The Cisco Collaborative PLM Solution with PTC Windchill: Accelerating Engineering Change Approval and Implementation

For today's manufacturers, increasing the rate of innovation has become a top priority. Such initiatives are driven by increasing customer demand for specialized products and new features, high growth in emerging markets that often require localized products, and the need to compete effectively with other global firms. According to a recent study by Forrester, "slow response to changing market conditions in today's hyper-competitive environment places companies at a distinct disadvantage relative to competitors."

To accelerate innovation and launch successful new products, therefore, manufacturers are increasingly expanding their global R&D footprint, both internally and via outsourcing. This allows companies to accelerate time-to-market by adding new resources, capture local knowledge and talent, and minimize the costs of development. However, successfully implementing a global product development organization brings with it a number of new challenges that must be addressed to gain the full benefit of a global design chain and achieve innovation objectives.

One of the most important of these challenges is ensuring global collaboration. Product development is inherently a team process, in which communications becomes a key part of the development workflow. However, with globally distributed teams working in different locations, in different time zones, with different languages and cultures, effective collaboration can become a significant obstacle. Even though communication devices are proliferating as employees become more mobile, trying to work together based on a series of non-integrated devices can result in costly delays and a potential lack of compliance with the formal change process, due to not being able to locate reviewers and approvers, or not being able to quickly and effectively collaborate to review and discuss changes.

In innovation environments, where quick access to people and their knowledge is an imperative, manual interactions and communications may take hours, days, or even weeks to accomplish in today's larger organizations. In fact, a recent study by Forrester indicated that 75% of manufacturing organizations regularly see delays in product development projects due to inability to reach key decision makers to sign off on reviews and milestones.

The solution can be found in technologies that support the entire Product Lifecycle Management (PLM) process by fully integrating communications into relevant applications. Offerings such as the Cisco Collaborative PLM Solution with PTC allow manufacturers to optimize communications throughout the workflow to achieve:

- Accelerated processing and reduced delays by dramatically improving communications and availability of team members
- Improved productivity as researchers and developers are kept in close touch with every phase of the process
- Improved compliance and tracking through comprehensive recording of all communications and approvals

The Engineering Change Process

A key business process that relies heavily on successful and timely collaboration is the engineering change process. Change is inevitable in a product development environment, becoming ever more costly as it moves into the manufacturing phase. Whether changes are driven by product introduction or refinement, manufacturing or supplier non-conformance and corrective action, in-service events, or process or supply chain improvements, they need to be communicated, tracked, and quickly resolved among development team members.

Implementation of the engineering change notification and approval process is therefore key to cost-efficient and timely product development, as well as rapid implementation of changes in the plant floor production environment. An effective management process supporting review, approval, documentation, and execution of changes ensures that costs are contained, quality standards are met, productivity remains high and traceability requirements are achieved.

However, poor communications can severely disrupt this process, causing significant delays in implementing critical engineering changes. Change notice approvers may be difficult to locate and communicate with, or they may not have access to the business application to approve the change if they are traveling or on the plant floor. Team members may also need to review the engineering change in more detail before approving it, but are located in another country and time zone and thus have difficulty with connecting with colleagues, resulting in further process delays.

Difficulties in communicating and collaborating can also result in reduced productivity for development team members as they try to locate reviewers and approvers, or have to meet multiple times with different decision makers to review and explain each engineering change. The result is late approvals, slow implementation, a time-consuming development process, and a greater impact on production.

The Solution: Collaborative Product Lifecycle Management

To address these challenges and optimize collaboration within the change management process, Cisco and PTC offer an integrated solution that combines Cisco's industry-leading Unified Communications with PTC's Windchill Product Lifecycle Management (PLM) application. By implementing unified communications capabilities directly within the Windchill user interface and workflows, manufacturers are able to accelerate change approval cycles, improve productivity, and increase process compliance for engineering change notice approval and implementation.

The Power of Cisco Unified Communications

Cisco Unified Communications integrates collaboration tools closely with engineering processes, ensuring that information reaches researchers and developers every time and everywhere, in any working environment, through the most appropriate device or medium. It provides:

- **Mobility:** A unified view of calls, calendars, data, and e-mail from any location, at any time.
- **Collaboration:** Shares all types of media with voice, web, or videoconferencing participants.
- **Security:** Extends comprehensive security throughout the network, from infrastructure through call control devices and communications applications.
- **Choice:** Open standards facilitate integration with the PLM application.
- **Customer Service:** Integration with applications maximizes call center performance.

Cisco Unified Communications integrates applications to create a unified workspace that clears collaboration roadblocks and empowers engineering team members to choose when, how, where, and with whom they wish to communicate. Based on this powerful technology, manufacturers can transform the workflow and build bottom line benefits that are an order of magnitude greater than traditional business processes.

Comprehensive Product Lifecycle Management from PTC

PLM applications are increasingly being used by manufacturers to help manage change and ensure consistent processes across distributed global development teams. Product lifecycle management is the process of managing the entire lifecycle of a product from its conception through design and manufacture.

PTC's Windchill application is one of the leading products on the market for creating, controlling, communicating, and configuring development data. It enables manufacturers to:

- Create detailed digital product information
- Collaborate with distributed project teams, customers, suppliers, and partners
- Control content and automate processes
- Configure content to match products and services
- Communicate with people and other business applications

The PTC Windchill PLM application offers a range of information management capabilities on an integral, web-based architecture that supports the globally distributed environment. Modular in design for greater reliability and extensibility, it shares a single database and business object and process model, and is utilized via a consistent and unified web-based user interface.

How the Solution Works

The combination of Cisco Unified Communications and PTC Windchill accelerates the change process and dramatically improves productivity across the global R&D organization. Its robust features are designed to enable better, faster, and more effective collaboration between team members.

One such feature is the text-to-speech (TTS) conversion of engineering changes that can be delivered to any device, including phones, PDAs, VoWLAN phones, and others, allowing users to approve, deny, or quickly gather more information on a pending modification. As well, Cisco Presence is integrated directly into the PTC Windchill user interface, allowing users to immediately see which team members are available, how they would like to be communicated with (email, mobile phone, desk phone, etc.) and enabling click-to-talk to multiple users at the same time for ad hoc conferencing or notification.

The solution also includes web conferencing tools such as WebEx and MeetingPlace integrated into the PTC Windchill user interface. This allows users to escalate phone calls to a web conference, or perform a virtual design review that incorporates web conferencing, video, and voice. The resulting review information can also be attached to the change for later consideration by other team members, improving productivity by reducing the number of meetings required to complete a change.

All events and approvals from multiple devices are incorporated into the Windchill workflow engine, providing multiple options for reviewing and approving engineering changes. Specific actions such as approvals or rejections are passed back to the Windchill application to allow the process to

move on to the next phase. The application also creates a complete record of all team responses for audit and reporting.

These capabilities are made possible by the Cisco Unified Application Environment (CUAE), which provides the first integrated, end-to-end runtime and development platform for unified communications applications. This platform abstracts the complexity of telephony protocols, separates application logic from core call routing, and provides a standard for managing unified communications applications. Its key features and benefits include:

- **Extensible plug-in framework:** As part of CUAE, the Cisco Unified Application Server offers an extensible plug-in framework that shields users from the complexity of voice technology by abstracting a wide variety of call control and other telephony protocols, as well as popular data protocols and APIs.
- **Virtual machine layer:** The Server also provides a virtual machine layer that clearly separates application logic from core call routing and manages calls from applications to Cisco Unified Communications Manager. The virtual machine protects the Manager from immature protocol defects and security threats. The virtual machine also protects applications from each other.
- **Standard application container:** Finally, the Server acts as a single standard application container to provide a common platform that developers and quality assurance and operations staff can use to manage the reliability, scalability, capacity, and performance of all packaged and custom unified communications applications.

The Cisco Unified Communications platform facilitates rapid development, reliable execution, and automated management of applications that converge voice and video with enterprise applications and data. Based on this platform, Unified Communications tools and capabilities can be used to support multiple R&D workflows. Through the use of CUAE, these collaboration tools are rapidly and efficiently integrated with Windchill to improve communications, transform business processes, and create competitive advantage.

Business Benefits

Manufacturers experience significant benefits by making use of unified communications solutions. Forrester finds that “integrated processes and communications support faster decision-making and better service driving business effectiveness, efficiency, and profitability, and early evidence suggests that they have a transformative effect for companies that deploy them effectively” (Forrester, 2007). In support of this finding, this integrated solution:

- Accelerates the change process by reducing delays associated with communications during the process; eliminates queuing of emails and tasks and provides continuous availability through web conferencing
- Improves process compliance and tracking by reducing the likelihood of skipping steps due to delays; and improves auditing, searches, and reporting through comprehensive recording of each step in the process
- Improves productivity by having collaboration tools embedded directly into the Windchill change management application user interface; provides team members with a clearer understanding of outstanding changes and their impact on program milestones

- Integrates communications with the business process via two-way interaction between the Cisco UC platform and the PTC Windchill application; while providing the ability to include communications events in the Windchill workflow manager

The Collaborative PLM solution is part of Cisco's Continuous Innovation portfolio of solutions that enable manufacturers to accelerate time to market, improve the efficiency of product development processes, and collaborate with employees, customers, and partners to drive innovation and development of new products in a global marketplace.

Next Steps

Responding to rapidly changing customer demands and capturing new revenue growth opportunities requires manufacturing companies to continuously innovate. Managing innovation processes on a global basis, however, requires the most effective change management solutions available to assure rapid and consistent launches of new products.

Cisco and application partners such as PTC help manufacturers address the business and technical challenges associated with globally distributed PLM deployments by providing applications to optimize the change management process. This allows manufacturing companies to focus their time and resources on developing new products and growing their business.

For more information on successful real-world implementations and best practices, visit: http://www.cisco.com/go/manufacturing.

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Printed in USA C22-502528-00 10/08