Solid Edge Data Management

Increasing Productivity with Teamcenter Integration

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Introduction

Design engineers often spend more of their valuable time looking for product data and managing their existing data than they do designing products. Even the individual, self-employed engineer can easily lose track of their previous designs and drawings as their workload increases and assemblies get more sophisticated with hundreds if not thousands of component models. Small design groups struggle to manage their component libraries. They constantly face challenges to organize and track multiple design projects as each team member contributes to the overall quantity of product models. Designers in larger enterprises face even more daunting adversities with geographically distributed project teams and the maintenance of multiple product revisions.

Designers spend more time looking for data than they do designing products

Siemens PLM Software understands these issues and has worked with countless industrial companies to help them overcome these challenges and increase overall productivity. With Solid Edge ST9 integrated with Teamcenter for data management, the Solid Edge team delivers the necessary tools to manage all CAD product data. One user company that has confronted these challenges, Interwell Technology,[1] headquartered in Stavanger, Norway, specializes in increased hydrocarbon recovery and barrier security for global, upstream energy companies. In the past, the company faced just such a disruptive issue—the handling of increasing volumes of CAD models and drawings. A constant flow of new, customized product revisions for different clients created bottlenecks in their design workflow due to their inability to effectively manage the growing volume of data. Mr. Anders Ratdal, Managing Director states, "Using Solid Edge and Teamcenter, we have created the ability to quickly respond to customer requests with high-value solutions. This solution represents what we feel will be a long-term competitive advantage."

Interwell Technology is not alone in dealing with the burden of an increasing volume of CAD data. "The amount of CAD data was growing and we needed to manage it better so that no unnecessary duplicates would be created," says Mr. Anand Atole, Assistant Manager of Design at Sparkonix,[2] an Indian manufacturer of EDM machines. "Being able to re-use design data to speed up work was a priority. Also, the number of users accessing data was increasing and we required control of user workflow, so we needed revision management. Ultimately, Teamcenter […] has enabled us to streamline design data and make it available to all for re-use, from design to sales and support. Designers can now

"The amount of CAD data was growing and we needed to manage it better"

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[1] See Interwell case study:
http://www.plm.automation.siemens.com/en_us/about_us/success/case_study.cfm?Component=202035&ComponentTemplate=1481
[2] See Sparkonix case study:
http://www.plm.automation.siemens.com/en_us/about_us/success/case_study.cfm?Component=242531&ComponentTemplate=1481

concentrate on design rather than on storing, searching for and retrieving data. We have reduced design time by 25 percent."

These examples capture the two fundamental pressures design engineers face:

1. Managing the overall growth of their CAD design files and
2. Supporting collaboration with their co-developers and clients (see Figure 1).

As noted by these users of Solid Edge, the growth of CAD data derives from a number of sources. Product models are becoming more complex and product assembles are increasing in size. Variations of the same product for different global markets are driving an increase in multiple product configurations. Change requests force multiple revisions. Without a data management solution, design engineers are left to struggle with manually organizing large, complex data sets.

Designers face the challenge of growing numbers of CAD files and collaboration with stakeholders

Figure 1—CAD Data Pressures Faced by Designers

The second fundamental pressure comes from the many demands placed on the design engineer to work collaboratively with other designers and to share their CAD models with a wide range of product stakeholders. Designers need to provide their customer with views of the digital product model at various stages in its development, yet the client likely does not have a CAD license or knowledge of using CAD. The same is true for stakeholders in other parts of a manufacturing company such as procurement, marketing, and sales. These contributors to the product's development and delivery need a solution that allows them to visualize the digital product model—preferably at no cost to them.

The product development situation today is a multi-CAD environment. No company can expect all their design partners and supply chain developers use the same CAD solution. They require the ability to incorporate disparate CAD data into their product assemblies. The method of sharing data arriving in different formats must also be sensitive to the fact that during product development it is very likely that changes will occur. Once a portion of foreign product data is input, it must be readily identifiable and updateable.

Today product developers live in a multi-CAD environment

Siemens PLM Software offers users a scalable solution for data management. It begins with a suite of tools embedded with Solid Edge itself which is targeted for customers with fewer than 10 seats and who have limited IT skills. As a company's seat count and the complexity of their data and processes grows, Teamcenter provides a wealth of capabilities such as configuration control and multi-CAD bill of material (BOM) management. The Solid Edge team is careful to synchronize software releases to align with Teamcenter functionality.

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Teamcenter Integration

Solid Edge ST9 delivers a new level of in-CAD experience for data management with its Teamcenter integration. No longer do users have to step out of their Solid Edge design environment to access Teamcenter's capabilities. Teamcenter integration for Solid Edge ST9 introduces a new user interface tab for immediate access to Teamcenter operations presented across a customizable Teamcenter ribbon bar (Figure 2). Smooth interaction between design and data management is enabled by the Teamcenter tab which offers a level of ease-of-use that allows users to maintain their focus on design modeling without unwanted interruptions.

Solid Edge ST9 delivers a new level of in-CAD experience for data management
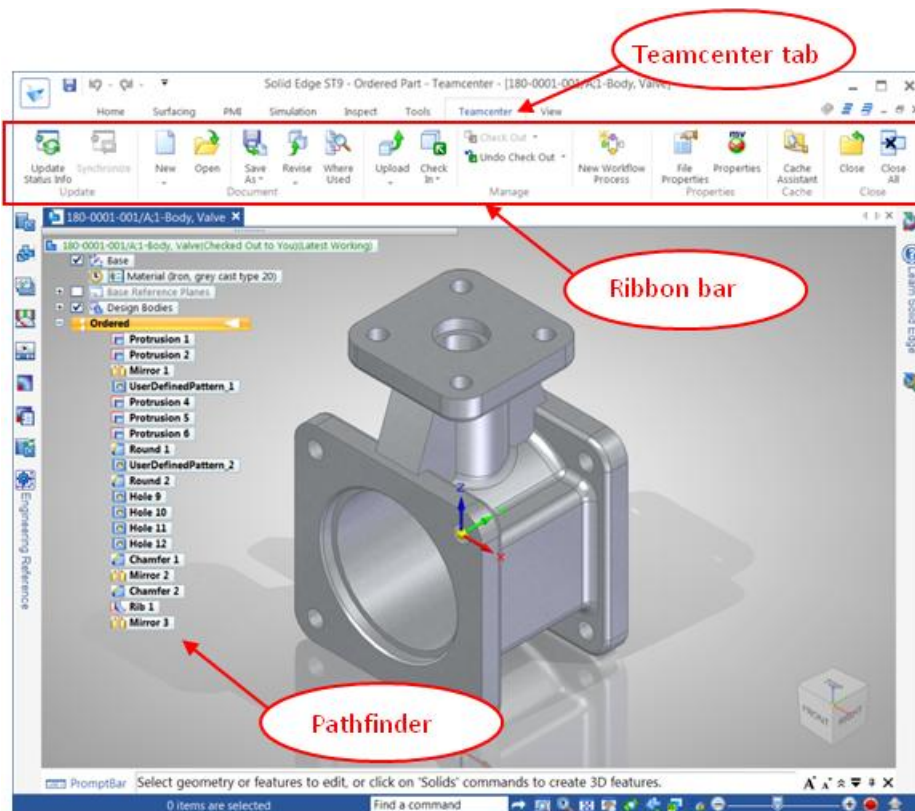

Figure 2—Teamcenter Tab and User Interface Ribbon Bar within Solid Edge
*(Courtesy of Siemens PLM Software)*

Teamcenter integration with Solid Edge ST9 supports a single source of data, keeping Teamcenter attributes and Solid Edge property information

synchronized. The Solid Edge Pathfinder can display key attributes from Teamcenter, and users can access a menu of available Teamcenter operations by right clicking on the Solid Edge documents that are displayed.

When working in an assembly, the Pathfinder indicates whether a component model or subassembly is out of date. The user can then explore that item's status information and decide to selectively perform an update to incorporate the changes or not.

Mr. Ruberto Badiali, R&D Director at Savio Macchine[3] notes, "Another key benefit of Teamcenter is the management of configurable structures." He adds, "Our designers can build assemblies with variant parts to extract different configurations from the master model and the corresponding BOMs, viewing them with a very simple and intuitive approach."
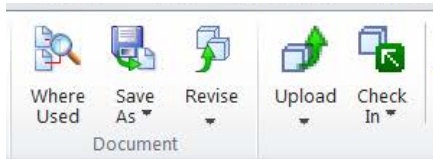
When the user requests that a part be opened, Solid Edge works seamlessly with Teamcenter to automatically check the part out of Teamcenter. This point has been an issue of contention in other industry solutions—users dislike having to first check a model out then open the model in separate operations. Solid Edge ST9 with Teamcenter performs the check out behind the scene without extra user involvement. The user then has the options to save the model back into Teamcenter under a new name or to save the model with an incremented revision number.

When the user opens a file it is automatically checked out of Teamcenter

In addition, the user has numerous functions to search, view, and modify model properties and see how these are synchronized with Teamcenter. They can also package data to send to an external supplier or customer and then incorporate changes proposed by the external parties back into Teamcenter. Teamcenter also supports Solid Edge part libraries and designers can initiate new workflow processes directly from Solid Edge.

Teamcenter Active Workspace

A particularly significant new capability in Solid Edge ST9 is the ability to access Teamcenter Active Workspace directly from Solid Edge (see Figure 3). Active Workspace is Siemens PLM Software's intuitive and graphically rich user experience for PLM data and applications. It presents a user-interaction model that supports visual decision-making and collaboration across the extended enterprise for all levels of users including those who need only occasional access to PLM. Designers working in Solid Edge can use simple text based searches, similar to the familiar Amazon.com search, to locate needed components, then open them or insert them into an assembly.

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3 See Savio Macchine case study:
  http://www.plm.automation.siemens.com/en_us/about_us/success/case_study.cfm?Component=238568
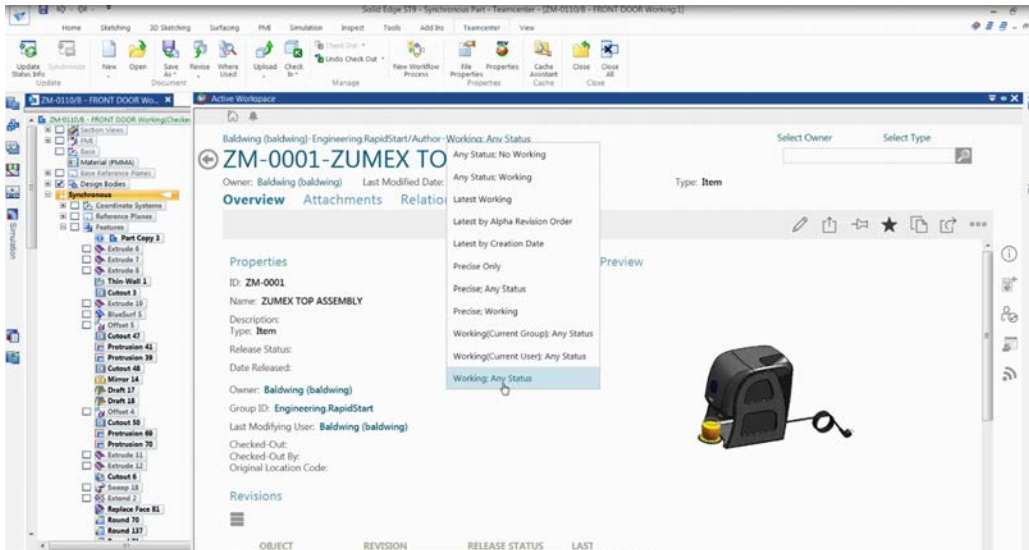 &ComponentTemplate=1481

Figure 3—Teamcenter Active Workspace in Solid Edge
(Courtesy of Siemens PLM Software)

Collaboration

No CAD designer works alone. Even the independent design engineer interacts with their client. In larger product development organizations, teams of designers often work together and with suppliers, all of whom may be geographically dispersed. Collaboration has become essential as companies employ concurrent engineering processes and develop products with global teams of designers.

One key aspect of the Solid Edge ST9 integration with Teamcenter is the ability of users to share their CAD designs with others who do not have a Solid Edge license. The sharing happens through the use of a JT data file (a lightweight 3D data format for visualization and collaboration). JT is an International Organization for Standardization (ISO) open standard, ISO 14306.

Users have the ability to share their CAD models using a free visualization app

Effective collaboration requires a number of varied capabilities depending upon the use case. In its basic form, collaboration merely requires the ability to view, and manipulate (e.g., pan, zoom, and rotate) the model in 3D. Key to this capability, however, is a viewing solution that does not require the viewing stakeholder to have an expensive software license or know how to operate a CAD system. Additional requirements come in the need to comment and red-line views of the model; and the collaboration model having the ability to incorporate models from disparate CAD solutions.

Visualization

In today's digital engineering environment, a broad range of product stakeholders must interact with digital product models, even before a physical prototype is built. Visualization of the product is essential to the work done in quality management, sourcing, product support, documentation, and sales. These stakeholders, as well as other designers who work collaboratively, must be able

to view and manipulate the digital product model in 3D to explore its design. In addition, each must be able to comment and mark up the visualization with their notes and any issues they have with the current state of the design.

Solid Edge ST9's integration with Teamcenter allows the design user to establish the automatic generation of JT visualization files whenever the Solid Edge design is saved into Teamcenter. This guarantees that the most up-to-date version of the design is always available for visualization. Siemens PLM Software offers a free-of-charge viewer, JT2GO, for JT files (Figure 4). In addition, numerous other solution providers support the JT format in their software.
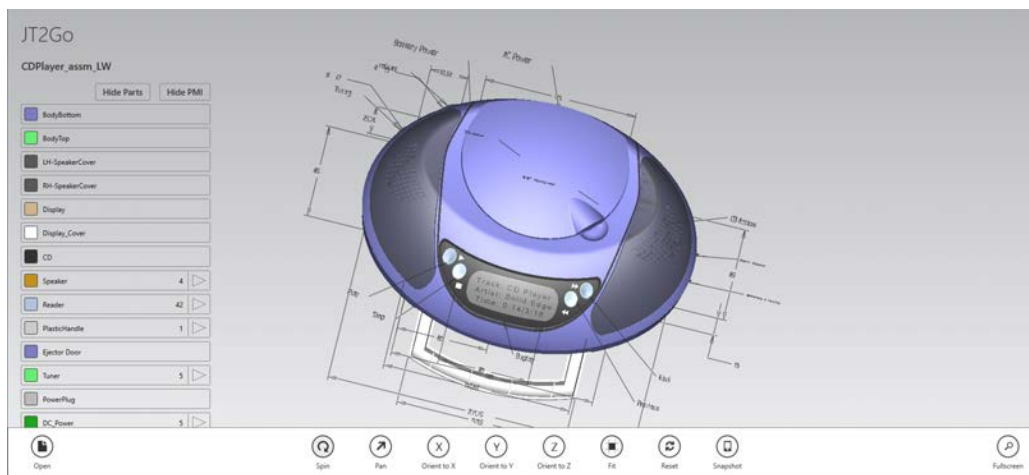
Figure 4—Visualizing a JT file with the Free JT2GO Application
(Courtesy of Siemens PLM Software)

Mr. Eli Fayzenberg, computer-aided application specialist at Candu Energy[4] states: "Teamcenter allowed the vendors to design better in the context of the overall 3D model. Now, when they do their design, we can share enough of our design with them to ensure the designs will work together properly." He further remarks: "Teamcenter allowed us to do visualization and the JT technology enabled our engineers to perform basic tasks without using a full CAD license."

Mr. Brian Hare, CEO of Industrial Control Associates[5] explains: "The Teamcenter visualization capabilities make it a lot easier for customers to view an assembly. This can be done in 30 seconds instead of 30 minutes using the CAD system."

Multi-CAD

Siemens PLM Software understands that today's product developers operate in a multi-CAD world where native models authored within solutions from different providers must work together. Solid Edge ST9 supports multi-CAD both

Solid Edge ST9 and Teamcenter support multi-CAD

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[4] See Candu Energy case study:
http://www.plm.automation.siemens.com/en_us/about_us/success/case_study.cfm?Component=233595&ComponentTemplate=1481
[5] See Industrial Control Associates case study:
http://www.plm.automation.siemens.com/en_us/about_us/success/case_study.cfm?Component=83695&ComponentTemplate=1481

natively and through its Teamcenter integration and can accommodate not only Solid Edge native CAD files but an extensive list of standards formats, such as STEP and IGES as well as CAD formats of other solution providers, such as Autodesk Inventor, PTC CREO, and Dassault Systèmes CATIA V4 and V5.

Mr. Hare of Industrial Control Associates additionally states: "By allowing us to bring in and work on data from any CAD system, Solid Edge with synchronous technology will save us the time it takes to redraw that geometry. By doing small design tests through parallel work in synchronous technology and traditional modeling, we have seen as much as a 30 percent reduction in the design phase."

Underlying the multi-CAD capability is the JT technology which contains a copy of the precise b-rep of a solids model. By exploiting strong data solutions, Siemens PLM Software is able to import foreign data models from major CAD solutions.

Summary

Design engineers face many challenges. Often key to their use of a CAD design solution is their ability to manage an ever growing volume of data that derives from the increasing complexity of product models, large multi-configuration assemblies, and multiple product revisions. They must then share their product designs that may include disparate CAD data with an ever growing audience of product stakeholders ranging from external supply chain designers to the non-technology savvy business and support organizations within their companies. Siemens PLM Software rises to these challenges with Solid Edge ST9 integrated with Teamcenter.

The integrated solution delivers capability to its users with an in-CAD suite of tools to manage and search large volumes of data, as well as control updates to complex assemblies and multiple configurations. The solution also delivers on a wide range of requirements in the collaboration space with a free, easy-to-use visualization tool and its ability to handle disparate CAD formats. Solid Edge ST9 integrated with Teamcenter is a solution product developers can expect to provide a competitive answer to today's market's demands.

About CIMdata

CIMdata, a leading independent worldwide firm, provides strategic management consulting to maximize an enterprise's ability to design and deliver innovative products and services through the application of Product Lifecycle Management (PLM) solutions. Since its founding over thirty years ago, CIMdata has delivered world-class knowledge, expertise, and best-practice methods on PLM solutions. These solutions incorporate both business processes and a wide-ranging set of PLM-enabling technologies.

CIMdata works with both industrial organizations and providers of technologies and services seeking competitive advantage in the global economy. CIMdata

helps industrial organizations establish effective PLM strategies, assists in the identification of requirements and selection of PLM technologies, helps organizations optimize their operational structure and processes to implement solutions, and assists in the deployment of these solutions. For PLM solution providers, CIMdata helps define business and market strategies, delivers worldwide market information and analyses, provides education and support for internal sales and marketing teams, as well as overall support at all stages of business and product programs to make them optimally effective in their markets.

In addition to consulting, CIMdata conducts research, provides PLM-focused subscription services, and produces several commercial publications. The company also provides industry education through PLM certification programs, seminars, and conferences worldwide. CIMdata serves clients around the world from offices in North America, Europe, and Asia-Pacific.

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