" status and edit it; then change the status back to "complete," and redeploy it to Unifier. Thereafter, any **new** BP or other form created with the edited form or workflow will reflect the changes.

To change the status of a component:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**.
3) Click the object that you want to work in (business process or manager).
4) In the list, on the right pane, highlight the name of the form.
5) From the toolbar, click **Status** and select **Complete**.

Deploying to the Test Environment for Testing

The **Test** environment is where you test the component before it is imported into the **Development** or **Production** environment.

In the **Test** environment, you can:

- Test BP workflows
- Modify, configure, or setup BPs
- View forms in action

Configuring a uDesigner Component for Testing

In the **Test** environment, you can test the workflows and view forms in action.

Example

Do the right fields become editable or read-only at the right steps?

Are fields missing at any step?

Does the workflow work the way you want it to?

Ensure that you involve the people who will use the components and gather the necessary requirements.

If you are not satisfied with your design:

a) Go back to the **Development** environment.
b) Change the uDesigner component (for example, BP) status back to "Draft" in the **Development** environment.
c) Ensure that the necessary changes are applied.
d) Deploy the changed design.
e) Test the design in the **Development** environment.

It may take several iterations to get everything exactly the way you want it.

To configure a uDesigner component:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Configuration**.
3) Click the component/object that you want to work in (business process or manager).
4) In the list, on the right pane, highlight the name.

To use the component in the **Development** or **Test** environment, you must set up and configure the component the same way that you would in the **Production** environment.

For instructions on how to set up and configure a component (a business process or manager), refer to the *Unifier Modules Setup Administration Guide*.

Loading the Business Process or Manager for Testing

To test the business process or manager, you need to load it into the Project/Shell in which it will be used and set it up for operation.

For instructions on how to set up and configure a component (a business process or manager), refer to the *Unifier Modules Setup Administration Guide*.

Modifying a Design

You can only modify your design in the **Development** environment.

Modifying a published BP or manager design can be a simple matter of changing a field on a form and re-deploying the component, or it can be a delicate balancing act of making modifications that will affect a workflow with trigger elements and conditional steps.

In uDesigner, you cannot edit a design with a status of "complete." You must change a completed component back to "draft" status and edit it; then change the status back to "complete," and redeploy it. Thereafter, any new records created with the edited design will reflect the changes.

Before you modify a published design, familiarize yourself with what you can and cannot change, and the possible ramifications of a change.

Test, Test! Test!

Making changes to a BP can have unexpected results on a business process. Test the BP thoroughly in the **Development** environment before re-deploying it. Keep in mind that a published BP can set internal requisites and conditions that a re-deployed BP can disrupt. You may encounter error conditions you did not expect.

What You Can Change

Following are the things you can change in a business process or manager design, with some caveats.

- You can change field protocols—"editable," "required," and so on.
- You can add fields (including auto-populated fields on a Payment Application BP, even if the Base Commit BP has been published).
- You can change the fields on a log.
- You can change "Find" fields.
- You can change workflow schemas.

  Be aware that schemas are a combination of forms and workflows, so if you change a form, you have effectively changed the schema as well.
- You can change conditional routing triggers.
- You can change the auto-created BPs on a workflow link.
- You can change the Default setting of Line Item Statuses for business processes.

What You Cannot Change

To protect the integrity of your existing records, uDesigner restricts the kinds of changes you can make to a published design. Following are the components you cannot change in a business process or manager design, with some explanations.

- You cannot change the name of a business process or other component once it has been imported into production.
- You cannot change data definitions that have been assigned to data elements that are in use.

If you change a definition, it changes the meaning of the data type and how it is used. For example, if you change a data definition from "currency" to "integer," it can disrupt cost rollups all the way to the company level.

- You cannot change a fund code after it has been used in the system.
- You cannot change a status value, after it is created. You can, however, deactivate it if you no longer want it to be available.
- You cannot change steps and links in a workflow

  After a workflow has been published, uDesigner locks the design. The best solution is to design a new workflow. Specifically, you cannot:
  - Change step names
  - Add or remove steps
  - Change link names
  - Add or remove links
- You cannot delete fields from a business process after it is active in the system. Deleted fields could disable a formula or cause a cost rollup, auto-population, or conditional routing to fail. Rather than remove the field, a safer idea is to place it in a hidden block, even if it is not going to be used elsewhere in the BP.
- You cannot delete any published workflow, even if it is no longer being used. If you want to modify a workflow, create a new one and re-deploy the BP.
- You cannot edit trigger elements in published workflows. You must create a new workflow. In-flight records will not have any impact if the existing workflow is inactive.

  Workflows are so integral to those business processes that use them that a deleted workflow will disable all the BP's configurations, setups, and records.
- You cannot delete a work package after it exists in the system. You can, however, inactivate a work package if it is not linked to any line items that may be in the Cost Sheet. If you inactivate the work package, approved and completed line items linked to the package will not be affected, but you will not be able to link any new line items to the package.
- You cannot change the following options in the BP **General** tab (go to the Company Workspace tab and switch to Admin mode; in the left Navigator, select uDesigner, and then select Business Processes; select a BP; from the toolbar, click **Open**, and select the **General** tab), after you click Apply or OK.
  - ID
  - Type
  - Level
  - Behavior
  - Record Instances

  You can only edit the Name and Description fields.

Integration

Using the Unifier integration feature, you can import data from an outside data source, such as a business management system or a text file, into Unifier, and export information from the application to an outside data source, such as an accounting system database.

An integration interface is necessary for the bulk editing feature. The bulk edit function works only on fields from the action form (upper form) for the current step in a workflow. It cannot be used to edit the following:

- Auto-populated fields
- Fields in a dynamic data set
- Read-only fields
- Fields from line items
- System-defined fields, such as record number, status, or due date

The integration feature supports:

- Cost BPs
- Line item BPs
- Simple BPs
- Text BPs
- Document BPs and documents
- Code and Records-based configurable manager classes
- Planning Manager planning items
- Shell Manager shells
- User Administration

Integration operates using two methods: **CSV files** and **Oracle Primavera Web Services**.

CSV Files

You can use CSV files from the Unifier interface. This integration method is typically for bulk loading data into the application. It creates records and line items, and is useful for converting a company's legacy data into forms.

Web Services

Web Services works outside of Unifier. It is useful for exchanging information between the application and other applications, such as a third-party accounting system that needs to interface with Unifier on a regular basis to exchange cost information. To use Web Services, customers need a basic knowledge of XML and the GET, CREATE, and UPDATE calls. Using these XML calls, Web Services can:

- Create records and line items using data from an outside database.
- Update upper form information on demand
- Retrieve information for use in an outside application.

For more information about Web Services integration, refer to the *Unifier Integration Interface Guide*. XML integration via Web Services must be coordinated with a representative (Oracle Support).

Integration Interface

To integrate data using either method, you need to create an *integration interface* in uDesigner. This interface specifies what fields in the Unifier forms you want to create and populate.

For CSV, this interface becomes a template that users can use to enter data. After users enter data into the templates, they must import the template back into Unifier to create and populate specific upper or detail forms.

For Web Services, this interface is used to validate the data that is imported into Unifier. For example, the interface will be used to verify that all required fields are present and that the pull-down lists contain the correct information.

In uDesigner, the interface design consists of upper and detail forms, much as it does in business process design. The upper form of an integration interface collects the upper form information of a business process or attribute form. The detail form collects line item information. In uDesigner, you can create the integration interface for a business process or other component (such as a planning item) as you create the component itself.

In This Section

Creating an Integration Interface 480

Creating an Integration Interface

To create an integration interface, you need to use an action form for a business process, or an attribute form for managers. With these forms, you can verify that all required fields are included in the interface design. After you have specified the fields you want on the interface, you need to create an interface template (a CSV file). This template, along with the other details of the integration interface, is imported along with the BP or manager into Unifier.

Tips for a successful interface design

- Data elements that are marked as required fields on the validation form should be included in the integration interface and should have the direction set to Input or Both.
- Standard data elements can only have a direction of Output. Avoid using them if you plan to use CSV integration for input.
- Be sure all field labels on a form are unique. If your form contains two fields with the same label, Unifier will stop the integration and issue an error message. To avoid this, be sure that all field labels on a form are unique. For existing forms, either remove the duplicate from the integration interface, or change one of the duplicate labels to something unique. (Changing the label will affect all forms in which that field (data element) is used.
- You cannot override the template project currency using the Project/Shell Creator business processes.
- CSV import is only available for a Simple-type Project/Shell Creator business process.

- Microsoft Excel truncates csv files with 15 or more rows and drops the additional commas from the 15th row onwards, resulting in an error when you try to import the file. You can avoid this issue for users by placing a required field as the last column of the design, and therefore, avoid having empty columns at the end of the file.
- If you add new data elements to your forms after creating the integration interface, they will not automatically be added to your existing integration design; you must add them manually if you want to include them in the design.
- If you remove a data element from a form after creating the integration interface, the data element will not be automatically removed from the interface design; you must remove it manually to avoid an error.
- If you change the design of your integration interface, be sure to export the new version of the xml or csv template first, before importing new records.
- Unifier can update Workflow BP records with the workflow details, and uses the step action form for validation. This enables an integration user to use the workflow step form to validate, when creating or updating a Workflow BP record through the new Rest Services. Also, when an integration form is defined in a Workflow BP, the following note is displayed under the Validation Form drop-down field: **Note: The Validation Form will be used for business process methods of REST Web Services V1 type.** This note is not available for Non-workflow BP records and other attribute forms in uDesigner.
- Unifier does not preserve, or retain, the query conditions for BP pickers that have been enabled to receive values through any type of integration. Oracle recommends that you use BP data pickers instead of BP pickers. In addition, when you are using BP pickers ensure that the display element value is unique; otherwise, the integration will fail if multiple business process records with the same display element value exist.

Creating an Upper Interface

The upper form of an integration interface collects the upper form information of a business process. The integration upper form is where you choose the form that verifies the required fields. Be sure you include all the required fields from the form you choose.

> **Note:** When using QBDE, be aware that query elements are rounded off to use two decimal places, even if the Base Currency and various defined currency fields are different.

To create an upper integration interface

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes.**
3) Open the business process.
4) In the left Navigator, select **Integration**, and then select **Upper**.
5) Click the **New** button.
6) In the **Upper Design** window:
   a. Enter a **Name** and **Description** for the interface.
   b. In the **Validation Form** field, select the upper form you want to use to verify the required fields for the interface.

      The list displays only the action forms that were created for the business process.

Notes:

- Images are not supported for import through CSV, Microsoft Excel, and web services. You must ensure that the validation form that is used for creating the record does not include image picker fields.
- Required fields in a hidden block of the form will not be exposed in the Import template. If the hidden fields are a part of the validation form, the import will fail. It is important that the validation form, used in the integration interface, is designed correctly to prevent import errors.

c. Click the **Data Elements** tab.

d. To add a field to the interface, click **Add**. The Add Data Element window opens.

e. In the **Add Data Element** window, enter the following information:

1. In the **Element Label** field, choose the field you want to add to the interface. The Data Element field will show the actual name of the data element you chose.
2. In the **Direction** field, select how the interface should direct the data in this field:
   - Select *Input* to receive data into Unifier in CSV or XML formats to create records or line items.
   - Select *Output* to send data from Unifier in XML format using Web Services.
   - Select *Both* to send and receive data between Unifier and any external application in XML format using Web Services.

Notes:

- Query-based data elements (QBDE) can only be included as read-only fields in the Upper form design. If you modify an existing business process design in the Draft mode, and it already included QBDEs with **Direction** set as *Input* or *Both* in the **Integration** tab prior to this change, the system will display errors during an error check. To resolve these errors, update the **Direction** for QBDEs as *Output* in the **Integration** tab.
- Unifier will dismiss direct QBDE value updates, if the "refresh" condition has not been defined, or the "trigger element" is not updated through input request.

f. Rearrange the order of the data elements using any of the following actions:

- Click the **Move Up** and **Move Down** buttons to reorder the data elements.
- Click the **Update Order** button to change the order of the rows in the **Row** column

7) Click **OK**.

Using the Move Up/Move Down keys

1) On the **Data Elements** tab, highlight the data element and click the **Move Up** or **Move Down** key until the element is in the order you want.
2) Click **OK**.

Editing the Row column

1) On the **Data Elements** tab, highlight (or double-click) the row number of the element you want to reorder.
2) Enter the new row number the data element should occupy.
3) Repeat step 2 for any other data elements you want to reorder.
4) Click the **Update Order** button; then click **OK** to save the changes and close the window.

Row Numbering

Row numbering follows a relative numerical progression.

Row numbers on the list start at 1. When you change the order of the rows, you can enter just about any number; even positive, negative, and duplicate numbers. uDesigner will re-sort the rows by retaining the relative order of the numbers you enter.

If you enter this:	This happens:
A negative number (for example, -100)	The row will move to the top, becoming row 1. If you enter two negative numbers, the "most negative" number becomes row 1, and the "next negative" number becomes row 2.
Zero (0)	The row will move to the top, becoming row 1 (or the row following any negative number you entered).
A number greater than the existing number of rows (for example, 100 when there are only 50 rows)	The row will move to the end, becoming row 50. If you enter two numbers greater than the existing number of rows (for example, 100 and 101), the sort will retain the order of the numbers. In this example, 100 and 101 will become rows 49 and 50.
A duplicate number (that is, the same number for two or more different rows)	The duplicate-numbered rows will become adjacent rows (in no specific order).

Creating a Detail Interface

A detail integration interface will collect line item information from the detail forms of business processes and the attribute/detail forms of managers. You can include any field on the detail form. A validation form is not necessary because the required fields are specified on the interface upper form (if there is one).

To create a detail integration interface:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes.**
3) Open the business process or manager attribute form.

4) In the left Navigator, select **Integration**, and then select **Detail**.
5) Click the **New** button. The Design window opens.
6) Enter a **Name** and **Description** for the detail interface.
7) Click the **Data Elements** tab.
8) To add a field to the interface, click **Add**. The Add Data Element window opens.
9) In the **Element Label** field, choose the field you want to add to the interface. The Data Element field will show the actual name of the data element you chose.
10) In the **Direction** field, select how the interface should direct the data in this field:
    - **Input** means the data will be imported into Unifier, using either csv or xml format, to create records or line items.
    - **Output** means the data will be exported from Unifier via Web Services, using xml format.
    - **Both** means the data will be available for both import and export between Unifier and an outside system via Web Services, using xml format.
11) Click **OK**.

Creating an Integration Template

To create a template for a business process, you must define Integration in the business process. The integration template is the structure that imports or exports the data that you defined in the Integration forms.

To create the template:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **Business Processes** or select the manager for which you want to create the integration template.
3) On the right pane, select the business process or manager attribute/detail form.
4) Click the **Integration** button at the top of the right pane and choose what template you want to create:
    - **Input CSV Template** to create a csv template to import data into Unifier
    - **Input XML** to create an xml template to import data into Unifier using Web Services and uLink
    - **Output XML** to create an xml template to export data from Unifier using Web Services

    When you specify what template you want to build, uDesigner takes the fields you specified and builds the csv or xml template, mapping field to field.

    A "file download" notification appears, asking if you want to open or save the template file.
5) Open the file if you want to review it, or click **Save** to save the file.

    You might want to give the file an easily recognizable name for users.

Upper Form Templates

For most companies, the upper forms in business processes contain many of the same fields. It can be difficult to ensure that forms are consistent, with fields in the same location for similar forms. To make creating upper forms easier, and reduce the chances of errors when modifications are made, you can create templates for upper forms so that you do not have to design and edit each one manually. When you add blocks from a template to an upper form, the template becomes linked to the upper form so that any changes you make to the template can be quickly and automatically "pushed" to the upper form.

A template provides only a layout of fields for the upper form. After a template layout is on the form design and linked to the template, you can use all the design features for the fields, such as formulas, auto-population, and dynamic data sets; but you:

- Cannot add, remove, or rearrange the template fields.
- Cannot move fields into or out of the template block.
- Cannot link template elements.

The procedure that follows explains how to **create a template**.

For information on how to use these templates to design an upper form, see ***Adding Blocks to the Attribute Form*** (on page 199).

Creating a Template

You can create a template manually, from a snapshot of the template, or copy a template from another business process.

Template "Cans" and "Cannots"

When you are creating a template, be aware of the following:

- The template provides only a layout of fields for the upper form.
- You can make fields in the template editable, required, or read-only.
- You cannot create dynamic data sets in a template.
- You cannot link elements in a template.
- You cannot validate the fields in a template.
- You cannot see a preview of the template design.
- You cannot use any of the functions that are available on the layout properties, such as formulas or auto-population.

To create a template manually:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process for which you want to create a template.
4) In the left Navigator, select **Templates**, and then select **Upper Forms**.
5) From the toolbar, click **New**, and select **Manual**. A Form Design window opens.
6) Enter a name and description for the template.
   The name must be unique. A description is optional, but recommended.
7) Click **OK**. uDesigner displays the name of the template on the right pane.

8) Double-click the template name to open the design window. The Form Designer window opens.
9) Create the template using the instructions under "***Adding Blocks to a Form*** (on page 301)" and also "***Adding Fields to the Form*** (on page 336) and ***Adding Blocks to a Form*** (on page 301).

To copy a template from another business process:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process for which you want to create a template.
4) In the left Navigator, select **Templates**, and then select **Upper Forms**.
5) From the toolbar, click **New**, and select **Copy From**. The BP Template Forms window opens, showing a list of the upper form templates that have been created for this business process.
6) Select an upper form from the list and click **Open**. A Form Design window opens.
7) Enter a name and description for the template.

   The name must be unique. A description is optional, but recommended.
8) Click **OK**.

   uDesigner copies the layout of the template to the template you are designing. At this point, you can edit the template. To edit the template, use the instructions under "***Adding Blocks to a Form*** (on page 301)" and also "***Adding Fields to the Form*** (on page 336)."

Using a Template In a Design

After you have created a template, you can add it to the design of the upper form when you add blocks to the form. For information on adding template blocks, see ***Using a Template in a Design*** (on page 298).

Updating an Upper Form Using a Template

After a template has been used in the design, you can make changes to that template and push those changes to any upper form that is linked to the template.

To push template changes to upper forms:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process with the upper form(s) you want to update.
4) In the left Navigator, select **Templates**, and then select **Upper Forms**.
5) On the right pane, select the name of the template you want to use to update the form(s).
6) From the toolbar, click **Update Forms**. uDesigner will ask you to confirm the update. Click **Yes**.

   uDesigner updates all upper forms in the business process that are linked to this template. Here is what the template will update:
   - Any block label name, width, or position change
   - Show or hide setting for the block border or label

- Blocks added to the template will be added at the end of the form
- Field positions, to reflect a change in the template (however, field settings, such as editable or read-only, will not be updated)
- Fields added to the template will be added to the form and will reflect the editable, required, or read-only settings from the template.

> **Note**: This is an "all or nothing" operation. If uDesigner finds any errors, it will not update any of the upper forms. For example, if the template does not exist in an upper form, or if you have added a field to the template that already exists on the form, the update will fail and uDesigner will display a window listing the errors.

Unlinking an Upper Form from a Template

When you unlink a form from a template, uDesigner leaves the block on the form design; however, the fields in the block are now available for any of the field functions, such as formulas or auto-population.

To unlink the form from a template:

1) Go to the **Company Workspace** tab and switch to **Admin** mode.
2) In the left Navigator, select **uDesigner**, and then select **Business Processes**.
3) Open the business process with the template you want to unlink.
4) In the left Navigator, select **Templates**, and then select **Upper Forms**.
5) On the right pane, select the name of the template you want to unlink from the form.
6) From the toolbar, click **Usage**. The Template Usage window opens, showing a list of all the upper forms the template is linked to.
7) Select the upper form you want to unlink and click the **Unlink** button.
8) Click **Close Window**.