

Innovate2011

The Premier Software and Product Delivery Event

 **Software. Everywhere.**



Enabling software-driven innovation with new and enhanced solutions from IBM

Richard Crisp

Director, Systems Engineering

IBM Software, Rational

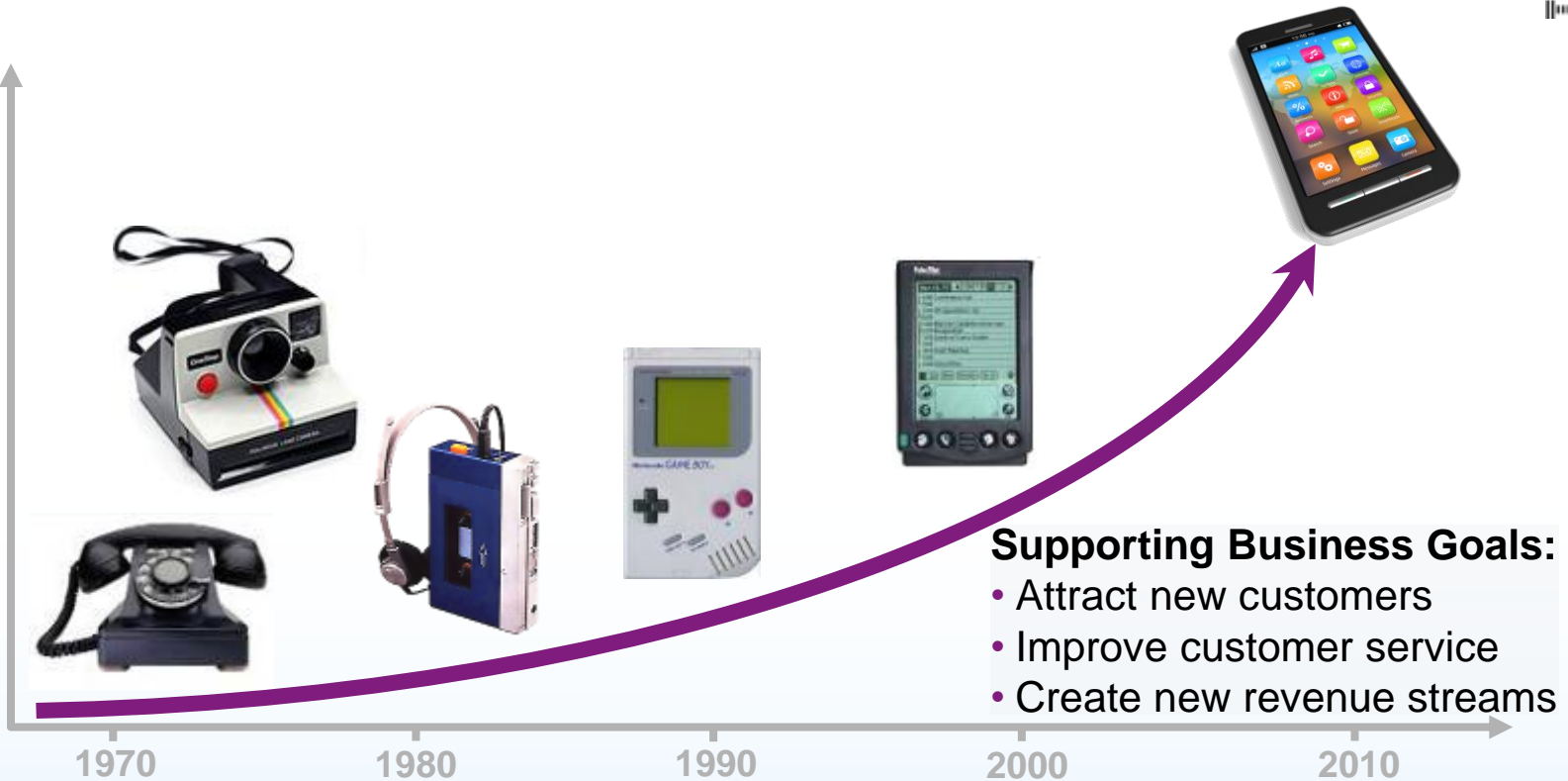


We didn't get here overnight

Uniquely customizable phone, email, music, Web, camera, GPS, games, apps, video recorder... in a single device

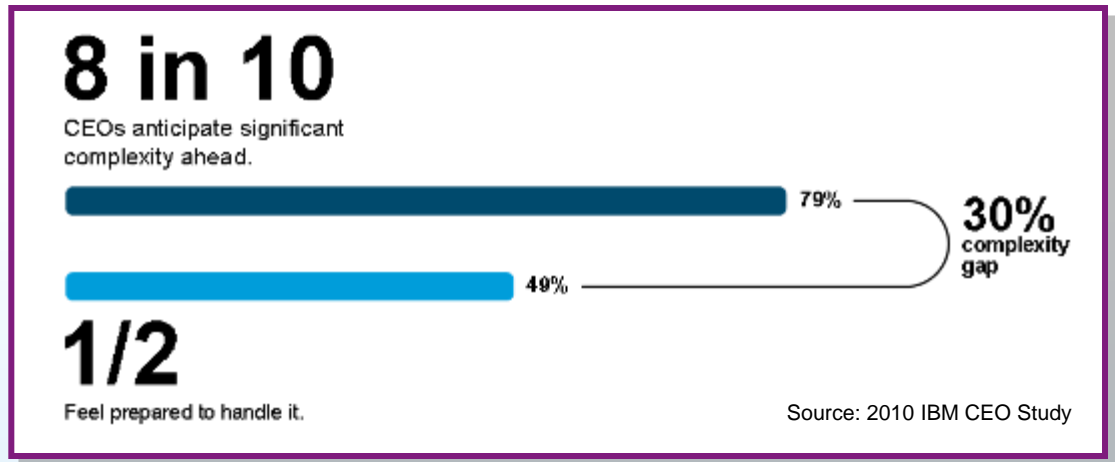
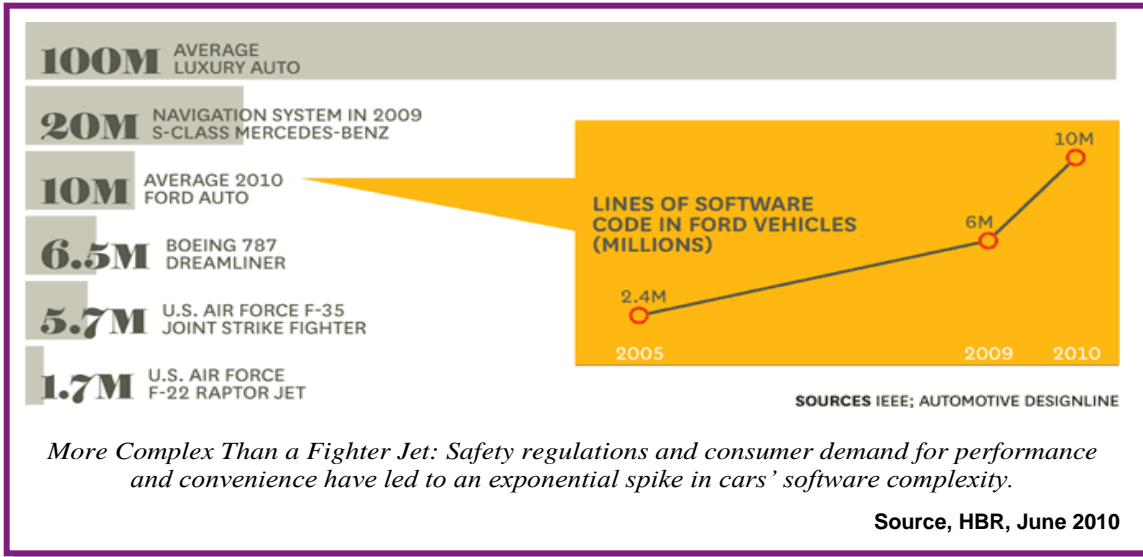


**Software
Functionality
and Amount**

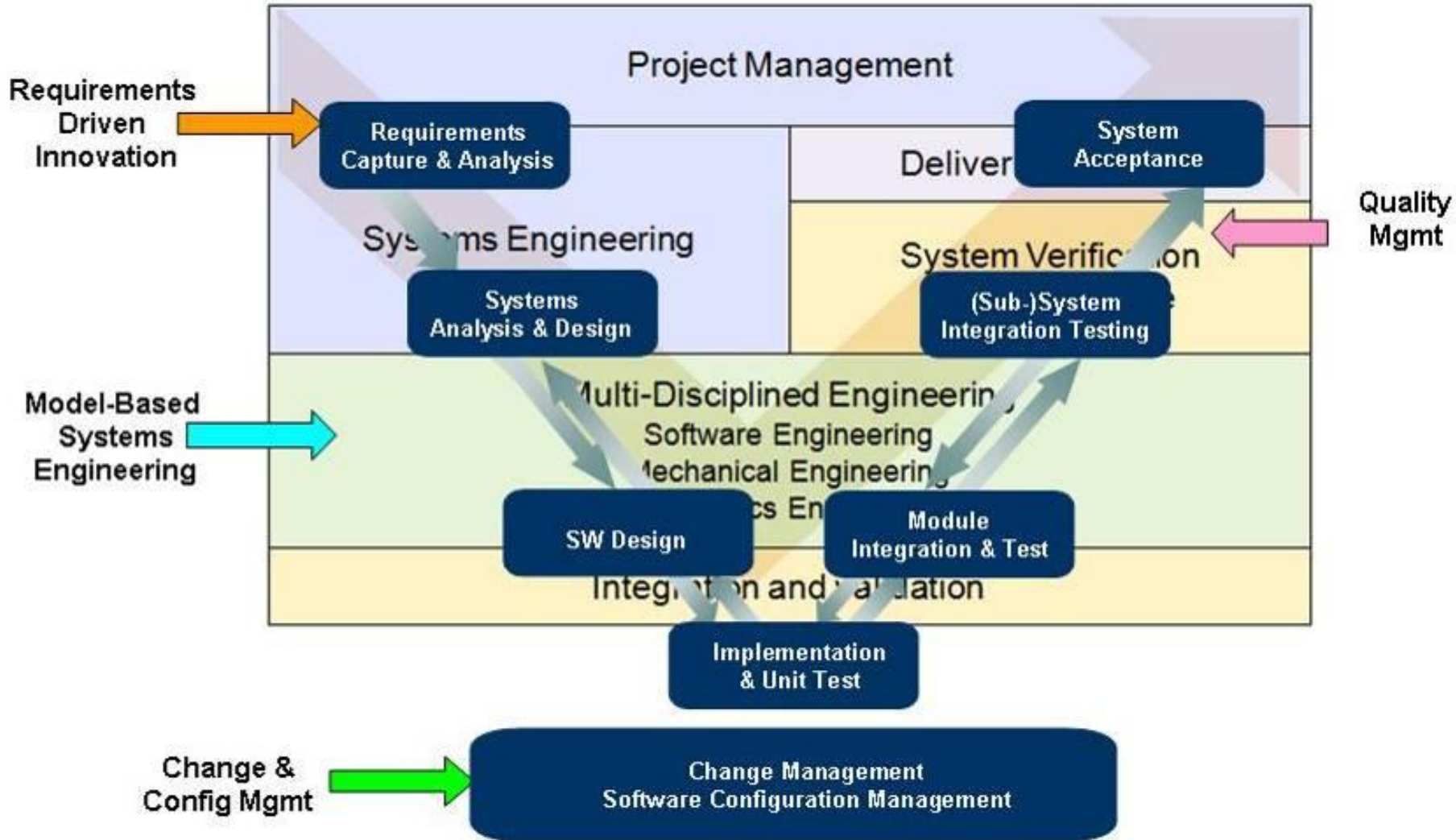


Introduction of software brings complexity

Yet few are prepared to handle it



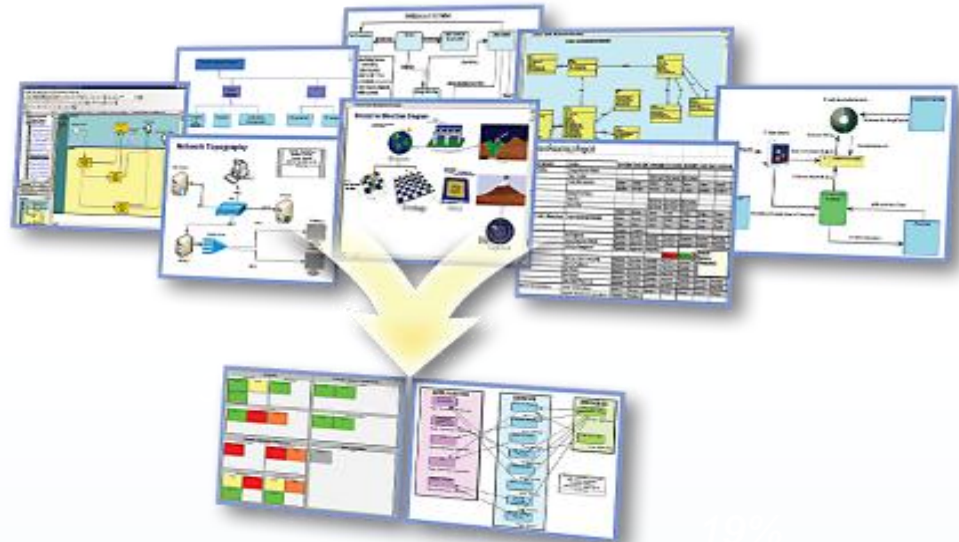
Using Systems and Software Engineering to meet the Challenges of Smarter Product Development



Best-in-class product & service companies are those that build a strong competency in systems engineering

Best-in-class produce results:

- **19%** more likely to meet revenue targets than the industry average
- **4.4x** more embedded software than competitors
- **50%** fewer defects in embedded software
- **25%** decrease in product development time



Source: "Embedded Systems Development", Aberdeen Group, March 2009

What Hinders Innovation?

In our customer's words



Evolving Business Models

"I need to transform product development to be more collaborative while removing redundant activities."

Increasing Product Complexity

"I need for mechanical, electrical, and software engineering to all be on the same page."

Extension of the Enterprise

"I need a way for all my design and supply partners to participate in a unified process for product development."

Disconnect with Operations

"I need to ensure that the products I build can be profitably supported and maintained over their lifetime."

How IBM is Leading the Innovation Agenda



Software and systems delivery

Integrate
across the
development
lifecycle

**OSLC and the Jazz
Platform**

Collaborate
among
stakeholders

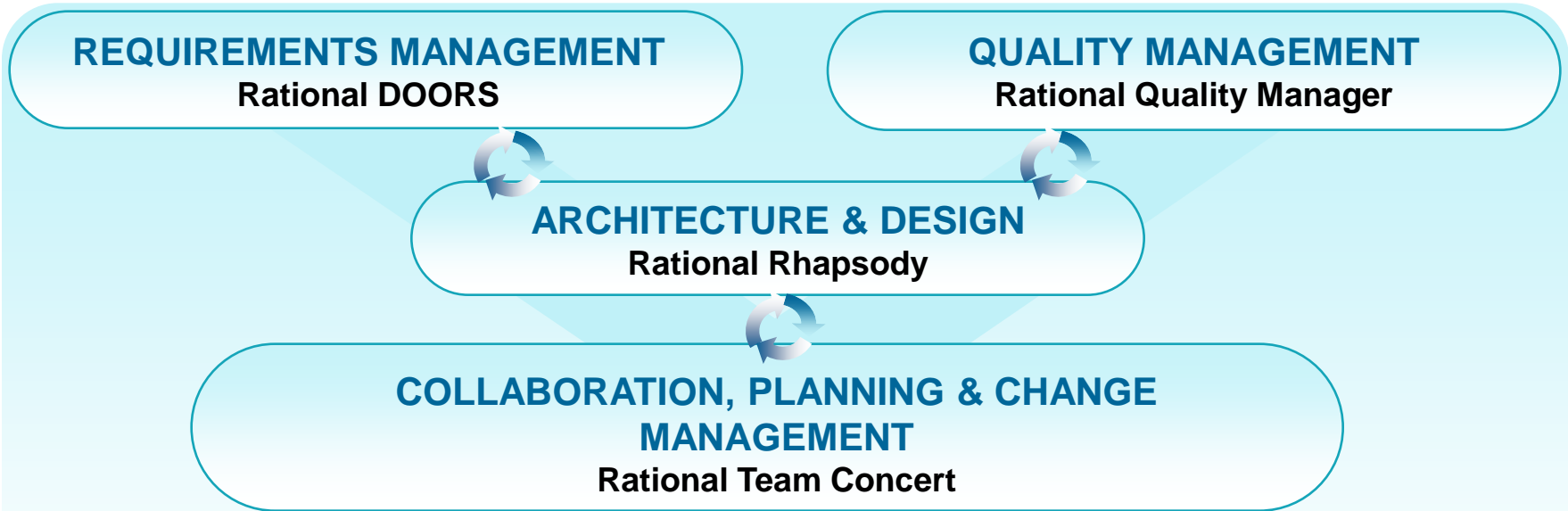
**Collaborative Design
Management**

Optimize
outcomes through better
measurements and
organizational steering

**Systems and Software
Engineering Solution**

Systems and Software Engineering Solution

Technology, Best Practices, Services and Industry Solutions



DODAF



Open Services for Lifecycle Collaboration



ISO 26262

Automotive SPICE?



Innovate2011

 Software. Everywhere.

Business Partners ecosystem for Systems



Ready for IBM Rational Software

Automated code review integrated with Rational Team Concert workflow



Ready for IBM Rational Software

Extends Rational Software Architect with software defined radio industry toolkit

This site Powered by



Ready for IBM Rational Software

Develop, deliver and evolve a product line portfolio



Ready for IBM Rational Software

Automated Team Build-Deploy-Test for Web Sphere from Rational Team Concert



Research and development of technology business consultancy, system integration



Ready for IBM Rational Software

Trace, control, manage product requirements across engineering domains



Offerings and assets designed to maximize IT spend through people and process optimization



Ready for IBM Rational Software

Architecting, designing, implementing and maintaining suitable software change management solutions



Architecting, designing, implementing and maintaining suitable software change management solutions



Find and manage open source approvals



Execute mobile handset tests.



Enable bidirectional JIRA change management integration



Embedded software quality lifecycle management



Electronic design data management



Software model simulation

A few of over 150 Ready for Rational active integrations



Customer Success Stories



General Motors Video

Innovate2011

General Motors leverages Rational tools to develop innovative products

IBM helps GM develop smarter products like the Chevrolet Volt



What's smart?

- Innovative electric drive system uses software and electronics to control interaction of electric motors and gasoline engine
 - “System of systems” seamlessly integrates electric drive system with powertrain and body controllers
 - >10 million lines of code in car; nearly 100 microprocessors

Smarter business outcomes

- Smarter products delivered in less time
 - Volt was delivered in <5 years, compared to typical 10+ year development cycle for new vehicle technology

How IBM helps GM develop smarter products

- Rational DOORS for requirements management
- Rational Rhapsody for model-driven development
- Rational Team Concert for team collaboration
- Rational Asset Manager for engineering asset management
- Rational Professional Services for technical services
- IBM Global Services for business transformation services

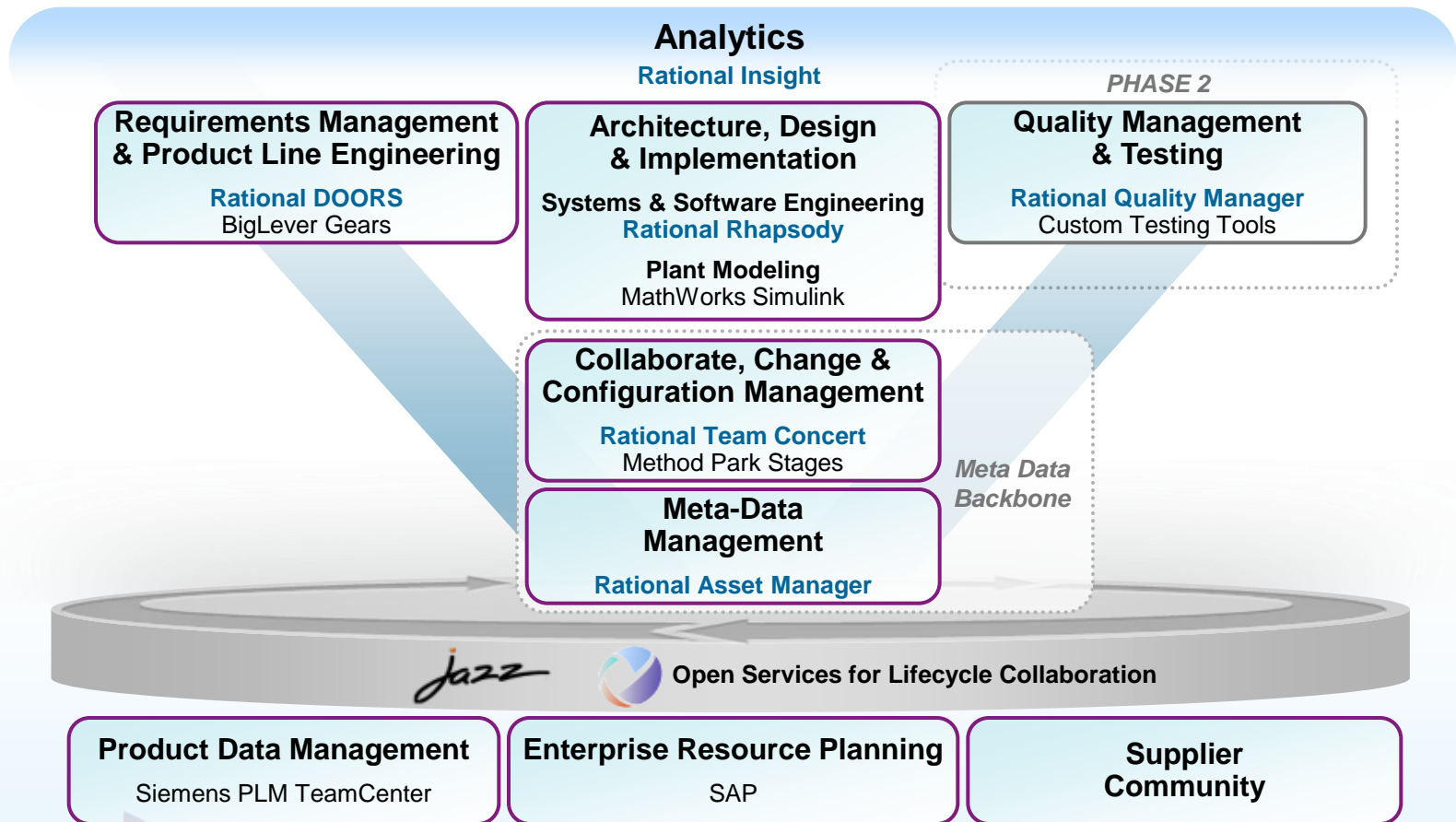


“The IBM Rational platform enables our globally distributed teams to collaborate in real-time to develop innovative software and electronics for our vehicles. GM’s use of the Rational platform will deliver business results in efficiency, time-to-market, quality, and overall customer satisfaction.”

General Motors

Customer Success: GM

Chevy Volt designed and engineered in 29 months versus typical 5-10 year cycle for new technology

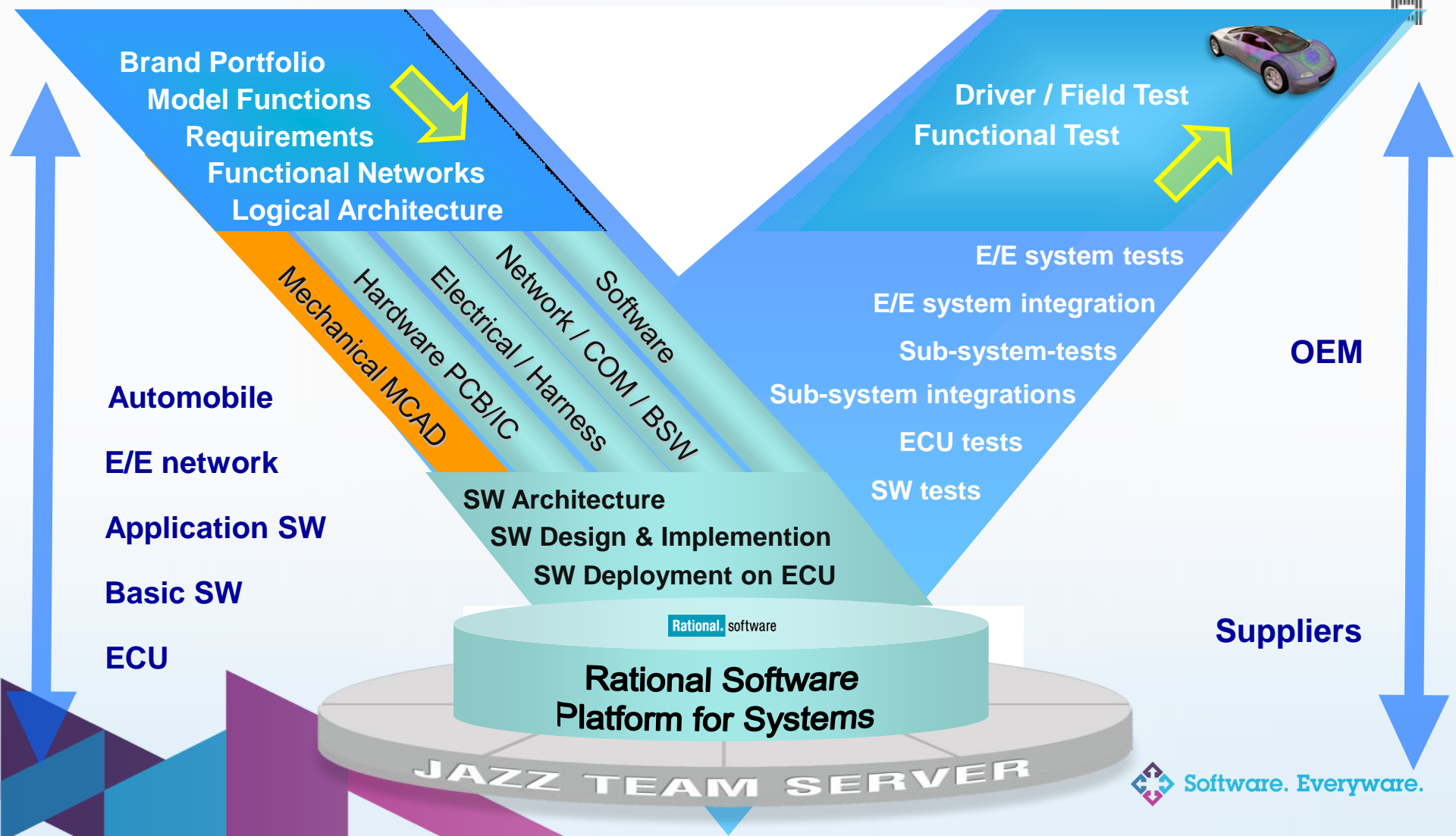


Systems Lifecycle Management

integrates teams, disciplines and workflows along the V-Model



→ Service After Sales
→ Manufacturing



St. Jude Medical

Interconnected life sustaining technology

The Challenge

- Reduce cost, time to market in highly regulated industry
- Plan growth & sustainability of complex System of Systems

The Solution

- Systems of Systems approach both inward and external focused
- Common and/or reusable components
- Technical governance, Integration of work streams
- IBM Rational DOORS, Rational Team Concert, ClearQuest, ClearCase, BuildForge

The Result

- Streamlined regulatory reporting
- Improved margins, lower product costs
- 30% increase in product deliveries to market
- Development costs reduced by up to 25%



ST. JUDE MEDICAL™
MORE CONTROL. LESS RISK.

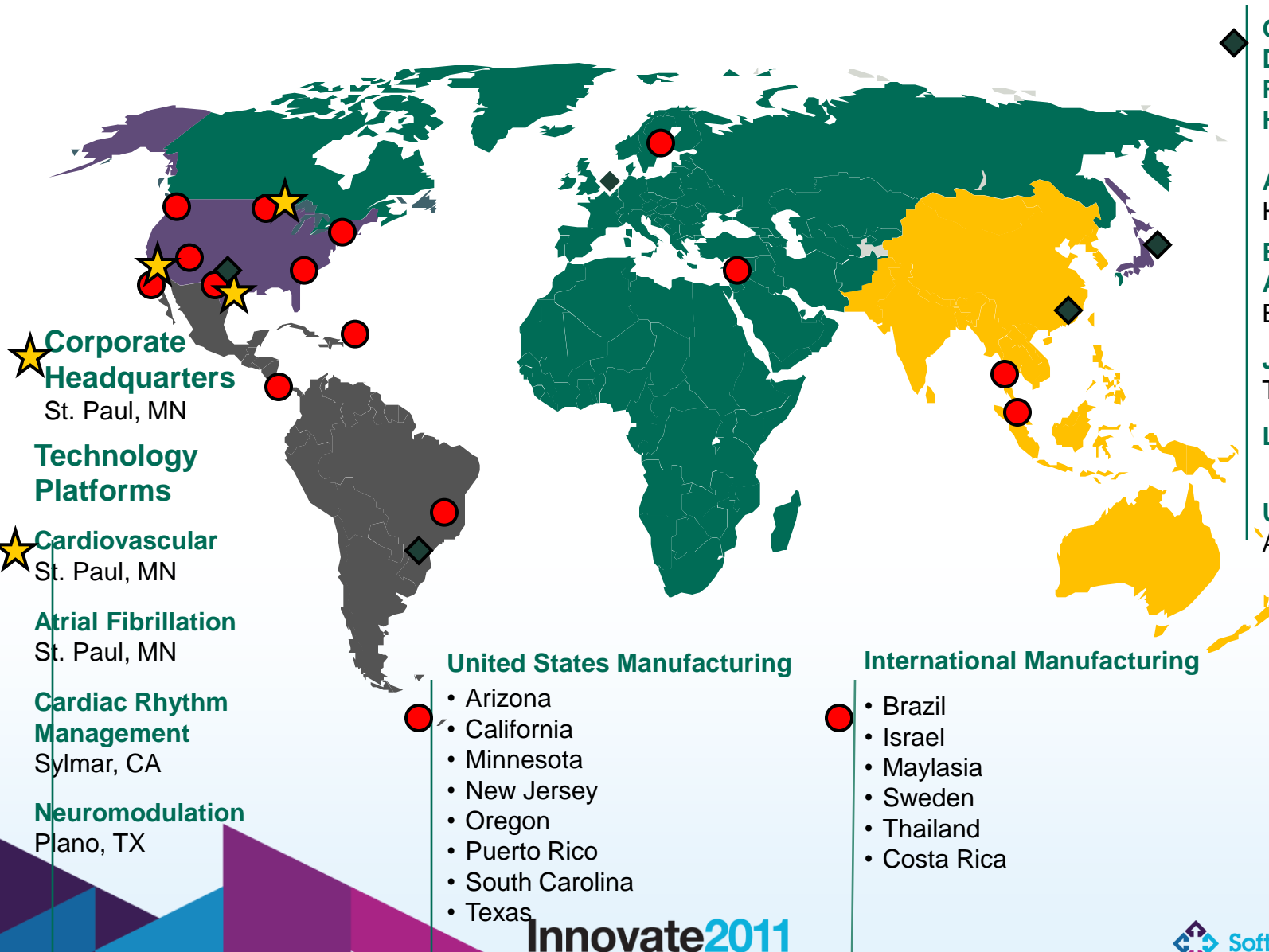


“Creating a Systems of Systems approach that strategically fits together both internally and externally has enabled us to reduce our costs and increase our output”

*Cyndi McHenry, Director, Product Development
Strategic Planning, Tools & Logistics, Cardiac
Rhythm Management Division*

St. Jude Medical

Global Presence



★ **Corporate Headquarters**
St. Paul, MN

★ **Technology Platforms**

★ **Cardiovascular**
St. Paul, MN

Atrial Fibrillation
St. Paul, MN

Cardiac Rhythm Management
Sylmar, CA

Neuromodulation
Pano, TX

United States Manufacturing

- Arizona
- California
- Minnesota
- New Jersey
- Oregon
- Puerto Rico
- South Carolina
- Texas

International Manufacturing

- Brazil
- Israel
- Malaysia
- Sweden
- Thailand
- Costa Rica

◆ **Geographic Divisions**
Regional Headquarters

Asia Pacific
Hong Kong

Europe, Middle East, Africa, Canada
Brussels, Belgium

Japan
Tokyo, Japan

Latin America

United States
Austin, Texas



St. Jude Medical - Challenges & Outcomes in Medical Device Development



Challenge:

- Reducing cost and time to market in a highly regulated industry and interconnected life sustaining technology in today's economic environment

Outcome:

- Created high level Systems of Systems approach both inward and external focused
- Show strong high quality foundation
- Streamlined regulatory reporting
- Improved margins (Lower product costs)
- 30% increase in product deliveries to market



Thank You

www.ibm.com/software/rational

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