Answers for Manufacturing

Automotive Industry

Siemens IT Solutions and Services
Safeguarding the Future with IT

As a key part of the economy, the automotive industry is one of the most innovative sectors. Increasing, global competition is challenging companies to continually reduce their costs while, at the same time, maintaining innovation and quality leadership. Siemens IT Solutions and Services is the professional partner to help face these challenges thanks to its extensive industry knowledge and many years of experience in the automotive industry.

Being future-oriented in the automotive industry not only requires horizontal technology integration, it also requires new concept development and optimization of entire business processes. Ever-increasing globalization is causing a shift away from traditional, classic business processes and relationships towards distinct networks. This applies to design, manufacturing, sales and logistics networks just as it does to the convergence of information and communication technology and process optimization. The specific challenges are:

- Market and product requirements are changing continually – process complexity is growing and cost pressure is rising all the time.
- Development, manufacturing and logistics need to be better integrated, while product life cycles are shortening.
- Heterogeneous IT landscapes and high maintenance costs for legacy systems are causing unnecessary and increasing IT costs.
- The requirement for global networking is growing continually because the share of added value from the automotive manufacturers themselves is decreasing.
- Strong and rapidly occurring sales fluctuations require increased flexibility in production.
- The holistic planning, implementation, control and on-going improvement of major manufacturing processes and resources require the methodical implementation of a ‘digital factory’, including IT-based tools for well-founded management decision-making.
- The ever-increasing demand for comfort and safety in cars is resulting in more and more electronics. It is scarcely possible to have innovations without electronics, and this also applies of course to software.
Portfolio: Customized solutions and services for the automotive industry
Against this backdrop, Siemens IT Solutions and Services offers the automotive industry a custom, proven portfolio of premium quality IT solutions and services, and hence the optimization of relevant business processes. This applies to:
• IT outsourcing
• Application Management
• Business Intelligence (BI)
• Product Lifecycle Management (PLM)
• Supply Chain Management (SCM)
• Sales and after-sales
• Process harmonization and IT standardization
• Software development and solutions for car electronics and telematics

The basis for all this is the extensive expertise of the entire Siemens group which is, for example, market leader in automation technology, Manufacturing Execution Systems (MES) and PLM software within the automotive industry. At Siemens IT Solutions and Services alone, around 40,000 employees in over 40 countries belong to the global Siemens network.

Industry DNA: IT expertise and automotive know-how from a single source
Embedded in a global technology group which has been a trailblazer in many fields of technology for over 160 years, Siemens IT Solutions and Services is the only IT service provider combining automotive industry know-how with proven IT expertise. Combined under one roof are expertise in industrial/administrative business processes and intuitive understanding of diverse process environments.

Applied innovation: Measurable value-added for customers
Innovations must prove their worth in practical applications. They can only do this, however, when integrated into existing systems and infrastructures. In this regard, the technical expertise of Siemens IT Solutions and Services is based upon a well-developed engineering culture. The results are innovative solutions which offer customers measurable added value. All in all, Siemens is synonymous with the highest levels of reliability and long-term customer confidence.

Quality and reliability: Overcoming challenges together
The high, above-average number of contract extensions attests to the satisfaction of customers with Siemens IT Solutions and Services. Customers value Siemens as a committed, long-term partner that stands by its contractual obligations without reservation and that successfully overcomes difficult situations together and in collaboration with the customer.

Financing: Preserving valuable liquidity with a strong partner
Working in collaboration with Siemens Financial Services, Siemens IT Solutions and Services makes it easier for companies in the automotive industry to make decisions about IT investments. The range of financing products available from a single source is customer-specific and extremely competitive. For the automotive industry, this means easier financial management of complex projects.

In project financing, for example, upfront investment can be reduced or completely avoided. The pay-as-you-use approach ensures a sensible relation between outflow of funds and immediate benefits. Individual payment plans that are flexible as regards term, frequency and variance enable adaptation to any given budget.
Growing Business Value

Siemens provides a broad spectrum of proven, innovative IT solutions and services. Companies in the automotive industry benefit from this because investments amortize within a short space of time and can be implemented with manageable initial outlay.

Information technology and the associated costs must adapt flexibly to the business environment. Responsive IT with flexible models for operation and support are a mandatory requirement today to safeguard sustainable economical success in the long-term.

IT outsourcing: Concentration on the core business, cutting IT costs

The range of outsourcing offerings from Siemens IT Solutions and Services enables companies to optimize their business processes and to concentrate on the development of their core business. This frees up capacity to drive forward urgently required technological or process-specific innovations without a high financial burden. IT costs can be cut by around 25% through outsourcing, depending on the specific company situation.

Application Management Services: More IT performance and efficiency

Application Management Services (AMS) encompass sector-specific applications as well as comprehensive SAP systems. The professional implementation, operation and consolidation of applications by an experienced IT partner, yields many benefits. IT costs can be reduced while business processes are optimized at the same time. Furthermore, IT quality and reliability as well as the global availability of IT applications increase. Application Management is therefore the key to ever-increasing efficiency in the IT landscape and profitable company growth.

Business Intelligence: Aiding management in decision-making

Business Intelligence (BI) is increasingly becoming a strategic factor for success, especially in finance, controlling, personnel, production, logistics and sales. The goal is real-time, reliable support for management decision-making on the basis of professional analysis, reporting and planning systems.

For this, Siemens IT Solutions and Services offers appropriate BI solutions and platforms from SAP and other suppliers, with overall 200 installations worldwide to date. The result is relevant information represented in a clear and concise fashion, in the form of ‘Management Cockpits’ for example. Management is given a flexible set of tools for reporting, consolidation, Corporate Performance Management and planning, integrated into a company portal.

Transformational Data Center: Reducing energy consumption

The Transformational Data Center is an example of how Siemens IT Solutions and Services can combine ecological sustainability and economic success. This can be achieved with consolidation and virtualization of data centers and servers combined with the use of the latest energy-saving approaches. In conjunction with higher utilization, costs for the required hardware (including maintenance) can be reduced by more than half, and the overall operating costs by up to 40% – depending on the individual customer scenario. Reduced energy consumption plays the largest role. Investments amortize in less than 2 years in most cases.

Unified Communication Services: Strengthening communication, saving costs

The use of Unified Communication Services such as LiveMeeting, presence, instant messaging, IP telephony and video conferencing also allows significant cost reduction in internal company communications. With this, for example, savings of up to 50% are possible for telephony costs, about 30% for telephone charges and up to 10% for travel expenses. At the same time, communication between employees (and also with partners, customers and suppliers) is accelerated.
SieQuence® outsourcing: Holistic optimization of IT-based business processes

The SieQuence® approach has been developed in collaboration with Fortune 500 companies. The goal is to continually grow added value in four transformation stages (see figure) with a simultaneous reduction of IT costs. However, the model offers more, and clearly differs from other outsourcing methods in regard to scope and integration; it is the only solution that combines IT infrastructure services with vertical business solutions, is extremely scalable and contains elements extending beyond classic IT tasks.

With the comprehensive SieQuence approach, Siemens IT Solutions and Services offers a general solution for the outsourcing of IT services. Included here are the operation and running of help desks, desktops, data centers, networks and applications. In the industry-specific configuration for the automotive industry, SieQuence encompasses the entire service range – from the IT infrastructure to application management right through to support for specific business processes. A prerequisite for success is well-founded industry knowledge – something Siemens IT Solutions and Services can demonstrate in full.

SieQuence – progressive transformation of the IT infrastructure

The spectrum ranges from user-oriented services (e.g. help desk) to the management and operation of industry-specific applications, to innovation partnerships in the development and provision of future-oriented services.
Overcoming Product Complexity

Efficient Product Lifecycle Management (PLM) is increasingly becoming a survival factor for the automotive industry. The complexity of models and variants is on the increase, especially with regard to how individual vehicles are equipped. Development activities are being outsourced more and more. At the same time, the innovation cycles demanded by the market are becoming ever shorter. An integrated PLM approach creates the required transparency and productivity.

As a consequence of the mass-production of individualized products, intense competition, the networking of numerous partners and globally distributed development and production sites, conventional thinking in the automotive industry is reaching its limits. This means that companies that operate in networks across system boundaries and understand how important it is to integrate the entire cycle of development, production and distribution are securing competitive advantages. The importance of PLM, however, extends far beyond development and production; it encompasses the entire product life cycle and all the related information.

A major element is the convergence of the virtual world (product development) and the physical world (product manufacturing). Significant time, quality and cost benefits can be achieved here. In addition, PLM combines development and production with service (servicing, maintenance) and functions as a catalyst for the after-sales area, growing in importance all the time. A service provided with precise data functions much more efficiently. At the same time, customer experiences can be channeled directly into development. This means that an accurately informed sales organization can conduct business transactions with customers in an even more targeted fashion.

A PLM solution spanning company boundaries converts linear value chains into innovation streams and networks. This enables customers, manufacturers and suppliers, including dealers and garages as well as other partners and service providers, to be linked closely with one another. Great importance is attached to the full integration of development partners in particular. The aim is the manufacture of improved and market-driven products while optimizing costs and time. Step by step, all those involved in the value chain contribute added value.

15 years of PLM experience and first-hand expertise

Siemens IT Solutions and Services offers PLM expertise in three ways – first-hand industry expertise and practical relevance, worldwide leadership of Siemens in PLM software and the much-proven capability to integrate IT processes and solutions company-wide. For international customers in the automotive industry, Siemens IT Solutions and Services can call upon the resources of Siemens as an industrial concern with a strong international presence worldwide and with many years of PLM experience. The PLM portfolio essentially comprises three areas – Consulting, Design/Solution Development and Operation/Support.

- Consulting begins with PLM strategy development and identification of potential in the product lifecycle. Added to this is the development, harmonization and optimization of business processes or selected sub-processes, followed by the definition of a business-oriented IT strategy and architecture and a roadmap for further steps.
• **Design/Solution Development** extends to the development and company-wide implementation of PLM solutions in the fields of collaborative product development, product data management, service, production and visualization that are specifically tailored to the requirements of the automotive industry. Wherever possible, proven standard solutions and components are deployed because this saves development costs, minimizes project risks and ensures quick rollout of the solution.

• **Operation/Support** means transfer of the ongoing operation, support and servicing of the deployed PLM solutions by Siemens IT Solutions and Services on the basis of standardized ITIL (IT Infrastructure Library) processes. This allows a defined high availability at a low operating cost. Furthermore, continuous improvement and modernization of PLM systems and processes guarantee the future security of investments.

**Significantly sinking costs and accelerating market launches with PLM**

The high level of integration of the PLM solutions from Siemens allows customer benefit to be quantified. Here are some typical values:

- Product development costs can be reduced by 25%–40%
- Organization of technical change processes can be improved by 10%–70%
- Productivity can increase 10%–20%
- The pre-production development of a product can be reduced by 10%–50%

Summing up, Product Lifecycle Management therefore means lower development costs, quicker time-to-market, more efficient global collaboration, improved compliance with laws and directives, reduced IT complexity and hence also significantly higher customer retention.
Managing the Supply Chain with Precision

Working together in networks is one of the greatest challenges faced by the global automotive industry. With production-specific and logistics-specific solutions for Supply Chain Management (SCM), Siemens IT Solutions and Services is opening up new opportunities in the global collaboration between suppliers, partners, third-party service providers, dealers and garages.

The focus in the automotive industry on their core competences, and hence the reduction of in-house manufacturing depth, means optimal supplier management is now a strategic task. In addition, increasing cost pressure is forcing the outsourcing of activities to low-wage countries. These trends are extending the supply chain considerably as a result. This is why responsible control of one’s own supply chain includes the active management of risks to prevent potential company financial losses.

The core objective of SCM is availability of the right material in the right quantity at the right time at the right place – in the required quality and in the right order. At the same time, SCM is also about the elimination of potential disruptive factors. This requires a high degree of transparency in the individual value chain stages and in the entire order processing phase so as to be able to have alternative solutions at hand, or to be able to respond as quickly as possible when normal processes are affected by problems. Furthermore, technological innovations such as those offered by the Internet and the location-related benefits of global sourcing must be leveraged profitably for one’s own business environment.

Siemens IT Solutions and Services offers various modular service packages for modern, future-proof and scalable Supply Chain Management.

Optimization of production workflows and supply chain processes

The first step is to provide a consulting service for innovative production and supply chain processes. A comparison of a company’s logistics and production strategies with its business strategy allows strategic initiatives and improvement potential to be identified and defined. The corresponding processes can be optimized in the next step.

The benefits of optimized production and supply chain processes include shorter response times in the event of problems or changes in demand. The overall efficiency of the value chain can be improved and defined performance indicators allow the production and logistics process to be monitored. Not least, it increases the transparency of how IT is actually contributing to business value. In addition, the methodical alignment of applications to process requirements contributes to achieving the goals of reduced complexity and lower costs.
Enterprise Resource Planning (ERP) for production and logistics
Consulting as well as design and implementation of industry-specific ERP solutions begins with a requirements analysis based on the customer’s business processes.

The benefits of industry-specific ERP system enhancements for production and logistics result from a high degree of standardization with predefined process and application models into which the various solutions and also non-ERP systems are integrated. This improves transparency and increases the speed of response so as to, for example, exploit new, attractive business opportunities more quickly or to optimize existing business cycles. Additional issues include the automated integration of third-parties (such as part suppliers, development and logistics partners) in the value chain, shorter cycle times and optimized planning, scheduling and monitoring of production and logistics resources.

Improved planning and monitoring with supply chain automation
The first step is to define planning and supply strategies and processes for inter-company networks, such as the collaboration with suppliers or partner companies. This is then followed by the design and implementation of IT systems with which supply chain planning processes are implemented and automated.

The quality and flexibility of planning increases in an automated supply chain. Planning costs fall while the company-wide flow of information (from production up to strategic management) is improved with integrated solutions. As a result of improved information, more and more complex planning levers are available, such as for production and logistics-specific forecasting, capacity management and material planning.

One practical implementation of this is the introduction of lean production approaches. The cost reduction levers here include Kanban and ‘just in sequence’.

Integration of the supply chain on the production and machine level
The integration of ERP systems and production solutions on a factory level with Manufacturing Execution Systems (MES) is critical to the long-term success of supply chain management solutions. Siemens IT Solutions and Services is the only IT supplier in the world that can provide the combination of IT and industry-specific process expertise required for this from a single source.

Among the benefits are reduced logistics costs for material stocks, storage space, cycle times and processing costs plus significantly improved supply capabilities. In addition, quicker and more reliable delivery commitments enhance customer satisfaction and retention. Quality control can also be integrated. Issues such as traceability with MES can be implemented more quickly.

With its SIMATIC IT solution, Siemens is market leader in the MES sector. This is combined with Siemens consulting expertise for Original Equipment Manufacturers (OEMs) and suppliers.
Manufacturing Intelligence (MI) to monitor the supply chain
The methods and tools of MI reveal the actual performance of complex production and logistics systems. The benefits are improved monitoring and control along the entire value chain by means of transparent performance parameters. As a result, the costs for provision of the required information are reduced and data quality increased as all operating levels are integrated into a single Business Intelligence system. This transparency contributes to the identification of further optimization potential in the individual value chain stages.

Increasing production availability
High cost pressure and capital-intensive machines are forcing companies to tap the full potential of production capacities and to organize maintenance and other internal service processes more efficiently. With an integrated approach, machine downtimes can be reduced or prevented and system productivity increased in the long-term.

Siemens IT Solutions and Services has devised a tried-and-tested, proven best-in-class approach for this. It includes:
• Service process management
• Monitoring of production resources
• Maintenance management
• Business process monitoring

Procurement Management: Transparency – from pre-production to spare parts
The steadily advancing globalization of markets necessitates worldwide procurement of required production material and the manufacturing of goods in large volumes. This affects issues such as:
• Parts tracking (starting with preproduction, including deadline monitoring and sampling process)
• Parts procurement, capacity management, parts naming and buyer assignment
• Global and forward sourcing, sourcing strategy
• Supplier selection and monitoring

The entire parts life cycle needs to be monitored and optimized. To do this, buyers must be able to respond quickly to changes in the market. Another challenge is the ever-increasing cost pressure. These pressures necessitate a high degree of flexibility in procurement, as is the case in production. Furthermore, supplier management from pre-production to post-production is indispensable in gaining a transparent picture of the capabilities of suppliers.

Supplier Management: Effective selection and monitoring of partners
A growing number of companies in the automotive industry are focusing on their core competencies and so reducing the extent of in-house value creation. Suppliers are being commissioned to develop and manufacture complete modules and system units. This is leading to an increase in purchasing volumes and making efficient supplier management an even more crucial strategic success factor.

The integrated approach to supplier management therefore extends from supplier registration/evaluation through risk-oriented and demand-based supplier selection/assessment to the demand-based development and optimization of supplier cooperation. The management of strategic partners plays a special role here.
Greater success through purchasing controlling

A key aspect in successful volume purchasing and replacement part procurement is purchasing controlling:

**Strategic** purchasing controlling is primarily about target setting, monitoring/control and variance analysis. In addition, factors such as purchasing performance per supplier and buyer (down to part level), and price changes on part and model level should be determined automatically. Other issues are turnover distribution by region and currency, periodical result tracking and comparison of current, plan and budget figures. Also included in the strategic tasks are recording of start-up costs, comparison of material pricing on vehicle and model level and any potential variations. 

In the **operational** purchasing control, the focus lies on the monitoring of purchasing performance, the earliest possible detection of changes (such as creditworthiness risks), target agreements with suppliers and the determination of supplier deficits. This presupposes reliable information on these important issues:

- Material-price comparison per model and vehicle
- Deviations from estimated prices from pre-production or forward sourcing
- Actual and planned purchasing performance
- Price changes of raw materials

**Supply Chain Management requires an experienced IT partner**

The complexity of the many different facets of success-oriented, future-proof Supply Chain Management requires adaptive, innovative information technology. For this, Siemens IT Solutions and Services offers an extensive service and solution portfolio tailored precisely to the requirements of the automotive industry and its business partners.
Managing Sales and After-Sales

Given the ever-increasing variety of models, variants and equipment, customers, potential customers, dealers and garages require continuously up-to-date information on products, pricing, servicing and repair. Integrated portal applications allow standardized sales and after-sales processes that also take into consideration national and regional characteristics.

Service, repair, accessories: Raising the quality of customer care
From the viewpoint of the garage or dealer, the key issue is the combination of services on the one hand and parts/accessories on the other. As a result, sales become easier while the quality of customer care is enhanced.

The background to this is, not least, the frequently-changing parts configurations with limited time frames in which to produce and sell. Thanks to the IT-based bundling of services and part/accessory configurations, customers are given transparent and verifiable pricing and delivery commitments. Service and cost alternatives can also be determined this way.

After-sales portal: Simple integration into existing ERP landscapes
The issue of after-sales, especially the payment processes for services and information, is continuing to gain in importance. After-sales portals are the ideal solution here. Among the benefits of portal-based after-sales solutions are the following:

• Automated accounts receivable management including reminder mechanisms
• The replacement of paper-based invoicing
• The generation of cancellations and credits
• Electronic payment transactions with multiple payment methods and types

In addition, electronic availability of services and information does away with the need for the time-consuming storage of documents and their dispatch by post.

Appropriate solutions from Siemens IT Solutions and Services can be integrated quickly and easily into existing IT landscapes. The solution is rapidly available and initial investment is modest due to the fact that payment can be made on the basis of a pay-per-use model.
Spare part management: Increasing availability while cutting costs
The increasing variety in models, variants and equipment in automotive production is also increasing the complexity of replacement part management. Here, a modern scheduling system can play a key role in supporting the processes involved in ensuring a high level of parts availability while keeping storage and transportation costs low. The approaches taken by Siemens IT Solutions and Services are, on the one hand, the re-engineering of system landscapes with heterogeneous architectures and unnecessary interfaces and, on the other, the standardization of processes in replacement part management.

After-sales marketing: Integrating cross-function processes
The satisfaction and loyalty of end customers depend to a large degree on attractive offers (at prices in line with the market), high-quality and timely services and transparent communication. In after-sales marketing, Siemens IT Solutions and Services supports the relevant processes for publication, calculation and sales of new products and service offerings. Here, marketing activities are integrated with the processes in the garage/service, Customer Relationship Management, product management and materials management to build a holistic solution.

Warranty: Avoiding unnecessary costs, increasing profit
The warranty makes up a significant part of the overall costs in service. This is why reduction of these costs, without impacting service quality or customer satisfaction, is of particular importance. With appropriate IT solutions, warranty claims can be substantiated more thoroughly, warranty work can be managed more tightly and the unnecessary exchange of parts can be prevented. At the same time, relevant operational figures can be better monitored and all relevant costs can be included more exactly in the case of supplier regress.
Harmonizing Processes, Standardizing IT

The standardization of IT landscapes and the harmonization of business processes make a key contribution to company success. Integrated packaged solutions that allow for differentiated core processes increase data quality, lower complexity and reduce costs while increasing productivity – a decisive factor for success for the automotive industry with its highly competitive markets.

IT standardization and process harmonization require a systematic, carefully planned approach. Using the methodology and tools from Siemens IT Solutions and Services, a number of typical problems can be solved:

- Heterogeneous process and IT landscapes evolved over time can no longer satisfy the increased requirements for productivity in the long-term.
- Identical processes often exist in parallel in several applications, or are inadequately defined.
- Without a complete process understanding, standardized parameter definition and consistent master data structures, reporting gives only a limited picture.
- Suppliers, dealers, garages and other business partners are not, or not fully, integrated into the overall system of processes.
- The acquisition or sale of companies or parts of companies entails a considerable expenditure for integration/carve-out.
- Time limits for servicing IT application guarantees specified by suppliers (such as up to 2012 for SAP R/3) increase the pressure to act.

Solutions for process harmonization and IT standardization

The extensive portfolio ranges from consulting to design and implementation of the solution to ongoing operation.

- **Consulting** begins with the creation of the necessary conditions – preparation of the customer-side organization regarding planned harmonization activities, readiness check, implementation of governance, risk and compliance structures, development of an IT strategy and roadmap. This is followed in the subsequent value engineering by the analysis of the existing IT landscape, derivation of harmonization potential and the development of economically viable implementation scenarios including cost-benefit considerations.

- **Design/solution development** extends to the consolidation of the ERP landscape within the company, the harmonization of company processes and the standardization of IT in individual specialist divisions. Included here are the harmonization of core processes and collaboration scenarios, standardized integration of business partners and the harmonization of planning processes, business performance and master data management.

- **Operation/support** deals with the build-up of global application management structures for ERP solutions; the efficient operation, support and maintenance of applications, and a high level of value-added through continual improvement and innovation.
Identical alignment of IT worldwide, taking local factors into consideration

Siemens IT Solutions and Services is following a tried-and-tested approach for globally standardized IT landscapes and processes which, at the same time, takes into consideration specific regional/local requirements and embeds them into the overall solution. The list of tools used for this includes Chestra, the project management framework from Siemens IT Solutions and Services, tools in the Siemens SAP framework and the Siemens ABAP analysis tool.

Solid experience from numerous successful projects across the globe

As part of the Siemens group, Siemens IT Solutions and Services combines required industry competence with sound IT expertise. Evidence of this are the over 3,200 successful SAP implementations in some 90 countries and best-practice experience from one of the world’s largest ERP consolidation projects – at Siemens itself.

### Savings potential in % of all SAP costs (approximation)

<table>
<thead>
<tr>
<th>Description</th>
<th>Savings Potential</th>
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<tbody>
<tr>
<td>Harmonize enterprise business processes based on a template approach</td>
<td>30% – 50%</td>
</tr>
<tr>
<td>Harmonize processes in distinct functional areas and consolidate SAP clients</td>
<td>20% – 40%</td>
</tr>
<tr>
<td>Run SAP as separate clients on one system</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Consolidate SAP systems into one data center</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>Harmonize releases of SAP systems</td>
<td>&lt;5%</td>
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**Process harmonization offers the greatest savings potential:** For company-wide business processes based on SAP, a template approach captures cost reduction potential of 30%–50%. For the harmonization of function-specific processes and the consolidation of SAP solutions, savings in the region of 20%–40% are also possible.
By the mid-90s, electronic assemblies were already accounting for 15% of manufacturing costs, but that share has now increased to 25%–30% (depending on vehicle category). And the trend is set to continue. In the foreseeable future, the volumes of data captured and processed in vehicles will be measured not just in hundreds of megabytes, as they are now, but in gigabytes.

The focus of car electronics is the drive train with engine management, transmission control and the car body electronics. There is also considerable innovation in the fields of driver assistance/navigation systems, infotainment/communication systems and Internet-enabled in-car systems.

Innovations despite high time and cost pressure
Innovations are key differentiating features in the marketplace. A non-exhaustive list of what this means for the automotive industry:

- The rapidly evolving field of entertainment electronics is having a significant impact on innovation cycles in automotive electronics. At the same time, conventional IT and embedded technology are converging and are making increased demands on developer skills.
- Research and serial development are increasingly running in parallel. Here, projects must be started at short notice, appropriate employees found and projects then ended or deferred. This can only succeed with excellent project management and flexible resources.
- For many companies, it is simply too costly to keep human resources available for times of peak demand and have in-house experts in every field. The deployment of developers at cost-effective sites and cost-conscious solution design are decisive factors.

Electronics and software: embedded systems, system integration, solutions
Against this backdrop, Siemens IT Solutions and Services offers the automotive industry products, services and solutions in a number of different areas:

- **Dedicated embedded systems** for engine management, transmission control, navigation, infotainment and communication systems, body electronics, chassis and vehicle/passenger safety. Siemens IT Solutions and Services has over ten years’ software development experience in these fields.
- **System integration** involves the product-independent integration of complex systems and components from different manufacturers. The range of services we offer – either in their entirety from a single source or individually based on the customer’s requirements – extends from consulting to design, simulation, prototyping, implementation and integration. We also carry out testing and validation against the specifications, as well as system maintenance.
- **Independent solution modules** reveal the particular strength of Siemens IT Solutions and Services when it comes to the convergence of automotive electronics and IT services.
  - In-car Internet services: Secure, reliable communication links to car audio head units and provision of services from the Internet on a uniform platform, including operator services.
  - Eco telematics: Real-time provision of navigation data and information on the car-external environment such as gradients, curves and road type for the use of vehicle control functions (for adjustments to the engine management system, adaptive headlights or driver assistance system, for example).

Deploying Innovative Electronics
In recent decades, automotive engineering has been transformed by electronics. Software and electronics now account for 70% to 90% of all automotive innovations. Siemens IT Solutions and Services offers OEMs and suppliers in this industry many years of experience in embedded software development as well as its own solution modules.
– Telematics: Development and operation of special telematic devices and applications including call-center services for customer support. Application areas include fleet management, remote diagnostics and emergency/breakdown services.

– Car2X communication: Information interchange between vehicles on the move or with traffic signs or displays, for example, for providing warnings about traffic jams or obstacles or offering added-value services. Siemens is a member of the European Car2Car consortium for this particular field.

Many years of project management experience and proactive acceptance of responsibility
With many years of wide-ranging experience both within the Siemens group and working in external customer projects, Siemens IT Solutions and Services is able to make progress quickly in new embedded software projects and to take on projects already at the critical stage – and to make a lasting success of them. Siemens IT Solutions and Services is used to taking on the overall management of customers’ projects and integrating the customer’s own resources.

Global teams of product and vendor-independent Siemens developers
Siemens IT Solutions and Services has over 6,000 software developers around the world, including 800 specialists for embedded systems. The personnel and technical resources can be deployed tailored to the specific requirements and projects within the automotive industry – from single developers to 100-strong teams. Siemens IT Solutions and Services is product- and vendor-independent and is therefore perfectly positioned to produce technical concepts that meet functional requirements to optimum effect.

By using professional services from nearshore and offshore locations in Eastern Europe, India and China, for example, the costs of software development can be reduced by up to 35%, while maintenance costs can be reduced by over 40%.
Company structures change continually in the future-oriented automotive industry, or are even created completely anew. This is why the integration of value networks, the convergence of information and communication systems and the optimization of business processes are so important. As new company structures develop, service partners must go along with these changes in a spirit of partnership.

**Partnership: Worldwide network, worldwide service provision**

Siemens IT Solutions and Services is the ideal partner for the changes facing the automotive industry. A high degree of flexibility with a balanced mix of onshore, nearshore and offshore production centers is an absolute prerequisite. Siemens IT Solutions and Services has its own branch offices in more than 40 countries worldwide and, as part of the Siemens global technology and knowledge network, is excellently equipped to successfully manage international projects across different locations and countries in close cooperation with its customers. In addition, Siemens IT Solutions and Services benefits from the global presence of Siemens in over 190 countries.

This is why Siemens IT Solutions and Services, as a long-standing and close partner of the automotive industry, is represented in all focus regions by experienced experts, who are not only specialists in their fields, but also intuitively understand the sector dynamics. With this combination of market, industry and IT expertise, automotive production on the international stage can be optimally organized and profitable at the same time.

**Actively Shaping Change**

At Siemens IT Solutions and Services, the long-term, holistic optimization of customer processes is paramount – from product development through to production and after-sales. The goals are successful IT projects that have a positive effect on the bottom line of the business as quickly as possible, quite apart from the purely technical aspects.
Harmonization/standardization of processes and IT
• Process harmonization in development, production, sales and service
• Harmonization for SAP systems and non SAP systems
• Harmonization for infrastructure and architecture
• Solutions for collaboration and business management

Application Management (AM)
Support and hosting of SAP applications and non SAP applications
• Enterprise Resource Planning (ERP)
• Product Lifecycle Management (PLM)
• Others (e.g. CRM, SCM, SRM)

IT outsourcing
Operating, monitoring, support and maintenance of IT systems
• Service Desk
• Desktop Services
• Network Services
• Data Center Services
• Application Operations

Garages

Partners

Car manufacturers

Service and Maintenance

Solutions for service and maintenance
• Increase of production availability
• CRM
• Remote service
• Mobile field service
• Spare part logistics

Logistics
Solutions for Supply Chain Management (SCM)
• ERP solutions
• Supply chain planning and execution
• RFID and supply chain

Manufacturing
Solutions for manufacturing and assembly
• ERP solutions
• RFID in production
• ERP-MES integration
• Production information systems

Dealer

Manufacturing