

# Mechatronics Solution for the Automotive Industry

Solution brief

automotive

Siemens PLM Software

**SIEMENS**

# Automotive industry solution brief

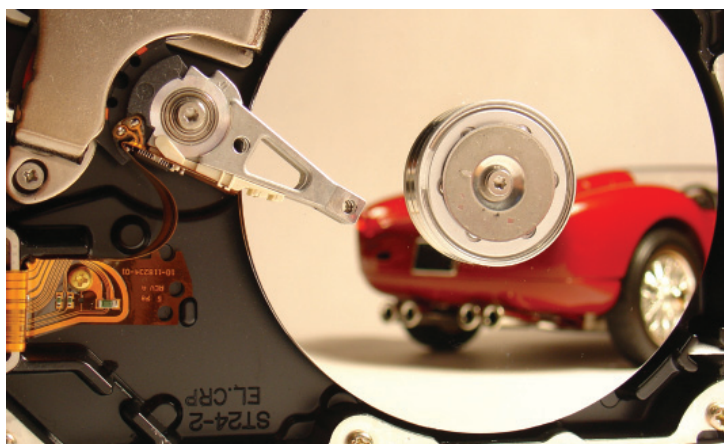
Effectively integrate your mechanical, electrical,  
electronic and software domains







Vehicles today are differentiated with intelligent features that integrate mechanical functions with electronic controls driven by software and connected by physical wiring. Today, these embedded software systems make up 70 to 90 percent of all automotive innovations. As a result, some vehicles have more than 10 million lines of code, 3 kilometers of wiring and more than 100 ECUs. Over the next three years, these numbers are expected to grow by another 30 to 40 percent. The increase in embedded software content has also had a negative effect on warranty costs, with as many as 55 percent of repair costs derived from embedded software issues, according to many industry analysts. Managing, integrating and synchronizing domain and product information, as well as your globally distributed development team and supply chain, can be overwhelming for companies using traditional tools and processes.



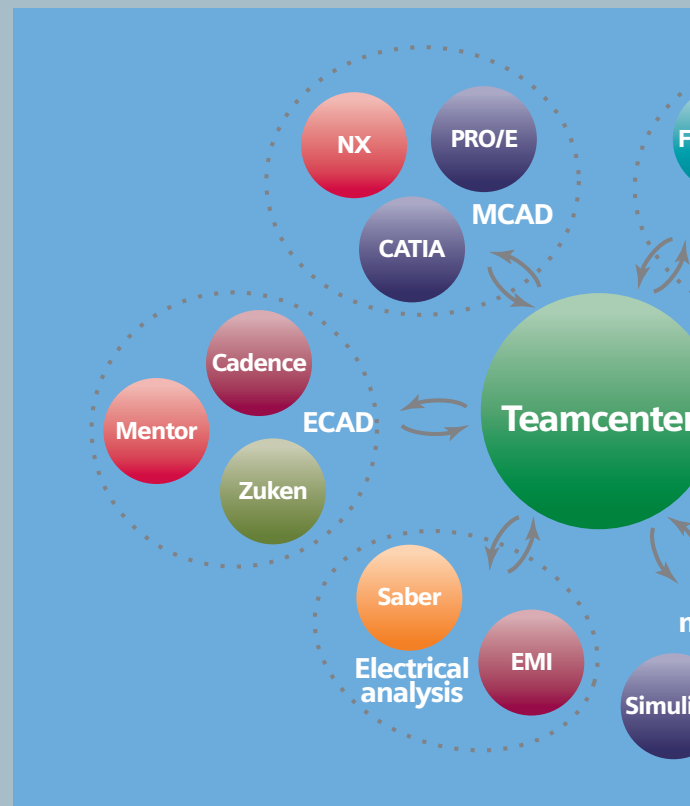
#### How can Siemens help?

Siemens PLM Software's mechatronics solution provides a rich, integrated environment for developing and managing mechanical, electrical, electronic and embedded software content in a single source of product and process knowledge. Engineering teams can retain their domain focus, while working in each other's context to jointly meet overall development goals. This ensures a clear understanding of design intent and provides continuous change impact across the entire electro-mechanical system, minimizing warranty issues, and improving cross-domain collaboration initiatives that fuel innovation.

OEMs and suppliers can:

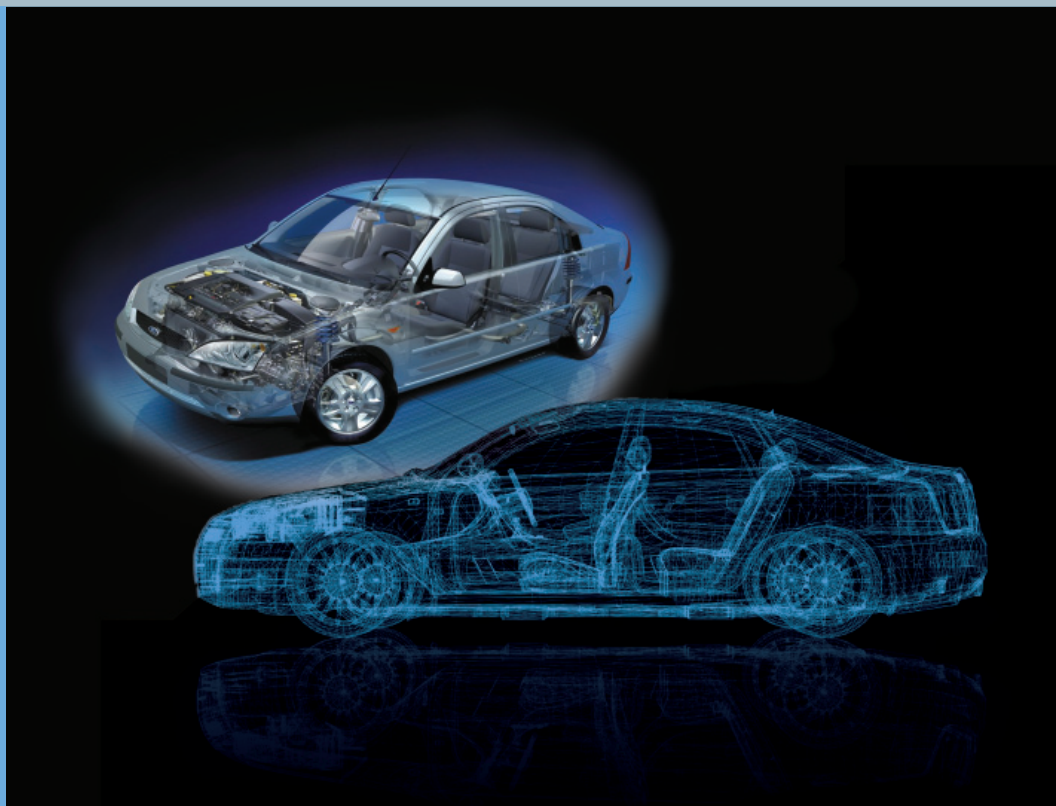
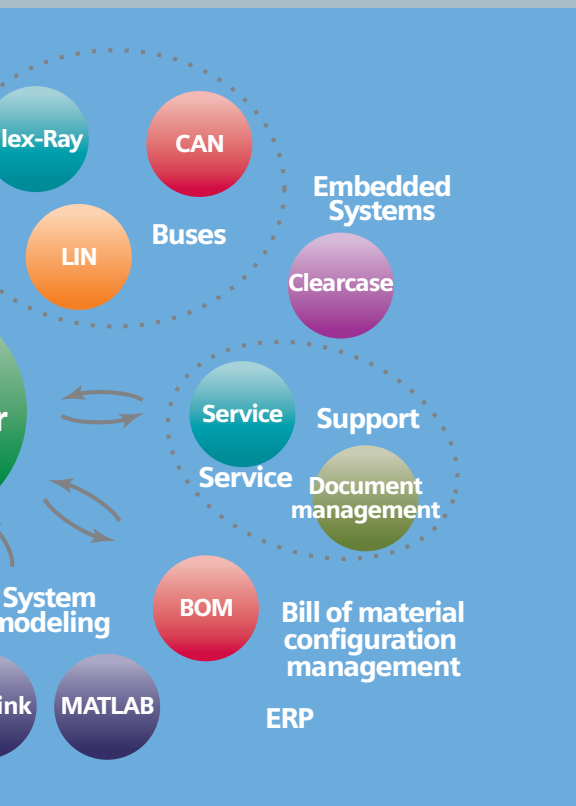
- Reduce product development and warranty costs by identifying and resolving integration issues earlier, especially when adding new innovations to your product
- Give development teams higher confidence in achieving program timing at concept selection
- Enable development teams to synchronize and collaborate more effectively by providing a shared system context across multiple domains
- Improve resource utilization by re-using intellectual property and eliminating repetitive development tasks

Three critical elements ensure that your mechanical, electrical and software development processes and designs integrate successfully in the finished product.



## 1 Single source with best-in-class integrations

Siemens PLM Software's solution for mechatronics products integrates with many best-in-class tools for software, electronics, electrical and mechanical design. As a result, your company can accelerate your development process by allowing engineers to work with familiar toolsets while ensuring that all relevant information is available for continuous collaboration



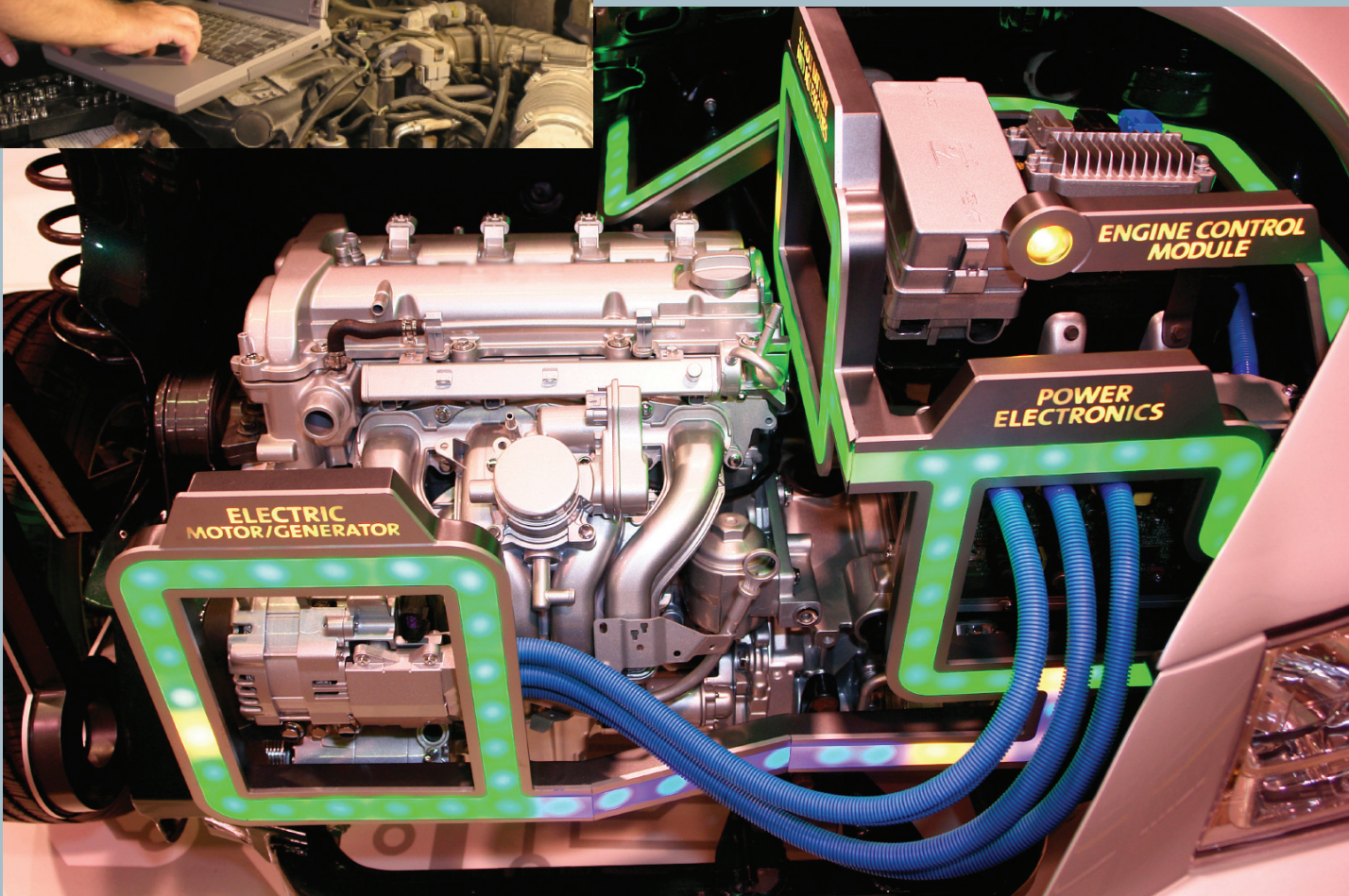
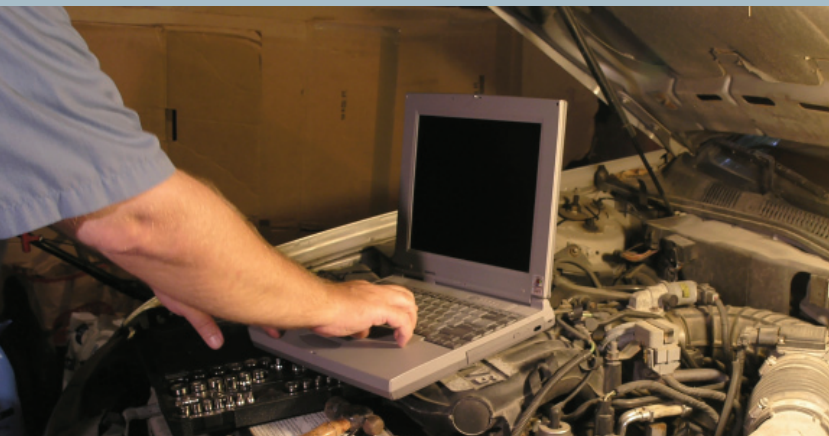
across the development team. A PLM-driven backbone provides you with a single source of multi-domain knowledge. This backbone manages your mechatronics data and achieves significant productivity by facilitating information re-use and avoiding rework. You can further extend this advantage across your supply chain by synchronizing and exchanging mechatronics information with your suppliers.

## 2 Full mechatronics associativity

Your organization will be able to avoid and resolve its integration issues since interactions between electrical, electronic, software and mechanical systems can be easily traced. Dependencies are effectively defined and managed between the different mechatronics systems and domains. As a result, the impact of a change on associated systems can be quickly assessed thereby avoiding iterative loops and rework.

Development teams can demonstrate compliance to customer and regulatory requirements by controlling and allocating requirements across systems and across domains. Implementation risks are reduced when you introduce new innovations since you are now able to synchronize and assess impact at a more granular level – as well as more effectively manage the relationships and interactions between different systems and domains.







### 3 Global product, process and data management

Now you can manage all the complexities of global product variations by accurately representing the Bill of Material (BOM), including software and electronics, for all product configurations. The multitude of vehicle variants are captured and managed, along with their corresponding software versions, individual feature configurations, associated hardware components and calibrations, and operating systems. Additionally, this information needs to be shared with your global supply chain. In the case of software and electronics, as many of the final end item components are developed and delivered remotely it's important to have them tightly integrated into your product development process. Through this global product data management, the final software flashed on specific ECUs can be tracked down to the VIN level. You can be confident that you have the correct level through change, revision and version control.

#### The bottom line

Siemens PLM Software's mechatronics solution transforms the innovation process for mechatronics products by using an integrated PLM environment to manage and synchronize your mechanical, electrical, electronic and embedded software domains. This framework delivers a single source of product and process knowledge throughout the product's lifecycle, allowing global teams to stay current in their information while making effective decisions during the development process. Now you can create a highly efficient development environment for delivering successful products that satisfy your customers.

#### How do I get started?

Contact your Siemens PLM Software representative today to learn how to get your mechatronics solution started.

[www.siemens.com/plm/automotive](http://www.siemens.com/plm/automotive)



## About Siemens PLM Software

Siemens PLM Software, a business unit of Siemens Industry Sector, is a leading global provider of product lifecycle management (PLM) software and services with 4.6 million licensed seats and 51,000 customers worldwide. Headquartered in Plano, Texas, Siemens PLM Software's open enterprise solutions enable a world where organizations and their partners collaborate through Global Innovation Networks to deliver world-class products and services. For more information on Siemens PLM Software products and services, visit [www.siemens.com/plm](http://www.siemens.com/plm).

### Division headquarters

United States  
Granite Park One  
5800 Granite Parkway  
Suite 600  
Plano, TX 75024  
972 987 3000  
Fax 972 987 3398

### Americas

Granite Park One  
5800 Granite Parkway  
Suite 600  
Plano, TX 75024  
800 498 5351  
Fax 972 987 3398

### Europe

Norwich House Knoll  
Road  
Camberley, Surrey  
GU15 3SY  
United Kingdom  
44 1276 702000  
Fax 44 1276 705150

### Asia-Pacific

Suites 6804-8, 68/F.,  
Central Plaza  
18 Harbour Road,  
WanChai  
Hong Kong  
852 2230 3333  
Fax 852 2230 3210

[www.siemens.com/plm](http://www.siemens.com/plm)

© 2008 Siemens Product Lifecycle Management Software Inc. All rights reserved. Siemens and the Siemens logo are registered trademarks of Siemens AG. Teamcenter, NX, Solid Edge, Tecnomatix, Parasolid, Femap, I-deas, JT, UGS Velocity Series, Geolus and the Signs of Innovation trade dress are trademarks or registered trademarks of Siemens Product Lifecycle Management Software Inc. or its subsidiaries in the United States and in other countries. All other logos, trademarks, registered trademarks or service marks used herein are the property of their respective holders. 1/08 X 13