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Understanding
PART MANAGEMENT
in Windchill

ptc

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Why Part Management Matters

Part management is the process of defining and governing part creation and part data to inform faster, value-led decision making for part selection and strategy. It includes tools for creating a formal classification structure, attribution of detailed part information and sourcing preferences, ingestion of third-party supply-chain and part data, powerful search functionality, and control over new part creation. Together these capabilities provide better visibility, collaboration, and decision making regarding engineered and purchased parts.

CHALLENGES

Manufacturers that lack a robust part management practice suffer at both the individual and strategic levels of part decision making. Engineering teams are uncoordinated and siloed from supply-chain intelligence and there is no holistic view of the part portfolio to drive enterprise-level decisions. On a case-by-case basis, a lack of parts classification and inadequate part definitions make it impossible for engineers to search for and reuse approved parts that meet their design and business requirements. From a strategic perspective, far more effort is required to govern new part creation and to identify, validate, and enforce strategic sourcing opportunities.

CONSEQUENCES

Poor Quality & Quality Assurance – Inadequate governance of part & supplier selection introduces quality risk and reduces the effectiveness of quality efforts.

Disruptions to Supply, Manufacturing, and Product Launch – Inability to plan for, quickly identify, and respond rapidly to part shortages, new regulations, and late-stage design changes leave operations vulnerable to disruption.

Duplication of Work and Parts – Needlessly redundant part portfolios, ungoverned part creation, and multiple sourcing options by product line & geography require unnecessary and duplicative work across the enterprise.

Increased Costs – Poor alignment between engineering and sourcing and limited part-data visibility make it difficult to focus spend and leverage volume by consolidating on strategic suppliers.

Benefits of Part Management

Part Management in Windchill combines parts classification and supplier management tools to formally categorize the parts comprising a product portfolio and attributes each part with critical engineering, manufacturing, and supply chain characteristics. Providing searchability and easy access to part data drives enterprise standardization of preferred parts and suppliers according to a wide variety of engineering and business considerations including performance, cost, risk, regulatory compliance, and sustainability. Part intelligence can be further supplemented through tight integrations with third-party databases. All of this information is captured with a part-centric approach ensuring part decisions are made in context of the holistic product definition for better visibility and collaboration.

REDUCE PRODUCT COSTS

Reduce material spend and increase margins by eliminating duplicate parts and identifying and utilizing preferred suppliers.

ACCELERATE LEAD TIMES

Govern part creation and promote reuse to reduce the manual, time-consuming work of creating, sourcing, and supporting new parts in product development.

INCREASE EFFICIENCY

Improve searchability of existing parts and assemblies to decrease time spent looking for like-parts and streamline downstream activities by reducing the total number of active parts in your portfolio.

IMPROVE SUSTAINABILITY

Assign part attributes to assist engineers in selecting parts that meet sustainability goals based on material specifications, compliance data, and other metrics generated internally or sourced via third-party resources.

Key Part Management Capabilities in Windchill

The following list of key part management capabilities in Windchill is not exhaustive. Both the list and definitions are intended to provide a brief overview of the tools that are among the most valuable to the typical part management user.

Part-Centric PLM

With a part-centric approach, the bill of material (BOM) – rather than the engineering drawing – becomes the basis for the product definition. Each part composing the BOM represents a different mechanical, electronic, or software part stored as an object in Windchill with its own associated data. This data can include CAD models, drawings, specifications, technical documents, and so on. Defining the product this way enables stakeholders to view, configure, and manage changes to any product-related content—from final assembly structures to individual parts—in a single, central repository.

Parts Classification

Parts classification is the process of organizing your products, parts, and documents to drive efficiencies in searchability and productivity. Windchill provides tools for building a classification structure, defining and applying part attributes, generating part names, searching by attribute, identifying when similar parts are being created, and more.

Attributes Management

Attributes in Windchill are reusable properties for which a part can have a value. Managing attributes is a powerful way to expose detailed engineering and sourcing information to the system and its users. For example, capacitor parts can be defined to have a capacitance attribute. Assigning the corresponding capacitance value to every capacitor in your portfolio, along with values for other attributes like voltage rating, working temperature, and even regulatory compliance, makes it easy for engineers to find the right one for their application. Attribute values in Windchill can be Boolean, date & time, strings, integer numbers, or real numbers.

Key Part Management Capabilities in Windchill

Classification Structures

Classification structures in Windchill form the hierarchy and taxonomy that will define all parts in your system. The classification structure formalizes the relationships between parts and between parts and their attributes. This structure can be visualized in Windchill as a tree, where each node represents an object – with pre-defined attribute categories – that serves as a template and starting point for classifying, searching for, or creating new classified parts..

Faceted Search

Windchill provides powerful search tools that allow users to locate and retrieve product information of all types. When enabled, faceted search gives users the ability to narrow search results by filtering on attribute values in much the same way Amazon and other ecommerce websites work.

Alternative/Substitute Parts Management

Windchill provides a fully traceable solution to define and maintain relationships at the part and part usage level to indicate when a part can be used in place of another part at any stage of the product lifecycle. There are two types of replacement parts. An “alternative” part may be used in any assembly where the corresponding part is used. A “substitute” part may be used in place of the corresponding part only in specified assemblies.

Key Part Management Capabilities in Windchill

Strategic Sourcing (AML/AVL)

Approved Manufacturer Part Lists (AMLs) and Approved Vendor Part Lists (AVLs) create transparency with an automatic flow of reference data & history linked to parts. Engineers can use this preferred supplier information in addition to other part attributes to improve part selection. Buyers can review preferred suppliers, using workflow and authorized access control for change management and new part introduction. Strategic sourcing teams can work concurrently with their supply chain partners to securely share up to date, accurate product information. Further, the sourcing context allows administrators to create AMLs or AVLs for specific conditions. For example, based on geographical location of a production facility or for a particular product line within a product family.

Sustainability Management

Windchill users have a comprehensive picture of product sustainability through PTC partnerships for material intelligence, supply chain intelligence, supplier compliance, and manufacturing simulation tools. With part management, the data from these resources is incorporated into the part definition to inform design for sustainability, sustainability reporting, and sustainability analysis at the part, BOM, and even product family level.

Key Part Management Capabilities in Windchill

Material Compliance Management

Windchill material compliance tools are used to collect, track, and manage critical regulatory information for submission to governing bodies around the world in addition to part compliance status against industry specifications. Integrations with Compliance Map, Makersite, Ansys Granta, and Silicon Expert provide rich functionality for detailed reporting, including dashboards and reports, to reveal high-risk articles and automated supply chain communications so data on new substances can be collected. These tools provide library and process updates alongside ever-changing regulations.

Risk Management

Third-party integrations help mitigate supply chain exposure by identifying critical counterparties, accessing credit, exposing trade data, and monitoring developments. SiliconExpert, for example, is a partner solution provider that streamlines relevant product data and insight needed to mitigate risk during a product's lifecycle. Silicon Expert aims to provide users with the most up-to-date data to give their customers the ability to make better risk-based decisions from design through procurement. Embedding this in windchill standardizes and automates processes that provide visibility and status reporting.

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Expert Insights

STEVE SHAW
Senior Director, Product Management
PTC

"There are broad implications around eliminating duplication, promoting reuse, and, really, classification. And having a strong classification strategy is going to help you enable consumers across the enterprise"

Parts classification is essential to a robust part management practice. Without it, it would be impossible for any sufficiently large company to have a comprehensive view of the parts used across their product portfolio. It's this detailed understanding of the entire picture, and the tools that allow users to navigate to the parts they need, that gives power to engineers, supply chain managers, and procurement to make better decisions and drive better business outcomes.

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Customer Perspective

SCOTT MORRIS
PLM Manager
iRobot

"...the advantage here is not only the category that you want to assign to parts, but also the attributes that you can assign to them."

iRobot is the leading global manufacturer of household robots. While headquartered in Massachusetts, the company also has design offices in California as well as distribution and manufacturing sites around the world. iRobot relies on part management in Windchill to reduce part duplication across its product lines, to speed up product development, and to provide a costing perspective to their product families.

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Realized Benefits Case Study

HP INC.

HP Inc. is a world-renowned manufacturer of electronic products such as PCs, printers, and computer accessories.

CHALLENGE

HPs printer portfolio has increased in complexity and breadth over the past thirty years from simple desktop printers to large format printers, 3D-printers, photo-printers, and multi-capability printers. However, their data management solution was not able to keep up with this this complexity, leading to manual and disconnected information chains, supply chain dis-integration, delayed time-to-market, and growing cost and quality pressure.

SOLUTION:

HP implemented Windchill to associate and classify all relevant design and industrialization data related to product design, manufacturing, supply chain, quality, and cost. Having done so, they were able to automate key product development processes including part selection for reuse, product composition, release management, and product costing. Learn More

HP reduced process complexity through architecture consolidation and modularization. They also realized new part governance by establishing global module owners who were empowered to create new strategic parts. They were able to:

- **Reduce costs**
- **Accelerate time to market**
- **Increase product development programs**
- **Improve quality**
- **Improve sustainability**

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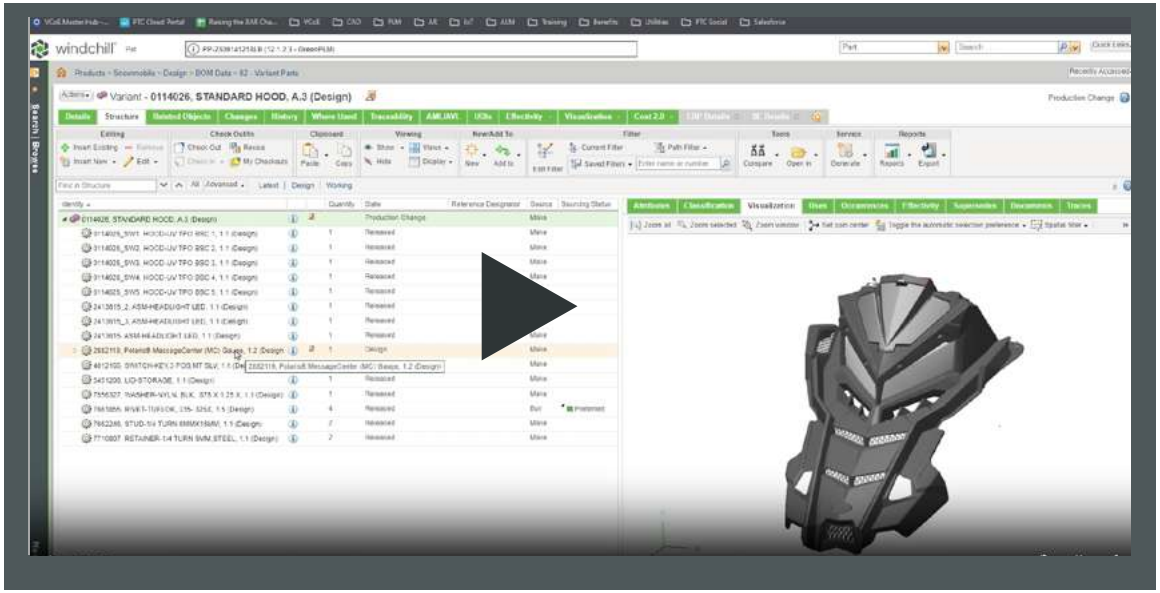
See Part Management at Work

This demonstration illustrates how quick and easy it is to search for parts, to understand part attributes, to identify preferred suppliers, and to understand part risk using part management in Windchill. It emphasizes the power of a well-organized part portfolio, the rich product definitions that can be created, and the effortless alignment between engineering and procurement.



- CLASSIFICATION STRUCTURE
- FACETED SEARCH
- PART ATTRIBUTES
- STRATEGIC SOURCING
- WHERE USED
- PREFERRED SUPPLIER
- RISK MANAGEMENT

Part Management Solutions: What to Consider

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Part Management Requires a Strong PLM Foundation

Robust part management is inextricable from a strong PLM foundation. However, too many companies operate with immature BOM management processes, often based on drawings, that prevent best-practice part management methods, and lead to delayed time to market, quality problems, poor productivity, excess cost, and damaged customer relationships.

Improving the maturity of part management by implementing a digital BOM not only helps with things like complexity, efficiency, and collaboration but also plays a crucial role in supporting organization wide digital transformation efforts.

Use this Tech-Clarity Buyer's Guide as a reference tool as you investigate systems to improve the maturity of your own PDM or PLM practices.

Learn More >

This Buyer's Guide covers:

- The benefits of digitizing BOM management and making it the foundation of the digital thread and digital twin.
- The functionalities, service options, and vendor requirements you should be considering when looking at BOM management solutions.
- Why you should look beyond your current needs so you can support the digital future.

Learn More

Click here to explore more of these topics

BOM Management

Collaborative Product Development

Engineering Change Management

Manufacturing Process Management

Model-Based Systems Engineering

Parts Classification

Product Configuration Management

Product Data Management

Product Variability Management

Quality Management

Requirements and Test Management

Service Process Management

Supply Chain Collaboration

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