

# **Oracle® Engineering**

User's Guide

Release 12.2

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Oracle Engineering User's Guide, Release 12.2

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## Oracle Engineering User's Guide, Release 12.2

### Part No. E48939-02

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- Are the implementation steps correct and complete?
- Did you understand the context of the procedures?
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# Preface

## Intended Audience

Welcome to Release 12.2 of the *Oracle Engineering User's Guide*.

- Engineers
- Oracle Engineering Applications users

See Related Information Sources on page x for more Oracle E-Business Suite product information.

## Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

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## Structure

- 1 Setting Up
- 2 Engineering Change Orders
- 3 Engineering Prototypes
- 4 Reports
- A Engineering Windows and Navigator Paths
- B Engineering Alerts
- C Engineering Tools Menu

## Related Information Sources

### Integration Repository

The Oracle Integration Repository is a compilation of information about the service endpoints exposed by the Oracle E-Business Suite of applications. It provides a complete catalog of Oracle E-Business Suite's business service interfaces. The tool lets users easily discover and deploy the appropriate business service interface for integration with any system, application, or business partner.

The Oracle Integration Repository is shipped as part of the E-Business Suite. As your instance is patched, the repository is automatically updated with content appropriate for the precise revisions of interfaces in your environment.

You can navigate to the Oracle Integration Repository through Oracle E-Business Suite Integrated SOA Gateway.

### Oracle Inventory User's Guide

This guide explains how to use Oracle Inventory

### Oracle Bills of Material User's Guide

This guide explains how to use Oracle Bills of Material

### Oracle Work in Process User's Guide

This guide explains how to use Oracle Work in Process

## Do Not Use Database Tools to Modify Oracle E-Business Suite Data

Oracle **STRONGLY RECOMMENDS** that you never use SQL\*Plus, Oracle Data Browser, database triggers, or any other tool to modify Oracle E-Business Suite data unless otherwise instructed.

Oracle provides powerful tools you can use to create, store, change, retrieve, and maintain information in an Oracle database. But if you use Oracle tools such as SQL\*Plus to modify Oracle E-Business Suite data, you risk destroying the integrity of your data and you lose the ability to audit changes to your data.

Because Oracle E-Business Suite tables are interrelated, any change you make using an Oracle E-Business Suite form can update many tables at once. But when you modify Oracle E-Business Suite data using anything other than Oracle E-Business Suite, you may change a row in one table without making corresponding changes in related tables. If your tables get out of synchronization with each other, you risk retrieving erroneous

information and you risk unpredictable results throughout Oracle E-Business Suite.

When you use Oracle E-Business Suite to modify your data, Oracle E-Business Suite automatically checks that your changes are valid. Oracle E-Business Suite also keeps track of who changes information. If you enter information into database tables using database tools, you may store invalid information. You also lose the ability to track who has changed your information because SQL\*Plus and other database tools do not keep a record of changes.



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# Setting Up

This chapter covers the following topics:

- Setup Overview
- Setup Flowchart and Checklist
- Setup Prerequisites
- Setup Steps
- Defining ECO Types
- Defining ECO Autonumbering
- Defining ECO Priorities
- Defining ECO Reasons
- Defining ECO Approval Lists
- Defining Material Dispositions
- Starting the AutoImplement Manager
- Engineering Profile Options and Security Functions
- Profile Option Settings
- Profile Options

## Setup Overview

This section contains an overview of each task you need to complete to set up Oracle Engineering.

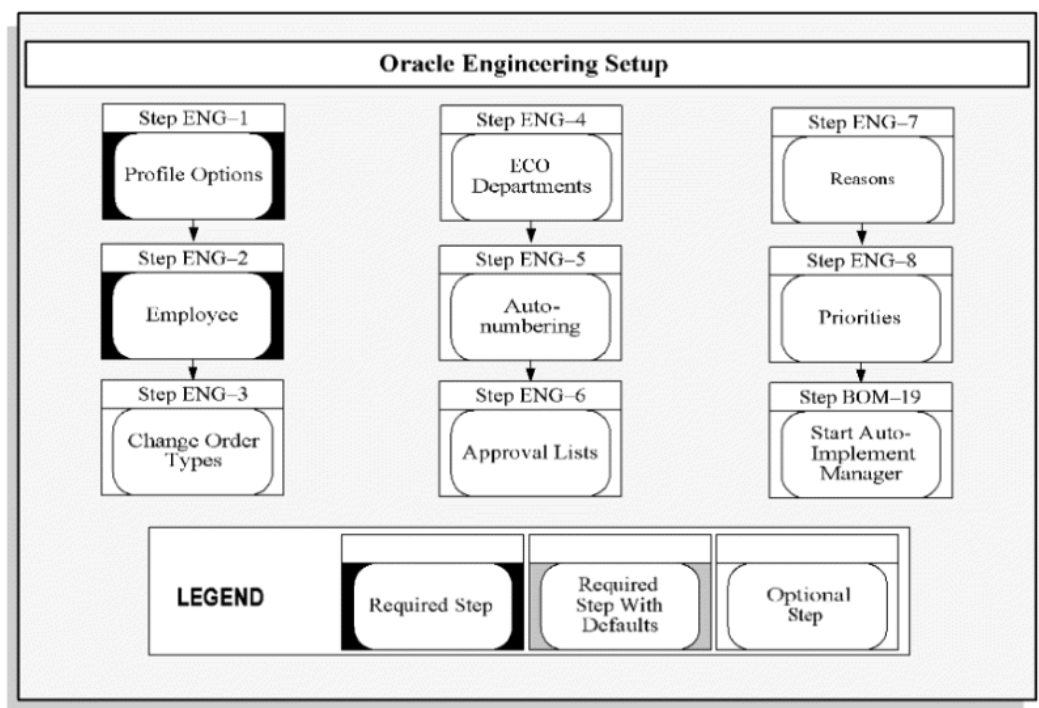
Before you set up Oracle Engineering, you should:

- Setting Up Oracle Applications System Administrator. See: System Administration Setup Tasks, *Oracle E-Business Suite Setup Guide*.

# Setup Flowchart and Checklist

Some of the steps outlined in this flowchart and setup checklist are Required and some are Optional. Required Step With Defaults refers to setup functionality that comes with pre-seeded, default values in the database; however, you should review those defaults and decide whether to change them to suit your business needs. If you want or need to change them, you should perform that setup step. You need to perform Optional steps only if you plan to use the related feature or complete certain business functions.

The diagram below is described in detail in the Setup Checklist table, and Setup Steps section that follow.



The following table lists setup steps. After you log on to Oracle Applications, complete these steps to implement Oracle Engineering:

Step No.	Required	Step
Step 1	Required	Set Profile Options
Step 2	Required	Enter Employee
Step 3	Optional	Define Change Order Types

Step 4	Optional	Define ECO Departments
Step 5	Optional	Define Autonumbering
Step 6	Optional	Define Approval Lists
Step 7	Optional	Define Material Dispositions
Step 8	Optional	Define Reasons
Step 9	Optional	Define Priorities
Step 10	Optional	Start AutoImplement Manager

## Setup Prerequisites

Before you set up Oracle Engineering, you must complete the setup for the following:

*In Oracle Inventory:*

- Define items. See: Defining Items, *Oracle Inventory User's Guide*

*In Oracle Bills of Material:*

- See: Setting Up, *Oracle Bills of Material User's Guide*

## Setup Steps

### Setup Steps:

#### 1. Set Profile Options (Required)

Profile options specify how Oracle Engineering controls access to and processes data. In general, profile options can be set at one or more of the following levels: site, application, responsibility, and user.

Oracle Engineering users use the Update Personal Profile Options form to set profile options only at the user level. System administrators use the Update System Profile Options form to set profile options at the site, application, responsibility, and user levels.

**Context:** Perform this step once for each entity, that is, site, application, responsibility, or user.

## 2. Enter Employee (Required)

Define employees for your organization. ECO requestors and approvers must be defined as employees.

If you do not install Oracle Human Resource Management Systems with Oracle Engineering, you use the Enter Employee form to define and maintain employees in Oracle Engineering.

If you install Oracle Human Resource Management Systems, you use the forms in Oracle Human Resource Management Systems instead to enter and maintain employees.

**Context:** Perform this step once for each entity organization.

## 3. Define Change Order Types (Optional)

You can assign a change order type to your ECOs, either using the ECO change order type that Oracle Engineering provides or choosing a change order type from any number of types you define using your own terminology, such as Design Revision, Manufacturing Change Order, or Substitution Waiver. You can create change order types for ECOs with manufacturing items, or manufacturing and engineering items.

**Default:** If you skip this step, Oracle shipped change order types will be used as the default value.

**Context:** Perform this step once per installation.

## 4. Define ECO Departments (Optional)

You can group users that use the engineering change order (ECO) system through ECO departments, creating multiple ECO departments within your Inventory organization. You can restrict access to ECOs by ECO department and require an ECO department on all ECOs-changing the responsible ECO department as the ECO moves through multiple departments.

**Default:** If you skip this step, *<enter value here>* will be used as the default value.

**Context:** Perform this step once per organization.

## 5. Define Autonumbering (Optional)

You can define customized autonumbering (for a user, organization, or site) for new ECOs or mass change orders. You can use the autonumber default value when you define an engineering or mass change order, or you can override the autonumber default and assign your own number.

**Context:** Perform this step once per organizational user.

## 6. Define Approval Lists (Optional)

You can define lists of approvers required to approve an ECO before it can be



released. Oracle Engineering notifies the people on the list, using an alert, that the ECO requires their approval.

**Context:** Perform this step once per installation.

7. Define Material Dispositions (Optional)

You can define your own customized material dispositions, and then assign them to revised items when defining ECOs.

8. Define Reasons (Optional)

You can define reasons for engineering change orders using your own terminology, such as Model Year, Design, Safety, and Ergonomic. ECO reasons are for your reference use only.

**Default:** If you skip this step, Oracle shipped reasons will be used as the default value.

**Context:** Perform this step once per organization.

9. Define Priorities (Optional)

You can define scheduling priorities for engineering changes to describe the urgency of your ECO. Priorities are for your reference use only.

**Default:** If you skip this step Oracle shipped priorities will be used as the default value.

**Context:** Perform this step once per organization.

10. Start AutoImplement Manager (Optional)

If you automatically implement ECOs, you must specify the frequency that you want the AutoImplement manager to run. Once an ECO has been released to the autoimplement manager, you can automatically implement all scheduled ECO revised items whose effective date is less than or equal to the current date.

## Related Topics

Starting the AutoImplement Manager, page 1-14

Defining ECO Priorities, page 1-10

Defining ECO Reasons, page 1-11

Defining Material Dispositions, page 1-13

Defining ECO Approval Lists, page 1-12

Defining ECO Autonumbering, page 1-8

Defining ECO Types, page 1-6

Oracle Engineering Profile Options and Security Functions, page 1-15

## Defining ECO Types

Engineering change order (ECO) types help classify engineering and mass change orders to items and bills of material, and determine whether such orders apply to engineering in addition to manufacturing.

An ECO type can be associated with an Oracle Workflow process. If so, a priority can optionally be associated with the ECO type.

If you define an ECO using a type and priority combination (even if the priority is blank) that is associated with a workflow process, Workflow will control the ECO approval process. If the type and priority combination is *not* associated with a workflow process, the ECO approval status defaults to Approved.

Use this form to define and update change order types that determine the types of items and bills of material you can modify on mass change orders.

**Note:** You can now create an engineering change order type in the Change Types window with a name of up to 80 characters in length in the Type field. Previously, the name of an engineering change order type was limited to 10 characters.

You can now set up engineering change order types in the Change Types window in multiple languages.

### To define an ECO type:

1. Navigate to the Change Types window.

Type	Engineering Also	Description	Inactive On
Document	<input type="checkbox"/>	Documentation Only Change	
Eng Proto	<input checked="" type="checkbox"/>	Engineering prototype	
New Prod	<input checked="" type="checkbox"/>	New Product	
Prod Chg	<input type="checkbox"/>	Product Change	
	<input type="checkbox"/>		
	<input type="checkbox"/>		
	<input type="checkbox"/>		
	<input type="checkbox"/>		
	<input type="checkbox"/>		
	<input type="checkbox"/>		
	<input type="checkbox"/>		

Processes

2. Enter alphanumeric text for a unique change order type.

3. Indicate whether the change order type can revise both engineering and manufacturing items and bills.

ECOs with an engineering change type can include both engineering and manufacturing items. ECOs with a manufacturing change type *cannot* include engineering items.

If an ECO with a status of Open, Hold, Release, or Schedule is using this ECO type, this value cannot be updated.

You must choose the **Manufacturing** option in this field for Oracle Engineering.

4. Optionally, enter a description for the change order type.

5. Enter a date to inactivate the change order type. As of this date, you can no longer assign this change order type to a change order.

6. To associate this ECO type with a Workflow process, choose the Processes button.

If you do not associate this ECO type with a Workflow process, any ECO using this type will default to Approved.

### To associate an ECO type with a Workflow process:

1. Navigate to the Change Type Processes window. Do this by choosing the Processes button from the Change Types window.

2.

Optionally, select an ECO priority.

**Note:** ECO types are not organization-specific. However, ECO priorities are organization-specific. This ECO type-priority combination will only be available in the current organization.

3. Select a workflow process to associate with this ECO type.

Whenever this type and priority combination (even if priority is blank) is used for an ECO, Workflow will control the ECO approval process.

## Related Topics

Overview of Engineering Change Orders, page 2-2

Engineering Change Order Types Report, page 4-7

Workflow for ECO Approvals, page 2-9

Defining ECO Priorities, page 1-10

## Defining ECO Autonumbering

You can define and update customized autonumbering to use as defaults when creating new engineering change orders (ECOs) and mass change orders.

Define autonumbering for a particular user in an organization, a user across all organizations, all users in one organization, or all users across all organizations.

When you first define an ECO, Engineering uses the following hierarchy to determine the prefix to use for autonumbering:

- Specific prefix for you and your current organization
- Specific prefix for you across all organizations
- Specific prefix for all users for your current organization
- Specific prefix for all users across all organizations

For example, if a prefix is set up for you and the current organization, it supersedes a prefix defined for you across all organizations.

When defining an ECO, you can either accept a default ECO number or manually enter one. Engineering displays the prefix along with the next available number. If Engineering does not find an autonumbering prefix, you must assign an ECO number manually.

**Important:** When creating an ECO, once a default ECO autonumber displays, Engineering considers that number used, even if you do not save your changes and create the ECO using that number. For example, if you begin to define an ECO called ABC234, and then decide to abandon your changes, Engineering presents the next ECO number as ABC235. You can manually change this number.

### To define ECO autonumbering:

1. Navigate to the ECO Autonumbering window.

The screenshot shows the 'ECO Autonumbering (M1)' window. It contains two sections: 'Users' and 'Organizations'. The 'Users' section has a 'User Name' label and a list of input fields. The first field is highlighted, and below it is a button labeled 'All Other Users'. The 'Organizations' section has a table with columns: 'Code', 'Organization', 'Prefix', and 'Next Number'. The first row is highlighted, and below it is a button labeled 'All Other Organizations'.

2. Enter or select a specific UserName to define autonumbering for a particular user, or select the All Other Users record to define autonumbering for all other users.  
  
If you have privilege only to define autonumbering for yourself, the default is your username.
3. Enter a specific organization to define autonumbering for a particular organization, or select the All Other Organizations record to define autonumbering for all other organizations.

**Important:** The information you provide in the Organizations region is associated with the specific user or the All Other Users record in the Users region.

4. Enter a prefix to use as the first characters for each defaulted ECO identifier for the specific user or All Other Users, whichever is currently selected.

You can define only one prefix per user per organization. You can define only one prefix per user across all other organizations.

5. Enter a Next Number to use as the of the base of the numeric portion of ECO autonumbering.

The combined prefix and next number-the autonumber-is incremented when each ECO is created. For example, if you enter 100 and your prefix is ABC, the first ECO number is ABC100. The next will then be ABC101.

Each new ECO number is defaulted to one integer plus the last used ECO number. When defining a new ECO, you can override this with a higher value. The next ECO number will then be one integer greater. For example, assuming ABC as the prefix and no ECOs defined using ABC, ABC1 is the default. If you have defined an ECO called ABC234, ABC235 is the default.

You cannot enter a prefix and next number that, when used together, exceeds ten alphanumeric characters.

## Related Topics

Engineering Change Orders, page 2-2

Creating an ECO, page 2-22

## Defining ECO Priorities

Engineering change priorities enables you to specify the urgency of the engineering change order. You can define a priority, enter a description, and enter a priority level between zero and nine.

**Note:** ECO priorities can be specified when associating ECO types with Oracle Workflow processes, which are used for ECO approvals.

### To define an ECO priority:

1. Navigate to the ECO Priorities window.



Reason	Description	Inactive On	[ ]

2. Enter alphanumeric text to describe a unique reason for initiating an engineering change. For example, you could define a reason *obsolete* to indicate an obsolete part, or *waiver* to indicate a component change on a bill of material.
3. Enter a description of the ECO reason.
4. Enter a date on which the reason becomes inactive. As of this date, you can no longer assign the reason to an ECO.

## Related Topics

Engineering Change Order Reasons, page 4-4

## Defining ECO Approval Lists

Engineering lets you define lists of approvers for ECOs. Each approval list can be used as a role by Oracle Workflow.

One workflow process, named Standard Approval Process, is installed with Engineering.

### To define an ECO approval list:

1. Navigate to the Approval Lists window.



Approval Lists

List

Description

Inactive On  [ ]

Approvers

Seq	Employee	Description	Inactive On

2. Enter the approval list name, a description, and, optionally, a date on which you can no longer assign the approval list to an ECO.
3. Enter a sequence for the approver. This number indicates the sequence of the approver for the ECO. Engineering uses this for information purposes only.
4. Enter an employee name for the approver.
5. Enter a date for this approver on the approval list. As of this date, the approver is no longer notified when an ECO requires their approval.

## Related Topics

ECO Approval Statuses, page 2-59

Workflow for ECO Approvals, page 2-9

Viewing ECO Approval Status, page 2-25

Engineering Change Order Approval Lists Report, page 4-1

## Defining Material Dispositions

Engineering enables you to define customized material dispositions. You can then assign them to revised items when defining an ECO.

### To define a material disposition:

1. Navigate to the Material Dispositions Lookups form and define your material disposition.

Code	Meaning	Description	Tag	From	To	Enabled
1	No change required					<input checked="" type="checkbox"/>
10	Exhaust on serial nu					<input checked="" type="checkbox"/>
11	test disposition looku	test disposition lookup		01-FEB-2002		<input checked="" type="checkbox"/>
2	Scrap WIP and inven					<input checked="" type="checkbox"/>
3	Scrap only inventory					<input checked="" type="checkbox"/>
4	Scrap only WIP					<input checked="" type="checkbox"/>
5	Rework inventory an					<input checked="" type="checkbox"/>
6	Rework only invento					<input checked="" type="checkbox"/>
7	Rework only WIP					<input checked="" type="checkbox"/>
8	Exhaust WIP and inv					<input checked="" type="checkbox"/>

2. Enter a new code and description for your material disposition.
3. Save your work.
4. Navigate to the Revised Items window and assign your material disposition to revised items.

## Related Topics

Defining ECO Revised Items, page 2-29

## Starting the AutoImplement Manager

The AutoImplement Manager runs at the specified dates and times and automatically implements items whose schedule dates occur on or before the current date. Engineering change orders or revised items whose status is Scheduled are automatically implemented.

### To start the AutoImplement Manager:

1. Navigate to the Start AutoImplement Manager window.

2. Enter or select the Automatic Engineering Change Order Implementation program.
3. Enter the dates and times when to run the ECO auto implement process.

## **Related Topics**

Changing the ECO Status, page 2-27

## **Engineering Profile Options and Security Functions**

During implementation, the system administrator sets up and maintains security functions and profile options.

A security function determines whether an Engineering Change Order (ECO) approval Workflow process can be submitted or aborted.

### **Engineering Change Orders: Cancel (ENG\_ENGFDECN\_CANCEL)**

Determines whether ECOs can be cancelled.

### **Engineering Change Orders: Implement (ENG\_ENGFDECN\_IMPLEMENT)**

Determines whether ECOs can be implemented.

### **Engineering Change Orders: Release (ENG\_ENGFDECN\_RELEASE)**

Determines whether ECOs can be released.

### **Engineering Change Orders: Reschedule (ENG\_ENGFDECN\_RESCHEDULE)**

Determines whether ECOs can be rescheduled.

### **Engineering Change Orders: Schedule (ENG\_ENGFDECN\_SCHEDULE)**

Determines whether ECOs can be scheduled.

### **Engineering Change Orders: Update (ENG\_ENGFDECN\_UPDATE)**

Determines whether ECOs can be updated.

### **Engineering Items: Delete (ENG\_INVIDITM\_DELETE)**

Determines whether engineering items can be deleted from the Bills of Material or Routings windows.

## Engineering Items: Revisions (ENG\_INVIDITM\_REVISIONS)

Determines whether revisions for engineering items can be updated.

## Engineering Items: Transfer (ENG\_INVIDITM\_TRANSFER)

Determines whether engineering items can be transferred to manufacturing.

## Profile Option Settings

You can set or view the following profile options in Oracle Order Entry/Shipping. The following table includes some profile options from other applications that are used by Engineering.

### *Profile Option Settings*

Profile Option	User	User	Resp	App	Site	Required ?	Default Value
ENG: Change Order Autonom bering - System Administrator Access	-	Y	Y	Y	Y	Required	No
ENG: ECO Department	-	Y	Y	Y	Y	Optional	No
ENG: ECO Revision Warning	-	0	0	0	Y	Optional	No
ENG: Engineering Item Change Order Access	-	Y	Y	Y	Y	Optional	Yes

Profile Option	User	User	Resp	App	Site	Required ?	Default Value
ENG: Mandatory ECO Departments	-	0	0	0	Y	Optional	No
ENG: Model Item Change Order Access	-	Y	Y	Y	Y	Optional	Yes
ENG: Planning Item Change Order Access	-	Y	Y	Y	Y	Optional	No
ENG: Require Revised Item New Revision	-	0	0	Y	Y	Optional	No
ENG: Standard Item Change Order Access	-	Y	Y	Y	Y	Optional	Yes
ENG: Allow Eng Comps for MFG Items in ECO	-	-	0	Y	Y	Optional	Yes

Profile Option	User	User	Resp	App	Site	Required ?	Default Value
ENG: MRP Active Flag default for ECO	-	-	0	Y	Y	Optional	Yes
ENG: Update Unreleased WIP Jobs	Y	Y	Y	Y	Y	Optional	Yes
ENG: Internal User Default Role for Changes	-	-	0	0	Checked	Optional	Yes
Y				You can update the profile option.			
-				You can view the profile option value but you cannot change it.			
0				You cannot view or change the profile option value.			

## Profile Options

You can set or view profile options in Oracle Engineering. The profile options mentioned in the preceding table are described here.

### ENG: Allow ENG COMPS for MFG Items in ECO

When this profile option is set to Yes, you can add engineering components to a manufacturing bill of material, but you must transfer the engineering component to manufacturing before implementing the engineering change order. When this profile option is set to No, you cannot add engineering components to a manufacturing bill of material.

**ENG: Change order Autonumbering-System Administrator Access**

Indicates whether you can define ECO autonumbering for all users or for yourself only.

**ENG: ECO Department**

Indicates the default department Engineering uses when you define an ECO. An ECO department is the department currently responsible for an ECO. It restricts departments from updating ECOs for which they are not responsible.

**ENG: ECO Revision Warning**

Indicates whether to raise a warning but still implement ECO revisions with pending lower level revisions (Yes), or to raise an error and not perform the implementation (No or blank). A blank (or "null") value is equivalent to No.

**ENG: Engineering Item Change Order Access**

Indicates whether a Change Order Type allowing the "Engineering Also" is available for selection. Set to No the Change Order Types which do not have the "Engineering Also" attribute selected.

**ENG: Internal User Default Role for Changes**

This is one of the roles that can be configured. Roles are used to define a set of privileges for the user. The roles are mentioned below:

Approver: User can approve the change order, may have edit privileges

Owner: User that submits the change order and has edit or read privileges

Reviewer: User can read the change order and material associated with the change order and has no edit privileges.

**ENG: Mandatory ECO Departments**

Indicates whether it is mandatory to assign a department to each ECO so you can enforce a security policy.

**ENG: Model Item Change Order Access**

Indicates whether you can revise model and option class items on ECOs.

**ENG: MRP Active flag default for ECO**

Indicates the default active flag for ECO revised items.

**ENG: Planning Item Change Order Access**

Indicates whether you can revise planning items on ECOs.

**ENG: Require Revised Item New Revision**

Indicates whether it is mandatory to assign a new revision to revised items on ECOs. A blank (or "null") value is equivalent to No.

**ENG: Standard Item Change Order Access**

Indicates whether you can revise standard items on ECOs.

**ENG: Update Unreleased WIP Jobs**

Indicates if you can update unreleased WIP jobs.

**Related Topics**

Overview of Function Security, *Oracle E-Business Suite Security Guide*

Implementing Function Security, *Oracle E-Business Suite Security Guide*

Defining Preferences with User Profile Options, *Oracle E-Business Suite User's Guide*

Profile Options in Oracle Application Object Library, *Oracle E-Business Suite Setup Guide*



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# Engineering Change Orders

This chapter covers the following topics:

- Overview of Engineering Change Orders
- User Profile Options
- ECO Departments
- Transfer or Copy from within an ECO
- ECO Life Cycle
- ECO Approvals
- Customizing the Standard Approval Process
- The ECO Approval Item Type
- Summary of the ECO Approval Process
- ECO Approval Process Activities
- Defining Engineering Change Orders
- Creating an ECO
- Viewing ECO Approval Status
- Rescheduling an ECO or Revised Items
- Changing the ECO Status
- Defining Implementation Costs
- Defining an ECO Revision
- Defining ECO Revised Items
- Viewing ECO Schedule History
- Viewing Item Revisions
- Viewing Routing Revisions
- Defining Revised Operations

- Defining Revised Resources
- Defining Revised Components
- Assigning or Deleting Substitute Components
- Assigning Reference Designators
- Attaching Files to ECOs
- Transfer to Manufacturing from an ECO
- Copy to Manufacturing from an ECO
- Mass Changing ECOs
- Implementing ECOs
- Automatic Implementation
- Cancelling ECOs and Revised Items
- Viewing ECO Schedules
- Use Up ECOs
- MRP Planning for ECOs
- Unreleased Item Revisions in Oracle Work in Process
- Implementation of ECOs on Jobs and Schedules
- Purging ECOs
- Engineering Change Orders Field Reference

## Overview of Engineering Change Orders

Engineering Change Orders (ECOs) enable you to control new item revisions and bill of material changes. With one ECO you can group several bill of material changes that affect one or more bills.

You can define ECOs for all types of items and bills, including:

- Manufacturing and engineering items
- Bills and their components
- Planning, model, option class, and standard items
- Primary and alternate bills of material

An ECO specifies changes to one or more items that are logically related to each other, such as a new product introduction. Each ECO specifies changes for one or more revised items and each revised item can have one or more revised components.

Depending on the ECO type, an ECO can update only the manufacturing bills or both

manufacturing and engineering bills.

You can add either engineering or manufacturing items as components on engineering bills. However, you can only add manufacturing items as components on manufacturing bills.

You can transfer or copy engineering items, bills, and routing to manufacturing as part of an ECO.

## Revised Items

Revised items can be either items or bills. If a revised item is a bill, you can change the item revision and component information (revised components). If a revised item defines a new bill, you can create revised components by copying an existing bill.

Engineering changes can be defined by date and or model/unit number effectivity. You should assign an effective date and model / unit number for each revised item on an ECO. Engineering uses this information to implement the ECO and to identify past due ECOs. Each time you change a revised item's effective date, Engineering adds an entry to list effective date changes. You can also specify an early effective date that determines the earliest date that you can manually implement a change. If you do not enter an early effective date, you can manually implement the change at any time. You can reschedule an ECO by entering a new effective date. A date effective revised item can only have date effective revised components.

A unit effective revised item can have both unit and/or date effective components. All unit effective revised items must have a from end item unit number specified, if the effectivity profile is set to Unit effectivity. The from end item unit number will be null and non-updatable for date effective revised items. The to end item unit number field will also be null and non-updatable for revised components of date effective revised items. If you are implementing a ECO for a unit effective component, the from unit number needs to be specified in the revised item block and the to unit number needs to be specified in the revised components block.

**Note:** There are two conditions under which revised items are not implemented: if the early effective date is greater than the current date, and if the user does not have access to the item type of the revised item. For example, if the revised item is a model item and the user does not have access to model items, the revised item is not implemented. The same is true for option class, planning, and standard items.

You can control whether Oracle Master Scheduling/MRP plans your proposed changes before implementation. If you have engineering changes that are firm, but whose effective date is in the future, you may want planning to consider those changes. You can choose to plan changes on any pending ECO regardless of the ECO status. Changes to the ECO status or the revised item status will automatically update the MRP active attribute. However, you can always manually set the MRP active attribute as desired.

For each revised item, you can also specify whether Engineering should update work in

process material requirements. When you implement such an ECO revised item, Engineering automatically re-explodes and updates the bill of material for all unreleased jobs and repetitive schedules for that item.

Engineering also updates repetitive schedules with statuses of Released, Complete, or On hold accordingly.

## Revised Components

You can add, change, or delete bill of material components and their attributes. The components and their attributes have the same restrictions as when you define a bill using Oracle Bills of Material. For example, you can only add components that are standard, model, or option class items for revised items that are model items.

## Revised Operations

You can define an ECO for Operations. You can add, disable, and change Department information, Effective dates, Minimum Transfer quantities, and many other attributes.

## Revised Resources

You can define an ECO for Resources. You can add, change, and disable resource information.

## Revisions

When you enter a revised item on an ECO, Engineering displays the current and latest revision of the item. The latest revision could be higher than the current revision if the latest revision is on a pending ECO.

Engineering uses the ENG: Require Revised Item New Revision to control new item revisions for each engineering change. If engineering changes always correspond to new item revisions, set this profile option to Yes. Doing so will force a new item revision for all revised items on an ECO. When you require new item revisions, you can track all engineering changes to an item by revision. For example, you can group related design changes on an ECO and roll revisions for each item to reflect the latest design.

If you define related ECOs at different times, set this profile option to No so you increment the revision only once. You can then define one ECO to change the revised item revision and other ECOs that do not change the item revision. Minor changes that do not affect form, fit, or function of an item may not require new revisions.

## Transfer and Copy to Manufacturing

You can transfer or copy entities to manufacturing. Transfer and copy transactions must proceed through the required approval cycles before they are implemented. The system

captures all transfer and copy transactions for future reference.

## ECO Access Control

Oracle Engineering controls the access to ECOs and the changes you can specify on them using profile options, security functions, item types, ECO types, and ECO departments.

## ECO Types

For each ECO type, you specify if it can update engineering items. Only users whose profile option indicates they can update engineering items can choose ECO types that update engineering items.

## Related Topics

Implementation of ECOs on Jobs and Schedules, page 2-55

ECO Revised Item Statuses, page 2-59

Copy Engineering Items to Manufacturing, page 2-45

Transfer Engineering Items to Manufacturing page , page 2-44

Bill / Component Validation Rules, *Oracle Bills of Material User's Guide*

## User Profile Options

User profile options control the types of items you can revise on an ECO. You can specify whether a user or responsibility can revise model and option class items, planning items, standard items, or engineering items on ECOs.

Engineering uses the following four profile options to control the types of items you can change on an ECO:

- ENG: Engineering Item Change Order Access (engineering items)
- ENG: Model Item Change Order Access (model and option class items)
- ENG: Planning Item Change Order Access (planning items)
- ENG: Standard Item Change Order Access (standard items)

Engineering enforces security for engineering items by letting only the users who are allowed to update engineering items choose ECO types that update engineering items. In addition, to update engineering bills of material for manufacturing items, you must choose ECO types that update engineering items.

Each time you try to add a revised item to an ECO, Engineering checks to see if you can update that item based on its BOM Item Type and your profile options.

For example, you might define several ECO types that can update manufacturing items, and only define one type that can update engineering items.

You might also specify profile options to control access to BOM item types by user, as shown in the following table:

***User Profile Options***

<b>User</b>	<b>ECO Department</b>	<b>Standard Item Access</b>	<b>Planning Item Access</b>	<b>Model / Option Class Item Access</b>	<b>Engineering Item Access</b>
Joe	Product Engineering	Yes	No	No	Yes
Mary	Mfg. Engineering	Yes	No	Yes	No
Fred	Customer Service	No	No	Yes	No
Sue	Material Planning	No	Yes	No	No
Dave	Production	Yes	No	Yes	No

In the example, Joe can create ECOs that update standard items. Mary can create ECOs that update manufacturing standard items and model / option class items. But Mary is not allowed to update engineering items.

## **Profile Settings for Changing Bills Only With ECOs**

To limit user's access to bills of material only through ECOs, set the following Bills of Material profile options to No:

- BOM: Standard Item Access
- BOM: Planning Item Access
- BOM: Model Item Access

And the following Engineering profile options to Yes:

- ENG: Standard Item Change Order Access
- ENG: Planning Item Change Order Access

- ENG: Model Item Change Order Access
- ENG: Engineering Item Change Order Access.

## Profile Settings for Changing Bills With or Without ECOs

With the same seven profile options listed above all set to Yes, bills can be changed with or without ECOs.

## ECO Departments

You can assign users to departments and secure each ECO to a department so that only those users can access the ECO. If you do not specify a department for an ECO, any user can access it. If you do not assign a user to a department, they can access all ECOs. Setting the ENG: Mandatory ECO Departments to Yes requires you to specify a responsible department on every ECO.

You can update the responsible department as you release an ECO from the current ECO department. For example, if Product Engineering releases an ECO to Manufacturing Engineering, they can reassign the responsible department so it becomes visible and updatable to users assigned to the Manufacturing Engineering ECO department.

## Related Topics

Engineering Profile Options and Security Functions, page 1-15

Oracle Bills of Material Profile Options, *Oracle Bills of Material User's Guide*

Defining ECO Types, page 1-6

Access Control by Item Type, *Oracle Bills of Material User's Guide*

## Transfer or Copy from within an ECO

You can transfer or copy engineering items, bills and routing to manufacturing from an ECO. When you transfer or copy an item, a bill or a routing to manufacturing, it passes through the necessary approval cycles and is implemented like other revised item changes. You can perform transfer or copy on only approved ECOs.

You can schedule transfer or copy transactions the same way you schedule revised items on an ECO. When the schedule date arrives, the items, bills and routings are automatically transferred or copied to manufacturing.

When transfer or copy of items is done through an ECO, the system captures the transaction history for future reference. It also give you the flexibility of creating all transactions when identified, and you may implement them at a later date.

## Related Topics

Transfer Items to Manufacturing from an ECO, page 2-44.

Copy Items to Manufacturing from an ECO: page, page 2-45.

Transferring or Copying Engineering Items, Bills, and Routings, page 3-5.

Copying Bill and Routing Information, *Oracle Bills of Material User's Guide*.

## ECO Life Cycle

Engineering uses two ECO status fields to control the ECO life cycle: ECO Status and ECO Approval Status. See: ECO Statuses, page 2-59.

You can change the status of an ECO. You can open, hold, release, schedule, implement, or cancel a revised item or an ECO. Engineering does not let you set the ECO Status field to Implemented or Scheduled if the approval status has not been set to Approved.

The following table illustrates a typical ECO life cycle:

### ***ECO Status Flow***

Sequence	Action	Approval Status	ECO Department
Start creating new ECO	Hold	Not Submitted for Approval	Mfg. Engineering
Complete data entry	Open	Not Submitted for Approval	Mfg. Engineering
Submit approval process	n/a	Approval Requested	Mfg. Engineering
Oracle Workflow controls approval process	n/a	Approval Requested	Mfg. Engineering
Approve and release	Released	Approved	Production
Production updates date	Scheduled	n/a	Production
Effective date arrives	Implemented	n/a	Production



## Related Topics

Creating an ECO, page 2-22

Viewing ECO Approval Status, page 2-25

Implementing ECOs, page 2-48

## ECO Approvals

ECOs can be approved in three ways, two of which require an approval process. The third requires no approval process.

First, the ECO, based on the ECO type in combination with the ECO priority, can be associated with an Oracle Workflow process. Once approval is granted, Workflow automatically updates the approval status.

Second, a simple approval list can be used, which sends an Oracle Alert to all those listed requesting their approval. Once approved, you must manually update the approval status. This approval option does not require an Oracle Workflow process.

The third method is to use neither of the above; the ECO needs no formal approval process and is given the status of Approved.

If the ECO is associated with an Oracle Workflow process, only Workflow may set the status to Approved. If the ECO has an approval list, you must set the status to Approved manually after the ECO has been approved by the appropriate member(s) on the approval list.

If neither is used, the ECO is set to Approved but can be manually rejected.

The following table describes the conditions under which the different approval statuses can be used:

### ***Approval Status Conditions***

<b>Condition</b>	<b>Valid Approval Statuses</b>
No approval list / no workflow approval process	Approved (default), Rejected
Approval list	Not Submitted for Approval (default), Ready to Approve (Oracle Alert fires), Approval Requested, Rejected, Approved
Workflow approval process	Not Submitted for Approval, Approval Requested, Rejected, Approved, Processing Error

## Workflow for ECO Approvals

Most organizations have some form of approval process before engineering change orders (ECOs) are implemented. By using Oracle Workflow, the approval process can be customized to meet each organization's needs.

Business rules for the approval of ECOs are defined in a workflow process. For each ECO, Workflow manages adherence to these business rules, including:

- submission of the completed ECO for approval via Workflow
- enforced approval process for an ECO type
- communication of messages via Notification Viewer, electronic mail, or web browser
- review of ECO from Notification Viewer
- automatic processing of user responses and update of system
- workflow status indicator for ECOs
- usage of current approval lists (roles) in the workflow process.

Once the ECO is created, Workflow takes over processing.

When Workflow is in control of the approval process, the ECO approval status is set to Approval Requested. Before the approval status is changed, the workflow approval process can be aborted.

Workflow manages the approval process until the entire approval flow is complete. Only then is the ECO approval status updated to either Approved or Rejected. If an error occurs during the Workflow approval process, the approval status is set to Processing Error.

## ECO Approval List Setup

Workflow can use roles whenever an activity involves several users. Approval lists defined in Engineering can be used to create roles. Roles are made up of either one approval list or one employee previously defined with the Enter Person window.

The ECO workflow approval process will notify all persons in the role, regardless if the role is defined using an approval list or an individual employee.

To approve (or reject) the ECO, approvers must respond to the notification. If the approver has an Oracle Applications Object Library account, they can respond to ECO approval requests using either a web browser or the Notification Viewer. If not, the approver can respond via electronic mail, provided their address is defined in the Enter Person window.

## **ECO Types and Priorities Setup**

ECO types can be associated with a workflow process. If you do not associate an ECO type with a workflow process, there can be no workflow approval process for ECOs using that ECO type. If there is an approval list, the ECO cannot be associated with a process.

ECO types that are associated with a workflow process can optionally be associated with an ECO priority. If so, ECOs that use the type/priority combination are approved via Workflow. Doing so enables workflow approval processes to be ranked according to priority.

## **ECO Approval**

The only user intervention required for a workflow approval process is for individual approvers to respond to an ECO approval notification. Once the process is complete, Workflow automatically updates the ECO approval status.

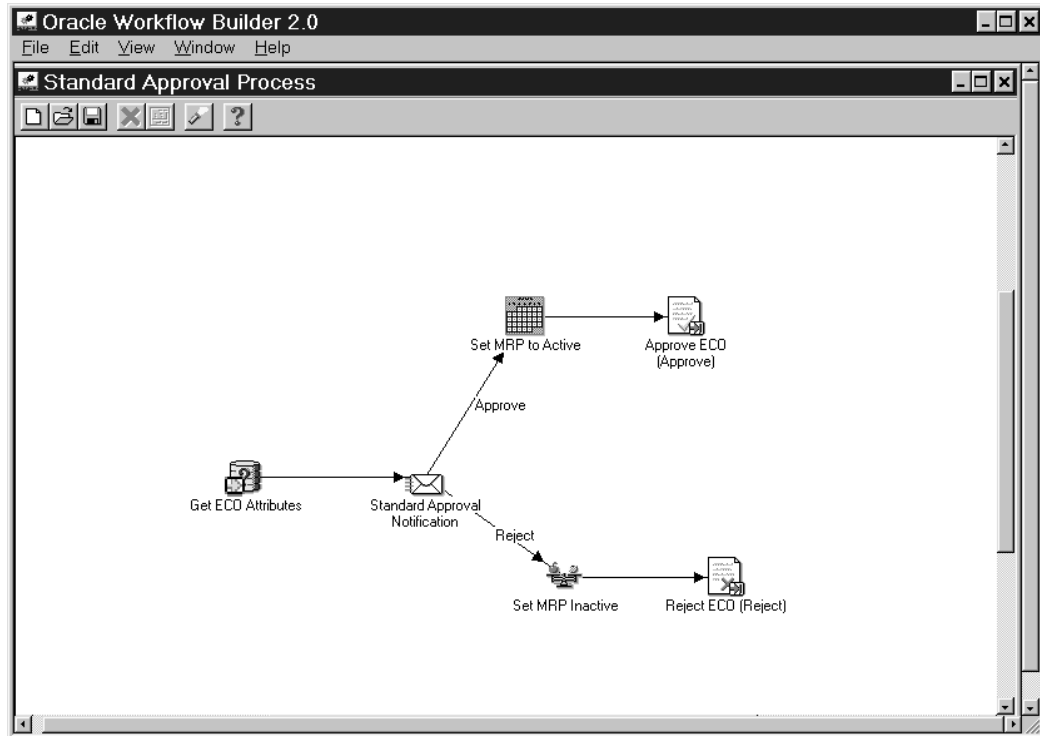
## **Related Topics**

Workflow for ECO Approvals, page 2-9

ECO Approval Statuses, page 2-59

## **Customizing the Standard Approval Process**

Once you install Oracle Engineering, you can view the Standard Approval Process in a Process window using Oracle Workflow Builder.



### To Display the Standard Approval Process in Oracle Workflow Builder:

1. Choose Open from the File menu, and connect to the database where you installed Oracle Engineering.
2. Select the ECO Approval item type.
3. Expand the data source, then the ECO Approval item type branch within that data source.
4. Expand the Processes branch within ECO Approval then double-click on the Standard Approval Process activity to display the diagram of the process in a Process window.

### Required Modifications:

You must make the following modifications to the Standard Approval Process before you can use it to initiate a workflow:

1. Specify an Approval for the ECO Approval Process
  - Choose Load Roles From the Database from the File menu. Select the role you wish to use for an approval.

**Note:** A role can represent a person or a group of persons. You must have already defined approvers and/or approval lists in Oracle Engineering.

- Select the Standard Approval Notification activity to view its properties.
- Enter Constant as the Performer Type. Select a Performer from the adjacent list of values.
- Select OK to save your changes.

#### **Optional Modifications:**

Although you can use the Standard Approval Process as is, you may want to customize the process further to accommodate your organization's specific needs.

#### **Creating a New Custom Process:**

You can use the Standard Approval Process for your ECO approvals or create your own approval process using Oracle Workflow. You must install Oracle Workflow to create your own approval process.

### **Related Topics**

ECO Approval Process Activities, page 2-16

Defining ECO Types, page 1-6

Defining ECO Approval Lists, page 1-12

Creating an ECO, page 2-22

Viewing ECO Approval Status, page 2-25

### **The ECO Approval Item Type**

The ECO Approval process is associated with an item type called ECO Approval. This item type represents the domain of all processes and activities used in the ECO Approval process and used by Oracle Engineering.

The following table presents ECO approval item type attributes:

***ECO Approval Item Type Attributes***

<b>Display Name</b>	<b>Description</b>	<b>Type</b>	<b>Length</b>
Approval Status	ECO Approval Status	Text	80
Attribute1	Attribute1	Text	150
Attribute2	Attribute2	Text	150
Attribute3	Attribute3	Text	150
Attribute4	Attribute4	Text	150
Attribute5	Attribute5	Text	150
Attribute6	Attribute6	Text	150
Attribute7	Attribute7	Text	150
Attribute8	Attribute8	Text	150
Attribute9	Attribute9	Text	150
Attribute10	Attribute10	Text	150
Attribute11	Attribute11	Text	150
Attribute12	Attribute12	Text	150
Attribute13	Attribute13	Text	150
Attribute14	Attribute14	Text	150
Attribute15	Attribute15	Text	150
Attribute Category	Attribute Category	Text	30
ECO	Engineering Change Order	Text	30
Change Type	Change Type	Text	10

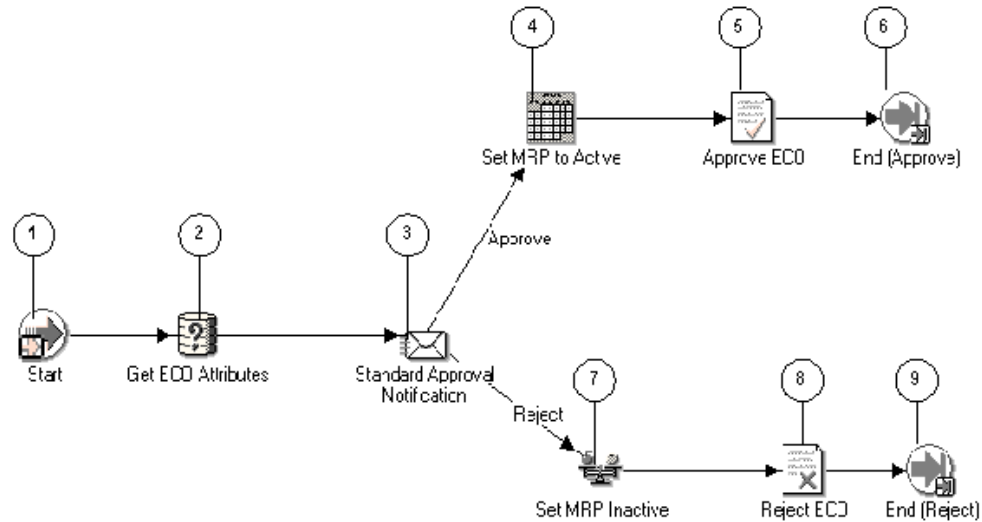
Display Name	Description	Type	Length
ECO Dept Code	ECO Department Code	Text	3
ECO Dept Name	ECO Department Name	Text	60
ECO Description	ECO Description	Text	2000
ECO Status	ECO Status	Text	80
Estimated Eng Cost	Estimated Engineering Cost	Number	n/a
Estimated Mfg Cost	Estimated Manufacturing Cost	Number	n/a
Full Name	Change Requestor	Text	240
Initiation Date	ECO Initiation Date	Date	n/a
Organization Code	Organization Code	Text	3
Organization Name	Organization Name	Text	60
Org ID	Organization ID	Number	n/a
Priority Code	ECO Priority Code	Text	10
Reason Code	ECO Reason Code	Text	10
Rev ID	Revision ID	Number	n/a

## Summary of the ECO Approval Process

The ECO Approval process consists of nine unique activities as displayed in the process diagram. The ECO Approval workflow begins when you submit an approval requisition from the ECO form in Oracle Engineering. The workflow begins at node 1 with the start activity. At node 2, the function gets all required ECO attributes and sets the item attributes. The ECO Approval status is changed to Approval Requested at node 3 and users on the approval list are notified of the ECO. If the user approves the

ECO, the MRP Active ECO attribute is set to YES at node 4 and the approval status is set to Approved at node 5. If the user rejects the ECO, the MRP active attributes is set to NO at node 7 and the ECO approval status is set to Rejected at node 8. The workflow process ends either at node 6 or at node 9 depending on whether the user approves the ECO.

The following diagram illustrates what is described in the text above.



## ECO Approval Process Activities

This section provides a description of each activity in the process, listed by the activity's display name. Following is the legend for the information displayed, and immediately followed is the list of activities.

### Start (Node 1):

This is a standard function activity that simply marks the start of the process.

- Function - WF\_STANDARD.NOOP
- Result Type - None
- Required - Yes
- Prerequisite Activities - None
- Item Attributes Set by Function - None
- Item Attributes Retrieved by Function - None



**Get ECO Attributes (Node 2) :**

This function gets all required ECO attributes and sets the item attributes.

- Function - ENG\_WORKFLOW\_API\_PKG.GET\_ECO\_ATTRIBUTES
- Result Type - None
- Required - Yes
- Prerequisite Activities - None
- Item Attributes Set by Function - CHANGE\_NOTICE
  - ECO\_DESCRIPTION
  - ECO\_STATUS
  - INITIATION\_DATE
  - PRIORITY\_CODE
  - REASON\_CODE
  - ESTIMATED\_ENG\_COST
  - ESTIMATED\_MFG\_COST
  - ATTRIBUTE\_CATEGORY
  - ATTRIBUTE1
  - ATTRIBUTE2
  - ATTRIBUTE3
  - ATTRIBUTE4
  - ATTRIBUTE5
  - ATTRIBUTE6
  - ATTRIBUTE7
  - ATTRIBUTE8
  - ATTRIBUTE9
  - ATTRIBUTE10

- ATTRIBUTE11
  - ATTRIBUTE12
  - ATTRIBUTE13
  - ATTRIBUTE14
  - ATTRIBUTE15
  - APPROVAL\_STATUS
  - ORGANIZATION\_CODE
  - ORGANIZATION\_NAME
  - FULL\_NAME
  - CHANGE\_TYPE
  - ECO\_DEPT\_NAME
  - ECO\_DEPT\_CODE
- Item Attributes Retrieved by Function - None

### **Standard Approval Notification (Node 3) :**

This is a standard approval notification that requests approval from users on the approval list.

- Message - Standard Approval Message
- Result Type - ECO Approval
- Required - Yes
- Prerequisite Activities - Standard Approval Message
- Expand Roles - No
- Notification Function - None

### **Set MRP to Active (Node 4) :**

After the user has approved the ECO, this function sets the MRP Active attribute to on for revised items with status of Open and Scheduled. This can be used to create MRP demand when the ECO's approval status is updated to Approved.

- Function - ENG\_WORKFLOW\_API\_PKG.SET\_MRP\_ACTIVE
- Result Type - None
- Required - Yes
- Prerequisite Activities - Standard Approval Notification
- Item Attributes Set by Function - None
- Item Attributes Retrieved by Function - None

#### **Approve ECO (Node 5) :**

This function sets the status of the ECO to Approved.

- Function - ENG\_WORKFLOW\_API\_PKG.APPROVE\_ECO
- Result Type - None
- Required - No
- Prerequisite Activities - Standard Approval Notification
- Item Attributes Set by Function - None
- Item Attributes Retrieved by Function - None

#### **End (Approve) (Node 6) :**

This function ends the ECO approval process with a status of Approved.

- Function - WF\_STANDARD.NOOP
- Result Type - None
- Required - No
- Prerequisite Activities - None
- Item Attributes Set by Function - None
- Item Attributes Retrieved by Function - None

#### **Set MRP Inactive (Node 7) :**

After the user has rejected the ECO, this function sets the MRP Active attributes to off for revised items with status of Open and Scheduled.

- Function - ENG\_WORKFLOW\_API\_PKG.SET\_MRP\_INACTIVE
- Result Type - None
- Required - Yes
- Prerequisite Activities - Standard Approval Notification
- Item Attributes Set by Function - None
- Item Attributes Retrieved by Function - None

#### **Reject ECO (Node 8) :**

This function sets the status of the ECO to Rejected.

- Function - ENG\_WORKFLOW\_API\_PKG.REJECT\_ECO
- Result Type - None
- Required - No
- Prerequisite Activities - Standard Approval Notification
- Item Attributes Set by Function - None
- Item Attributes Retrieved by Function - None

#### **End (Reject) (Node 9) :**

This function ends the ECO approval process with a status of Rejected.

- Function - WF\_STANDARD.NOOP
- Result Type - None
- Required - No
- Prerequisite Activities - None
- Item Attributes Set by Function - None
- Item Attributes Retrieved by Function - None

## **Defining Engineering Change Orders**

An engineering change order (ECO) controls item revisions and bill of material changes. ECOs specify changes to one or more items and each of these items can have one or

more revised components.

### **To define Engineering Change Orders:**

1. Navigate to the Engineering Change Orders window.
2. Create the ECO. See: Creating an ECO, page 2-22.
3. Assign an ECO approval list and status. See: Viewing ECO Approval Status, page 2-25.
4. Define implementation costs. See: Defining Implementation Costs, page 2-28.
5. Define an ECO revision. See: Defining an ECO Revision, page 2-29.
6. Define revised items. See: Defining ECO Revised Items, page 2-29.
7. Review ECO scheduling. See: Viewing ECO Schedule History, page 2-33.
8. Review item revisions. See: Viewing Item Revisions, page 2-34.
9. Define revised components. See: Defining Revised Components, page 2-39.
10. Review substitute components and reference designators. See: Assigning or Deleting Substitute Components, page 2-42 and Assigning Reference Designators, page 2-43.
11. Optionally, attach files to ECOs. See: Attaching Files to ECOs, page 2-43.
12. Submit the ECO for approval or set approval status to Ready to Approve.
13. Transfer or Copy the ECO to manufacturing See: Transfer to Manufacturing from an ECO page , page 2-44 and Copy to Manufacturing from an ECO page , page 2-45.

## **Related Topics**

Rescheduling an ECO or Revised Items, page 2-27

Changing the ECO Status, page 2-27

Implementing ECOs, page 2-48

Engineering Change Order Detail Report, page 4-1

Transferring or Copying Engineering Items, Bills, and Routings, page 3-5

## Creating an ECO

An ECO's approval status must be Approved before the ECO can be implemented.

**Note:** If the approval status is Approval Requested, you cannot modify the ECO. If the approval status is Approved and the ECO is modified, the approval status will be set back to Not Submitted for Approval.

When ECO types are defined, they can optionally be associated with a priority as they are being associated with an Oracle Workflow process. When creating the ECO, if the selected ECO type / priority combination matches a defined ECO type/priority combination, the associated workflow process defaults. The approval status is set to Not Submitted for Approval until the Submit button is chosen. If there is no match between entered values and existing ECO type / priority combinations, the approval status is set to Approved and you can enter an approval list.

You can create, update and delete ECOs for the current organization, or for the current organization and all subordinate organizations in a given organization hierarchy.

You can use ECO propagate function to implement ECO in all eligibles across organization.

### To create an ECO:

1. Navigate to the Engineering Change Orders window.

The screenshot shows a software window titled "Engineering Change Orders (M1)". It contains a form with the following fields and values:

- ECO: [Empty text box]
- Type: [Empty text box]
- Creation Date: 13/MAR/2001
- Status: Open
- Requestor: [Empty text box]
- ECO Department: [Empty text box]
- Reason: [Empty text box]
- Priority: [Empty text box]
- Approval List: [Empty text box]
- Approval Process: [Empty text box]
- Approval Status: [Empty text box]
- Project: [Empty text box]
- Task: [Empty text box]

Below the fields are two tabs: "Description" (selected) and "Cancellation Comments". The "Description" tab shows a large empty text area. At the bottom of the window are four buttons: "Submit", "Approvals", "ECO Revisions", and "Revised Items".

2. Enter an alphanumeric ECO identifier. If you use ECO autonumbering, the next identifier is defaulted.

3. Enter or select an ECO type.

You can only select ECO types that can revise engineering items and bills if the ENG: Engineering Item Change Order Access profile option is set to Yes. If the selected ECO type updates engineering and manufacturing items and bills, any new bills defined on the ECO are engineering bills.

4. Indicate whether to process the ECO across all organizations within the given organization hierarchy, or for the current organization.

**Note:** If the checkbox is clear, then the ECO applies to the current organization. If the checkbox is selected and a value is provided in the Organization Hierarchy field, then the ECO propagate function allows ECO to be applied to the current organization and all subordinate organizations under the given organization hierarchy structure.

**Important:** The Organization Hierarchy driver fields apply to the ECO Header, ECO Revisions, Revised Items, Revised Components,

## Reference Designators and Substitute Components.

5. Optionally, enter the requestor of the ECO.
6. Optionally, enter the ECO department responsible for the ECO.

This can be used to transition the ECO from one department to another, for example, from manufacturing engineering to operations. For new ECOs, the default is derived from the ENG: ECO Department profile option.

If you specify that each ECO must have an ECO department, that is, the ENG: Mandatory ECO Departments profile option is set to Yes, then you must specify a responsible department.

Access to ECOs by ECO department is as follows:

  - You can only view and update ECOs with the same ECO department as your ENG: ECO Department profile option.
  - If you do not have a value for the profile option ENG: ECO Department, you can query and update any ECO.
  - Any user can query and update ECOs with no department reference.
7. Optionally, enter a reason for the engineering change.
8. Optionally, enter or select a priority for the ECO.

**Note:** If the ECO type and the priority combination are associated with an Oracle Workflow process, you cannot use an approval list.
9. If a workflow process is not associated with the ECO, you can enter an approval list. If you do not enter an approval list, the ECO approval status defaults to Approved without any kind of approval process.
10. Optionally, enter the approval status for the ECO.
11. Choose the ECO Revisions button to define ECO revisions. See: Defining an ECO Revision, page 2-29.
12. Choose the Revised Items button to define revised items. See: Defining ECO Revised Items, page 2-29.
13. Select the ECO status from the Tools menu. See ECO Statuses, page 2-59.

If the ECO status is Implement or Cancelled, the date of either status change is displayed.



14. If a workflow process is associated with the ECO, choose the Submit button to start the process.

## Related Topics

Defining ECO Types, page 1-6  
Viewing ECO Approval Status, page 2-25  
Changing the ECO Status, page 2-27  
Implementing ECOs, page 2-48  
Defining ECO Autonumbering, page 1-8  
MRP Planning for ECOs, page 2-54  
Unreleased Item Revisions in Oracle Work in Process, page 2-55  
Implementation of ECOs on Discrete Jobs and Repetitive Schedules, page 2-55  
Engineering Profile Options and Security Functions, page 1-15  
Creating Organization Hierarchies, *Using Oracle HRMS-The Fundamentals*

## Viewing ECO Approval Status

If an approval list is used, the approval status can only be changed manually, pending formal approval from a list member.

If a workflow process is associated with the ECO (based on the ECO type / priority combination), the approval status is changed automatically.

If neither a list nor a process is used, you must manually select either Approved or Rejected.

### To view approval dates:

1. Select View Dates from the Tools menu. The approval request date, the approved date (if applicable), and the days to approve are displayed for reference.

Approval Dates (M1)

Approval Request Date 15-JUL-2002

Approval Date

Days to Approve

### To view workflow approval status:

1. If a workflow process is associated with an ECO, Select View Approvals from the Tools menu to view the approval status of the ECO.

Approval History (M1) - M1-1007

Approval Process	Submit Date
Standard Approval Process	06-OCT-1999 12:22:49

Status

2. Highlight the desired Approval Process, and select the Status button.

## Related Topics

Creating an ECO, page 2-22

ECO Approval Statuses, page 2-59

Workflow for ECO Approvals, page 2-9

## Rescheduling an ECO or Revised Items

You can reschedule ECOs or ECO revised items unless their status is Cancelled or Implemented.

### To reschedule an ECO or Revised Items:

1. Choose Reschedule from the Tools menu from either the Engineering Change Orders window or the Revised Items window.
2. Do one of the following:
  - If you are rescheduling an ECO, select an effective date from the calendar.
  - If you are rescheduling revised items, select a use-up date.
3. Enter the requestor of the rescheduled ECO.
4. Choose OK to save your work.

If you entered this window from the Engineering Change Orders window, choosing OK will reschedule all pending revised items (those with the status of Open, Hold, Schedule, or Release) for this ECO.

If you entered this window from the Revised Items window, this will reschedule only the selected revised item.

## Related Topics

Overview of Function Security, *Oracle E-Business Suite Security Guide*

Implementing Function Security, *Oracle E-Business Suite Security Guide*

## Changing the ECO Status

You can change the ECO status and the ECO revised item's status to Open, Hold, Release, Schedule, Implement, or Cancel.

The approval status of an ECO must be Approved before the ECO can be implemented.

The following table describes the conditions regarding Workflow under which the status can be changed:

Status	Without Workflow	With Workflow: Before Approval	With Workflow: After Approval	With Workflow: Approval in Process
Open	Yes	Yes	Yes	No
Hold	Yes	Yes	Yes	No
Released	Yes	Yes	Yes	No
Scheduled	Yes	No	No	No
Rescheduled	Yes	Yes	Yes	No
Cancel	Yes	Yes	Yes	No
Implement	Yes	No	Yes	No

#### To change the ECO status:

1. Navigate to the Engineering Change Orders window.
2. From the Tools menu, choose the status (Open, Hold, Release, Schedule, Implement, or Cancel). See: ECO Statuses, page 2-59.
3. If you are cancelling the ECO, select the Cancel Comments pop list to enter comments.
4. Save your work.

## Related Topics

Implementing ECOs, page 2-48

Starting the AutoImplement Manager, page 1-14

Engineering Profile Options and Security Functions, page 1-15

## Defining Implementation Costs

Estimate the implementation costs to engineering and to manufacturing of the ECO. Oracle Engineering uses this information only for the purpose of reference.

**To define manufacturing and engineering costs:**

1. Go to Tools menu and choose Enter Costs.
2. Enter a cost for engineering
3. Enter a cost for manufacturing.

## Defining an ECO Revision

**To define an ECO revision:**

1. Navigate to the ECO Revisions window. Do this by choosing the ECO Revisions button from the Engineering Change Orders window.

Revision	Comments	Entry Date	<input type="checkbox"/>
		13/MAR/2001	<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

2. Enter a revision for the ECO.  
The date that you entered the ECO is displayed for reference.
3. Save your work.

## Defining ECO Revised Items

Each ECO can list one or more revised items whose form, fit, or function needs revision.

Any revised item can have an associated bill of material. You can create a bill for a revised item (if one does not exist) by copying it from another bill or by adding components to it.

**To define revised items:**

- 1.

Navigate to the Revised Items window. Do this by choosing the Revised Items button from the Engineering Change Orders window.

The screenshot shows the 'Revised Items (M1) - 1234' window. The interface includes a menu bar with 'Main', 'Item Details', 'Dates', 'Use Up Details', 'Routing Details', 'Work In Process', 'Discrete Jobs', and 'Cancel Details'. The main content area features a table with columns: 'Item', 'Alternate', 'From', 'To', 'CUM Qty', and 'Lot Number'. To the right of the table is an 'Update Jobs Only' checkbox and a vertical list of checkboxes. At the bottom, there is an 'Item Description' field and five buttons: 'History', 'Revisions', 'Routing Revisions', 'Operations', and 'Components'.

2. Enter or select an item to change with this ECO.

**Note:** You can create a bill for the item (if one does not exist) by choosing the Components button and adding components in the Revised Components window.

3. Optionally, enter an alternate for the item. You can create or update alternate bills using an ECO.
4. Optionally, enter a new revision for the revised item.  
This must be greater than or equal to the current revision. If you create or update an alternate bill of material, you cannot assign a new item revision.  
You must enter a new revision for the revised item if you set the ENG: Require Revised Item New Revision profile option to Yes.
5. Optionally, enter an item Description.  
You do not have the ability to enter an item description if you enter an alternate for the item.
6. Optionally, enter a Routing Revision.  
This must be greater than or equal to existing revisions. You cannot enter any revisions if you selected a Model/Unit effectivity item in the Item field. If you entered a revised item that should not have routings, then the Routing Revision

field will be disabled.

7. Enter an effective date for the item and component changes.

This date is used to implement the revised item and identify past due revised items.

If you select a use-up date for this item and its components, a record is created that indicates this revised item is based on the use-up date of the item. If the MRP planning process computes a new use-up date before this revised item is implemented, Engineering automatically sends an alert to the planner.

8. Choose a status for the ECO revised item from the Tools menu. See: ECO Revised Item Statuses, page 2-59.

**Note:** You can set the revised item status to Hold, Released, Implemented, or Cancelled only if the ECO status is Open. Otherwise, the revised item status defaults from the ECO status.

If the ECO has a Workflow process and the item or its components are changed, the revised item's status is changed from Scheduled to Open and the approval status is changed to Not Submitted for Approval.

9. Indicate whether the revised item is MRP Active, that included in the planning process. The default is No if the Status is Hold; Yes if the Status is Open, Release, or Schedule.

If the ECO lists engineering changes and has an effective date in the future, you may want the planning process to consider those changes.

10. Open the Item Details tabbed region and view the description and the user-defined item type for that item.

11. Optionally, open the Dates tabbed region and enter the Early Effective date. This is the earliest date you can manually implement the revised item.

If applicable, the Cancelled date for the changes of the revised item and its components, or the Implemented date for the revised item is displayed.

The Implemented field indicates the date the revised item was implemented and the Implemented By field indicates either that the revised item was implemented manually from the Tools menu or implemented automatically.

12. Open the Use Up Details tabbed region and do the following:

- If not already selected, enter the item whose use-up date is tied to the revised item effective date. The use-up item can be the revised item itself or a component of the revised item.
- View the use-up item associated with the use-up date selected as the effective

date.

- View the name of the MRP plan to use for determining item use-up dates.

13. Open the Routing Details tabbed region and do the following:

- Indicate whether CTP is enabled. This attribute is derived from the routing header information if the revised item has existing routing information. If routing information does not exist, routing header information is created automatically when you enable this attribute.
- Enter a priority value for this item.
- Choose a valid subinventory.
- Enter Locator information. If the completion subinventory does not have a valid location, or the revised item's Locator Control attribute is set to No Control, then this field is disabled. If the revised item's Locator Control attribute is set to Dynamic Entry, then this field is enabled.

14. Open the Work in Process tabbed region and indicate whether to update WIP requirements for unreleased jobs or schedules when the revised item is implemented.

15. Select a disposition for inventory and work in process inventory affected by the ECO. See: Disposition, page 2-59.

16. Open the Cancel Details tabbed region to view the cancellation date and cancel comments.

17. Choose the History button to view revised item effective date history and track schedule changes to the revised item. Choose the Revisions button to view item revisions. Choose the Components button to add, change, or disable components.

## Related Topics

Viewing ECO Schedule History, page 2-33

Defining Revised Components, page 2-39

Viewing Item Revisions, page 2-34

Use Up ECOs, page 2-53

Defining Material Dispositions, page 1-13



## Viewing ECO Schedule History

View revised item effective date history and track schedule changes to revised items.

### To view ECO schedule history:

1. Navigate to the History window. Do this by choosing the History button from the Revised Items window.

The screenshot shows a software window titled "History (M1) - M1-1030". It contains several input fields and a table. At the top, there are three fields: "Revised Item" (with two adjacent input boxes), "Alternate" (with one input box), and "Effective Date" (with one input box). Below these is a section titled "Reschedule History" with a checkbox that is checked. This section contains a table with three columns: "Effective Date", "Employee", and "Entry Date". The table has eight rows, each with input boxes for these three fields. To the left of the table is a vertical scrollbar, and to the right is a vertical scrollbar with a "Find" icon. Below the table is a "Comments" label followed by a large text area for entering comments.

A history of all previous effective dates and their entry date is listed for the revised item.

2. View the employee who initiated the change to the effective date and any comments describing the change to the effective date.

## Related Topics

Engineering Change Order Detail Report, page 4-1

## Viewing Item Revisions

### To view item revisions:

1. Navigate to the Item Revisions window. Do this by choosing the Revisions button from the Revised Items window.
2. Review the displayed information:

The revision, the effective date and time, the implementation date, the initiation date, and the ECO are displayed for information purposes.

**Note:** : When creating an item revision, to support revision identification, you can specify both Revision Code and Revision Label. You can then quickly review an item revision by selecting this combination from the Item Revisions drop down list in the Revisions page.

**Revisions**

Item Revisions: A - A Go

SC - 12  
A - A

Revision Code	Revision Label	Effective Date	Implementation Date	Lifecycle Phase	Reason	Revised By	Update
SC	12	30-Oct-2006 16:34:39	30-Oct-2006 16:34:39		Cost Reduction	Jonathan Smith	
A	A	30-Oct-2006 14:33:15	30-Oct-2006 14:33:15			Jonathan Smith	

**Revision Detail**

Revision Code: A  
Revision Label: A  
Reason:  
Lifecycle Phase:  
Implementation Date: 30-Oct-2006 14:33:15  
Effective Date: 30-Oct-2006 14:33:15  
Change Order:  
Description:  
Additional Attributes:

Item | Lifecycle | Change Management | Configuration | Recent | Home | Logout | Preferences | Help | Diagnostics

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## Related Topics

Defining ECO Revised Items, page 2-29

## Viewing Routing Revisions

### To view routing revisions:

1. Navigate to the Routing Revisions window. Do this by choosing the Routing Revisions button from the Revised Items window.

Routing Revisions

Revised Item **AS54888** **Sentinel Standard Desktop**

**Routing Revisions** ☒

Revision	Effective Date	Time	Implement Date	ECO
A	09-APR-1997	17:45:52	09-APR-1997	

2. Review the displayed information:

The revision, the effective date and time, the implementation date, and the related ECO are displayed for information purposes.

## Related Topics

Defining Revised Components, page 2-39

Defining Revised Resources, page 2-37

Defining Revised Operations, page 2-35

Defining ECO Revised Items, page 2-29

## Defining Revised Operations

Enter, disable, and update information for a revised item's operations.

### To define revised operations:

1. Navigate to the Revised Operations window. Do this by choosing the Operations

button from the Revised Items window.

Revised Operations

Revised Item: **AA102** AA-Serial Controlled Item

Alternate:  ☐ Capable to Promise

Effective: **05-JUN-2002** ☒ Engineering Routing

Operations ☒

Main WIP Operation Yield Description

Action	Op Seq	Reference Flag	Std Op	Dept Code	Disable Date	Option Dependent	Lead Time %
Change	10	...		D1-A706			

Revised Resources

2. Enter or select an action to take:

*Add:* Add an operation and the operation's resources. If there is no existing operation, then a new routing header should be created.

*Change:* Change operation attribute and resource information.

*Disable:* Disable the operation from the revised item's bill. The resources which are associated with the operation should be disabled.

3. Enter the Operation Sequence Number of the target operation. If you selected the Add action, enter a new operation sequence number. If you selected the Change or Disable actions, enter an existing operation sequence number.
4. Indicate whether this operation will be referenced if you selected the Add action. If you selected a standard operation, then this flag is turned on automatically. If you selected the Change action, then this flag is disabled.
5. Enter the Department Code. If you selected the Add action, or the Change action and a standard operation, enter an existing department code.
6. Enter the date the operation is to be disabled in the Disable Date field. If you selected the Disable action, the system date is entered automatically.
7. Indicate whether this operation is option dependent if you selected the Add action, or the Change action and did not select the reference flag.

8. Enter the Operation Lead Time if you selected the Add or Change actions. If an operation lead time is smaller than zero or greater than 100, then an error message will be shown.
9. Open the WIP tabbed region and enter the following attributes:
  - If you selected the Add action, or the Change action and did not select the reference flag, you can update the Count Point flag.
  - If you selected the Add action, you can update the Autocharge flag.
  - If you selected the Add action, or the Change action and did not select the reference flag, you can update the Backflush flag.
  - If you selected the Add action, or the Change action and did not select the reference flag, you can enter the Minimum Transfer Quantity.
10. Open the Operation Yield tabbed region and do the following:
  - Enter the Yield if you selected the Add or Change actions. Operation Yield is applicable to lot-based jobs, and is used to track variances between estimated and actual scrap absorption. See: *Defining a Department, Oracle Bills of Material User's Guide*
  - Enter the Cumulative Yield if you selected the Add or Change actions. See: *Yield, Oracle Bills of Material User's Guide*.

**Note:** These fields can be updated for operations belonging to lot-based routings, and are applicable for Shop Floor Management enabled organizations.

## Related Topics

Defining Revised Components, page 2-39

Defining Revised Resources, page 2-37

Item and Operation Sequence, *Oracle Bills of Material User's Guide*

Effective Date Fields, *Oracle Bills of Material User's Guide*

## Defining Revised Resources

Enter or disable information for a revised operation's resources.

If the Reference Flag in the Revised Operations window is selected, then you cannot add or disable resources.

### To define revised resources:

1. Navigate to the Operation Resources window. Do this by choosing the Revised Resources button from the Revised Operations window.

The screenshot shows the 'Revised Operations' window. At the top, there are fields for 'Revised Item' (AA102), 'Alternate', 'Effective' (05-JUN-2002), and 'AA-Serial Controlled Item'. Below these are checkboxes for 'Capable to Promise' and 'Engineering Routing'. The 'Operations' section has tabs for 'Main', 'WIP', 'Operation Yield', and 'Description'. The 'Main' tab is active, showing a table with columns: Action, Op Seq, Reference Flag, Std Op, Dept Code, Disable Date, Option Dependent, and Lead Time %. The first row has 'Change' in the Action column, '10' in Op Seq, and 'D1-A706' in Dept Code. A 'Revised Resources' button is at the bottom right.

Action	Op Seq	Reference Flag	Std Op	Dept Code	Disable Date	Option Dependent	Lead Time %
Change	10	...		D1-A706			

2. Enter or select an action to take:  
*Add:* Add a resource to the operation.  
*Change:* Change existing resource information.  
*Disable:* Disable the resource from the operation. Designate an existing resource sequence number.
3. Enter the Resource Sequence Number. If you selected the Add action, enter a new resource sequence number. If you selected the Disable action, enter an existing resource sequence number.
4. Enter the Resource Code. If you selected the Add action, select a resource belonging to the selected department in the Revised Operations window.  
**Note:** The UOM field is derived from the Resource attribute and is read-only.
5. Enter the Basis Type. If you selected the Add or Change actions, select Item or Lot. See: Basis, *Oracle Bills of Material User's Guide*.

6. Enter the Usage Rate or Amount if you selected the Add or Change actions. Once you enter or change this value, the Inverse will be calculated automatically.
7. Enter the Inverse Rate or Amount if you selected the Add or Change actions. Once you enter or change this value, the Usage will be calculated automatically.
8. Open the Scheduling tabbed region and do the following:
  - Indicate whether this resource is available 24 hours. Once selected, you cannot update this value.
  - If you selected the Add or Change actions, enter a Schedule Sequence Number.
  - Enter the number of units assigned to this resource.
  - Select the Schedule option. Available options are Yes, No, Prior, and Next.
  - If you selected the Add or Change actions, enter the Offset percentage. This number should be greater than or equal to zero, and less than or equal to 100.
  - Indicate whether this is the principle resource in the operation, if you selected the Add or Change actions.
  - Enter the Setup Type Code for this resource.
9. Open the Costing tabbed region and do the following:
  - Select an Action. You can Add or Change costing information. Costing information must be defined for each resource.
  - Select whether to cost at the standard rate.
  - Select a Charge Type if you selected the Add action. If you selected the Change action, you can change the Charge Type but cannot enter an autocharge type of PO Move or PO Receipt for a resource without Outside Processing enabled. You can select Manual or WIP Move.

## Related Topics

Defining Revised Components, page 2-39

Defining Revised Operations, *Oracle Engineering User's Guide*

Item and Operation Sequence, *Oracle Bills of Material User's Guide*

## Defining Revised Components

Enter and update change information for a revised item's components.

## To define revised components:

1. Navigate to the Revised Components window. Do this by choosing the Components button from the Revised Items window.

Revised Components (M1) - M1-1000

Revised Item: AS18947    Sentinel Deluxe Desktop

Alternate:

Effective Date: 01-OCT-1997

Components

Action	Component	Op Seq		Item Seq	UOM	Quantity		Effect
		Old	New			Old	New	
Disable	CM15138	60	60	20	Ea	1	0	01-OC
Add	CM15140	60	60	21	Ea	1	1	

Component Description: Monitor - 17"

Substitutes    Designators

2. Enter or select an action to take:

*Add:* Add a component to the revised item's bill of material. If a bill does not already exist, adding components creates one.

*Change:* Change usage information for the component of the revised item's bill.

*Disable:* Disable the component from the revised item's bill.

3. Enter a component on the bill.

4. Do the following:

- If you are changing component information, enter the old operation sequence where the component is currently assigned.
- If you are changing the component's operation sequence, enter a new operation sequence (from the routing) for the component of the revised item. The default is 1 for components being added where no routing exists.
- Enter the item sequence of the item on the bill of material. The default is the next highest item sequence.



- Enter the component quantity used by this particular revised item. For components you are changing, you can see the old component's quantity in the Old Quantity field when you change or disable a component. In ECO form, when disabling a component the value in Old Quantity field is defaulted into New Quantity field, and 1 for components you are adding.
  - For components you are adding or changing, enter an inactive date for the revised component.
5. Review the item's description, revision, and whether it is an engineering item in the Item Details tabbed region.
  6. Open the Component Details tabbed region and do the following:
    - Enter the planning percent for optional components on model and option class bills, and all components on planning bills. Oracle Master Scheduling/MRP uses planning percentages for planning bill explosions. You can enter quantities over 100 percent to overplan. See: Planning Percent, *Oracle Bills of Material User's Guide*.
    - Enter a component yield factor. You cannot enter component yield for an option class item or for any components of a planning bill. The default is 1, indicating 100% yield. See: Yield, *Oracle Bills of Material User's Guide*.
    - Indicate whether to include the cost of this component in the cost of its parent item for the cost rollup.
    - View the component item type and status.
  7. Open the Material Control tabbed region and select a supply type, a subinventory, and a locator. See: Supply Type, *Oracle Work in Process User's Guide* and Subinventory and Locator, *Oracle Bills of Material User's Guide*.
  8. Open the Order Entry tabbed region and do the following:
    - Indicate whether to Check ATP. See: Check ATP, *Oracle Bills of Material User's Guide*.
    - Indicate whether the component is optional and mutually exclusive. See: Mutually Exclusive and Optional, *Oracle Bills of Material User's Guide*.
    - For optional components, enter the minimum and maximum sales order quantities. See: Minimum and Maximum Quantities, *Oracle Bills of Material User's Guide*.
    - Select a basis. See: Basis, *Oracle Bills of Material User's Guide*.

9. Open the Shipping tabbed region and indicate whether the component should be listed on shipping documents, required to ship, or required for revenue. See: Shipping Details, *Oracle Bills of Material User's Guide*.
10. If the component is cancelled, open the Cancel Details tabbed region. Once the component is cancelled, you can no longer update any information about the revised component on this ECO.

**Note:** You can cancel revised components by choosing Cancel from the Tools menu.

11. Choose the Substitutes button to open the Substitute Components window. Choose the Designators button to open the Reference Designators window.

## Related Topics

Assigning Reference Designators, page 2-43

Assigning or Deleting Substitute Components, page 2-42

Item and Operation Sequence, *Oracle Bills of Material User's Guide*

Effective Date Fields, *Oracle Bills of Material User's Guide*

## Assigning or Deleting Substitute Components

Assign or delete suggested substitute items for the revised component. You can assign any number of substitute items to each bill component and you can assign the same substitute item to more than one component.

### To assign or delete substitute components:

1. Navigate to the Substitute Components window. Do this by choosing the Substitutes button from the Revised Components window.
2. Enter an action: add a substitute item to, or delete a substitute item from the revised component.
3. Enter or select a substitute item for the revised component. This must be a manufacturing item.
4. Enter the quantity of the substitute item needed to replace the full component quantity.

This can differ from the bill usage quantity of the component. The default is the usage quantity of the component.

## Assigning Reference Designators

### To assign reference designators to the revised component:

1. Navigate to the Reference Designators window. Do this by choosing the Designators button from the Revised Components window.
2. Indicate whether to relate component quantity to the number of reference designators.

*Off:* Assign any number of reference designators to each component (the default). The number of reference designators is independent of the component quantity. With Quantity Related unchecked, if the usage quantity of the component is four, you could, for example, define six or more reference designators.

*On:* Use one reference designator per usage of the component. The component usage quantity must be a positive integer in order for you to use this option. When the bill requires a quantity of four of a given component, you assign four reference designators to that component, one for each usage.

The number of reference designators implemented for the revised component is displayed. This value is 0 until the ECO is implemented.

Also, the total number of reference designators currently defined for the revised component is displayed.

3. Select an action: add to or delete a range of reference designators from the revised component.

Engineering enables you to view a prefix, suffix, and number range to assign to a sequence of reference designators.

## Related Topics

Creating Reference Designators, *Oracle Bills of Material User's Guide*

## Attaching Files to ECOs

You can attach text and files, such as spreadsheets, graphics, and OLE objects to engineering change orders.

For example, an attached file may include comments, such as a graphical representation of the bill structure or detailed instructions.

### To attach files to ECOs:

1. From the Engineering Change Orders window, choose the Attachments icon.

## Related Topics

Working With Attachments, *Oracle E-Business Suite User's Guide*

## Transfer to Manufacturing from an ECO

You can transfer engineering items, bills and routing to manufacturing from within an ECO.

### To transfer entities to manufacturing from within an ECO:

1. Navigate to the Engineering Change Orders window.
2. Select the Transfer Button from the Engineering Change Orders window.

Transfer			Current		New	
Item	Bill	Routing	Item	Routing	Item	Routing
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				

Item Description

3. Enter an Item and select Bill and Routing if applicable.
4. Enter the Effective Date of the item.
5. Enter the Early Effective date if applicable.
6. Select the Revisions tabbed region.

7. Select the Selections tabbed region.
8. Select the Selection Option from the list. The available selections are:
  - All:* All past, current or future components and or operation steps associated with the assembly.
  - Current:* All current components and or operation steps associated with the assembly that are effective on the Selection Date.
  - Future and Current:* All current and future components and or operation steps associated with the assembly.
9. Enter the Selection Date.
10. Enter the Unit Number if applicable.
11. Save your work.
12. Select the History button to view the transaction history.

## Related Topics

Transferring or Copying Engineering Items, Bills, and Routings, page 3-5

Transfer or Copy from an ECO, page 2-7

Copy to Manufacturing from an ECO, page 2-45

Copying Bill and Routing Information, *Oracle Bills of Material User's Guide*

## Copy to Manufacturing from an ECO

You can copy engineering items, bills and routings to manufacturing from within an ECO.

### **To copy entities to manufacturing from within an ECO:**

1. Navigate to the Engineering Change Orders window.
2. Select the Copy Button from the Engineering Change Orders window.

Copy Engineering Data

Schedule Revisions Alternates Selection Manufacturing Item Cancel Details

— Copy —

Item	Item	Bill	Routing	Status	Effective Date
AS10001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open	07-AUG-2002
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Item Description: Passport Backup Drive

History

3. Enter an Item and select Bill and Routing if applicable.
4. Enter the Effective Date of the item.
5. Enter the Early Effective date if applicable.
6. Select the Revisions tabbed region. For information on the Revisions tabbed region and the Alternates tabbed, See: Transferring or Copying Engineering Items, Bills, and Routings, page 3-5
7. Select the Selections tabbed region.
8. Select the Selection Option from the list. The available selections are:
 

*All:* All past, current or future components and or operation steps associated with the assembly.

*Current:* All current components and or operation steps associated with the assembly that are effective on the Selection Date.

*Future and Current:* All current and future components and or operation steps associated with the assembly.

9. Enter the Selection Date.
10. Enter the Unit Number if applicable.
11. Select the Manufacturing Items tabbed region.

The screenshot shows the 'Copy Engineering Data' dialog box with the 'Manufacturing Item' tab selected. The dialog has a title bar with standard window controls. Below the title bar are tabs: 'Schedule', 'Revisions', 'Alternates', 'Selection', 'Manufacturing Item' (active), and 'Cancel Details'. The main area is titled '- Copy -'. It contains a table with columns: 'Item', 'Bill', 'Routing', 'New Item', and 'Description'. The first row is populated with 'AS10001' in the 'Item' column, checked boxes in 'Bill' and 'Routing', 'AS11112' in 'New Item', and 'Passport Backup Drive' in 'Description'. Below the table is a scroll bar. At the bottom, there is a text field labeled 'Item Description' containing 'Passport Backup Drive' and a 'History' button.

Item	Bill	Routing	New Item	Description
AS10001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AS11112	Passport Backup Drive
	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>		

Item Description: Passport Backup Drive

History

12. Enter a new item name and description.
13. Save your work.
14. Select the History button to view the transaction history.

## Related Topics

Transferring or Copying Engineering Items, Bills, and Routings, page 3-5

Transfer or Copy from an ECO, page 2-7

Transfer to Manufacturing from an ECO, page 2-44

Copying Bill and Routing Information, *Oracle Bills of Material User's Guide*

## Mass Changing ECOs

You can define a mass change to add, delete, or replace a component, alter a component quantity or yield, or change other component information. You can mass change all using bills of material or choose a subset of bills by item range, item category, or item type.

Engineering lets you create an ECO based on your parent item and component criteria. A mass change ECO lists all using assemblies that meet your search criteria as revised items, and assigns all component changes as revised components. You can manage and implement each revised item, or the entire ECO, the same way you maintain revised items you manually assign to an ECO.

**Note:** In Bills of Material, mass changes take place immediately.

However, in Engineering, an ECO is created that must be implemented to take effect.

### To mass change ECOs:

1. Mass change the bills of material as needed. Be sure to set ECO options.

## Related Topics

Engineering Profile Options and Security Functions, page 1-15

Mass Changing Bills of Material, *Oracle Bills of Material User's Guide*

## Implementing ECOs

When you implement an ECO, each revised item's status is marked as "implemented"; you can no longer reschedule it. You can implement all revised items on an ECO, or implement each revised item on a different date. Engineering only lets you implement ECOs that do not have an approval status of Rejected, or do not have an ECO status of Hold or Cancelled. Once you implement an ECO or revised item, you can no longer make any revised item changes.

You can manually implement revised items on an ECO or you can automatically implement each revised item on its effective date. Engineering updates the actual implementation date for each revised item when it is implemented. When all of the revised items on an ECO have been implemented, the ECO is completely implemented and can be purged.

Engineering implements an ECO over time from the earliest revised item effective date to the latest revised item effective date. When you spread multiple changes across several ECOs, you should ensure that the effective date ranges for the ECOs do not overlap. For example, if you implement changes to a bill of material across many ECOs,



you should make sure that the revised item effective dates do not overlap. If you implement one change using the current revision, you should implement all other changes to the current revision before you implement changes against future revisions.

**Important:** You must implement new revisions in ascending order. If you implement a later revision for an item on one ECO, Engineering ensures that you implement any subsequent revisions for the item in ascending order.

## Manual Implementation

For an ECO, you can specify whether to implement all or specific revised items. An ECO can be implemented today, but will not make the changes to the revised items effective until the date specified on the change order.

## Automatic Implementation

To AutoImplement a revised item on an ECO, you mark the revised item status as 'scheduled' and specify an effective date. You can schedule all revised items on an ECO for auto-implementation, or schedule each revised item individually. Engineering automatically implements scheduled changes on their effective dates.

You can automatically implement scheduled ECOs in the current organization, or the current organization including all subordinate organizations. You have the ability to specify the organization hierarchy name, since the current organization can be accessed from more than one organization hierarchy. You can also automatically implement scheduled ECOs in all organizations having the same item master organization as the current organization, and if they are accessible by the user responsibility.

Start the AutoImplement Manager process so Engineering implements scheduled changes daily.

### To manually implement an ECO:

1. Navigate to the Engineering Change Orders window.
2. Enter or select an ECO to implement.
3. Choose Implement from the Tools menu. Doing so automatically changes the status of all revised items.

### To manually implement a revised item on an ECO:

1. Navigate to the Revised Items window.
2. Select a revised item to implement.

3. Choose Implement from the Tools menu.

**Note:** A warning message appears if the ECO does not have a Workflow process and the revised item's effective date is in the future.

### **To automatically implement an ECO:**

1. Navigate to the Engineering Change Order window.
2. Enter or select an ECO to implement.
3. Set the ECOs status and/or the status of revised items to Scheduled.
4. Save your work.
5. Start the AutoImplement Manager.

The following parameters are provided:

- All Organizations
- Organization Hierarchy

**Note:** If the All Organizations parameter is set to Yes, then processing is done for all organizations having the same item master organization as the current organization. If All Organizations is set to No, and a value is provided in the Organization Hierarchy field, then processing is done for the current organization and all subordinate organizations. If the Organization Hierarchy field is left blank, then the ECO is implemented only for the current organization. For processing, an organization must be accessible by the user responsibility. You can specify a periodic schedule for the concurrent program. In this case, the user should set the processing interval, start date, and end date.

## **Related Topics**

Engineering Profile Options and Security Functions, page 1-15

Starting the AutoImplement Manager, page 1-14

Implementation of ECOs on Discrete Jobs and Repetitive Schedules, page 2-55

Creating Organization Hierarchies, *Using Oracle HRMS-The Fundamentals*

## Cancelling ECOs and Revised Items

You can cancel an entire ECO, a revised item on an ECO, or the individual revised components on an ECO before it is implemented. When you cancel an ECO, you can enter comments that explain the reason for cancellation.

Cancelling an entire ECO cancels all the revised item changes and the changes to their associated revised components. Cancelling a specific revised item cancels only the changes that affect that item and its revised components. Once you cancel an ECO you cannot update it, but you can view a cancelled ECO.

Cancelling a revised component only affects that revised component for that revised item. The cancel date and comments about the cancelled component can be viewed in the Revised Components window, Cancel Details tab.

### **To cancel the entire Engineering Change Order:**

1. Navigate to the Engineering Change Order window.
2. Find the ECO to cancel.
3. Choose Cancel from the Tools menu.
4. Save your work.
  - Cancel the ECO, its revised items, and the associated revised components by choosing Cancel from the Tools menu.
  - Cancel a revised item by choosing the Revised Items button on the Engineering Change Orders window, and choosing Cancel from the Tools menu.
  - Cancel a revised component by choosing the Components button from the Revised Items window and choosing Cancel from the Tools menu.
5. Save your work.

### **To cancel an ECO's revised items:**

1. Navigate to the Engineering Change Order window.
2. Find the ECO containing revised items to cancel.
3. Choose the Revised Items button.
4. Select the revised items to cancel.
5. Choose Cancel from the Tools menu.

6. Save your work.

**To cancel components of a revised item:**

1. Navigate to the Engineering Change Order window.
2. Find the ECO containing components of revised items to cancel.
3. Choose the Revised Items button.
4. Select the revised item containing components to cancel.
5. Choose the Components button.
6. Select the components to cancel.
7. Choose Cancel from the Tools menu.
8. Save your work.

## Related Topics

Engineering Profile Options and Security Functions, page 1-15

Creating an ECO, page 2-22

See: Material Requirements Planning, *Oracle MRP User's Guide*.

## Viewing ECO Schedules

View ECO information, including scheduling information, pending and implemented ECOs, approval status, revised item status, and so on.

**To view ECO schedules:**

1. Navigate to the View ECOs folder window.
2. Enter search criteria in the Find ECOs window
3. Select how to sort ECOs-by ECO identifier then effective date, or by effective date then ECO identifier.
4. Optionally, enter revised item information:
  - An effective date range
  - A revised item

- A revised component
  - Whether to query for revised item status, and if so, any combination of revised item statuses.
5. Choose the Find button to find ECOs based on your search criteria.  
This opens the View ECOs folder window which has three tabbed regions, each containing specific ECO information: Revised Items, ECO Details, and Use Up.
  6. Choose the New and Open buttons to navigate to the Engineering Change Orders window. Using the New button enables you to create a new ECO; using the Open button enables you to view an existing ECO.

## Related Topics

Using Query Find, *Oracle E-Business Suite User's Guide*

Using Query Operators, *Oracle E-Business Suite User's Guide*

Searching For Information, *Oracle E-Business Suite User's Guide*

Performing Query-by-Example and Query Count, *Oracle E-Business Suite User's Guide*

Defining Engineering Change Orders, page 2-20

Customizing the Presentation of Data in a Folder, *Oracle E-Business Suite User's Guide*

## Use Up ECOs

Oracle Master Scheduling/MRP automatically computes and stores the use-up date for each item it plans on each MRP plan. The use-up date is the date when on-hand quantity is exhausted based on projected gross requirements. It calculates the use-up date by applying any on-hand quantity in inventory (supply) against any gross requirements (demand). When calculating the date, it does not consider scheduled receipts or repetitive schedules as supply.

## Revised Item Effective Dates Linked to Use-Up Dates

When you define a revised item on an ECO, you can base the revised item effective date on the use-up date of another item.

When you define a revised item on an ECO, you can select the use-up date for all components of the revised item and the use-up date of the revised item itself for all MRP plans that include those items. Doing so will default the plan name and use-up item. The revised item effective date is now linked to a use-up date.

Alternatively, for a revised item, you can select a use-up item, which can be any component of the revised item or the revised item itself. But since the plan name is not

specified, the revised item effective date is *not* linked to a use-up date.

## Use-Up Alerts

Engineering uses Oracle Alert to automatically notify planners whenever the MRP planning process computes a new use-up date for an item if it is a use-up item for an ECO revised item. For example, if revised item A specifies item B as its use-up item (so the revised item effective date for A equals B's use-up date), then if the MRP planning process computes a different use-up date for B, Oracle Alert notifies the planner for A that B's use-up date no longer equals the revised item effective date for A.

## Related Topics

Creating an ECO, page 2-22

Overview of Planning Logic, *Oracle Master Scheduling/MRP User's Guide*

Reviewing the Horizontal Plan, *Oracle Master Scheduling/MRP User's Guide*

## MRP Planning for ECOs

Oracle Master Scheduling/MRP lets you consider unimplemented ECOs when you plan material requirements and considers use-up date changes in some cases.

## Unimplemented ECO Revised Items Planning

When you define an ECO, specify whether the MRP planning process should plan for an ECO revised item. This lets you order material and plan resources that you need to build a future revision in advance. When the MRP planning process explodes requirements for a planned order based on a planned order start date, it generates requirements considering component changes introduced on ECO revised items so specified.

## Use-up ECOs Planning

The planning process automatically changes revised item effective dates and considers those new effective dates in the current MRP plan *only* when the use-up date changes and the revised item is the use-up item. The planning process then uses the updated effective date for component changes when it explodes requirements for planned orders.

## Related Topics

Material Requirements Planning, *Oracle Master Scheduling/MRP User's Guide*

## Unreleased Item Revisions in Oracle Work in Process

In Work in Process, you can open discrete jobs or schedules considering pending engineering changes. Each user can define a job with released, scheduled, and implemented engineering changes, but you can control whether a user or a responsibility can define a job considering unreleased engineering changes.

If you set the WIP: Exclude Open ECOs profile option to Yes, Work in Process sees the effects of *only* released, scheduled, and implemented ECO revised items when you choose a revision or revision date and when Work in Process explodes the bill of material. Work in Process also considers open (unreleased) ECOs if you set this profile option to No.

### Related Topics

Overview of Discrete Manufacturing, *Oracle Work in Process User's Guide*

Overview of Repetitive Manufacturing, *Oracle Work in Process User's Guide*

## Implementation of ECOs on Jobs and Schedules

You can indicate whether to update work in process requirements when you implement an ECO revised item. When you implement the revised item that is set to update work in process, the bill of material is automatically re-exploded and updated for all unreleased discrete jobs and repetitive schedules for the item.

If you have updated component material requirements for the unreleased job or schedule, you lose these updates after you implement the revised item.

### Released, Complete, and On hold Repetitive Schedules

For repetitive schedules, if you have not moved assemblies beyond the Queue intraoperation step of the first operation, Work in Process automatically regenerates the bill and component requirements for the repetitive schedule to include the effects of the ECO.

If you have moved assemblies beyond the Queue intraoperation step of the first operation, when you implement the ECO, Work in Process splits the schedule into two schedules that take the place of the original schedule. The first schedule uses the original bill and the second new schedule uses the revised bill that includes any revised item or component changes. Work in Process assigns the two new schedules a status of Released, Complete, or On hold, depending on the status of the original schedule.

The schedule splits based on the number of assemblies in process (moved past the Queue intraoperation step of the first operation if you are using routings) on the original routing. That number is rounded up to the nearest day so that you can finish your day's work using the original bill. The next day production starts using the revised

bill and a new schedule.

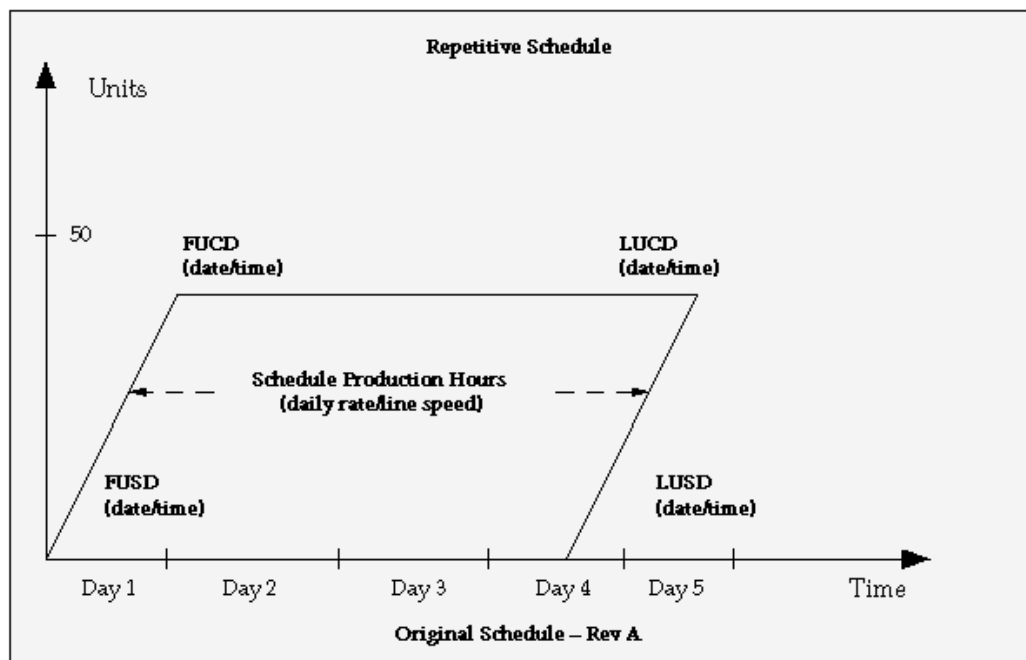
The following example best illustrates this procedure.

## Example

Released Schedule:

- Production rate = 50 per day
- Process days = 4 days
- Total quantity of schedule = 200 units
- Throughput = 1 day

The following diagram illustrates the original schedule:



Shop floor distribution of assemblies before the implementation of the ECO for the original schedule:

- 80 units spread in the routing beyond queue of the first operation
- 120 units in queue of the first operation

Original schedule dates:

- First unit start date = Day 1



- First unit complete date = Day 2
- Last unit start date = Day 4
- Last unit complete date = Day 5

Since the daily quantity is 50, this means that production is in its second day. Therefore, if you implement the ECO now, the schedule splits after the second day's work is completed.

If you implement a change order for the item on Day 3 (Today), the shop floor distribution of assemblies following the implementation of the ECO are:

New Schedule 1 = 100 total units

- 20 units in queue of the first operation
- 80 units spread in the routing beyond queue of the first operation. These 80 units are located exactly where they were before the implementation of the ECO.

New Schedule 2 = 100 total units

- 100 units in queue of the first operation. The reason that there are only 100 assemblies and not 120 assemblies is that only two process days remain in the schedule; therefore, only two process days worth of assemblies can be put into new schedule 2.

Schedule dates following the implementation of the ECO:

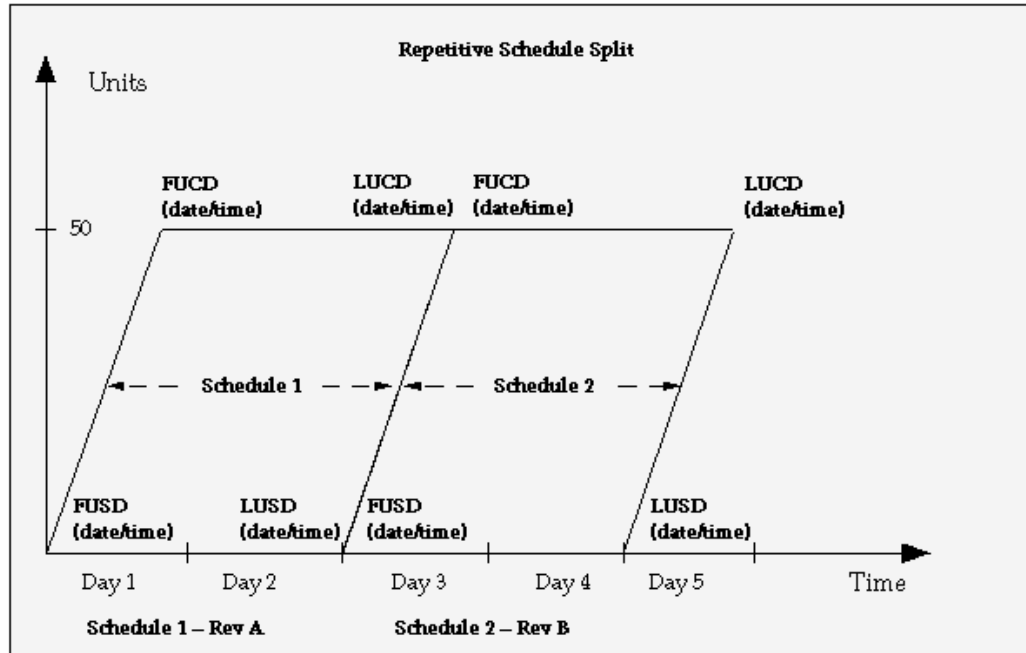
New Schedule 1:

- First unit start date = Day 1
- First unit complete date = Day 2
- Last unit start date = Day 2
- Last unit complete date = Day 3

New Schedule 2:

- First unit start date = Day 3
- First unit complete date = Day 4
- Last unit start date = Day 4
- Last unit complete date = Day 5

The following diagram illustrates the split schedule:



All material that you issued to the original schedule remains with new schedule 1. Material requirements for new schedule 1 are changed to match the new number of assemblies to complete. Material requirements for the altered assembly are exploded for new schedule 2 for the number of assemblies assigned to the new schedule 2.

## Related Topics

Overview of Discrete Manufacturing, *Oracle Work in Process User's Guide*

Overview of Repetitive Manufacturing, *Oracle Work in Process User's Guide*

## Purging ECOs

You can purge fully implemented engineering change information from the database. You can choose a range of ECOs and a date. Engineering purges all fully implemented or cancelled ECOs on or before that date.

When you purge ECOs, Engineering removes all implemented and cancelled ECOs as of that date from the database, along with all related information (except for the revision history of the bill itself). You cannot view or report ECO information once you purge it.

### To purge an ECO:

1. Navigate to the Purge Engineering Change Order window. See: Submitting a Request, *Oracle E-Business Suite User's Guide*.

2. Enter a range of ECOs to purge.
3. Indicate whether to purge implemented ECOs.
4. Indicate whether to purge cancelled ECOs.
5. Enter a date on or before which all implemented and/or cancelled ECOs are purged.

## Engineering Change Orders Field Reference

This section describes the use of certain major fields.

### ECO Statuses

Whenever this status is updated, the status of all revised items is also updated.

---

<b>Open</b>	The ECO is not complete; you can still make changes. MRP Active is defaulted to on.
<b>Hold</b>	The ECO cannot be implemented. The status of all pending revised items is set to Hold. MRP Active defaults to off.
<b>Release</b>	The entire ECO is released from the currently responsible ECO department. The status of all pending revised items is set to Released. MRP Active defaults to on.
<b>Schedule</b>	The ECO is scheduled for auto-implementation. An ECO can only have this status if the approval status is Approved. MRP Active defaults to on.
<b>Implement</b>	The ECO is implemented manually. You can no longer make changes to an implemented ECO.
<b>Cancel</b>	No more changes allowed. All unimplemented revised items are cancelled.

---

**Note:** If the organization hierarchy is selected when creating an ECO, the ECOs having approval process will be propagated with an 'Open' status.

## ECO Revised Item Statuses

These statuses are updated by changes to the ECO status.

---

<b>Open</b>	Changes to the revised item are still in process or not complete. The MRP active attribute will be updated to Yes. This is the default.
<b>Hold</b>	Changes to the revised item are on hold; you cannot implement them.
<b>Release</b>	Changes to the revised item have been released and can be implemented manually. The revised item has not been scheduled for auto-implementation.
<b>Schedule</b>	The revised item is scheduled for auto-implementation. You can only set the revised item to Schedule if the ECO status is Approved. The MRP active attribute is updated to on.
<b>Implement</b>	The revised item has been implemented manually or automatically. You cannot list additional changes for implemented revised items.
<b>Cancel</b>	The revised item has been cancelled.

---

## ECO Approval Statuses

If you do not tie an Oracle Workflow process to the ECO, the only valid approval status is No Approval Needed.

---

<b>Not Submitted for Approval</b>	The ECO has not been submitted to the Workflow approval process.
<b>Approval Requested</b>	Engineering has started the Workflow process.
<b>Rejected</b>	Cannot schedule or implement the ECO or any revised items.

---

<b>Approved</b>	Approved for release, to schedule, or to implement.
<b>Processing Error</b>	Indicates that an error occurred while Workflow was processing the ECO approval.
<b>Ready to Approve</b>	Generate an approval Alert.

## Disposition Field

These values describe the disposition of inventory and work in process inventory affected by an engineering change order (ECO).

<b>No change required</b>	The ECO does not affect the revised item in WIP and inventory. This is the default.
<b>Scrap WIP and inventory</b>	Scrap the revised item in WIP and inventory when you implement the revised item.
<b>Scrap only inventory</b>	Scrap the revised item only in inventory when you implement the revised item.
<b>Scrap only WIP</b>	Scrap the revised item only in WIP when you implement the revised item.
<b>Rework inventory and WIP</b>	Rework the revised item in WIP and inventory when you implement the revised item.
<b>Rework only inventory</b>	Rework the revised item only in inventory when you implement the revised item.
<b>Rework only WIP</b>	Rework the revised item only in WIP when you implement the revised item.
<b>Exhaust WIP and inventory</b>	Use the revised item until you exhaust WIP and inventory for the item.
<b>Exhaust only WIP</b>	Use the revised item until you exhaust WIP for the item.

---

**Exhaust on serial number**

Use the revised item until it reaches a particular serial number.

---

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# Engineering Prototypes

## Overview of Engineering Prototype Environment

Oracle Engineering enables you to move toward concurrent engineering by integrating engineering prototype data with manufacturing data. Each department that accesses engineering item information can perform the same functions on prototypes as all departments do for manufactured assemblies. With engineering item information, you can separate released product designs, controlled distribution products, and alternate manufacturing methods for existing products from your manufacturing data.

Engineering enables you to create engineering items, bills of material and routings the same way you define manufacturing item information.

**Note:** This does not apply to Product Families. See: Creating a Product Family, *Oracle Bills of Material User's Guide*

Each item defined in Engineering is assigned to engineering. You can define engineering items and assign item attribute details as you do for manufacturing items. You can perform any function with an engineering item that you do for a manufacturing item, including:

- Revision control
- Track inventory
- Value inventory transactions
- Rollup costs
- Update frozen standard costs
- Plan in MPS and MRP

- Sell on customer orders
- Purchase on purchase orders
- Build in WIP and issue to a WIP job

## Item Catalog for Group Technology

When you design new products, search for existing items that meet your requirements before you define a new engineering item. Doing so can help prevent duplicate items. When you define an engineering or manufacturing item, you can classify the item by any number of characteristics.

For example, you can catalog manufacturing items and engineering items by three descriptive elements—*form*, *fit*, and *function*. Before you create a new engineering item, search the item catalog for all items that match any combination of these elements, such as "heated plastic" and "fastener". You can further restrict your search with other item details, including organization, item type, item category, and item status. If an item that meets your search criteria does not exist, you can create a new engineering item and assign the values of "heated plastic" to *form* and "fastener" to *function*. See: Overview of Item Catalogs, *Oracle Inventory User's Guide*.

## Engineering Item Status

You can define item statuses for each phase of your product life cycle. Engineering enables you to control engineering item attribute information by item status, so you can manage the introduction of new products. For example, you may define an item status "Design Released" and assign this status to all engineering product designs released from Design Engineering to your organization. You can control a "Design Released" item so that it cannot be built, purchased, or sold. As your product design matures, you can assign an item status of "Alpha" to your item so you can build or purchase it, but not include it on customer orders. After the product design and process stabilize, you may assign a "Beta" item status to your item so you can build, purchase, and sell the item in small quantities. See: Defining Item Status Codes, *Oracle Inventory User's Guide*.

## Engineering Item Costing

You can specify item costs, roll up costs, and update frozen standard costs for engineering items. When you assign item costs, you can specify cost elements, sub-elements, activities, basis and rates, the same way you assign costs for manufacturing items. Oracle Cost Management lets you roll up and update manufacturing and engineering item costs by item, category, or across all items. After you assign, roll up, and update item costs, you can review cost information for all cost types available to engineering. You can restrict access to item cost details in Engineering by cost type.



## Engineering Item Purchasing

For each engineering item you define, you can enable the item for use in Oracle Purchasing. To include engineering items on your purchase orders and requisitions, you can assign default buyer, supplier, price tolerance, and account information the same way you assign purchasing details to manufacturing items. You can receive, return, or adjust engineering items the same way you receive manufacturing items on purchase orders. For costed engineering items, you can track purchase price and compute purchase price variance the same way you cost other purchased items. With item status control, Engineering also enables you to control purchasing functions at any point in an engineering item's life cycle.

## Engineering Item Planning

Engineering enables you to plan engineering items in Oracle Master Scheduling/MRP the same way you plan manufacturing items. When you define an engineering item, you can assign a MPS/MRP planning method, planning time fence, shrinkage rate, and other planning details. In Master Scheduling/MRP, you can forecast engineering items and manufacturing items, load forecast details, and consume forecasts with existing sales orders. Master Scheduling/MRP computes material requirements for engineering and manufacturing items using the master schedule, engineering or manufacturing bills of material, scheduled receipts, and inventory information. You can also control planning functions for engineering items by item status to track an engineering item's life cycle. .

## Discrete Jobs for Engineering Items

When you define an engineering item, you can enable the item for use in Oracle Work in Process. To build an engineering assembly or prototype a new process, you define a discrete job using an engineering bill of material or routing. You can issue engineering and manufacturing items to jobs, as well as collect resource, material, and overhead costs based on an engineering routing. You can place finished engineering assemblies into inventory the same way you place manufacturing assemblies into inventory. To track an engineering item's life cycle, you can update item status and control when to build an engineering item or prototype a new process in Work in Process.

## Item Types and Bills of Material Types

Each item can be identified as an engineering item and enabled for use in Engineering using two item master attributes, Engineering Item and BOM Item Type. The BOM Allowed item attribute must also be set to Yes.

The Engineering Item attribute indicates whether the item exists in engineering. If not, it is a manufacturing item. This attribute is not updatable when defining the engineering item. When an item is transferred to manufacturing, the Engineering Item attribute is disabled.

You can enable any item for use in Engineering when you assign one of the following four values for the BOM Item Type item attribute: standard, model, option class, or planning.

You can define an engineering item and an engineering bill of material for a manufacturing item enabled in Oracle Bills of Material, but you cannot define manufacturing bills of material for engineering items.

## **Engineering Bills of Material and Routings**

You can define an engineering bill of material or routing as alternates for a manufacturing bill or routing. This enables you to prototype variations from the primary bill of material that produce the same assembly.

You can specify a list of item catalog descriptive elements for model and option class engineering bills. After you release the engineering bill to manufacturing and take customer orders for specific configurations, Bills of Material creates the new configuration item and automatically assigns values to each catalog descriptive element.

Engineering lets you assign manufacturing and engineering items as components to the engineering bill of material.

Each routing you define can exist either in engineering or in manufacturing, and both engineering and manufacturing routings share the same resource, department, and standard operation information.

You can calculate manufacturing and cumulative lead times for engineering items.

## **ECOs on Engineering Items and Bills**

Engineering enables you to define engineering change orders (ECOs) for manufacturing and engineering items. You can also mass change engineering bills of material the same way you manage mass changes to manufacturing bills of material.

## **ECO Types**

Engineering controls the access to ECOs and the changes you can specify on an ECO. For each ECO type, you can specify if ECOs of this type can update engineering items. Only users whose profile option indicates they can update engineering items can choose ECO types that update engineering item information. If you define a new bill of material using an ECO with an ECO type that updates engineering items, Engineering creates the bill as an engineering bill when you implement the ECO.

## **Profile Options**

Engineering uses the following four profile options to control the types of items you can change on an ECO:

- ENG: Engineering Item Change Order Access (engineering items)
- ENG: Model Item Change Order Access (model and option class items)
- ENG: Planning Item Change Order Access (planning items)
- ENG: Standard Item Change Order Access (standard items)

## Related Topics

Creating an ECO, page 2-22

Defining ECO Types, page 1-6

Engineering Profile Options and Security Functions, page 1-15

## Transferring or Copying Engineering Items, Bills, and Routings

You must transfer an engineering item prior to, or simultaneously with, its engineering bill of material and/or routing. When copying items, bills, and routings, all information must be copied simultaneously.

**Note:** Engineering does not transfer or copy an item, bill, or routing if it already exists in manufacturing. Also, information transferred to manufacturing is still available to engineering; it is not copied.

Transferring and copying engineering data is organization specific. That is, you can only transfer or copy an engineering item, bill, or routing to manufacturing within the same organization.

## Engineering Items

All information associated with the engineering item is transferred or copied.

If you copy an engineering item, you must provide a new name and description. The original item information is retained in engineering.

When you transfer an engineering item assigned to a category set different from the inventory category set, Engineering automatically assigns the new manufacturing item to the inventory category set. Engineering also enables you to assign a new item revision and lets you reference an ECO when you transfer an engineering item.

## Engineering Bills of Material

All bill information-including all engineering item components on a single level bill for an item is transferred (or copied). For multiple levels of engineering item components, you must transfer each engineering bill level by level, starting from the lowest level.

You can assign a new item revision and reference an ECO when you transfer an engineering bill of material. When you transfer an engineering bill of material, you can specify whether to transfer all components, current effective components, or current and future effective components. You can also specify whether to transfer pending component information from an ECO.

With this transfer criteria, Engineering transfers all engineering items that meet your criteria and that are components on the single level bill of material. For bills of material that reference a common engineering bill, you must transfer the common bill to manufacturing before you transfer any engineering bills that reference the common bill.

**Note:** This is applicable for ECOs in the tabbed region and for Transfer/Copy specific to Engineering Prototypes.

## Engineering Routings

When you transfer a bill of material without transferring the engineering routing, all components on the manufacturing bill report to the operation sequence 1, regardless of the operations on the engineering routing. If components of the bill of material overlap (the same component item appears twice) at operation sequence one, Engineering does not transfer the engineering bill of material until you also transfer the engineering routing. If you transfer the engineering bill of material and routing simultaneously, components on the manufacturing bill report to the appropriate operation on the manufacturing routing.

When you transfer a routing, you can also specify a new routing revision and reference an ECO. Engineering transfers all operations, current effective operations, or future effective operations depending on your transfer criteria. For routings that reference a common engineering routing, you must transfer the common routing to manufacturing before you transfer any engineering routings that reference the common routing.

**Note:** This is applicable for ECOs in the tabbed region and for Transfer/Copy specific to Engineering Prototypes.

1. Navigate to the Transfer to Manufacturing window.

The screenshot shows the 'Transfer to Manufacturing (M1)' dialog box. It has three tabs: 'Revisions', 'Alternates', and 'ECO, Description'. The 'Revisions' tab is selected. The main area contains a table with the following structure:

Transfer			Current		New	
Item	Bill	Routing	Item	Routing	Item	Routing
...	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>				

Below the table is an 'Item Description' text field and a 'Transfer' button.

2. Enter an item and indicate whether to transfer (or copy) item, bill, and routing data (if applicable).

**Note:** When copying an engineering bill to manufacturing, you must copy the item simultaneously with its bill and/or routing.

3. Optionally, enter a new item or routing revision (if applicable).

The revision must be higher than the current revision (as shown) and can be alphanumeric.

4. Optionally, open the Alternates tabbed region and for Selection, select Specific to transfer (or copy) a specific alternate, select Primary to transfer the primary alternate, or select All to transfer all alternates.

Leaving this blank will transfer (or copy) the primary and all alternates (if any).

To transfer (or copy) a specific alternate, you must enter its name.

5. Open the ECO, Description tabbed region and enter an ECO. This is for informational purposes only.

6. If you are copying data, you must open the Manufacturing Items tabbed region and enter a new item name and description.
7. Choose the Transfer (or Copy) button.
8. If you are transferring (or copying) bills, indicate if only implemented components should be transferred.
9. Select whether to transfer (or copy) All past, Current (effective on the specified revision date), or Future components and/or operation steps associated with the assembly. The default is Current. If you select Current or Future and Current, enter an effective date.

## Related Topics

Transfer or Copy from an ECO, page 2-7

Transfer items to manufacturing from an ECO, page 2-44

Copying Bill and Routing Information, *Oracle Bills of Material User's Guide*

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## Reports

### Engineering Change Order Approval Lists Report

This report lists the approvers for engineering change orders (ECOs). When you change the approval status of an ECO to Ready to Approve, Oracle Alert automatically sends an alert to each approver on the list indicating that an ECO awaits their approval.

#### Report Submission

In the Submit Requests window, select Engineering Change Order Approval Lists Report in the Name field.

#### Approval List Names From/To

To restrict the report to a range of approval list names, select beginning and ending approval list names.

#### Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

### Engineering Change Order Detail Report

This report contains current or historical engineering change order (ECO) information. You can sort the report by engineering change notice or creation date. You can report all changes, current pending changes, or historical changes. You can run the report for all engineering change notices or for a range.

#### Report Submission

In the Submit Requests window, select Engineering Change Order Detail Report in the Name field.

## All Organizations

Choose one of the following options:

---

<i>No</i>	Report ECO information for the current organization.
<i>Yes</i>	Report ECO information for all organizations having the same item master organization as the current organization, and for those organizations accessible by the user responsibility.

---

## Organization Hierarchy

Enter a valid organization hierarchy name from the list of values. If the value for the All Organizations parameter is set to No, and you have provided a value for the Organization Hierarchy parameter, then the report will provide ECO information for the current organization and all organizations below the current organization in the specified organization hierarchy. If this parameter is left blank, and the All Organizations parameter is set to No, then the report will provide ECO information for the current organization. You can enter a value in this field only if you have entered No in the All Organizations field.

## Engineering Change Orders From/To

To restrict the report to a range of engineering change orders, select the beginning and ending engineering change orders.

## Dates From/To

To restrict the report to a range of dates, select the beginning and ending dates.

## Status

Enter Open, Hold, Scheduled, Cancelled, Implemented, or Released to indicate the status of the ECO to print. See: ECO Statuses, page 2-59.

## Additional Component Detail

Enter Yes or No to indicate whether to print ECO component detail.



# Order Entry Component Detail

Enter Yes or No to indicate whether to print ECO order entry component detail.

## Related Topics

Creating Organization Hierarchies, *Oracle Bills of Material User's Guide*

Submitting a Request, *Oracle E-Business Suite User's Guide*

# Engineering Change Order Open Interface Report

Engineering Change Order (ECO) Open Interface concurrent request is used to import data from ECO Open Interface tables to Oracle Engineering source tables. With this request, new ECOs can be created and existing ECOs can also be updated or deleted. ECO Open Interface request validates the interface tables data, ensuring that the imported ECOs contain the same details as those manually entered through Define ECO form. If validation is successful, then the program imports the data to source tables. You can then view the created ECOs in the forms from UI.

## Parameters

### All Org Flag (Yes or No)

Yes	Runs the interface for all organization codes in the bill of material and routing interface tables.
No	Runs the interface program only for the organization that you are in. The interface program processes only bill of material and routing interface records in the current organization.

### Delete Processed Rows (Yes or No)

Yes	Deletes the processed rows successfully from the bill of material and routing interface tables.
No	Leaves all records in the bill of material and routing interface tables for successfully processed rows.

## Engineering Change Order Priorities Report

This report lists engineering change order (ECO) priorities that you defined for Oracle Engineering. ECO priorities enable you to specify the urgency of your ECO. Engineering uses ECO priorities for reference only.

### Report Submission

In the Submit Requests window, select Engineering Change Order Priorities Report in the Name field.

### Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Engineering Change Order Reasons Report

This report lists the engineering change order (ECO) reasons that you defined for Oracle Engineering. You can use engineering change reasons to categorize your ECOs. Engineering uses ECO reasons for reference only.

### Report Submission

In the Submit Requests window, select Engineering Change Order Reasons Report in the Name field.

### Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Engineering Change Order Schedule Report

This report lists pending engineering change order (ECO) schedule information up to a specified date. You can run the report for all ECOs or for a range.

### Report Submission

In the Submit Requests window, select Engineering Change Order Schedule Report in the Name field.

### Print Components

Enter either Yes or No to indicate whether you want to print revised components associated with the revised item.

**Engineering Change Order Type**

Enter an engineering change order type to print engineering change orders associated with it.

**Engineering Change Orders From/To**

To restrict the report to a range of Engineering Change Orders, select the beginning and ending Engineering Change Orders.

**Effective Dates From/To**

To restrict the report to a range of dates, select the beginning and ending dates.

**Revised Item Status**

Enter Open, Hold, Scheduled, Cancelled, Implemented, or Released to indicate the status of the revised item to print.

**Display Option**

Choose one of the following options:

<i>All</i>	Report the pending and implemented engineering change orders.
<i>Historical changes</i>	Report the implemented engineering change orders.
<i>Pending changes</i>	Report the current engineering change orders. Oracle Engineering displays this option as the default.

**Revised Item**

Enter a revised item to print.

**Revised Component**

Enter a revised component to print.

## Sort Criteria 1

Choose one of the following options. The report sorts ECOs first in this order, then in the specified order for Sort Criteria 2 and Sort Criteria 3.

---

<i>ECO</i>	Sort ECOs first by ECO. Oracle Engineering displays this option as the default.
<i>Effective date</i>	Sort ECOs first by effective date.
<i>Item number</i>	Sort ECOs first by item number.

---

## Sort Criteria 2

Choose one of the following options. Engineering sorts the ECOs by the first sort type and then by this sort type within the first type.

---

<i>ECO</i>	Sort ECOs by ECO.
<i>Effective date</i>	Sort ECOs by effective date.
<i>Item number</i>	Sort ECOs by item number. Oracle Engineering displays this option as the default.

---

## Sort Criteria 3

Choose one of the following options. Engineering sorts the ECOs by the first sort type, then by the second sort type within the first type, and finally by this sort type within the second type.

---

<i>ECO</i>	Sort ECOs by ECO.
<i>Effective date</i>	Sort ECOs by effective date. Oracle Engineering displays this option as the default.
<i>Item number</i>	Sort ECOs by item number.

---

## **Related Topics**

Submitting a Request, *Oracle E-Business Suite User's Guide*

## **Engineering Change Order Types Report**

This report lists the change orders types that determine the types of items and bills of material you can modify on engineering and mass change orders.

## **Report Submission**

In the Submit Requests window, select Engineering Change Order Types Report in the Name field.

## **Related Topics**

Submitting a Request, *Oracle E-Business Suite User's Guide*



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# Engineering Windows and Navigator Paths

## Engineering Windows and Navigator Paths

For windows described in other manuals:

See...	Refer to this manual for a complete window description.
BOM	<i>Oracle Bills of Material User's Guide</i>
CAP	<i>Oracle Capacity User's Guide</i>
CST	<i>Oracle Cost Management User's Guide</i>
Flex	<i>Oracle E-Business Suite Flexfields Guide</i>
GL	<i>Oracle General Ledger User's Guide</i>
HR	<i>Oracle Human Resources User's Guide</i>
PO	<i>Oracle Purchasing User's Guide</i>
MRP	<i>Oracle MRP User's Guide</i>
SYS	<i>Oracle E-Business Suite Setup Guide</i> <i>Oracle E-Business Suite Maintenance Guide</i> <i>Oracle E-Business Suite Security Guide</i>

<b>See...</b>	<b>Refer to this manual for a complete window description.</b>
User	<i>Oracle E-Business Suite User's Guide</i>

Text in brackets ([ ]) indicates a button.

The following table presents window names and navigation paths.

## Engineering Responsibility

<b>Window Name</b>	<b>Navigation Path</b>
Approval Lists, page 1-12	Setup > Approval Lists
Assign Cross Reference Types (See <b>INV</b> )	Prototypes > Items > Cross References > [Assign]
Bill Components Comparison (See <b>BOM</b> )	Prototypes > Bills > Comparison
Bill Details (See <b>BOM</b> )	Prototypes > Bills > Bills > [Bill Details]
Bill Documents (See <b>BOM</b> )	Prototypes > Bills > Documents
Bills of Material (See <b>BOM</b> )	Prototypes > Bills > Bills
Calculate Lead Times (See <b>BOM</b> )	Prototypes > Routings > Lead Times
Change Types, page 1-6	Setup > Change Types
Change Type Processes, page 1-6	Setup > Change Types > [Processes]
Component Changes, page 2-48	ECOs > Mass Changes > [Changes]
Component Changes (See <b>BOM</b> )	Prototypes > Bills > Mass Changes > [Changes]
Copy to Manufacturing, page 3-5	Prototypes > Copy to Manufacturing
Copy to Manufacturing: from within an ECO page , page 2-45	ECOs > ECOs > [Copy]



Window Name	Navigation Path
Cross Reference Types (See <b>INV</b> )	Prototypes > Items > Cross References
Deletion Constraints (See <b>BOM</b> )	Setup > Delete Constraints
Departments (See <b>BOM</b> )	Prototypes > Routings > Departments
Descriptive Elements (See <b>BOM</b> )	Prototypes > Bills > Bills > [Elements]
ECO Autonumbering, page 1-8	Setup > AutoNumbering
ECO Department (See <b>HR</b> )	Setup > ECO Department
ECO Priorities, page 1-10	Setup > Priorities
Engineering Change Orders, page 2-20	ECOs > ECOs ECOs > Schedules
Engineering Master Item (See <b>INV</b> )	Prototypes > Items > Master Items
Engineering Organization Item (See <b>INV</b> )	Prototypes > Items > Organization Items
Enter Person (See <b>HR</b> )	Setup > Employees
History, page 2-33	ECOs > ECOs > [Revised Items] > [History]
Import Bills and Routings (See <b>BOM</b> )	Prototypes > Bills > Import
Indented Bill of Material (See <b>BOM</b> )	Prototypes > Bills > Indented Bills
Item Attributes (See <b>INV</b> )	Prototypes > Items > View Item Details > [Attributes]
Item Catalog Groups (See <b>INV</b> )	Prototypes > Items > Catalog Groups
Item Documents (See <b>User</b> )	Prototypes > Items > Documents
Item Relationships (See <b>INV</b> )	Prototypes > Items > Related Items > [Find]
Item Revisions, page 2-34	ECOs > ECOs > [Revised Items] > [Revisions]
Item Revisions (See <b>BOM</b> )	Prototypes > Bills > Bills > [Revision]

Window Name	Navigation Path
Item Search (See <b>INV</b> )	Prototypes > Items > Item Search > [Find]
Item Template (See <b>INV</b> )	Prototypes > Items > Item Template > [Find] > Item Templates Summary > [Open]
Item WhereUsed (See <b>BOM</b> )	Prototypes > Bills > Item WhereUsed
Mass Change Bills, page 2-48	ECOs > Mass Changes
Operation Resources (See <b>BOM</b> )	Prototypes > Routings > Routings > [Operation Resources]
Reasons, page 1-11	Setup > Reasons
Reference Designators, page 2-43	ECOs > ECOs > [Revised Items] > [Components] > [Designators]
Reference Designators (See <b>BOM</b> )	Prototypes > Bills > Bills > [Designators]
Resources (See <b>BOM</b> )	Prototypes > Routings > Resources
Resource WhereUsed (See <b>BOM</b> )	Prototypes > Routings > Resource WhereUsed
Revised Components, page 2-39	ECOs > ECOs > [Revised Items] > [Components]
Revised Items, page 2-29	ECOs > ECOs > [Revised Items]
Routing Details (See <b>BOM</b> )	Prototypes > Routings > Routings > [Routing Details]
Routing Documents (See <b>BOM</b> )	Prototypes > Routings > Documents
Routing Revisions (See <b>BOM</b> )	Prototypes > Routings > Routings > [Routing Revisions]
Routings (See <b>BOM</b> )	Prototypes > Routings > Routings
Standard Operations (See <b>BOM</b> )	Prototypes > Routings > Standard Operations
Start AutoImplement Manager, page 1-14	Setup > AutoImplement

Window Name	Navigation Path
Substitute Components, page 2-42	ECOs > ECOs > [Revised Items] > [Components] > [Substitutes]
Substitute Components (See <b>BOM</b> )	Prototypes > Bills > Bills > [Substitutes]
Transfer to Manufacturing, page 3-5	Transfer to Manufacturing
Transfer to Manufacturing from within and ECO, page 2-44	ECOs > ECOs > [Transfer]

## Oracle Engineering Character Mode Forms and Corresponding GUI Windows

The following table matches character mode forms with their corresponding GUI windows or processes. This information supplements *Windows and Navigator Paths* in the product online documentation. Text in brackets ([ ]) indicates a button.

The GUI Navigator paths are based on the Engineering responsibility.

The following table presents more information on any window, navigate to the window and choose the help icon.

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Assign Key Flexfield Security Rules	Assign Security Rules
\ Navigate Setup Flexfields Key Security Assign	Navigator: Setup > Flexfields > Key > Security > Assign
Assign Security Rules	Assign Security Rules
\ Navigate Setup Flexfields Validation Security Assign	Navigator: Setup > Flexfields > Validation > Security > Assign
Bill of Material Comparison Report	Bill Components Comparison
\ Navigate Report Bill Compare	Navigator: Prototypes > Bills > Comparison
Bill of Material Loop Report	Engineering Bill Reports
\ Navigate Report Bill LoopCheck	Navigator: Reports > Bills

<b>Character Mode Form and Menu Path</b>	<b>GUI Window or Process, and Navigation Path</b>
Bill of Material Structure Reports \Navigate Report Bill Structure	Engineering Bill Reports Navigator: Reports > Bills
Calculate Lead Times \Navigate Prototype Leadtimes	Calculate Lead Times Navigator: Prototypes > Routings > Lead Times
Change Organization \Navigate Other ChangeOrg	Organization Navigator: Other > Organization
Define Change Order Types \Navigate Setup ECO Types	Change Types Navigator: Setup > Change Types
Define Cross-Validation Rule \Navigate Setup Flexfields Key Rules	Cross-Validation Rules Navigator: Setup > Flexfields > Key > Rules
Define Descriptive Flexfield Segments \Navigate Setup Flexfields Descriptive Segments	Descriptive Flexfield Segments Navigator: Setup > Flexfields > Descriptive > Segments
Define Descriptive Security Rule \Navigate Setup Flexfields Descriptive Security Define	Define Security Rules Navigator: Setup > Flexfield > Descriptive > Security > Define
Define Descriptive Segment Values \Navigate Setup Flexfields Descriptive Values	Segment Values Navigator: Setup > Flexfields > Descriptive > Values
Define ECO Approval Lists \Navigate Setup ECO ApprovalLists	Approval Lists Navigator: Setup > Approval Lists
Define ECO Autonumbering \Navigate Setup ECO AutoNumbering	ECO Autonumbering Navigator: Setup > AutoNumbering

<b>Character Mode Form and Menu Path</b>	<b>GUI Window or Process, and Navigation Path</b>
Define ECO Departments	Define ECO Department
\Navigate Setup ECO Department	Navigator: Setup > ECO Department
Define ECO Priorities	ECO Priorities
\Navigate Setup ECO Priorities	Navigator: Setup > Priorities
Define ECO Reasons	Reasons
\Navigate Setup ECO Reasons	Navigator: Setup > Reasons
Define Employees	Enter Person
\Navigate Setup Employee	Navigator: Setup > Employees
Define Engineering Bill of Material	EngineeringBills of Material
\Navigate Prototype Define Bill	Navigator: Prototypes > Bills > Bills

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Define Engineering Change Order \\Navigate ECO Define	Engineering Change Orders Navigator: ECOs > ECOs or Approval History Navigator: ECOs > ECOs > [Approvals] or Approval Dates Navigator: ECOs > ECOs. From the Tools menu choose View Dates or ECO Revisions Navigator: ECOs > ECOs > [ECO Revisions] or View Reference Designators Navigator: ECOs > ECOs > [Revised Items] > [Components] > [Designators] or View Substitute Components Navigator: ECOs > ECOs > [Revised Items] > [Components] > [Substitutes]
Define Engineering Item \\Navigate Prototype Define Item Item	Engineering Master Item Navigator: Prototypes > Items > Master Items or Engineering Organization Item Navigator: Prototypes > Items > Organization Items
Define Engineering Item Revision \\Navigate Prototype Define Item Revision	Item Revisions Navigator: Prototypes > Bills > Bills > [Revision]

<b>Character Mode Form and Menu Path</b>	<b>GUI Window or Process, and Navigation Path</b>
Define Engineering Routing	Engineering Routings
\Navigate Prototype Define Routing	Navigator: Prototypes > Routings > Routings or Routing Details Navigator: Prototypes > Routings > Routings > [Routing Details]
Define Item Catalog Groups	Item Catalog Groups
\Navigate Prototype Inventory Catalog Define	Navigator: Prototypes > Items > Catalog Groups
Define Item Cross-References	Assign Cross Reference
\Navigate Prototype Inventory Cross-Reference	Navigator: Prototypes > Items > Cross References > [Assign]
Define Item Relationships	Item Relationships
\Navigate Prototype Inventory RelatedItems	Navigator: Prototypes > Items > Related Items > [Find]
Define Item Template	Item Template
\Navigate prototype Inventory Template	Navigator: Prototypes > Items > Templates > [Find] > Item Templates Summary > [Open]
Define Key Flexfield Security Rule	Define Security Rules
\Navigate Setup Flexfields Key Security Define	Navigator: Setup > Flexfields > Key > Security > Define
Define Key Flexfield Segments	Key Flexfield Segments
\Navigate Setup Flexfields Key Segments	Navigator: Setup > Flexfields > Key > Segments
Define Key Segment Values	Segment Values
\Navigate Setup Flexfields Key Values	Navigator: Setup > Flexfields > Key > Values

<b>Character Mode Form and Menu Path</b>	<b>GUI Window or Process, and Navigation Path</b>
Define Rollup Groups	Rollup Groups
\Navigate Setup Flexfields Key Groups	Navigator: Setup > Flexfields > Key > Groups
Define Security Rule	Define Security Rules
\Navigate Setup Flexfields Validation Security Define	Navigator: Setup > Flexfields > Validation > Security > Define
Define Segment Values	Segment Values
\Navigate Setup Flexfields Validation Values	Navigator: Setup > Flexfields > Validation > Values
Define Shorthand Aliases	Shorthand Aliases
\Navigate Setup Flexfields Key Aliases	Navigator: Setup > Flexfields > Key > Aliases
Define Value Set	Value Sets
\Navigate Setup Flexfields Validation Set	Navigator: Setup > Flexfields > Validation > Sets
Delete Item Information	Engineering Deletion Groups
\Navigate Prototype Delete	Navigator: Delete Item Report
Delete Items Report	Delete History Report
\Navigate Report Delete	Navigator: Reports > Delete Groups
Engineering Change Order Reports	Engineering Change Order Reports
\Navigate Report ECO	Navigator: Reports > ECOs
Engineering Setup Reports	Engineering Setup Reports
\Navigate Reports Setup	Navigator: Reports > Setup
Implement Engineering Change Orders	Engineering Change Orders
\Navigate ECO Implement	Navigator: ECOs > ECOs



Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Item Cost Information Report \Navigate Report ItemCosts	Item Cost Information Report Use the Cost Management responsibility Navigator: Report > Cost > Item
Item Reports \Navigate Report Item	Engineering Item Reports Navigator: Reports > Items
Mass Change Bills of Material \Navigate ECO MassChange	Mass Change Bills Navigator: ECOs > Mass Changes
Purge Engineering Change Orders \Navigate ECO Purge	Purge Engineering Change Orders Navigator: ECOs > Delete
Routing Reports \Navigate Reports Routing	Engineering Routing Reports Navigator: Reports > Routings
Run Reports \ Navigate Report	Submit Request window Navigator: Reports > Run
Search Items \Navigate Prototype Inventory Catalog Search	Item Search Navigator: Prototypes > Items > Item Search > [Find]
Start AutoImplement Manager \Navigate Setup AutoImplement	Start AutoImplement Manager Navigator: Setup >AutoImplement
Transfer Engineering Data to Manufacturing \Navigate Prototype Transfer	Copy to Manufacturing Navigator: Prototypes > Copy to Manufacturing or Transfer to Manufacturing Navigator: Protoypes > Transfer to Manufacturing

<b>Character Mode Form and Menu Path</b>	<b>GUI Window or Process, and Navigation Path</b>
Update Engineering Item/Org Attributes \Navigate Prototype Define Item Update	Item Attributes Navigator: Prototypes > Items > View Item Details > [Attributes]
Update Personal Profile Options \Navigate Other Profile	Personal Profile Values Navigator: Setup > Profiles
View Bill of Material Comparison \Navigate Inquiry Bill Compare	Bill Components Comparison Navigator: Prototypes > Bills > Comparison
View Bill of Material Details Navigate Inquiry Bill Detail	Bill Details Navigator: Prototypes > Bills > Bills > [Bill Details]
View Concurrent Requests \ Navigate Other Requests	Requests window Navigator: Concurrent > Requests Choose: View Output button- to view Request Output View Log button - to view Request Log Use the Menu to choose: Tools > Managers - to view Manager Log
View Engineering Change Order Details \Navigate Inquiry ECO Details	Engineering Change Orders Navigator: ECOs > ECOs
View Engineering Change Order Schedule \Navigate Inquiry ECO Schedule	View ECOs Navigator: ECOs > Schedules
View Engineering Delete History \Navigate Inquiry DeleteHistory	Warning: Engineering Deletion Groups Navigator: Prototypes > Routings > Delete Groups
View Indented Bill of Material \Navigate Inquiry Bill Indented	Indented Bills of Material Navigator: Prototypes > Bills > Indented Bills

<b>Character Mode Form and Menu Path</b>	<b>GUI Window or Process, and Navigation Path</b>
View Item Attributes \\Navigate Inquiry Item Attributes	Item Attributes Navigator: Prototypes > Items > View Item Details > [Attributes]
View Item Revision Navigate Inquiry Item Revision	Item Revisions Navigator: Prototypes > Bills > Bills > [Revision] or Revised Items Navigator: ECOs > ECOs > [Revised Items] > [Revisions]
View Item Usage \\Navigate Inquiry WhereUsed Item	Item WhereUsed Navigator: Prototypes > Bills > Item WhereUsed
View Routing Details \\Navigate Inquiry Routing	EngineeringRoutings Navigator: Prototypes > Routings > Routings



---

## Engineering Alerts

### Engineering Alerts

Engineering includes these pre-coded alerts that you can use with or without customizing.

### ECO Approval Notification

This alert notifies all the approvers on an ECO's approval list that an ECO requires their approval

---

<b>Alert Type</b>	Periodic
<b>Periodicity</b>	Every $n$ business days
<b>Inputs</b>	Organization
<b>Distribution</b>	Approvers for the ECO

---

Example:

To: Henry Smith  
From: Oracle Alert  
Subject: Approval Requested for ECO - ECO7  
-----

The following Engineering Change Order needs your approval. Please take the appropriate action and inform the Requestor below.

Organization: BM1 BOM Test Org 1  
ECO: ECO7  
Reason: Cost  
Priority:  
Approver List: appr1  
Approver: Mecker, Satyajit Singh  
Requestor:  
Revised Item: E:EDEI\_watch  
Description: watch  
Effective Date: 31-JUL-93  
New Revision: 1

Oracle Alert

## ECO Use Up Date

This alert notifies the ECO planner that a plan date for a use-up item has changed.

---

<b>Alert Type</b>	Periodic
<b>Periodicity</b>	Every <i>n</i> business days
<b>Inputs</b>	Organization
<b>Distribution</b>	ECO requestor

---

Example:

To: Henry Smith  
From: Oracle Alert  
Subject: ECO revised item use up dates  
-----

ECO scheduled dates for the following revised items do not match their use up dates in MRP. Please take the necessary action.

Organization: MR1 MRP Organization 1  
Planner: PRUBINFE  
Description: Paul

|----- Use Up -----|

ECO	Revised Item	Sch. Date	Item	Plan	Date
-----	-----	-----	-----	-----	-----
pxr-013	M-pxr-b	28-JAN-94	M-pxr-b	NF-MRP	13-APR-94

Oracle Alert





---

## Engineering Tools Menu

### Engineering Tools menu

Change the status of ECOs and ECO revised items by using the Tools menu and choosing a status. Other functions available from the Oracle Engineering Tools menu include:

---

<b>Reschedule</b>	Opens the Reschedule window to reschedule ECOs and ECO revised items. To reschedule ECOs, the Engineering Change Orders: Reschedule security function must be included as part of the responsibility.
<b>Enter Costs</b>	Opens the ECO Costs window so that you can enter engineering or manufacturing implementation costs.
<b>Copy Bill from</b>	Opens the Copy Bill window so that you can copy a bill into an ECO.
<b>Check for Loops</b>	Verifies that a bill does not contain items are not listed as components of the same item. Opens the Approval Dates window which shows the date the ECO approval list was requested, the date it was approved, or the days remaining for approval to take place.
<b>View Dates</b>	View ECO information including: scheduling information, pending and implemented ECOs approval status, revised item status, etc.

---

---

**View Approvals**

If an approval list is used, the approval status can only be changed manually, pending formal approval from a list member. If a workflow process is associated with the ECO, the approval status is changed automatically.

**Abort Approvals**

Aborts the Workflow approval process. This is only available if the ECO approval status is Approval Requested. This is only available if the ECO: Approvals security function is included as part of the responsibility.

---

## Related Topics

Changing the ECO Status, page 2-27

ECO Statuses, page 2-59

ECO Revised Item Statuses, page 2-59

Rescheduling an ECO or Revised Items, page 2-27

Defining Implementation Costs, page 2-28

Assigning an ECO Approval List and Status, page 2-25

Engineering Profile Options and Security Functions, page 1-15

Copying Bill and Routing Information, *Oracle Bills of Material User's Guide*

Checking for Bill Loops, *Oracle Bills of Material User's Guide*

---

## 21 CFR Part 11 Compliance

### 21 CFR Part 11 Overview

The Food and Drug Administration (FDA) protects the public health by regulating the food and drug industries. In 1997, the FDA issued new regulations for quality systems using computerized software in the FDA Code of Federal Regulations (CFR) Title 21 Part 11, otherwise known as 21 CFR Part 11. The regulations strive to assure that computerized records are safe, secure, and as accurate as a paper based system.

According to 21 CFR Part 11, the software application's role in the data management process is to guarantee and substantiate that the manufactured product data is electronically captured, manipulated, extracted, and coded during the manufacturing of the product. All subject data and definitional objects (metadata) must have a complete audit trail.

In general, 21 CFR Part 11 describes the requirements that must be met when using electronic records (e-records) and electronic signatures (e-signatures), but does not describe where they are required. The FDA left the definition of where to use electronic records and which signatures to apply as electronic signatures to the discretion of the medical device manufacturers who use software applications as part of their quality management system. The predicate rule used by the medical device manufacturers is FDA 21 CFR Part 820. Oracle Engineering enable electronic records and signatures for certain business events (as described in this chapter), as well as give users ways to choose which business events must meet 21 CFR Part 11 requirements, by using the Oracle E-Records product. Refer to the *Oracle E-Records Implementation Guide* for information on how to tailor Oracle E-Records to meet your needs.

Depending on the type of business event, an electronic signature is either online or deferred. An online signature requires that you enter a valid signature before saving the event or transaction.

Certain business events also include any attachment made to the business event object in the e-record. For example, if a drawing depicting an engineering change is attached to an engineering change order, you can review the drawing in the e-record for the engineering change order.

The e-records and e-signatures (ERES) framework is a central tool designed to achieve 21 CFR Part 11 compliance for the necessary Oracle Applications business events. The ERES framework uses common Oracle Applications components such as Oracle Workflow business events, the XML Gateway, and others.

In order to enable electronic records and signatures for Oracle Engineering, you must follow the steps listed in Implementing E-Records, *Oracle E-Records Implementation Guide*. Otherwise, no e-records or e-signatures are required.

## Related Topics

E-Records and E-Signatures for Oracle Engineering, page D-2

See Viewing Oracle E-Records and E-Signatures

## E-records and E-signatures for Oracle Engineering

The following table lists the Oracle Engineering events seeded in Oracle E-Records.

Event	Online or Deferred E-signature	E-Record Includes Attachment
ECO Creation	Online*	Yes
ECO Update	Online*	Yes
ECO Approval	Deferred	Yes
ECO Implementation	Online*	No
ECO Schedule	Online*	No
ECO Reschedule	Online*	No
ECO Cancellation	Online*	No
Transfer to Manufacturing	Online	No
Copy to Manufacturing	Online	No

\* By default, the online e-signatures marked with an asterisk (\*) are disabled. To enable e-signatures for these events, change the ESIG\_REQUIRED configuration variable default value to Y. See: Setting Up the Configuration Variables, *Oracle E-Records Implementation Guide*.

## ECO Creation or Update

The Engineering Change Orders window starts the record capturing process whenever an ECO is created or changed.

## ECO Approval

When a completed ECO is submitted for approval, the required e-signatures must be captured to complete the approval process. You can enter your signature online, while the event is happening in the window or in deferred mode. All users in the ECO approval list receive workflow notifications requesting that they provide their e-signature before the ECO is approved.

The ECO Approval process requires an additional setup step in Oracle Engineering because this process is not defined in Oracle Approvals Management. You must associate the Change Type and Priority used by the ECO with the ERES Approval Process in Oracle Workflow. See: Defining ECO Types.

When creating the ECO, you must enter a Change Type and Priority that is associated with the ERES Approval Process. You must also select a valid approval list in the Approval List field.

## ECO Implementation

You can create an e-record upon either manual or automatic implementation of an ECO. When you implement an ECO, a concurrent program executes your command, captures an e-record, and invokes the necessary event to make the change. The necessary event could be a bill, routing, or item update or a transfer or copy to manufacturing. See: Implementing ECOs..

## ECO Schedule, Reschedule, or Cancellation

The action of scheduling, rescheduling or cancelling an ECO creates an e-record. When you select Schedule, Reschedule, or Cancel from the menu, you must enter the date and time, then confirm the action. Once you confirm the action, the e-record is created. See: Implementing ECOs, , Rescheduling an ECO or Revised Item, *Oracle Engineering User's Guide*, or Cancelling ECOs and Revised Items, *Oracle Engineering User's Guide* for more information.

## Transfer or Copy to Manufacturing

When you transfer or copy items, bills, and routings to manufacturing from within the Engineering Change Orders window using the ERES Approval Process in Oracle Workflow, you eventually schedule an ECO implementation. The e-record is created as described for an ECO implementation and the e-signature is collected as described for an ECO Approval previously in this section. This is the recommended method for

transferring or copying data to manufacturing and Oracle suggests removing the other menu entries for manually transferring or copying engineering data to manufacturing.

If you need the flexibility to manually transfer or copy data to manufacturing, the other navigator paths for manually transferring engineering data are provided below. The paths for manually copying engineering data are the same; substitute the word Copy in place of Transfer.

- Engineering > Prototypes > Transfer to Manufacturing
- Engineering > Prototypes > Items > Master/Organization Items (M) Tools > Engineering Transfer
- Engineering > Prototypes > Bills (M) Tools > Transfer Bill
- Engineering > Prototypes > Routings (M) Tools > Transfer Routing

These paths open the Transfer to Manufacturing or the Copy to Manufacturing window. These windows create an e-record and require an online e-signature for every record line once the event is saved.

## Related Topics

Viewing Oracle E-Records and E-Signatures, page D-4

Also see: 21 CFR Part 11 Overview in the *Oracle Engineering User's Guide*.

## Viewing Oracle E-Records and E-Signatures

You can view e-records and e-signatures using the following methods:

- Using the Oracle E-Records Evidence Store to query e-records and e-signatures. See: Evidence Store, *Oracle E-Records Implementation Guide*.
- Selecting the eRecord Details option from the Tools menu of a transaction or event initiating form. This option is available from many, but not all, of the transaction or event initiating forms.

## Related Topics

21 CFR Part 11 Overview

E-Records and E-Signatures for Oracle Engineering

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