

CONFIGURATION

ENOVIA Engineering Configuration Central



ENOVIA® Engineering Configuration Central™ is used by manufacturers of low volume and highly complex products to define and manage the engineering bill-of-material (EBOM). It provides advanced product unit effectivity configuration management functionality to define the “engineering view” of specific product units.

Key Benefits

- Consolidate part design content from multiple Engineering systems and tools by providing a single definition of the EBOM
- Provide visibility to customer/unit specific EBOM configurations within a single, consolidated PLM solution
- Leverage the skills and knowledge of the enterprise and supply chain through the institutionalization of cross-functional product development and engineering change processes, which include the ability to manage complex product configuration changes using product unit effectivity
- Decrease product costs by enabling component engineers to qualify and manage purchased parts from multiple suppliers on a local or global basis

Product Overview

ENOVIA Engineering Configuration Central enables product planners as well as design, quality, and manufacturing engineers to analyze and validate that all delivered units have been built to the proper engineering specifications. ENOVIA Engineering Configuration Central significantly reduces the non-value-added efforts of redundant Engineering Bill-of-Materials (EBOM) data entry, correction, and synchronization, resulting from fragmented processes and systems. The net result is improved product delivery accuracy and product quality, leading to reduced service costs.

ENOVIA Engineering Configuration Central creates a competitive advantage by addressing key product development business challenges including:

- Improved communication and collaboration with global development teams comprised of internal and external resources
- Configured and un-configured part and bill-of-material management capabilities to provide a single enterprise-wide definition of software, electronic and mechanical product information
- Global product development and change processes that provide the right information to the right users at the right time
- Synchronization with design in-work progress for CATIA and other CAD tools, and 3D visualization
- Reporting capabilities tailored to meet the needs of multiple functional areas such as change and BOM management

Product Highlights

ENOVIA Engineering Configuration Central provides a “single version of the truth” by consolidating and managing all the engineering data and processes in one enterprise solution. Key features and capabilities include:

Development Team Communication and Collaboration

Global teams comprised of internal and external resources need to share ideas and participate in development business processes globally. ENOVIA Engineering Configuration Central is built upon the ENOVIA platform, which provides collaboration capabilities including supplier security, formal and ad hoc process support, file sharing and distribution.

Part Management

In order to address a wide range of product development, ENOVIA Engineering Configuration Central provides part management capability for configured and un-configured parts with development and production lifecycles. Configured parts are supported only in the production lifecycle mode, whereas un-configured parts support both development and production modes. Parts in ENOVIA Engineering Configuration Central can be identified by a unique auto-numbering scheme or by user-entered names. Part revisions can be created for managing the evolution of design and changes for an item if the current part number corresponds to a released part (e.g. – tooling or production). Each new part revision must be form, fit, and function (“FFF”) compatible with all of its predecessors. “FFF” is a description of an item’s identifying characteristics as defined below:

- Form is the shape, size, dimensions, mass and/or other visual parameters which uniquely characterize an item. This defines the “look” of the part or item. Sometimes weight, balance and center of mass are considerations in ‘form.’
- Fit is the ability of an item to physically interface or interconnect with or become an integral part of another item or assembly. This relates to the associativity of the part in relation to the assembly, or to other parts, and includes tolerances.
- Function refers to the action[s] that an item is designed to perform. This is the reason for the item’s existence, which also includes secondary applications.

If the specifications or criteria, for form, fit and function of a particular item are met, all other attributes, from an engineering design process perspective are moot or extraneous. Interchangeability on an item in a system is mainly determined by physical, functional, and performance characteristics or specifications that uniquely identify a component or device.

Parts can be managed individually or included in a part family, which groups parts into logical families. Parts that are members of the same part family share similar characteristics. Parts within a family can be declared as a master or reference to determine how a common set of specifications is shared. An example could be a set of parts that have the same geometric shape but different colors. The CAD models can be defined once for the "master" part in the part family, and shared between the other "reference" parts in the part family. An auto-naming function allows parts in the family to be named similarly based on customer tailored rules.

EBOM Management

ENOVIA Engineering Configuration Central provides global development teams with a single, persistent definition of product EBOMs. This reduces data errors and time delays.

ENOVIA Engineering Configuration Central's advanced configuration management enables users to plan, manage, and track changes to specific sets of customer product units. This capability, known as "product unit effectivity," is incorporated into EBOM creation, navigation, review, and change management. Product unit effectivity is used in conjunction with other EBOM configuration management techniques such as "latest released revision" part effectivity in order to better support reuse of lower-level un-configured assemblies and equipment provided by external suppliers.

By defining the EBOM with parts of specific types, users can capture specific business behavior and attributes. 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. An integrated structure browser allows users to navigate and edit multiple 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. EBOMs can be filtered by products, unit ranges and pending changes to provide dynamic views of current or pending EBOM configurations of interest.

EBOM Editing

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 Data Packages

ENOVIA Engineering Configuration Central 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.

Preparing the EBOM for Manufacturing

ENOVIA Engineering Configuration Central supports preparation of an EBOM for manufacturing. Users can define the EBOM with location specific preferred suppliers and component parts and provide a list of engineering approved "alternate" or "substitute" parts that can be used by manufacturing instead of the primary engineering part. 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 ENOVIA integrations to most leading Enterprise Resource Planning (ERP) systems.

Synchronization with Design Work-in-Progress and Visualization

ENOVIA Engineering Configuration Central works with ENOVIA® VPM Central™ and with ENOVIA® Designer Central™ in order to make CATIA® V6 other CAD data available in the context of the EBOM. This provides consolidated document and EBOM views independent of the authoring tools used. Parts and assemblies can be visualized in ENOVIA Engineering Configuration Central with the 3DVIA® Viewer, which is available as part of the ENOVIA® Live Collaboration license. The user simply clicks on the 3DVIA Viewer icon from the EBOM page and a 3D image of the part will be displayed. Users can review the 3D image with functions such as rotate, zoom, and panning.

Product Development Change Processes

ENOVIA Engineering Configuration Central is delivered with engineering “best practices” from the experience of some of the world’s largest manufacturing companies. Standard and repeatable global engineering change processes exist for configured assemblies, managed with product unit effectivity based engineering change orders (PUE-ECOs), and un-configured parts / assemblies which use a standard ECO process for changing the EBOM structure. ECO approval and notification templates can be configured for any change process to accommodate different classes of change which require different levels of oversight, review and approval.

ECOs can compensate for design errors found during testing or changes that are made to the design specification to compensate for design problems in other areas. ECOs enable the engineering best practice rules of FFF. If a proposed change is FFF compatible then the ECO affected item will be revised. If a proposed change is not FFF compatible then a new part number should be used. A “mass replace” change capability is included in the ECO process to enable the replacement of an existing child part with a new part for all or selected affected parents when a part replacement is required to implement a FFF incompatible change.

In a typical product development lifecycle, the need for change is caused by one or more of the following conditions:

- Correction of a design error that doesn’t become evident until testing and modeling or until customer use reveals it.
- A change in the customers’ requirements necessitating the redesign of part of the product.
- A change in material or manufacturing method. This can be caused by a lack of material availability, a change in vendor, or to compensate for a design error.
- A proactive change initiated by design or engineering in order to modernize or enhance an existing design.

ENOVIA Engineering Configuration Central users can select effectivity for multiple products and unit ranges (MPUE) under a single change process. An “MPUE” capability in the change context greatly reduces the amount of time to perform a change which would otherwise require separate change processes for each unique product unit range combination. In addition, ECOs that have common product unit effectivity ranges for configured part changes are grouped dynamically, which is referred to as “mod stacking.” The mod stack information is presented to the user when assigning ECO effectivity, so the ECO can be assigned to existing design solutions applied to other ECOs. This minimizes the number of unique design solutions and modifications for a given product. Engineers use this information to analyze how many unique sets of changes exist for a given product serial number. When changes are made, they can also be assigned to specific serial numbers to better control diversity across all product serial numbers.

ENOVIA Engineering Configuration Central supports parallel change processes for configured assemblies. Multiple engineering changes that have common affected parts can be evaluated in parallel. Dependencies between ECOs that need to be released in sequence are created automatically. The result is an optimized set of pending changes that allow ECOs with no dependencies to be released in any order, and those with dependencies to be released in a specific order.

Reporting

ENOVIA Engineering Configuration Central has many standard reporting capabilities tailored to meet the needs of multiple functional areas. These reports provide valuable product information for cross functional groups to make informed and timely decisions thus contributing to overall product development and planning efficiency and quality. Reports can be formatted in a printer friendly format or exported to Microsoft Excel.

BOM Reports: *Multi-Level EBOM*

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

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.

Results can be displayed in either a printer-friendly table or in a graphical side-by-side format. If both ENOVIA Engineering Central and ENOVIA® X-BOM Manufacturing are implemented, users of each product can compare any combination of engineering or manufacturing BOMs.

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.

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 an historical date. This report enables the user to see the “effective” EBOM at a select 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 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 3 would be expanded to display three separate EBOM records with reference designator values R1, R2, R3 and with a quantity of 1 for each. The inverse view can also be calculated where an expanded view can be consolidated.

Change Process Reports: *ECO Summary Reports*

ECO summary reports are automatically generated for unconfigured parts changes 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.

ECO Metrics Report

These reports capture lifecycle date and time metrics for ECOs, and are useful to determine trends in change process throughput.

Change Process 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.

Technical Document Management

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

ERP Integrations

ERP Integrations> trademarks in the wrong place, fix so matches below:

- ENOVIA® X-BOM for Oracle Manufacturing
- ENOVIA® X-BOM for SAP

The Role of ENOVIA V6 and PLM 2.0

ENOVIA Engineering Configuration Central supports PLM 2.0, product lifecycle management online for everyone, and the ENOVIA V6 values, which are:

- Global collaborative innovation
- Single PLM platform for intellectual property (IP) management
- Online creation and collaboration
- Ready to use PLM business processes
- Lower cost of ownership.



Delivering Best-in-Class Products



Virtual Product



Information Intelligence



3D Design



Virtual Planet



Realistic Simulation



Dashboard Intelligence



Digital Manufacturing



Social Innovation



Collaborative Innovation



3D Communication

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 150,000 customers of all sizes, in all industries, in more than 80 countries. For more information, visit www.3ds.com.

Europe/Middle East/Africa

Dassault Systèmes
10, rue Marcel Dassault
CS 40501
78946 Vélizy-Villacoublay Cedex
France

Asia-Pacific

Dassault Systèmes
Pier City Shibaura Bldg 10F
3-18-1 Kaigan, Minato-Ku
Tokyo 108-002
Japan

Americas

Dassault Systèmes
175 Wyman Street
Waltham, Massachusetts
02451-1223
USA

Visit us at
3DS.COM/ENOVIA

