

## Embedded systems lifecycle management for auto



### Accelerate embedded systems software excellence

Deliver compelling and reliable vehicles with embedded systems with the least risk to your business. Today, customers expect cars to have advanced electronic features and it's your challenge to provide them. To drive both competitive advantage and brand identification, rely on breakthrough innovation from the embedded systems lifecycle management (ESLM) solution from IBM.



### Let embedded systems steer you in the right direction

Shifting from mechanical to primarily software- and electronics-based vehicle innovation has the potential to transform the entire automotive industry. Embedded systems lifecycle management (ESLM) provides a proven design, production and launch process for electronics and embedded automotive software.

A typical implementation would begin with an outline of steps to accelerate the solution implementation process.

- First, we assess the existing systems and software development environment, processes, tools and infrastructure.
- Then, we design a strategy to improve your embedded systems engineering capabilities.
- Next, when you commit to improving the process, we'll provide support with resources, embedded systems integration, infrastructure support, testing assistance or whatever your needs are.
- Finally, ongoing testing and support can help ensure optimal integration and functionality.

### Turning the promise into profit

Embedded systems lifecycle management (ESLM) is designed to help automotive OEMs and suppliers strategically:

- Manage and integrate embedded vehicle software and electronics, developed across multiple suppliers.

- Speed new vehicle time to market and drive predictable launches.
- Implement techniques for more efficient software development and design processes between suppliers.
- Increase collaboration capabilities and access to critical information within the extended-enterprise and suppliers.

Implementing measures that help improve the quality and reliability of vehicle software components can translate directly to your bottom line. We can help you:

- Minimize software-related development costs through process improvement.
- Decrease warranty costs by reducing the number and frequency of software defects.
- Generate revenue faster and reduce costs by improving and making vehicle time to market more predictable.
- Become more profitable by driving innovation and better managing the increasing complexity of software and electronics.



### Making way for today's electronic automotive solutions

Embedded systems lifecycle management (ESLM) from IBM can be the key to delivering advanced car designs to the market to meet growing demands. Currently, there are massive changes underway in every system of new car design—from global positioning systems to air bag sensors, self-adjusting climate control systems, radar sensing and more. How do you turn a profit when the cars your customers want are so complex and costly to design, build and test—with embedded systems lifecycle management (ESLM).

## IBM leverages deep automotive expertise

IBM can help you become an on demand business and seize the opportunities presented by embedded systems. Embedded systems lifecycle management (ESLM) provides capabilities and disciplines to help clients configure, develop, manage and maintain embedded system products for their entire lifecycle.

Developed in collaboration with automotive electronics customers, industry experts and IBM automotive software specialists, embedded systems lifecycle management (ESLM) is built upon broad industry experience.

- Successful solution implementations with major car manufacturers and suppliers.
- End-to-end solution capability, providing unique integration of various solutions and broad outsourcing experience.
- IBM automotive software capabilities leverage deep industry experience required for optimal success.

## Better processes lead to a competitive edge

Knowing how to produce reliable, highly functional electronics is a strategic advantage in the automotive industry as well as other industries. Knowing how to make it work throughout the product lifecycle will determine the winners in the automotive technology race.

Embedded systems lifecycle management (ESLM) provides excellence over systems and software product lifecycle management—a major competitive advantage in automotive innovation. Using an integrated set of embedded systems, tools and services that map software development to your changing requirements, we'll help with your most critical lifecycle initiatives.

- Manage the cost of innovation.
  - Develop embedded software products in a lean, responsive digital design and modeling environment.
  - Focus resources on the products with the most potential.
- Speed time to market.
  - Implement new capabilities that can accelerate and improve your processes.
  - Use testing and simulation to pinpoint software problems early in the development process.
- Reduce production, sales and delivery costs.
  - Communicate and collaborate effectively on electronics development with suppliers.
  - Reuse or extract data from existing designs.
  - Focus on your core competencies and partner with others for non-core processes.

- Comply with regulatory guidelines.

## A major manufacturer builds competitive advantage with IBM

IBM recently worked closely with a leading automotive company's electrical engineering and product development organization to jointly develop internal standards for software and systems engineering excellence. The development and implementation of these new standards will help support the automaker's strategic intent to change the way it governs and guides its electronics suppliers.

Through its new ability to deliver high-quality, cutting-edge products that can provide a faster time to market, the manufacturer expects to stake out a significant competitive advantage.

## Innovation options that drive revenue growth

Saving just a few cents per vehicle can add up to a huge saving over the production life of the model. A dollar saved per vehicle can amount to saving millions of dollars, which in turn can fund significant additional design time.

From development through service, embedded systems lifecycle management (ESLM) can help minimize the cost and impact that software-laden vehicles increasingly pose to your organization's bottom line. Full implementation of embedded systems lifecycle management (ESLM) could realize:

- Significant warranty cost improvements.
- Savings due to reusable software across car platforms and supplier networks.
- Lifecycle management savings due to configurable, updateable software. Benefits could include enhanced features and functions and overall improved vehicle innovation.
- Increased predictability of the entire software-development process.
- Better design, reduced cost and increased quality, reliability and safety of software. As a result, OEMs and suppliers could balance costs in one year and achieve significantly greater savings due to business transformation improvements across the extended enterprise.

## Leverage integrated design and development

Embedded systems lifecycle management (ESLM) from IBM can help you improve the development lifecycle, including system and software design, integration, testing and deployment. Our solution is based on open standards to support the future growth of embedded software vehicle components.



### Get the job done right

Embedded systems lifecycle management (ESLM) is built on more than 25 years of automotive industry experience.

- We've delivered complex solutions to major vehicle manufacturers and suppliers worldwide.
- IBM has experience with remote diagnostics and ongoing software update maintenance.
- We have automotive industry product lifecycle management experience in mechanical and electronic development.

### The right tools for analyzing data

The basis of embedded systems lifecycle management (ESLM) is to help OEMs and suppliers effectively adjust products, business processes and core competencies to adapt to software- and electronics-based vehicle innovation. Components of the solution cover virtually the entire software lifecycle, including software:

- Design
- Development
- Testing
- Integration
- Deployment
- Maintenance

Our technology infrastructure complies with open industry standards and includes a suite of tools for embedded software development, collaboration and data/software logistics. Our solution can include:

- Integrated architecture and suite of tools for embedded software development.
  - Eclipse, our open source universal tool platform, and IBM WebSphere Studio Workbench,

engineered to integrate a wide range of software development tools into a common platform.

- Rational software from IBM for development and testing tools.
- Engineering data management providing traceability for a complete development process.
- Configuration management and distribution tools for maintaining software in existing vehicles.
- Remote or wire-line access to vehicles providing verification, compatibility check, software and personalization data update and management of registration information.

### Deployment methods that hit all the right milestones

From concept to planning, development, launch and lifecycle management, embedded systems lifecycle management (ESLM) offers defined deliverables and milestones. We can:

- Perform trade-off analyses, including requirements partitioning and allocation-mechanical, electrical, electronic and software.
- Plan system infrastructure, interface and functionality.
- Perform development activities, conduct reviews, produce or procure prototypes and software.
- Verify, test, track and fix problems.
- Provide test design and test execution services.
- Provide engineering release and production support.
- Maintain product support, upgrades and fixes.

### Software-overhaul can drive down costs

Your legacy design and electronics architectures may no longer be adequate for the complexity of embedded systems, but that doesn't mean you can't leverage your existing systems. Utilize embedded systems lifecycle management (ESLM) to help reduce total cost of ownership.

- Improve quality and reliability of data and logistics system infrastructure to help reduce IT maintenance costs.
- Boost component development and testing mechanisms to help reduce recall costs and prevent costly errors.
- Integrate a security-rich infrastructure that's flexible and scalable for future demands and growth, without further investments.

©Copyright IBM Corporation 2008

IBM Corporation New Orchard Road Armonk, NY  
10504 U.S.A.

Produced in the United States of America 3-06 All Rights  
Reserved

IBM, the IBM logo, ibm.com are trademarks or registered  
trademarks of International Business Machines  
Corporation in the United States, other countries, or both.

Other company, product, or service names may be  
trademarks or service marks of others.

References in this publication to IBM products or services  
do not imply that IBM intends to make them available in  
all countries in which IBM operates.