Model Driven Engineering in Motorola

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Overview

• Historical Perspective of MDE in Motorola
• MDE Product Deployment Success
• Common Success Factors
• Key Issues
• MDE Strategic Management
Historical Perspective of MDE in Motorola

• Deploying MDE-based products for over 10 years
• Deployed solutions from multiple vendors
  • Telelogic
  • IBM/Rational
  • I-Logix
• We have taken a top-down approach to apply MDE to the entire lifecycle
  – Is everyone else just trying to reverse engineer their legacy code?
• Built our own support structure
  – Test Automation Framework
  – Code Generators
  – Environment Interface Framework
MDE Product Deployment Success

- Most widespread use is in the Networks business
  - Large, complex systems with high capacity and availability requirements
- SDL
  - Multiple network elements in the field
  - ~3x better phase containment effectiveness
  - 2.5x – 10x productivity improvement (over $25M savings)
- UML 1.X
  - High Availability Platform – availability behaviors defined in model
  - Reduces resources to one dedicated modeler per team
- UML 2.0
  - Multiple products will be deployed to customers this year
  - Productivity improvements seen similar to SDL
Common Success Factors

- Biggest benefit comes when modeling is integrated across the lifecycle

Product Models

Requirements Models

Test Models

Code Generation

Target Testing

Simulation & Logic Debugging

Test Generation

Product Code
Isolated Models Reap Fewer Rewards

• Teams that use modeling in an isolated fashion don’t reap big rewards
  – Helps an individual or team solve a particular problem
  – Typically results shared with other teams, but not model itself
Key Issues

• Teaming
  – Different Teams / Different Tools
  – Different Teams / Different Level of Abstraction
  – Different Teams / Different Processes

• Abstraction
  – Skill not widespread in engineering workforce, even those with years of industry experience

• Data
  – Platform independent models are nearly impossible to create due to data complexity issues
  – Tools have limited support for complex data

• Performance
  – Teams hesitant to use code generation for fear of slow performance
  – Primary factor for limited MDE deployment in Mobile Devices
Key Issues - Continued

• Tool Support for Full Lifecycle
  – Traceability
  – Metrics
  – Static Analysis
  – Automated Testing
  – Change Management
  – Debugging

• Tool Interoperability
  – Metamodel
  – Language
  – Diagrams
MDE Strategic Management

• Technology Advisory Board - MDE TAB
  – One of many corporate level TABs
  – Corporate level board to set strategy for MDE use
  – Representatives from each business, the Labs, and the Global Software Group

• Key Activities
  – Share best practices
  – Evaluate vendor products
  – Manage strategic vendor relations
  – Document challenges
  – Provide guidance for new adopters