

Product Collaboration

Securing the Power of Innovation in the Manufacturing Environment



Introduction

The realm of product design has passed through many incarnations, from parametric technology to concurrent engineering. However, regardless of technological innovation, the need to exchange product development data, especially design files, with suppliers and OEMs remains a major concern. Overall both suppliers and OEMs have same concerns:

- Secure, effective transfer and receipt of design files, contracts and product related information to and from external supply chain partners, negating threats of corporate espionage or corruption
- Ability to send large complex files, such as CAD generated designs to a variety of different OEMS or suppliers on a real-time or batch basis
- External transfer of design for downstream operations, such as marketing and sales
- Removal of barriers to partnership, whether of a technological or cost nature

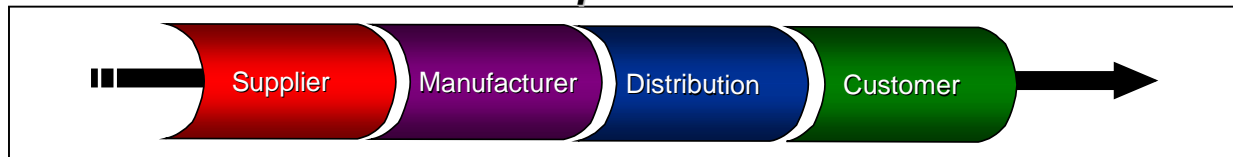
Industry Overview

Within the manufacturing sector, competitive advantage is usually gained through cost management and faster times to market of new product and associated innovations. With the increasingly competitive nature of business, it has become important not only to link closely with vendors and suppliers for information exchange and economies of scale, but also to secure the information that is exchanged during these interactions. Often these exchanges consist of design and engineering changes, contractual, pricing and inventory; critical information of a nature that can be used by a competitor to make moves to grab market share or prevent another company from taking a technical lead from new innovations.

Supply Chain Landscape

In the not so distant past, most supplier relationships were contentious and driven by short-term procurement savings, volume discounting, and product availability. As competition became increasing impacted by time to market and profit margins, the supply chain evolved from pure procurement to corporate strategy with the intent of streamlining the manufacturing process. These partnerships took on added dimensions as Manufacturers realized that by sharing information and including suppliers earlier in the development cycle substantially decreased both product development costs and time to market. This high level of commitment has the added benefit of avoiding the expense of switching costs by inspiring loyalty and creating stability in the Supply Chain resulting in an environment where needs and resources can be more easily forecasted. Studies on the impact of Supply Chain Management (SCM)¹ have found that the Supply Chain operation impacts key indicators of a company's financial performance including growth, profitability, and capital utilization (SPEED), adding more urgency to attempts to optimize the Supply Chain.

Product Collaboration Landscape



The latest holy grail in the Manufacturing segment is Product Collaboration, the ability to exchange product design and development data with external engineering and business units in real-time. Product Collaboration is the ability to work on product design and development concurrently or simultaneously with suppliers to decrease the development cycle and deliver product design that work right the first time. Due to the lack of interaction with design geometry, the need for suppliers to continue to share actual design files is still pertinent. One of the biggest limitations to current collaboration efforts is the inability to share and transfer the larger file sizes generated by many CAD and Engineering packages. Many email systems do not support files attachments over 10MB, and

¹ Reference: "The Financial-SCM Connection", by Stephen G. Timme and Christine Williams-Timme, Supply Chain Management Review May/June 2000

company firewalls usually prohibit large attachments. When email or EDI networks are not or cannot be used, files are shipped to suppliers on physical media; a costly and time-consuming method of file sharing.

EDI

EDI, or Electronic Data Interchange², is the incumbent method of electronic exchange of business data for most companies. EDI is used for a variety of business processes such as purchase orders, invoices, and shipping notices. EDI, though used in a variety of industries, is usually implemented as a proprietary internal network or outsourced to a VAN³. The cost of joining an EDI-based supplier is often cost prohibitive for smaller companies or new suppliers. Where the cost of entry into an internet-based system is often as low as the cost of connecting to the internet, implementation of EDI usually starts at \$20,000⁴ due to the specialized nature of the networking equipment.

EDI TODAY ACCOUNTS FOR THE BULK OF B-TO-B E-COMMERCE

U.S. B-to-B E-Commerce by EDI and Transactions		
	1998	2003
Internet-based transactions	\$92	\$2,000
Private-network EDI	\$579	\$780
Total b-to-b e-commerce	\$671	\$2,780
EDI as percentage of total volume	86%	28%

DOLLAR AMOUNTS IN BILLIONS. SOURCE: BOSTON CONSULTING GROUP

Companies need secure file transfer and access implementations that do not require the complexity or investment of EDI. With the explosion of Internet access, many companies are looking for ways to exploit the cost advantages of cyberspace, yet keep the security that a private EDI network affords.

Complexities of Product Development

A simplified example of the process of design and manufacturing processes is shown in the diagram below, shows the additional complexity involved

1. Specifications are created and delivered to the Supplier, through FAX, package delivery, or e-mail. Larger Companies with higher-level suppliers send information through costly, proprietary networks such as, EDI.
2. Product design commences
3. To create the optimum design, the manufacturer and supplier exchange design and product information.
 - Many files are exchanged through email, but file size can be a constraint for email networks, especially with the sizes of some CAD files in the hundreds of MBs. Delivery problems also crop up with these files as they attempt to pass through company firewalls, making email delivery less robust than other delivery mechanisms.
 - For larger files, shipping to recipients on media, such as CD, still occurs and is time consuming
 - FAX can deliver copies of normal documents physically, but is not satisfactory for the large or complex geometries of product designs.
 - EDI connections can be cost prohibitive for new and smaller suppliers, as a monetary investment to connect or integrate with the network is usually necessary.
4. Product design commences at both locations
5. Manufacturer and suppliers exchange design information through the same methods listed, resulting in delays and possible exposure of new innovations.

Manufacturing begins, and design changes are sent back to Design. Files are sent to the Supplier and the time-consuming process begins again. In the sixth step, the final design is completed, components are manufactured and delivered to the OEM.

Although different processes are used to communicate between the manufacturer and supplier, most of these methods, fax, delivery and email, have varying degrees of success due to time or delivery constraints⁵. Firewalls, an requirement for basic security in today's Internet realm, often limit the size of attachments and files that pass through to end-users and decrease the reliability of successful transfer of design and other very large files. Faxes are

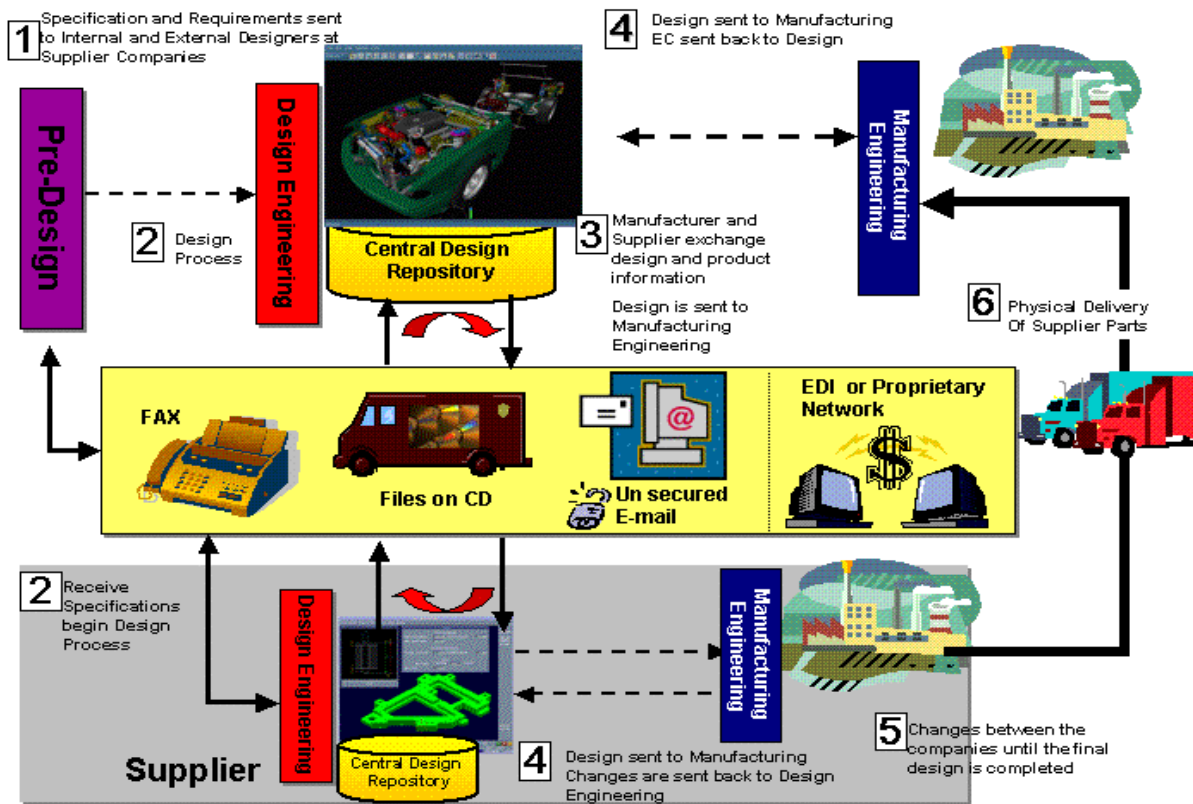
² Table from "Behind the Numbers, the Mystery of B2B Forecasts Revealed", The Standard, February 21, 2000

³ VAN: Value Added Network, a service provider specializing in EDI networks

⁴ Reference: Association for Financial Professionals 21st Conference, November 2000 – Verizon and Mellon Bank

⁵ By necessity companies share design information today, but most sharing happens via informal and inefficient means such as e-mail, FTP, or FedEx. Reference: Yankee Group [Adding Design Collaboration to the E-Marketplace Value Proposition](#), January 2001

unreliable due to many factors from equipment to connection effecting quality. EDI can be effective, but is often cost prohibitive for smaller or new suppliers who are vendors to a number of different manufacturers. The cost of leased lines, support of proprietary systems, and fees to a VAN can accumulate over years to diminish the original savings of EDI implementation for SCM.



Valicert secures the power of Innovation

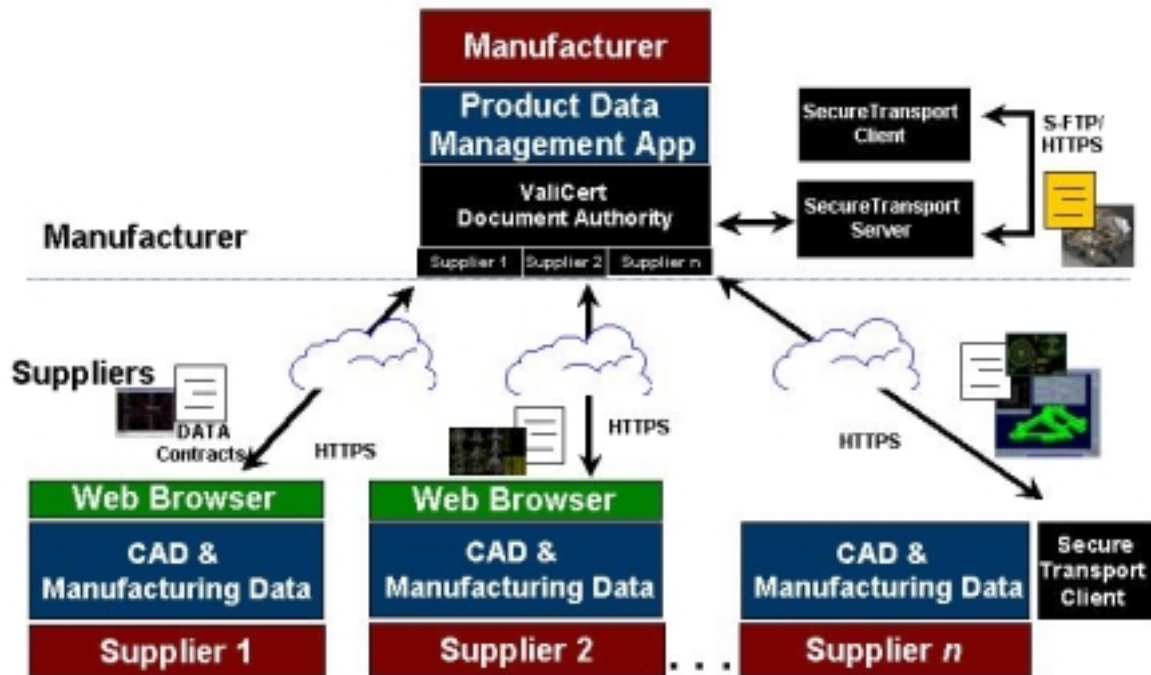
ValiCert Product Collaboration creates a more complete solution for collaboration. In the example below, the Manufacturer would like to manage more of the processes for the product design and manufacturing cycle. This solution provides a secure environment where Suppliers can access information specific to their company in their own “domain”. Permissions and user definitions are easily defined in the systems for Suppliers and their domains. The separate environment effectively protects each supplier from other users and companies in the system. Two suppliers may be vying for the same component business but the secured environment controls access to what each user can view. Each Supplier has its own log-on and folders for information that is shared with the Manufacturer. Other advantages of the system include the ability to audit access and report through digital receipting. This in turn is used to provide an audit trail to further ensure secure access to critical files and data.

Secure messaging is integrated and used for alerting Suppliers and the Manufacturer to new information in the system. Version control within ValiCert Product Collaboration solution keeps track of changes in proposals, contracts and other documents. Acceptance and authorization of documents can also be completed digitally or downloaded and returned to the Manufacturer through physical or digital means.

The design process shown below has been enhanced by the addition of ValiCert Product Collaboration. Both Manufacturers and Suppliers receive the requirements and design the required assembly and components in a private secured domain. Email and messaging sends out the RFP, specifications and other related documentation for initial product design. For documentation that requires, the Supplier has the option to transfer the file to their network.

Design and related information is exchanged between the OEM and supplier for inclusion in the level of design that will be delivered to the manufacturing engineering units. The Supplier can push these files up to the collaboration

ValiCert Product Collaboration: Global View



server for retrieval by Manufacturer's engineering teams. Updates can be placed on a delivery schedule to a variety of OEMs or suppliers if needed. By removing difficulties normally associated with the movement of large files, both manufacturer and supplier are able to update the designs for components and assemblies in a faster manner. Design and manufacturing engineering can share changes that impact the overall product assembly. With current information, each company is confident that any changes to the product design can be acted upon in rapid fashion, resulting in faster product development and implementation.

Final delivery of components for assembly completes the entire design and supply process. Exchange of inventory, delivery schedules, and information related to the component are exchanged to finalize the creation of the assembly.

In Conclusion...

Manufacturer Benefits

Manufacturers who implement ValiCert SecureTransport with their SCM solutions can expect:

- Closer relationships with suppliers and OEMs resulting in competitive advantage
- Faster time to market due to faster product development
- Lower design and production costs due to the ability to exchange design files and specification information with vendors and suppliers
- Cost savings from leased lines and networking, as this solution does not require EDI or VAN connections

Supplier Benefits

Suppliers can expect the following benefits from an implementation of ValiCert SecureTransport:

- Ability to quickly retrieve information needed for manufacturing decisions leading to faster time to market
- More satisfied customers due to increased availability of component designs
- Rapid deployment of updated designs and specifications to a variety of customers resulting in faster product development
- Cost savings from a reduced need for networking and leased lines, as well as lowered cost of entry into the supplier relationship.

By 2003, enterprises that design application architectures using a c-commerce⁶ relationship framework for improved versatility and agility will see up to a 40 percent gain in profitability.⁷ Wouldn't your business like to start realizing the benefits of secure product collaboration today? ValiCert is your partner for secure, effective collaboration with the cost advantages of the Internet. For more information regarding ValiCert's collaboration and secure e-transaction solutions, and delivery of Professional Integration Services, visit our website at www.valicert.com or call +1.650.567.5400 or toll-free 1.877.VALICERT.

⁶ C-Commerce: Collaborative commerce, which includes design, product and other versions of electronic collaboration.

⁷ Reference: "The C-commerce Role/Relationship Framework", October 18, 2000, GartnerGroup