

Managed collaboration and Solid Edge

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white paper



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▶ Executive summary

As a fundamental approach to design management, Solid Edge has endorsed the philosophy of managed collaboration. Managed collaboration unites the web and product data management (PDM) software to provide tools that enable access to information (collaboration), while maintaining control of accuracy, integrity and currency (management) of data in a secure manner.

Collaboration = to work together; co-operate = web

Manage = to control the action; have charge of = PDM

PDM + web = managed collaboration = Insight

Today, collaboration through various electronic means continues to grow. This is driven by the proliferation of the web (and other networks) and the need for electronic design data to be disseminated beyond engineering to internal groups such as purchasing or the shop floor and externally to suppliers. Unfortunately, the effectiveness of electronic collaboration is still suspect with many of the tools in use today, as concerns over security of data and loss of control inhibit effective use of the technology and slow adoption. It is these issues that managed collaboration addresses. But before we can explore this issue we must understand what is meant by collaboration.

This leads to 4 different electronic collaboration processes and associated product categories are represented in the chart below.

These processes manifest themselves in sample workflows such as an asynchronous/design workflow to manage engineering data via PDM, an asynchronous/visual workflow for viewing manufacturing drawings on the shop floor, a real-time/design workflow for an online peer-to-peer editing session or a real-time interactive peer review session over the web.

Electronic collaboration defined

First, electronic collaboration can be categorized two ways:

real-time

- Working on the same files, at the same time

Asynchronous

- Passing static files to different users at different times

Second, the activities being performed while collaborating can vary:

Design

- Creating, editing and authoring the files as part of the design process

Visualization

- Viewing and markup as part of the review process. Original files remain unchanged.

Real-time (Synchronous)	Peer to peer Multi-user control Collaboration file management	Web conferencing Multi-user control Single user control Dynamic view manipulation Collaboration file management
	Design management Work flow Where used Revisions and versions Check in/out	Design review 2D and 3D viewing Attribute and BOM viewing Change notification Red line and markup Review file management
Asynchronous	Design	Visualization

► Solid Edge managed collaboration

While all of the types of electronic collaboration are in use today, the importance of these different collaboration workflows varies significantly. UGS projects the relative importance to of these technologies by percentage as shown in the diagram below.

Notice that the most important requirement is for users to work in an asynchronous manner as dictated by their needs. While the desire to collaborate is high, the need to be able to do it in a flexible manner is dominant. Today peer-to-peer interactive design is seldom required and while web conferencing certainly is advantageous and saves incredible amounts of travel when required, it is still driven by a specific event, which requires everyone together at a single time. Asynchronous operations however, like design management and view and mark-up, are used in common practice today. Designs and related information is checked in and out, created, reviewed and modified by many professionals in the course of their daily operations.

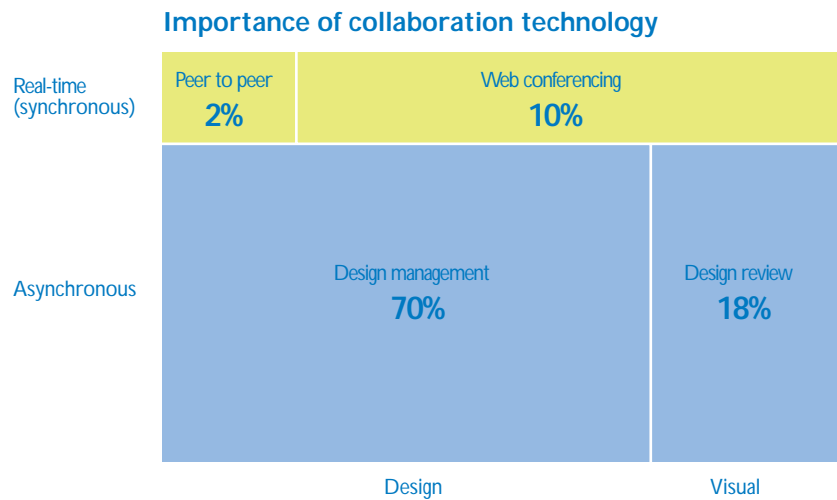


Figure 1. Collaboration technology

Currency and integrity are the keys to effective collaboration

Regardless of the type of electronic collaboration used, the objective is to communicate current, relevant, accurate data. The reason many companies are still reluctant to implement technology that will allow them to collaborate electronically is both a lack of security and a loss of control.

In the case of security, today's firewalls and intranet technologies have, for the most part, answered these concerns. Firewall and VPN technology exists for very high levels of security at a reasonable cost.

Lack of control over electronic documents used to collaborate beyond the engineering department, however, is often as bad as the physical documents they replaced. Simple email collaboration systems inherently create documents that are out of date, often as soon as they have left the engineering department. Gaining and maintaining control of electronic documents is critical to assuring integrity and currency as well as managing access; in short, gaining control of the information used for collaboration.

Enter PDM, which inherently allows access to accurate, current information as it is created or updated, allowing people to work together, in a controlled way. Check in and out, user roles, workflows, revision management all contribute to providing not just simple access but secure, reliable access to current data. Because of this fact, PDM is now the number one investment being made by Engineering IT departments.

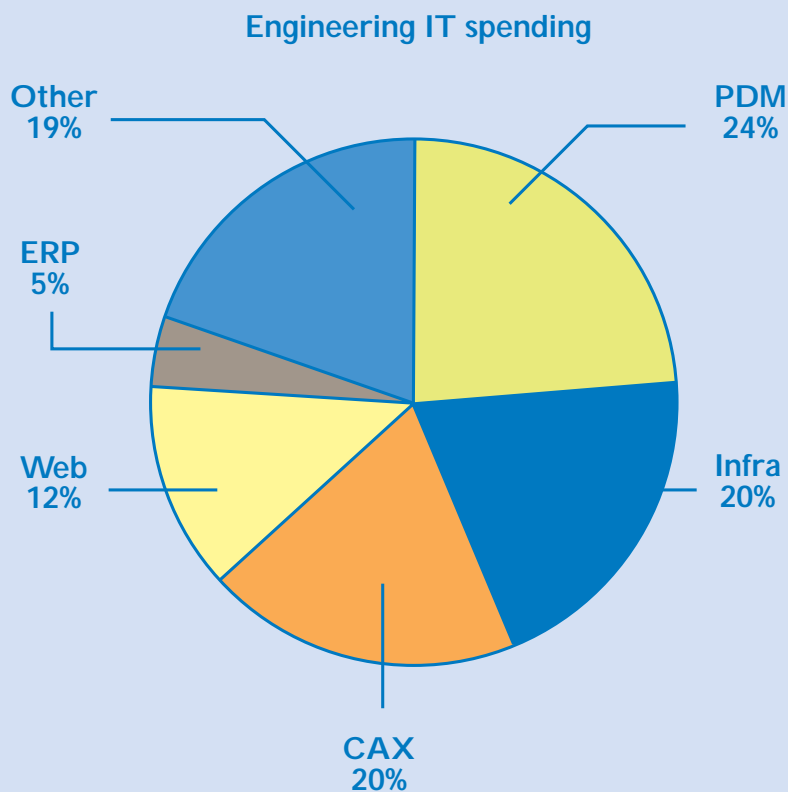


Figure 2. Engineering IT spending. Source Gartner 2002.

► Solid Edge Insight managed collaboration features:

Windows Sharepoint Services MS.NET web browser

With Insight, the Microsoft Windows Server environment establishes a standardized approach to browsing via Windows Sharepoint Services that essentially makes it a part of your standard desktop, while Microsoft SQL server provides the design management vault; secure and scalable, with outstanding performance and administrative tools for backup and recovery, virus scanning and server use.

By leveraging the proven tools provided by Microsoft and adding essential product structure for today's 3D designs – including assembly structure, bill of material (BOM), assembly links and part relationships – Solid Edge Insight is not only the most elegant mainstream design data management solution available, but is also the safest investment for the future.

SharePoint creates a web portal – known as the dashboard site – automatically during installation. The dashboard site offers a centralized access point for finding and managing information. By using a browser to view the dashboard site, users can perform document management tasks and find information. The dashboard site allows users to:

- Browse through information by categories
- Search for information
- Subscribe to new or changing information
- Check documents in and out
- Review a document's version history
- Approve documents for publication
- Publish documents

In addition, you can customize the home page of the dashboard site to display organizational news and other important information and users can create customized “personal” dashboards to organize and present information that is especially relevant to them, such as ECOs, design reviews and other project-specific information.

Insight also adds essential functionality for managing the complexity of design projects carried out in a 3D world, such as product structure, BOM management, revision management and ECO Support. Solid Edge parts, assemblies, BOMs and drawings can be viewed in real-time, using the “web part” viewer – a web-based control that provides controlled access to Solid Edge documents, complete with viewing functionality such as rotate and zoom.

User roles

Collaboration, by nature, calls for design documents to be shared among multiple users. Without a design management solution, it can be difficult to share documents with others, while also controlling access to those documents.

Insight takes advantage of the “role-based security” features in Sharepoint, to control document access based on users' roles. You can assign the coordinator, author and reader roles to users, based on the tasks they perform. Each role identifies a specific set of permissions: coordinators handle management tasks, authors can add and update files and readers have read-only access to published documents. Insight also offers the option of denying a user access to specific design documents.

Rapid searching and “where used” reporting

Solid Edge Insight helps evaluate the impact of design decisions by quickly finding all documents that will be affected by a change, including all related 2D drawings. Within the standard Solid Edge file opening operation, designers can use a powerful search tool to quickly locate design data by any defined criteria and all file properties are indexed in a SQL server for fast access, so searches take seconds instead of minutes. Fast “where used” reporting helps determine all the product and subassembly models that contain a specific design and Solid Edge uses information indexed in the Insight database server to reduce reporting time from minutes or hours to seconds. This rapid “where used” reporting provides quick, accurate understanding of the impact of design modifications.

Solid Edge users also access powerful “full text” searches to locate text data displayed on drawings, such as in the notes. From a standard Solid Edge search window, the user simply types in the text they wish to search for and choose the folders in which to search. A list of all documents containing that text is displayed, providing enormous time savings when compared to the manual searches required by less sophisticated systems.

Full workflow management

Solid Edge Insight greatly simplifies the release process by automating events that are typically accomplished manually. By establishing a series of managed design workflows, Insight ensures that everyone is receiving the information that they need, when they need it. From pre-released to released and throughout any change notices that occur afterwards, Insight manages the design process so that changes can be enacted, checked and approved as swiftly and accurately as possible.

Built on the .Net framework and using the power of event triggers to build custom actions, Insight supports both serial and parallel, single and multiple, approval processes. Alerts, notifications, viewing and markup are all elements of the workflow and these elements progress from step to step in an automated, structured manner.

Comprehensive revision management

Solid Edge Insight supports fully customized workflows that streamline and simplify the engineering change process and help design team members keep abreast of design changes as they develop. Throughout the lifecycle of the design, a personal alert system allows engineers to subscribe to product data – individual model files, folders and even discussion groups – to receive automatic e-mail notification whenever changes are made.

As the design develops, Solid Edge uses Insight technology to simplify control of design versions and revisions and help teams collaborate more effectively by knowing exactly where the latest documents are and that they are definitely using the correct revisions.

The Lifecycle Assistant provides an automated workflow for complete packages of documents as 3D models move through the release process. When designers complete their work on parts, assemblies or drawings, Solid Edge automatically checks in the files, assigns new version numbers and updates related files to reflect the changes.

► Solid Edge Insight managed collaboration features:

Solid Edge saves and tracks multiple revisions of a design and Insight provides powerful recursive searching so the design and management team can review the full design history, determine the source of revisions and replace designs with previous revisions. For even greater flexibility, Solid Edge provides users with the ability to create dynamic BOMs by using revision rules when opening managed documents. A design can be opened using different options, including how it was last saved, using only the latest revisions in the system, using the latest *released* revisions or even those with revisions specified by an external system, such as an ERP or MRP system.

Offline mode and smart synch

Solid Edge Insight uses an innovative Smart Sync feature that improves system performance in a network environment. Design modifications are carried out using the local workstation to avoid network traffic delays and reduce file open times and completed changes are automatically propagated to files in their network storage locations. Smart Synch also ensures complete synchronization of all product structure and attributes when returning on line; for example on a laptop when visiting suppliers or customers.

Insight connect

Solid Edge extends the power of Insight for *managed* collaboration to users of design data through Insight Connect, Solid Edge's powerful design management client. Delivered with every copy of Solid Edge and available as a stand-alone client, Insight Connect provides powerful design management functionality such as revision management, document lifecycle management and where-used searches.

About Solid Edge

Solid Edge (www.solidedge.com) from UGS is powerful 3D CAD software that allows manufacturing companies to Design with Insight and achieve competitive advantage through cost reduction, while increasing top line revenues. The exclusive Solid Edge Insight technology embeds design management capabilities directly within CAD, providing insight into design intent to the entire organization and enhancing collaboration. Insight, complemented by Solid Edge's superior core modeling and process workflows, greatly eases the design of increasingly complex products required to meet continually changing market demands. The extensive Solid Edge user community is comprised of designers at thousands of companies worldwide, including Alcoa, NEC Engineering and Volvo. The Solid Edge Voyager Program includes 200 integrated engineering software applications and computer hardware solutions. For more information on Solid Edge products and services, visit www.solidedge.com.

About UGS

UGS is a leading global provider of product lifecycle management (PLM) software and services with more than 3.1 million licensed seats and 42,000 clients worldwide. The company promotes openness and standardization and works collaboratively with its clients in creating enterprise solutions enabling them to transform their process of innovation and thus begin to capture the value of PLM. For more information on UGS products and services, visit www.ugs.com.

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