From **Eclipse** to **Jazz** to **Team Concert**
Developing Software like a band plays Jazz

Erich Gamma
Jazz Technical Lead
IBM Distinguished Engineer
IBM Rational Zurich Research Lab

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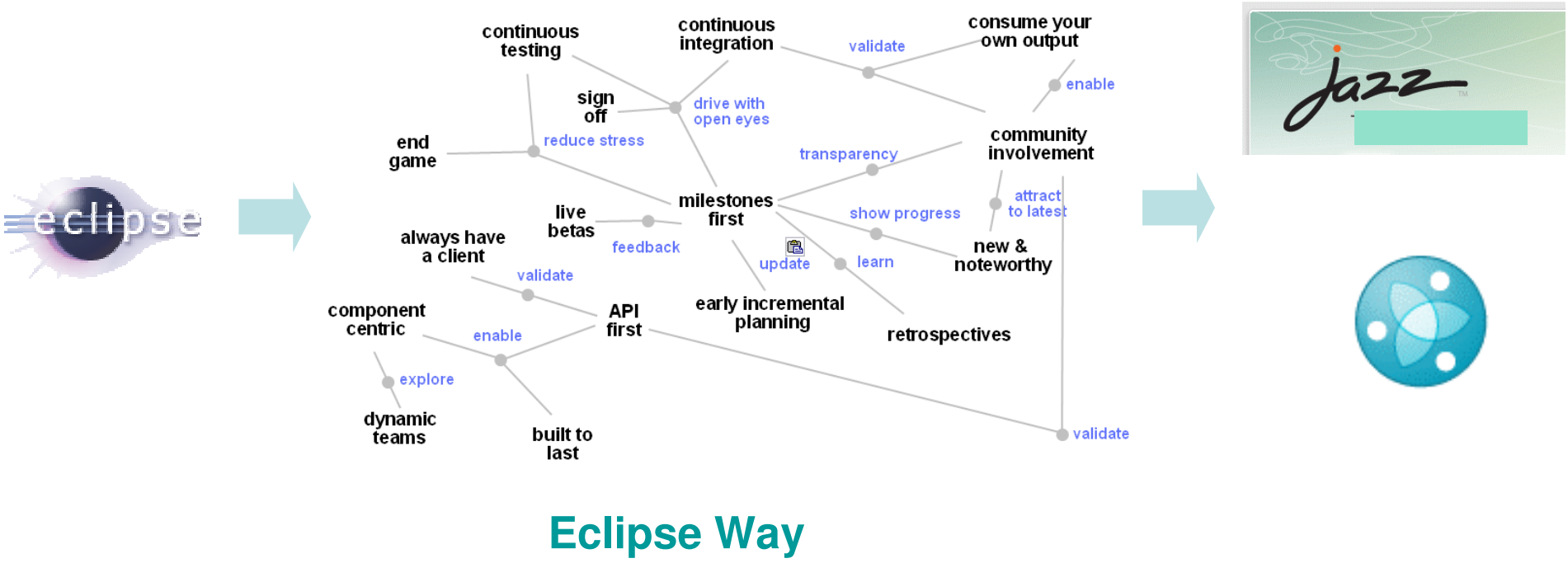
Our Journey



Eclipse Way

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Eclipse and Jazz

- Eclipse components used by Jazz
  - OSGi run-time
  - Eclipse platform
  - EMF
  - GEF
  - Birt
  - Mylin (incubator)
  - TPTP ProbeKit (incubator)
- More Open Source Apache
  - Log4j
  - Lucene

➢ You can use all your favorite plug-ins CDT, PHP…

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Jazz and Team Concert

- **Jazz** is a **technology platform**

- **Rational Team Concert**
  - Team Concert is the **first Jazz based product**
  - Source control, build system, work items
  - Other products will follow

Free for qualified Open Source Projects and academic use

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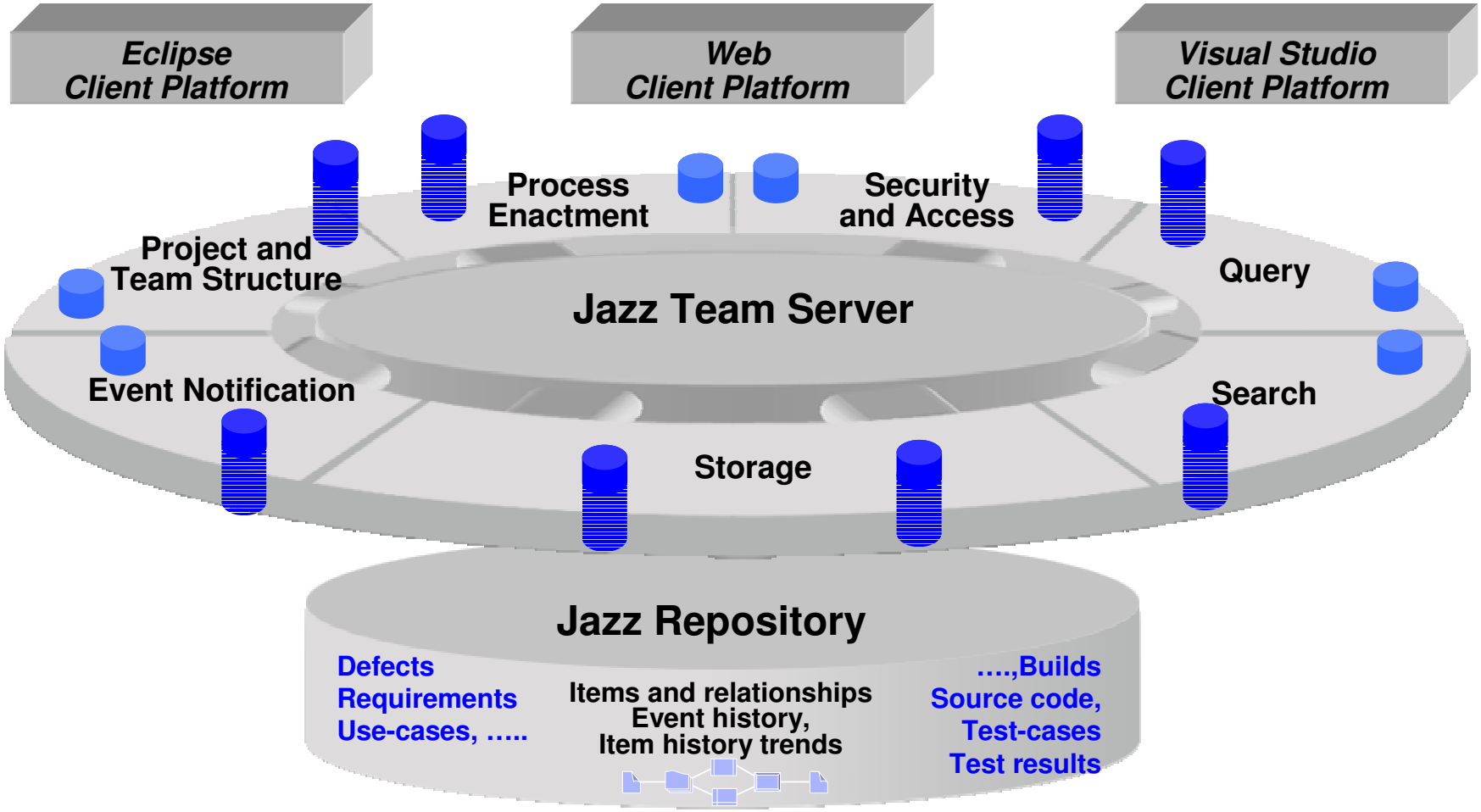
Jazz Conceptual Architecture



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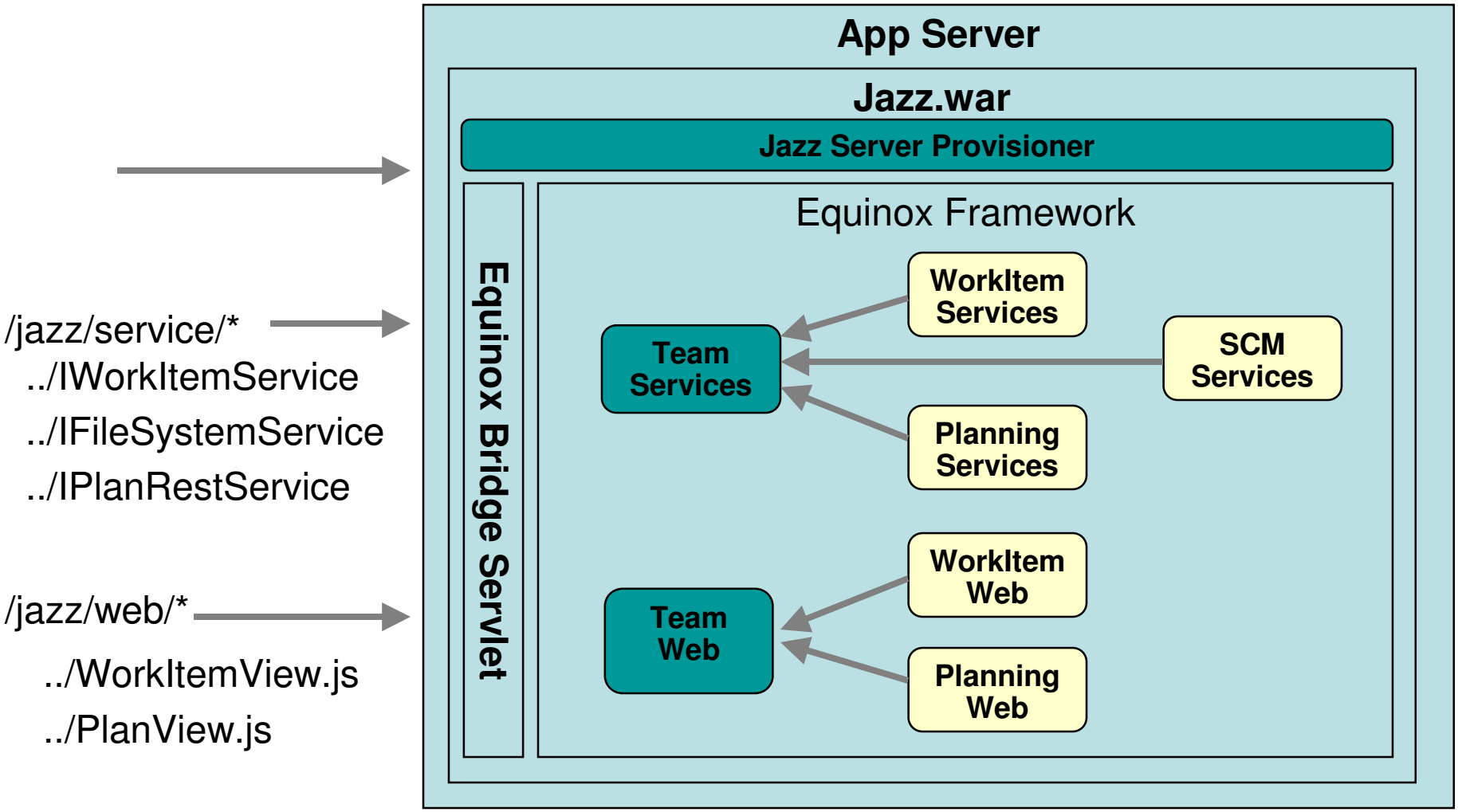
Extending the Jazz Platform – Understanding jazz.war



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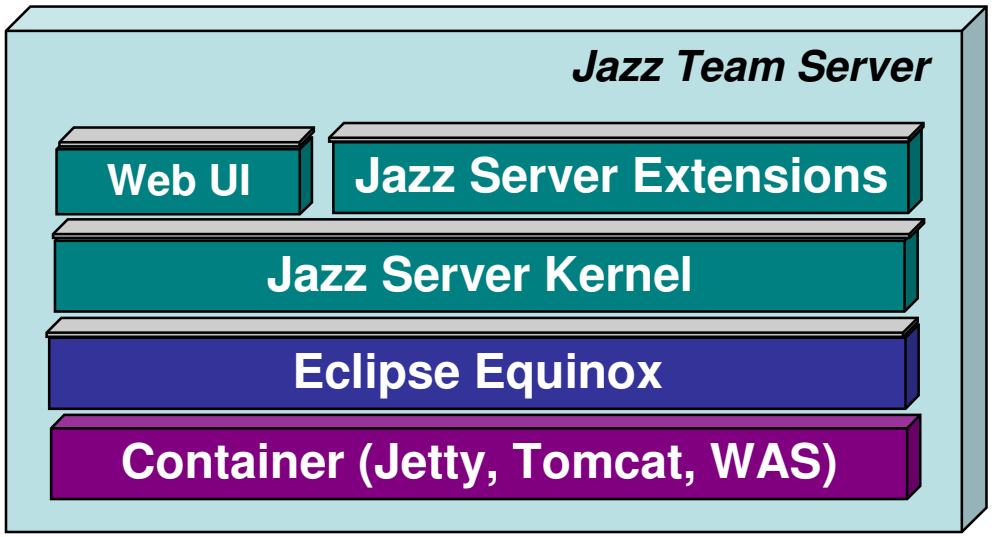
Jazz Server Kernel

- Team Repository Services
  - Provides the basics for querying, fetching, and updating repository data
  - Provides support for change events and feed rendering
  - Provides the notions of projects, teams, and process
  - Provides a platform for extensible AJAX Web UIs
  - Runs in an OSGI environment



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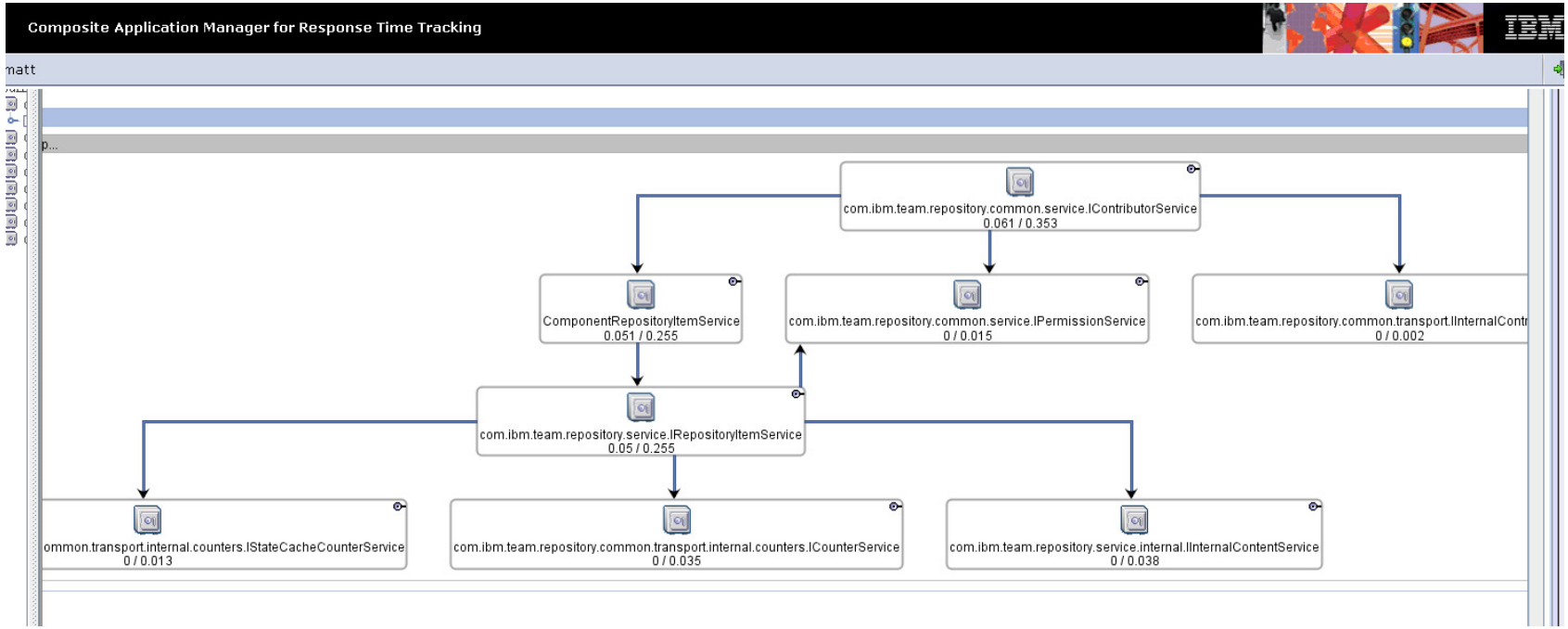
Extending the platform - Service programming model

- It's stateless services all the way down…
- Services are contributed by bundles
- Statelessness is key to scalability
  - All state is in the DB, all client interactions are atomic
  - Clusterable and restartable
  - No session state (clients are stateful)



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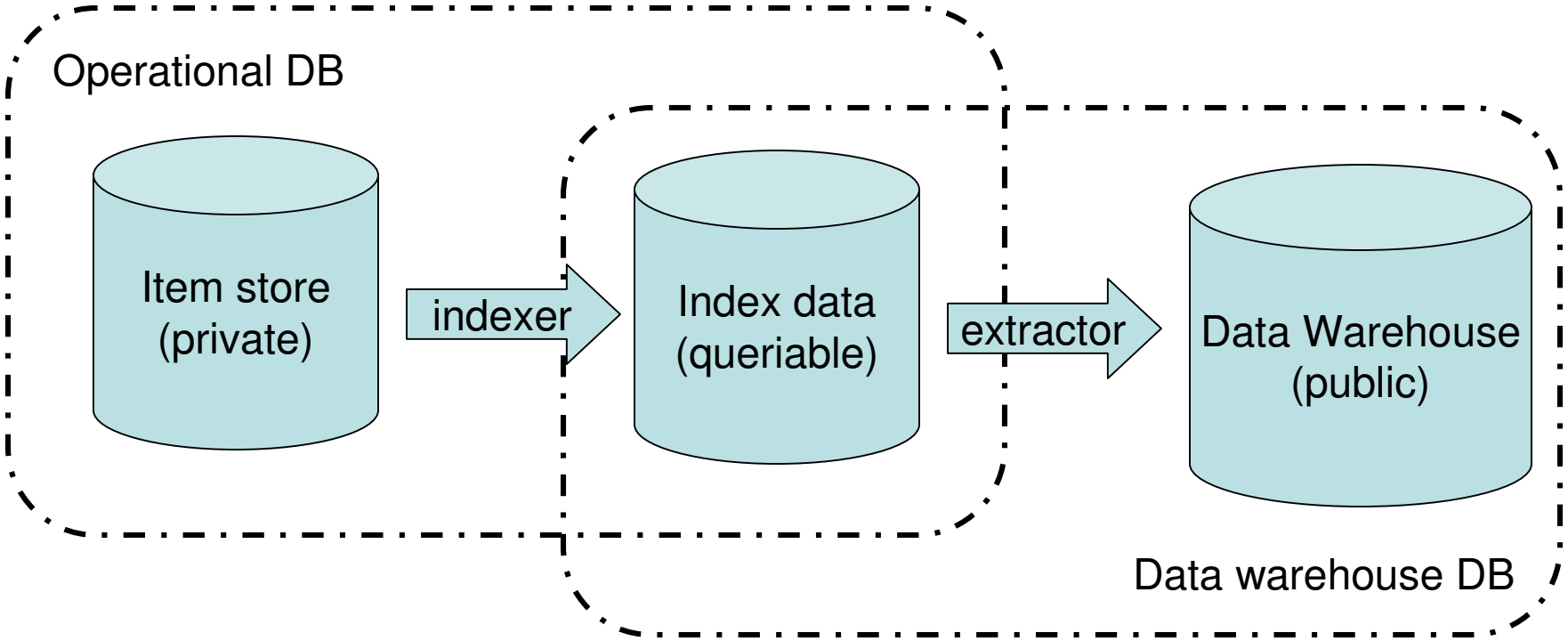
Extending the Jazz Platform – repository data model …three DBs in one

- An open-ended item store
  - Stores structured items as XML
  - Stores arbitrary content as BLOBs
- A declarative indexing story to support query
- Lucene to support full-text search
- A snapshot framework for extracting summary data for reporting



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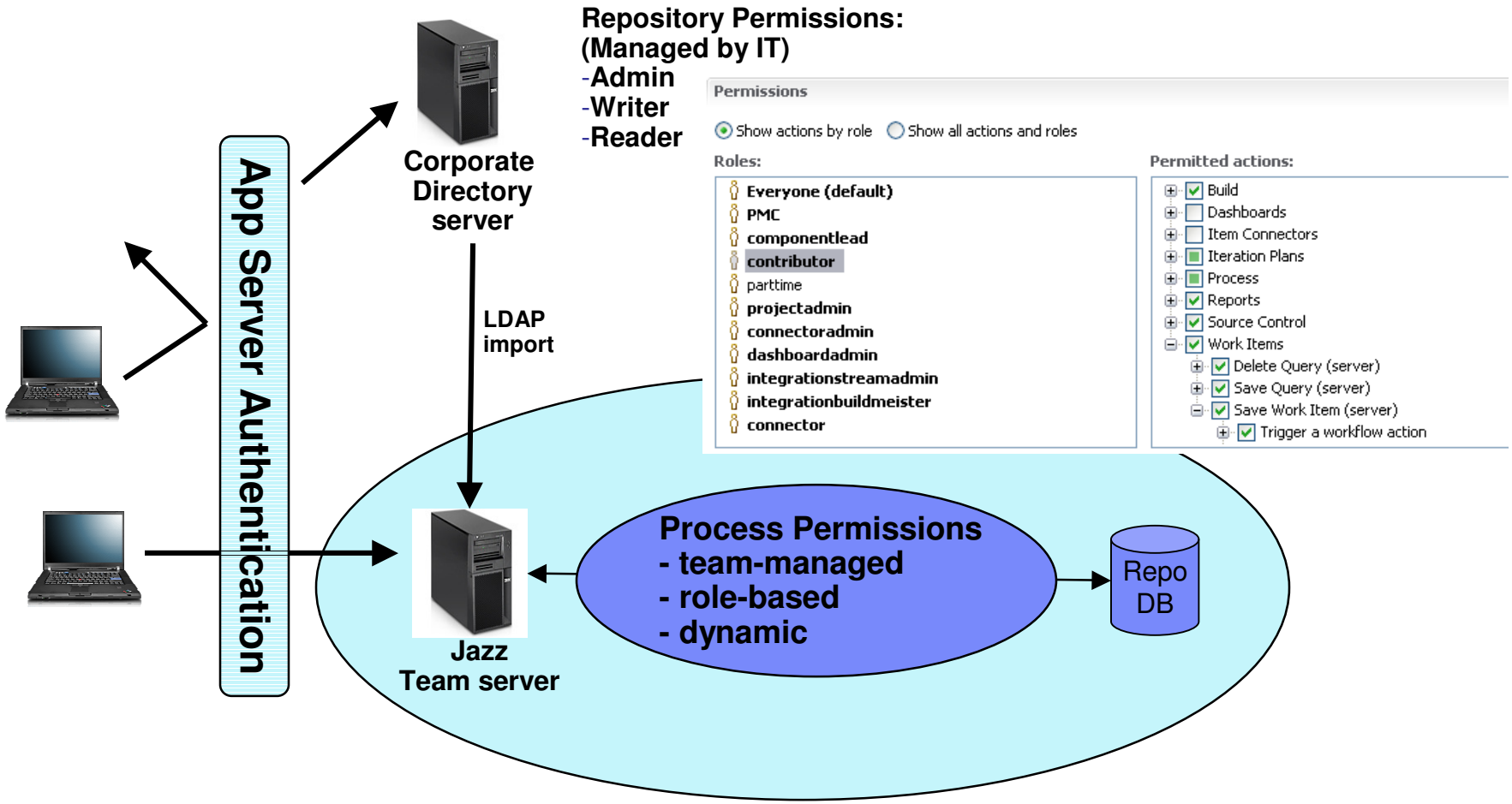
Authentication and Permissions



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Process basics

- Teams work on projects
- Each project follows a process
- Work inside the scope of a team follows the team's process
- Team members play roles defined by the process
- Process manifests itself through artifacts types, operations manipulating the artifacts, and artifact change events

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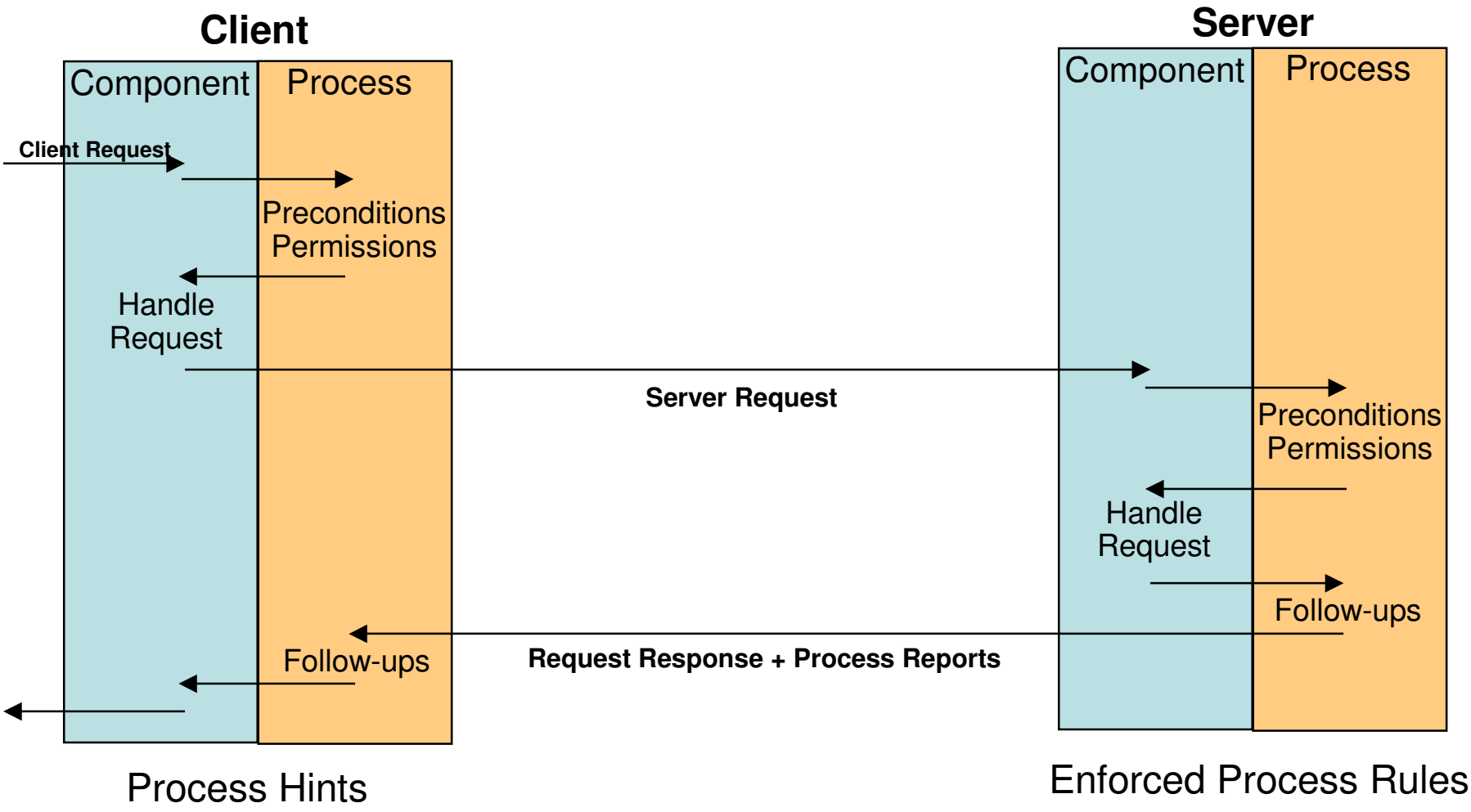
Process Execution Flow



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What we learned

- Jazz Platform 0.6 provides a general server-side programming model
  - Wire protocol is implementation, clients program to Java client libraries
    - Resources modeled; serialized between client and server
  - Clients communicate using RPC style interface

- Currently exploring providing a simpler programming model
  - Provide an on-ramp to ease extensibility
  - Characteristics of experiment
    - Wire protocol is API, accessible to clients of all kinds
      - Resource representations explicitly specified
    - Clients communicate using RESTful interface
    - More declarative building blocks

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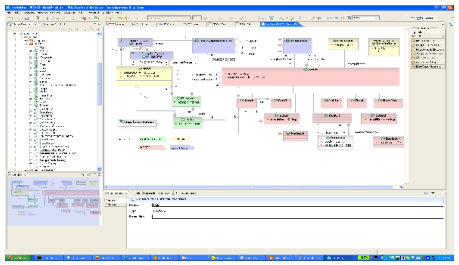
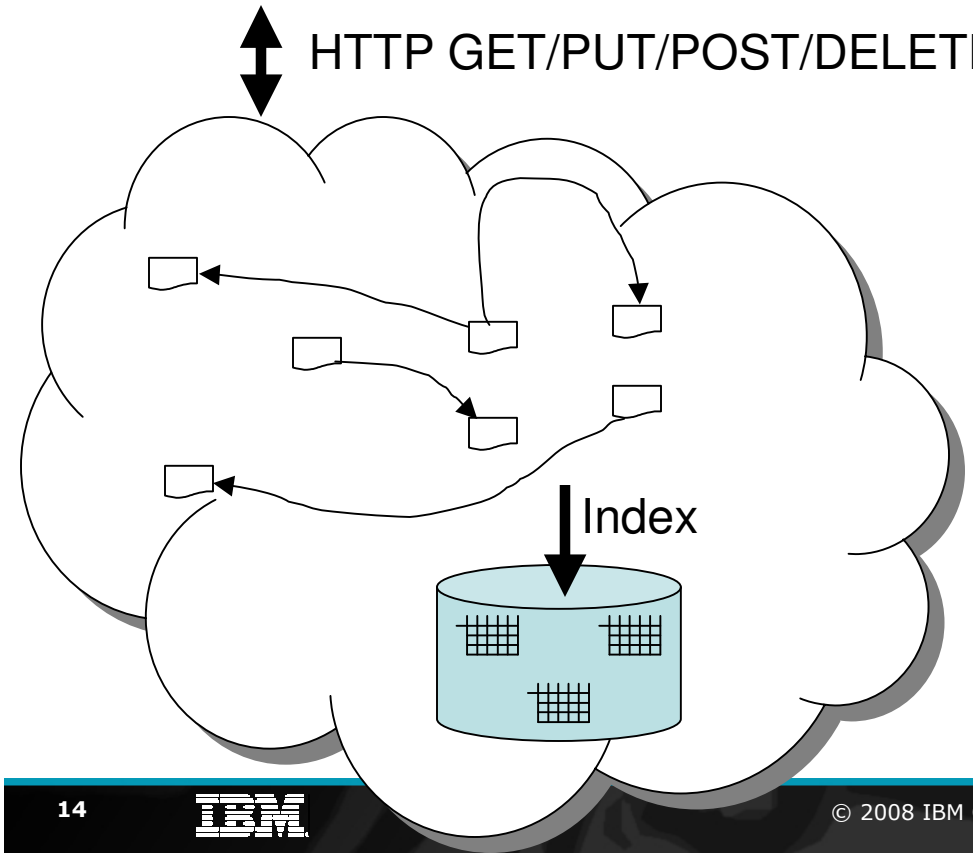
Experiment: Implement tools like an internet application





- Build on Jazz experiences in Web UI
- Data specified independently of tools
- All data are resources with URLs
  - Ubiquitous access
- Tools access data through HTTP/APP
  - Multiple tools same data
  - Data integration without forcing same tool for multiple roles
- References are embedded URLs
  - Cross technology/location
- Resources have representations
  - XML encouraged, not required
- Search and query through “structured indexes”, independent
  - Standard analysis, query, reporting

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Team Concert: Developing software like a band plays "Jazz"?

- Developing software in a team is like playing an instrument in a band. Both require a **balance of team collaboration** and **solo expertise**
- Band members knows what the others are doing/playing
- Live music/live software

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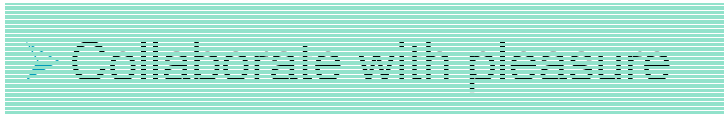
Guiding Principles

Help ***people*** work ***together*** to be more ***effective:***

- Integration
- Team First
- Collaboration
- Transparency



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Integration

- Tools should be invisible
- Users work and collaborate on tasks

Tasks	Work Items	SCM	Build	Reports	Project Mgt.
joining a team	X	X	X		
what is happening in the team?	X	X	X	X	X
following the team's process	X	X	X		
starting an ad hoc/dynamic/tiger team	X	X	X		
deliver a change to the team	X	X			
find out if a fix is in the build?	X	X	X		
run a personal build		X	X		
tracking a broken build	X		X		
reconstructing a context for a bug/build failure	x	X	X		
interrupting development due to a high priority bug fix	X	X			
working on multiple releases concurrently		X	X		X
tracking the code review of a fix	X	X			
tracking status			X	X	X

Tools

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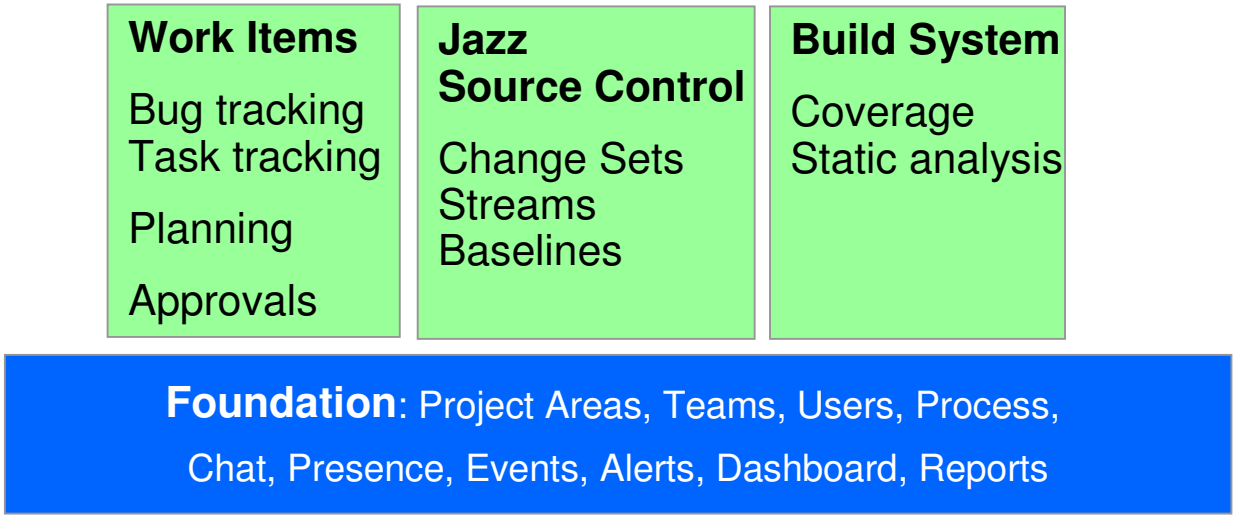
Rational Team Concert



- Team Concert provides an integrated Collaborative development environment
  - Using a single repository
  - Integrated Version Control, Work Item and a Build System

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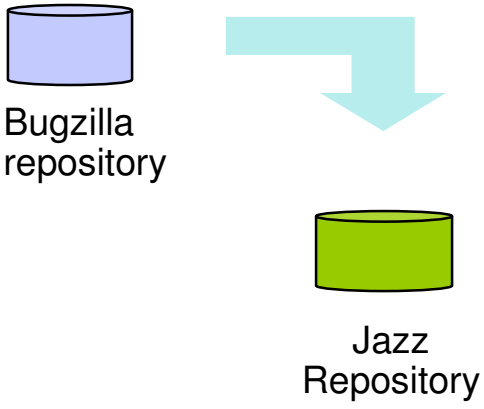
Playing with Others

Import

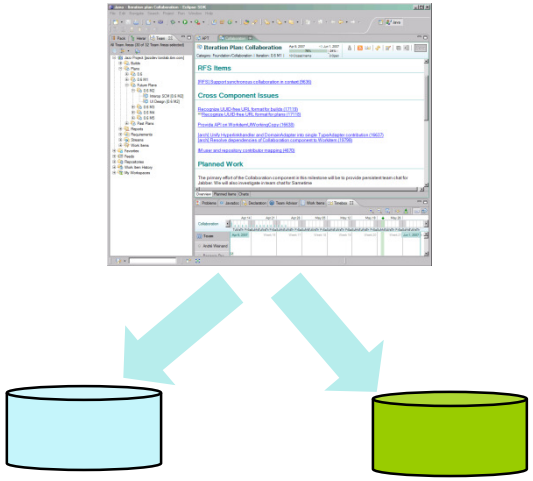
One way data migration



Bridge

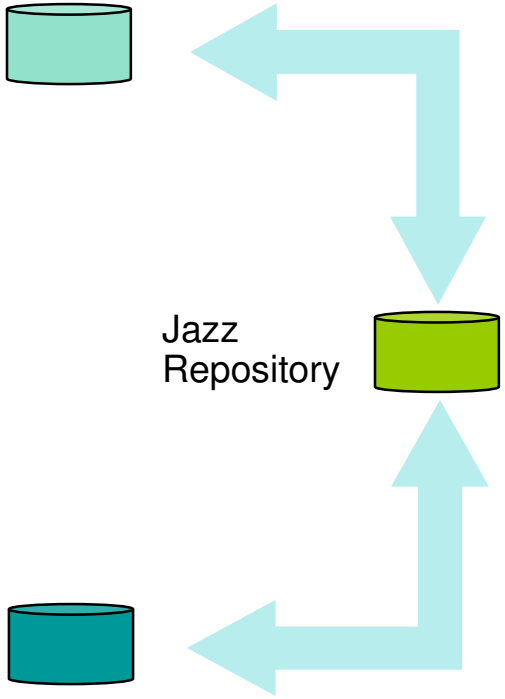
SVN Bridge links work items with change sets.

Mylin repository connector (incubator)



Connectors

Two way data synchronization



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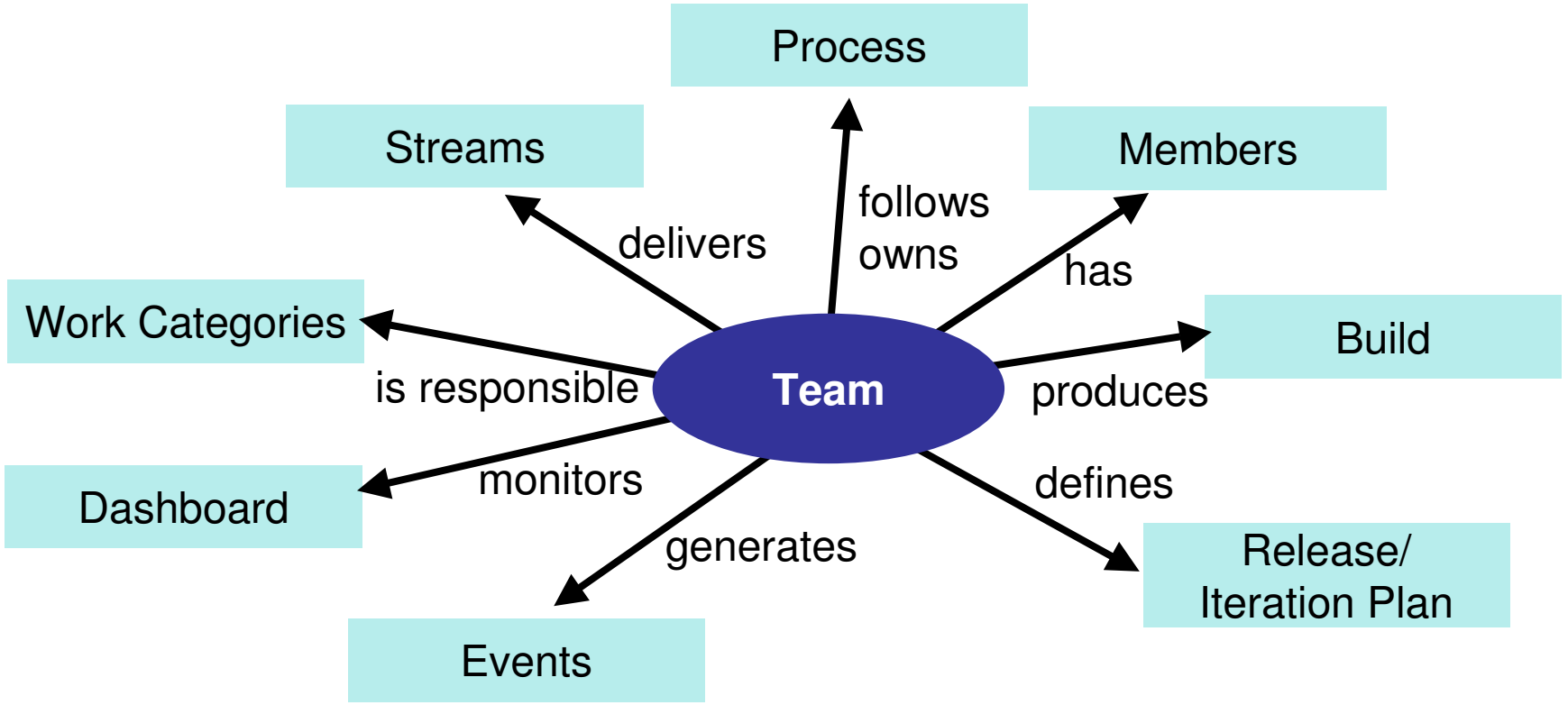
Team First



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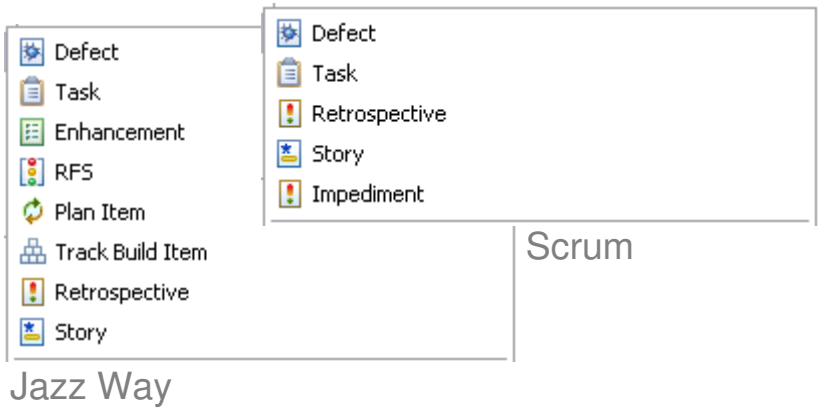
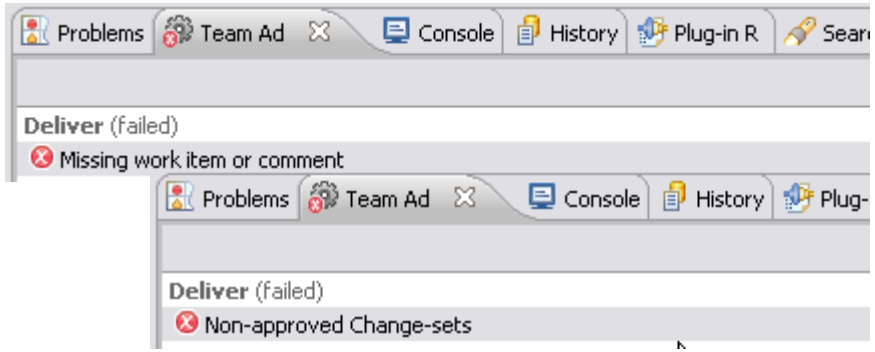
Team First: My Way your Way…

- Jazz allows teams to define **their rules** and the **artifacts** they care about
- **Process templates** define **their way** and rituals
  - Eclipse Way, Scrum, OpenUp
- Process templates defines
  - **Artifacts** and their **states**
    - Bugs, Tasks, Stories
  - **Pre/post conditions** for team operations
    - delivering a change
    - saving a work item
  - Roles and permissions





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Demo: Developer Role

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http://www.hacknot.info/hacknot/action/showEntry?eid=97

Demo: Joining a team (before…)

If They Come, How Will They Build It?

9 Sep 2007

To: Mike Cooper
From: Ed Johnson

Hi Mike,

I started on the AccountView project today. Can you tell me how to get the code and get started developing?

Thanx,

Ed

To: Ed Johnson
From: Mike Cooper

Hi Ed,

The code is all in CVS in the module called AccountView. Just check it out and you'll be right to go. As you've probably noticed, we're all using the Eclipse IDE here. That's all you need to get stuck into it.

Mike

To: Mike Cooper
From: Ed Johnson

Mike,

Can you tell me the connection details for your CVS server? Will I automatically have access to it, or will I need someone to create an account for me?

Ed.

To: Mike Cooper
From: Ed Johnson

Mike,

I finally got CVS access today from Arnold. So I've checked out the AccountView module OK, but it won't compile. The Eclipse project has dependencies on about five other projects. I tried checking those dependent projects out as well, but a few of them won't build at all? How are you managing to develop this thing when the dependent projects don't build?

Ed

From: Mike Cooper
To: Ed Johnson

Oh yeah – I forgot to tell you about the dependent projects. I always forget about them. I'm not so surprised some of them don't build for you. I've got versions on my machine that build OK but I haven't checked them in for a while. Gimme about 15 minutes and I'll check them in, then you should be right to go.

M.

From: Ed Johnson
To: Mike Cooper

Mike,

I just got your check-ins, but the utils project still doesn't build. Did you forget to check in some logging library?

Ed

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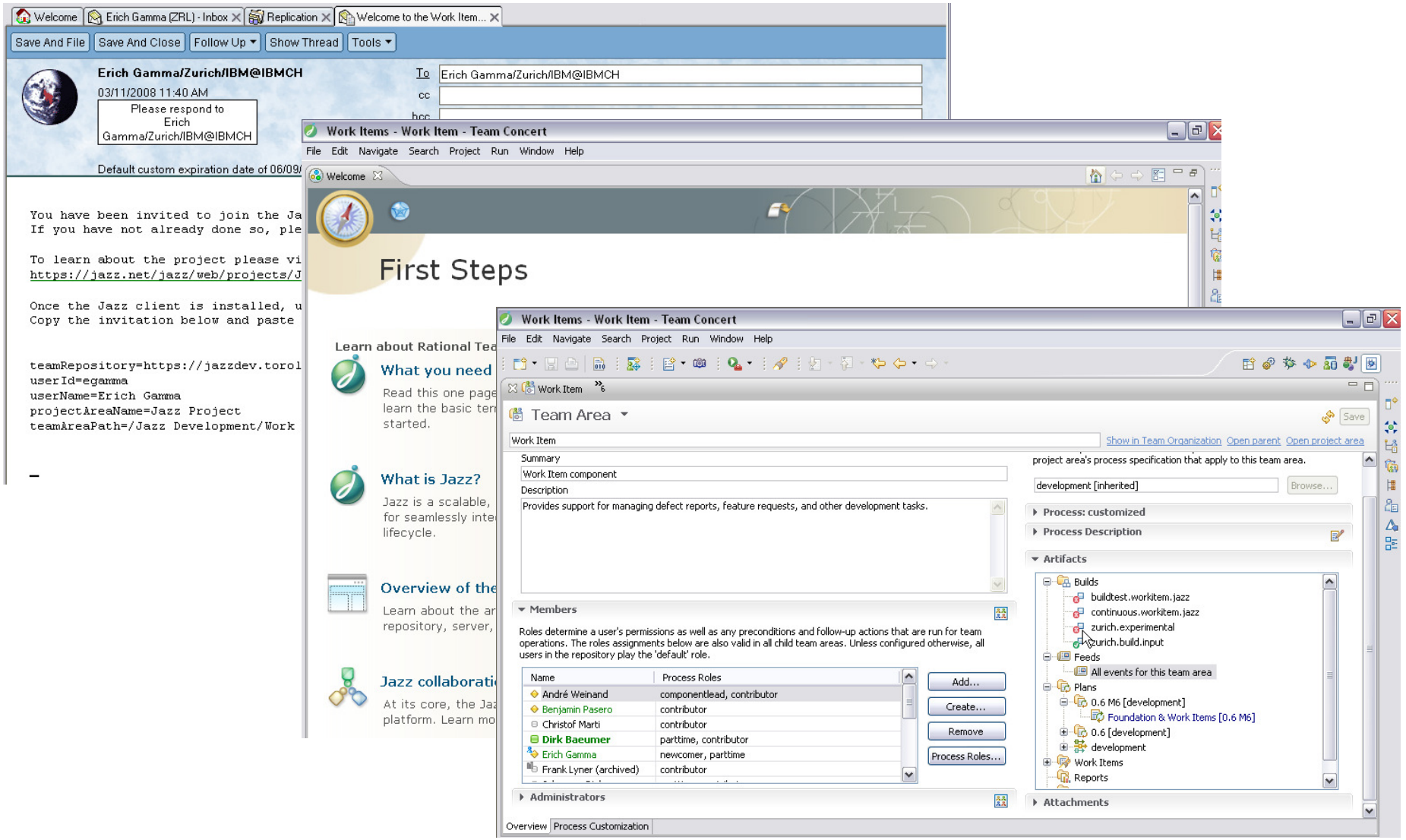
Video Demo: Joining a Team (after…)



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Project Lead

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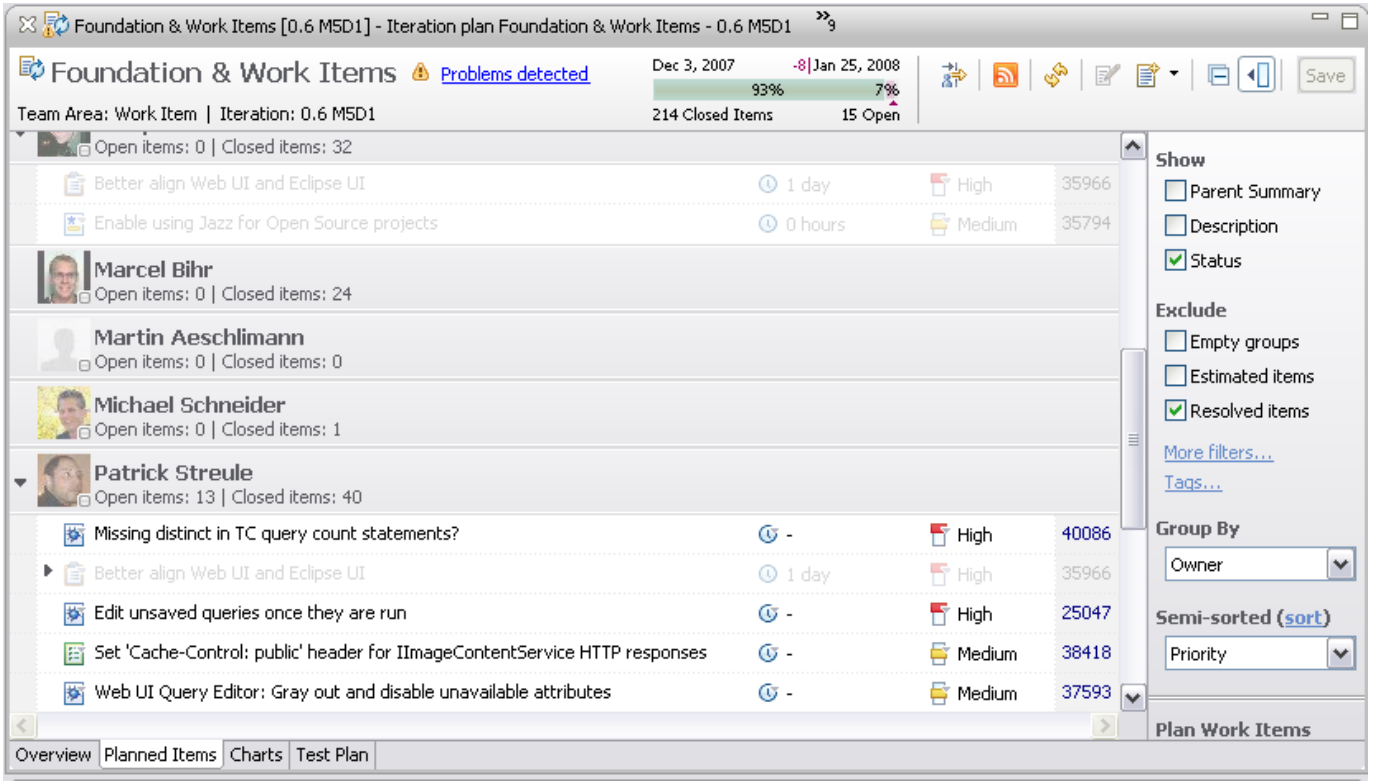
Iteration based Planning

- Planning integrated with bug/defect tracking
- Work break down, e.g., (Stories, Tasks)
- Team load
- Progress tracking, burndown



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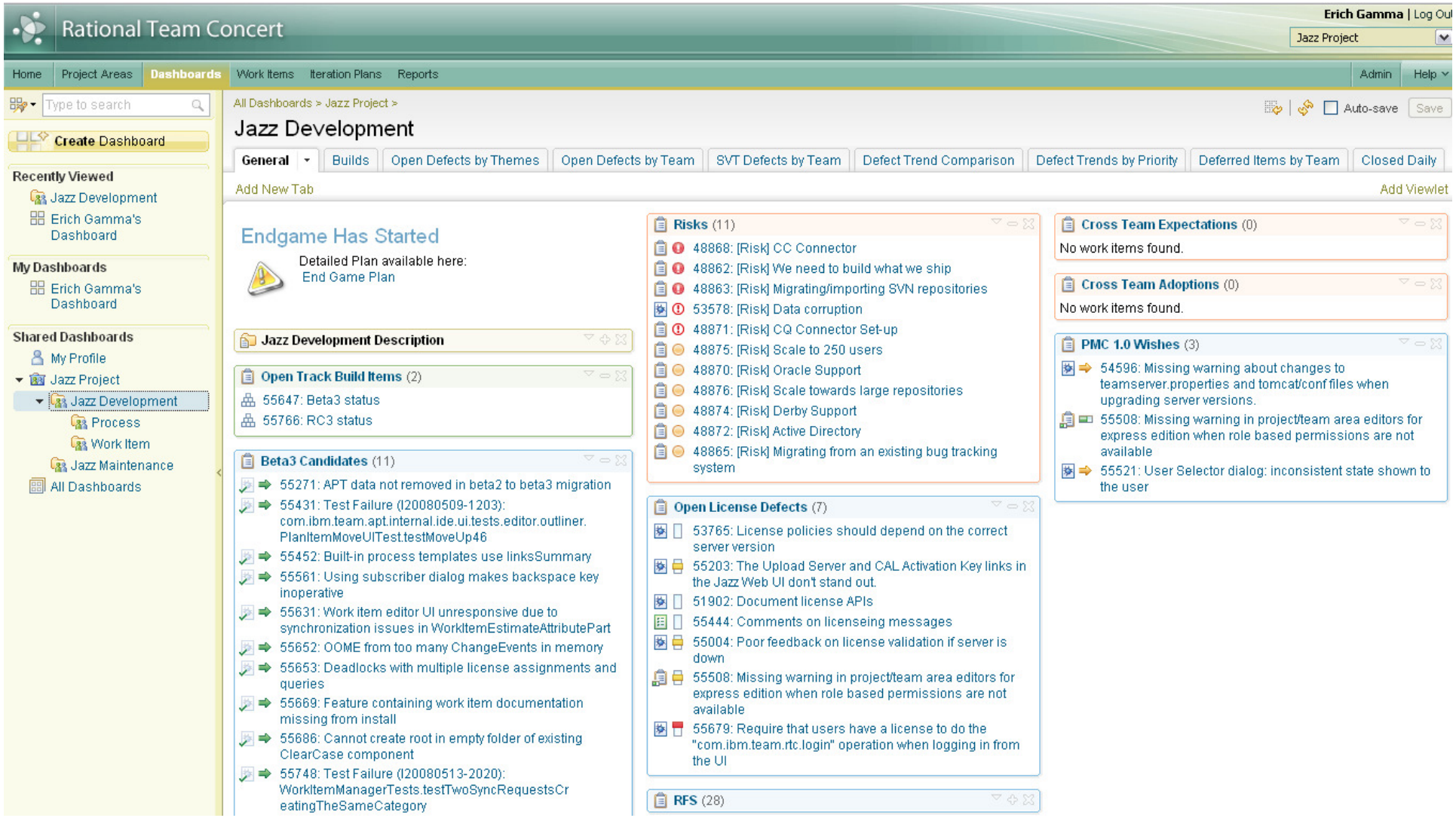
Tracking/Transparency



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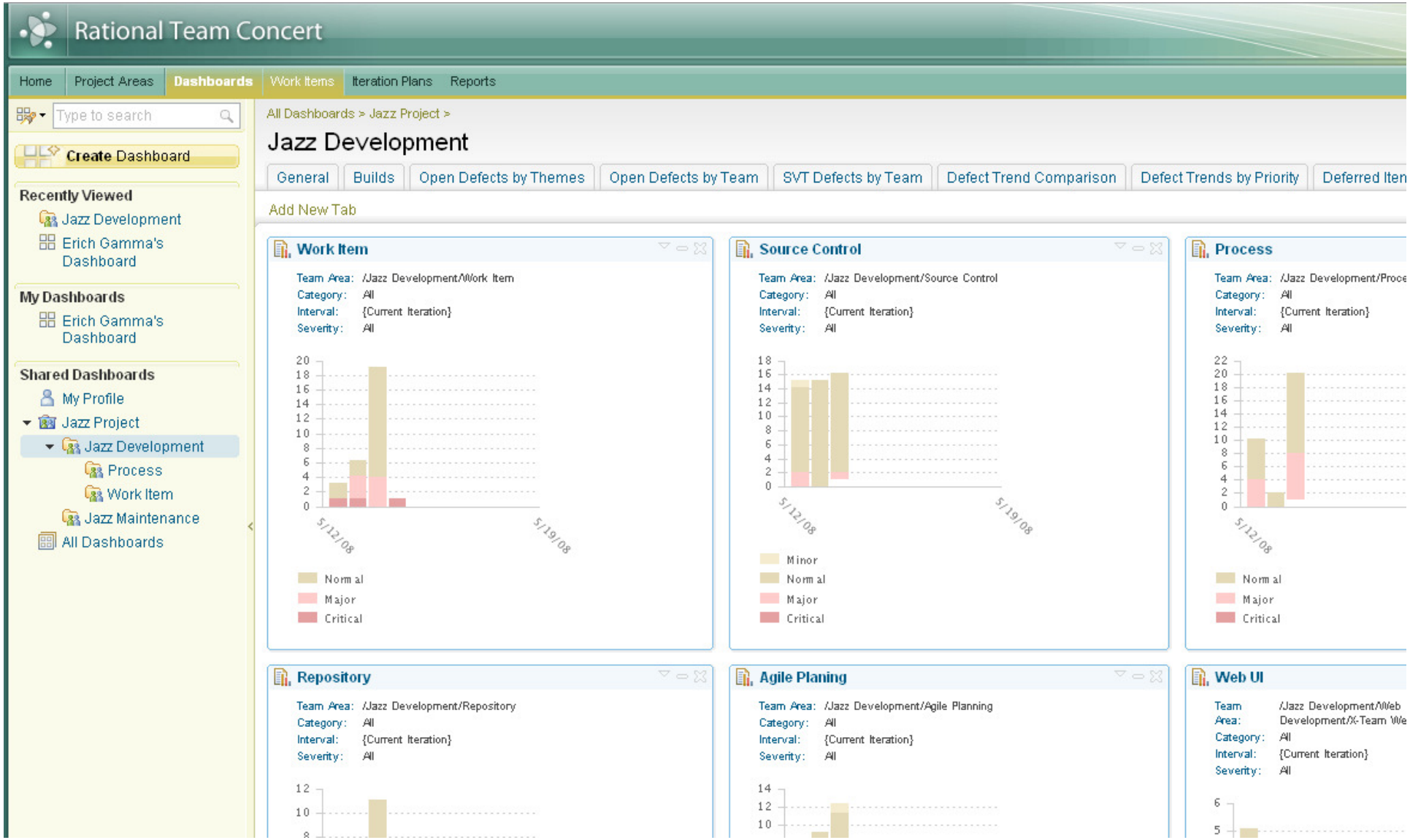
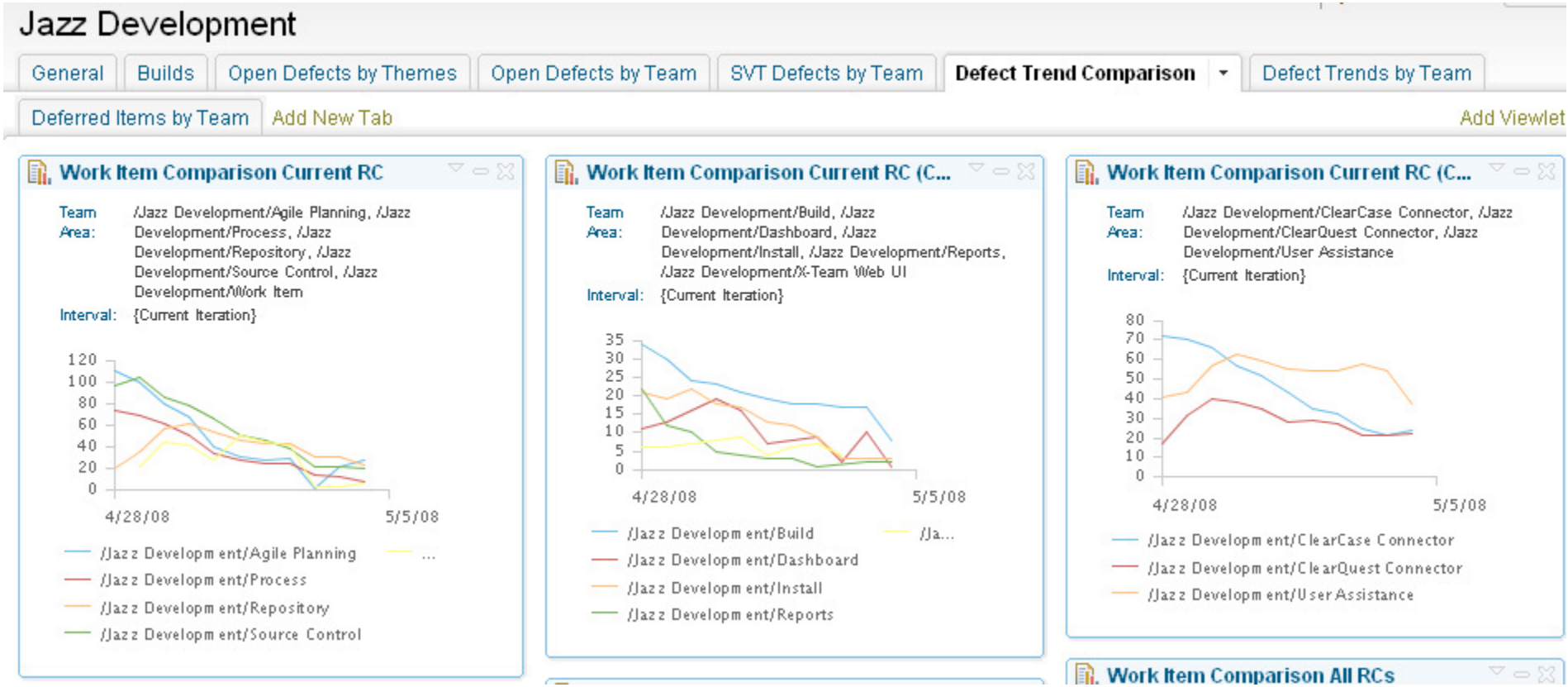
Tracking Stabilization



Trends across Teams



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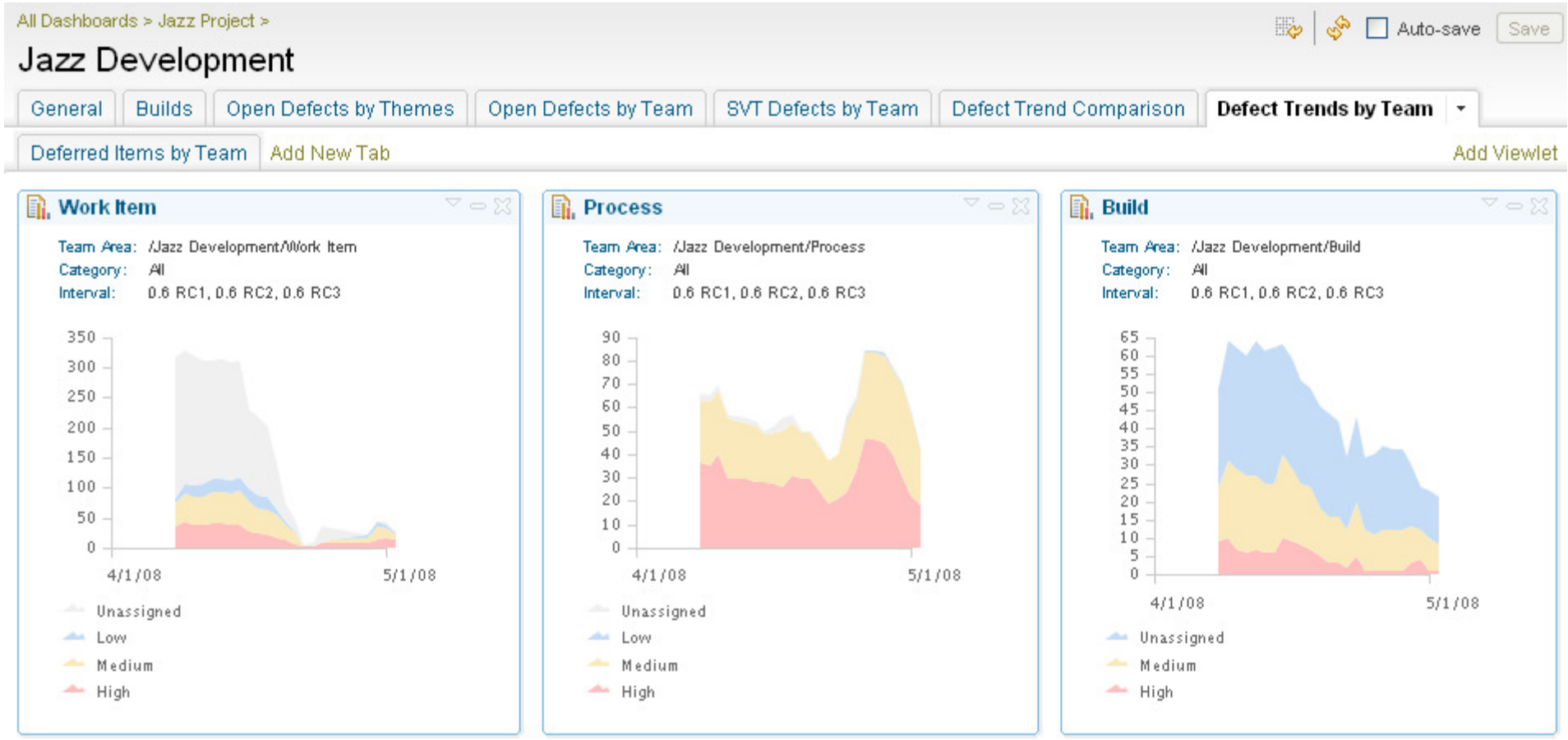
Trends across Teams (Cont'd)



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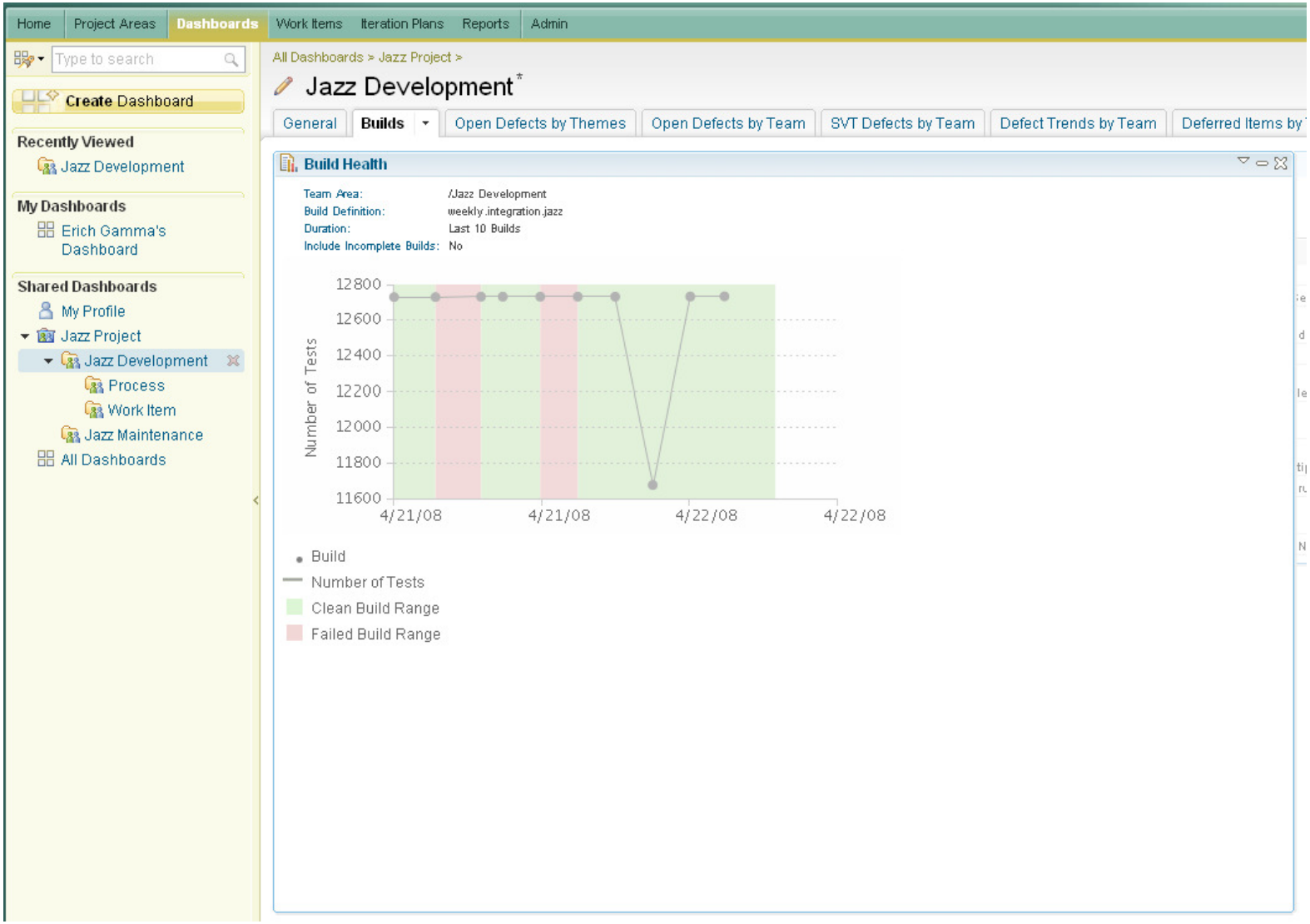
Build Health



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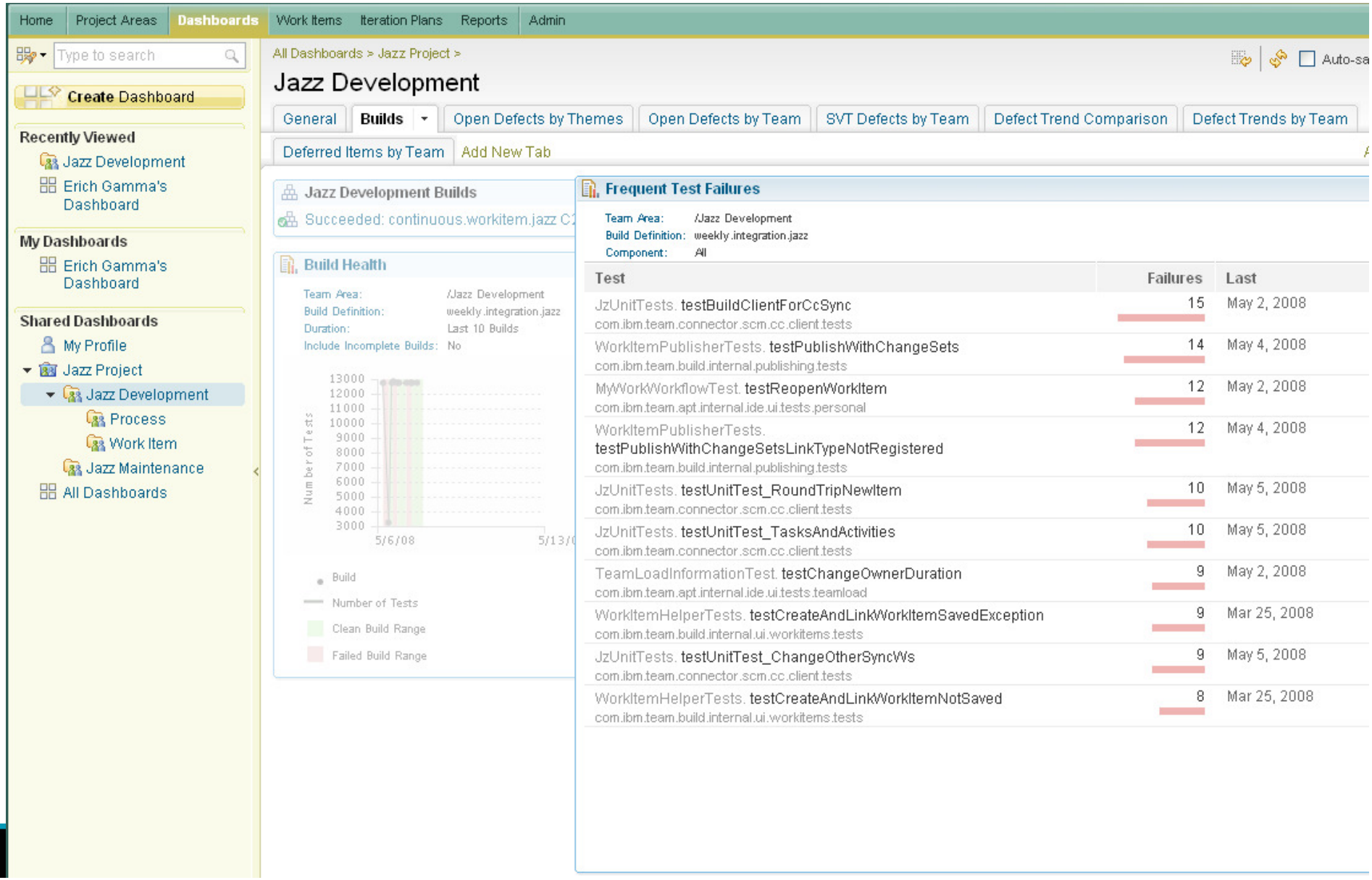
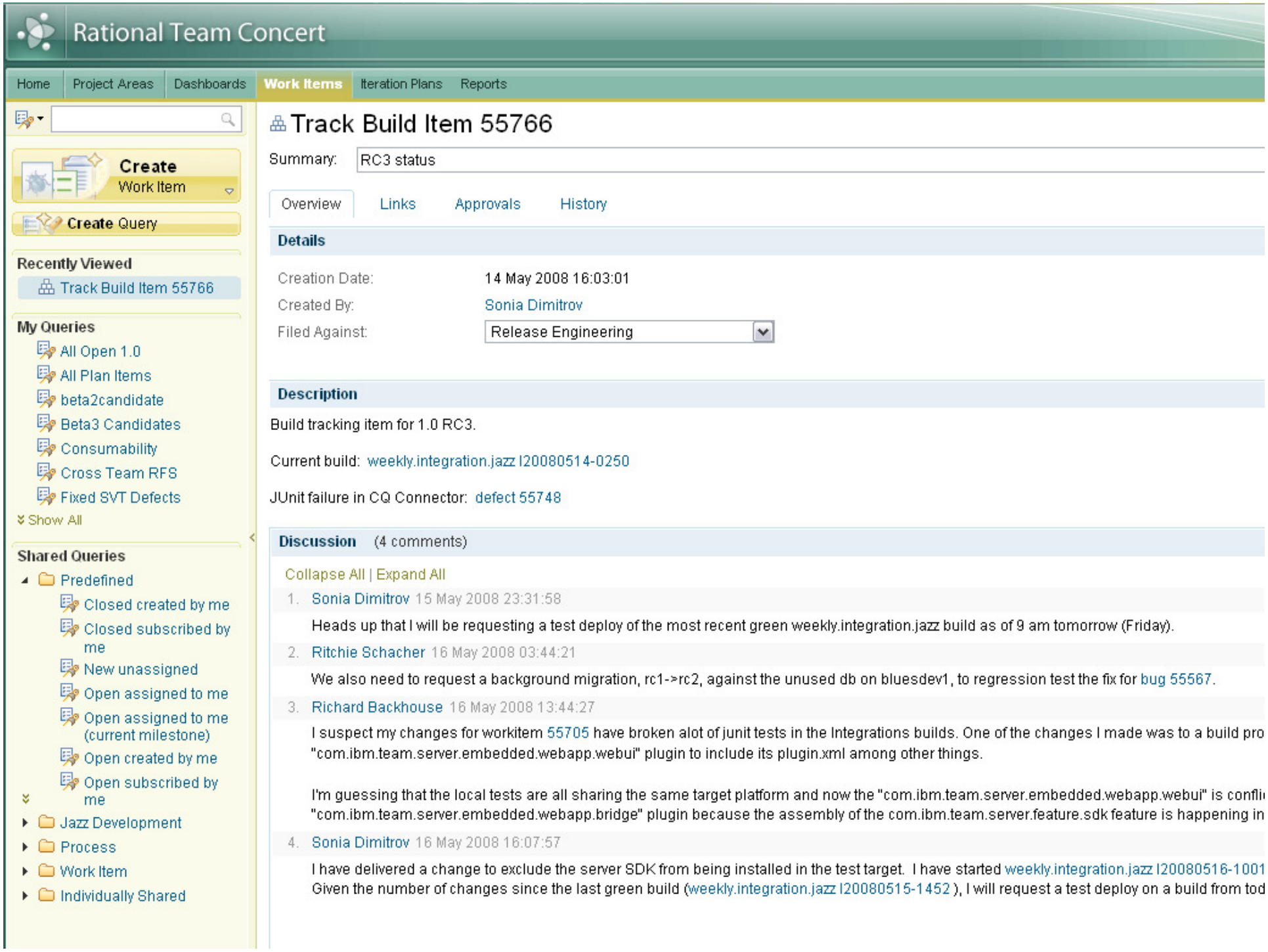
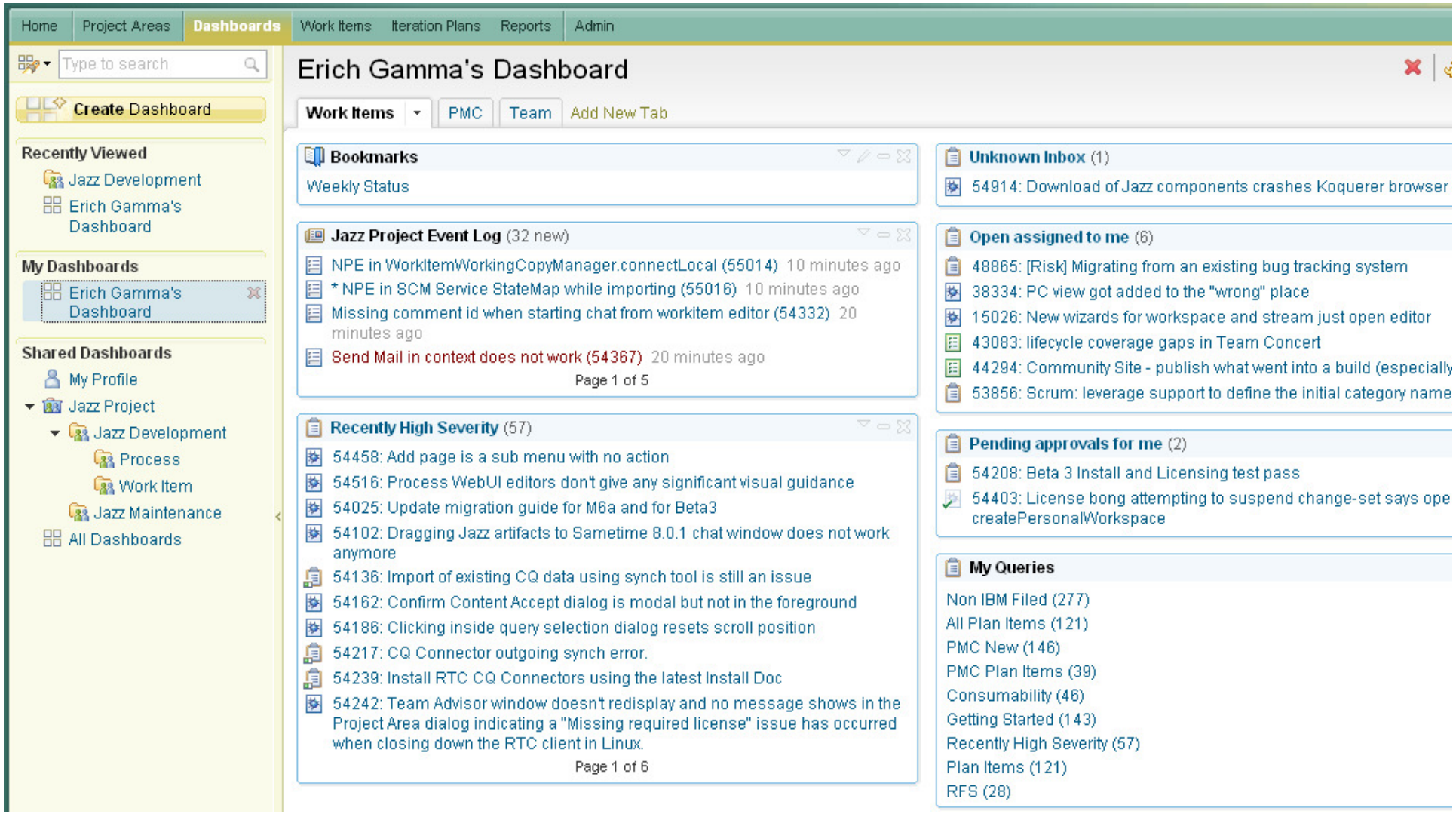
Build Health




Rational Team Concert
Home
Project Areas
Dashboards
Work Items
Iteration Plans
Reports
Create
Work Item
Create Query
Recently Viewed
Track Build Item 55766
My Queries
All Open 1.0
All Plan Items
beta2candidate
Beta3 Candidates
Consumability
Cross Team RFS
Fixed SVT Defects
Show All
Shared Queries
Predefined
Closed created by me
Closed subscribed by me
New unassigned
Open assigned to me
Open assigned to me (current milestone)
Open created by me
Open subscribed by me
Jazz Development
Process
Work Item
Individually Shared
Track Build Item 55766
Summary:
RC3 status
Overview
Links
Approvals
History
Details
Creation Date:
14 May 2008 16:03:01
Created By:
Sonia Dimitrov
Filed Against:
Release Engineering
Description
Build tracking item for 1.0 RC3.
Current build: weekly.integration.jazz I20080514-0250
JUnit failure in CQ Connector: defect 55748
Discussion (4 comments)
Collapse All | Expand All
1. Sonia Dimitrov 15 May 2008 23:31:58
Heads up that I will be requesting a test deploy of the most recent green weekly.integration.jazz build as of 9 am tomorrow (Friday).
2. Ritchie Schacher 16 May 2008 03:44:21
We also need to request a background migration, rc1->rc2, against the unused db on bluesdev1, to regression test the fix for bug 55567.
3. Richard Backhouse 16 May 2008 13:44:27
I suspect my changes for workitem 55705 have broken alot of junit tests in the Integrations builds. One of the changes I made was to a build pro
"com.ibm.team.server.embedded.webapp.webui" plugin to include its plugin.xml among other things.
I'm guessing that the local tests are all sharing the same target platform and now the "com.ibm.team.server.embedded.webapp.webui" is confli
"com.ibm.team.server.embedded.webapp.bridge" plugin because the assembly of the com.ibm.team.server.feature.sdk feature is happening in
4. Sonia Dimitrov 16 May 2008 16:07:57
I have delivered a change to exclude the server SDK from being installed in the test target. I have started weekly.integration.jazz I20080516-1001
Given the number of changes since the last green build (weekly.integration.jazz I20080515-1452), I will request a test deploy on a build from tod

A Dashboard of a Project Lead



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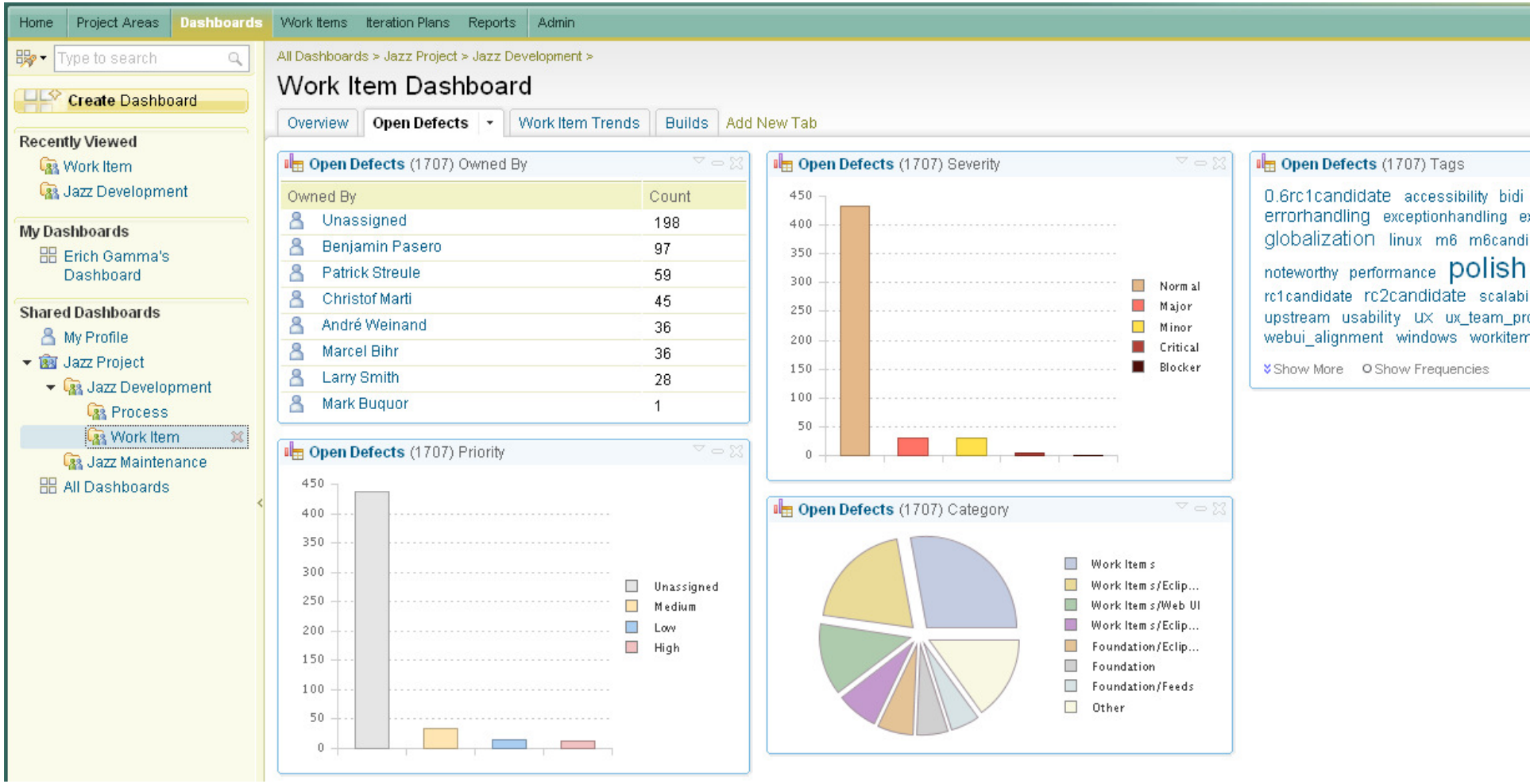
A Dashboard of a Component Lead



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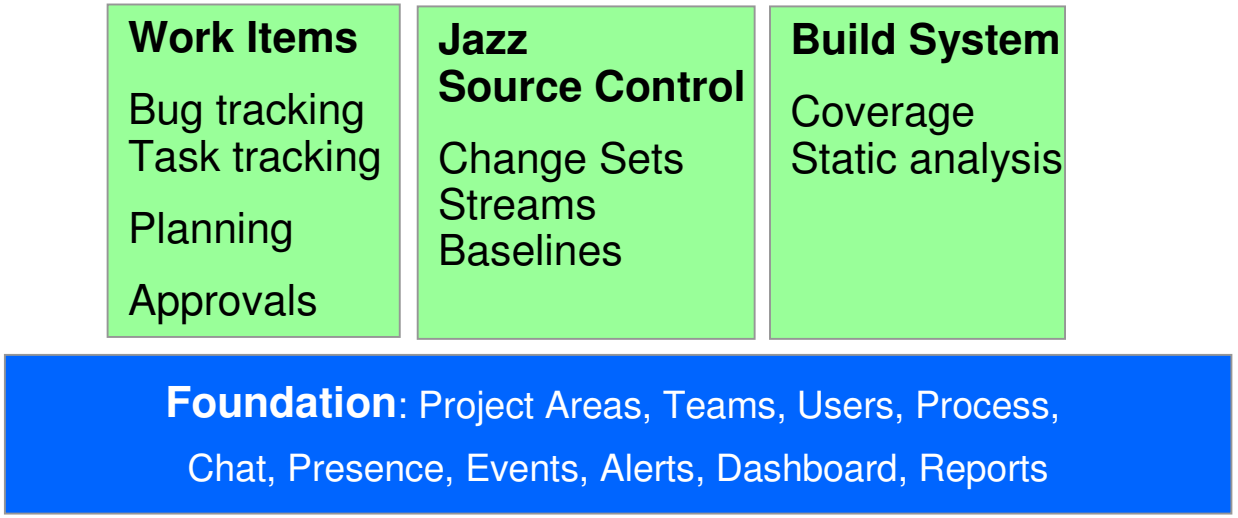
Some Highlights



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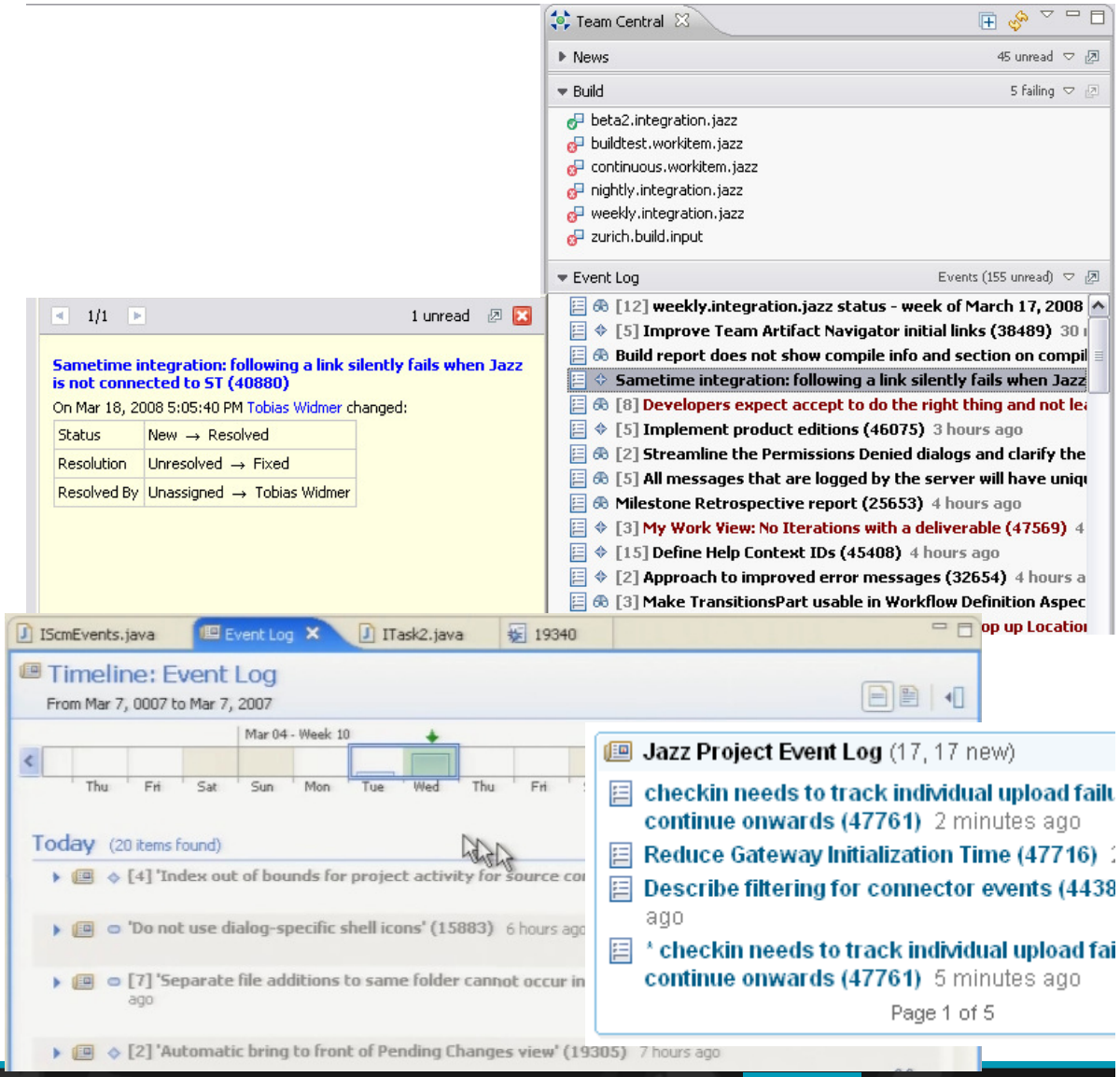
Foundation: Feeds, Presence

- Scoped events
  - My events
  - Team events
- Team central
  - Team awareness
- Dashboard
  - Event viewlets
- User presence

My Way your way:
Subscribe to event feeds of interest



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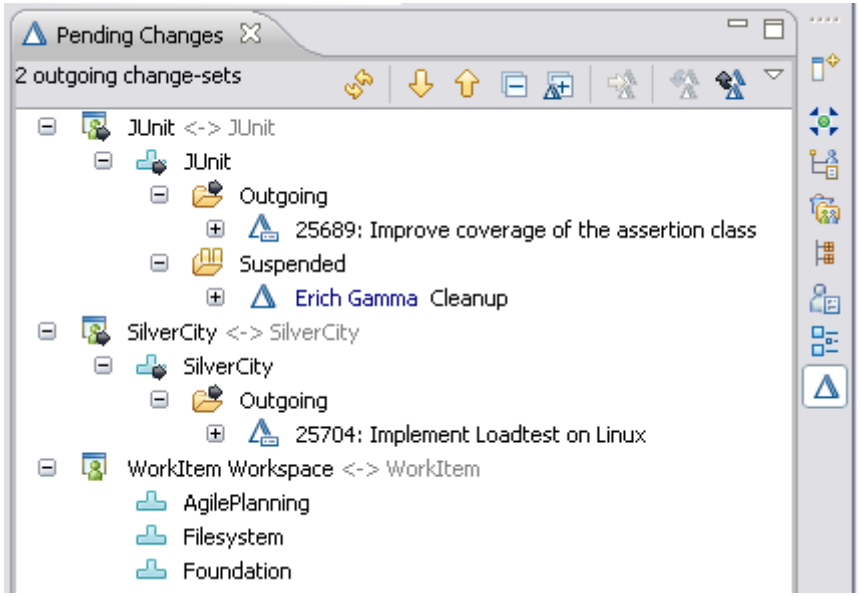
Change Sets, Streams, Components

- Component based development:
  - Components
  - Base lines
  - Snapshots
- Multi-streaming is cheap (branching),
  - flexible flowing of change sets
- Server side workspaces
  - Enables ad hoc sharing of changes, change set sharing
- Change-set cherry picking
- Suspending changes
- Private versions
- Refactoring tracking ⇒ enables aggressive/agile refactoring



My Way your way:
- Customizable flows
- Stream levels
- Delivery rules

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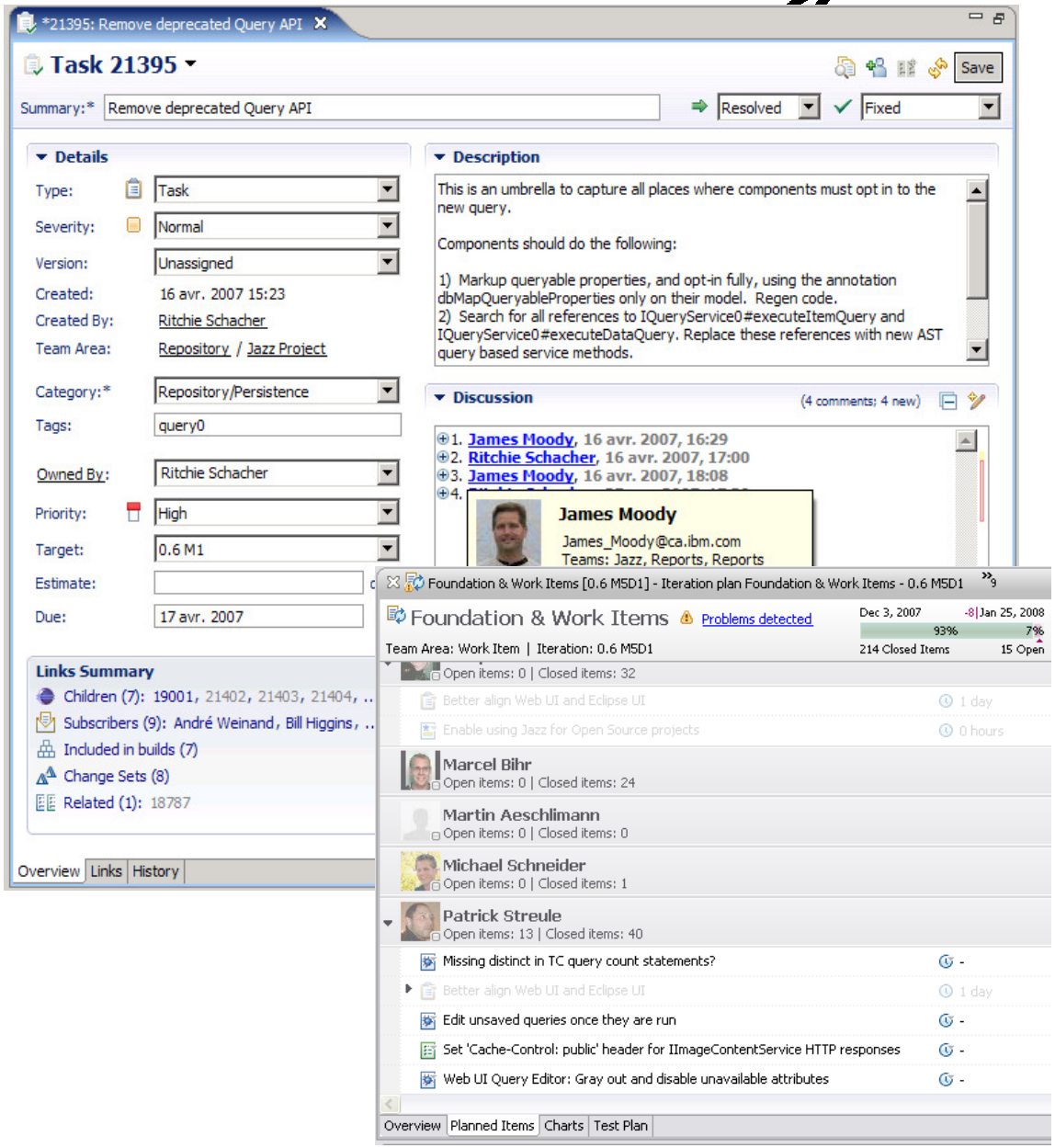
Work Items
Planning tracking

- Tight eclipse integration
- Iteration planning
  - From unstructured to structured
  - Work item decomposition
- Personal planning
  - My work

My Way your way:
- Work item types
- Workflows
- Approvals
- Save preconditions



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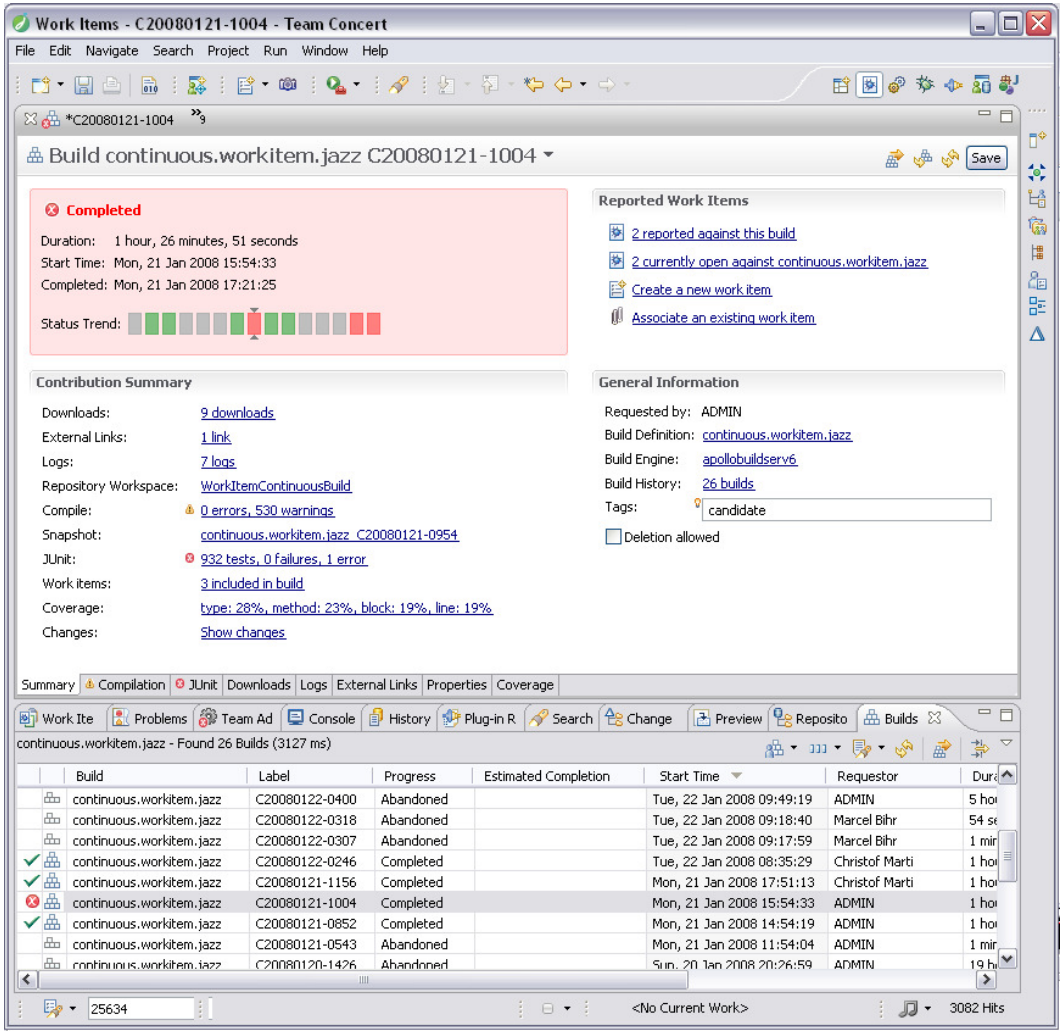
Builds

- Build awareness for developers
- Build results integrated into eclipse
- Linkage between
  - Work item fixed in build
  - Build corresponding to a
  - Build and release
  - change-sets in build
- Private system builds
- Build comparison
- Build promotion, tagging

My Way your way:
- Build definitions
- Build result contributions



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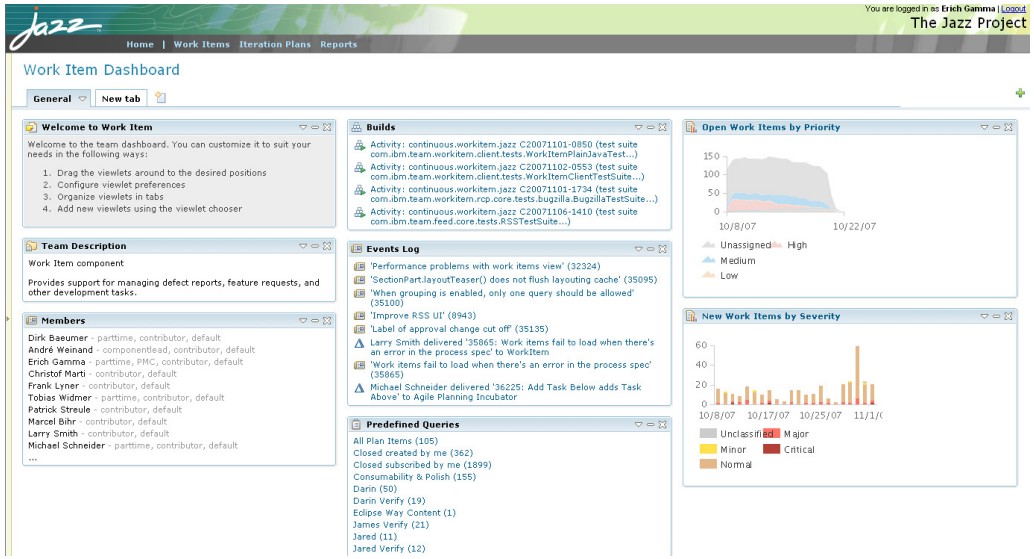
Dashboards/Reports

- Scoped by
  - Project
  - Team
  - user
- Viewlet collection
  - Events, feeds
  - Queries, bookmarks
  - Reports with drill down
  - Planning



My Way your way:
- Create dashboards
- Add and customize viewlets

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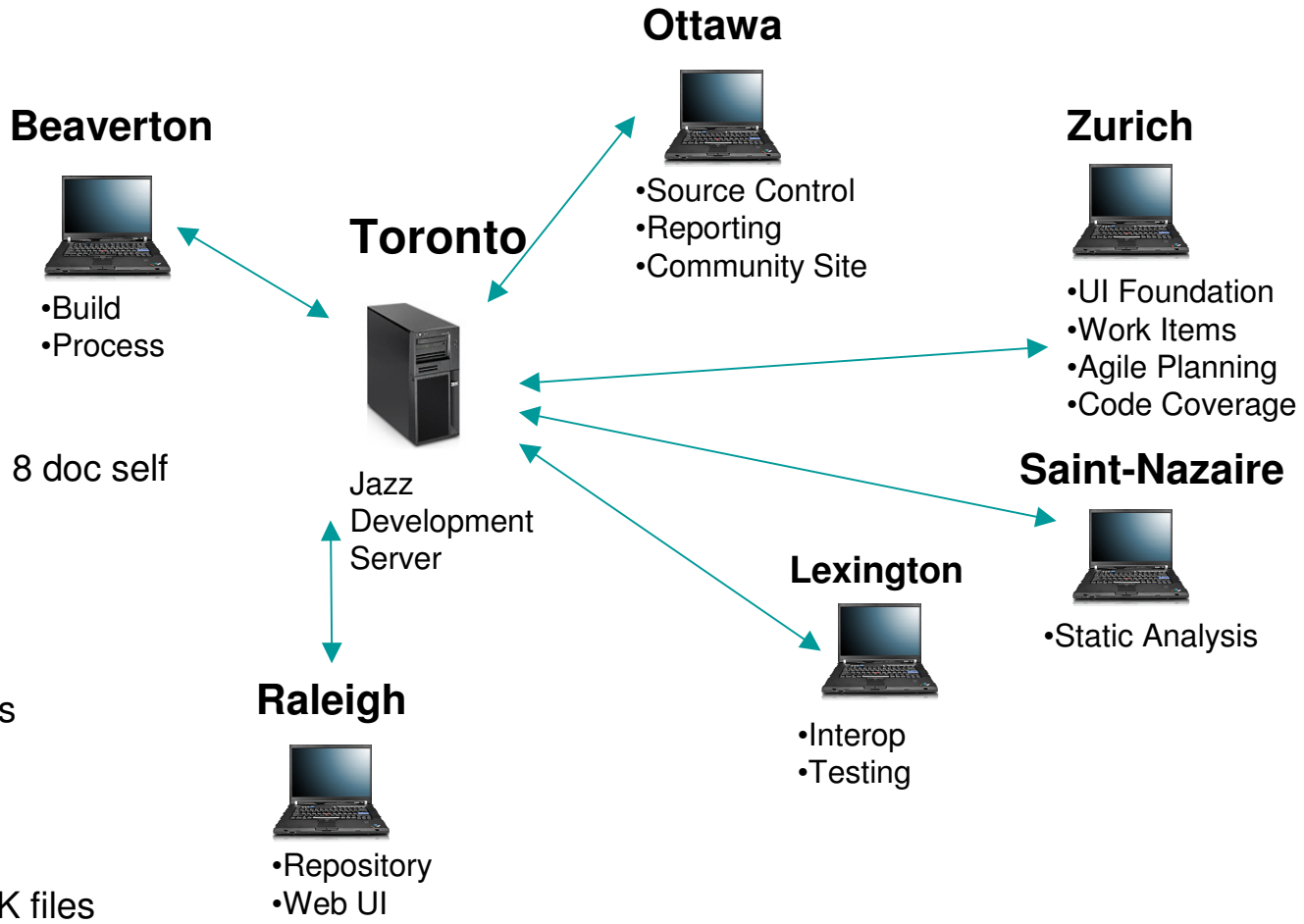
How we Develop Team Concert/Jazz: Setup



- 70 developers, 20 testers, 8 doc self hosting on Jazz.
- 18,000 change-sets
- 40,000 work items
- 250 repository workspaces
- 66K files
- 10GB file content
- Integration stream has 30K files
- 40 builds a day
- Weekly integration build

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Experiences

- We have become **more continuous**
  - If it is hard, do it more often, how can you help If it is **simple** to do ⇒ do it more **frequently** ⇒ do it **continuously**
    - Initiate a build, private builds, exchange a change set
    - Coverage, static analysis ⇒ you do not want to run this on the desktop
- Things important to us we make **explicit**
  - custom work item types, retrospectives, stories, adoptions, track build items…
- Increased **awareness** – staying on top of things
  - Linking, build awareness, team awareness, dashboards
- Improved **practices**
  - Retrospectives ⇒ leverage project health data
  - Testing ⇒ coverage

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New & Noteworthy in Beta 3

- SCM
  - Subversion bridge
  - Version graph
  - Command line
- Web UI
  - Dashboard
- Process
  - Process editors
  - Scrum, Agile process templates
- Work items
  - Approvals
  - New query editor, link queries
  - Mylin Incubator
- Jazz Team Server
  - LDAP
  - Permissions
  - Oracle support
- Planning
  - Team load, My work view
- Build
  - Personal builds
  - “Found in” links

Everybody can try it out now

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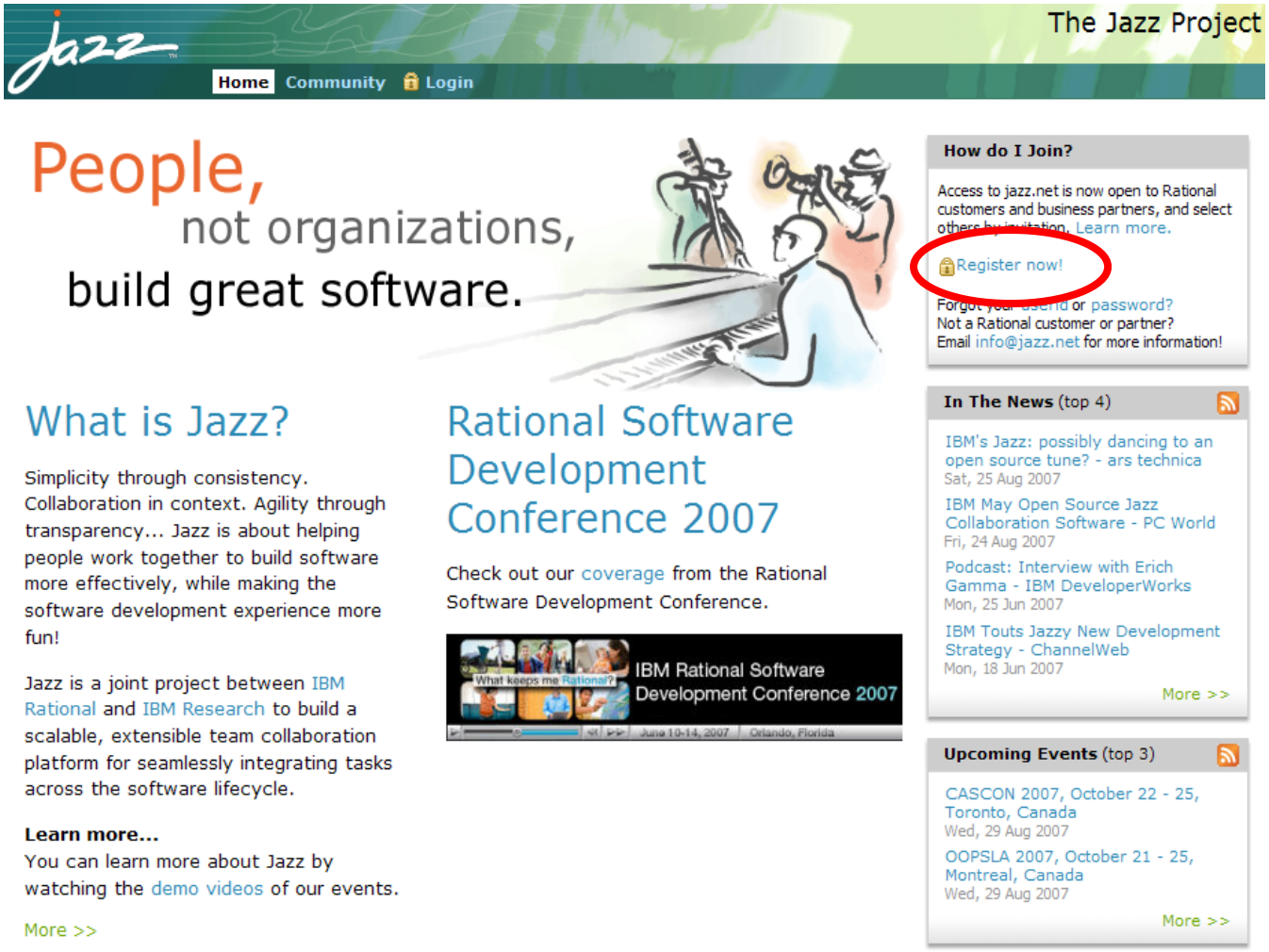
www.jazz.net



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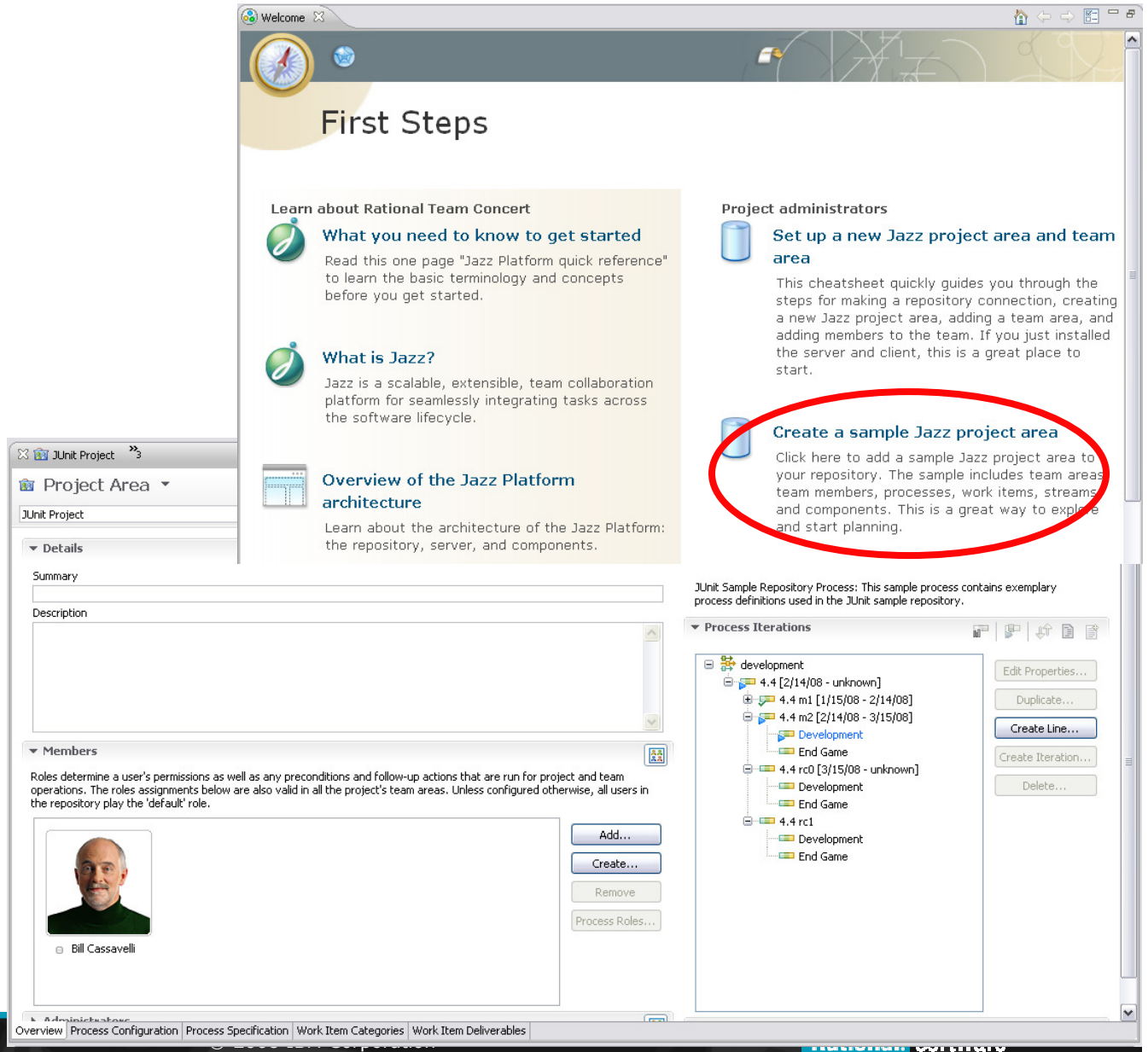
Getting Started

- Go to Jazz.net
  - Forums
  - Developer Wiki
  - Blogs
  - Install
- Jazz workshop
- Install
  - Try the JUnit Sample Project