

PRODUCT ENGINEER

OBJECTIVE

Product Engineer enables multiple design disciplines to publish data into a consolidated view of the engineering bill of materials (EBOM). A common change process provides standardized change governance, task assignment, approval and visibility for all stakeholders. The result is fewer BOM errors, reducing the need for rework and increasing business velocity.

OVERVIEW

Product Engineer connects design and engineering through the automation of publishing multi-discipline design content from mechanical, electrical or software authoring tools into a consolidated engineering bill of materials, eliminating redundant BOM data entry time and errors. **Product Engineer** connects manufacturing and procurement by augmenting the engineering bill of materials definition to include make / buy decisions, raw materials, tooling, and supplier equivalent parts required for purchasing, eliminating design intent ambiguity.

Product Engineer connects consolidated design and engineering information to other downstream business processes such as Supply Chain, Purchasing, Compliance, Project Management, and Quality. Common change processes provide standardized change governance, task assignment, approval and visibility for all stakeholders improving communication, reducing the need for rework and increasing business velocity.

CAPABILITIES

Product Engineer enables global product development through a consolidated set of design and engineering business processes in one enterprise solution. These design and engineering business processes include the following capabilities:

Product Development Communication and Collaboration

Product Engineer includes an engineering dashboard view, which provides users with a configurable, consolidated view of all of their assigned tasks and items which they have authored or are assigned to work on based on a user defined time range. The engineering dashboard improves productivity by reducing the need for the user to search for assigned tasks or items.

Product Engineer includes configurable charting capabilities, which provide intuitive summary views for a group of parts or an EBOM, based on user criteria of interest such as child part maturity, materials or ownership.

Product Engineer is built upon the **3DEXPERIENCE®** platform, which provides collaboration capabilities, including supplier security, formal and ad-hoc process support, file sharing, and distribution.

Technical Document Management

Any document type, including Microsoft Office, can be managed independently or associated to parts. This improves inter-department communication and company knowledge capture such as best practices and industry standards. Documents can be connected to parts, specifications or change objects as needed to provide reference documents or supporting documents.

Synchronization between Design Authoring Tools and EBOM

Product Engineer bridges the gap between design and engineering by synchronizing the mechanical 3D product structure from design tools such as CATIA®, SolidWorks®, and many other mechanical CAD authoring tools. In addition, other product design authoring tools, such as electronics and software, are published and synchronized to the EBOM, providing consolidated product structure, technical documentation and EBOM views independent of the authoring tools used.

Parts and assemblies can be visualized and cross-highlighted between 3D and the BOM in **Product Engineer** with the included 3D Viewer. Product engineers and other authorized users can review the 3D image with functions such as measure, section, rotate, zoom, and panning.

Engineering Part Management

Equivalent Parts

Product Engineer provides component engineers early visibility to long lead items and new part requirements so they can create and qualify Manufacturer / Supplier Equivalent Parts (MEPs) in parallel to other product development activities, thus reducing time to production.

Alternate and Substitute Parts

Alternate and substitute parts are defined and qualified by product engineering and used by manufacturing as being interchangeable with a primary/default enterprise engineering part. This provides manufacturing flexibility while insuring that the design intent of the part is being followed. An "Alternate Part" is an equivalent part that can be used by manufacturing instead of a default engineering part independent of its usage. A "Substitute Part" is an equivalent part that can be used by manufacturing instead of a default engineering part for specific parent assembly usage.

Define Manufacturing and Procurement Intent

Product Engineer supports manufacturing and procurement intent by determining make / buy preferences, capturing raw materials and defining preferred suppliers and equivalent purchased component parts. Purchasing can obtain a roll up of parts from a multi-level EBOM and execution systems can be automatically populated with EBOM data using optional integrations to most leading Enterprise Resource Planning (ERP) systems.

Search and Access Parts

Product Engineer provides parametric search capabilities that allow product engineers and other authorized users to search engineering parts or EBOMs. Authorized users can search and evaluate standard parts based on commercial part information such as manufacturer or supplier name and preferences. They can also search for standard parts based on corresponding part equivalent (MEP or SEP) attributes and qualifications while building EBOMs.

Search results show a fully cross-referenced view of parts, including all necessary information to make a component selection including unit-of-measure, lead time, target cost, estimated cost, effective date, usage location, manufacturing location, and supplier location. Additionally, product engineers and other authorized users can access attachments and reference documents for components and their equivalents (MEPs and SEPs).

Engineering Bill of Material Management

A Single Enterprise EBOM

Product Engineer provides global development teams with a single, persistent definition of EBOMs. This reduces data errors and time delays. By defining the EBOM with parts of specific types, product engineers and other authorized users can capture specific business behavior and attributes. Product engineers and other authorized users can structure EBOMs for even the most complex products with thousands of parts organized across many levels of hierarchy. The EBOM assembly structure automatically updates when new component revisions are released.

Key Benefits:

- Consolidate part design and related technical document content from multi-discipline tools, into a single EBOM view.
- Reduce cost and time-to-market while defining the enterprise EBOM by searching and reusing standard parts.
- Build products right the first time by selecting qualified, approved and preferred components
- Reduce proliferation of components and improve component reuse across the enterprise.
- Make better, more informed design and engineering decisions **by leveraging EBOM and 3D cross highlighting to visually experience a BOM structure in 3D and better plan design changes and/or downstream manufacturing processes.**
- Leverage skills and knowledge of the enterprise and supply chain through institutionalization of cross-functional product development and engineering change processes.
- View use analysis reports that quickly identify component usage, highlight differences between assemblies, and summarize design changes over time.
- Link downstream business processes including Supply Chain, Purchasing, Compliance, Project Management, and Quality to a "single source of the truth" for product development early in the process thus improving cross department communication and reducing product development time.

EBOM View and Navigation

The EBOM can be viewed and navigated in one of the following three views: Structure Table, Thumbnail and Graphical. A filter provides the ability to expand a development BOM with the latest or as-stored revisions to view the intended BOM. The BOM expand filter enables fast navigation to any BOM level including "all" levels. "Search within context" provides the ability to search for parts within the context of the current part's BOM.

The graphical structure browser provides an animated and intuitive visual representation of the product structure.

Product Engineer provides users with EBOM and 3D cross highlighting to visually experience a BOM structure in 3D and better plan design changes and/or downstream manufacturing processes. Scenarios include navigating an EBOM structure, performing EBOM comparisons and identifying affected items in 3D via Enterprise change processes (Change Request (CR), Change Order (CO), Change Action (CA)), providing better information to make better, more informed design and engineering decisions.

EBOM Editing

The integrated structure browser allows product engineers and other authorized users to edit multiple BOM levels easily. Users can create and add multiple new parts to an EBOM in one operation or add multiple, existing parts by search or explicitly entering the part name. Users can replace parts with a specific or latest revision. An intuitive EBOM markup tool allows users to markup, approve and apply EBOM changes. Comprehensive EBOM editing capabilities include the ability to copy parts to and from existing assemblies, and replace, add, remove, and re-sequence parts in the EBOM. Differences between EBOMs can be listed in a detailed text format or an intuitive highlighted side-by-side format. Multi-level where used capabilities enable users to quickly determine affected items, raise change requests and perform complex mass change operations such as replace, add, remove, or edit.

EBOM Import from Excel

Parts and engineering BOMs can be imported from Excel. Users can map Excel column names to EBOM attributes. Customer specific attributes can be included in the import spreadsheet. New parts can be created while existing parts can be re-used during import.

EBOM Data Packages

Users can generate and download a "data package" of EBOM related data. The package of data files can be in either a Microsoft Windows or UNIX® ZIP file format. Users can specify BOM levels to include in the package, select specific documents for the package, download the package, and store it in a workspace folder.

BOM Reporting

Part Comparison

Users can perform a side-by-side comparison of multiple components from the search results list based on various classification attributes used to make a selection. This helps users examine the similarities and differences of attributes of various qualified components and choose the right one for the most optimized design.

Multi-Level EBOM

Any number of EBOM levels can be expanded and included in the multi-level EBOM report.

Bill of Material (BOM) Comparison

This report improves part reuse and product quality by providing the ability to compare EBOM differences. The report has many comparison options, including basis of comparison, attributes to display when a difference occurs and BOM levels to compare.

Consolidated EBOM

This report improves purchasing response time and reduces errors by providing a quantity roll up of parts from multiple levels of an EBOM.

Engineering Effectivity

The engineering effectivity report provides the ability to view an EBOM based on a historical date. This report enables the user to see the "effective" EBOM at a selected date in the past.

Electronics Approved Vendor List (AVL) BOM

This report improves communication and reduces data errors internally and with electronic contract manufacturers by providing EBOM views and data packages with optional location-specific preferred suppliers and component parts.

View EBOM in Expanded or Consolidated Format

The EBOM view can be "expanded" by displaying each reference designator value as a single EBOM record. This is particularly useful for consistently displaying electronic or location-specific items in the EBOM. For example, an EBOM record with a reference designator value of R1-R3 and a quantity value of three would be expanded to display three separate EBOM records with reference designator values R1, R2, R3 and with a quantity of one for each. The inverse view can also be calculated where an expanded view can be consolidated.

Change Management

Change Management "Best Practices"

Product Engineer is delivered with engineering "best practices" from the experience of some of the world's largest manufacturing companies. These best practices enable standard and repeatable global engineering processes, including a unified CR process, which is used to qualify, analyze, review, and approve change requests for released parts, assemblies and technical documentation. The CR process ensures that a common process is followed and the right level of analysis and oversight is employed so that only "approved" changes are implemented, thus reducing the quantity and time associated with implementing engineering changes.

Change Reporting

Part Where Used

The "where used" report provides a part's single or multi-level parent usage, which is very useful in analyzing the scope and impact of engineering changes.

CR/CO Summary Reports

Summary reports are generated automatically and refreshed during the change process lifecycle and can be stored in HTML or PDF format. These reports provide a synopsis of the change so change board members can quickly review and approve complex pending changes.

CR/CO Metrics Report

These reports can be generated to capture lifecycle date and time metrics for CR or CO. These reports are useful to determine trends in change process throughput.

CR/CO Late Approvals Report

Late approval reports provide engineering management with a list of change review or approval tasks that are late by the resource assigned. Late approval reports are useful to manage resource tasks and as input to resource load balancing.

ERP Integrations

Customers can choose to extend **Product Engineer** capabilities by leveraging the ERP integration products to integrate seamlessly with leading ERP systems. When **Product Engineer** is used with the above ERP integrations, the change process automatically updates the associated ERP system(s). This automatic synchronization process eliminates redundant, error-prone manual data entry.

Collaboration & Approvals

Users can benefit from a wide range of capabilities for global enterprise collaboration. Those capabilities include the ability to manage and organize shared documents and structured product data. They also enable the creation of digital workspaces for virtual teams to work together. Product engineers and other authorized users can easily raise issues, organize meetings and track decisions while any object lifecycle modifications can be formally approved using routes defined by end-users or, to simplify and facilitate a repeatable approval process, standard route templates.

Microsoft Integration

Users can create and access **3DEXPERIENCE** data from the most popular Microsoft applications: Word®, Excel®, PowerPoint®, Outlook®, Windows Explorer, and Windows Desktop Search. This capability enables enterprise-level collaboration while not disrupting the established productivity of end-users. With product content being managed in **3DEXPERIENCE** rather than on users' PCs, organizations are able to create, manage and review product content more securely.

Our **3DEXPERIENCE**® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE**® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 210,000 customers of all sizes in all industries in more than 140 countries. For more information, visit www.3ds.com.



3DEXPERIENCE®