

# IMPLEMENTATION OF TEAMCENTER IN MERCURY MARINE PROPULSION

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## ABSTRACT

This paper is on mercury marine propulsion. A \$1.5 billion division of Brunswick Corporation, Mercury provides engines, boats, services and parts for recreational, commercial and government marine applications. Mercury's strategic vision is to be "the most respected and revered global marine industry leader. This requires product development processes that are flexible and fast enough to support constant innovation. And with manufacturing/supplier facilities in 11 countries and engineering activities in six, these processes must operate seamlessly across multiple sites. In this paper the conditions before team center and the condition after team center are shown the problems, the duplication of design, reuse of the design, faster to the market, new product launch, change management, centralized data from all departments. Increased the innovation of the product in lesser time to market with lower cost.

## 1. Problem Statement

Before the business process transformation, product design data and project data was stored and managed in multiple systems, which led to longer lead times in our product development process, for CAD, CAM and PLM Systems at Mercury. "With the defined release processes in Team center to capture the development- and milestone-specific design builds, all stakeholders in the product development process are ensured of using the same information to make the right decisions."

In the past the company also had multiple systems and places where people could take out part numbers and data regarding product. The engineering bill of materials was maintained in spreadsheets by all the stakeholders involved with product development. The engineering change process used multiple systems and it was not automated. "All this resulted in extended lead time in the design and development phase and didn't help the downstream users. CAD data was managed in a PDM environment, preventing the company from leveraging it in cross-functional collaborations.

## 2. Choosing the Teamcenter Software:

In the search for a PLM solution, Mercury evaluated software from Parametric Technology Corp. and IBM/Dassault Systems in addition to Team center® software from Siemens PLM Software. Mercury's PLM solution must manage all of the company's product data, including geometric data created by its Pro/Engineer® CAD software. It also needs to be able to automate and manage processes such as engineering change as well as support multi-site collaboration.

Mercury chose Team center because it was the "best fit" solution that met these requirements. Another factor in the decision was the willingness of Siemens to work with

Mercury to ensure a successful implementation. "A PLM implementation requires a close partnership with the vendor."

## 3. Process before Teamcenter Implementation:

Before team center was implemented, mercury worked on three main tiers. "When organizations embark upon a major software implementation, they tend to jump straight into the technology without first aligning around cross-functional goals and processes. That typically results in either a much longer, more expensive deployment due to mismanaged expectations and misunderstood processes, or an implementation that is deemed unusable by the rank and file, and therefore considered a failure.

Tier 1 involved understanding the top executives' view of the existing processes, capturing the voice of the customer and establishing metrics for success. Tier 2 was a process-definition step in which existing processes were refined at the user level, evaluated and streamlined in preparation for Tier 3. This final tier was the actual aligning of the defined processes to the technology. Once this was completed an extremely rapid implementation was possible thanks to the groundwork done in the tiered approach.

## 4. Design data & Process under Control:

A key element of the company-wide Team center implementation is the use of a single repository for all product information. This includes Pro/Engineer CAD data, design specifications, design standards, material specifications, supplier data and specifications and any other dataset types relevant to the product data. It also includes 600,000 items of legacy product data that were migrated into the Team center database.

Mercury's Team center sites are synchronized nightly, allowing a level of global design collaboration. Mercury uses the community collaboration capabilities of Team center for managing project data where teamwork is essential. These capabilities are based on Microsoft SharePoint® server. With the use of Team center the people in areas such as costing, procurement, quality and manufacturing now have access to design data, even though they don't use Pro/Engineer. Mercury uses various workflows and statuses to manage the lifecycle of an item from concept to end of life. As part of the drawing sign-off workflow, Team center pushes the released and approved drawing in a PDF format to Mercury's intranet website for those who need it. Team center is integrated with Mercury's ERP system; the two programs are synchronized daily.

### 5. New innovation boosts The Product:

The product development process, along with data management/change management processes, enabled Mercury to introduce more innovative products in short duration using the same or fewer engineers. This innovation boost is due to a number of factors. One is design re-use, which is happening to a much greater extent now that Team center searches can quickly identify appropriate parts and designs in the database. With less time wasted creating duplicate parts, there is more time for innovation. Design re-use also reduces costs.

Mercury's accelerated innovation rate is also the result of fewer delays caused by errors. With single source product information and one engineering bill of materials through the entire development process, people now work within one system where they get all the information they need. Also,

design modifications are captured through a disciplined and automated approval process. Process automation is another area where time saved goes back to innovation. Mercury's engineering change process offers an excellent example. Having a single engineering change management process that is managed by Team center throughout Mercury Marine produces significant yearly savings. Since implementing Team center, the average time for an engineering change at Mercury has dropped from 56 days to 22. These benefits are just the beginning.

### 6. Conclusion:

- 1) Team center manages project-related information such as documentation, scheduling, team meetings, individual tasks and feedback.
- 2) Since implementing Team center, Mercury now has just one place where part numbers are created and managed and one place where engineering bills of materials are stored and managed.
- 3) In addition, a single, automated change management process is now in place, replacing multiple systems

### 7. References:

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