Teamcenter overview

Teamcenter® software addresses today's critical business challenges by maximizing the power of your product knowledge and leveraging it to drive innovation throughout the product lifecycle.

TEAMCENTER

SIEMENS

Today's opportunities for product lifecycle management

Product lifecycle management (PLM) is an enterprise, business and information strategy that enables companies to establish Global Information Networks, essential for developing and delivering world class products in today's highly competitive international marketplace.

▶ As an *enterprise* strategy, PLM lets your extended value chain innovate, develop, support and retire products as if it was working as a single company.

▶ As a *business* strategy, PLM allows you to capture and leverage best practices that drive your speed-to-market, cost containment and revenue enhancement objectives.

▶ As an *information* strategy, PLM provides globally dispersed product teams with common access to a single repository of product and process knowledge.

PLM lets your product and production teams collaborate on a virtual basis and engage in data sharing in real time. You can use PLM to integrate multiple mission-critical systems, aggregate their knowledge and extend the useful lives of these investments.

You can take advantage of PLM's open APIs and industry standards to minimize your data translation costs and extend participation in your enterprise. You can leverage PLM to provide total visibility into the workflows and decision making at all stages in the product lifecycle. PLM provides unique opportunities to:

▶ **Maximize innovation throughout your product lifecycle**, which translates into higher revenues, greater market share, faster time-to-market and improved portfolio success rates.

▶ **Transform the decision-making processes** you use to determine what products you should offer and how these products should be brought to market.

▶ **Increase the value of your product knowledge** by managing this information as an intellectual asset on an enterprise basis and leveraging it across multiple programs, projects and revenue-generating initiatives.

▶ **Minimize lifecycle cost** by replacing time-consuming manual processes with accelerated fully automated solutions.

To address these opportunities, Siemens PLM Software offers the Teamcenter suite of digital lifecycle management solutions.

Introducing Teamcenter

Teamcenter powers innovation and improves productivity by connecting people with the product and process knowledge they need to effectively function in a globally oriented product lifecycle. Teamcenter's proven digital lifecycle management solutions are built on an open PLM foundation.

Teamcenter is the world's most widely used PLM system. It is backed by Siemens PLM Software's leadership in delivering Global Innovation Networks that enable companies to make unified, information-driven decisions at every stage in the product lifecycle.

Driving crucial business initiatives

Teamcenter solutions enable companies to meet today's critical business challenges, including challenges addressed by the business initiatives described below. You can use Teamcenter solutions to drive key performance goals, including the need to increase the yield of innovation, compress time-to-market, meet business and regulatory requirements, optimize operational resources and facilitate global collaboration.

Teamcenter solutions include best practices and standard-based processes that enable your company to:
• Rapidly deploy your PLM solution
• Obtain a quick return on your PLM investment
• Minimize your cost of ownership

Critical business initiatives targeted by Teamcenter

• **New product development and introduction**
 Improve innovation by facilitating real-time global collaboration among all lifecycle participants and processes

• **Value chain synchronization**
 Excel globally by optimizing the exchange of ideas and information between all value chain participants

• **Enterprise data management**
 Improve competitiveness by providing secure access to your enterprise's product and process knowledge

• **Commonization and re-use**
 Re-use proven parts, equipment and processes to create cost efficiency and foster best practices

• **Knowledge/intellectual property management**
 Capture the knowledge and expertise of your lifecycle participants to continuously improve innovation

• **Regulatory compliance**
 Achieve market compliance by integrating safety, environmental and government requirements early in your design stage

• **Production efficiency**
 Integrate product and process design with manufacturing best practices to increase production quality and performance

• **Systems engineering and mechatronics**
 Improve your customers' value experience by integrating mechanical, electrical and software subsystems, relationships and components

Why Teamcenter excels

Single source of product and process knowledge. You can use Teamcenter to establish a single source of product and process knowledge drawn from disparate authoring systems. Entitled members in your product teams can access this common resource to quickly find the information they need to perform their jobs.

With this single source, your company can:

- *Increase productivity* by enabling individual users to reduce the time they spend searching for information by up to 65 percent
- *Eliminate costly errors and rework* by providing decision makers with better visibility into the product lifecycle
- *Reduce product and lifecycle costs* by re-using product and process information across multiple programs and projects
- *Synchronize and accelerate your product teams' operational execution* by providing aligned and up-to-date requirements and product definitions

Instant collaboration. To reduce costs and pursue international marketing opportunities, today's leading companies are dispersing various operational functions globally. Teamcenter facilitates instant collaboration by enabling your global teams to connect, communicate and share information on-demand in a community setting.

When Teamcenter's community collaboration capabilities are in place, your global teams can:

- *Iterate more easily,* get the right answer faster and accelerate overall product development by up to 25 percent
- *Communicate visually* across multiple disciplines, enabling people to work together to make better decisions
- *Engage suppliers, partners and customers* in your teams by enabling them to exchange information in a secure environment that protects the interests of all participants
- *Automate your review and approval workflows*, assess more innovative ideas and improve your change process by up to 30 percent
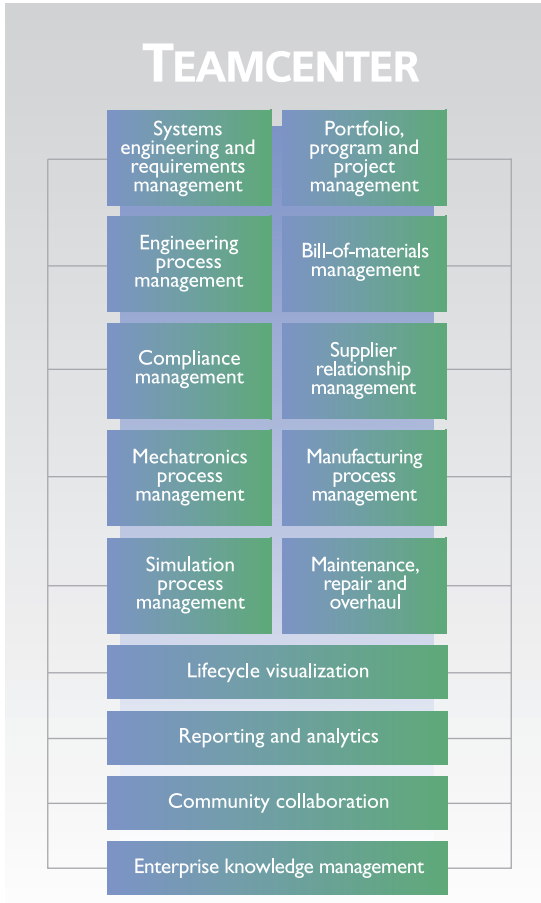
Powers end-to-end PLM. You cannot leverage your product lifecycle as a business asset unless you have visibility into your entire lifecycle. Teamcenter is the only PLM solution on the market today that addresses your product lifecycle from portfolio planning through product development, manufacturing, service/sustainment and retirement.

Once your end-to-end solution is in place, you can:

- *Drive revenue growth* by aligning decisions with market requirements throughout the product lifecycle
- *Squeeze time and cost* from your product lifecycle by gaining total visibility into your lifecycle's operational stages
- *Master change* by understanding the impacts it has on the rest of the product lifecycle
- *Reach the marketplace faster* by automating common processes that cross multiple lifecycle stages

TEAMCENTER

Systems engineering and requirements management	Portfolio, program and project management
Engineering process management	Bill-of-materials management
Compliance management	Supplier relationship management
Mechatronics process management	Manufacturing process management
Simulation process management	Maintenance, repair and overhaul

Lifecycle visualization

Reporting and analytics

Community collaboration

Enterprise knowledge management

Lower cost of ownership. Teamcenter provides an easy-to-configure service-oriented architecture (SOA) that eliminates the high cost of implementation. Teamcenter's open, high performance interface lets you integrate the system's capabilities with your existing processes so that you can:

• *Reduce your integration costs* by seamlessly exchanging information between Teamcenter and CAD, CAM, CAE, ERP and SCM applications

• *Minimize your deployment costs* by using applications on an out-of-the-box basis instead of incurring customization and subsequent upgrade costs

• *Reduce training costs* by using Teamcenter's familiar Microsoft Windows-like look and feel

• *Easily link* Teamcenter-managed information and status results into portals and executive dashboards

Proven global leadership. Teamcenter's market-leading success provides your company with confidence and assurance that comes from the realization that Siemens PLM Software has repeatedly delivered proven results in real-world, full-production settings. The world's most successful companies use Teamcenter as a mission-critical system because:

• Teamcenter delivers unsurpassed functional capabilities with proven performance

• Teamcenter clients experience substantial business results

• Teamcenter's scalable architecture enables clients to adopt PLM at their own pace

• Siemens PLM Software is committed to its customers; our mantra is "We never let a customer fail"

Enterprise knowledge management

Teamcenter's enterprise knowledge management capabilities let your company bring its product, process, manufacturing and service information into a single source of product knowledge.

By capturing, integrating and controlling this information in a single PLM environment, Teamcenter enables you to employ this knowledge in workflow-driven processes that automatically synchronize the activities of your cross-discipline teams.

Teamcenter allows you to capture product and process knowledge from diverse authoring applications and protect it in a scalable and open PLM environment. Teamcenter provides the following enterprise knowledge management capabilities.

Data management allows you to control your product and process information across all lifecycle states.

Document and record management lets you organize records, classify information and implement your record retention and disposition policies.

Content management links your technical publications and engineering design groups by enabling them to share information and re-use product content while automating processes common to both domains.

Change management allows you to implement best-practice standards-based change processes for planning, controlling, executing and tracking product changes and revisions.

Process automation and orchestration enables you to define and standardize workflow-driven processes that you can use across multiple programs and product platforms.

Product structure and configuration management lets you coordinate work-in-progress, establish context usage and synchronize multiple product hierarchies, options, variants and configurations across the entire product lifecycle.

Advantages

Manage the complete lifecycle of a product from ideation through retirement

Coordinate processes across multiple disciplines in the product lifecycle

Ensure that your teams can access the right information at every lifecycle phase

Provide secure global access to your product and process knowledge on an anywhere, anytime basis

Integrate systems-of-choice and their related data into your PLM environment, thereby enabling best-in-class suppliers to work in your value chain

4
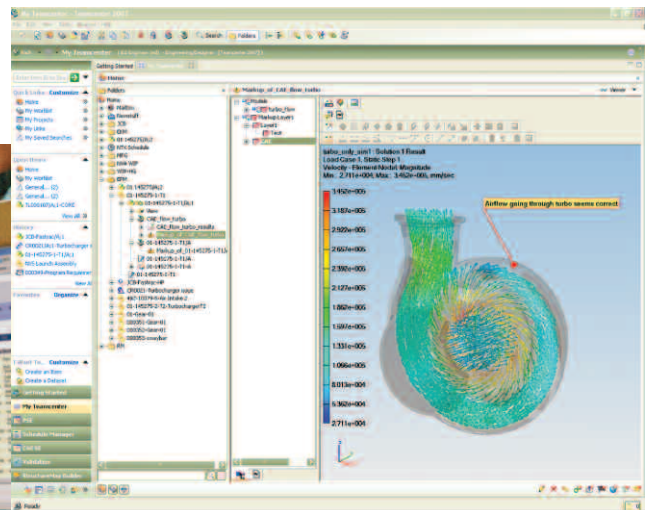
Community collaboration

You can use Teamcenter's community collaboration capabilities to establish a secure and adaptive environment where distributed multidisciplinary teams can work together in real time with rich product data across the entire product lifecycle – without incurring any special training or learning how to use a PLM or CAD system.

Teamcenter enables your product teams to work with their suppliers, allied partners and trusted customers in a collaborative community that facilitates concept studies, program reviews, design reviews and engineering change reviews. To support these initiatives, Teamcenter provides the following community collaboration capabilities.

Virtual teaming allows groups to quickly establish a virtual team and easily add new contributors.

Virtual conferencing enables team members to easily share information from their desktops without the costs and hassles of travel.

Ad hoc knowledge capture allows teams to collect information from individual participants and integrate this unstructured knowledge with the structured information already managed by Teamcenter.

Visual product data collaboration gives all team members integrated visualization allowing view, markup and analysis of data from any of the corporate CAD or other document formats via the best-in-class JT™ format.

Personal portals provide individual members with product and process views that match their user roles, workflow responsibilities and security entitlements.

Synchronous and asynchronous collaboration capabilities provide team members with 3D product visualizations, application sharing, digital calendars and schedules, instant messaging, document routing/notification services, discussion boards, and shared documents, folders and libraries.

Advantages

Enable team members to participate in a collaborative environment that combines the advantages of PLM with the familiarity of Microsoft's desktop conventions

Plug Teamcenter's community collaboration capabilities into your web-based business environment so you can leverage knowledge from your ERP, SCM and CRM systems alongside your Teamcenter-managed product knowledge

Leverage Teamcenter's use of the CAD-neutral JT format to enable team members to view, markup, review/approve multi-CAD designs without requiring them to have a CAD license or CAD authoring experience
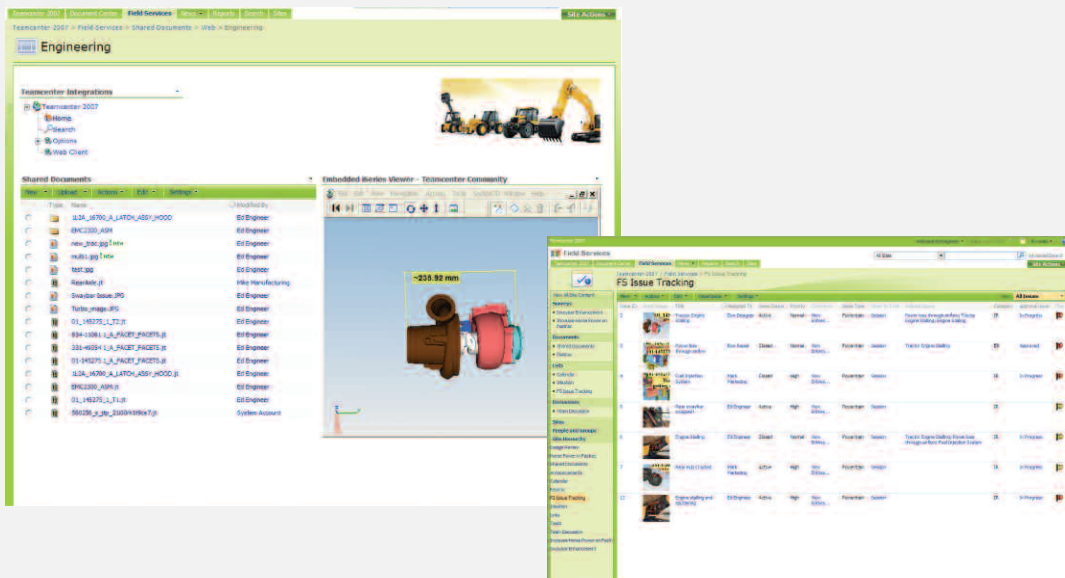
Lifecycle visualization

Teamcenter provides your PLM environment with a consistent and scalable visualization backbone that teams can use to view your products as they evolve across their lifecycle. These lifecycle visualization capabilities enable team members to visualize product data in 2D and 3D formats, even when this data is created using diverse authoring software. These capabilities:

• Allow more stakeholders to participate in the early stages of the design process without incurring the cost or complexity of a CAD system – or without having to standardize on a single CAD system

• Improve decision making by letting product teams exchange and mark up universally accessible visualizations as part of their PLM workflows

• Streamline innovation by allowing product teams to visually collaborate on new product ideas, test their validity and evaluate virtual prototypes

Advantages

Enable stakeholders to clearly illustrate and understand product and process issues through visual product collaboration

Bring all stakeholders into your processes by enabling people who do not have a CAD authoring system to engage in the earliest design stages

Significantly reduce time and cost spent building physical prototypes by using digital prototypes instead

Extend your visualization backbone with process-specific add-ons, including immersive virtual reality, automated clearance analysis, virtual human ergonomics, tolerance simulation, animation creation, quality validation and assembly path planning

Teamcenter's visualization capabilities are powered by open and published JT technology, the world's common language for 3D collaboration. You can extend your PLM environment at your discretion by implementing capabilities that allow lifecycle stakeholders to use:

Full function 2D capabilities and basic 3D visualization functionality for viewing into the product lifecycle

Enterprise 2D/3D view and markup capabilities for interacting with advanced product data

Full function 2D/3D analysis for performing virtual design reviews of multi-CAD assemblies on a collaborative basis

Sophisticated digital mockup capabilities for assembling a complete digital prototype and performing advanced analysis to validate form, fit and function issues
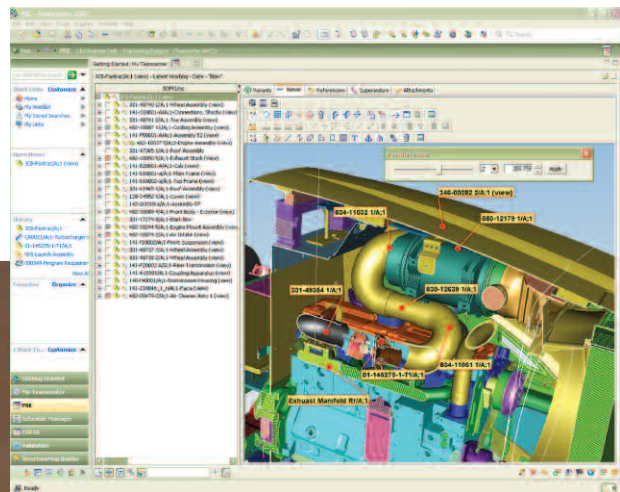
Reporting and analytics

Teamcenter's capabilities for reporting and analytics provide real-time – and near real-time – tools that you can use in your PLM environment to establish, measure and analyze key performance metrics across your product lifecycle.

Teamcenter provides the following reporting and analytics capabilities to enable you to extract, aggregate, analyze and disseminate information from multiple applications integrated into your PLM environment.

Powerful data aggregation capabilities let you aggregate Teamcenter-managed data while leveraging Teamcenter business rules and security models to maintain data integrity/security. You also can bring in data from virtually any application while honoring that application's security and business conventions.

Rich lifecycle reporting capabilities allow you to generate reports and dashboards based on this aggregated data into customizable html formats for viewing and printing. You can save these reports, email them, generate them into PDFs and export them into Excel. You can easily generate and include graphics in these reports.

You can view, report and analyze Teamcenter data from multiple perspectives (e.g., by leveraging drill-down and drill-up data-centric and graphical views). You can optimize this data through caching and the use of data cubes that present views of the same data for multiple types of analysis. This flexibility reduces system overhead in your data collection activities.

Open data framework and advanced wizards help users rapidly deploy and maintain Teamcenter's reporting and analytics capabilities, thereby enabling you to minimize your total cost of ownership.

Advantages

Create a basis for establishing, measuring and analyzing key performance metrics to drive better process performance

Rapidly and accurately aggregate data from multiple application sources into an enterprise information integration (EII) solution

Easily extend these capabilities to systems outside the product lifecycle by leveraging Teamcenter's open framework, flexible data input formats, application-specific APIs and JDBC support for any relational database

Reduce the total cost of ownership associated with implementing a reporting and analytics capability

Average time spent in each step of ECR workflow

7

Systems engineering and requirements management

You can use Teamcenter to define detailed customer and market requirements from a whole product perspective and then communicate these requirements to the functional teams that bring your products to market. Teamcenter provides the following systems engineering and requirements management capabilities.

Requirements management. Teamcenter enables you to define, capture, manage and leverage product requirements. You can use Teamcenter parsing tools and content management capabilities to extract key requirements from commonly used information assets, including documents, spreadsheets, drawings and diagrams. Then, you can link these requirements and manage their dissemination for wider use.

Traceability. You can use Teamcenter to link your product requirements to downstream processes, providing decision makers with visibility to source knowledge about how or why each requirement was determined. You can leverage Teamcenter's workflow and change management capabilities to version, track, manage and route requirements changes to your product teams.

Systems architecture definition. You can use Teamcenter to outline a product from a logical systems perspective and decompose these systems to key product requirements. You can use these connected requirements to understand how key characteristics (such as performance, maintainability, reliability, usability and ergonomics) are affected by given requirements.

Extended application and systems integration. Teamcenter's open framework enables you to link critical systems, such as Matlab/Simulink and Rhapsody, into your PLM environment. You can use Teamcenter's "live" integration with Microsoft Office (Excel, Word and Visio) to interact with data in familiar formats. An open framework also enables you to leverage your existing data and shorten your learning curve.

Advantages

Mitigate the risk of new product development by understanding product requirements, program constraints, engineering issues and manufacturing/supply chain issues

Combine systems level understanding with requirements understanding to make better trade-off decisions

Maximize revenue potential by ensuring that you deliver the right product content at the right time to the right market

Facilitate closed loop feedback by recognizing when strategic intent is at risk and informing lifecycle stakeholders of this impending impact
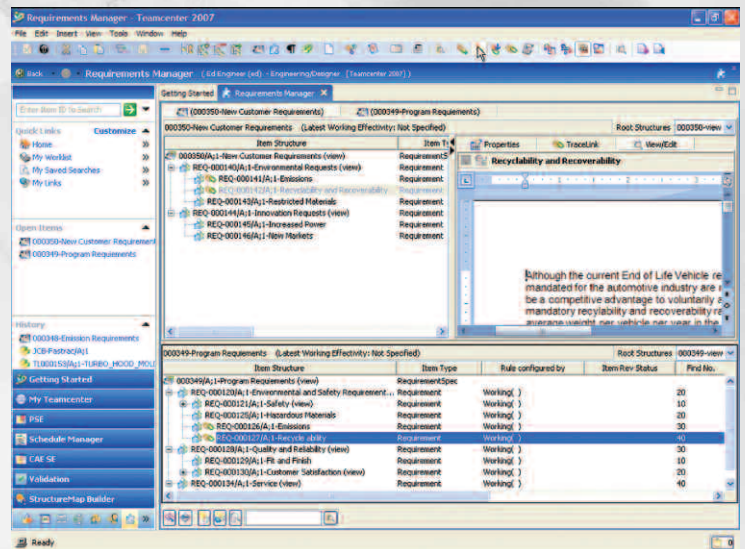
Portfolio, program and project management

You can use Teamcenter to improve the performance of your new product development (NPD) initiatives. Teamcenter's portfolio management capabilities enable you to establish a collaborative portfolio strategy and select the right portfolio mix for maximizing the return on your NPD investments.

Teamcenter's program and project management capabilities enable you to drive the operational execution of your NPD projects so they deliver the business results you expect. By combining these capabilities together, you can use Teamcenter to perform:

Collaborative portfolio management. You can use Teamcenter to define a portfolio strategy through the use of weighted strategy objectives, scoring models and performance criteria. Teamcenter process templates enable you to capture and assess prospective NPD programs and projects. Teamcenter's portfolio analysis capabilities allow you to quickly evaluate project alternatives and select a portfolio mix that matches your strategic intent.

Program and project management. Teamcenter enables product teams to plan your programs in terms of their schedules, work tasks, dependencies, milestones, baselines and constraints and then execute your NPD projects in accordance with these trackable expectations.

Resource, financial and business performance management. Teamcenter allows you to fully understand the workload demands on your teams and the risks that given projects face from shortfalls. You can also associate bill rates with given team resources to exercise both detailed and summary cost controls.

Advantages

Establish strategic goals for your product portfolio that reflect your company's business intent

Select a portfolio mix that matches NPD investment with your portfolio strategy

Ensure that strategic planning consistently drives the operation of your NPD projects

Coordinate resources across your NPD projects and drive your product teams' interrelated activities with unified goals, gates, timelines and targets

Provide stakeholders with total visibility into your most up-to-date program information, including rolled-up performance metrics, process metrics, custom strategy-specific KPI and risk analysis metrics
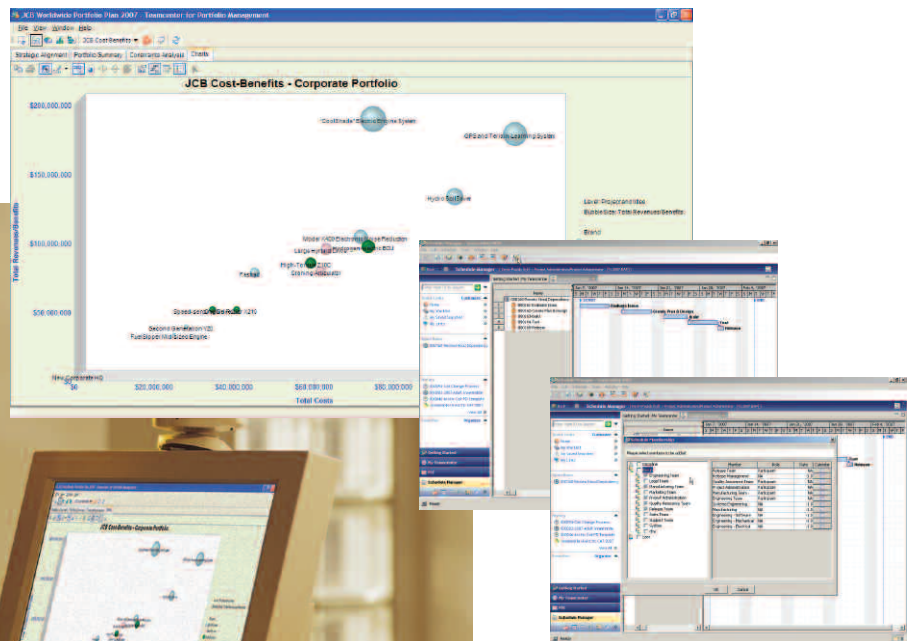
Engineering process management

Teamcenter's capabilities for engineering process management[1] provide a secure environment for capturing and managing information from multiple MCAD, CAM, CAE, ECAD, CASE and ESM systems. You can tightly integrate this information into a single source of engineering knowledge capable of supporting multiple initiatives, including:

Product data management. Teamcenter enables you to bring product data from multiple sources and sites into a single source of enterprise knowledge. This single source enables your teams to easily find, modify, share and collaborate on product design while maximizing part, process and information re-use. You can leverage Teamcenter's advanced security protections to implement ITAR best practices for multi-national engineering projects.

Engineering structure and configuration management. Teamcenter enables you to establish hierarchical product structures that can be decomposed into manageable design and engineering tasks. Teamcenter's context management capabilities facilitate repeatable product, design and manufacturing processes that are faster and easier to validate. You can use Teamcenter's lifecycle representations to support your product across its various lifecycle states.

[1] *Siemens PLM Software also provides a Teamcenter configuration called Teamcenter Express, which is a preconfigured, easy-to-use and easy-to-deploy collaborative product data management solution (cPDM) designed to meet the requirements of mid-sized manufacturing companies.*

Engineering change and process management. You can use Teamcenter to establish revisions and intermediate version controls over your engineering data. Teamcenter provides preconfigured standards-based processes to initiate, review/approve and execute product change on an enterprise basis. Teamcenter enables you to capture workflows and best practices to implement your change processes.

Design validation. Teamcenter accelerates your design validation process by enabling extended teams to visualize and quickly build digital mockup on the fly. This allows teams to collaboratively review engineering designs – as well as validate styling, quality, engineering, ergonomic and service-related issues through the use of digital prototypes.

Advantages

Provide a single source of engineering knowledge to support your design anywhere, build anywhere initiatives

Capture workflow and best practices to develop common standards and processes

Leverage Teamcenter's open architecture to integrate existing enterprise applications

Reduce cost, error and cycle time through increased use of product and process knowledge
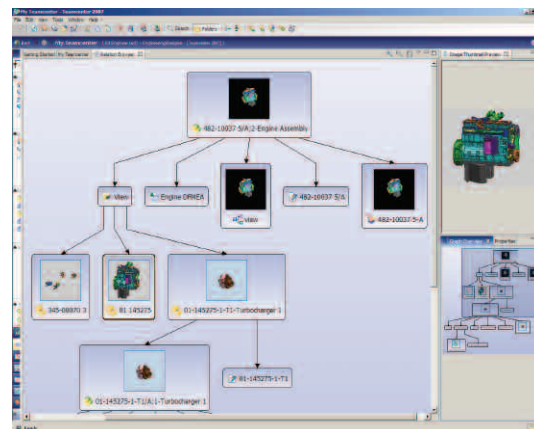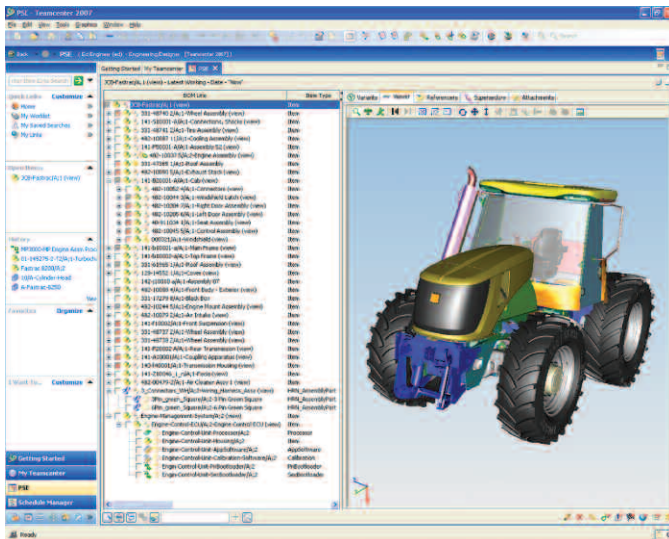
Bill of material management

Today's companies deal with increasing product complexity, including the need to support segmented markets, personalized consumer preferences and rapidly rising technology changes. Teamcenter's bill of materials (BOM) management capabilities help you manage complexity by providing total visibility into your product definition and how it evolves across the product lifecycle.

You can use the following Teamcenter capabilities to maintain the accuracy of your BOM information.

Product configuration and enterprise BOM management. You can use Teamcenter to leverage commonality across your product offerings, providing a basis for your re-use initiatives. Your teams can use Teamcenter's BOM markup and review capabilities to see the real-time effect of design changes for any applied context or configuration selection.

Process-specific data structure and data management. You can leverage Teamcenter to support traditional BOM management such as releasing parts to production – as well as to extend BOM management to requirements definition, simulation, manufacturing, sourcing, MRO and other lifecycle activities.

Lifecycle representation management. Teamcenter enables you to audit your product information and provide visual feedback so that you can easily see what information is complete and accounted for and what is still in progress. Teamcenter provides where-used/where-referenced and rollup/compare tools to help you ensure that design impact is fully understood.

Context management. Individual users can leverage Teamcenter to work with an appropriate scope or "view" of the product configuration based on time, maturity or feature-based criteria unique to their function.

Advantages

Rapidly and precisely deliver the right product content to market by managing BOM changes across your product suite

Optimize speed-to-market by synchronizing upstream and downstream BOMs, thereby facilitating better cross-discipline coordination

Improve individual and collaborative team productivity by enabling users to work in consistent contexts that provide a common scope to their product data (i.e., the right configurations and right working versions of the right product offering)
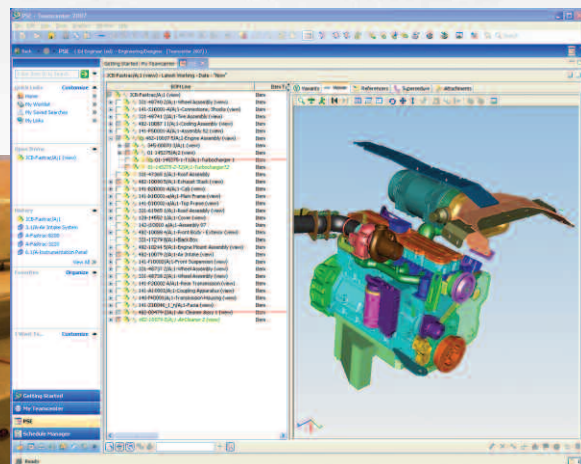
Compliance management

Teamcenter's support for compliance management enables you to document, enforce and track regulatory compliance across the entire product lifecycle. You can use Teamcenter to capture compliance requirements early, incorporate these requirements into your development processes and track accountability for regulatory compliance.

Teamcenter's configuration management, record keeping and audit tracking capabilities support your compliance mandates, including your archiving, financial/product records management and document/records retention needs. Teamcenter provides tailored add-ons for the following compliance processes.

Environmental compliance. Teamcenter's environmental compliance solution enables you to comply with Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), End-of-Life Vehicle (ELV), Restriction on the Use of Hazardous Substances (RoHS) and Waste Electrical and Electronic Equipment (WEEE) directives. This solution facilitates the end-to-end collection, management and reporting of environmental compliance and material content information.

Medical compliance. Teamcenter's medical compliance solution manages digital product information in accordance with the regulatory requirements for the medical devices industry and U.S. Food and Drug Administration 21 CFR Part 11 (Electronic Records and Electronic Signatures) and 21 CFR Part 820 (Quality System) regulations.

Export control. Teamcenter's authorized data access capabilities control the export of regulated information, including requirements specified by the International Traffic in Arms Regulations (ITAR) enforced by the US Department of State (Office of Defense Trade Controls).

Document and records management. You can use Teamcenter's document and records management capabilities to establish a compliance-related data lifecycle management solution that meets the requirements of the U.S. Department of Defense 5015.2 standard. Teamcenter enables you to define what data you need for regulatory compliance, what format this information must take and how long the information has to be retained.

Advantages

Approach compliance as a strategic initiative rather than simply as a reporting activity

Reduce compliance risk by establishing regulatory control across your entire product lifecycle

Enforce regulatory control by fully documenting your compliance requirements, establishing ownership, tracking accountability and auditing compliance

Ensure executive awareness by integrating compliance-related status into dashboard summaries, system audits, worst-case analyses and/or risk assessment reports

Supplier relationship management

Teamcenter's capabilities for supplier relationship management drive your supplier management and strategic sourcing initiatives by transforming the way suppliers work with your product development and procurement teams. Teamcenter addresses classical sourcing needs, including improving your supplier identification, supplier assessment and sourcing negotiations activities.

Teamcenter's supplier management capabilities provide a key component for driving your product cost management initiatives. You can use Teamcenter's extended processes to manage supplier relationships, including quality monitoring, supplier score carding, engineering change, inter-company teaming, supplier training, joint project management, issue tracking and performance monitoring. Teamcenter provides the following strategic sourcing solutions.

Supplier management captures, collects and manages information about individual suppliers, including performance data and capability descriptions that let you quickly find, select and monitor prospective supply sources.

Spend management and analysis consolidate purchasing data into common spend categories that let you track enterprise spend and compliance.

Collaborative RFP management streamlines the processes associated with RFP, RFI and RFQ data collection and analyses. Decision support and scenario modeling is simplified through detailed optimization capabilities.

Internet negotiations bring the negotiation process online for virtually any kind of good or service, enabling you to plan, track and categorize individual auction events.

Sourcing community collaboration enables procurement teams to work in a collaborative real-time environment where they can use sourcing tools to "market" deals, educate people about new agreements, capture/share sourcing knowledge and manage sourcing projects.
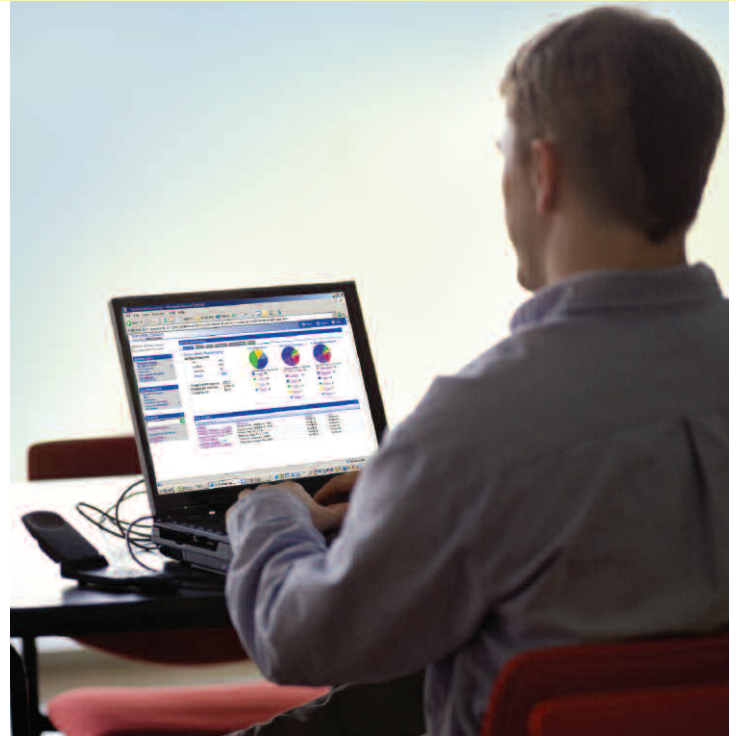
Advantages

Provide your procurement teams with a single information source they can use to quickly find, qualify, select and monitor your supply sources

More closely monitor and manage your procurement and supplier spending

Enable on-board suppliers to fully understand and actively participate in your product requirements, definition and development processes

Streamline and standardize your RFP, RFI and RFQ processes by establishing a consistent bidding framework – providing a basis for supplier response comparisons and implementing scenario modeling and optimization techniques
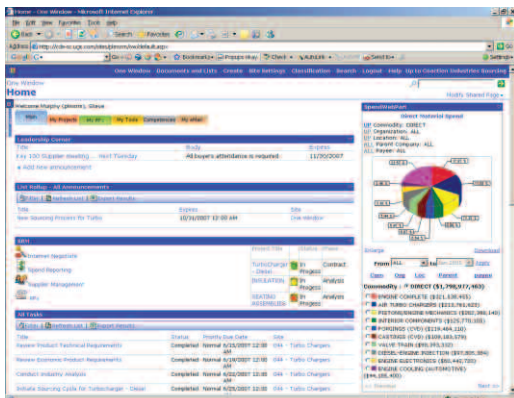
Mechatronics process management

Teamcenter's capabilities for mechatronics process management enable you to establish a rich environment where multiple disciplines can work together to develop electro-mechanical products comprised of multiple mechanical, electric, electronic and embedded software components.

Each engineering discipline works in its own development environment using tools-of-choice to design their components. Once these components are ready, team members release their definitions to Teamcenter – where cross-discipline teams can use the PLM environment's integrated data and product structure management capabilities to get the electro-mechanical product's components to work together.

Teamcenter provides the following capabilities to facilitate mechatronics process management.

Integrated data and product structure management. Teamcenter's data, document, record and content management capabilities enable you to integrate all critical mechatronics information.

Integrated change and process management. You can use Teamcenter's change management capabilities to implement best-practice workflows that enable cross-discipline teams to understand change impact, manage review/approval processes and execute approved product changes.

Systems engineering and requirements management. You can use Teamcenter to functionally and logically diagram your electro-mechanical product as a whole system subject to numerous cost, scheduling and quality constraints. You can use Teamcenter's requirements management capabilities to collaboratively define, capture, manage and leverage the whole system's customer and product requirements.

Visualization and collaboration. Teamcenter's digital mockup and markup capabilities let cross-discipline teams collaboratively validate a wide range of performance and quality issues at the integrated product level.

Advantages

Manage your mechatronics development processes in one cohesive and integrated environment, thereby improving productivity and enabling otherwise disparate disciplines to work together more effectively

Facilitate earlier and better decision making by enabling teams to understand the entire electro-mechanical product and how customer and product requirements relate to their component designs

Enable individual disciplines to more clearly understand how their development efforts impact the product's roadmap and its related cost, scheduling and quality constraints
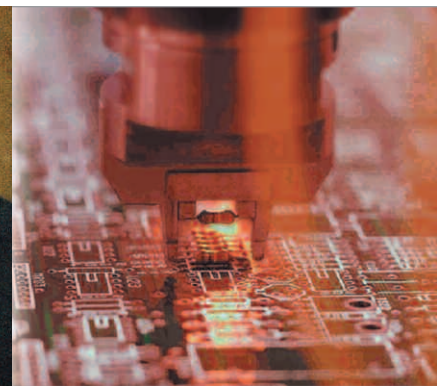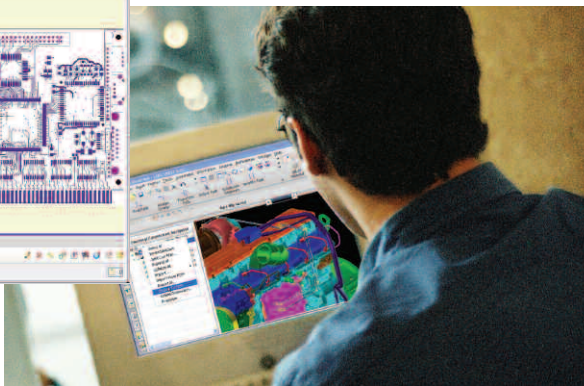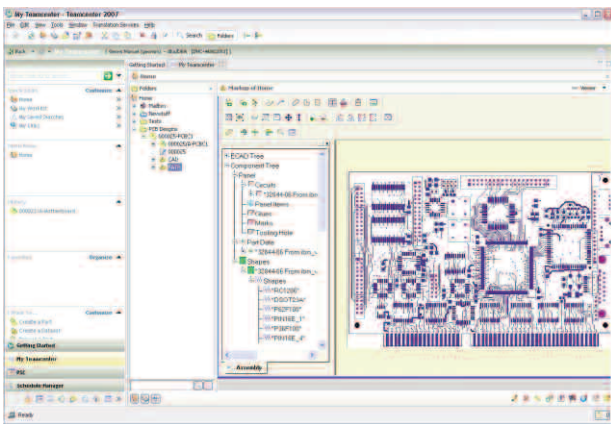
Simulation process management

Teamcenter's capabilities for simulation process management enable you to assess product performance and quality early in the product lifecycle and embed these simulation processes and their related data with the rest of your product lifecycle. Teamcenter provides the following capabilities to support simulation process management.

Simulation data management. Teamcenter's rich suite of simulation-specific data, document, record and content management capabilities let you manage your simulation data on a centralized basis. Teamcenter's open service-oriented architecture enables you to integrate data from your CAE systems-of-choice into your PLM environment. Teamcenter is tightly integrated with the NX® software suite of digital simulation solutions.

Simulation change and process management. Teamcenter provides preconfigured, best-practice processes to automate your simulation activities. You can use these workflow-driven processes to initiate, administer, review/approve and execute product changes and determine how these changes impact your product simulations. Teamcenter supports batch meshing for automating key steps in your simulation processes.

Advanced simulation structure management. You can use Teamcenter's context management capabilities to establish working contexts that define how your teams perform their simulation tasks. Teamcenter's automatic simulation mapping capabilities enable you to deliver the right product structure and geometry data in the right context for individual analysis projects.

Simulation visualization. Teamcenter's visualization capabilities for FEA, CFD and motion simulation enable your teams to dynamically view, interrogate, mark up and collaborate on simulation projects while bringing in detailed information from the rest of the product lifecycle.

Advantages

Start your simulation processes upstream in the product lifecycle, enabling your teams to arrive at a good design earlier while minimizing uncoordinated verification and testing

Integrate your simulation processes into the rest of your product lifecycle so that product decisions can be understood in terms of their testing and verification impact

Visualize your simulation data and integrate it into cross-discipline team reviews so that team members can more clearly understand this data without using a costly CAE seat
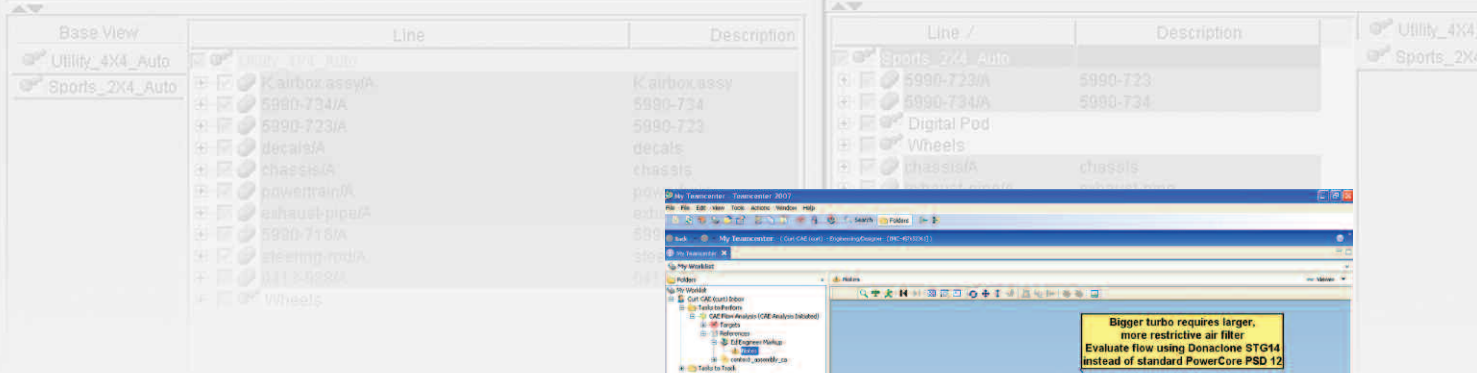
Manufacturing process management

Teamcenter's capabilities for manufacturing process management enable you to manage your manufacturing data, process, resource and plant knowledge in the same PLM environment that you use for product development. Your engineering and manufacturing teams can use these capabilities to collaborate across the product lifecycle.

Teamcenter provides the following capabilities to facilitate manufacturing process management.

Advanced BOM/BOP management. You can use Teamcenter to associatively relate essential bill of material (BOM) information with your manufacturing bill of process (BOP). You can leverage this associativity and Teamcenter's configuration management capabilities to represent the physical decompositions of all activities related to manufacturing assembly. This approach makes certain that your teams are using the right product configurations in the right working context.

Manufacturing change management. You can use Teamcenter's effectivity management capabilities to track product change or variance over time and across multiple processes.

Resource management. You can use Teamcenter to classify multiple manufacturing assets (tooling, fixtures, machinery, robotics) and to establish best-practice processes to manage their use. Teamcenter tools enable you to mock up, visualize, analyze and optimize plant layout and material flow.

Production and shop floor management. Teamcenter's tight integration with Tecnomatix® software enables your PLM environment to leverage manufacturing and production data from a complete suite of digital manufacturing solutions. You can use Teamcenter's open service-oriented architecture to integrate CAM, ERP and MES systems-of-choice into your PLM environment. Teamcenter provides standardized process templates and automated work instructions to simplify the transfer of planning information to your shop floor.

Advantages

Provide downstream teams with a single source of manufacturing and production knowledge they can use to execute your lean manufacturing and design-for-manufacturing initiatives.

Leverage integrated product and manufacturing knowledge in your PLM environment to enable product development and manufacturing teams to work in parallel lifecycle processes, thereby speeding time-to-market

Better synchronize BOM information with your manufacturing BOP to enable your teams to better understand product change
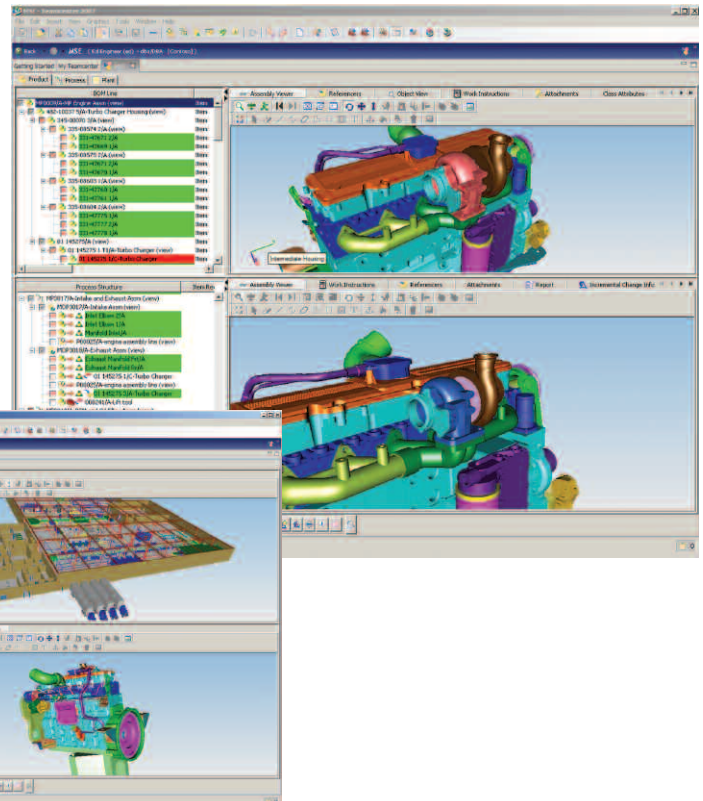
Maintenance, repair and overhaul

You can use Teamcenter's comprehensive suite of MRO solutions to establish service data management capabilities for your PLM environment. These capabilities provide total visibility into complex products that function as capital assets.

OEMs can use Teamcenter to manage product knowledge throughout the service life of their products. Service organizations can use Teamcenter's configuration-driven MRO to plan their operations, optimize service execution and better utilize assets and part, tool and equipment inventories. The following Teamcenter solutions enable you to perform a variety of MRO and support functions.

Service data management. Teamcenter provides total visibility into long-life assets including current and historical configuration knowledge and status, captures service event activities and delivers a services dashboard to support PBL/SLA contracts through metrics.

Maintenance planning. Teamcenter enables service organizations to define and plan maintenance activities for complex components and assets.

Service event management. Teamcenter enables you to capture results from service activities performed anywhere in the service value chain.

Maintenance execution. Service organizations use Teamcenter to execute auditable maintenance procedures, retain event histories and capture asset performance/readiness status.

Materials management. Teamcenter enables your organization to track and manage all part, tool and equipment inventories used to repair, maintain or overhaul its assets.

Logistics records management. Integrates the creation and management of logistics support data into the product engineering, manufacturing and support knowledge environment to reduce the logistics effort and improve accuracy of data.

Reporting and analytics. Teamcenter allows examination of operational information to identify trends in asset performance and reliability, and track asset and organizational KPIs.

Advantages

Enable your service organization to plan and deliver MRO services more efficiently

Maximize the operational availability and reliability of your managed assets

Provide up-to-date asset knowledge to service teams at their point of need so they can understand an asset's ongoing requirements

Establish feedback loops to bring service concerns of field technicians to the attention of product developers and service engineers

Facilitate performance-based contracts by enabling service organizations to measure asset availability/reliability and organization performance metrics, modeling and optimization techniques

17

About Siemens PLM Software

Siemens PLM Software, a business unit of the Siemens Industry Automation Division, is a leading global provider of product lifecycle management (PLM) software and services with 5.5 million licensed seats and 51,000 customers worldwide. Headquartered in Plano, Texas, Siemens PLM Software's open enterprise solutions enable a world where organizations and their partners collaborate through Global Innovation Networks to deliver world-class products and services. For more information on Siemens PLM Software products and services, visit *www.siemens.com/plm*.