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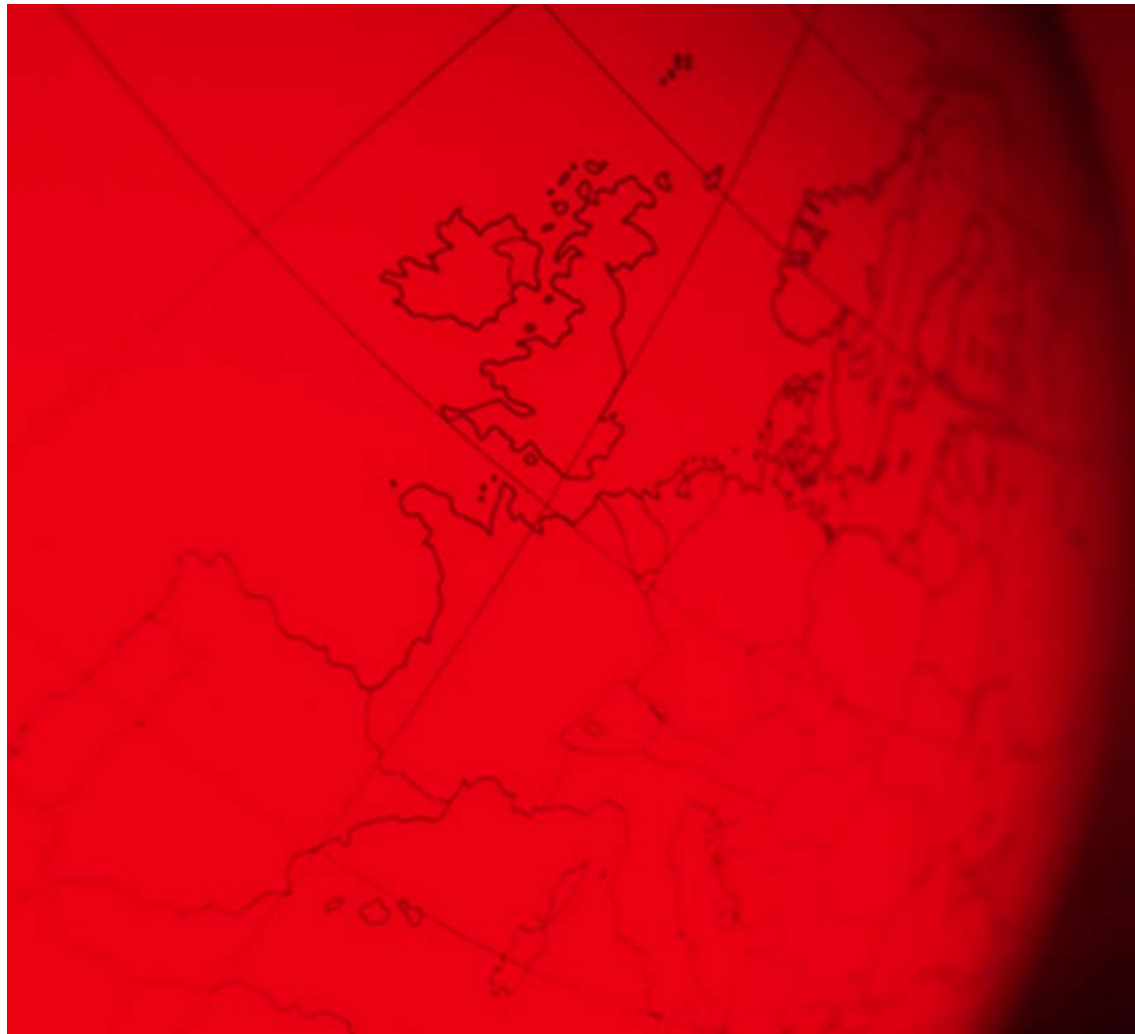
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# **GUIDEBOOK**

## SIEMENS PLM SOFTWARE FOR THE AUTOMOTIVE INDUSTRY



**Corporate Headquarters**  
Nucleus Research Inc.  
100 State Street  
Boston, MA 02109  
Phone: +1 617.720.2000

**Nucleus Research Inc.**  
[NucleusResearch.com](http://NucleusResearch.com)

**TOPICS**

Enterprise Applications

**THE BOTTOM LINE**

**Siemens product lifecycle management (PLM) software for the automotive industry helps manufacturers leverage globalization, reduce time-to-market, optimize resources, and ensure compliance and sustainability.**

Siemens product lifecycle management (PLM) software for automotive industry includes the Teamcenter platform for end-to-end collaborative PLM; Tecnomatix digital manufacturing applications; and NX computer-aided design, manufacturing, and engineering applications. The software can be deployed to support:

- Asset management
- Service knowledge management
- Configuration management
- Change management
- Maintenance planning
- Maintenance execution
- Material management
- Reporting and analytics
- Records management integration
- Compliance management integration
- Content management integration

Additionally, the JT format is a lightweight flexible format for capturing, sharing, and repurposing 3D product definition data, such as CAD drawings. Supported by Siemens, it enables designers and engineers to share and view product data at various levels of detail regardless of the authoring tools, driving further collaboration and less need for design document translation.

**THE SITUATION**

Automotive and transportation manufacturers face growing competitive pressures. They must:

- Innovate in design and engineering to cost-effectively and proactively deliver the products that customers demand.
- Reduce time to market through lean processes, a higher yield on designs, and faster cycle times.
- Show their products are in compliance with various governmental, industry, and customer requirements, which vary by product, geography, and sector.
- Optimize resources on a global basis by understanding and leveraging the unique characteristics of different partners, markets, and operations.
- Understand and manage the complexity of their operations so they can make critical decisions about changes in design and build locations, adding differentiating features, and other factors that may impact warranty support costs and time to market.
- Ultimately address and communicate their efforts to achieve greater economic, environmental, and social sustainability.

Many automotive manufacturers have looked to PLM software to help them manage these complex and sometimes competing requirements. Nucleus has found PLM solutions such as Siemens PLM software can be deployed to help manage these requirements while supporting and driving process innovations.

### **KEY BENEFIT AREAS**

Key benefits automotive manufacturers achieve from deploying Siemens PLM include:

- Reduced cycle times
- Increase design productivity
- Improved vehicle quality
- Faster problem resolution
- Better supply chain management
- Lower cost of compliance
- Reduced cost of operations
- Increased competitive differentiation
- Increased sustainability

This Guidebook explores best practices, fine-tuning tips, and missteps to avoid in order for companies to maximize returns from their investment in Siemens PLM software in the automotive industry.

### **BEST PRACTICES**

Nucleus found that automotive manufacturers and their partners maximized returns from their investment in Siemens PLM software by following a number of deployment best practices, including planning based on the entire product lifecycle; making PLM a central part of the design, manufacturing, service, and retirement process; addressing human factors effectively, and leveraging some of the specific characteristics of Siemens PLM offerings.

#### **Plan based on the entire product lifecycle**

Customer demand for more fuel efficient vehicles, government regulations, and societal concerns require automotive manufacturers to consider the sustainability of their products and processes from conception to end of life. Manufacturers that have visibility into the entire product lifecycle — and particularly at the end when an automobile must be broken down and recycled — can make better decisions at the conception and design stages to produce more sustainable vehicles.

Siemens PLM supports this approach in a number of ways. First, Siemens PLM software tools can help designers to evaluate the physical content of designs to make decisions on materials and components as the design evolves. Second, Siemens supplier relationship management tools can help manufacturers to track the compliance of suppliers and automate the evaluation of bills of material (BOMs) for compliance. Finally, the product lifecycle approach supported by Siemens provides visibility into as-designed and as-built BOMs so manufacturers can quickly pinpoint component changes that might impact sustainability and refine assembly, product retirement, and recycling processes as needed.

### **Make PLM the process, not just a tracking tool**

As PLM software has evolved from a somewhat generic toolkit to a platform for optimizing collaboration across the supply and service chain, companies that embrace PLM's power to support complexity and globalization achieve the most value. Companies struggle when they continue to view it as just a tracking tool or an obligatory tracking device.

One large automotive manufacturer, for example, embraced PLM to support its entire production review process and was able to reduce design costs by \$10 million per vehicle program per year.

### **Address human factors**

Identifying and addressing barriers to adoption are keys to the success of any application deployment — and that means thinking both tactically and strategically about how different teams and functions will play well with others. When a PLM project drives process changes and greater collaboration across distributed teams, individual, management, and structural changes need to be addressed. There is no one “silver bullet” for ensuring adoption; instead, companies should build a number of efforts into their project plan including:

- Ensuring the IT lead has excellent project management and communication skills.
- Designating one or two high-level executives as project champions and let them pick their team of mid-level managers to drive the project.
- Giving mid-level managers opportunities for visibility and leadership so they can own the project, both inside and outside the organization.
- Encouraging pilot users to be whistle-blowers as much as champions. If managers encourage negative feedback in the early stages, it can be addressed before a broad population accesses the application. This, in turn, will drive fewer adoption challenges.
- Not overlooking the need for global teams to meet in person to overcome collaboration barriers, particularly if those teams haven't worked together before or work for different partner organizations.

### **Leverage JT and Design Simulation**

Beyond just implementing PLM, automotive manufacturers can take advantage of key features of Siemens PLM software to drive greater productivity, accuracy and efficiency. The JT format, for example, enables the sharing and use of information from multiple sources and systems and reduces the cost and time to translate information between systems, accelerating individual and team productivity.

Manufacturers adopting the JT format can expect engineer productivity gains of up to 20 percent because of better access to information during the design process.

Using JT can also accelerate decision making and reduce rework. As one customer said, *“We avoid doing a lot of rework. JT allows you to find issues and an electronic drawing when they're easy to fix before you build a physical model. Using virtual tests and then a few physical tests with models to correlate the results, we save hundreds of thousands of dollars per vehicle.”*

Leveraging Siemens Design Simulation can drive greater productivity and cost savings by enabling engineers to quickly evaluate a proposed component's structural and thermal performance and determine the optimal blend of materials and structure.

### **FINE TUNING TIPS**

Beyond the initial deployment, organizations are able to achieve additional incremental returns over time by identifying other opportunities to gain value from Siemens PLM software.

#### **Monitor the supply chain for sustainability**

One of the key factors in a sustainable supply chain is collaboration. Manufacturers can use Siemens Teamcenter and related supplier relationship management functionality to track, monitor, and collaborate with suppliers on an ongoing basis. Additionally, feeding input in a structured way from service, support, and retirement and recycling partners back into the design process can help identify opportunities to improve sustainability across the supply chain.

#### **Extend PLM workflows**

Once the PLM platform is in place, OEMs can further reap returns from their investment by leveraging Teamcenter's workflow capabilities to automate and streamline additional product development, testing, delivery, manufacturing, and service and support processes.

#### **Optimize reuse**

Optimizing design reuse can help manufacturers speed time to market, reduce facility footprints, and reduce costs. However, disparate systems and lack of pre-validated designs often make it difficult to identify how. The Siemens PLM platform and its ability to support knowledge-enabled archetypes, in-context search, and cross-functional integration can be utilized not just as a repository for product and component data but as a tool to help manufacturers locate, evaluate, and select the best designs for reuse. The platform ensures not only that accurate information is available but that designs are reusable regardless of where they were authored.

### **MISSTEPS TO AVOID**

Given the scale and impact of a Siemens PLM software project, organizations sometimes overlook small factors that can have a dramatic impact on the overall initial and ongoing return on investment of a deployment. Keeping some missteps in mind and milestone-ing them into the ongoing process improvement effort can help maximize competitive advantage and, ultimately, the value Siemens PLM software can provide.

#### **Don't forget the end game**

Greater sustainability ultimately means greater profitability, as it can serve as a valuable differentiator. Beyond just institutionalizing sustainability and thinking green, organizations should communicate and promote their efforts to customers.

**Don't go it alone**

Siemens has made significant investments in providing specific modules, features, and support to optimize the its PLM platform for automotive manufacturers. Automotive manufacturers can reap the benefits by leveraging built-in support for standards and best practices, and focus their investment efforts on further competitive differentiation. Although this will likely require more focus around change management, it can pay off through faster time to market, faster compliance review processes, and greater sustainability.

**Don't assume you're finished**

As economic, social, and environmental concerns drive changes in the global automotive industry, establishing a secure PLM framework to support the complex needs of customers and suppliers is just the first step. Manufacturers that stay ahead of the sustainability curve by driving ongoing process improvements will remain competitive; those that don't will be increasingly challenged to succeed. Automating PLM processes and information sharing is just the first step.

Many manufacturers have found PLM to be the ideal platform from which to launch business process improvement initiatives. They can first use the platform to address their internal business initiatives, then cost-effectively extend those initiatives, such as sustainability, to include partners and suppliers.

**CONCLUSION**

Automotive manufacturers are facing tremendous competitive pressures. Constant changes in demand, time to market pressures, and demands for sustainability all must be balanced with the day-to-day logistics of delivering products to the marketplace, servicing them when repairs are needed, and, ultimately, disposing of them in a sustainable manner. Deployed properly, Siemens PLM software can deliver a positive return on investment for automotive manufacturers and support greater incremental returns over time when applied across the entire product lifecycle.

*Nucleus Research is a global provider of investigative technology research and advisory services. Building on its unique ROI case study approach, for nearly a decade Nucleus Research has delivered insight and analysis on the true value of technology and strategies for maximizing current investments and exploiting new technology opportunities. For more information or a list of services, visit [NucleusResearch.com](http://NucleusResearch.com), call +1-617-720-2000, or e-mail [info@NucleusResearch.com](mailto:info@NucleusResearch.com).*