Oracle Fusion Product Concept Design
Using Product Concept Design

11g Release 8 (11.1.8)

April 2014
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Preface

This Preface introduces the guides, online help, and other information sources available to help you more effectively use Oracle Fusion Applications.

Oracle Fusion Applications Help

You can access Oracle Fusion Applications Help for the current page, section, activity, or task by clicking the help icon. The following figure depicts the help icon.

Note

If you don’t see any help icons on your page, then click the Show Help icon button in the global area. However, not all pages have help icons.

You can add custom help files to replace or supplement the provided content. Each release update includes new help content to ensure you have access to the latest information. Patching does not affect your custom help content.

Oracle Fusion Applications Guides

Oracle Fusion Applications guides are a structured collection of the help topics, examples, and FAQs from the help system packaged for easy download and offline reference, and sequenced to facilitate learning. To access the guides, go to any page in Oracle Fusion Applications Help and select Documentation Library from the Navigator menu.

Guides are designed for specific audiences:

- **User Guides** address the tasks in one or more business processes. They are intended for users who perform these tasks, and managers looking for an overview of the business processes. They are organized by the business process activities and tasks.

- **Implementation Guides** address the tasks required to set up an offering, or selected features of an offering. They are intended for implementors. They are organized to follow the task list sequence of the offerings, as displayed within the Setup and Maintenance work area provided by Oracle Fusion Functional Setup Manager.

- **Concept Guides** explain the key concepts and decisions for a specific area of functionality. They are intended for decision makers, such as chief
financial officers, financial analysts, and implementation consultants. They are organized by the logical flow of features and functions.

- **Security Reference Manuals** describe the predefined data that is included in the security reference implementation for one offering. They are intended for implementors, security administrators, and auditors. They are organized by role.

These guides cover specific business processes and offerings. Common areas are addressed in the guides listed in the following table.

<table>
<thead>
<tr>
<th>Guide</th>
<th>Intended Audience</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common User Guide</td>
<td>All users</td>
<td>Explains tasks performed by most users.</td>
</tr>
<tr>
<td>Common Implementation Guide</td>
<td>Implementors</td>
<td>Explains tasks within the Define Common Applications Configuration task list, which is included in all offerings.</td>
</tr>
<tr>
<td>Functional Setup Manager User Guide</td>
<td>Implementors</td>
<td>Explains how to use Oracle Fusion Functional Setup Manager to plan, manage, and track your implementation projects, migrate setup data, and validate implementations.</td>
</tr>
<tr>
<td>Technical Guides</td>
<td>System administrators, application developers, and technical members of implementation teams</td>
<td>Explain how to install, patch, administer, and customize Oracle Fusion Applications.</td>
</tr>
</tbody>
</table>

**Note**
Limited content applicable to Oracle Cloud implementations.

For other guides, go to Oracle Technology Network at http://www.oracle.com/technetwork/indexes/documentation.

**Other Information Sources**

**My Oracle Support**

Oracle customers have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Use the My Oracle Support Knowledge Browser to find documents for a product area. You can search for release-specific information, such as patches, alerts, white papers, and troubleshooting tips. Other services include health checks, guided lifecycle advice, and direct contact with industry experts through the My Oracle Support Community.
Oracle Enterprise Repository for Oracle Fusion Applications

Oracle Enterprise Repository for Oracle Fusion Applications provides details on service-oriented architecture assets to help you manage the lifecycle of your software from planning through implementation, testing, production, and changes.

In Oracle Fusion Applications, you can use Oracle Enterprise Repository at http://fusionappsoer.oracle.com for:

- Technical information about integrating with other applications, including services, operations, composites, events, and integration tables. The classification scheme shows the scenarios in which you use the assets, and includes diagrams, schematics, and links to other technical documentation.

- Other technical information such as reusable components, policies, architecture diagrams, and topology diagrams.

Documentation Accessibility

For information about Oracle’s commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/us/corporate/accessibility/index.html.

Comments and Suggestions

Your comments are important to us. We encourage you to send us feedback about Oracle Fusion Applications Help and guides. Please send your suggestions to oracle_fusion_applications_help_ww_grp@oracle.com. You can use Send Feedback to Oracle from the Settings and Actions menu in Oracle Fusion Applications Help.
Develop Product Concepts

Developing Product Concepts: Overview

Oracle Fusion Product Concept Design offers a collaborative design workspace for product architects, designers and executives to generate, capture, analyze, and approve, product concepts that address product strategy goals. Approved concepts can then be transferred directly to PLM and PPM solutions for prototype planning, detailed design and product introduction.

The unique benefits of Oracle Fusion Product Concept Design are highlighted here:

- Concepts can align toward strategy goals like optimal material and development costs, features, roadmap, partnership objectives, and future technology migration.

- Product managers can compare and optimize competing concepts to support product strategy goals, and securely share the results with existing and potential supply chain partners or external design teams.

- Concepts can be traced in detail from ideas and requirements to finished products, for engineering clarifications, process analysis and improvement activities.

Use the Innovation Management work area to create concepts and manage existing concepts. Use the Edit Concept work area to develop, maintain, and analyze concept structures.
Create Product Concept

Concepts, Requirements and Proposals : How They Work Together

Concepts, requirements and proposals are intrinsically related.

Proposals

A Proposal contains all the business information for the concept. When you create a concept, a proposal of the same name is created; the converse applies as well. You can access a proposal from the Edit Concept screen.

When you delete a proposal, the corresponding concept is also deleted. You cannot delete a concept-proposal pair if the concept is in Submitted or Approved state. Deletion is possible only if both proposal and concept are in Draft or Rejected state.

Concepts

Concepts address the technical design aspect of a product. You cannot delete a concept which has a requirement assigned to it, without disassociating them first.

Requirements

Requirements are design specifications that serve as inputs for concept design in Fusion Innovation Management, or as inputs for detailed product design in PLM. Requirements also help measure the completeness of a concept design.

Concept: Explained

Conceptual product design starts with concept creation in Fusion Innovation Management.

A concept is defined by two characteristics:

1. Concept Type
2. Concept Status
Concept Type

Concept types, based on predefined attributes, define the grouping and search criteria of concepts.

Contact your system administrator for information on defining concept types and their attributes.

Note

You cannot change the concept type after you have created a concept.

Concept Status

A concept evolves through predefined states in a workflow. The concept status defines the actions you are allowed on the concept at each stage.

<table>
<thead>
<tr>
<th>Status</th>
<th>Workflow Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft</td>
<td>Design</td>
</tr>
<tr>
<td></td>
<td>This is the default status of a concept you create. As the concept owner, you can modify the concept structure as you require.</td>
</tr>
<tr>
<td>Submitted</td>
<td>Review</td>
</tr>
<tr>
<td></td>
<td>Submit a concept for review once you complete your concept design. You cannot make any further changes to the concept.</td>
</tr>
<tr>
<td>Approved</td>
<td>Approved</td>
</tr>
<tr>
<td></td>
<td>When a concept is approved, it is ready to move to a PLM system for production. The data of an approved concept continues to be available in Fusion Innovation Management, as an item structure.</td>
</tr>
<tr>
<td>Rejected</td>
<td>Design</td>
</tr>
<tr>
<td></td>
<td>A concept that has been rejected in the Review stage reverts back to the Draft status and is available for modifications.</td>
</tr>
</tbody>
</table>

Working with Concepts: Points to Consider

In Fusion Innovation Management, concept designs typically evolve in the following ways:

- From ideas and formal requirements
- From existing concepts or concept templates (using Save As)
- As independent concepts which contribute to detailed design requirements, for stable prototypes and products in the future
Creating a Concept

Creating a concept from the ground up gives you sole concept ownership, and enables you to define concept structures that can fulfil specific ideas and requirements.

Creating a Concept Using Save As

Using Save As results in a copy of the original concept and its proposal. You may create a copy of a concept to leverage the following points:

- Reuse specific concept versions
- Select a different concept type from the original
- Retain or remove content details of the original concept, including structure, attachments and designs, requirements, references, and team
- Retain or remove content details of the original proposal, including cost, revenue, resources, attachments, references, and projects

Note

You can copy concept-type specific attributes only if the source and target concept types match.

Deleting a Concept

When you delete a concept, all data and relationships concerning the concept are removed irrecoverably from Fusion Innovation Management.

Apart from the concept header itself, the deleted concept data includes:

- Concept structure
- Product proposal
- Attachments at concept and component level
- Links to designs, bidirectional references, top-level and sub-requirements, and items
- Solution alternatives
- Concept team
- Concept activity stream
- Concept history
- All concept versions

FAQs for Create Product Concept

Why is a product proposal created alongside a concept?

A product concept and a product proposal are meant to address the technical design and business aspects respectively, of any product you develop in Fusion Innovation Management.
A concept and a proposal cannot contain sufficient information individually to justify a project start, and are hence created alongside each other.
Assign Requirements to Product Concept

Working with Requirements: Points to Consider

Use requirements specifications as design inputs for your concepts, and as measures of design completeness. Alternately, you can build requirements specifications from planned concept designs, for use in future product redesigning activities.

Requirements, Concept Components, and References
You can assign one or more requirements specification to one or more concept components to track and measure design goals objectively across a concept structure.
When you assign a requirements specification to a concept component, the link to the requirement is automatically stored as a reference field in the concept component metadata.

Requirements Versions
Requirements can undergo version updates while they are assigned to your concept. The concept structure retains the version of the specification you assign, irrespective of the newer revisions available. In parallel, you are allowed to assign only the latest version of requirement specifications, available at that moment, in your concept structure.
A blue icon highlights requirements that have undergone changes after you assigned them in your concept. Click the highlighted requirements specification name to view the linked version, and to navigate to the latest version.

Fulfilled Requirements
When you decide a concept component is detailed enough to fulfill an assigned requirement specification, use the Fulfilled marker in the Details - Requirements panel, as a measure of tracking design completeness. You can then analyze the concept structure to determine how far your concept design has progressed.

Requirements Traceability
You cannot assign a requirement to a PLM item. However, when you convert a concept to a PLM item or item structure, the assigned requirements specification is stored as an external reference URL in the item metadata.
Develop Product Concept Structure

Developing a Concept Structure: Explained

A concept structure is a pre-production assembly of Fusion Innovation Management units and PLM items, specifically brought together to meet a given requirement.

Edit a concept structure to include the following objects:

- concept components you create, and copies of existing concept components
- embedded concepts
- links to PLM items and item assemblies

You must aim to have a concept structure that eventually fulfills design ideas and requirements, and contains PLM items and item assemblies primarily, if not entirely.

**Concept Components**

Concept components in a concept structure are placeholders for future production items.

Add a concept component directly in the concept structure, detailing its name, quantity and type. Use the Specifications pane to detail the attributes of the concept component.

You can also search for an existing concept component in the Requirements pane to add as a copy, including its attachments and design references.

**Embedded Concepts**

Use existing concepts in your concept structure as embedded concepts. While you are not allowed to edit or convert it to a PLM assembly directly from your concept structure, the data in embedded concepts is included in metric calculations and scores for your concept.
Linked Items and Assemblies

Search and link PLM items and item assemblies from external sources to a concept structure in Fusion Innovation Management, to reuse existing items, and arrive at a production-ready concept structure faster.

While you cannot directly modify linked objects in your concept structure, you can either edit the item in the PLM system itself, or you can convert the item to a concept component with modifiable attributes.

Concept Structure Evolution

Typically, you can make a concept structure evolve along the following path:

1. Create a concept structure, either from start, or as a copy of an existing concept
2. Add missing design items in the form of concept components
3. Replace concept components with existing or newly released PLM items, as they become available
4. Arrive at an approved concept structure consisting of primarily tangible PLM items and item assemblies
5. In the PLM system, approve the product prototype and proceed to production

Concepts, Concept Components, and Items: How They Work Together

A concept ties together concept components, linked PLM items, and assigned requirements in its structure, alongside its corresponding proposal.

Concept

A top-level concept root node contains concept components, linked PLM items, and embedded concepts that allow you to incorporate concepts belonging to other users in Fusion Innovation Management.

The design goal of a concept is a complete conversion to a product assembly or Bill of Materials (BOM) in PLM.

Concept Component

Concept components in a concept structure are placeholders, and are meant to be replaced with links to existing or newly created PLM items.

You can convert a concept component to a PLM item when you decide the component is ready for production.

Item

You can convert a PLM item to a concept component when you want to suggest changes in its design attributes, or simply reuse PLM data in your concept. The original item remains unchanged in PLM.
Converted Components: How They Are Processed

You can reuse a PLM item with suitable variations in your concepts structure. While you cannot edit the PLM item directly, you can convert it to a concept component in Fusion Innovation Management, and make your required modifications accordingly.

The original PLM item remains unchanged, while the newly-created concept component contains all the specification attributes of the item converted, as well as a reference link to the original item.

Settings That Affect Conversion of an Item to a Concept Component

There are two main factors that decide the scope of item conversion:

- Attachments and Designs
  If you include attachments during the conversion process, all the file attachments of the item are copied into Fusion Innovation Management as attachments of the newly created concept component.
  If you include designs, links to the design object residing in the PLM system are copied into Fusion Innovation Management.

- Item structure
  You can convert only the linked item and its first-level of items links during a single conversion process. Second-level of items in an item structure remain item links in the concept structure.

Note

While you can convert second-level item links also to concept components, you must aim for data reuse, and try to avoid creating too many concept components.

How Items Are Converted to Components

To convert an item to a concept component, select the item in your concept structure, and click **Actions - Convert to Concept Component**.

The following table details the levels of conversion of an item assembly and lower-level items in a single conversion step.

<table>
<thead>
<tr>
<th>Item Assembly Structure</th>
<th>Convert to Component?</th>
<th>Content Type Post Conversion</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item Assembly</td>
<td>Yes</td>
<td>Concept Component</td>
<td></td>
</tr>
<tr>
<td>• Part 1</td>
<td>Yes</td>
<td>Concept Component</td>
<td></td>
</tr>
<tr>
<td>• Part 2</td>
<td>No</td>
<td>Item link</td>
<td>Since Part 2 was not selected for conversion, it remains an item link in the</td>
</tr>
</tbody>
</table>
Integration with External Systems: Points to Consider

Fusion Innovation Management integrates with PLM systems through the Applications Unlimited (AU) PLM Integration (AUX) Framework.

Multiple Systems

You can configure multiple systems during setup, but you can connect only one PLM system at any time.

Applications Unlimited Framework

You can perform operations such as searching for PLM objects, converting an item to a component and vice versa, using webservice in the PLM system.

Automatic Authentication

Fusion IM uses Single Sign-On to allow you to logon automatically to the PLM system.

Working with Concept Versions: Points to Consider

Create and use versions of a concept to save and track the progress of your concept design.

Note

Concepts and proposals can have versions independent of each other.

Version Numbers

When you create a version of a concept, all the data of the source concept is copied into the newer version, and it is automatically numbered to the respective highest version number available. All previous versions are rendered read-only.

This image details how concept versions are numbered. Versions can be made of the latest or older versions of a concept.

<table>
<thead>
<tr>
<th>Part 3</th>
<th>Yes</th>
<th>Concept Component</th>
<th>To convert Select the item links and click Convert to Concept Component to change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 3.1</td>
<td>Note</td>
<td>Parts 3.1 and 3.2 remain item links</td>
<td></td>
</tr>
<tr>
<td>Part 3.2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4-4 Oracle Fusion Product Concept Design Using Product Concept Design
Older Versions of a Concept

You can edit only the latest version of a concept.

To reuse and edit an older concept version, create a version from it, or create a copy of it using Save As.

Version History summarizes all versions of a concept, including version creation dates and version owner information, but you cannot edit any details in it. Use the Version Selection tool to switch between versions.

Visual Information Navigator: Overview

Oracle Visual Information Navigator provides Fusion application users with a graphical view of structured data related to a particular context.

The application helps you do the following:

• View related components.
• View the number of children in a hierarchical structure.
• Expand and collapse relationships.
• Visually recognize different component types and the different relationships between the components.
• View detailed information related to a specific component within the structure.

Click the component or subcomponent to see the following context menu items:

• Information: View additional information about the component in focus.
• Focus: Brings the component into focus.

Note

The components not on the same level, and not directly connected to the component in focus are collapsed.

• More Details: Additional details of the component.

Click the root component to see the following additional context menu item:

• Expand All: Expands all the components and subcomponents for that particular context.

Visual Information Navigator: Explained

The Visual Information Navigator enables you to work on a concept structure and all its related objects in a graphical view.
VIN offers the following functionality for concept design in Fusion Innovation Management:

- View relationships between objects in a concept
- Search and highlight results within a concept structure
- View a color-coded display of concept elements

**Object relationships**

VIN helps you view relationships between all objects related to a concept, within IM and linked PLM systems, hierarchically.

Related objects include requirements and PLM design diagrams with thumbnails.

**Search and highlight**

When you search for particular objects within a concept structure, VIN highlights search results.

**Color coding**

Objects within the concept structure have different colors based on their type. Components with fulfilled requirements are also differentiated based on color.

**Working with References: Points to Consider**

References in Fusion Innovation Management are objects that provide additional design inputs, or test results as design feedback, for concepts and concept components.

**Reference Types**

References can include links to concept versions, competing concepts, PLM objects, design files, and URL attachments.

You can link references to concepts and concept components, but not PLM items, as they are stored outside Fusion Innovation Management.

**Accessing References**

Files are stored in the Fusion Content server while references in PLM objects are stored in the PLM system. You cannot edit referenced PLM objects in Innovation Management directly.

View or edit referenced attachments, documents, and designs in their native authoring or design applications.
Using Oracle Social Network in Innovation Management

How do I share my opinion with development teams on terminating a product?

If the Edit Portfolio page has a Social link, you can invite others to a conversation to discuss the ideas.

For example, as a portfolio manager, you carefully weigh the market share research, revenue, and future portfolio plans, and suspect that it may be time to end support for one of the products in your portfolio. You want to make sure you have buy-in from the people closest to the product, the product development manager and the product manager.

From the Edit Portfolio page:

1. Click the Social link to open Oracle Social Network.
2. Click New Conversation.
3. Invite your product manager and product development manager to the conversation.

The details of your conversation and key aspects of the portfolio are visible on the portfolio’s wall in Oracle Social Network for everyone to view.

After a joint online discussion about the pros and cons of terminating the product, questions can be asked and answered, and supporting documents can be uploaded and reviewed. When you click the Social link from a business object, all the social networking features provided by Oracle Social Network are instantly available, making it easy to bring in the people you need to make an informed decision.

Depending on your job role and permissions, you can access social networking features for the following Oracle Fusion Innovation Management business objects:

- Ideas
How do I share my ideas with key stakeholders in Innovation Management?

If the Manage Ideas page has a Social link, you can invite others to a conversation to discuss the ideas.

For example, while at a customer meeting, an idea for enhancing the product emerges, that you think is worth pursuing. You want to get it into the system so that the product manager and other stakeholders can consider it as they weigh options for the next release.

From the Manage Ideas page:

1. Add the details of product enhancement as a new idea and post it.
2. Click the Social link to open Oracle Social Network.
3. Click New Conversation.
4. Invite your product manager and product development manager to the conversation.

The details of your conversation and key aspects of the Idea are visible on the Idea's wall in Oracle Social Network for everyone to view.

You decide to share the customer's views about the idea, and post the customer's e-mail to the Conversation in the form of a document.

After several days' worth of discussion on the Idea you collectively decide that the idea has enough merit to move forward. The product manager creates a new Requirement to get the ball rolling, frequently referring back to the Conversation to see what was said. The Idea is thus translated into tangible requirements that can be measured in reality.

Depending on your job role and permissions, you can access social networking features for the following Oracle Fusion Innovation Management business objects:

- Ideas
- Requirements Specifications
- Feature Set
- Concepts
- Proposals
- Portfolios
Define Product Concept Metrics

FAQs for Define Product Concept Metrics

What are metric attributes?

Metric attributes are quantitative characteristics of individual units in a concept structure, and allow you to rate and score product concepts.

You can add, calculate and compare actual and target values of concept metrics like cost, weight, and compliance, to decide on product concepts suitable to your company’s product strategy and requirements.

To view these predefined attributes in the Metrics attribute group view of the concept structure, you must first roll up or recalculate the metrics.

Target attributes are product design goals broken down from concept-level to component-level metrics. They allow design engineers to plan design goals in specific categories.

You must manually aggregate target attributes on each level as required.
Define Solution Alternatives

Solution Alternatives: Explained

Solution alternatives allow you to design multiple alternate solutions using a single product concept structure, for different product requirements or use cases. You can analyze metrics across multiple design variations of the same concept structure, and select the most viable option.

Using solution alternatives to obtain an optimally-designed concept structure requires the following actions:

1. Define alternatives
2. Assign and analyze metrics
3. Select the most suitable solution alternative

Working with Solution Alternatives: Points to Consider

Working with solution alternatives requires you to define alternatives, analyze metrics, and select an optimum solution.

Defining Alternatives
In a concept structure, you must mark an embedded concept, concept component, or an item as an Alternative before you can assign it to one or more solution alternatives.

You can assign alternatives to active and visible solution alternatives only. Use the Manage Solution Alternatives menu to control the visibility of solution alternatives.

The Solution Alternative Filter controls how a concept structure is displayed, depending on the solution alternative name you select. Only the alternatives assigned to the solution alternative activated by the filter are displayed.

Comparing Solution Alternatives
Use solution alternatives to compare and analyze:
• how a concept can evolve in different use-cases

• what combination of components and items can best meet target costs, weight, and power metrics

• which items, components or embedded concepts in the concept structure do not meet compliance standards, and should be replaced

• the quality of PLM items in the concept, by viewing quality incidences associated with each item

• how well a solution alternative fulfills assigned requirements, as applicable per solution alternative

Use the **Metrics** view to view scores and compliance metrics for solution alternatives in tabular form.

Use the **Analysis** button to compare solution alternatives in a graphical view (using spider charts).

**Selecting an Optimum Solution Alternative**

Select a solution alternative that fulfills your requirements and presents the best score.

To complete the design phase of a product, convert your selected solution alternative to an item assembly in PLM for product prototyping.

**FAQs for Define Solution Alternatives**

**Why are some components hidden in the concept structure when I use the Solution Alternative Filter?**

The **Solution Alternative Filter** controls how the default concept structure appears, depending on the solution alternative you select.

The **Solution Alternative Filter** uses a top-down filtering sequence, and only the alternatives you have assigned to the selected solution alternative are displayed.

When a parent component is assigned to a solution alternative, and the active **Solution Alternative Filter** hides it, its lower level components which may belong to different solution alternatives are also filtered out. This filter applies to both, the table and metric attributes views.
Develop Component Specification

Editing Specifications: Points to Consider

Specifications are attributes, including target and actual metric values, of the concept, concept components, and item links in a concept structure. Attributes are grouped into the categories General Information and Additional Information, the latter consisting of flex attributes.

Note

Contact your system administrator to edit flex attributes.

All attributes are displayed in the Specifications pane of the Edit Concept screen, depending on the structure element you select.

Item Specifications

You cannot edit the attributes of items in the concept structure that are linked from the PLM system. To do so, convert the item to a concept component.

Item specifications affect the metric calculations of a concept. The attributes Quality and Alternative define the usage of an item in a higher-level concept component.
When the concept structure for a newly created or redesigned product is complete, or you have a solution alternative that meets all the assigned requirements, transform the concept structure into a PLM item assembly for further cost, sourcing, and compliance checks, and finally, for product manufacture.

**Converting Concept Components**

When you convert a concept component to a PLM item, the component becomes a read-only PLM item in Fusion Innovation Management. The newly created item replaces the concept component in the concept structure.

If the concept component you convert has its own structure comprising lower level components and item links, it appears as an item assembly in Fusion Innovation Management.

The converted concept component and all its related data cease to exist in Fusion Innovation Management.

**Converting References**

When you convert a concept component to a PLM item, you can copy its reference data, including links to design files and other attachments.

Upon conversion, component attachments appear as file attachments of the item, while designs appear as designs in relationship metadata of the item, in the PLM system.

Any references that you do not convert along with the concept component are deleted from Fusion Innovation Management permanently.

**Converting Requirements**

You cannot convert a concept component to an item if it has requirements assigned to it, or to its lower-level components. Delete the assigned requirements before reattempting conversion.
Converting Solution Alternatives

You can convert one solution alternative per concept to a PLM item assembly, including its designs and attachments.

Use the Solution Alternative Filter to select a solution alternative for conversion. If successfully converted, the newly created item assembly replaces the concept in Fusion Innovation Management.

FAQs for Convert Product Concept to Bill of Materials

How do I use an ECO while converting a component to an item?

When converting a solution alternative or concept component from Innovation Management to a PLM system, assign the newly-created item to an exclusive engineering change order (ECO) created in the PLM system, to an existing ECO, or to no ECO at all.

Using an ECO enables tracking of product changes, and implementation or modification of production processes within the PLM system.

- Create an exclusive ECO to track a proposed solution alternative in its entirety as it moves through the product lifecycle
- Select an existing ECO to track product redesigns

Note

If you select an existing ECO, ensure that it is not in the Released state, as it will stop the conversion operation, and result in an error in the PLM system.
Analyzing a Product Concept: Explained

Analyzing a concept in terms of target costs, compliance, requirements fulfilled or similar parameters enables you to make informed decisions on the future of the concept.

To compare target and actual metrics of the units of a concept structure, you must roll up or recalculate the attributes. The roll up results in the calculation of variance in the actual and target metric attributes, across all units of the concept structure, as applicable. In the Metrics view, a warning icon next to concept structure units indicates unfavorable variance values.

The following metrics are calculated during a roll up:

- Cost, weight, and power consumption
- Compliance
- Fulfilled requirements
- Status
- Concept score

Use a spider chart to view aggregated metrics across multiple solution alternatives, in an graphical or tabular form.

Costs, Weights, and Power Consumption

Cost, weight, and power consumption metrics are calculated by aggregating the total values of linked items, concept components, and embedded concepts, up to the top-level concept.

Total cost calculations are tabulated as follows:

- Total cost of an individual item or concept component = Material Cost + Non-Material Cost
- Total cost of a concept component assembly = Non-Material Cost + Aggregate of (Total cost of each item or component * Respective Quantities per Assembly)
Total Weight of a concept component assembly = Aggregate of (Actual Weights of each linked item, concept component, and embedded concept * Respective Quantities)

Total Power Consumption of a concept component assembly = Aggregate of (Actual Power Consumption of each linked item, concept component and embedded concept * Respective Quantities)

**Compliance**

The compliance status of a concept component or a linked item defines the compliance of the next higher-level component.

The compliance statuses of items are read directly from PLM. They are mapped as either compliant or noncompliant items in Fusion Innovation Management, depending on the completeness of information available.

A noncompliant item or component renders its higher-level component noncompliant also.

**Fulfilled Requirements**

You can analyze the number of assigned and fulfilled requirements per individual components in the concept structure, as applicable. This analysis can aid in fine-tuning the accuracy of a proposed concept design in meeting user needs.

**Status**

The statuses of individual components and linked items in a concept assembly decide the aggregated status of the higher-level component, upto the top-level concept.

Items in PLM may be linked in the concept structure while they are in conceptual, preliminary, or production stage.

**Concept Score**

Concept scores allow the assessment of solution alternatives against design objectives.

Concept-level scores are calculated by adding points earned in the following measures:

- the number of items in the structure, compared to concept components: reuse of items scores extra points
- the number of items with scores higher than the target value 85: a high percentage of high-scoring items in the structure raises the concept score
- the number of items missing data such as compliance status, lead time, number of manufacturers, or preferred status: complete items score high

**Spider Chart**

The Spider Chart enables you to compare metrics across solution alternatives. Metrics are normalized - the relative deviation of each actual value from the target value is calculated and displayed as a positive or negative deviation from the target value.
A Table view summarizes the data of the Spider Chart - calculated variance and metrics per solution alternatives - for quick reference.

Calculating Metrics: Worked Example

Your team has been asked to modify the existing model of a mountain bike to meet certain requirements received as feedback from users. The mountain bike and its components exist in a PLM system as an item structure and items respectively.

The primary requirements are:
- Reduce cost from $680 to $470
- Increase power from 35hz to 40hz

The detailed requirement specifications include:
- Reduce the size of the air box to improve efficiency and power
- Improve the exhaust system to increase the power
- Implement high flow rates and outstanding oil filtration for better power

The following table summarizes key decisions for this scenario:

<table>
<thead>
<tr>
<th>Decisions to Consider</th>
<th>In This Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>How can the existing PLM items be used in the concept design?</td>
<td>Convert existing items to concept components</td>
</tr>
<tr>
<td>How are requirements and metrics correlated?</td>
<td>Map requirements to components in the concept structure</td>
</tr>
<tr>
<td>How can the concept structure accommodate multiple concept designs in parallel?</td>
<td>Assign components to solution alternatives</td>
</tr>
<tr>
<td>How do I ascertain the most suitable concept design?</td>
<td>Modify component specifications</td>
</tr>
<tr>
<td></td>
<td>Calculate metrics and compare solution alternatives</td>
</tr>
<tr>
<td></td>
<td>Determine the concept design that fulfils requirements</td>
</tr>
</tbody>
</table>

Prerequisites

Complete the following actions before proceeding to the next task:
- Convert existing items to components in the concept
- Assign components to solution alternatives

The structure and component specifications of the newly-created concept Mountain Bike in this example are tabulated here. The units Air Box, Exhaust System, and Oil Filter are PLM items that have been converted to components.

<table>
<thead>
<tr>
<th>Concept Component</th>
<th>Default</th>
<th>Solution Alternative 2</th>
<th>Solution Alternative 3</th>
<th>Cost</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATV Air Box</td>
<td>Yes</td>
<td></td>
<td></td>
<td>330</td>
<td>17</td>
</tr>
</tbody>
</table>
1. Enhance specifications of the converted components Air Box, Exhaust System, and Oil Filter.

Reuse existing PLM items by converting them to concept components in the structure, and modifying specifications according to the requirements. The changes in component specifications can be translated into item enhancement requests in the PLM system.

2. Map requirements to components in the concept structure.

Calculating Metrics

1. On the Edit Concept page, click the concept root node Mountain Bike and assign the following specifications to it: Target Cost 470 and Target Power 40.

2. Click the Metrics link above the concept structure region to roll up and view metrics.

3. Click the Recalculate icon to view a roll up of assigned metrics.

Comparing and Selecting a Solution Alternative

1. On the Edit Concept page in Metrics view, locate the Solution Alternative menu to view and analyze the metric calculations of each concept.

2. From the Solution Alternative menu options, select Default. The calculated power exceeds the target power as indicated by the Warning icon.

3. View the calculated metrics for Solution Alternative 2 and Solution Alternative 3 also.

The cost and power metrics of each solution alternative are tabulated below.

<table>
<thead>
<tr>
<th>Solution Alternative</th>
<th>Default</th>
<th>Solution Alternative 2</th>
<th>Solution Alternative 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>665</td>
<td>530</td>
<td>470</td>
</tr>
<tr>
<td>Power</td>
<td>45</td>
<td>39</td>
<td>35</td>
</tr>
</tbody>
</table>

Solution Alternative 2 offers an optimum solution to the primary requirements, so you may choose to convert this alternative to a PLM item structure, or request approval for the concept Mountain Bike itself.
Approve Product Concept

Concept Approvals: Points to Consider

Approving a concept is not mandatory in Fusion Innovation Management. You can opt to approve a concept to confirm the completeness of a concept design, or to lock a concept from further updates.

Note

While a concept and its twin proposal belong together, they do not have to share the same approval workflow, and each may be approved independent of the other.

Approvers and Observers

As a concept owner, you can request users within Fusion Innovation Management for concept approval. Select the reviewers, and assign them either Approver or Observer roles.

Approvers are required to explicitly approve or reject the concept for a change in concept status.

Observers can view and comment on the aspects of a submitted concept, but are not required to approve or reject it during review.

Submitting a Concept for Approval

You cannot edit a submitted or approved concept.

The concept status changes from Submitted to Approved only when all assigned approvers have agreed on the concept. A rejected concept revert to the Draft status, and can be edited again.
concept
A possible solution based on limited data, usually with only the key components, materials and assemblies defined, and often relying on the knowledge and imagination of the concept creator.

concept structure
A conceptual, non-production structure of product (concept) components and PLM (production) items. Also called a concept assembly at lower levels.

embedded concept
An existing concept reused as a whole within another concept structure. Embedded concept data contributes to the metrics calculations in a concept. Concept ownership decides if an embedded concept can be modified by a Fusion Innovation Management user at any point.

PLM
Acronym for Product Lifecycle Management.

product proposal
A product proposal represents the business plan for a proposed new concept, new product, sustaining product or a product to be phased out. The proposal contains financial information such as cost and revenue of the product. It also contains milestone and resource data that represents execution details.

reference
IM and AU PLM objects assigned to a given concept or concept component as links