During the past decade, there has been rapid growth of design outsourcing as a key operational driver for companies to compete globally, increase productivity, and improve profitability. Manufacturers are transforming their product development models from local cross-functional operations to highly collaborative global operations, where skilled resources dispersed around the world are leveraged to optimize value-add and reduce cost.

Definition of Design Outsourcing

Design outsourcing is a process that enables companies to engage with design partners to deliver a design activity, the design of a single component, a subsystem, or an entire system. The process consists of communicating outsourcing requirements and contractual agreement on project scope. Project documentation and CAD model definitions are shared. Furthermore, a project plan is implemented, regular project and acceptance review are conducted, and final project work products are delivered.

A study reveals that 70% of executives believe that utilizing skilled labor pools is the key benefit of globalized R&D.
Source: Economist Intelligence Unit, “Scattering the Seeds of Invention,” September 2004
Understanding the Need for Design Outsourcing

As global markets expand, companies must continuously optimize the way products are developed to gain market share, profitability, and time-to-market benefits. Design outsourcing can be an effective approach to achieve these targets since it serves to increase product development capacity, lower total cost of product development, and free up valuable resources. The trend is clear: companies are recon-figuring their products and processes in order to effectively balance the costs of high and low-skilled development activities and spread them across multiple regions around the world.

While the benefits of outsourced design are numerous, companies often face challenges when attempting to alter processes and structure products for modularity to best support outsourcing activities. While many companies are practicing design outsourcing today it is usually performed on a tactical, ad-hoc basis. Without a holistic strategy, companies struggle with fundamental questions such as: how to engage and collaborate with partners, what products to outsource, what tools and methodologies to use, and how to achieve a balance of cost, risk, and value-add for work performed in-house vs. outsourced.

Data management and sharing also pose certain challenges including intellectual property protection, access/version control, change management, and obtaining visibility to project status.

A total of 52% of executives plan to increase their investments in overseas research in the next three years.

Source: Economist Intelligence Unit, “Scattering the Seeds of Invention,”

Benefits of an Optimized Process for Design Outsourcing

Typical benefits from improving the design outsourcing process include:

- **Increased Product Development Performance**
  - Augment product development capacity by outsourcing low-skill and non-core product development activities
  - Maximize profitability by effectively balancing product development value-add vs. cost

- **Improved Design Outsourcing Efficiency**
  - Enable repeatable and standardized design outsourcing process
  - Automate and streamline outsourcing process and deliverables generation
  - Increase data visibility by providing central information storage of all project related information
  - Ensure timely access to the latest and correct product information

- **Improved Design Collaboration**
  - Improve awareness, tracking and resolution of product design issues and product changes
  - Facilitate informal and formal design outsourcing reviews

- **Secure, Controlled Project Management and Execution**
  - Share and manage product data securely across globally dispersed product development teams.
  - Protect company intellectual property by providing role-based secure access to sensitive project information
The Solution – PTC’s Product Development System

A typical design outsourcing process has five major process steps:

1. **Prepare for Design Outsourcing**. The objective of this initial step is to define an outsourcing strategy. Typically, the strategy is defined once and is subsequently updated on an as needed basis. An effective outsourcing strategy requires research and documentation of the outsourcing goals, requirements including technology and security, measurements, and success criteria. With a strategy in place, the process proceeds with establishing a set of qualified design outsourcing partners. Characteristics and performance of existing and new design partners is captured and evaluated in an effort to ensure success of ongoing and future outsourced design initiatives.

The process proceeds with the definition and sharing of work methods across the companies so they can be reviewed and refined accordingly. The results are typically documented and provided to design partners as “standard operation procedures”.

2. **Initiate Design Outsourcing Project**. The initiative starts with the identification and documentation of required activities, components or modules to be outsourced. A design partner is either selected from a list of approved partners, or the outsourcing initiative may be sent to multiple partners for a “request for proposal”. When a partner is identified, a design outsourcing project is launched and the proper education and documentation (e.g., standard operating procedures, statements of work, CAD templates) will be shared with the partner.

3. **Manage Project Activities**. With the project team in place, the design partner develops and reviews design specifications and project plan with the OEM. Upon approval, the project moves to execution mode. Throughout the project, the team will continuously track and resolve issues through informal reviews. On a regular basis the project team will review status and proposed changes to the projects through formal review sessions.

4. **Final Acceptance**. Upon project completion a final acceptance review session is held. The project deliverables are reviewed and evaluated against original requirements, test needs, and quality measurements. Upon approval from the OEM, the project information will be released and transferred back to the OEM.

5. **Evolve**. After a design outsourcing project is completed it’s common practice to evaluate the success of the project and performance of design partner. The outcome of the evaluation is documented and proper steps are taken to implement improvements.
Critical Capabilities

The PTC Product Development System offers the following capabilities, necessary for the successful management of design outsourcing projects:

- Self-service project management, enabling users to track milestones, activities, tasks, deliverables, and resources across all phases of the project.
- Single secure Web-based environment for seamless integration of distributed development teams and external design partners.
- Single central repository for all project-related information with support for role-based access control.
- Intellectual property protection through role-based access control and selective concealment of design data.
- Secure data exchange and project information sharing.
- Seamless integral project and product environment for consistent user experience across internal and external parties.
- Integrated set of collaboration capabilities (e.g., virtual meetings, discussion forums, subscription/notification).
- Tracking issues and manage product changes and their resolution.
- Real-time visibility into project status and performance metrics to all team members and executive sponsors.
- Access to standard part libraries and visibility to approved part vendors and part manufacturers.
- Rich visualization of native 2D/3D design data and heterogeneous MCAD and ECAD data.
- Ability to involve external participants in the change management process.
- Ability to optimize system performance for external participants through content replication.

PTC’s Product Development System enables effective sharing of product information and tracking of outsourced design work.

PTC – Uniquely Qualified

An automated and optimized design outsourcing process not only requires superior technology, it also requires companies to streamline their day-to-day processes. Just as important, companies need to ensure that everyone across the organization understands and adopts the new processes and technology.

After 20 years of deploying process and technology improvements across thousands of customer sites, PTC Global Services understands all the components required for companies to achieve their product development goals. We offer solutions that include the right blend of process consulting, system implementation, and education services so customers realize the most value from their PDS investment. We implement industry best practices that fully leverage PTC technology, so companies take advantage of the technology’s potential while avoiding costly customizations. Plus, each of our solutions incorporates a unique training approach that accelerates the adoption of new technology and processes.