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Ingenuity for life

Exchanging design data with suppliers

Collaboration with your global supply chain increases productivity and reduces risk

This white paper provides an overview of collaboration models used by original equipment manufacturers (OEMs) and suppliers, and describes a cost-effective solution for data exchange that can help your company stay on top of critical requirements for managing the supply chain.

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The need for supplier collaboration

In a global economy, what you don't know about your suppliers can put you at risk. Regulatory and consumer scrutiny requires supply chain transparency. As your company continues to create more complex, quality products, it is critical that you have a complete view of your product, including information related to your supplied parts. Unless you have reliable and efficient methods for collecting and managing supplier data, your company is exposed to risks, including noncompliance to industry and regulatory directives, missed delivery dates and market opportunities, and damage to your brand.

Collecting and managing supplier information can be an immense and labor-intensive manual task, especially when you are trying to reach suppliers who are not connected to

your product lifecycle management (PLM) system. Today, they may only communicate via phone, email, or other non-managed methods. Using rudimentary collection methods can result in information that is inaccurate and quickly becomes out-of-date. Without the use of PLM capabilities to enable collaboration with internal and external suppliers, this information is likely to be dispersed over multiple systems and out of sync with a product's bill of materials (BOM).

You need a supplier collaboration framework that can help your company stay on top of critical requirements for managing the supply chain.

Collaboration models

There are different models of collaboration. The right supplier collaboration model is driven by the supplier's contribution to the overall product design, which influences:

- OEM business process integration requirements
- Level of delegation accepted by the OEM
- Amount/frequency of data exchange

Supplier types are shown in Figure 1.

Supplier types listed at the top of the pyramid in Figure 1 require a high level of integration with the OEM's business processes. They usually work in the OEM's PLM system.

Some of the supplier types identified in the upper middle tier of the pyramid may require synchronized collaboration with their OEMs via another PLM system.

The supplier types in the mid to bottom section of the pyramid usually have their own design processes and prefer not to work in the OEM's PLM environment. Our focus is on these suppliers.

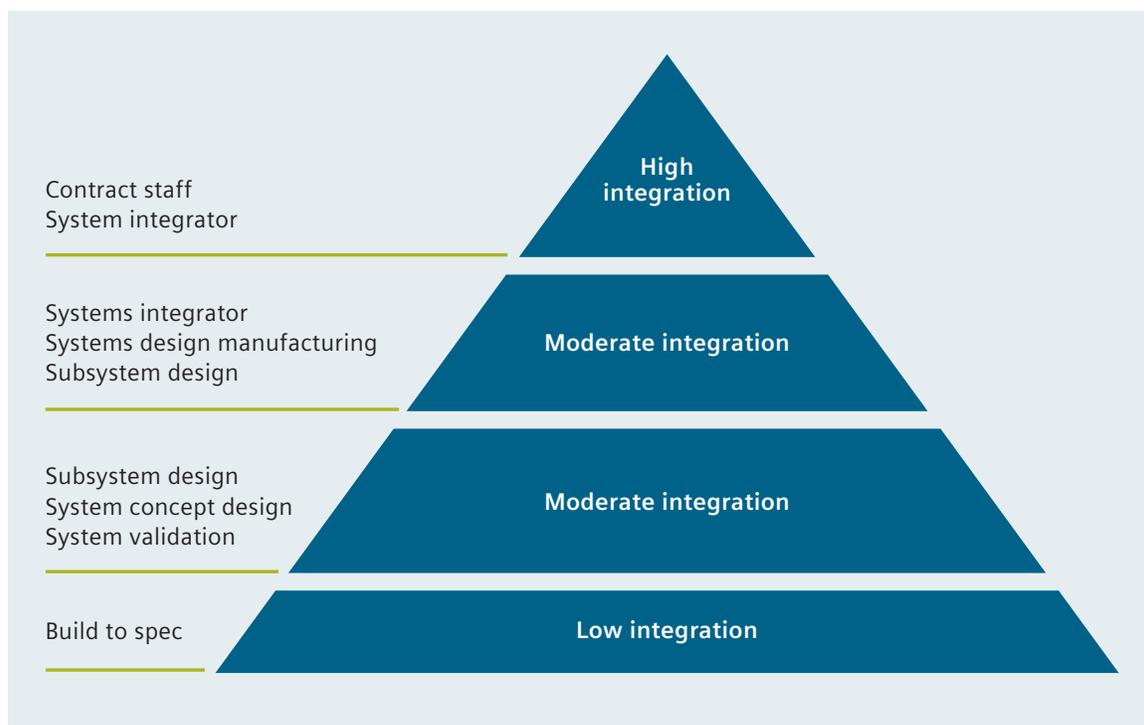


Figure 1: The type of supplier impacts the interaction required to be successful.

A cost-effective solution

There is a cost-effective way to collaborate with those suppliers who don't work in their OEM's PLM environment. With the Teamcenter supplier collaboration solution, all of the communication between OEM sponsors and their suppliers can be performed using the OEM's Teamcenter environment and a web-based supplier portal. For example, in the design data exchange use case, the OEM sponsor in Teamcenter who wants to share data with a supplier can create an exchange package with content intended for the supplier. This exchange package can include product structure, visualization files, ad hoc information and other files. Suppliers will receive a notification with a hyperlink to a web portal where they can enter their login credentials to access the exchange package and start to collaborate with the OEM sponsor.

Perhaps the most important feature of the Teamcenter solution for design data exchange is the OEM's Teamcenter database, which contains all of the knowledge required for collaboration, including suppliers' licenses, projects, access rules, contexts in which they work and data formats they can access.

With Teamcenter design data exchange, you will be able to shorten the time that it takes to start sharing information with your suppliers. In turn, your suppliers will realize low-overhead and low-cost methods for collaborating with you in a compliant and efficient manner.

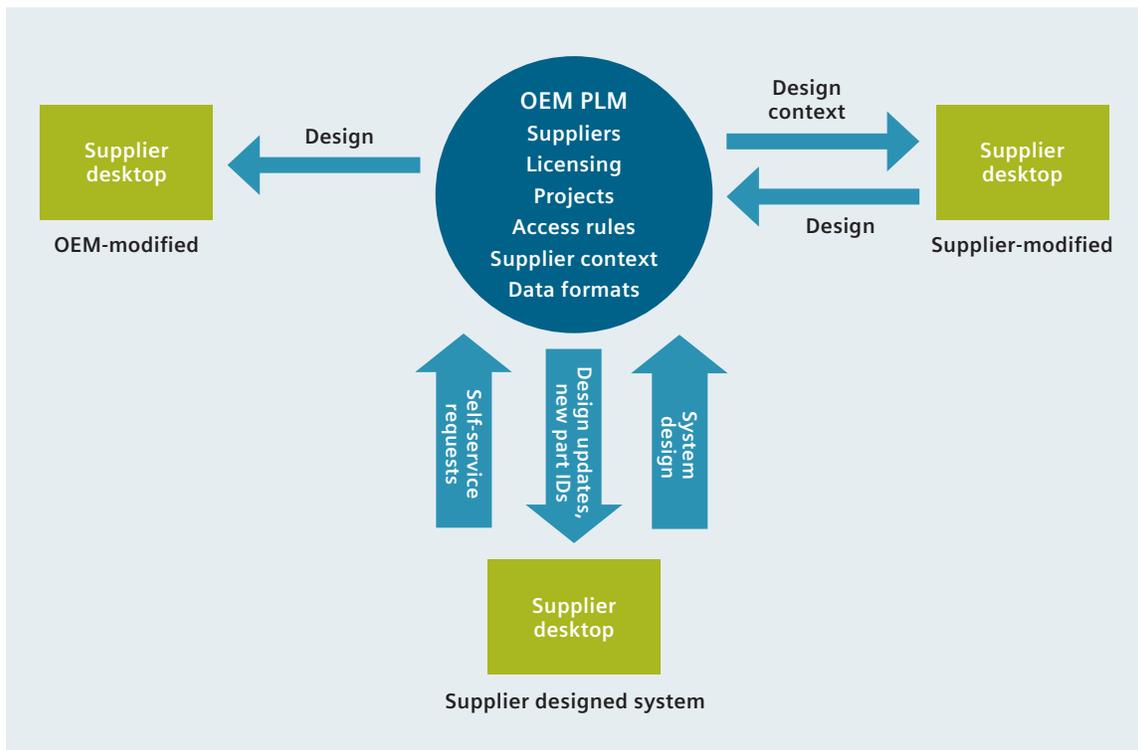


Figure 2: The OEM PLM system contains the knowledge necessary for collaboration.

The design data exchange business process

The design data exchange process is very simple when using Teamcenter.

Before the process begins, suppliers are on-boarded. Information about the companies and their contacts is loaded into the Teamcenter environment. Their contacts are given access rights based on the projects in which they participate. Other information, such as the context in which they work and the data formats they use may also be defined in Teamcenter.

When you, as a design engineer, are ready to exchange data, you simply identify the parts to be shared and create an exchange package with the parts. Then you identify the recipients (suppliers). You can continue to add parts and recipients

until you are done. You may even assign modification rights to a part or subassembly to a supplier.

Next, you can choose the type of data that will be shared and how it will be shared. Once the exchange package is complete, it can be sent to authorized suppliers. Suppliers with modification rights can then modify the assemblies or individual parts based on the requirements included in the package through the supplier collaboration foundation application.

Teamcenter software's supplier collaboration foundation (SCF), also known as the supplier web portal, is a web-based solution for exchanging information and collecting and analyzing data with suppliers. Suppliers use this solution for downloading the data and for providing a response with information relevant to the exchange.

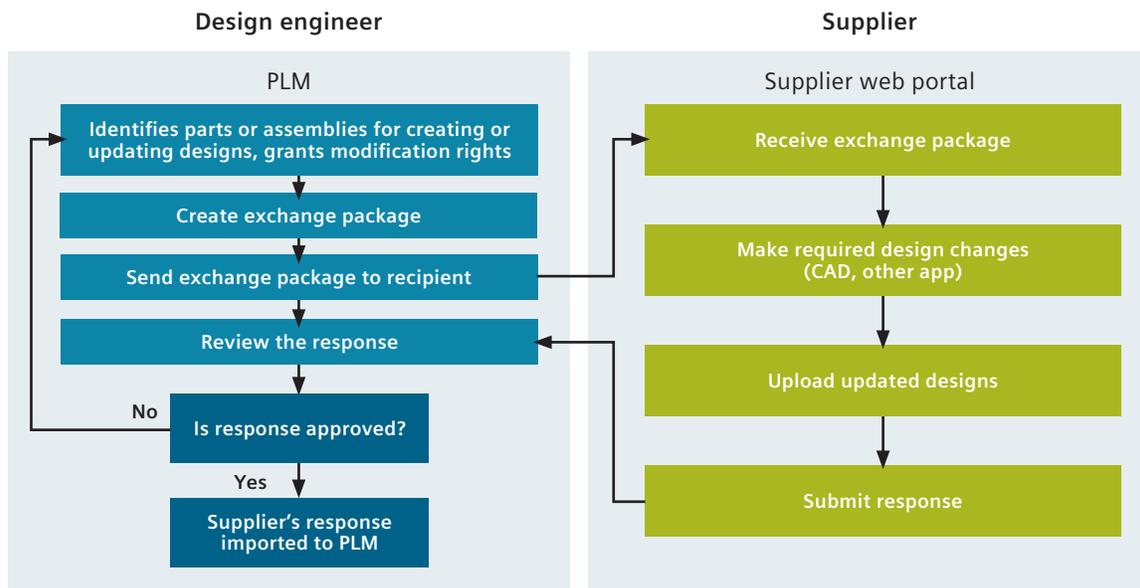


Figure 3: Design data exchange process

When a supplier submits a response, the design engineer will receive a review task. The design engineer can then preview the response and approve it. Once approved, the supplier's data is imported into Teamcenter.

During this round trip, parts or assemblies that are sent to suppliers for modification are "checked-out," which means that Teamcenter users cannot make modifications and that changes are coordinated.

Round-trip CAD data exchange

You can exchange (send and receive) computer-aided design (CAD) data with suppliers in a secure container called a briefcase. There is a special kind of briefcase ("semi-managed") for suppliers who don't have a Teamcenter connection with the OEM. Using a briefcase browser, recipients can work offline on the design packages. When ready to submit modifications, the supplier uses the briefcase browser to create a return briefcase with CAD files for the modified parts. Teamcenter recognizes the data in the briefcase and knows where to place it in the product structure.

Large file transfers

Product data can be very large, which means that transferring it can take a long time. File transfers can be subject to network outages or other interruptions. A data share manager provides an easy and robust method for exchanging large files smoothly. File transfers can be monitored, paused and resumed. In addition, file transfers are performed in the background so you do not have to stop working while an upload or download is taking place.

Supplier self-service

OEMs who want to minimize administrative efforts can allow their suppliers to use supplier self-service. With supplier self-service, authorized suppliers can request their own exchange packages. Suppliers simply query for items managed

in Teamcenter and select parts from the query results to include in their exchange packages. Data formats can be chosen from the list of formats associated with their supplier records in Teamcenter.

Supplier self-service is secure. The suppliers must work on assigned projects and within a configuration context assigned to them. Access rules are enforced so that suppliers only view data that the OEM allows them to see.

Supplier self-service allows OEMs and their suppliers to work in parallel, helping to reduce administrative overhead for the OEM and the supplier. Suppliers can get updates to exchange packages, delivered at their chosen frequency, so they can consume the latest design iterations from the OEM. And, if they need new parts, suppliers can request new items, revisions or clones.

Secure, flexible architecture

The design data exchange process is based on the supplier collaboration foundation, a web-based supplier portal that is designed to fit into your secure IT environment. The SCF can be deployed inside or outside your firewall. You can deploy SCF behind a forward proxy server and a reverse proxy server. All communications between the SCF and Teamcenter components and all file transfers are secure. If you want to enhance security, you can put two-factor authentication processes in place for suppliers.

Tracking

Exchange activities are tracked to support your monitoring and audit requirements. Reports containing logs of supplier activities and file uploads and downloads are available from the exchange package in Teamcenter. Supplier submissions and workflow decisions are also tracked, which is useful for managing relationships with suppliers.

Conclusion

In summary, Teamcenter software's design data exchange is based on an enhanced way of collaborating that reduces costs by eliminating the need for suppliers to have the same PLM footprint as their OEMs. The web-based supplier portal provides a comprehensive approach to managing interactions with suppliers to reduce risk, improve time-to-market and lower costs.

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