



# Agility@Scale

## IBM's Journey of Agile Transformation

Dibbe Edwards  
Vice President, Rational Development  
dibbed@us.ibm.com  
AGL-2260

IBM Software

# Innovate2012

The Premier Event for Software and Systems Innovation



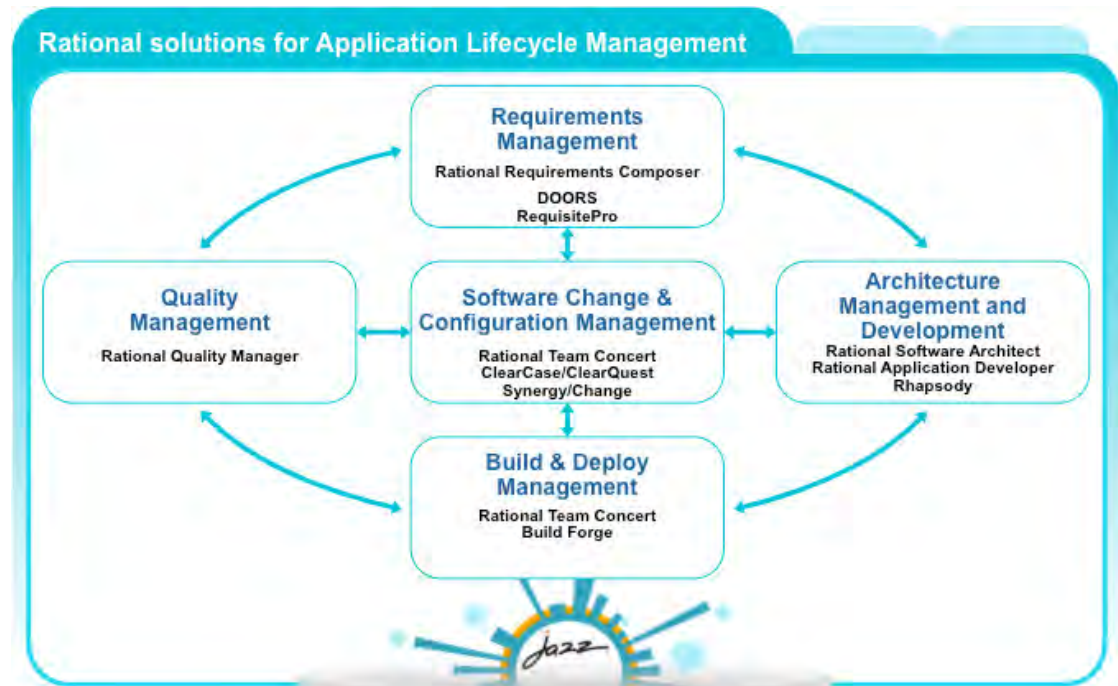
# Welcome



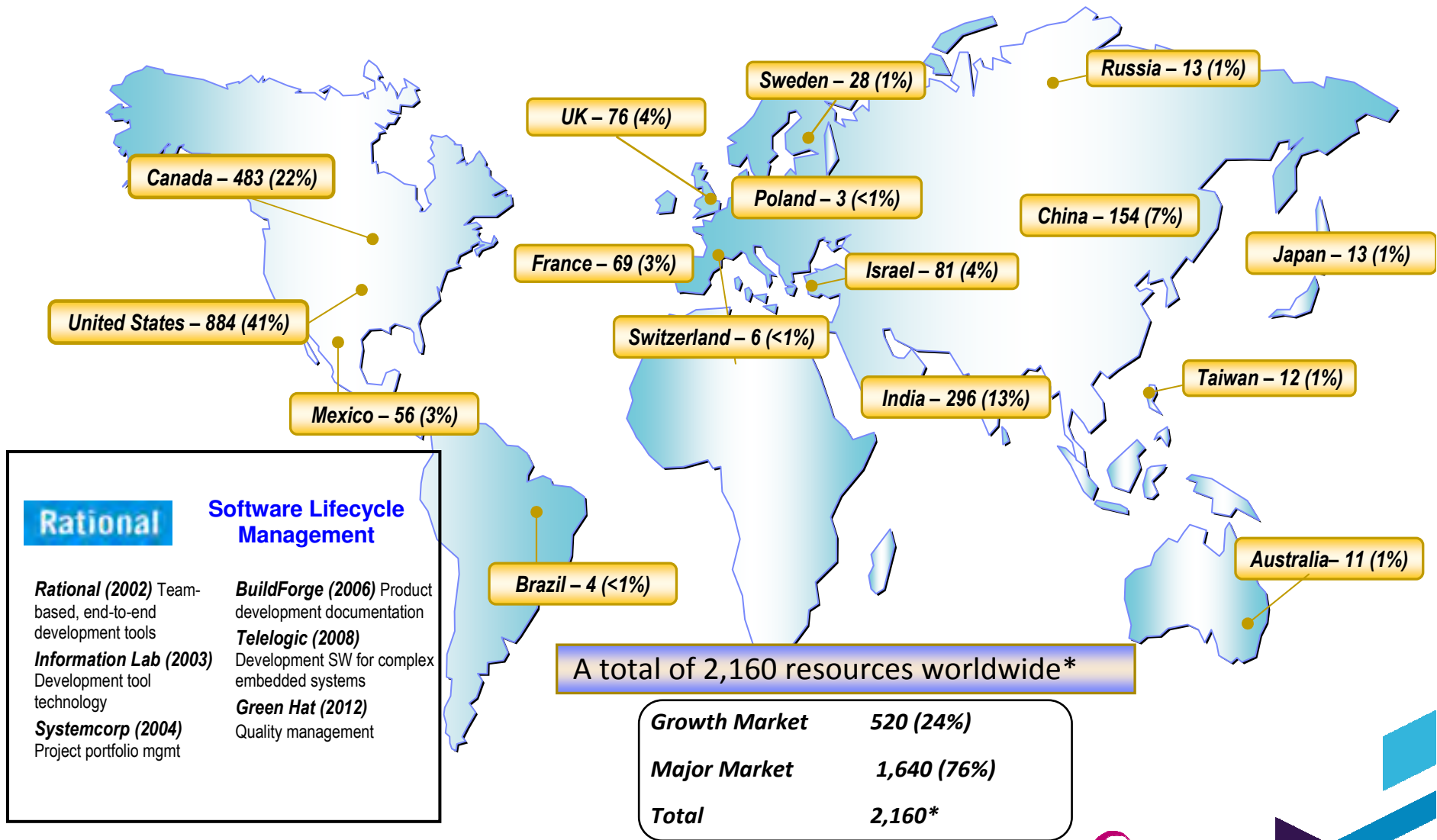
**Dibbe Edwards**  
**IBM Vice President, Rational Development**

Responsible for:

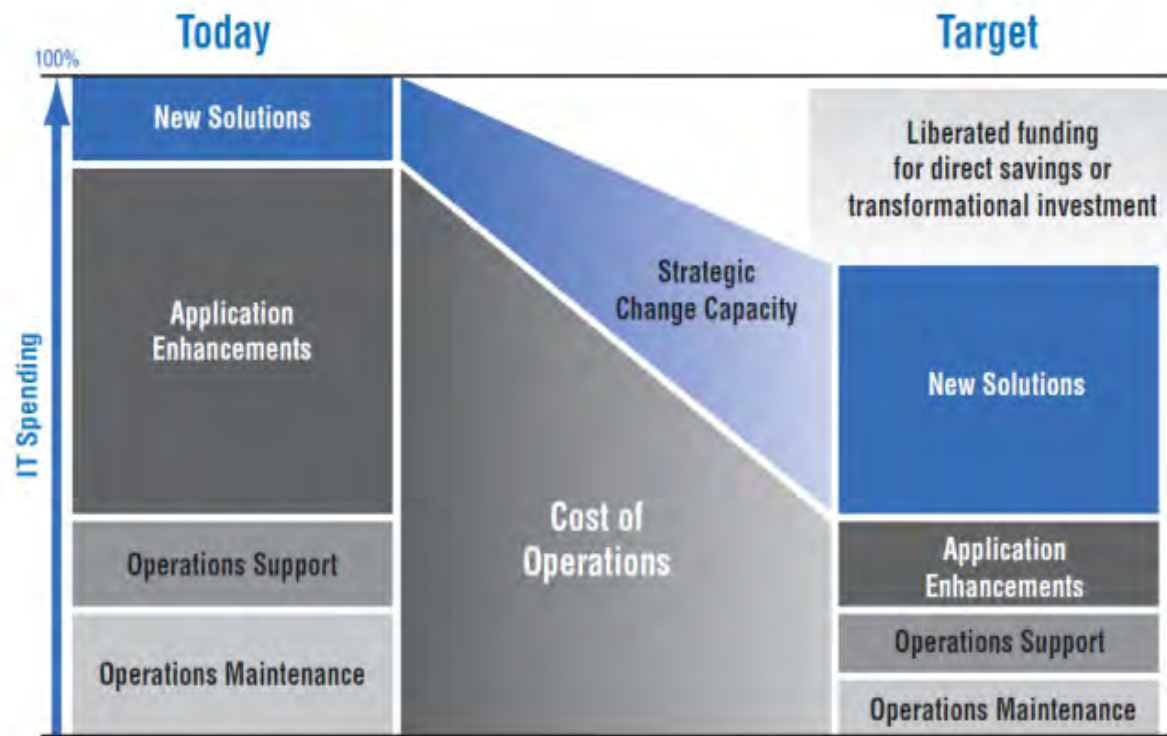
- IBM's Collaborative Lifecycle Management products & the Jazz Platform
- IBM's ALM products for Requirements, Quality, Change, Design, and Software Configuration management



# Rational Development – A Growing, Global Team



# Innovation and the Need for Speed



*“A large UK bank initiated its APM effort to take a 90:10 ratio for run-the-bank / grow-the-bank down to a more reasonable 40:60 ratio. Dell shifted its maintenance-to-innovation ratio from 80:20 to 50:50.”*

The Application Portfolio Management Landscape — Combine Process And Tools To Tame The Beast, Phil Murphy, Forrester Research, Inc. April 15, 2011

Created by David Puzas, WW Marketing Executive for IBM Enterprise Services, 2007.

## IBM Software Group: We had to Change

### Complexity Challenges

- Rapid pace of acquisitions
- Disparate technologies, teams, cultures
- Growing needs for integration

### Team Challenges

- Geographically dispersed teams that often include business partners
- Cross-organizational visibility
- Cross-discipline collaboration

### Business Challenges

- Need for market experimentation
- Global marketplace
- Increasing demands for speed, innovation, predictability, cost & investment performance

### Tools Challenges

- Silo'd tools and data
- Adopting new practices and methodologies



*How do we become an organization that excels in innovation and speed?*

## IBM Software Group

*Saves \$300M with Agile practices, collaboration and asset reuse*

### The need:

IBM Software Group needed to improve the efficiency of its development teams and focus on innovation. Waterfall development methods took too long to develop requirements and change requests were costly. The lack of tools for collaboration and asset reuse hindered code consistency, quality and productivity.

### The solution:

IBM Software Group promoted Agile development by establishing a center of competence and making Rational Team Concert available to provide transparency and help large distributed teams communicate and collaborate. IBM Rational Team Concert, IBM Rational Asset Manager and IBM Connections software enabled collaboration and sharing of assets.

### The benefits:

- Freed resources to focus on developing more innovative features
- Improved code consistency by facilitating greater sharing and reuse
- Saved an estimated \$300 million and improved revenue-per-developer by 15 percent



*“We now have 57,000 employees within 346 product areas using Rational Team Concert software, and they have adopted it on their own, which is a very, very strong statement.”*

Julie King,  
Vice President  
of Consumability,  
IBM Software Group, IBM

#### Solution components:

- IBM Rational Team Concert™
- IBM Rational® Asset Manager
- IBM Connections

SPP03079-CAEN-00 (March 2011)

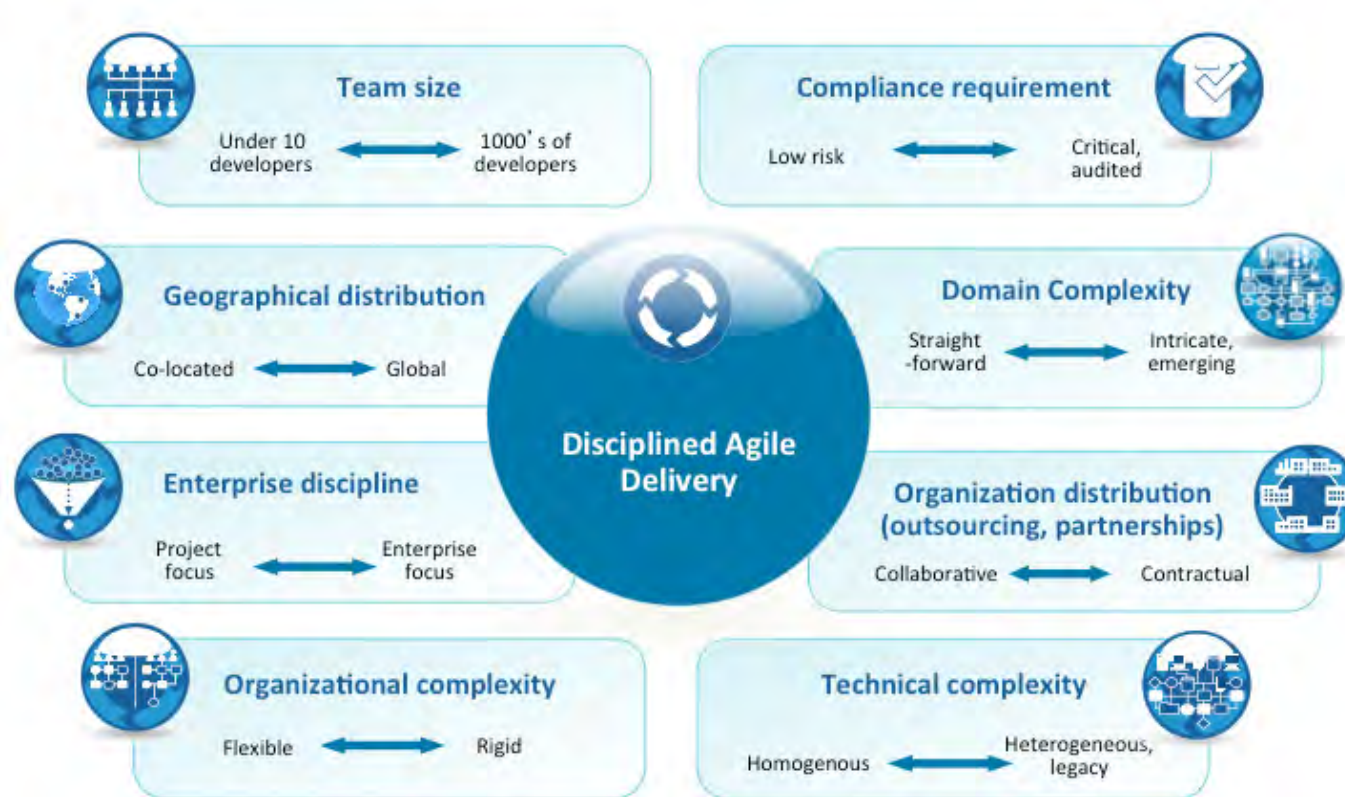


## Three Things We Turned into Organizational Priorities

1. Optimizing teams for agility, speed, responsiveness, and predictability
2. Creating transparency for improved understanding, communication, and decision making
3. A deliberate emphasis on flexible, loosely coupled architectures

# Agile Methodologies

## Agility@Scale



- Responsiveness
- Predictability
- Team ownership, morale, and performance
- Quality

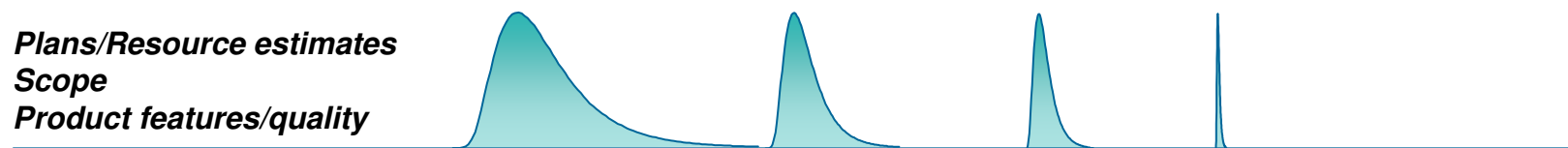


# The Development Journey

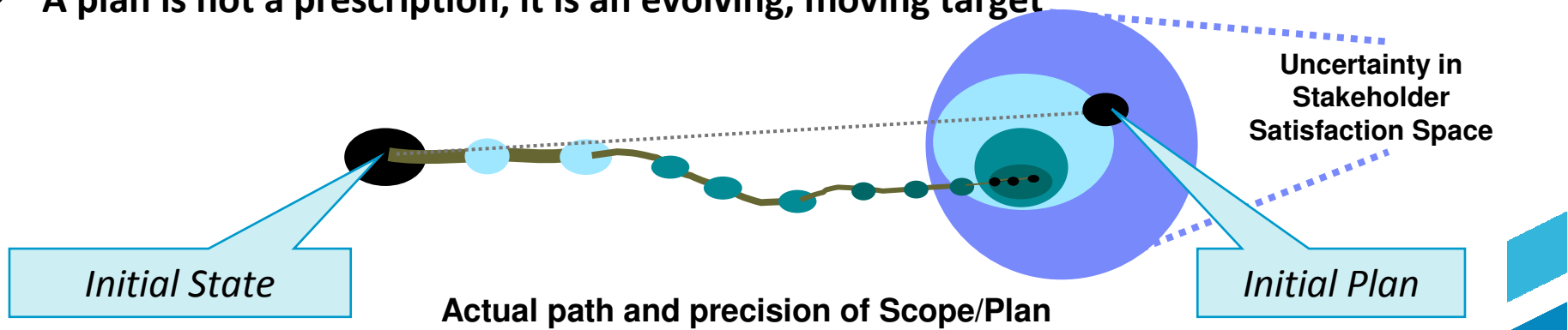
- A completion date is not a point in time, it is a probability distribution



- Scope is not a requirements document, it is a continuous negotiation

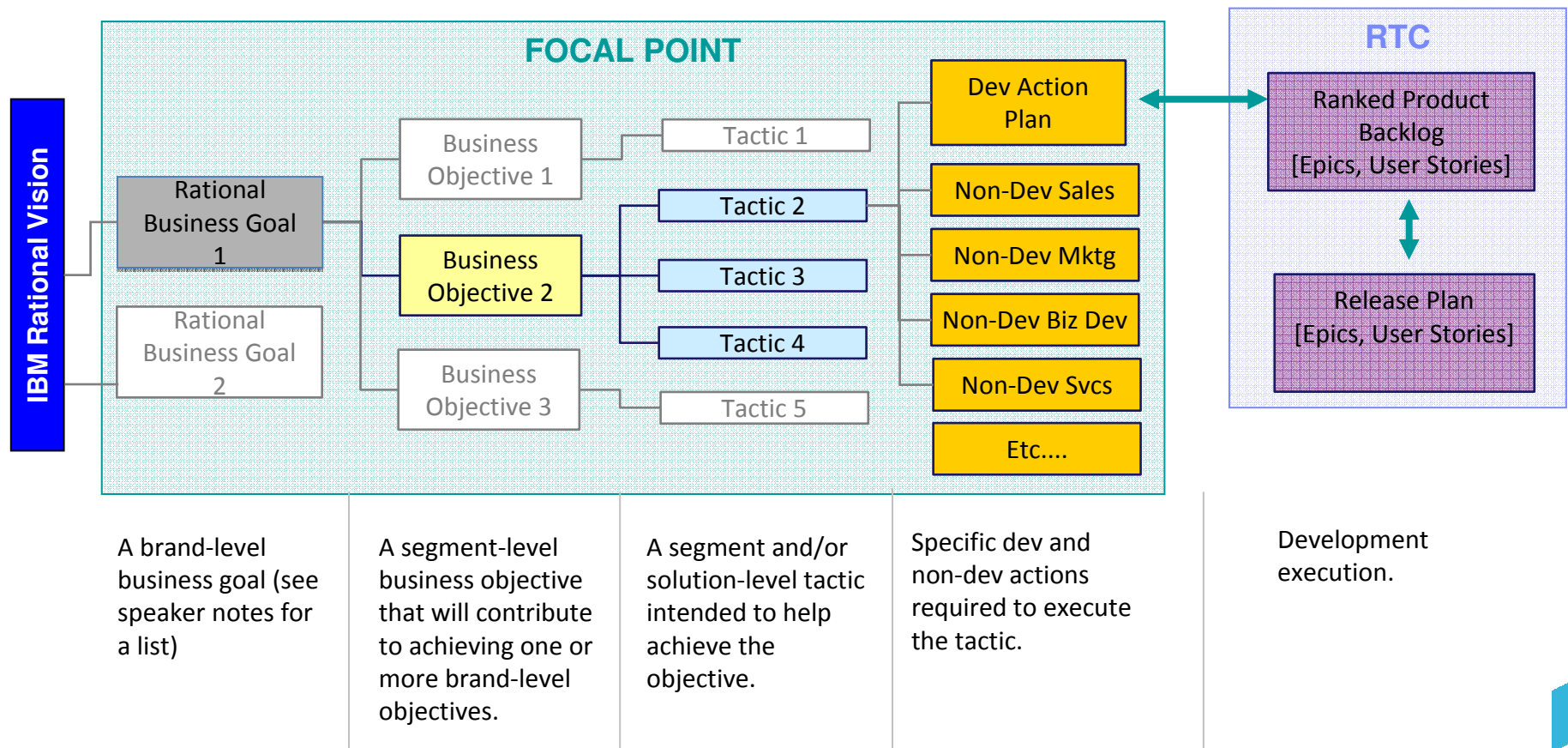


- A plan is not a prescription, it is an evolving, moving target



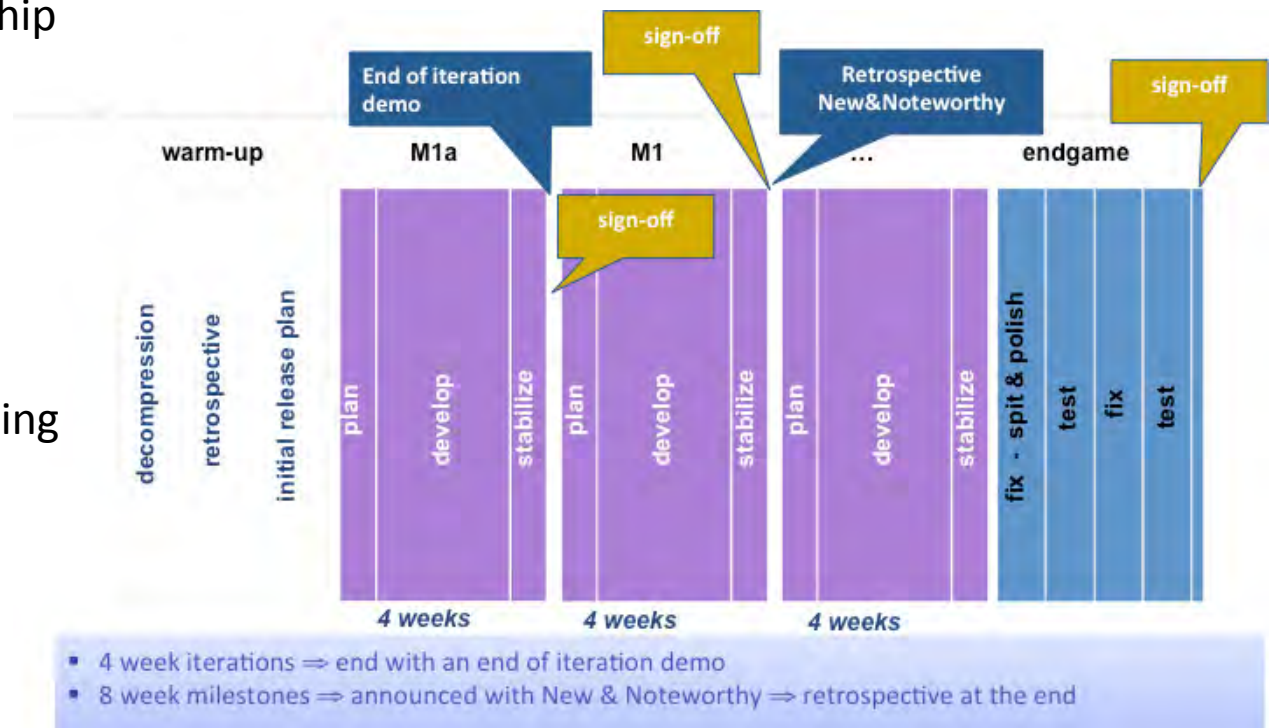
# Connecting the Dots – Business, Stakeholder to Development Execution

- Product management collects, refines, prioritizes the business goals, objectives & strategies
- Product management engages stakeholder communities in elicitation, prioritization & elaboration
- Results in the CLM.next Plan Motivation & themes



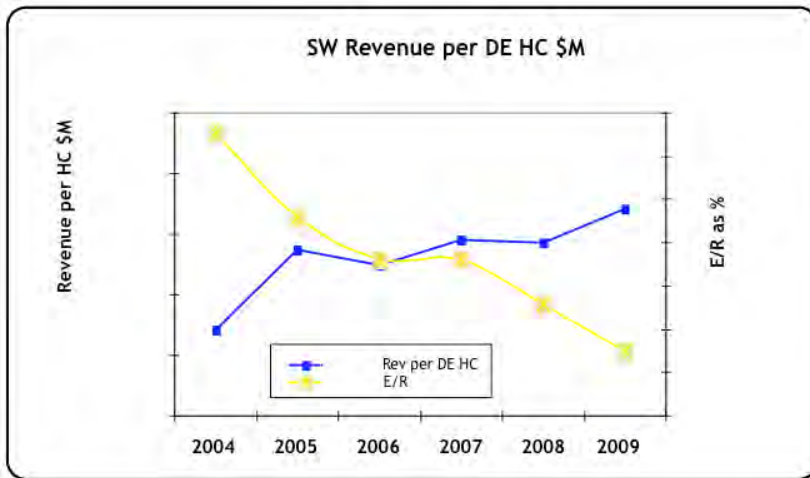
# Connecting More Dots - Agile Difference Makers in Optimizing Team Performance

- Team structure, technical leadership, process leadership
- Establishing rhythm, continuous integration
- Prioritizing over planning
- Retrospectives, understanding technical debt
- Intersections with business processes
- Trust

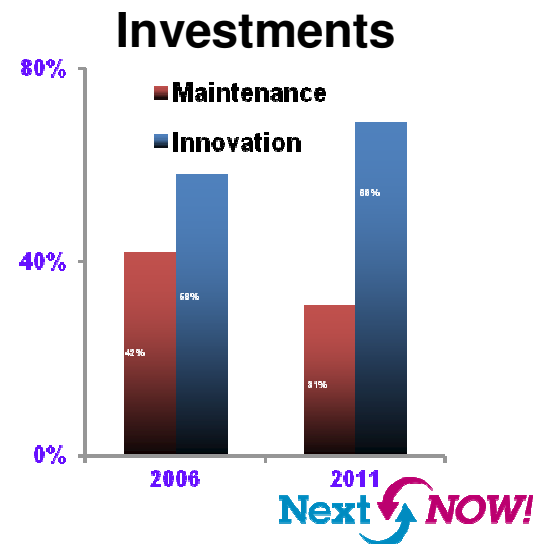
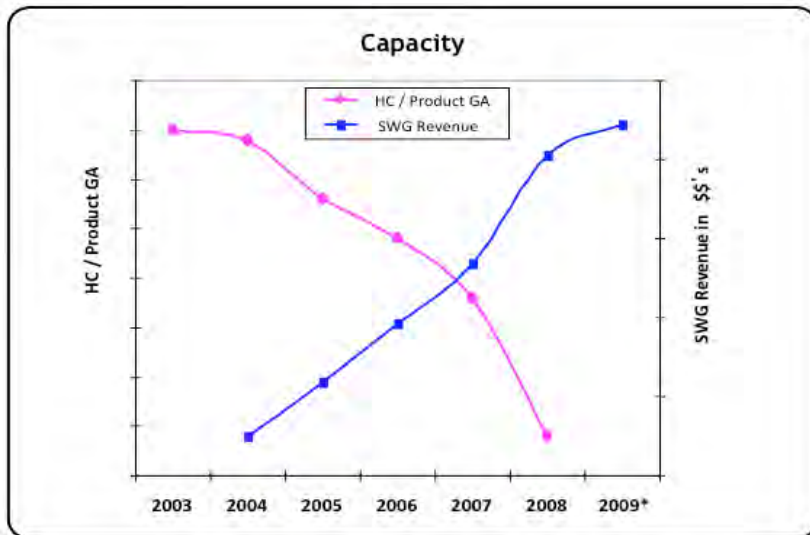


# Some Macro (SWG) and Local (Rational) Measures of Progress

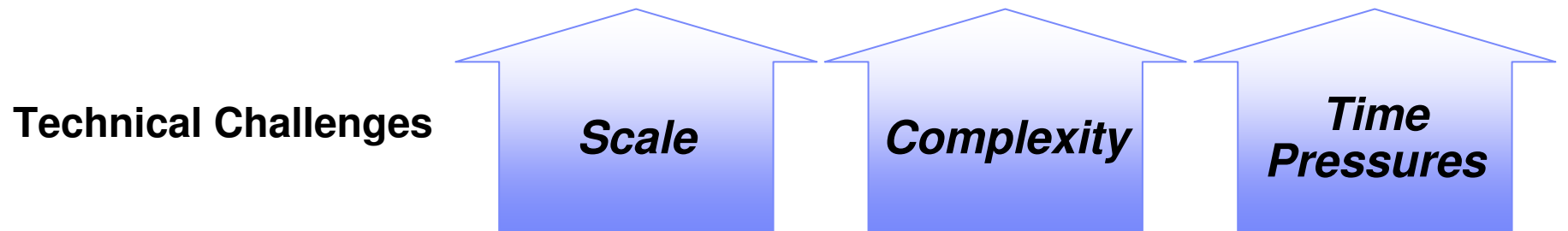
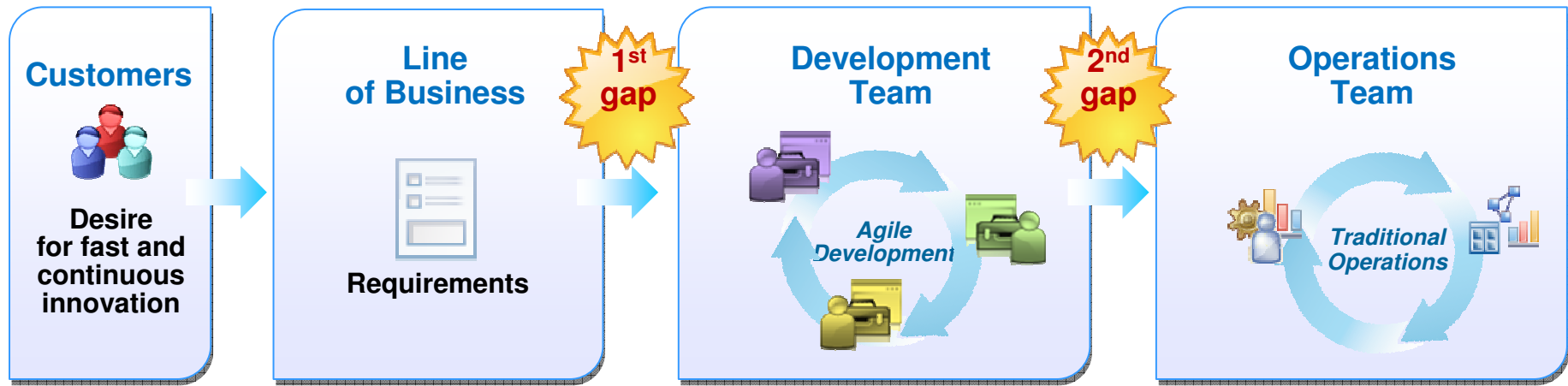
*Improved performance, efficiency, more innovation*



Efficiency Measures	2006 → 2011	
On time delivery	47%	95%
Defect backlog in months	>9	2.7
Beta defects fixed before GA	3%	95%
Agile / iterative projects	5%	85%



# The Next Challenge



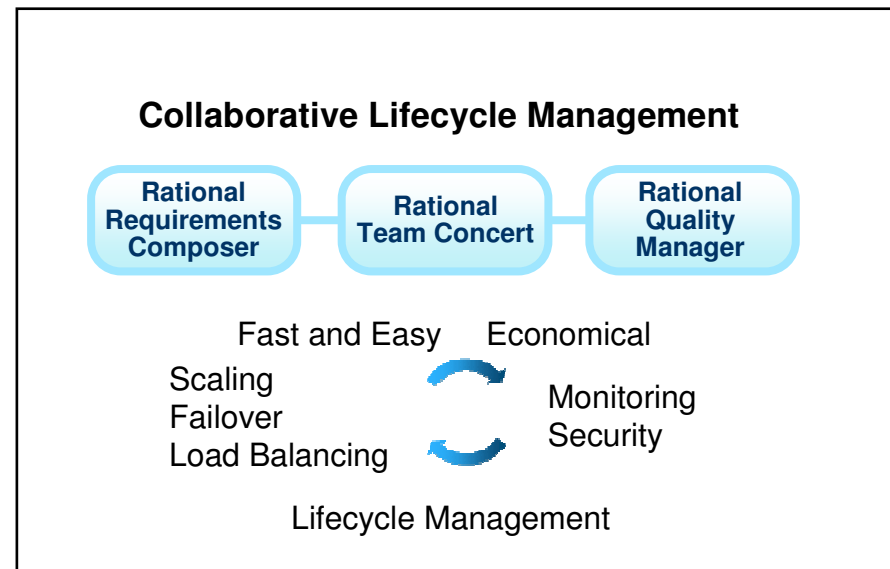
- Production and test environment complexity
- Disparate change management processes
- Disparate notions of quality

# Our Goal

Quarterly Delivery of Collaborative Lifecycle Mgmt Capabilities



**Increased Frequency**



**Customer consumable deliverable**

## Must do's:

- Improve quality with refined ways of working
- Hands off development delivery using automated testing and deployment pipeline
- Share with customers

## Three Things We Turned into Organizational Priorities

1. Optimizing teams for agility, speed, responsiveness, and predictability
2. Creating transparency for improved understanding, communication, and decision making
3. A deliberate emphasis on flexible, loosely coupled architectures

## Five Years Ago: Our Development Team Pain Points...

- ✓ joining a team
- ✓ get my environment configured to be productive
- ✓ what is happening in my team
- ✓ collecting progress status
- ✓ following the team's process
- ✓ ad hoc collaboration/sharing of changes
- ✓ starting an ad hoc team

Team awareness

- ✓ is the fix in the build?
- ✓ run a personal build
- ✓ tracking a broken build
- ✓ why is this change in the build?
- ✓ reconstructing a context for a bug/build failure

Build awareness

- ✓ interrupting development due to a high priority bug fix
- ✓ working on multiple releases concurrently
- ✓ tracking the code review of a fix
- ✓ referencing team artifacts in discussions
- ✓ how healthy is a component?
- ✓ collecting project data/metrics?
- ✓ keeping plans up to date

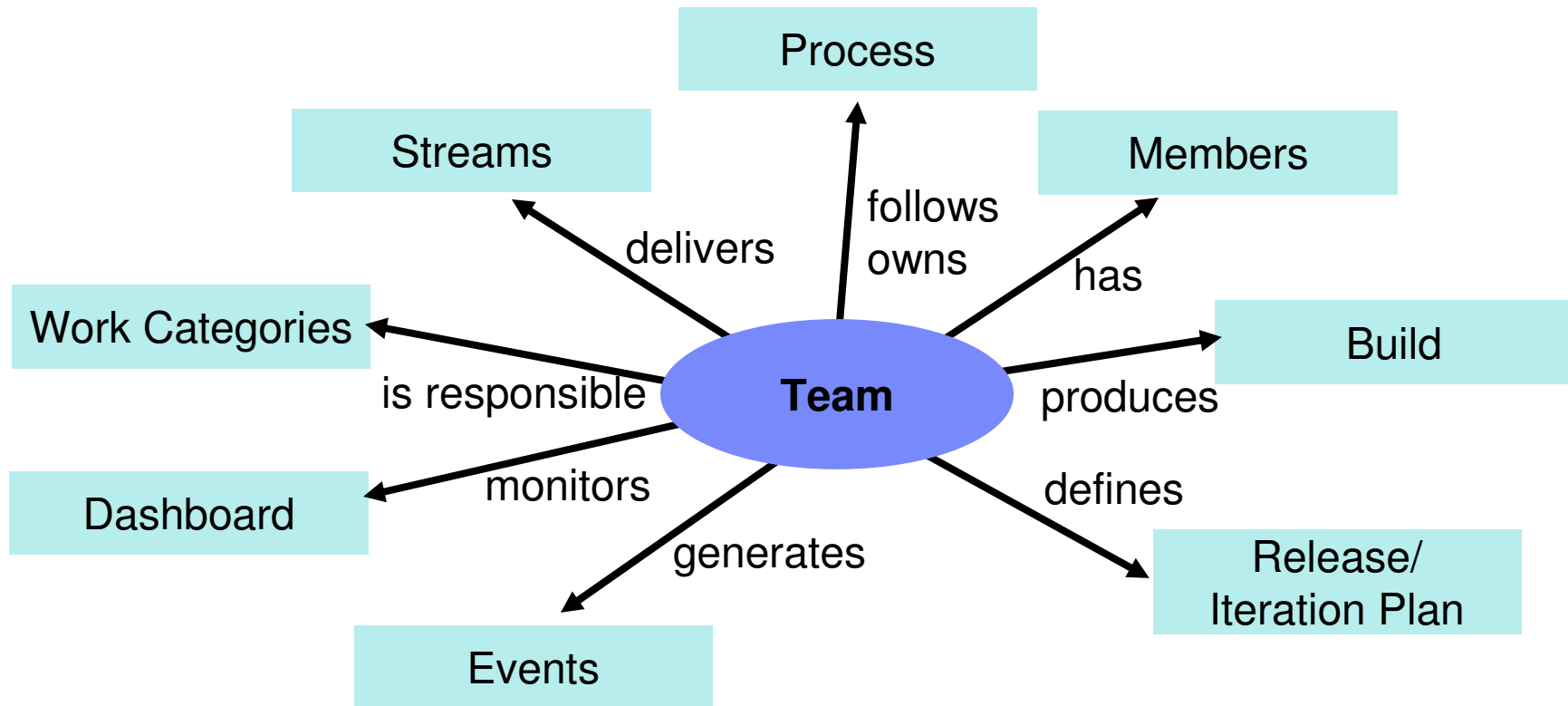
Project awareness



Boring and painful



## Way of Working: Team Centric



Teams are self-tuned but share a common rhythm

# Single Source of Truth across Teams and Disciplines...

**44244: [RM] Design Manager (DM) (RSA/Rhapsody) integration**

**Status:** ■ Implementing  
**Resolution:** Unresolved

**Details**  
**Type:** Plan Item  
**Planned For:** RRC 4.0 (CLM 2012)  
**Filed Against:** Server  
**Estimate:**  
**Theme:** Unassigned  
**Time Spent:**  
**Progress:**  
**Due Date:** March 9, 2012 12:00 PM  
**Tags:** mba, elaborated, cust\_412+, doorsnext, ux\_assigned, systems, cdm  
**Creation Date:** June 26, 2011 2:05 PM  
**Created By:** Muhtar Akbulut  
**Owned By:** George DeCandio  
**Team Area:** Server / Requirements Management  
**Severity:** ● Critical  
**Priority:** ■ High  
**Found In:** Unassigned

**Quick Information**  
**Children (15):** 49289, 52155, 52245, 52246, 52247, ...  
**Subscribers (16):** AC, AG, AS, CB, DB, GD, HZ, JL, ...  
**Duplicated By (1):** 21452  
**Implements Requirement (1)**  
**Related (3):** 48076, 46310, 51547  
**Mentions (7)**  
**Mentioned By (2)**

**Description**  
 The work item 44256 is a prerequisite for this integration. This work item is going to track the OSLC integration with modeling tools. Some of the integration scenarios are (we may not be able to do all this but this is the what we are deciding on what we can achieve in 3.5 time frame)

1) Start requirements explorations in RRC then elaborate them into design-time artifacts in DM

[Show More](#)

## Project Lead Dashboard: Work in Progress

**Exploring**  
 These plan items are being explored to determine whether we can commit to them.

**Implementing**  
 These plan items are ready to be implemented or the implementation is already underway.

**CLM 2012 Plan Items [Exploring] (R... (3) Owned By**  
 Barry McIntosh Bas Bekker Chris McGraw

**CLM 2012 Plan Items [Exploring] (RM) (2)**  
 50195: Trace links are not removed when an artifact is deleted (42848)  
 44949: [RM] Consolidate self-host servers

**CLM 2012 Plan Items [Implement... (24) Owned By**  
 Alastair Stuart **Bas Bekker** Charles Wells  
 Chris McGraw **Devang Parikh** Doug Raith  
 Ed Gentry Gabriel Ruélas George DeCandio  
**Joe Toomey** Knut Radloff  
**Lynne Kues** **Mark Goossen**  
**Muhtar Akbulut**  
**Sean Cudmore** Terry Caudill Unassigned

## Tester Dashboard: Coverage

**Partial Coverage**  
 These plan items have partial with some combination of self-hosting, FVT and/or SVT. The icons show the specific coverage.

**CLM 2012 Plan Items [Partial Test Cover... (19)**

- 44234: [RM] Improve upgrade experience 169175
- 44237: [RM] HP-QC Integration
- 44241: [RM] Support self hosting (upgrade jazz.net every 6 weeks) (for RRC 3.5)
- 44242: [RM] [3-nex] ReqPre migration
- 44244: [RM] Design Manager (DM) (RSA/Rhapsody) integration**
- 44248: [RM] Performance / scalability improvements (RRC 3.5)
- 44253: [RM] [Server] CLM Additional platform support
- 44255: [RM] Support Data reorganization (server move) (CLM 168347)
- 44256: [RM] Backlinking - Query service consumption for OSLC linking (DM)
- 44257: [RM] Upgrade sample for new features
- 44275: [RM] Suspect links 169220/164497
- 44284: [RM] Consolidate self-host servers

**Plans, work items, defects, requirements are live and linked – complete clarity no matter what role or tool.**



# ...Enabling Better Informed, Quicker Decision Making & Issue Resolution

**44244: [RM] Design Manager (DM) (RSA/Rhapsody) integration**

**Status:** ■ Implementing  
**Resolution:** Unresolved

**Details**

Type: <span style="color: green;">➤</span> Plan Item	Planned For: RRC 4.0 (CLM 2012)
Filed Against: Server	Estimate:
Theme: Unassigned	Time Spent:
Progress: <div style="width: 100%;"><div style="width: 100%;"></div></div>	Due Date: March 9, 2012 12:00 PM
Tags: mba, elaborated, cust_412+, doorsnext, ux_assigned, systems, cdm	Creation Date: June 26, 2011 2:05 PM
Owned By: George DeCandio	Created By: Muhtar Akbulut
Team Area: Server / Requirements Management	Severity: <span style="color: red;">●</span> Critical
Priority: <span style="color: red;">■</span> High	Found In: Unassigned

**Quick Information**

- Children (15): 49289, 52155, 52245, 52246, 52247, ...
- Subscribers (16): AC, AG, AS, CB, DB, GD, HZ, JL, ...
- Duplicated By (1): 21452
- Implements Requirement (1)
- Related (3): 48076, 46310, 51547
- Mentions (7)
- Mentioned By (2)

**Description**

The work item 44256 is a prerequisite for this integration. This work item is going to track the OSLC integration with modeling tools. Some of the integration scenarios are (we may not be able to do all this but this is the what we are deciding on what we can achieve in 3.5 time frame)

- 1) Start requirements explorations in RRC then elaborate them into design-time artifacts in DM

[Show More](#)

## Executive checkpoint: Obstacles, Risks, & Blockers

**Work At Risk**

⚠ Plan Items with a risk status red or yellow.

- CLM 2012 Plan Items With Risk (CLM) (4)**
  - 103973: [CLM] Support High Availability for CLM via clustering or automatic failover
  - 166347: [CLM] Support changing the server public URL (server rename)
  - 173274: [CLM] Clarify relationship between and make progress on the integrations between Design Management and CLM 2012
  - 175662: [CLM] Maintain and Enhance MtM Scenario and Sample assets
- CLM 2012 Plan Items With Risk (JTS) (3)**
  - 169960: [JAF] Support selfhost with JTS in cluster, DB2 HADR
  - 169932: [JAF] Multi-year: Process Sharing Improvements
  - 169994: [JAF] Enable server rename
- CLM 2012 Plan Items With Risk (CCM) (2)**
  - 169830: [CCM] Make RTC clusterable
  - 169831: [CCM] Support Server Rename
- CLM 2012 Plan Items With Risk (QM) (2)**
  - 52739: [QM] Doors integration enhancements using OSLC
  - 52655: [QM] Clustering for HA
- CLM 2012 Plan Items With Risk (RM) (3)**
  - 44244: [RM] Design Manager (DM) (RSA/Rhapsody) integration
  - 44293: [RM] Adopt clustering for HA and/or horizontal scaling (CLM 103973)
  - 44248: [RM] Performance / scalability improvements (RRC 3.5)

**Blocked Work**

⊗ Plan Items that are blocked from making progress.

- CLM 2012 Plan Items [Blocked] (CLM) (0)**

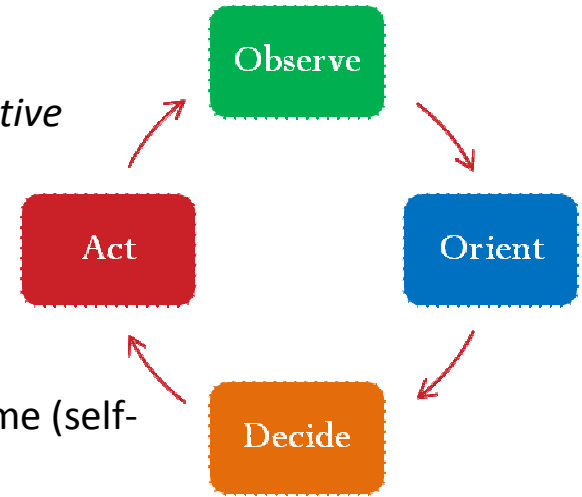
No work items found.

**Working with the same, live information – no guessing or “loss in translation” issues. It’s about speed.**

# Jazz.net – Transparent Development of Rational Jazz products



- Community - Over 115,000 members active
  - Development team
  - Customers
  - Partners
- Transparency
  - Try out the latest milestone
  - Watch everything happen in real-time (self-hosting on the latest milestone)
  - Interact with the development team
- Open commercial development
  - Open source practices
  - Commercial licensing
- Support
  - Community support
  - Paid support



**Learn more:**  
[www.jazzprocess.com](http://www.jazzprocess.com)

Published by Addison-Wesley

# Rational and the Broader IBM's Use of RTC

Pittsburg  
Poughkeepsie  
Princeton  
Somers  
Southbury  
NY, NY

Andover  
Bedford, MA  
Bedford, NH  
Lexington  
Westborough  
Westford

Cork  
Dublin

London/Staines  
Milton Keynes  
Hursley  
Warwick  
York

## IBM Rational hosts:

- Over 150 Rational development projects (~2800 users) using Rational Team Concert
- Plus an additional 700+ projects around IBM -- hosting 8500+ users
- Boarding time for new projects - less than one day

## More than 60,000 RTC users in IBM

- Across all brands of Software Group, Services, and even our X-Series server development
- Adopted by agile/iterative and waterfall projects

- Rational Development
- Rational Customer Support
- WebSphere Development
- Lotus Development
- Tivoli Development
- IBM Research Division
- IBM Global Business Services
- IBM Systems and Technology Group

El Salto

Yamato

Coast  
Key  
Herra

# IBM Websphere Application Server Team

*Adopts agile development practices and reduces time to market*

## Business challenge:

- Distributed global development environment.
- Needed better lifecycle metrics, greater efficiency and cohesive plan content definition and execution.
- Continuous integration for a complex product family while maintaining stability and high quality

## Benefits:

- 600+ employees across 6 countries and 10 global sites, greatly improving cross-site collaboration.
- Manage requirements to delivery, using real time reporting to track progress, and take action.
- RTC and RQM monitor quality, stability, and status in order to manage continuous integration for a product set that supports 60+ platforms and 10+ DBs.

## Results:

- ✓ *Doubled number of builds per week*
- ✓ *Automation drives 1.3m test cases wkly, +70%*
- ✓ *Regression testing complete in 1 day vs 3 mos*
- ✓ *60% reduction in FVT resources*
- ✓ *First beta drop delivered 7 months earlier*
- ✓ *1.5x more unique companies downloaded the Alpha/Beta 1 drivers at GA+25 weeks.*

***“Using the Rational Collaborative Lifecycle Management tools has allowed my team to embrace the agile development process to meet aggressive business deadlines while ensuring that we are achieving the highest quality that our customers demand today.”***

***Dave Klavon, Director, Websphere Application Server Development***

## Three Things We Turned into Organizational Priorities





1. Optimizing teams for agility, speed, responsiveness, and predictability
2. Creating transparency for improved understanding, communication, and decision making
3. A deliberate emphasis on flexible, loosely coupled architectures

# Making ALM Work – The Integration Challenge

- Individual tools aimed at particular roles or aspects of lifecycle development
- A single tool to support all aspects of ALM is impossible (and probably not even desirable)
- Whether by design or by fortune, software development teams employ many tools, from many sources
- But, integrating tools has been unsatisfactory
- And the scope of integration needs is expanding

Past approaches to lifecycle integration have fallen short

∅ Limited choice and coverage ∅

<p><b>Single repository</b></p> <p>“Can I really expect one vendor to provide all the functionality I need? And what about my existing tools?”</p> 	<p><b>Point-to-point integrations</b></p> <p>“How can I ever upgrade one tool without breaking everything else?”</p> 
<p><b>Universal metadata standard</b></p> <p>“How did I ever think all those vendors would be able to agree?”</p> 	<p><b>Standard implementations</b></p> <p>“Did I really believe that every vendor would rewrite their tools on a single framework?”</p> 

∅ Slow to emerge and disruptive to adopt ∅



## Range of Integration Needs and Scenarios

- Application and engineering lifecycle management
- DevOps, social business, ...
- 3<sup>rd</sup> party and open source – complementary and competitive





## Open Services for Lifecycle Collaboration

Lifecycle tool integration inspired by the web



Learn



Use



Participate

*An initiative aimed at simplifying data linking and tool integration across the lifecycle*

### Open Services for Lifecycle Collaboration

Barriers to sharing resources and assets among tools

- ▶ Multiple vendors, open source projects, and in-house tools
- ▶ Private vocabularies, formats and stores
- ▶ Entanglement of tools with their data

- ▶ Community Driven – specified at **open-services.net**
- ▶ Specifications for ALM, PLM and DevOps Interoperability
- ▶ Inspired by Internet architecture
  - Loosely coupled integration with “just enough” standardization
  - Common resource formats and services
- ▶ A different approach to industry-wide proliferation

## OSLC Community and Specifications

<http://open-services.net/members/>

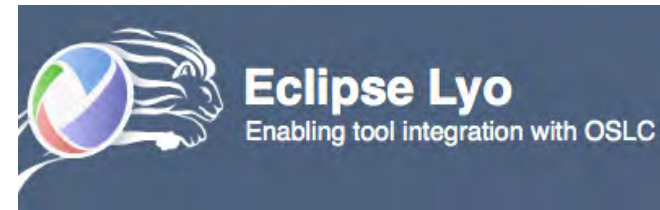
- Range of interests, expertise, involvement
  - 400+ registered community members
  - Individuals from 34+ different companies have participated in OSLC workgroups

<http://open-services.net/software/>

- Growing list of IBM and 3<sup>rd</sup> party software
  - Atlassian JIRA adapter for OSLC
  - Jenkins Plugin for OSLC
  - Kovair
  - Oracle Team Productivity Center
  - Tasktop

<http://open-services.net/specifications/>

- Domain and Solution specifications
  - Change Management
  - Quality Management
  - Requirements Management
  - Product Lifecycle Management
  - More...



Eclipse project creating an SDK for enabling adoption of OSLC specifications:

- Code libraries
- Reference implementations of specifications
- Test suites and test reporting
- Samples, tutorials and documentation

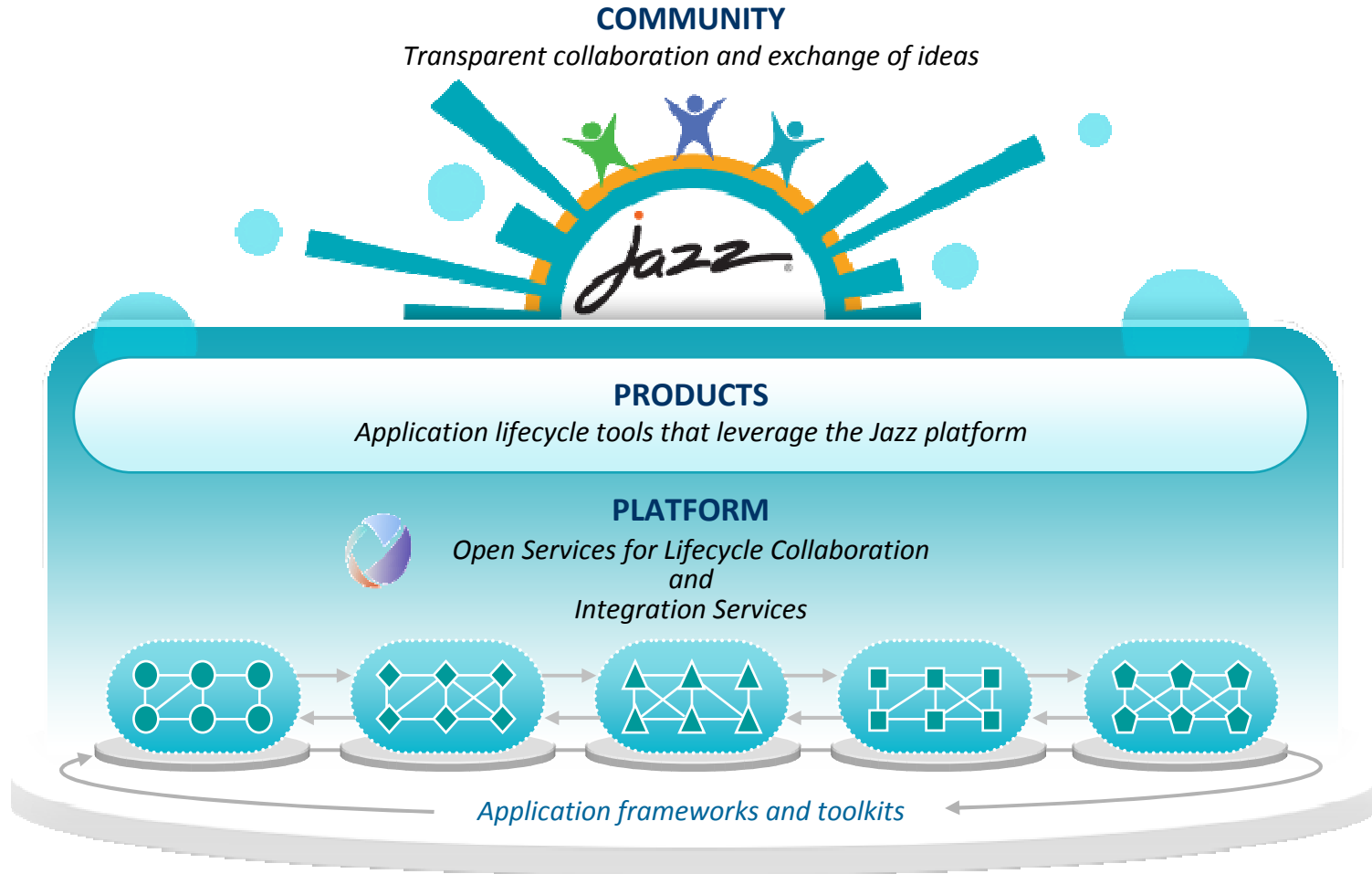


W3C Member Submission: *Linked Data Basic Profile*

- IBM, DERI, EMC, Oracle, Red Hat, SemanticWeb.com, Tasktop
- Supporters: Siemens, Cambridge Semantics

# Jazz

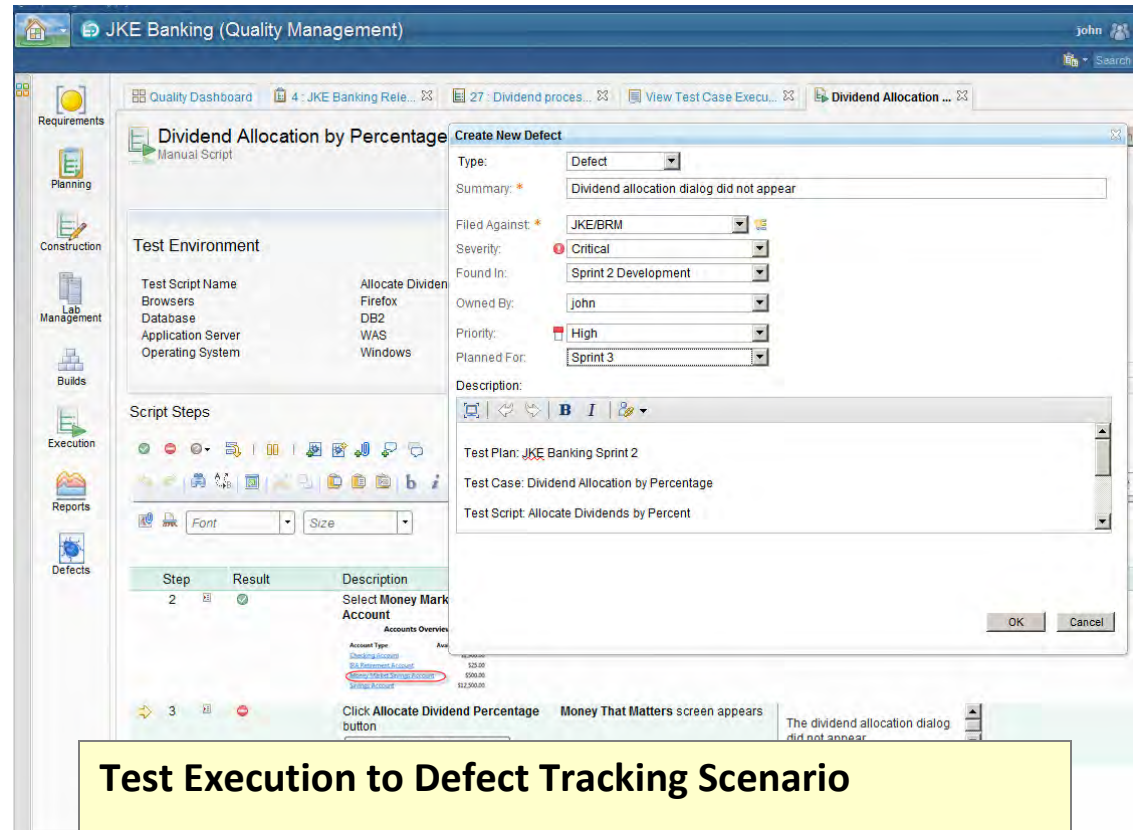
IBM's initiative for improving collaboration across the software and systems lifecycle



## Example – Rational Quality Manager

- Tool Integration scenarios:
  - Requirements to test planning & coverage
  - Development implementations to test case definition and execution

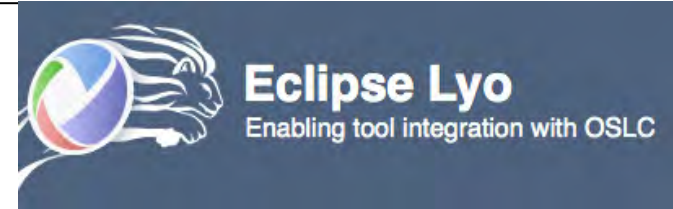
⇒ Test execution to defect tracking
- For defect tracking scenario:
  - Initial plans included custom integration, and only with RTC
- OSLC and linked data integration approach instead, allowing for:
  - RTC
  - + ClearQuest, +Rational Change
  - + Jira, +Bugzilla,
  - More, where OSLC implementations are available
- Outcome:
  - More integrations, sooner
  - Less cost
  - Reduced need for expertise in other tools, skills in proprietary API's
  - Integrations that are more stable, less fragile



**Test Execution to Defect Tracking Scenario**

- A problem is found during execution of a test
- The tester creates a defect in the context of the test step where the issue occurs.
- The defect is populated with relevant information from the test

# OSLC's Innovative Solution: IBM Experience



Improved time-to-market



Faster  
Time-to-prototype  
**Worked in ~1 day**  
  
Faster  
Time-to-market  
**Saved almost \$1M**

Increased effectiveness



and value of IT spending

Make ClearQuest, DOORS, CLM suite (and others) OSLC-CM Consumers  
**Connect to over 20 products**  
**All using the SAME integration**  
  
OSLC-enable internal Client Request System and enhance it capabilities  
**Reduce admin costs by 2/3**  
**Reuse code and knowledge**

New 3<sup>rd</sup>-party release  
**No change to OSLC-based integration**  
  
Resolve OSLC-based integration problems faster  
**Clients' waiting time reduced by 26%**

Decreased related costs

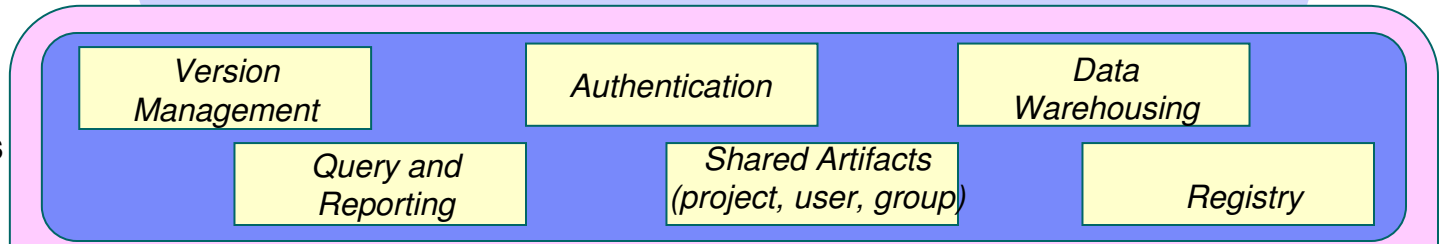


# An Emerging Life Cycle Integration Platform

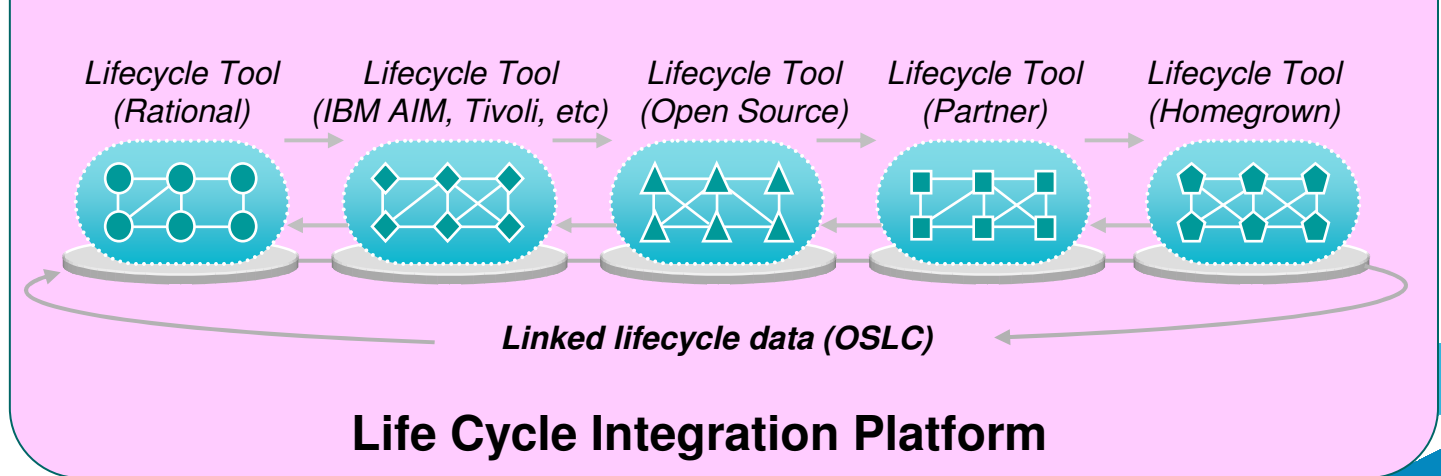
Platform-enabled Value and Differentiation



ALM Management Foundation Services



Set of adapters for common open-source and on-the-ground tools



# OSLC is expanding Specifications

## Core and common

Core	v2	Scope	Draft	Converge	Finalize	Wiki →
Reporting	v1	Scope	Draft	Converge	Finalize	Wiki →

## Application lifecycle management

Change Management	v2	Scope	Draft	Converge	Finalize	Wiki →
Quality Management	v2	Scope	Draft	Converge	Finalize	Wiki →
Requirements Management	v2	Scope	Draft	Converge	Finalize	Wiki →
Asset Management	v2	Scope	Draft	Converge	Finalize	Wiki →
Architecture Management	v2	Scope	Draft	Converge	Finalize	Wiki →
Software Configuration Management	v1	Scope	Draft	Converge	Finalize	Wiki →

Automation	v1	Scope	Draft	Converge	Finalize	Wiki →
------------	----	-------	-------	----------	----------	--------

## Software project management

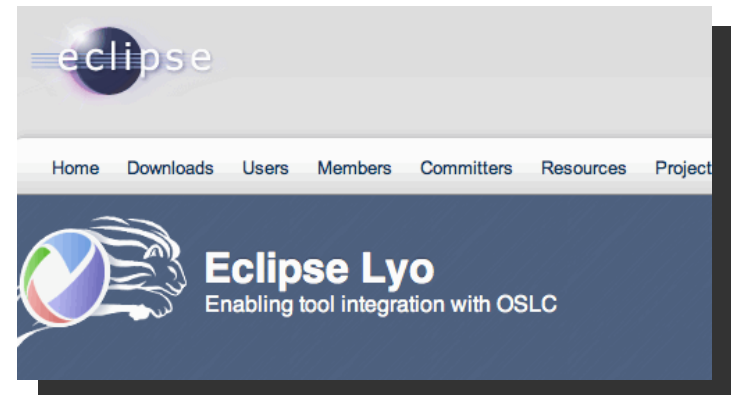
Estimation and Measurement	v2	Scope	Draft	Converge	Finalize	Wiki →
----------------------------	----	-------	-------	----------	----------	--------

## Product lifecycle management

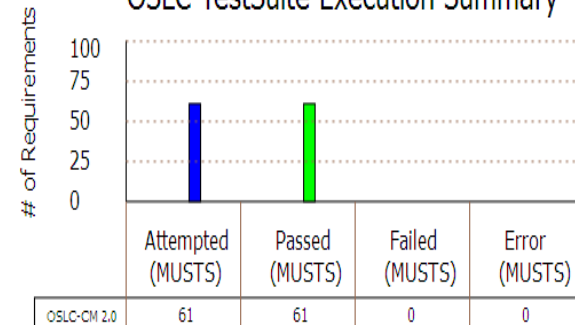
Product Lifecycle Management	v1	Scope	Draft	Converge	Finalize	Wiki →
------------------------------	----	-------	-------	----------	----------	--------

## Integrated service management

Performance Monitoring	v1	Scope	Draft	Converge	Finalize	Wiki →
------------------------	----	-------	-------	----------	----------	--------



OSLC TestSuite Execution Summary



- Attempted = Pass + Fail + Error. # of Tests Executed for a Specification Type
- Pass: # of Test(s) achieving the respective test design's expected result
- Fail: # of Test(s) deviating from the respective test design's expected result.
- Error: # of Inconclusive Results. Test executions encountering error due to poor test design, faulty environment or invalid configuration. Test results could not be assessed.



## Getting Started on Your Agile Journey

*Agile is about optimizing people, process, architecture and information - All are critical to success!*

- Incrementally Adopt Agile in Stages
- Tailor Your Adoption to Meet Your Organization's Needs
- Continuously Improve and Optimize

### Available Resources To Help

- [Agile Transformation Zone](#) – An on-line community established to learn from others who have transformed their organizations to agile software development methods
- [Jazz.net](#) – Rational's initiative to transform software and systems delivery by making it more collaborative, productive and transparent, through integration of information and tasks across the phases of the lifecycle.
- [IBM's IT Technical Training](#) offers a full suite of Disciplined Agile Delivery educational courses
- [IBM Software Services for Rational](#) provides a variety of Deployment Packages covering product, processes, and skills tailored to meet your needs



[www.ibm.com/software/rational](http://www.ibm.com/software/rational)

© Copyright IBM Corporation 2012. All rights reserved. The information contained in these materials is provided for informational purposes only, and is provided AS IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, these materials. Nothing contained in these materials is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software. References in these materials to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates. Product release dates and/or capabilities referenced in these materials may change at any time at IBM's sole discretion based on market opportunities or other factors, and are not intended to be a commitment to future product or feature availability in any way. IBM, the IBM logo, Rational, the Rational logo, Telelogic, the Telelogic logo, and other IBM products and services are trademarks of the 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.