Agility@Scale
IBM's Journey of Agile Transformation

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IBM Software
Innovate2012
The Premier Event for Software and Systems Innovation

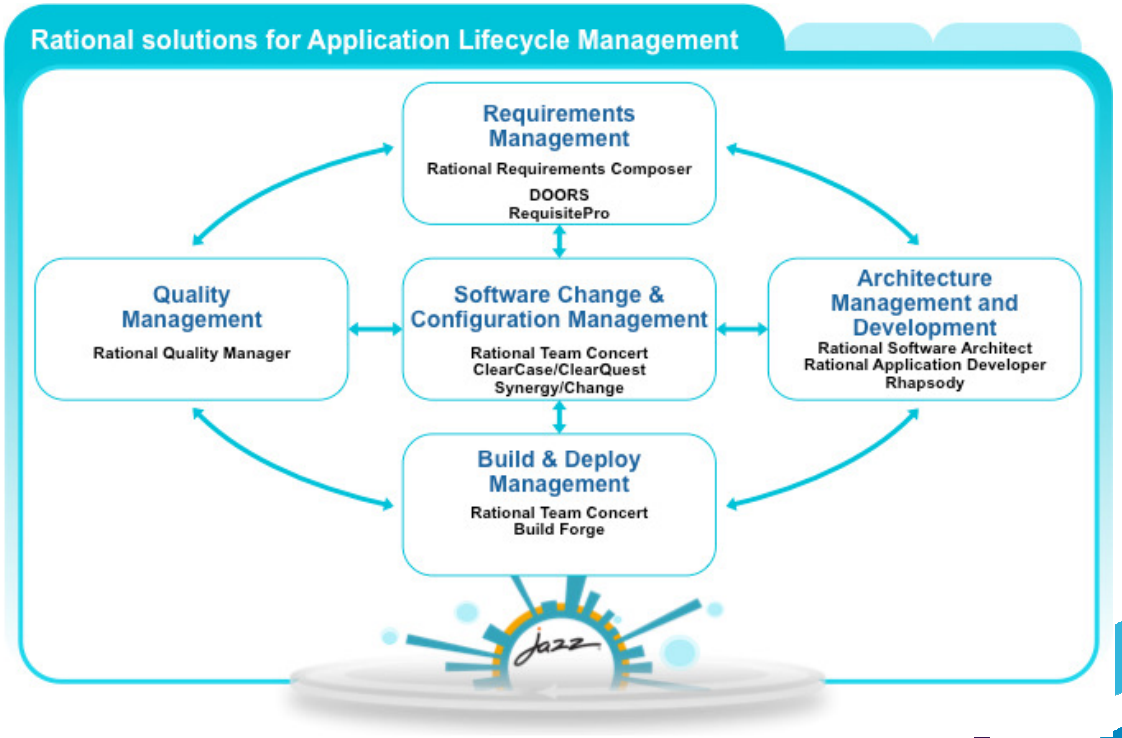
Next NOW!

Welcome

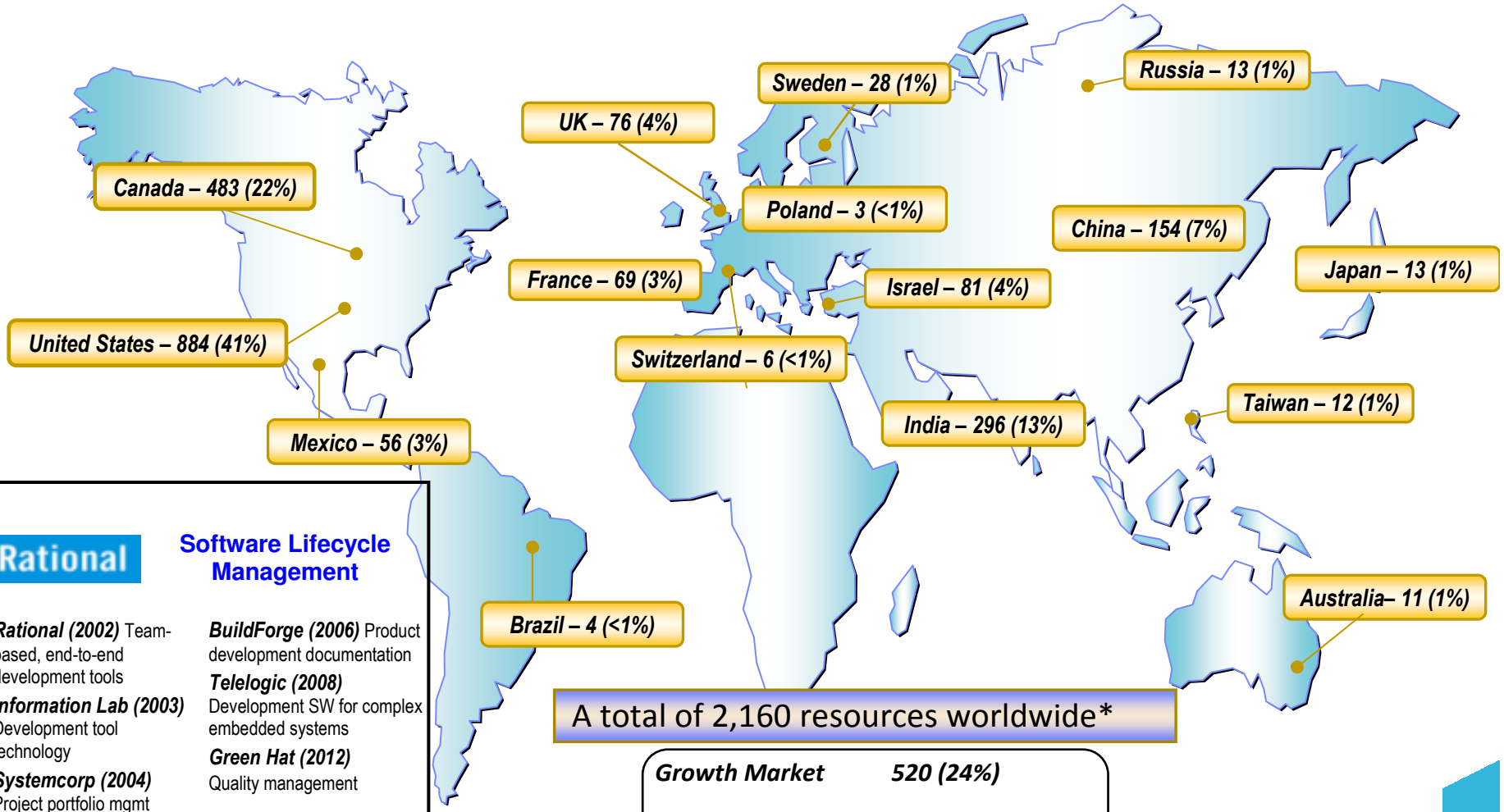
Dibbe Edwards
IBM Vice President, Rational Development

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



Rational **Software Lifecycle Management**

Rational (2002) Team-based, end-to-end development tools

Information Lab (2003) Development tool technology

Systemcorp (2004) Project portfolio mgmt

BuildForge (2006) Product development documentation

Telelogic (2008) Development SW for complex embedded systems

Green Hat (2012) Quality management

A total of 2,160 resources worldwide*

Growth Market	***520 (24%)***
Major Market	***1,640 (76%)***
Total	***2,160****

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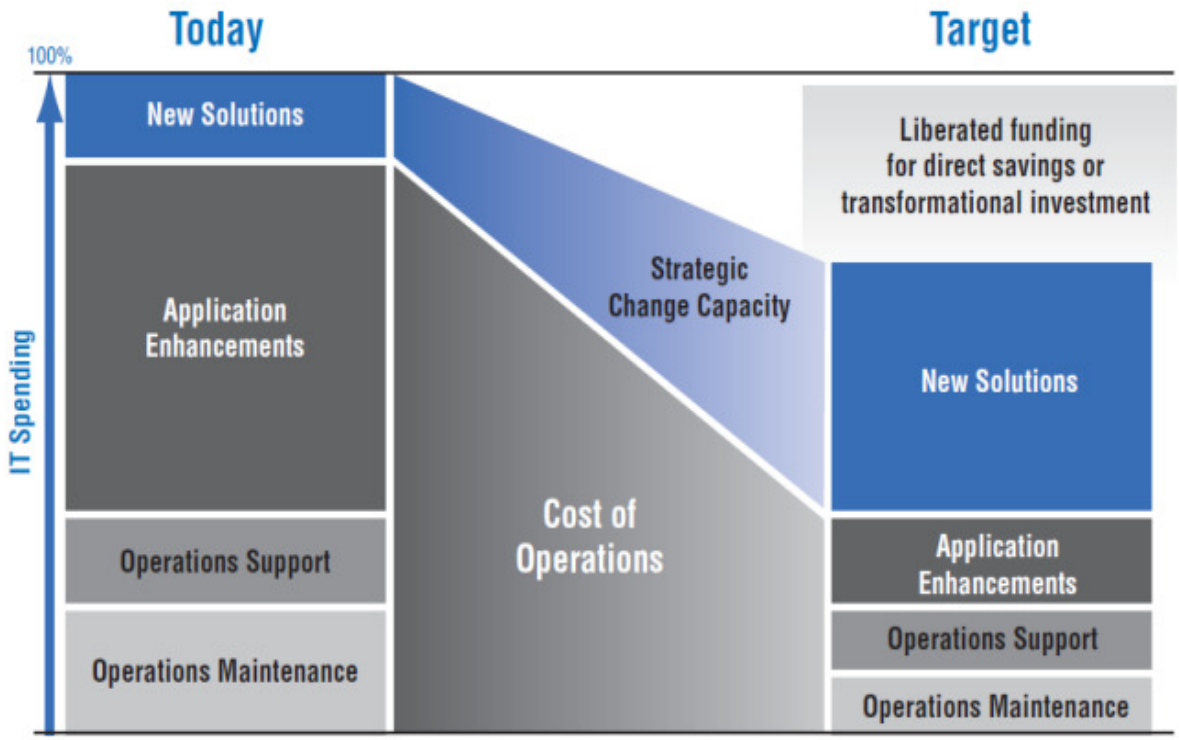
Innovation and the Need for Speed



"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)

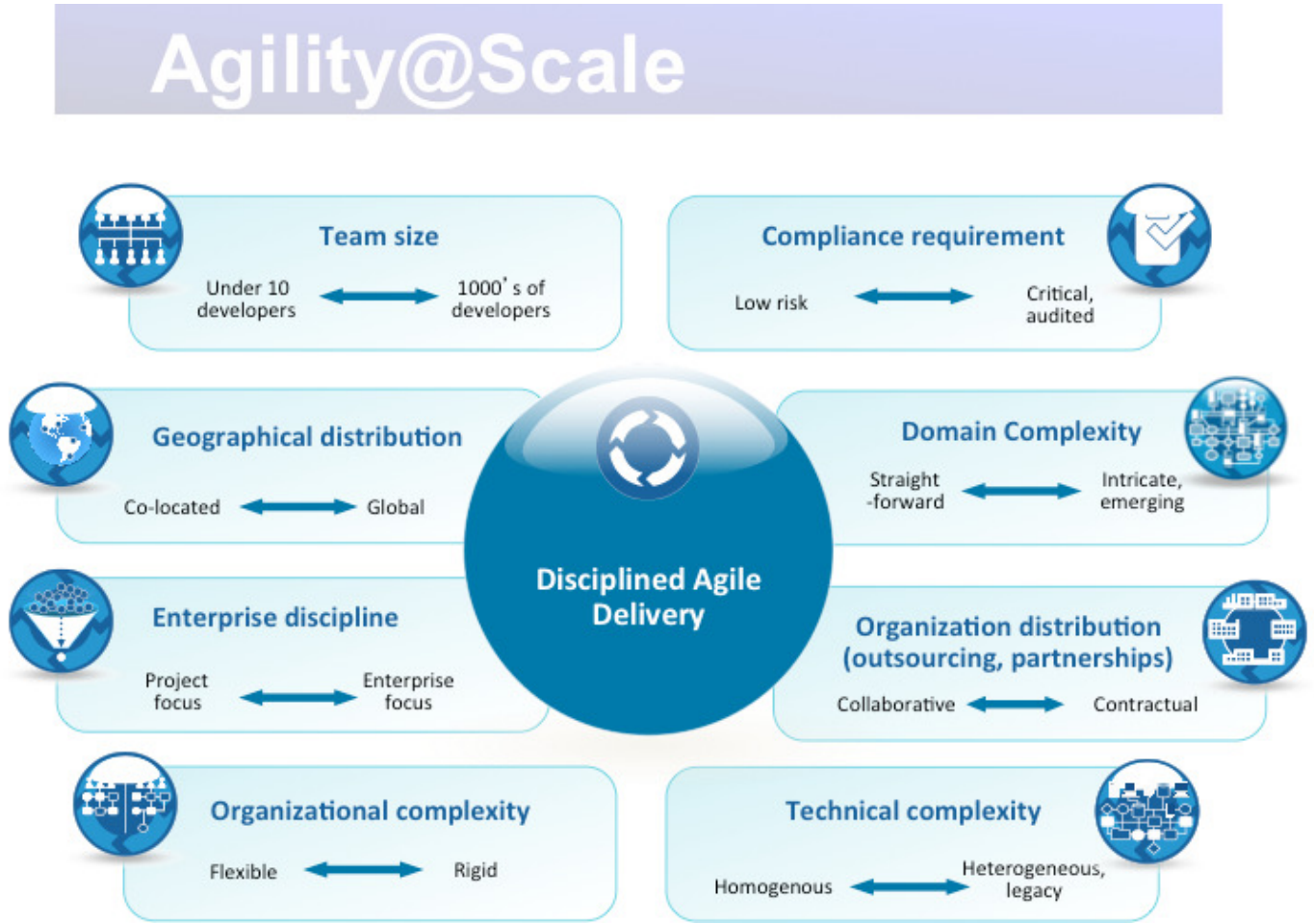
Three Things We Turned into Organizational Priorities

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

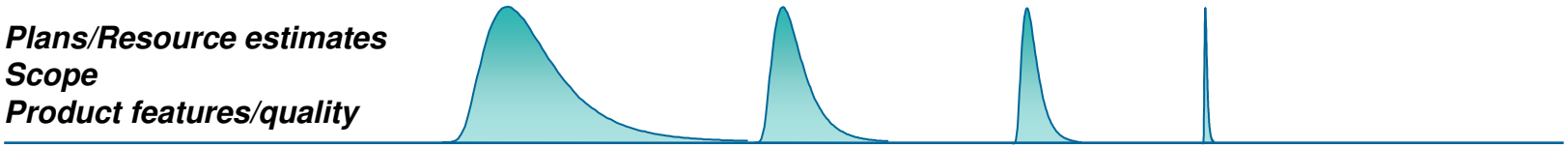


- Responsiveness
- Predictability
- Team ownership, morale, and performance
- Quality

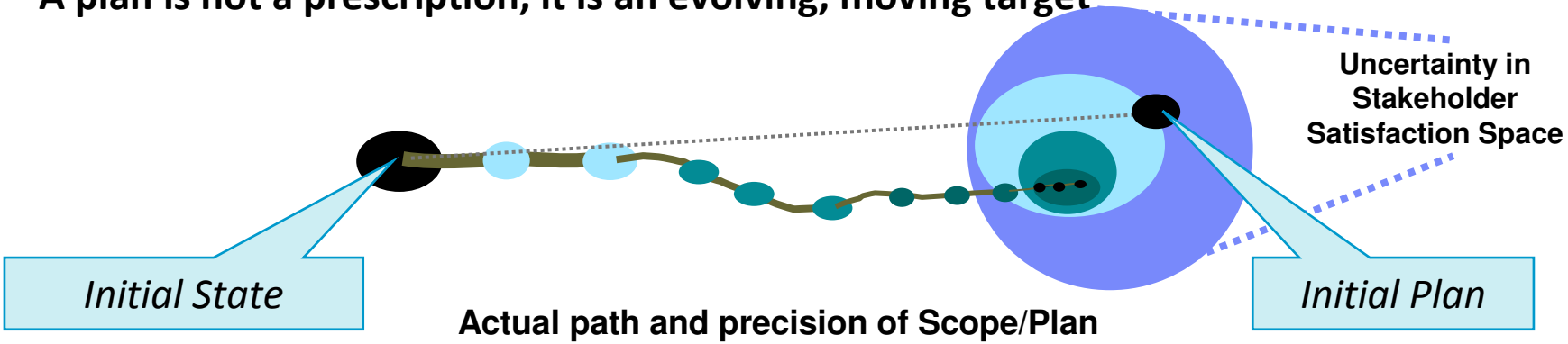
The Development Journey

- **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**

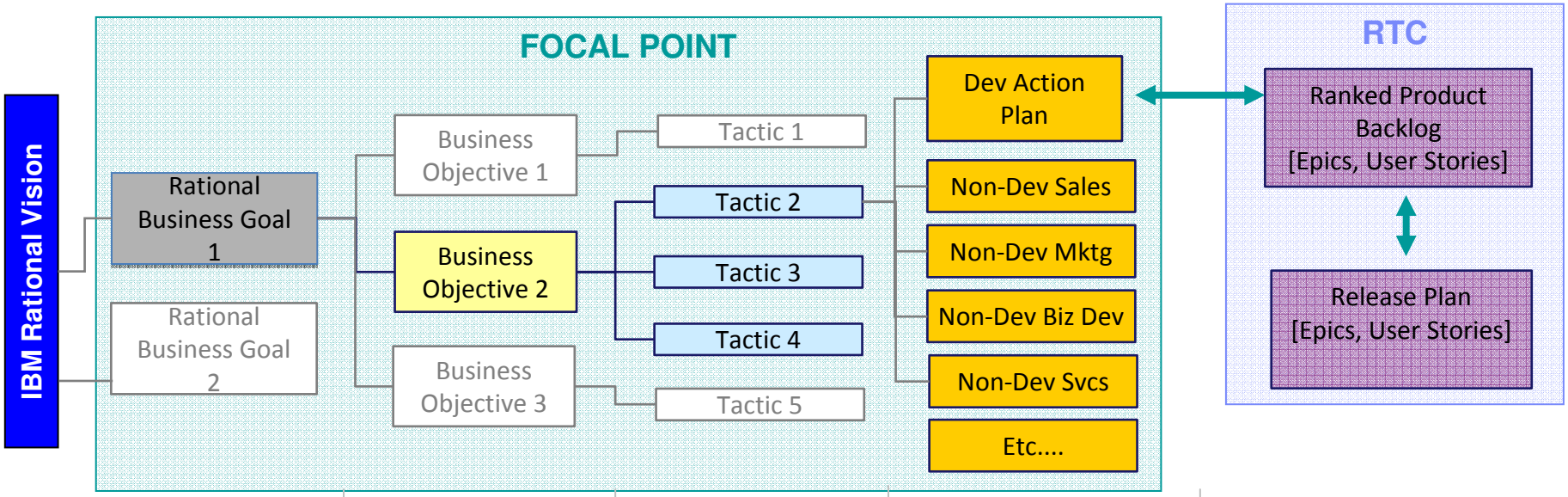


- **A plan is not a prescription, it is an evolving, moving target**



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



A brand-level business goal (see speaker notes for a list)

A segment-level business objective that will contribute to achieving one or more brand-level objectives.

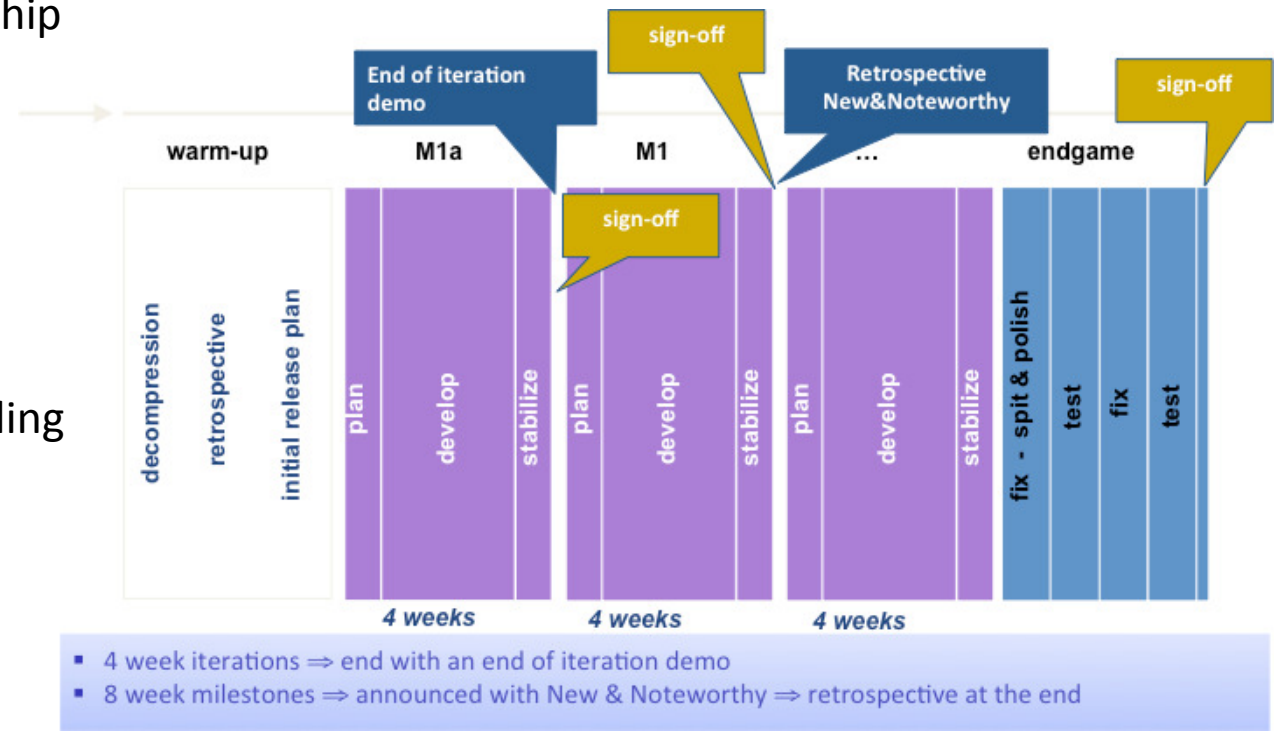
A segment and/or solution-level tactic intended to help achieve the objective.

Specific dev and non-dev actions required to execute the tactic.

Development execution.

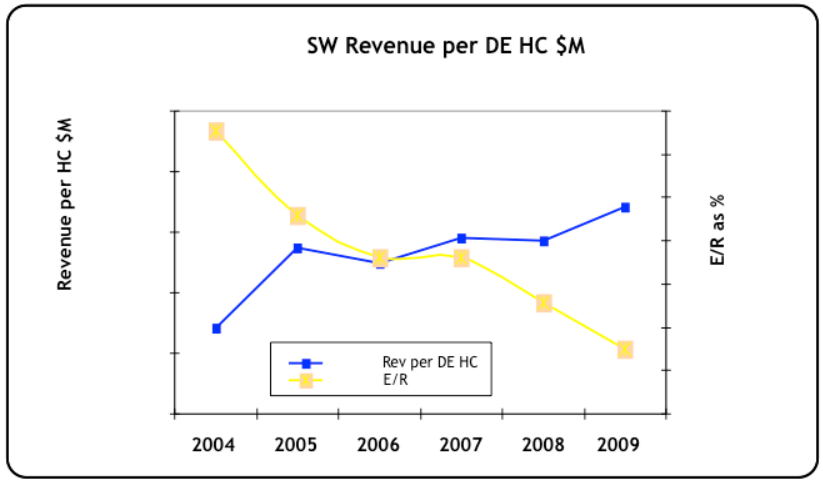
Connecting More Dots - Agile Difference Makers in Optimizing Team Performance

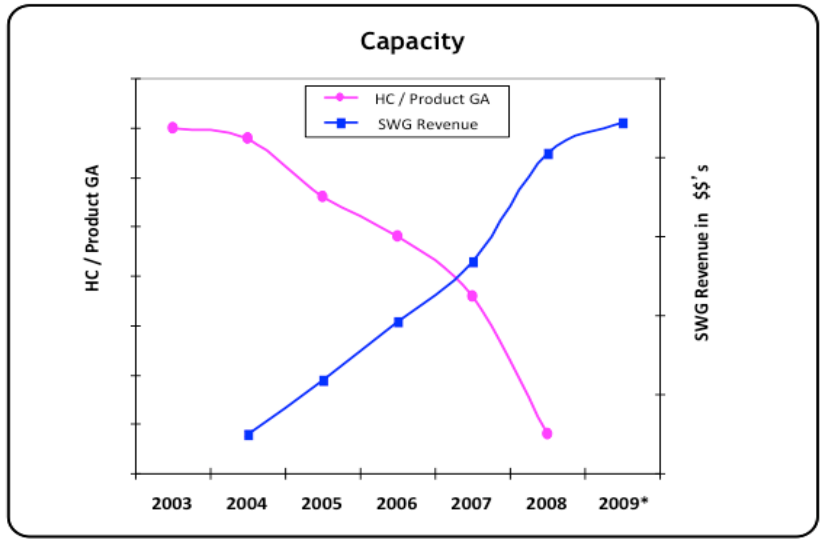
- Team structure, technical leadership, process leadership
- Establishing rhythm, continuous integration
- Prioritizing over planning
- Retrospectives, understanding technical debt
- Intersections with business processes
- Trust



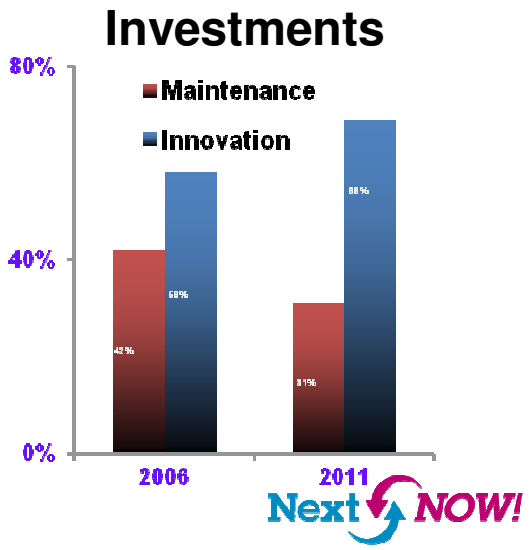
Some Macro (SWG) and Local (Rational) Measures of Progress

Improved performance, efficiency, more innovation



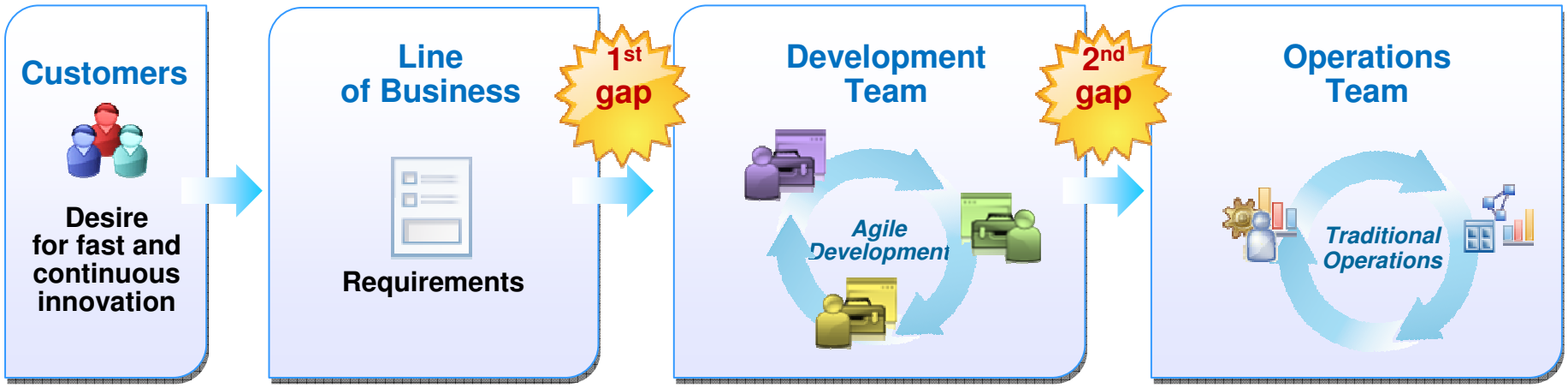


Efficiency Measures	2006 ➡ 2011	
On time delivery	47%	95%
Defect backlog in months	>9	2.7
Beta defects fixed before GA	3%	95%
Agile / iterative projects	5%	85%



Next NOW!

The Next Challenge



Technical Challenges

Scale

Complexity

Time Pressures

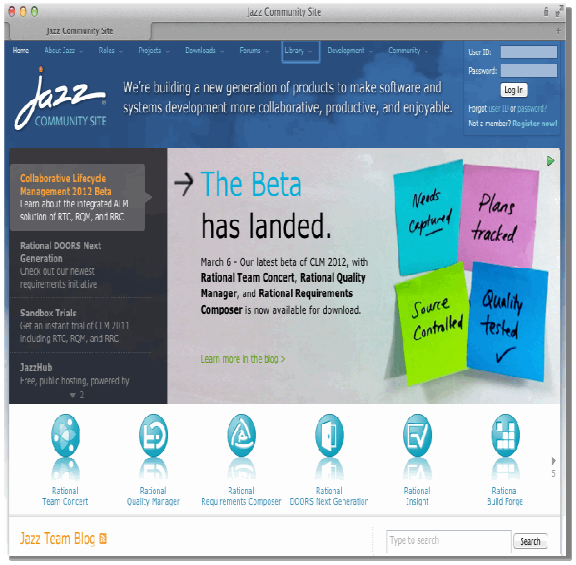
Production and test environment complexity

Disparate change management processes

Disparate notions of quality

Our Goal

Quarterly Delivery of Collaborative Lifecycle Mgmt Capabilities



Increased Frequency

Deliver

Collaborative Lifecycle Management

Rational Requirements Composer | Rational Team Concert | Rational Quality Manager

Fast and Easy Economical

Scaling
Failover
Load Balancing

Monitoring
Security

Lifecycle Management

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
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3. A deliberate emphasis on flexible, loosely coupled architectures

Five Years Ago: Our Development Team Pain Points…

Team awareness

- ✓ 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

Build awareness

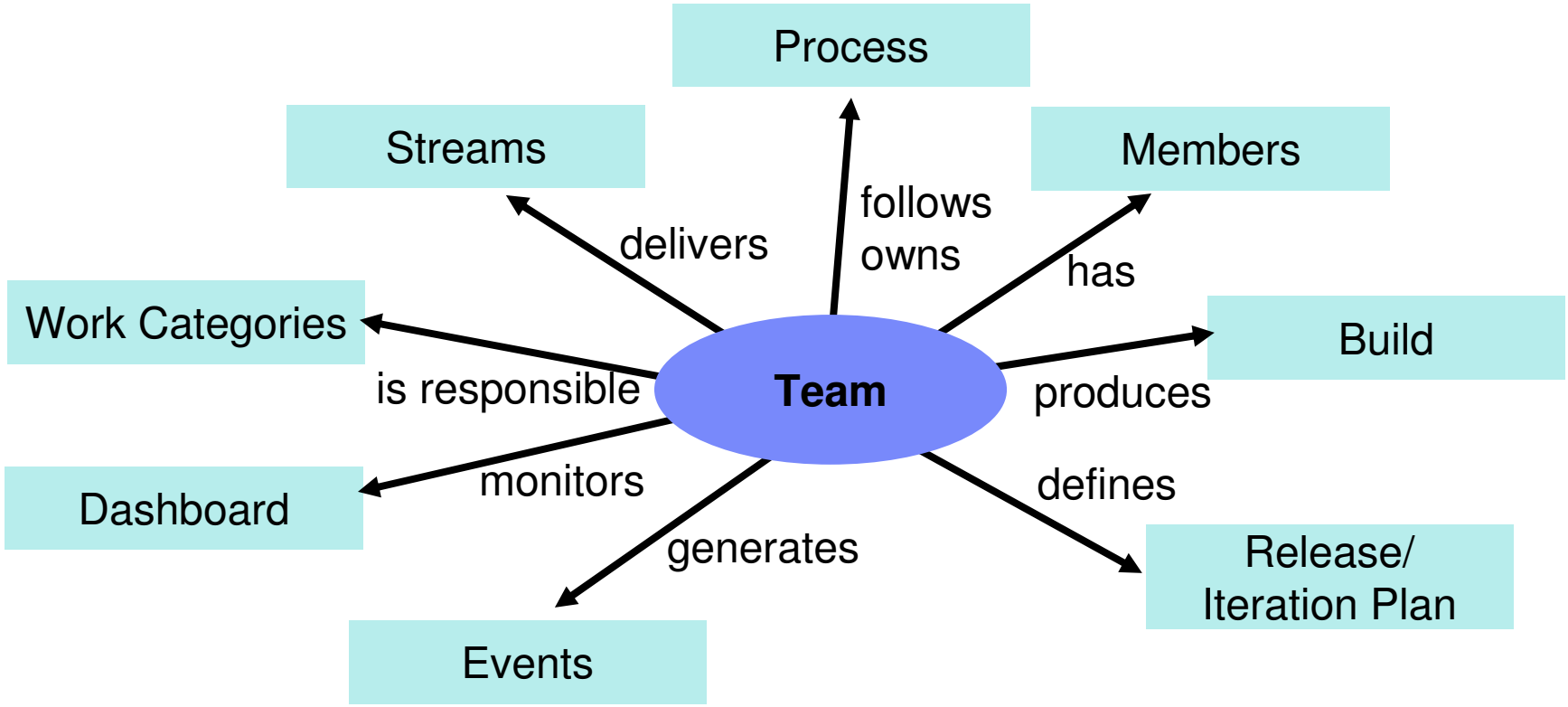
- ✓ is the fix in the build?
- ✓ run a personal build
- ✓ tracking a broken build
- ✓ why is this change in the build?
- ✓ reconstructing a context for a bug/build failure

Project 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

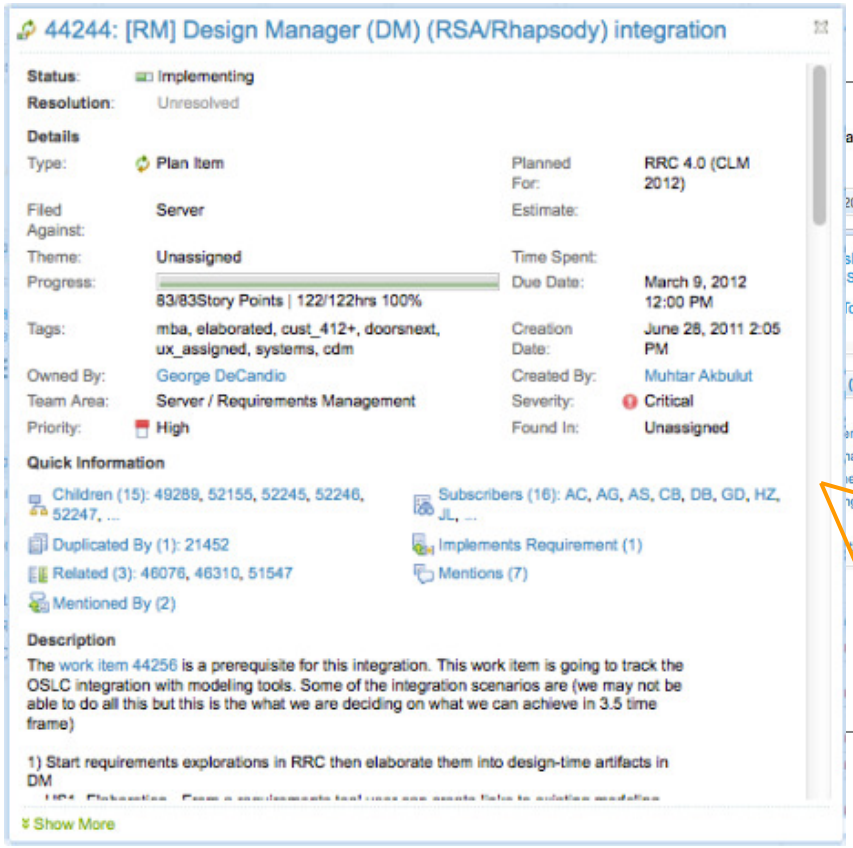
Boring and painful

Way of Working: Team Centric

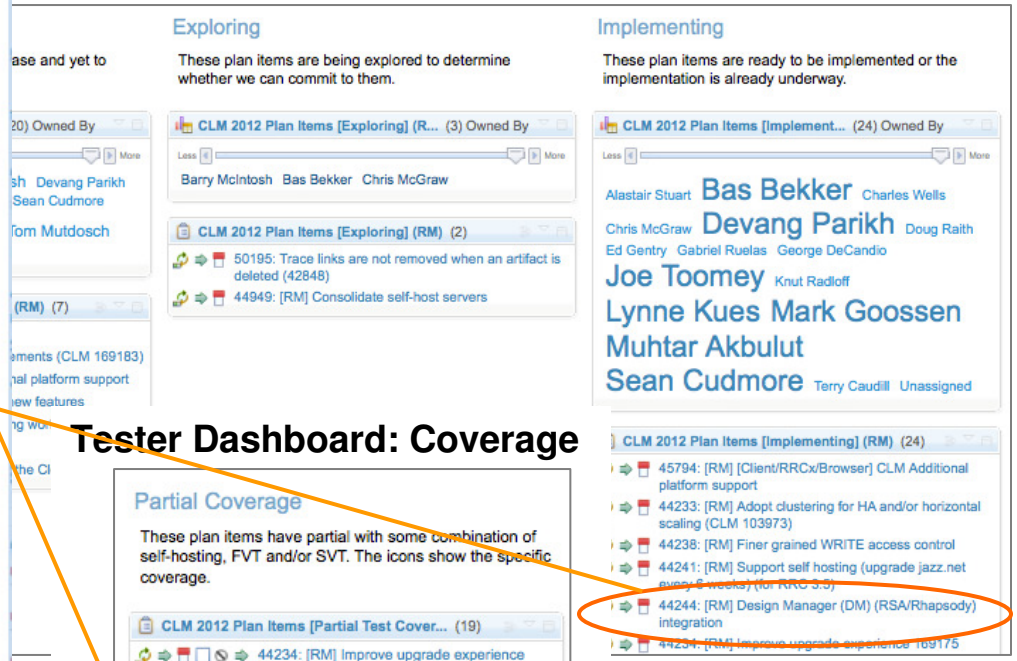


Teams are self-tuned but share a common rhythm

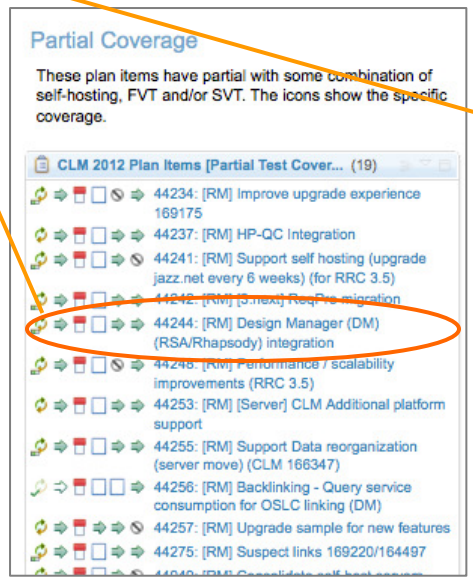
Single Source of Truth across Teams and Disciplines…



Project Lead Dashboard: Work in Progress

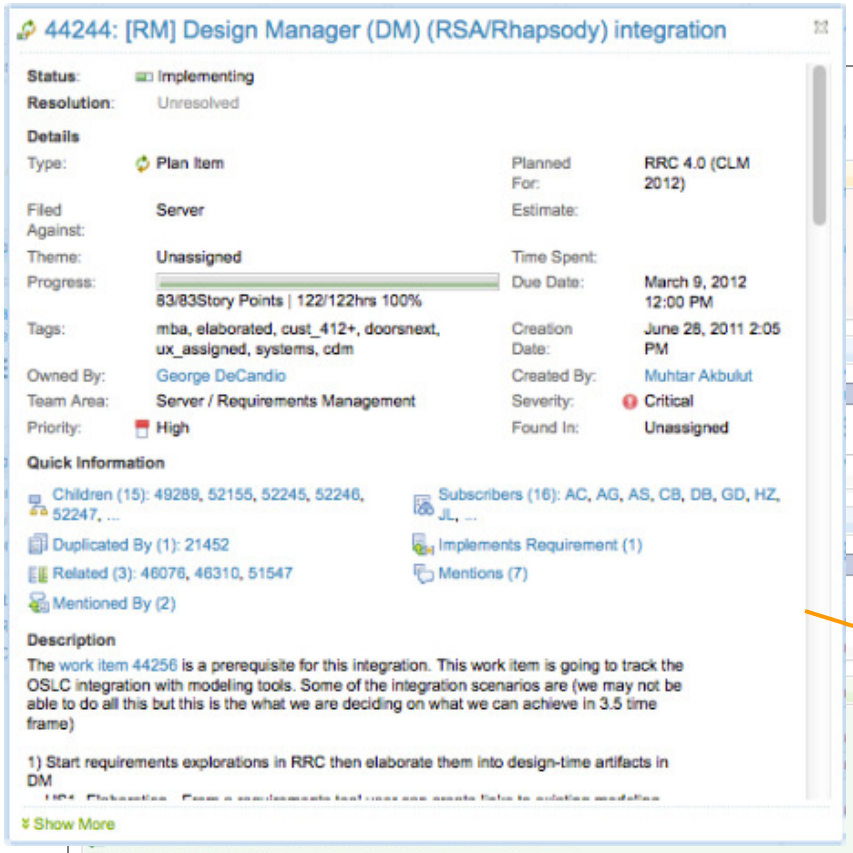


Tester Dashboard: Coverage



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

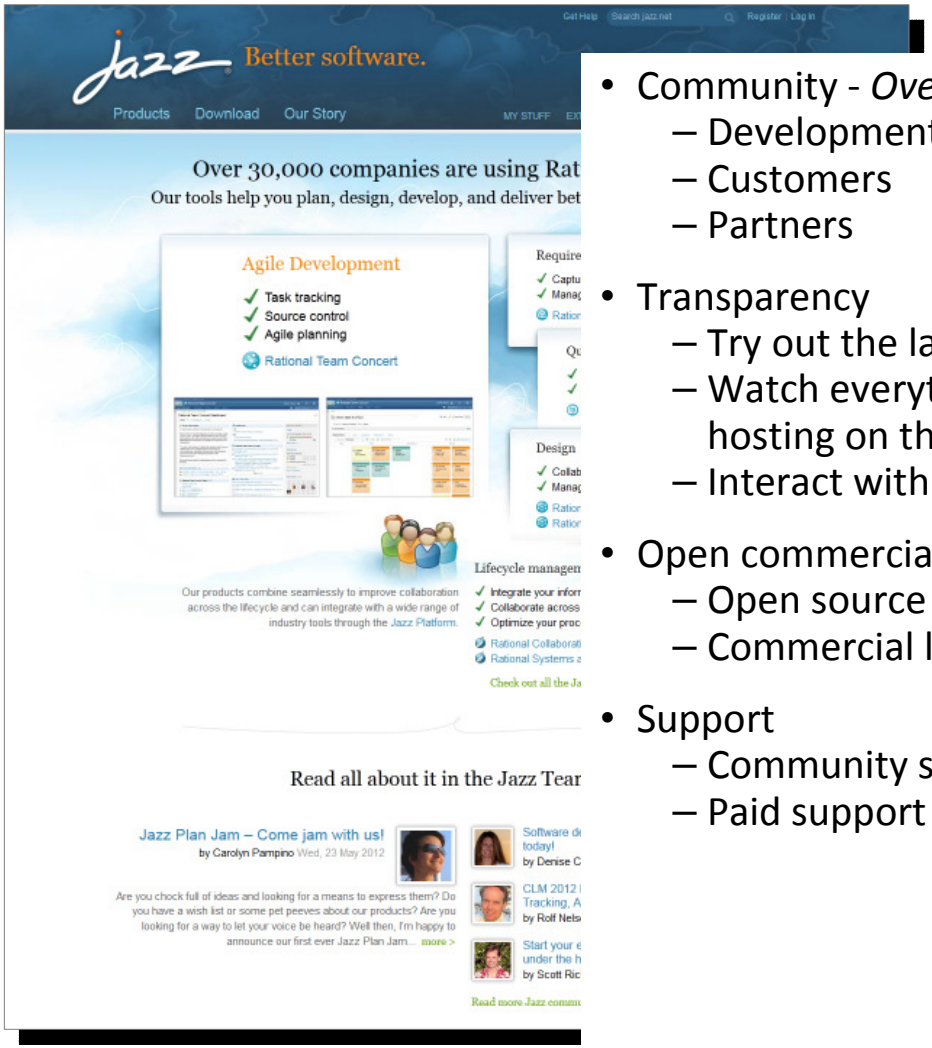
…Enabling Better Informed, Quicker Decision Making & Issue Resolution



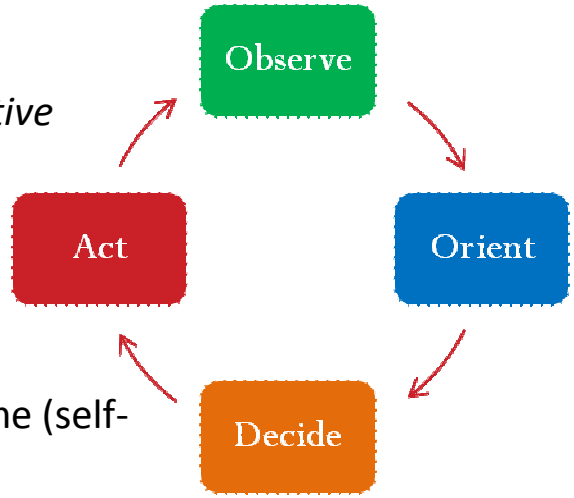
Executive checkpoint: Obstacles, Risks, & Blockers

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

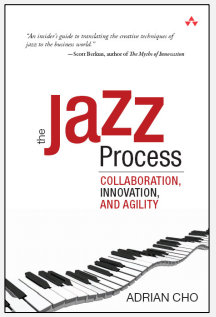


- Community - *Over 115,000 members active*
  - Development team
  - Customers
  - Partners
- Transparency
  - Try out the latest milestone
  - Watch everything happen in real-time (self-hosting on the latest milestone)
  - Interact with the development team
- Open commercial development
  - Open source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



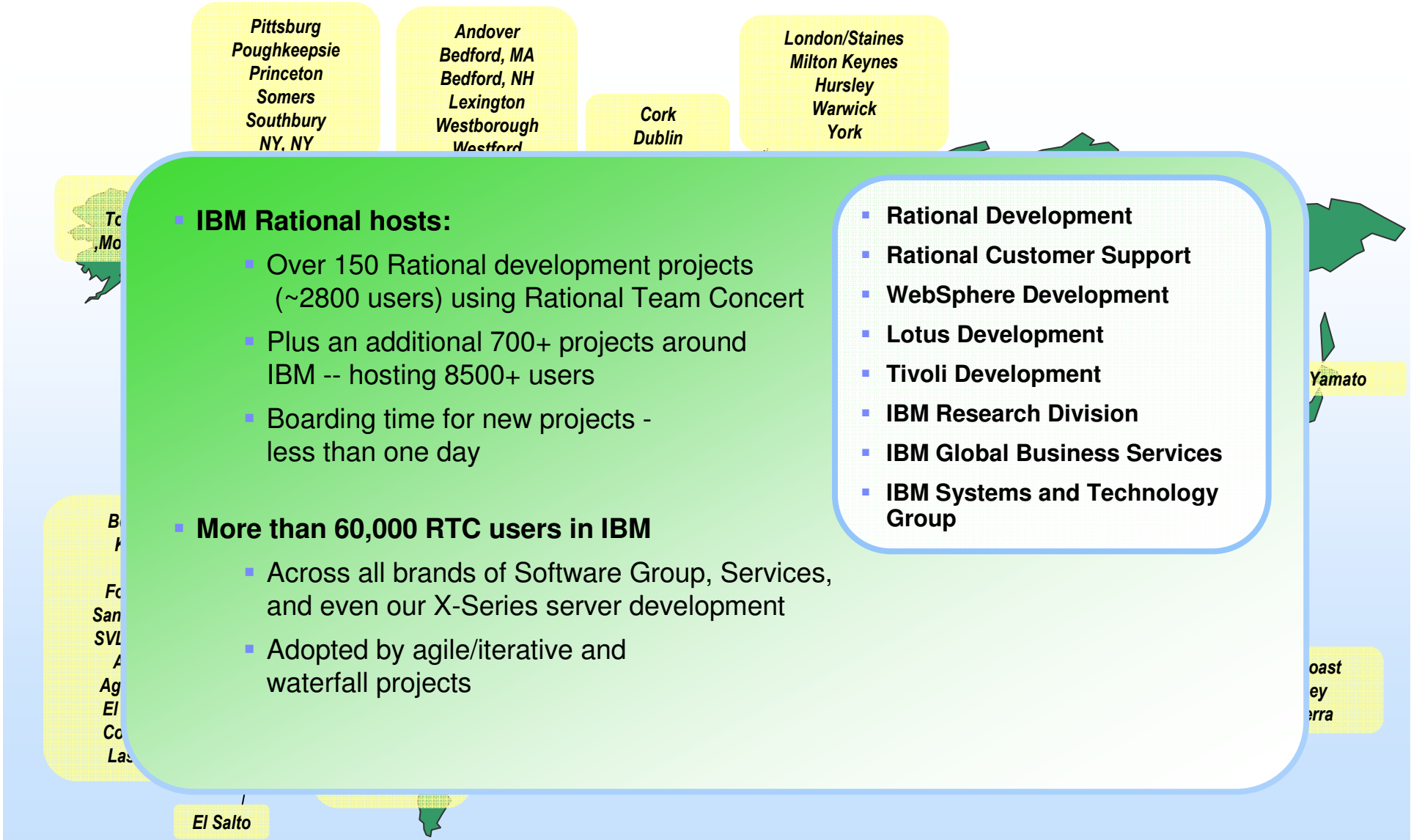
Learn more:

www.jazzprocess.com



Published by Addison-Wesley

Rational and the Broader IBM's Use of RTC



- **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**

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

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.*

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.

"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

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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 been unsatisfactory
- And the scope of integration needs is expanding

Past approaches to lifecycle integration have fallen short

∅ Limited choice and coverage ∅

Single repository

"Can I really expect one vendor to provide all the functionality I need? And what about my existing tools?"

Point-to-point integrations

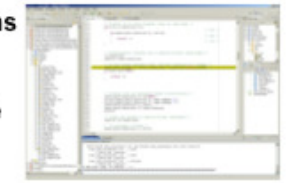
"How can I ever upgrade one tool without breaking everything else?"

Universal metadata standard

"How did I ever think all those vendors would be able to agree?"

Standard implementations

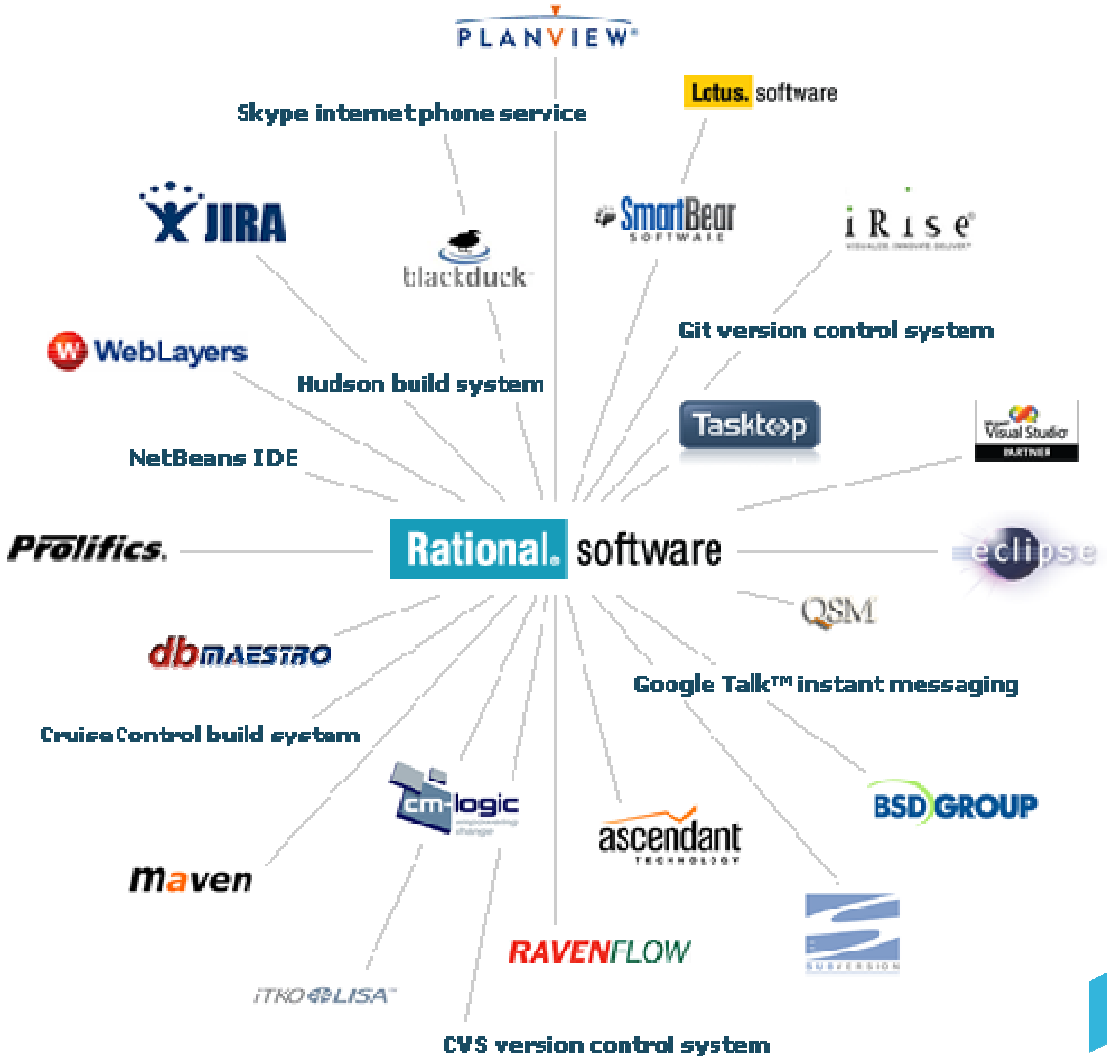
"Did I really believe that every vendor would rewrite their tools on a single framework?"



∅ Slow to emerge and disruptive to adopt ∅

Range of Integration Needs and Scenarios

- Application and engineering lifecycle management
- DevOps, social business, …
- 3rd party and open source – complementary and competitive



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/

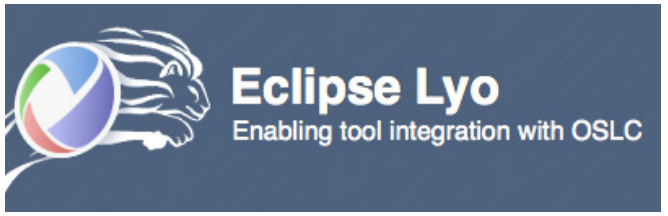
•Range of interests, expertise, involvement
- 400+ registered community members
- Individuals from 34+ different companies have participated in OSLC workgroups

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

•Growing list of IBM and 3rd 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…

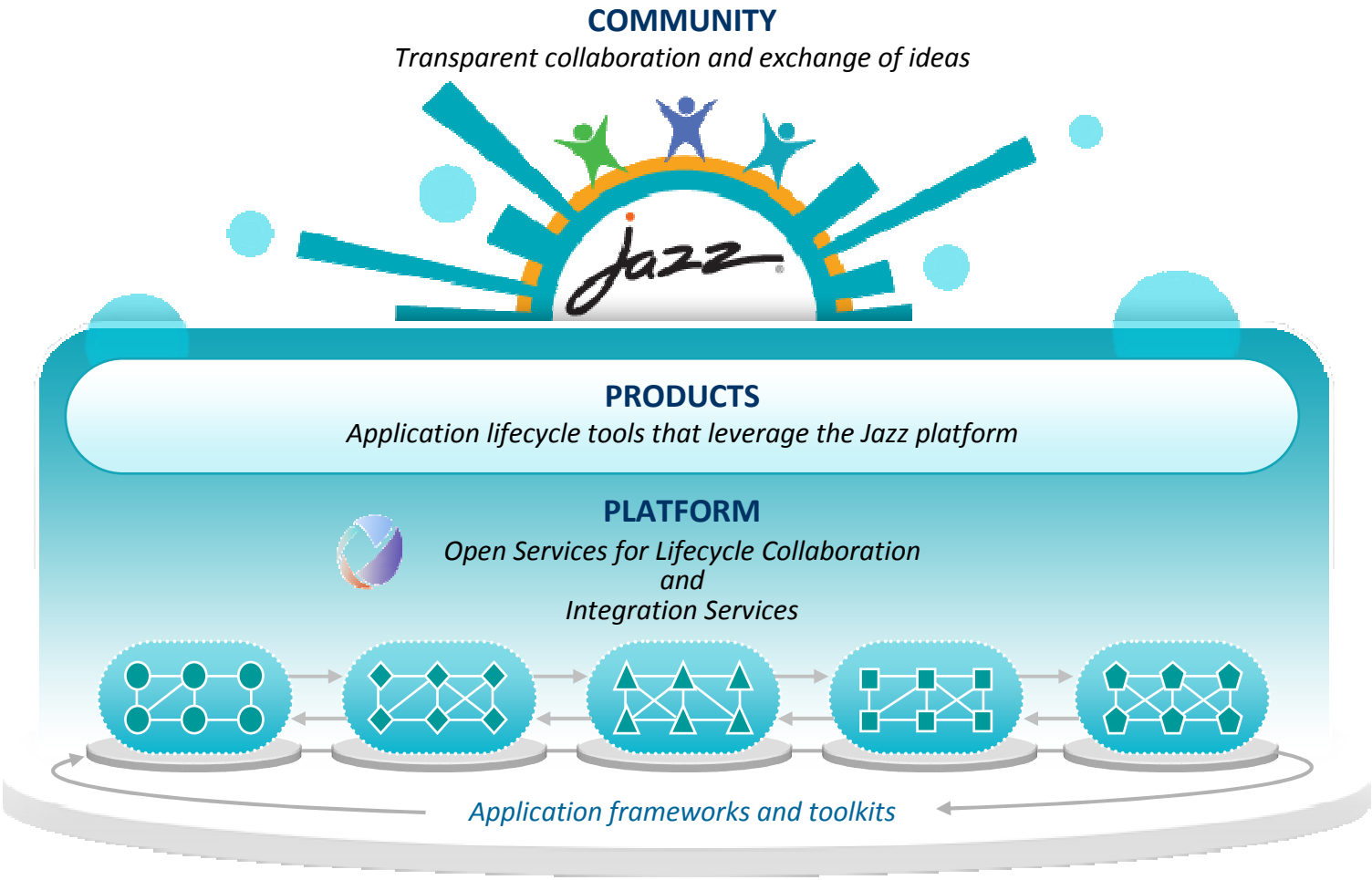


Eclipse project creating an SDK for enabling adoption of OSLC specifications:
- Code libraries
- Reference implementations of specifications
- Test suites and test reporting
- Samples, tutorials and documentation

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

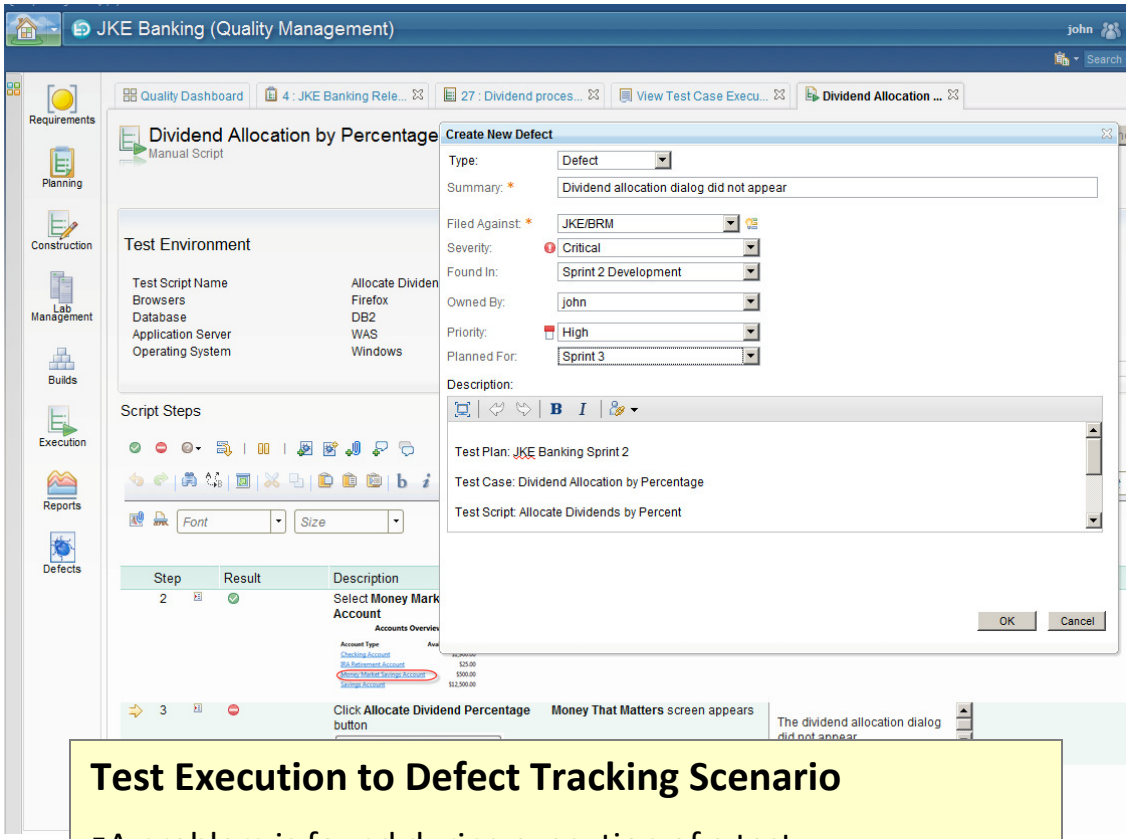
- Tool Integration scenarios:
  - Requirements to test planning & coverage
  - Development implementations to test case definition and execution

  ⇒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

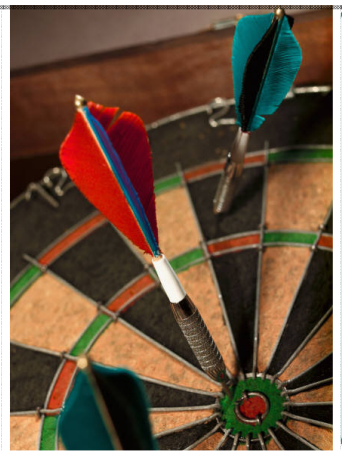
Eclipse Lyo
Enabling tool integration with OSLC

Improved time-to-market

Faster
Time-to-prototype
Worked in ~1 day

Faster
Time-to-market
Saved almost $1M

Increased effectiveness



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

and value of IT spending

New 3rd-party release
No change to OSLC-based integration

Resolve OSLC-based integration problems faster
Clients' waiting time reduced by 26%

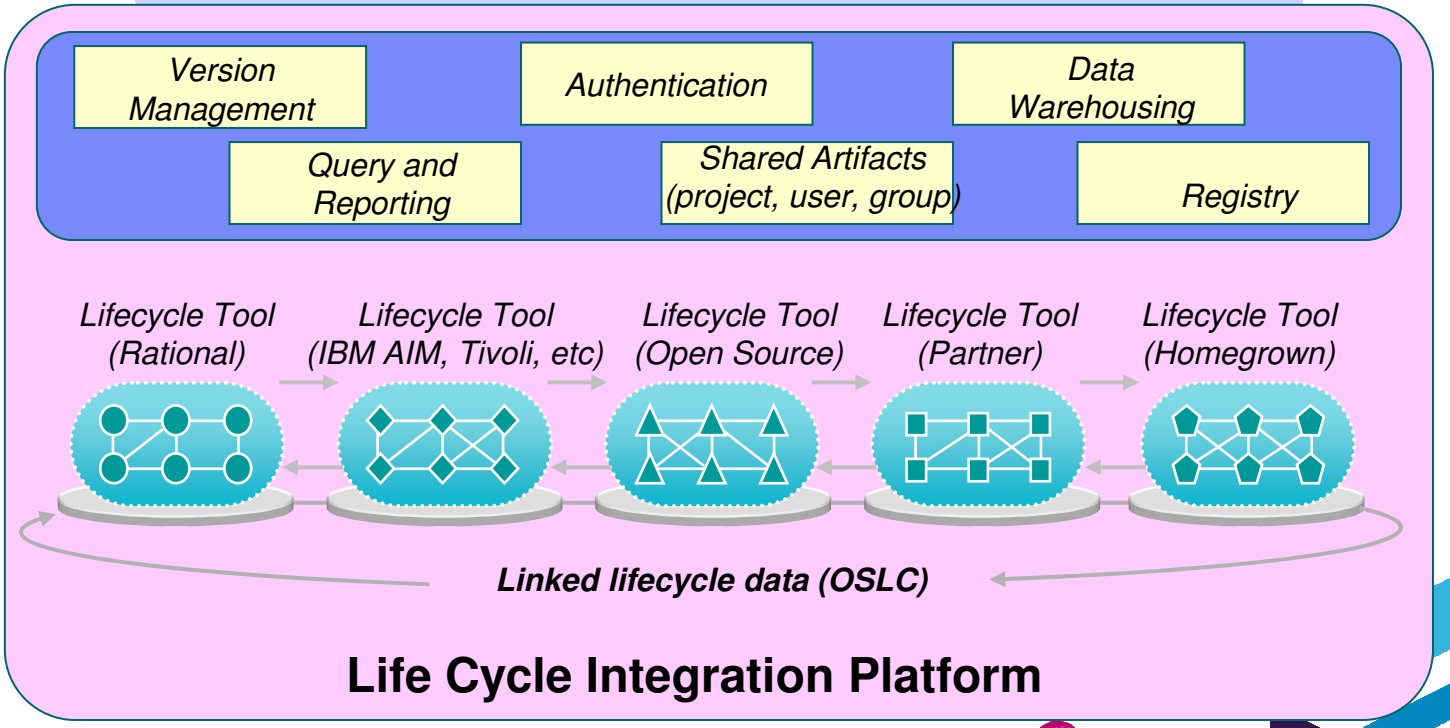
Decreased related costs

Next NOW!

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

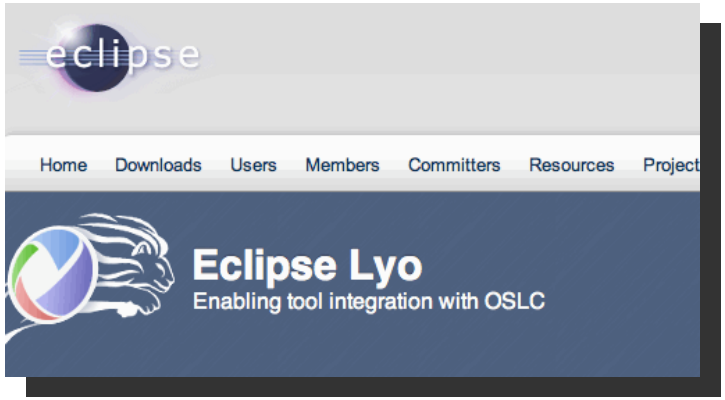
Estimation and Measurement	v2	Scope	Draft	**Converge**	Finalize	Wiki →

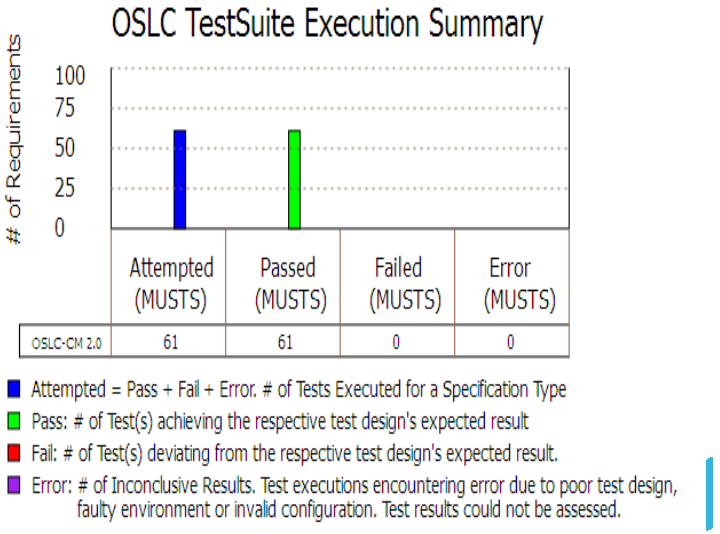
Product lifecycle management

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

Integrated service management

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





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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

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