

# Embedded Systems Lifecycle Management

## The Challenge

Innovation plays a key role in successful enterprises, but must be a managed process. Managing innovation is particularly of importance in industries engaged in embedded systems development. The embedded systems market is characterized by such market considerations as: consolidation and globalization; rapid innovation and competitiveness; cost efficiency/reduction and productivity improvements; security and intellectual property protection concerns; and regulatory compliance.

## Embedded Systems Realities

- High degree of complexity of environments and interactions between systems and a rising percentage of software within embedded components
- Software code reuse and re-engineering
- Rapid innovation and release cycles in response to shifting market demands
- Real time requirements management, and requirements reuse
- Increased focus on quality and process maturity

## Embedded Systems and Lifecycle Management

Within the rapid innovation cycle of the embedded systems market, requirements are defined, systems are modeled, designed, developed, and deployed, and then maintained and upgraded. With mounting time-to-market pressures and the increased complexities globally-dispersed teams of outsourcers and consultants management of the innovation process and each stage of the lifecycle is critical for maintaining control and reducing business risk.

Embedded systems development demands a lifecycle management system

that is flexible and nimble, and processes that support an environment where:

- Business priorities and requirements change in real time
- Development activity is collaborative and built on agility,
- Code and components and requirements can be reused to maximize efficiency and minimize costs, and
- The quality of systems and intellectual property investment can be preserved and protected

## The Solution – Managed Innovation with MKS Integrity

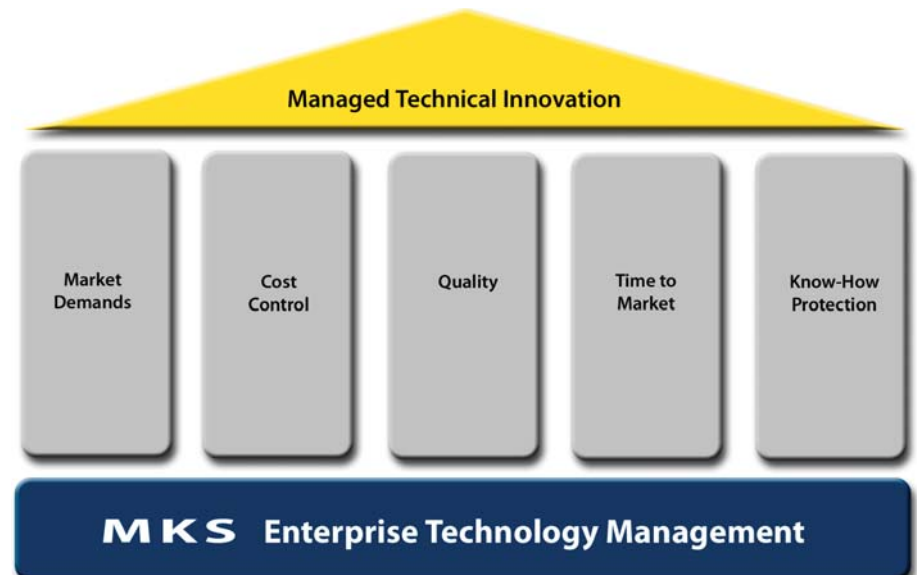
MKS Integrity combines powerful requirements management and software configuration management with flexible process enabling organizations to manage innovation across five areas:

MKS delivers an end-to-end lifecycle management solution that enables embedded systems teams to manage innovation along these five fronts, to direct complex development activity, maintain clear and continuous lines of communication between development centers around the globe

while facilitating agility and rapid release cycles, and retain a high level of software quality and IP protection while maintaining a low total cost of ownership.

## Requirements Management

Requirements are one of the most critical aspects of the software or product development lifecycle. Requirements management is a well established practice in industries engaged in embedded systems design, including automotive, aerospace and telecommunications. MKS Requirements management (RM) system for capturing market and business requirements, and forms the entry point to downstream lifecycle processes. MKS's integrated and robust requirements management solution is built as an extension of core software configuration management, enabling full traceability of requirements through the full development process and encouraging continuous collaboration between the business and development and engineering staff for greater agility and responsiveness to market change. A bi-directional flow of information within the system supports



the concept of 'real time requirements' keeping all development teams aware of requirements changes as they happen, and business staff updated on associated development tasks and project status.

### Flexible Process and Workflow

Embedded systems teams must move quickly and with agility to respond rapidly to shifting market demands, and need process flexibility and adaptability. MKS Integrity provides flexible, yet powerful process and workflow support allowing organizations to automate manual tasks with ease, move with speed and agility, yet with appropriate rigor to ensure software quality is uncompromised. Automated notification and escalation allows for fast cycle times accelerating your time to market.

### Configuration Management and Reuse Support

Powerful configuration management and reuse support enables embedded systems teams to reuse software and system components and requirements while remaining firmly in control. Within the MKS Integrity platform components can be reused and applied to new projects and adapted in parallel while maintaining a complete history of change to each component and its variations. Within the MKS platform, reuse efforts can be streamlined, minimizing the need for rewrite and redesign, and enhancing productivity while lowering complexity and costs.

### Metrics, Analytics and Reporting

Many embedded systems teams spend more time debugging their code or hardware than they do in the development stage. Moreover, 44

percent of embedded systems projects run over schedule. To reverse this trend, embedded systems teams need processes that put the emphasis on raising software quality. MKS's single lifecycle system, with real time dashboards and sophisticated reporting facilitates collaboration across teams, and brings visibility and metrics related to project execution, schedule variance, and rework efforts to immediate light allowing managers to make adjustments and course corrections to improve the overall quality of their projects and process maturity levels.

### Enterprise Security & Distributed Development Support

A sophisticated security and permission model protects intellectual property throughout the development lifecycle, and process support can be established to tie systems work to contractual commitments and SLAs, government or regulatory compliance requirements, or internal mandates. MKS Federated Server architecture enables you to maintain these secure policies even for geographically dispersed teams, outsourced and joint venture projects.

A centralized repository controls all activities in the development & design process and stores all relevant artifacts including processes, requirements, design documents, project plans, test cases and plans, source code, allowing teams to maintain on-shore control of critical assets and IP and minimize administrative burden, while optimizing process.

### MKS Embedded Systems Customers

- 3-Way Networks
- Alaska Communications Systems
- Arch Wireless
- Avaya
- Autoliv
- Continental AG
- CMC Electronics
- CSI Wireless
- dSPACE GmbH
- Deutsche Telekom
- EADS
- France Telecom
- Hella KG
- Helbako GmbH
- JSI Telecom
- Magna Steyr
- Maerske Data Defense
- Motorola
- Micron Electronic Devices
- NASA
- NTELOS Communications
- Parker Hannifin
- Knorr-Bremse
- Research in Motion
- Robert Bosch
- Tele-Atlas
- Telenor Mobil

### Contact Us Today

For more information about MKS and MKS Integrity for Embedded Systems visit our web site at <http://www.mks.com>, or by calling 1-800-613-7535 (US & Canada), +49-711-351775-0 (Germany), +44-1483-733900 (United Kingdom), +65-6732-8768 (Asia Pacific/Singapore) and +61 3 9674 0454 (Australia)

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