



Measuring Business Process Benefits Achieved Using SMARTTEAM[®]

A CIMdata Report

Measuring Business Process Benefits Achieved Using SMARTTEAM[®]

March 2005

Prepared by
CIMdata, Inc.

CIMdata[®]

<http://www.CIMdata.com>

CIMdata, Inc.

3909 Research Park Drive, Ann Arbor, Michigan 48108

Tel: +1 (734) 668-9922 Fax: +1 (734) 668-1957

CIMdata[®] is a Registered Trademark of CIMdata, Inc.

Copyright © 2005 by CIMdata, Inc. All rights reserved.

1. Executive Summary

Reducing the time to bring products right-to-market requires that a company develop innovative products and also that it improve and be innovative in its product-related business processes. Product Lifecycle Management (PLM) is a strategic business approach incorporating industry-specific best practices, processes, and methodologies delivered on a flexible, scalable technology platform that enables an enterprise to achieve those goals.

CIMdata has surveyed a cross section of SMARTEAM® (a member of the Dassault Systèmes family of PLM solutions) customers to understand the improvements these companies have achieved in a number of product-related business processes. This research illustrates that SMARTEAM is a comprehensive solution suite being used by companies of all sizes across many industries to meet their business improvement requirements. Over 90% of the companies interviewed stated that SMARTEAM is considered mission-critical to their business success. This feedback clearly reinforces the importance of PLM.

For example, a CAE Director at a European auto firm commented that, *“It is becoming more mission-critical as we increase the amount of data we manage with SMARTEAM and widen the exposure of the product. The next step is to look at an enterprise-wide use of the product rather than the pure CAD-centric solution that we have today.”*

Reinforcing the importance of PLM in facilitating and documenting dynamic product development processes, a Manager at a Korean communications company stated, *“We analyzed the flow from creating product data to terminating it, and implemented the flow into a system. Therefore, we realized the value of created product data through sharing it with many people. The data became the intellectual property of the company.”*

Furthermore, most of the surveyed customers are using SMARTEAM to optimize multiple business processes which have a cumulative effect on the overall product lifecycle and taken together can result in reducing the time to market. On an overall basis, organizations using SMARTEAM have experienced reduced lead time to market by up to 30 percent.

2. Introduction

Successful companies must deliver competitive products, gain and maintain customer mindshare and

loyalty, and maintain profitability while competing in a growing global marketplace. Success is achieved by applying PLM strategies and solutions to transform and improve product-related business processes. PLM helps companies improve those processes through a combination of industry “best practices” approaches, the correct enabling technology, and focused implementation methodologies.

PLM is the common term used to describe the creation, management, and use of product-related information and processes (i.e., an enterprise’s intellectual assets or complete product definition) throughout the entire product lifecycle and extended enterprise. As PLM solutions have matured, a greater emphasis has been placed on the development and delivery of focused solutions comprised of prepackaged functionality designed to simplify implementation and support specific business processes.

PLM solutions help optimize, monitor, and document product-related business processes to ensure that they are consistent and managed. They guide and assist the diverse users that play different roles in product development in their individual and team participation within those business processes and make ensure that the right information is available for use as they execute their work tasks. PLM solutions also help companies accelerate throughput within, and across business processes. The combination of these benefits results in a company’s ability to reduce cost, deliver more and better products faster, and positively impact its top line efficiency and bottom line profitability.

This report describes selected business processes and discusses the benefits companies have received using SMARTEAM PLM technology and solutions to improve and manage those processes.

3. The Research

In this study, based on research sponsored by SMARTEAM, CIMdata obtained information on benefits achieved from PLM implementations at fourteen companies in Europe, the United States, Israel, and Korea. CIMdata believes these companies are representative of the diverse, global SMARTEAM user base. Industries represented in the survey include automotive, aerospace, electronics, industrial manufacturing, construction equipment, design consulting, and software. Both large and small companies were interviewed and the number of users supporting a given business practice ranged from fewer than five to more than 1,000. The information was obtained using a combination of personal interviews,

responses to a survey questionnaire, and review of public documents. Participating company names and results are not disclosed since the summary results of a specific company are proprietary to that organization.

The customers in this survey used a diverse set of Computer Aided Design (CAD) applications including CATIA V5, SolidWorks, AutoCAD, Mechanical Desktop, Inventor, Pro/ENGINEER, NX, IDEAS, and others. The majority of the customers are using SAP R/3 as their Enterprise Resource Planning (ERP) system, followed by Oracle Applications. Some other ERP applications are also in use. The diversity of industry segments, company size, and best practice utilization are a solid indicator of SMARTEAM's flexibility and adaptability.

The information obtained during the survey has been aggregated to maintain confidentiality and participants were able to speak freely concerning their experiences and results using SMARTEAM. Although the statistical data is based on a limited set of responses, CIMdata is confident that the conclusions drawn and estimated benefits achieved presented in this document are valid.

4. The PLM Market

CIMdata divides the PLM market into two primary segments: collaborative Product Definition Management (cPDM) and Authoring and Analysis Tools. Note also that CIMdata uses the term "product" in a broad context that includes discrete products such as automobiles, toys, medical devices, and airplanes as well as large-scale plants and facilities such as oil rigs, petrochemical facilities, and factories. The Authoring and Analysis Tools segment includes mechanical and electronic computer-aided design (MCAD and ECAD), computer-aided software engineering (CASE), and technical publishing. cPDM encompasses all other PLM functionality and is focused on collaboration, management, and sharing of product related information. cPDM includes capabilities for product data management (PDM), program and project management, portfolio management, sourcing, digital manufacturing, visualization, collaboration and many others.

In 2003, the PLM market grew 4% to approximately \$14 billion overall with 33% (\$4.6 billion) invested in cPDM. Preliminary analyses indicate that in 2004, the PLM market exceeded the forecast and will achieve a growth of more than 10% in the cPDM sector. Looking ahead, the PLM market as a whole is forecasted to exceed \$20 billion by 2008 with the cPDM segment of

the PLM expected to exceed \$9 billion in that time frame.

5. SMARTEAM Program Overview

SmarTeam Corporation, a Dassault Systèmes company, is a worldwide organization headquartered in Israel with offices in Europe, Asia, and the United States. SMARTEAM has been in existence since 1995. The company has grown rapidly over the past few years with an expanding worldwide base of more than 3,000 customers at the time of this writing. Its collaborative PLM solutions offering, SMARTEAM® is sold worldwide by IBM and its Business Partners, as well as through the direct Dassault Systèmes/SmarTeam channel including Value Added Resellers.

Dassault Systèmes (NASDAQ: DASTY and Euronext Paris: #13065, DSY.PA) is one of the leaders in the PLM market, supplying both Authoring Tools and cPDM and continues to deliver an expanding, comprehensive PLM solution suite to companies around the world. As one of the world's leading PLM solution suppliers, Dassault Systèmes develops and markets technology-based solutions for PLM, CAD, CAM, CAE, simulation, and factory planning.

The solutions from Dassault Systèmes facilitate the design, simulation, and production of a wide range of products including extremely complex systems, such as cars or aircraft, and the manufacturing facilities used to produce them, as well as articles for everyday life such as tableware, household appliances, and jewelry. Dassault Systèmes' solutions are also used in the process industries ranging from packaged goods to the development of pharmaceuticals.

The Dassault Systèmes PLM family includes CATIA®, SMARTEAM®, ENOVIA®, DELMIA®, SPATIAL® and SolidWorks®. These solutions support industry-specific business processes to increase creativity and innovation, reduce development cycle times, and improve quality and supportability. Each of Dassault Systèmes' PLM brands provides both unique and complementary capabilities when employed with other Dassault Systèmes products.

Dassault Systèmes has a large network of technological, software, and service partners. These include leading companies such as IBM, Microsoft, MSC.Software Corporation, Nihon Unisys, Ltd., Hitachi Zosen Information Systems Co., Ltd., LMS International, ESI Group, HP, Intel, Volvo IT and others who provide products and services built upon or

integrated with the CAA V5 architecture. This partner network is fully open to all Dassault Systèmes' brands.

SMARTEAM provides solutions across the cPDM sector of the PLM market. It has consistently been one of the fastest growing suppliers in that sector and is a leader in delivering solutions for small- to medium-sized enterprises as well as division of large enterprises.

SMARTEAM has been designed to be a scalable solution that can be used by companies of all sizes, and by their supply chain partners. SMARTEAM has been used to develop solutions to different lifecycle management and collaboration business needs. These solutions help enable companies to create effective PLM environments in which individual, work teams, suppliers, and customers can design, build, maintain, and use products more effectively.

SMARTEAM solutions are built on an open, standards-based architecture that can be implemented and integrated into an enterprise's IT infrastructure. A manager at a European aerospace firm reported that *"SMARTEAM is very open; it is very easy to prototype a solution. One can couple SMARTEAM with file tools or database tools. For our system designers, we have the advantage of configuration management without any major drawback."*

SMARTEAM supports the following PLM functions:

- Product knowledge platform built on a flexible data model
- Systems engineering
- Document and multi-CAX content management
- Automated workflow and change management
- Product structure and configuration management
- Enterprise knowledge collaboration and application integration
- Program and project management
- Value/supply chain management and collaboration

Working with many of its leading customers, SMARTEAM has developed integrated PLM best-practice methodologies that promote optimization across engineering design, manufacturing logistics, customer service and other critical enterprise functions. These best practices can be used by companies to address mission-critical business processes and help drive value through the product lifecycle. SMARTEAM-supported best practices can be implemented in different combinations and sequences, concurrently and sequentially, throughout the product lifecycle. Domains in which SMARTEAM has developed best practices are presented in the following figure:

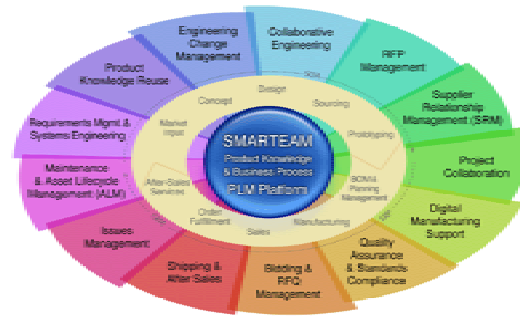


Figure 1. SMARTEAM Best Practice Domains

SMARTEAM addresses specific industry needs using the appropriate components as shown in Figure 1 and best practices pertinent to that industry and associated business processes. Specialized solutions address the following industries:

- Aerospace and defense supply chain
- Automotive supply chain
- Industrial and consumer products
- Electronics
- Regulated industries, including medical devices, pharmaceuticals, and related sectors
- Chemicals, petroleum, and AEC
- Consumer packaged goods

6. Collaboration – A Foundation for Process Improvement

Collaboration is a foundation for improving all business processes. The ability for users and organizations to work together synchronously and asynchronously in design, review, and management sessions dramatically reduces the time, cost, and errors of all affected processes. Additionally, collaboration is the vehicle for unleashing the innovative capabilities of a company's staff. Working together, exchanging ideas, expertise, and experiences enables everyone, and every organization, to perform at a higher level.

Collaboration is also a major contributor to reducing time to market. Collaboration by staff within and across organizations speeds their ability to complete their work. Further, collaboration expands concurrent engineering capabilities and the involvement of downstream organizations such as manufacturing and service in up-front design and engineering – thereby reducing costly, time-consuming errors and re-work that would otherwise be needed later in the product lifecycle.

SMARTEAM is intended to enable fast, effective, secure, managed collaboration and collaborative services throughout and across an extended enterprise and its value/supply chain. Organizations are using SMARTEAM to improve their product-related business processes to deliver right-to-market innovative products and achieve benefits for the business and its customers. Many of these benefits are described in the following sections. It is important to note that many of the benefits achieved apply to multiple business process areas.

7. Survey of SMARTEAM Process Benefits Findings

Business processes are the foundation upon which a company's operations are built. Improving and accelerating selected business processes can have a significant positive impact on operational efficiency and, in turn, on profitability. Results of this survey reveal that the primary business driver for companies implementing SMARTEAM is to obtain process improvements that will be reflected in reducing the cost and cycle time of these processes. SMARTEAM customers surveyed identified a variety of important drivers for implementing SMARTEAM PLM solutions including reducing time to market, improving product quality and their related data, increasing the efficiency of business operations and saving costs. Other drivers included facilitating CAD and other application integrations, improving ERP connectivity, and meeting regulatory compliance.

While SMARTEAM best practices, industry solutions, and technology are being successfully applied to many business processes, this paper focuses on the following selected business processes:

- Collaborative engineering
- Project collaboration
- Requirements management and/or systems engineering
- Engineering change management
- Supplier relationship management
- Service after sales
- RFP management

The following sections present the benefits companies have achieved using SMARTEAM to enable and improve the business processes covered by this survey.

7.1 Benefits Achieved in Collaborative Engineering

Supporting collaborative engineering is a PLM function that continues to grow in importance. As defined in this report, collaborative engineering encompasses Product Knowledge Reuse, as well as management of CAD files, product structure, and Bill of Materials (BOM) from one or more locations.

Product knowledge management consolidates distributed knowledge resources and facilitates comprehensive, integrated management of design data and documents in a multi-CAD authoring environment. To conceptualize, develop, modify, and consolidate product designs, team members can use SMARTEAM to jointly access, view and edit files created with a variety of CAD, EDA, software configuration, and other design and authoring tools, maintaining full version and revision control.

Collaborative engineering also increases the active re-use of designs, components, projects and processes – increasing return on investment by preventing redundancy and re-work. SMARTEAM contributes to optimizing knowledge re-use and helps facilitate defining and examining a greater number of design variations by helping make previously developed design information available to engineering teams. Access to that information enables those teams to better focus on product innovation to meet customer expectations.

More than half of the companies in the survey utilize SMARTEAM to support collaborative engineering. At the same time, more than two-thirds of the respondents stated that they plan to implement collaborative engineering or increase its use within their company. Increasing collaboration is the PLM function the majority of surveyed companies plan to expand.

Enabling collaboration earlier in the product lifecycle helps engineers design right the first time and minimizes overall product costs. The use of collaboration typically results in a number of benefits to a company. Using SMARTEAM can help multiple disciplines work together starting in the early stages of design. Early collaboration can significantly reduce errors in BOMs and eliminate redundant design work. The impact of such benefits as reported by SMARTEAM customers is presented in Figure 2.

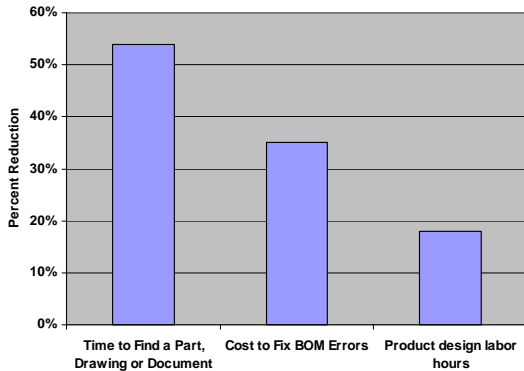


Figure 2. Benefits Achieved in Collaborative Engineering

An Associate V.P. from an Israeli software firm stated that, “The SMARTEAM software is used for decision support. There is improved collaboration. We have obtained improvement in our development processes. We have more up-to-date information. Workflow is improved. We are standardizing the processes.”

7.2 Benefits Achieved in Project Collaboration

Project collaboration expands collaborative engineering to address issues of shared resources and product and project information, unified resource management and allocation, project and program tracking and reporting, and portfolio management. It synchronizes product lifecycle management and program management to facilitate management of multiple, concurrent projects across distributed project teams. Collaborative project management enables companies to achieve maximum leverage of both their individual and shared human and physical resources to accelerate the design and development processes and reduce new product introduction cycle times.

By uniting the management of project and product data in a single, integrated platform-independent environment, SMARTEAM enables collaboration on multiple concurrent projects, facilitating re-use of project data to “quick-start” new projects. Bi-directional SMARTEAM integration to Microsoft Project and similar project management tools enables seamless automated management of project data inside SMARTEAM and enhanced reporting functions in the project management environment.

SMARTEAM’s program and project management capabilities enable companies to access integrated, up-to-date project, resource, and product data via web-enabled role-based user interfaces. Such management

improves collaboration within and across projects and facilitates more effective program management across distributed product teams. Benefits from improved project collaboration reported by SMARTEAM customers include:

- 10% reduction in project management time
- Up to 25% reduction in travel and associated costs
- Improved synchronization of information and processes between distributed locations (internal and external)

A V.P. of a US-based design consulting firm said, “We currently have 6 international projects, 5 of which we are work-sharing with our Indian partner. All of these projects are overseas and we must share project data with our clients and our partners via the web using community workspace. Projects last two to three years and range in total cost from \$200 million to \$300 million. The amount of project documents over this period is very large and all documents are controlled using SMARTEAM. All internal work processes are controlled with workflows and all collaboration with India utilizes SMARTEAM’s multi-site capability.”

7.3 Benefits Achieved in Requirements Management and/or Systems Engineering

Systems engineering requires taking a holistic or comprehensive view of a product and the development, manufacturing, and service activities and functions associated with it. It is necessary to connect information and requirements from multiple organizations and to share that information across those organizations to ensure that the product will meet or exceed its intended use and market potential.

SMARTEAM enables a company to establish virtual information repositories in which information of all types and formats are interrelated and managed so that users get a comprehensive view of the product and information needed to conduct their work tasks. It helps ensure that all authorized users work with a common, up-to-date, complete set of product information. Any changes made to that information, and thus to the product, are done in a managed process.

SMARTEAM’s best practice for systems engineering involves mapping requirements to a functional product design and then to a logical systems design. Mapping is next made to the physical design and BOM that will guide the systems integration, manufacturing, and assembly phases while in parallel executing testing and validation processes to ensure that the final product complies with initial requirements.

Using SMARTEAM can help manufacturers concentrate on using the right set of requirements throughout the product lifecycle and enable them to bring the right products to market on time. Product definition, mechanical and electrical design, and system architecture processes are all commonly employed to support requirements management and/or systems engineering. These processes are employed by approximately three-fourths of the companies surveyed and all stated that they have users supporting some element of requirements management.

In addition to an overall benefit in reduction of more than 30% in the time to market, sizable benefits can be obtained when implementing SMARTEAM to support systems engineering. Because systems engineering optimizes across business process functions, additional benefits associated with multiple business processes were achieved according to the survey respondents. A significant benefit of a collaborative environment is a reduction in the overall number of engineering changes per year, particularly those changes required to correct downstream problems or to address errors in earlier changes. This can result in less re-work throughout all phases of a product's lifecycle. Systems engineering-related benefits achieved by SMARTEAM customers responding to the survey are shown in Figure 3.

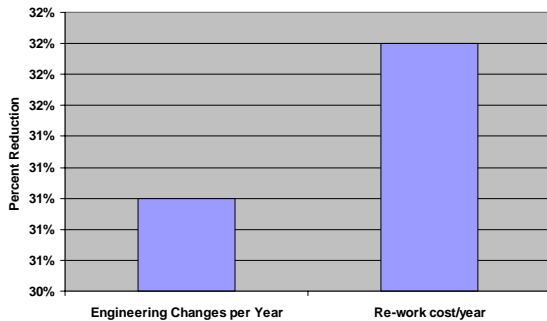


Figure 3. Benefits Achieved in Requirements and/or Systems Engineering

An Engineering Director of a European aerospace manufacturer commented, *“The use of SMARTEAM has met its objectives in requirements management. The designers can access the right data at the right revision through the element of the definition tree in SMARTEAM, which contains all the data comprising the complete system definition.”*

Companies using SMARTEAM have demonstrated results in improved quality of data, operations, and products. A CAD/PDM Manager from a large European industrial firm commented, *“SMARTEAM provides for improved quality of data. It provides for the safety of data by being stored in the PDM system. It*

provides for structured processes and structured process execution. We now have the backbone for PDM deployment around the world. We also have a good backbone for data integration with ERP.”

7.4 Benefits Achieved in Engineering Change Management

Engineering change management is the most commonly employed process to support extended collaborative engineering. Approximately two-thirds of the companies surveyed that have implemented SMARTEAM did so for this purpose. Effective change management is fundamental to ensuring that a company designs, builds, and delivers what it intended in conformance with all applicable standards and regulations. Change management ensures that proper review and approval is performed and that accountability is maintained. Change management is the foundation for product configuration management (CM) which has impact across an enterprise. CM ensures that sales personnel offer approved/valid configurations, that manufacturing groups build what is approved, and that service personnel work with the proper spares and replacement parts to maintain a product in use.

SMARTEAM can expedite engineering change processes to rapidly drive products from design to delivery. Manufacturers can use SMARTEAM-supplied engineering change templates (or create their own) and automatic routing of workflows to measure, review, and refine standardized change procedures.

Optimizing change management enables enterprises to better track product development schedules and leverage their knowledge base. Using SMARTEAM to connect change processes to files, objects, and people distributed throughout the extended enterprise and across the value chain increases visibility into the development process, facilitating on-the-fly changes to eliminate bottlenecks.

Effective engineering change management has significant impact on a company and sizable benefits were reported by SMARTEAM customers in several aspects of engineering change management.

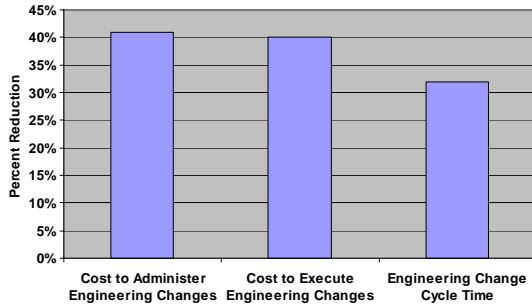


Figure 4. Benefits Achieved in Engineering Change Management

A CAD/PDM Manager of a European manufacturer observed that, *“Without SMARTEAM, the entire process change system is not supported. This would cause major problems throughout the company.”*

A Manager from a Korean electronics firm commented, *“SMARTEAM is efficiently being used for document management, BOM management, item code management, and ECO management etc. These functions were not previously performed before SMARTEAM.”*

7.5 Benefits Achieved in Service-after-Sales

Service-after-sales is a major business process that has recently been included within PLM strategies. However, improving service-after-sales processes has a direct impact on customer relations and loyalty and can reduce the cost of service and warranty programs. Leveraging up-to-date product definition and configuration information, including technical manuals that are updated synchronously as products evolve, means that service personnel have the information they need to repair or maintain a customer’s product in a timely manner. Knowing the current configuration of a product, e.g., a car or an airplane, means that the service operator can have the appropriate spares pre-ordered or already available when the product is brought in for service. Accurate information and available spares result in faster time to repair and less downtime for the customer.

Leveraging version and revision control data in SMARTEAM allows companies to expedite shipping and after-sales services, reducing errors and delays due to mistaken orders or incorrect or missing parts or documentation. Companies can utilize the comprehensive, updated product data to offer effective

technical support services that resolve potential problems and increase customer satisfaction.

As mature products reach the market, companies collaborate with sales personnel and customers who access comprehensive product design data to provide complete and valuable market feedback about existing product design issues, potential enhancements, and new requirements. This knowledge can be quickly shared with the engineering design teams and incorporated in the first stages of concept and requirement management for improved new product innovation.

Slightly more than half of the surveyed companies have employed SMARTEAM to support service-after-sales processes and most of these companies had fewer than 10 users supporting the process. However, it does appear that some sizable benefits can be obtained from the use of SMARTEAM for this purpose. For example, several of the companies that implemented SMARTEAM for service after sales reported that they have received an average improvement of 35% in savings from better synchronization between distribution sites.

A Chief Engineer at a US-based construction engineering company stated, *“Implementation of SMARTEAM’s Web Viewer has provided electronic access to all released component control documents to the entire organization. There a strong benefit for sales to be able to support customers, for purchasing to be able to communicate with vendors, for QA to be able to get drawings of components being investigated, and for new estimates to be based on existing designs, etc.”*

7.6 Benefits Achieved in Supplier Relationship Management

Supplier relationship management is a comprehensive approach to managing an enterprise's interactions with the organizations that supply the goods and services it uses. Effective value/supply chain management enables the secure, selective involvement of unlimited multiple suppliers in the development process from early in the design stage, protecting product IP while enabling optimal product costing based on accurate component and part data.

Value chain and supplier relationship management encompass several activities and business processes. These include establishing and managing preferred suppliers, components, and parts, supplier quality evaluation and management, design and project collaboration with suppliers and sourcing management.

Value chain management, particularly early in the design stage, expedites rapid and secure communication and timely delivery of accurate and up-to-date component and part data. This results in lowering the cost of the supplied components and in improved conformance and quality of those components.

Technological innovation, open markets, and price competition continually expand the number of value chain suppliers with whom a manufacturer must work. As the level of interaction between supply chain partners has continued to increase, many companies are using SMARTEAM to manage relationships with multiple suppliers within the value chain and to provide data integrity or security between the participating companies. To facilitate these interactions, SMARTEAM offers a range of collaboration interfaces such as secure, Web-based portals that allow suppliers to participate in a manufacturer's product development and engineering change processes.

Approximately 25% of the surveyed customers are:

- Sharing information across multiple companies
- Managing document versions across the web
- Incorporating partners within change processes

The V.P. of Operations at a US process industry, engineering, and procurement company stated, *"The need to collaborate with our offshore engineering partner was the main driver for change. We needed real-time replication of data files and Web access to our project database for our distant suppliers, partners, and customers."*

7.7 Benefits Achieved in RFP Management

RFP management using SMARTEAM means that personnel responding to an RFP have access to the information needed to complete a timely and accurate response with a reduced risk of over- or under-estimating the true cost and time of delivering the requested products or services. Further, SMARTEAM can provide knowledge about previous bids and costs that are pertinent to the current RFP.

Using SMARTEAM expedites the RFP/RFQ generation process by facilitating the rapid creation and distribution of BOMs that are the basis for RFQs, accompanied by comprehensive engineering design information. The more complete the procurement request, the faster and more accurately a potential supplier can respond. Using SMARTEAM, the updated

part and component costing, technical specs, and drawings received can be checked-in and made immediately available to design teams across the value chain. In a scenario where the manufacturer collaborates with pre-approved suppliers directly via SMARTEAM, the process is even faster and simpler.

Slightly less than half of the survey group reported use of SMARTEAM for RFP management. However, those that did often had a large number of users supporting this process, as three companies reported 200, 500, and 800 users respectively of RFP management. Within RFP management, the one specific benefit measured was the reduction in time to bid. On the average, companies reported a 7% reduction in time.

8. Summary

This study presents the benefits achieved by several companies that have deployed SMARTEAM to help improve selected product-related business processes. The study revealed both process-specific benefits and overall benefits. In the business processes and metrics measured during this analysis, the percentage of process improvement ranged from 25% to 54%. Further, more than 90% of the companies interviewed stated that SMARTEAM is considered business- and mission-critical to their success.

In all companies surveyed, SMARTEAM has been implemented within design engineering, as that is clearly at the core of all PLM implementations surveyed. Manufacturing engineering was the second most common organization to be involved in a SMARTEAM implementation, found in approximately three-fourths of the implementations. Hence, the majority of PLM implementations surveyed are directed at managing engineering data.

Engineering change management is the most commonly-employed process to support extended collaborative engineering. Approximately two-thirds of the surveyed companies have implemented SMARTEAM for this purpose. Half of these companies have implemented SMARTEAM to support the processes for re-use of product knowledge, collaborative engineering, and RFP management.

The following table summarizes selected measured benefits and business process improvements reported during this survey by companies that have implemented SMARTEAM:

Benefit	Average Improvement
Average Time Spent to Find a Part, Drawing, Document, etc.	54%
Cost to Administer Engineering Changes	41%
Cost to Execute Engineering Changes	40%
Cost to Fix BOM Errors	35%
Savings from Better Synchronization Between Distribution Sites	35%
Reduction in Time to Market	32%
Reduction in the Engineering Change Cycle	32%
Rework Costs per Year	32%
Number of Engineering Changes per Year	31%
Reduction in Travel	25%
Product Design Labor Hours per Year	18%
Time Saved in Project Management	10%
Reduction in Time to Bid	7%

Table 1. Average Improvement by Type of Benefit

Initially created to meet the needs of small- to medium-sized businesses, but designed to be scalable to support large enterprises, SMARTEAM has evolved and its product offerings have expanded quite rapidly, continually incorporating new features and capabilities into the product suite. SMARTEAM PLM solutions have been positively referenced by many companies in this survey and have implemented them to help optimize product-related business processes throughout and across their extended enterprise.

With the creation of business and industry solutions, SMARTEAM is being used by companies of all sizes to meet their PLM needs. Overall, SMARTEAM has been validated to be a comprehensive PLM solution suite that has received solid acceptance by industrial companies throughout the world.

SMARTEAM® is a Registered Trademark of SmarTeam Corporation