Change and Configuration Management

AN ORDERLY PROCESS FOR EVOLVING A PRODUCT FROM CONCEPTION TO RETIREMENT

Increased competition requires companies to offer more specifically configured products with better performance and higher quality at a lower price. Companies, involving many global contributors, must rationalize the way products are developed and can no longer afford delays and costs related to traditional change and configuration management practices. PTC offers a solution.

An efficient change process can cut upwards of 33% off of the typical product development cycle time.

TOTAL Product Development Cycle Time

It's typical to see 33% of development cycle time wasted either on unnecessary work, waiting for decisions, or waiting for information regarding a change. —McKinsey & Company

Definition of Change and Configuration Management

Change and configuration management are fundamental to product development. The process of taking market requirements, customer requests, and innovative ideas and turning them into viable products can not be accomplished without managing product change. While informal changes are accepted early in the design cycle, changes become formal as change complexity and cost increase, and as product matures. The change and configuration management process-controls how informal and formal changes are proposed, analyzed, planned, implemented, and released, as the product evolves from conception to retirement.

An Orderly Process for Evolving a Product from Conception to Retirement

Understanding the Need for Change and Configuration Management

Many companies face challenges around the use of change and configuration management procedures stemming primarily from the fact that the the process is typically manual and paper-based. As a result, it is very slow and bureaucratic.

An overly complex process coupled with a lack of users' knowledge, results in low process adoption. Changes are either avoided or the process is bypassed, and as a result the downstream documentation is either incomplete or incorrect, and valuable design and configuration history is lost, which causes problems in downstream product development stages (e.g., Manufacturing, Sourcing).

The process is further complicated due to companies using multiple systems managing product information and different applications to aid in the change process execution. As a result it is difficult to find, analyze, monitor and provide status of change information.

An increased number of global and external contributors in the product development process complicates change coordination and information access across multiple organizations. Companies must consider how change and process is executed in a highly distributed environment and how product data and intellectual property is secured as change information is delivered to and from contributors.

As product complexity, variants, and options increase, so too does the need to manage change and product configurations. Inadequate configuration management practices make it difficult to capture important product milestones, track incremental product updates and make updates to configurations impacted by change.

Benefits of an Optimized Process for Change and Configuration Management

A flexible, responsive and efficient change and configuration management process improve a companys' ability to compete. Typical benefits from improving the change and configuration management process may include:

Improve Business Decisions

- Replace legacy systems and applications with single enterprise process
- Enable reliable best practices process approaches supporting minor and major changes

Increase Innovation

- Increase overall engineering time by reducing the change related administrative workload
- Minimize rework and work task coordination across the extended enterprise by automating the process

Reduce Product Cost

- Early knowledge of changes allows manufactures to better prepare for change and minimize inventory

Attain Higher Quality

- Ensure product quality across the product lifecycle by improving process adoption
- Reduce manufacturing related issues by incorporating quality improvement changes early in design process

Reduce Time-To-Market

- Reduce product development cycle time and downtime awaiting change decisions by providing accurate documentation of changes

The Solution – PTC's Product Development System

PTC provides an integral and automated change and configuration process with all the necessary tools to accommodate change throughout the product lifecycle. In general terms, the process has 4 major steps: Identify the Need, Investigate the Need, Plan the Change, and Implement the Change.

1. Identify Need. The goal of this step is to enable product development contributers and external parties to report problems and enhancement to products. The information is captured using Windchill Problem Reports, where the submittor describes the "Need", identifies the affected product and suggests solutions. Once submitted, the problem report is sent automatically to a designated reviewer for validation and approval or rejection.

2. Investigate the Need. When one or many problem reports have been approved, the change team may now proceed with an in depth change investigation. The change investigation is captured in an Engineering Change Request and the goal is for product experts to accurately assess the scope of the change, feasibility, downstream product impact, solution proposals, cost and business justification. Upon completed investigation the process may follow either a formal process, involving review and approval by a cross-functional team (Change Review Board), or the process may follow a less formal process, not requiring approvals. Whether a change follow a formal process path or not generally depend on change complexity or product maturity state.

3. Plan the Change. The goal of this step is to plan the detailed implementation of the change including schedule, work tasks, and resources. The change planning is captured in an Engineering Change Notice (ECN). As part of the planning, the implementation team will decide how to incorporate changes to impacted product configurations, new or revised parts, and how to manage obsolete parts. If the change follow the formal process the implementation plan has to be reviewed and approved by a cross-functional team (Change Implementation Board).

4. Implement the Change. The goal of this step is to implement, review, audit and release the change. Upon approval of the implementation plan, all the work tasks per the implementation plan are automatically delivered to the designated users. When a work task is completed a designated reviewer is automatically notified to review and approve actual vs. planned change. When all work tasks are approved, a final review and audit notice is automatically sent to a designated reviewer, typically the engineering manager, who will perform a final review and analysis of the entire ECN based on actual vs planned changes, effective date of the change, disposition of obsolete parts, and new and updated product configurations. Upon approval, the change will be released.

Change and Configuration Management Process Flow. The general flow depicted here may be adapted in support of industry-specific change and configuration management needs. Particular adaptations are often undertaken for the Aerospace/Defense and Automotive industries.

Critical Capabilities

The PTC Product Development System offers the following capabilities, necessary for optimization of the change and configuration management process:

- Out-of-the-box change and configuration management process with support for informal and formal changes
- Automated, closed loop process enabling instant access to change information for analysis, review, approval and implementation
- Ability to describe, classify and prioritize Problem Reports and Enterprise Change Requests
- Ability to document, review and approve change business justification, impact and analysis
- Ability to effectively plan and manage change implementation using Engineering Change Notices
- Facilitate change review of proposal and planned implementation with board of advisor/approvers
- Manage and capture as planned and as-released product configuration baselines
- Automatic notification of downstream consumers of change information of impeding changes and effective dates
- Real-time change tracking, audit history, electronic signatures and statistics

Initiating a change request via a problem report in Windchill PDMLink.

PTC – Uniquely Qualified

Optimizing your change and configuration management process not only requires superior technology, it also requires companies to change the way they work on a day-to-day basis. Just as important, companies need to ensure everyone across the organization understands and adopts the new processes and technology.

After 20 years of deploying process and technology improvements across thousands of customer sites, PTC has a worldwide Global Services team that understand what's required for companies to be successful.We offer solutions that include the right blend of process consulting, system implementation, and education services so customers realize the most value from their PDS investment. We implement industry best practices that fully leverage PTC technology, so companies take advantage of its potential while avoiding costly customizations. Plus, each of our solutions incorporates a unique training approach that accelerates the adoption of new technology and processes.

> An automated and optimized change and configuration management process not only requires superior technology, it also requires the ability to understand how it impacts critical business processes and people in the organization.

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