



## Deploying IBM Rational ClearQuest Application Lifecycle Management and IBM Jazz Interoperability

### **Presenter's Name**

Mats Göthe | [mats.gothe@se.ibm.com](mailto:mats.gothe@se.ibm.com)

Bob Myers | [rwmyers@us.ibm.com](mailto:rwmyers@us.ibm.com)

**Rational.** software

- **Presentation Summary**

This session will present scenarios and practices for an integrated Application Lifecycle Management solution using the ClearQuest ALM schema and the Jazz products Rational Team Concert and Rational Quality Manager. This session will also present experiences from developing and deploying such solutions to Rational internal Development Operations.

- **Abstract**

This session will present integrated Application Lifecycle Management solution scenarios, tool support, and practices for connecting enterprise project teams using the Rational ClearQuest ALM schema with development teams and test teams using the Jazz products Rational Team Concert and Rational Quality Manager. Such projects' teams have a need to align on application requests, manage the impact on development and test plans, and monitor project health and delivery. Such project teams also need to improve collaboration to bridge the organizational and geographic barriers that separate project contributors. The usage and integration scenarios discussed are based on the IBM C/ALM Redbook.

This session will also discuss the experiences from deploying such an integrated ALM solution to Rational internal development operations. Examples of integrating development teams using Rational Quality Manager and Rational Team Concert with the Rational's internal defect tracking system (RATLC CQ ALM) will be presented. Scenarios will be demonstrated to show how CQ ALM supports development tracking within CQ as well as reflecting development performed in Rational Team Concert and Testing in Rational Quality Manager. We will present Agile and governance models in the same and different Projects showing integrated Defect, Enhancement and Requirements tracking.

# Agenda

- Introductions
- Overview of Rational ClearQuest ALM Solution
  - ▶ The ClearQuest ALM Schema
  - ▶ ClearQuest ALM Interoperability Scenarios
- IBM Experiences with the ClearQuest ALM Schema
  - ▶ Tivoli Service Management Deployment of the CQ ALM Solution
  - ▶ RATLC and Jazz.net Interoperability
  - ▶ Blue Harmony project Interoperability with RQM
- Solution Roadmap
  - ▶ Enterprise ALM Interoperability
  - ▶ ClearQuest ALM Solution

## Introductions

Mats Göthe | [mats.gothe@se.ibm.com](mailto:mats.gothe@se.ibm.com)



- Green thread Solution Architect with a focus on Global Development and Delivery in the CCM team
- Author of the C/ALM Redbook
- Currently engaged in shaping the Enterprise ALM solutions for global teams

Bob Myers | [rwmyers@us.ibm.com](mailto:rwmyers@us.ibm.com)



- Founder (1996) of Rational-wide CQ DB, RATLC
- CQ ALM Schema Design Lead
- Patent for Composite State Management used in CQ ALM (along with Geoff Clemm, Stu Poulin and Morgan Stair)

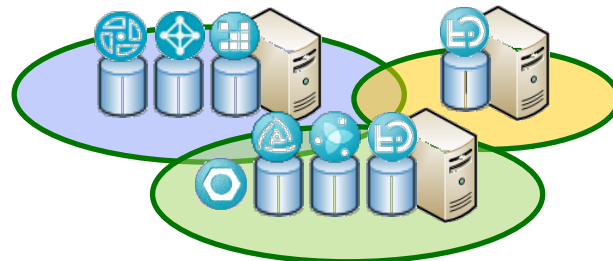
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- Solution Roadmap
  - ▶ Enterprise ALM Interoperability
  - ▶ ClearQuest ALM Solution

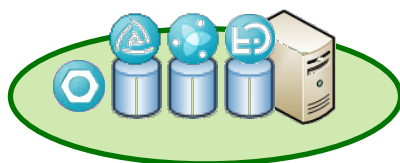
# Organizational Dynamic and Scale Drives the Solution Anatomy

## Organizational Drivers

Team Size  
Geographical Distribution  
Organizational Distribution  
Entrenched process, people, policy



- Scale management into Enterprise C/ALM, integrating Functionally Divided and Vertically Aligned global teams
- Enterprise Program Management, Reporting, Collaboration and Automation cross islands
- Scalable administration and infrastructure consolidation to regional repository hubs
- Integrate enterprise CM backbone with C/ALM platforms



- Vertically aligned global teams
- Integrated and automated C/ALM lifecycle solution on a foundation of services with global collaboration capabilities



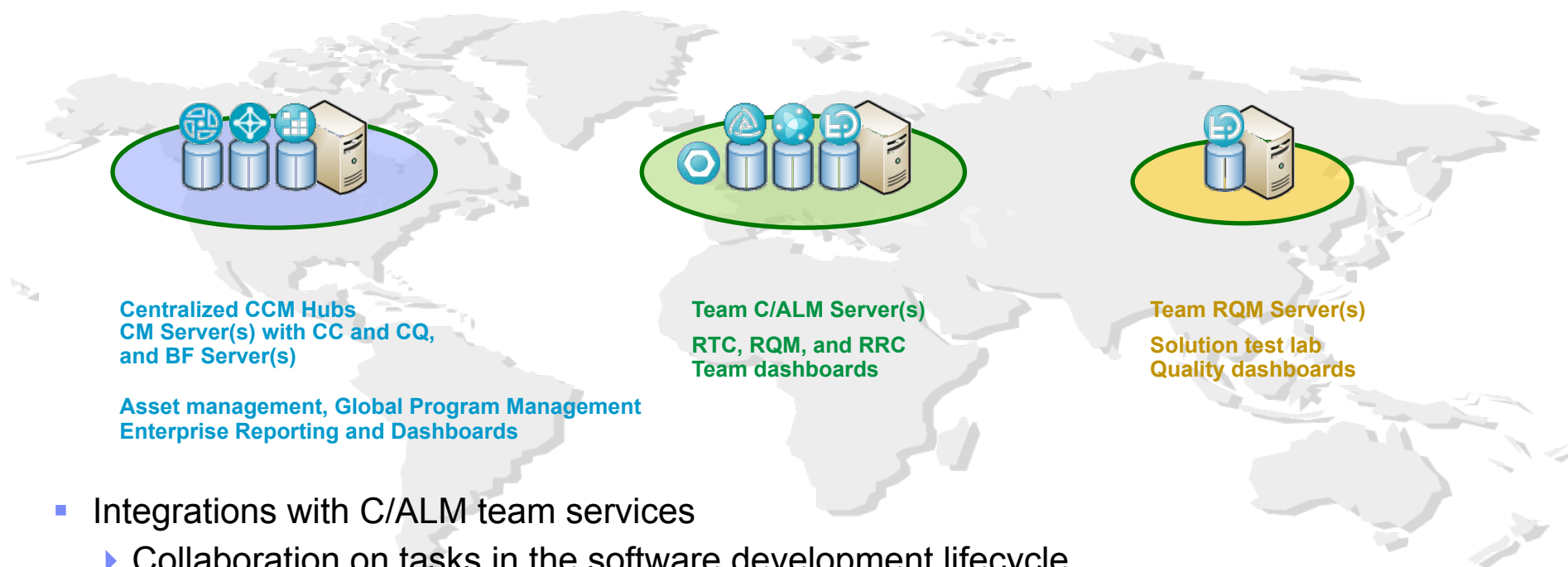
- Vertically aligned Agile global teams
- Single product / repository

## Technical and Regulatory Drivers

Compliance  
Governance  
Application complexity

## Enterprise C/ALM Solution Overview

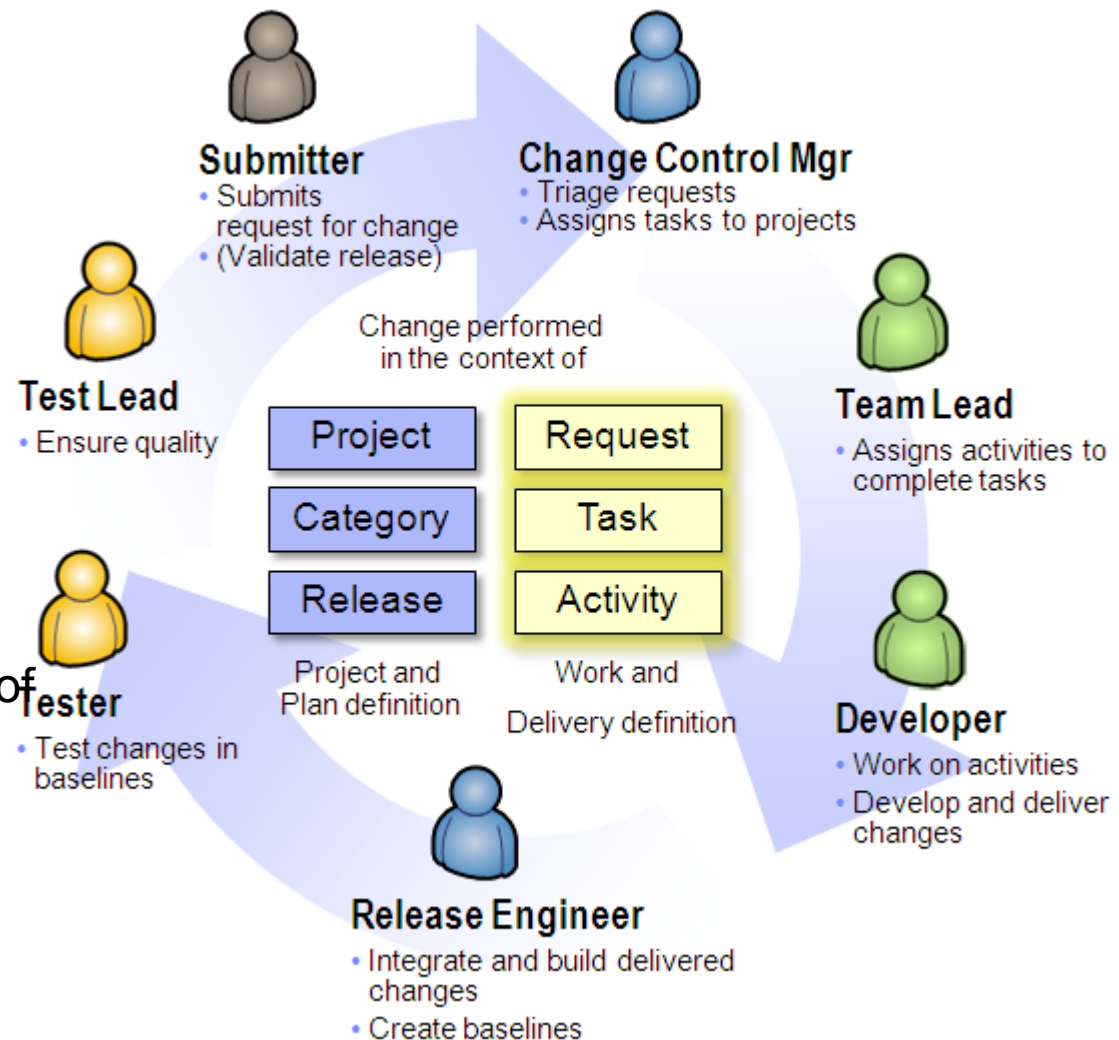
- Regional or Centralized ALM Backbone
  - ▶ Provide scalability and flexibility to handle project and organizational changes
  - ▶ Deliver high levels of availability, data integrity, security and reliability
  - ▶ Establish enterprise level software supply chain through integration and automation



- Integrations with C/ALM team services
  - ▶ Collaboration on tasks in the software development lifecycle
  - ▶ Traceability across the artifacts used or produced by project team members
  - ▶ Dashboards for reporting on progress and health

## What is Application Lifecycle Management on CQ?

- Out-of-box ALM Solution for ClearQuest (schema and packages)
- Process model focused on work completed in the context of a Project
- Requests are planned as Tasks and performed as Activities
- Workload can be balanced across Phases and Iterations of a Project
- Each project team can customize the process configuration
- Supports CQ versions 7.0.1 and 7.1, including CQ Web.

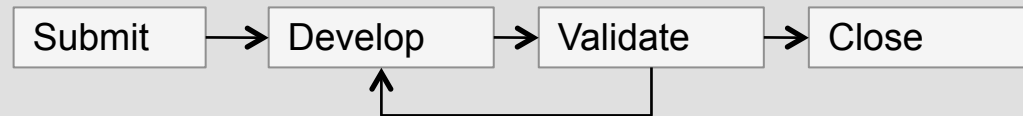




# Understanding the CQ ALM Context Switch

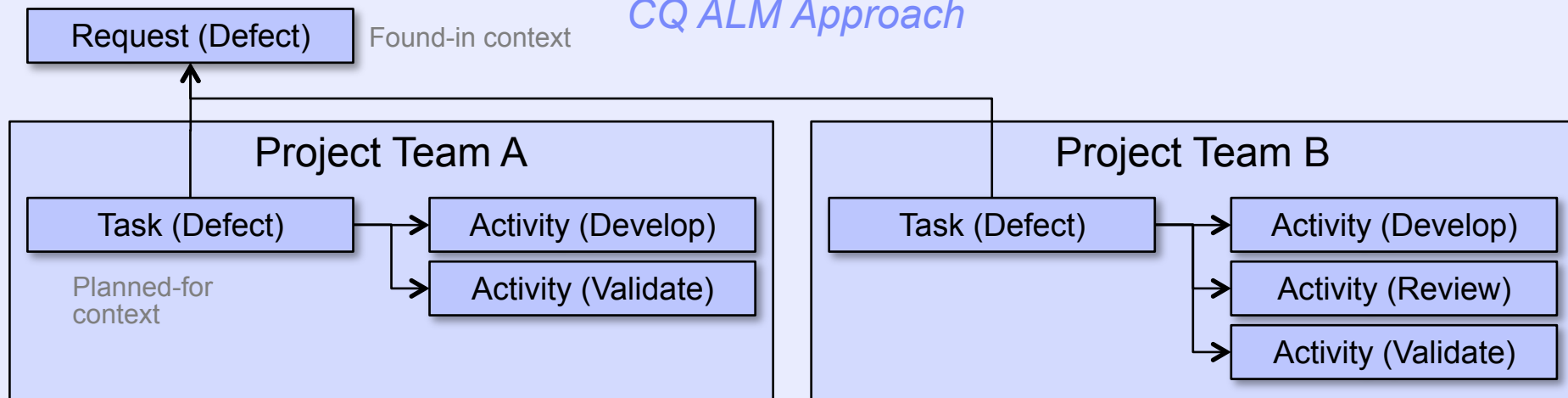
The screenshot shows a complex web form for a 'Found-in' record. It has multiple tabs at the top: 'Main', 'Configuration', 'Doc and Trace', 'Customer', 'AFM', 'Componentization', 'External RFE', 'Notes', 'Attachments', 'Resolution', and 'Index'. The form contains numerous input fields, dropdown menus, and checkboxes, organized into sections like 'Change Request Type', 'Product', 'Found in Version', 'Found in Platform', 'Found in Package Product', 'Description', and 'Required Products'. The form is designed to capture a wide range of information for a single record.

## Traditional CQ Approach



One big record: e.g. 400 fields to satisfy All the role needs

## CQ ALM Approach

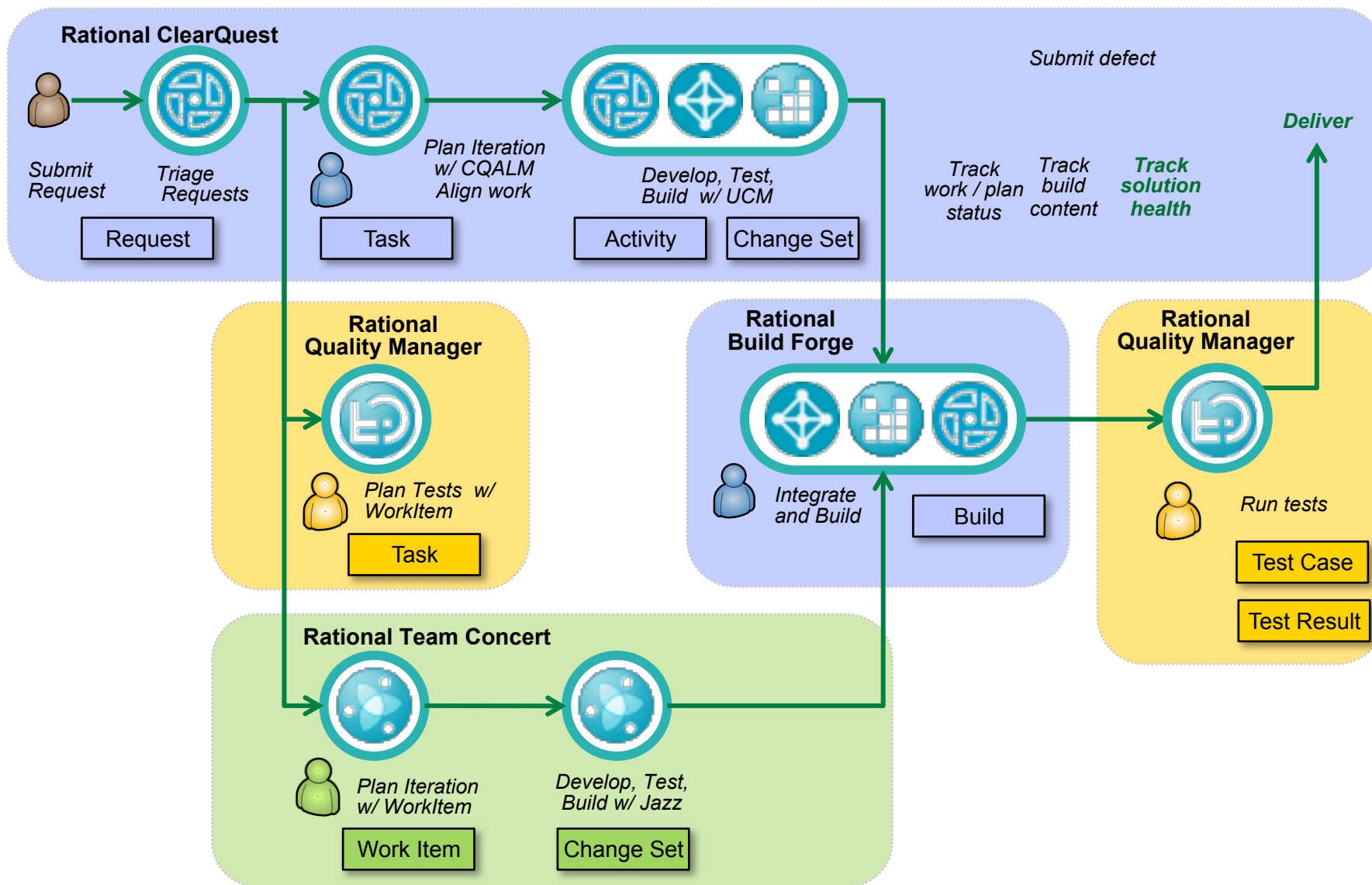


Multiple linked records configured for a collaborative role based ALM process

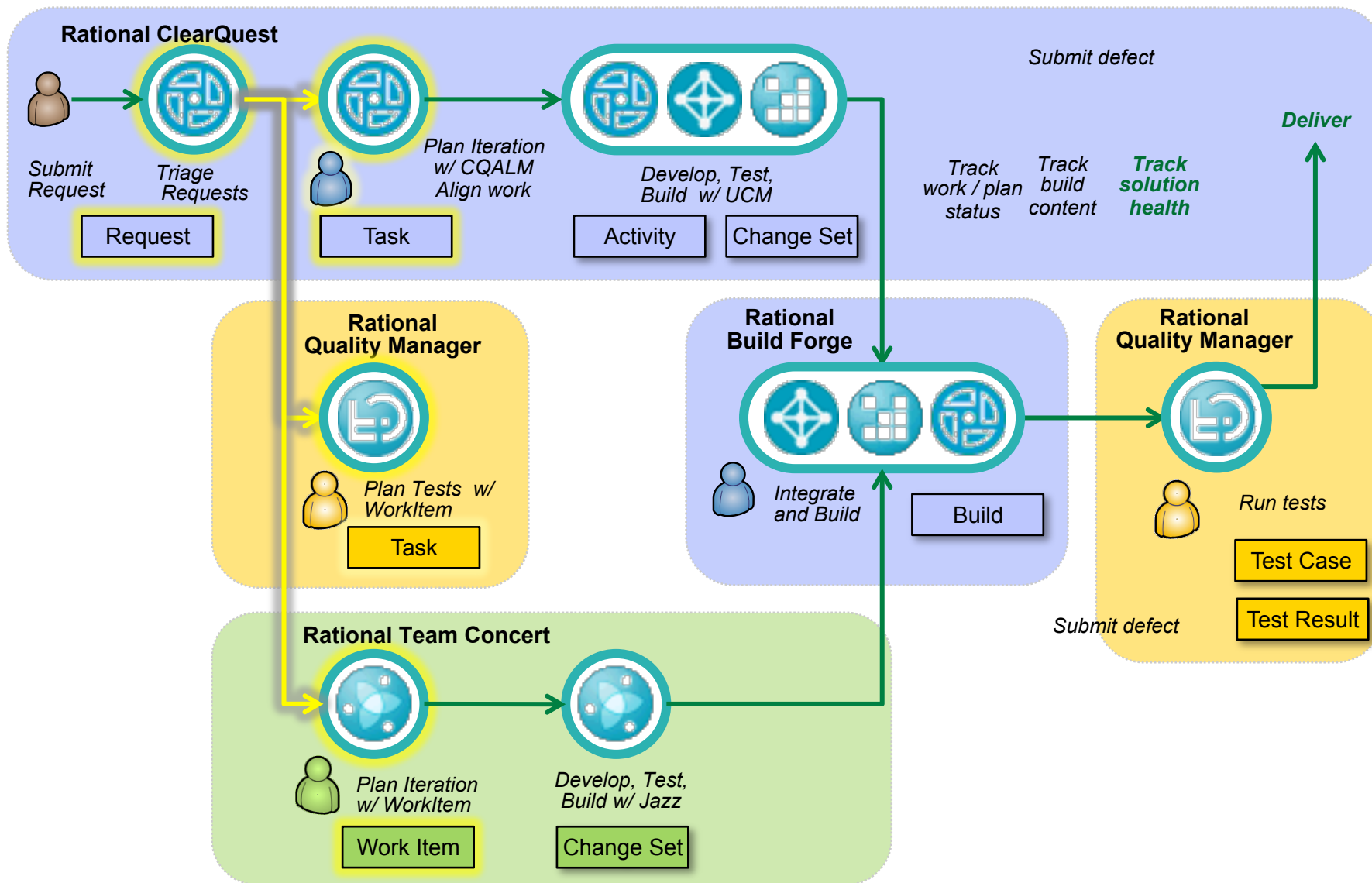
# ClearQuest ALM Interoperability Scenarios

- Team alignment
  - ▶ Development programs or projects are often delivered by multiple teams. Tracking the alignment of development and test plans across the repositories are challenging.
  - ▶ Team alignment scenarios track how Requests are submitted in the context of Projects and planned as Tasks that are assigned to global component or functional teams.
  - ▶ Alignment of work and tracking of delivery through repository interoperability.
- Work assignment
  - ▶ Collaborative development requires team members on heterogeneous repositories to collaborate and contribute to delivery.
  - ▶ Work assignment scenarios track how work is assigned and delivered to contributors through repository interoperability.
- Defect submission
  - ▶ Both functional and solution verification activities require test teams to integrate with the change management workflows.
  - ▶ Defect submission scenarios track how defects flow from test repositories through the triage process using repository interoperability.

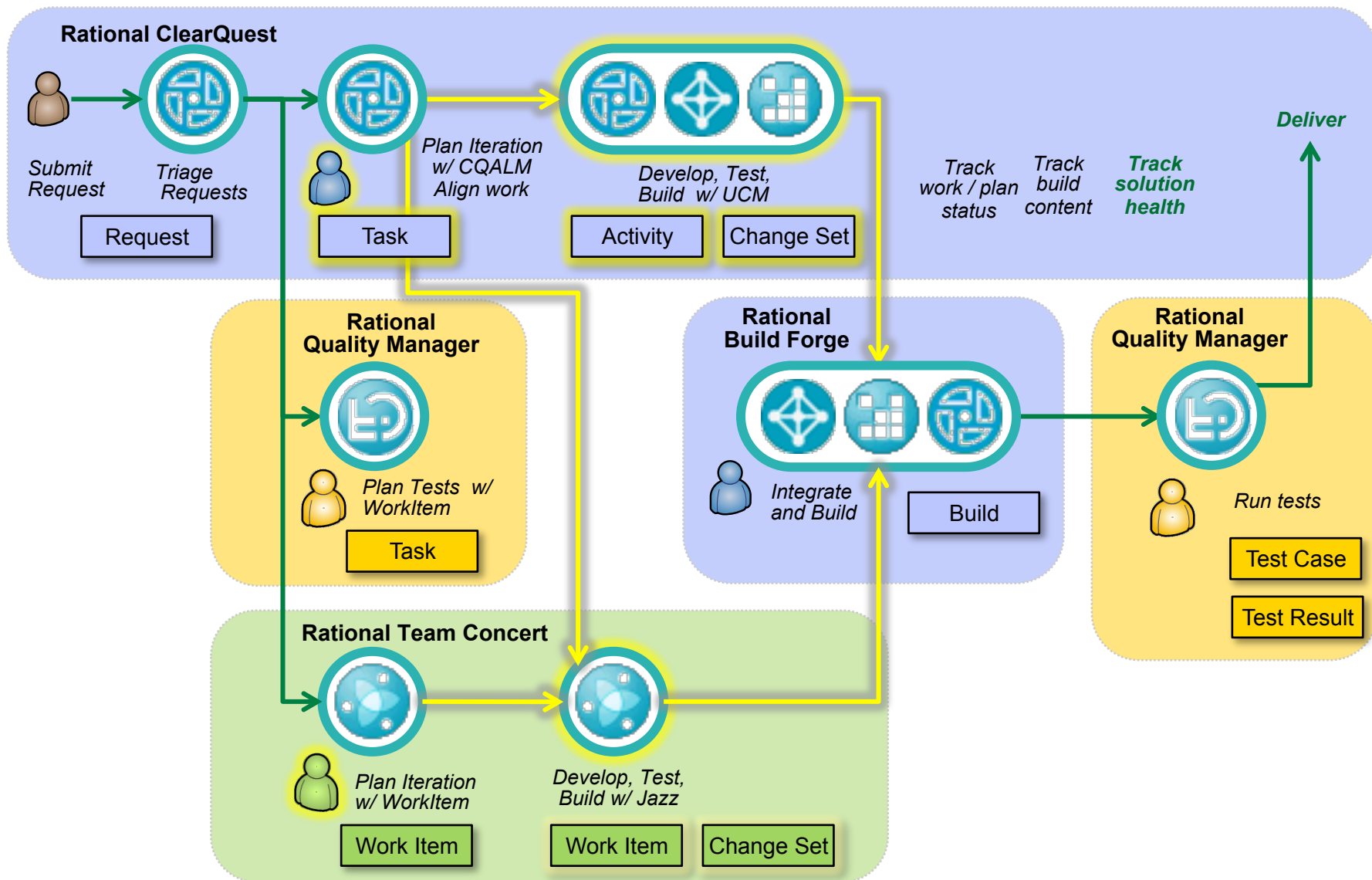
# Putting it all together – Basic ALM Flow



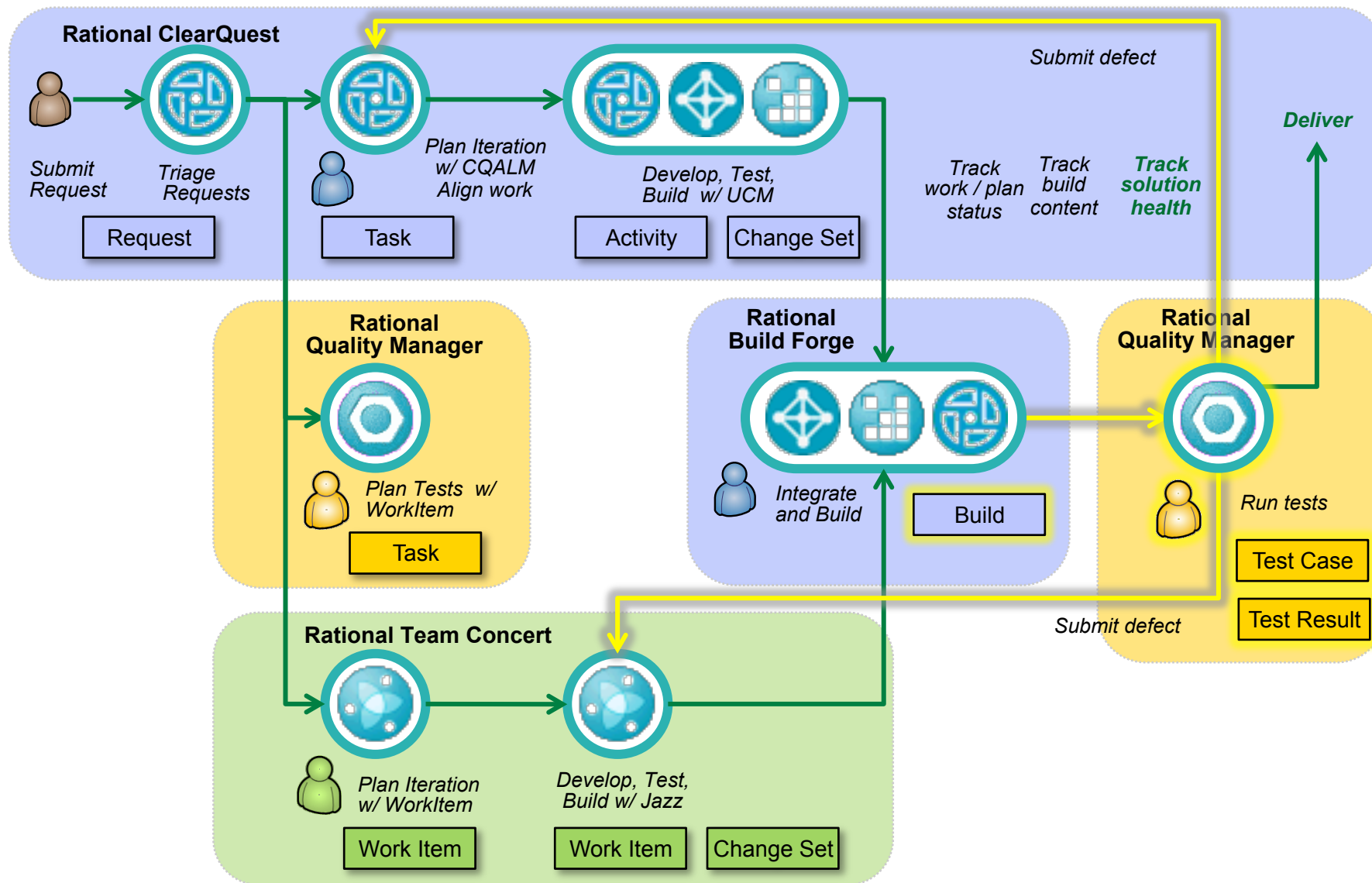
# Putting it all together – Plan Alignment Scenario



# Putting it all together – Work Assignment Scenario



# Putting it all together – Defect Submission Scenario



## Collaborative Application Lifecycle Management Redbook



- The Redbook provides a blueprint for Collaborative Application Lifecycle Management by using an end-to-end reference scenario for deploying the new Rational products and 'Agility at Scale' into an existing enterprise environment.
- Outline
  - ▶ Part A. Collaborative Application Lifecycle Management defined
  - ▶ Part B. Act 1: Responding to a change request
  - ▶ Part C. Act 2: Collaborative development
  - ▶ Part D. Act 3: Enterprise integration builds
  - ▶ Part E. Act 4: Managing quality
  - ▶ Part F. Act 5: Delivering the solution
  - ▶ Part G. Measuring team success in Application Lifecycle Management

### ■ Download PDF or Order Hardcopy

- ▶ Browse to <http://www.redbooks.ibm.com/abstracts/sq247622.html>

Rating: ★★★★★

- "This is an amazingly well done and provides depth detail on the ALM process in general, as well as appropriately positioning the Rational tools that are well suited to supplement the process. The figures provided are excellent "snapshots" of parts of the process as well as for showing where the tools fit in the process steps. Thanks so much for this Redbook!!!!!!!!!"



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- Solution Roadmap
  - ▶ Enterprise ALM Interoperability
  - ▶ ClearQuest ALM Solution



## Tivoli Service Management – Development

- Vallent and Micromuse Development in UK
- Business Needs
  1. Tivoli-wide **change management solution** (replacing 3rd party defect tracking solutions)
  2. **Geographically distributed** development (county, location, office)
  3. Process **flexibility** (one solution to fit small and large projects alike)
  4. Enhanced **traceability** across the development life-cycle (integration with ClearCase)
  5. **Integrations** with existing infrastructure to provide efficiency and governance improvements (integrated with test, build and service tooling)
  6. **Future proofed** (grow into the new Jazz technologies including RTC)
- Approach
  - ▶ Consolidation of 3<sup>rd</sup> part CM systems and deployment of a single CQ ALM solution for Tivoli development. Three step approach
    - #1 – Deploy CQ ALM to 800 Vallent users
    - #2 – Consolidate 400 Micromuse users from 3<sup>rd</sup> part solution to CQ ALM
    - #3 – Bring the two deployments into one
  - ▶ Currently in step #2, with business needs / objectives met

## Tivoli Service Management – CQALM Configuration



### ClearQuest Server

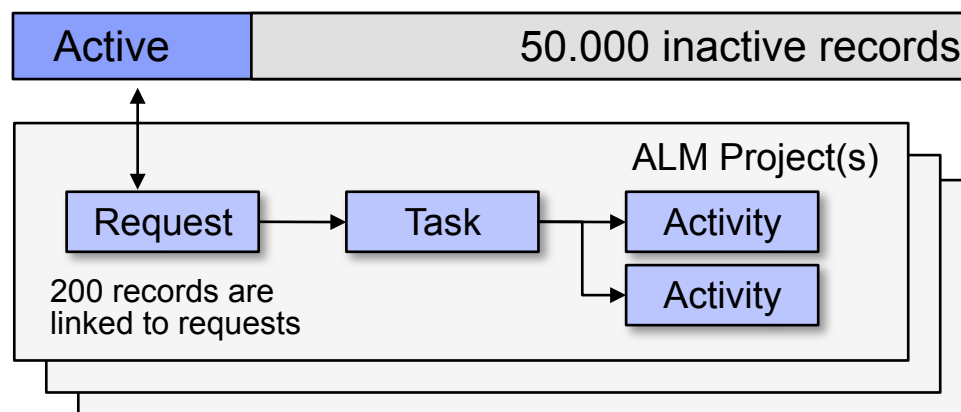
- pSeries 2xPower4 1.5GHz / 4GB
- AIX v5.3
- DB2 v8.1
- ClearQuest v7.0.1
- IBM Storage Area Network



### ClearQuest Web Server

- xSeries 3.2GHz / 3GB
- Windows 2000 SP4
- CQ Web v7.0.1

60.000 records from Remedy with ~160 data fields




- No modifications has been made to the ALM schema
- New projects start with an OOTB ALM process
- The projects then ‘self-configure’ the practices by modifying ALM work configurations and a template query folder
- The documentation field is used for custom properties with informal tagging
- CQ Web is used by 90 % of the users

## Tivoli Service Management – Lessons Learned

- Benefits of the CQ ALM solution
  - ▶ **Affordable on-boarding:** Users require just two hours education. New projects start OOTB.
  - ▶ **Supports business direction:** New teams joining Tivoli (as a result of acquisitions) can more quickly become integrated into the Tivoli change management process
  - ▶ **Improved collaboration:** Work is broken down into activities and contributors can see who else is involved thereby encouraging discussion
  - ▶ **Timely access to information:** Transparency to activities and their state, builds and their locations, defects and their fixes.
- Best practices
  - ▶ Using IBM Blue Pages Groups (LDAP) to automate CQ user management
  - ▶ Use a public query folder with template queries that new projects copy, tweak and adopt
  - ▶ Use a test deployment for education. Let new projects play in a safe environment
- Success criteria
  - ▶ Allow time to consume the value of the new 3-tier model – repeat the mantra
    - *“Request is owned by the submitter”*
    - *“Tasks are what we need to deliver for the request”*
    - *“That work is delivered as one or more activities”*

## RETAIN ► RATLC ► jazz.net Interoperability

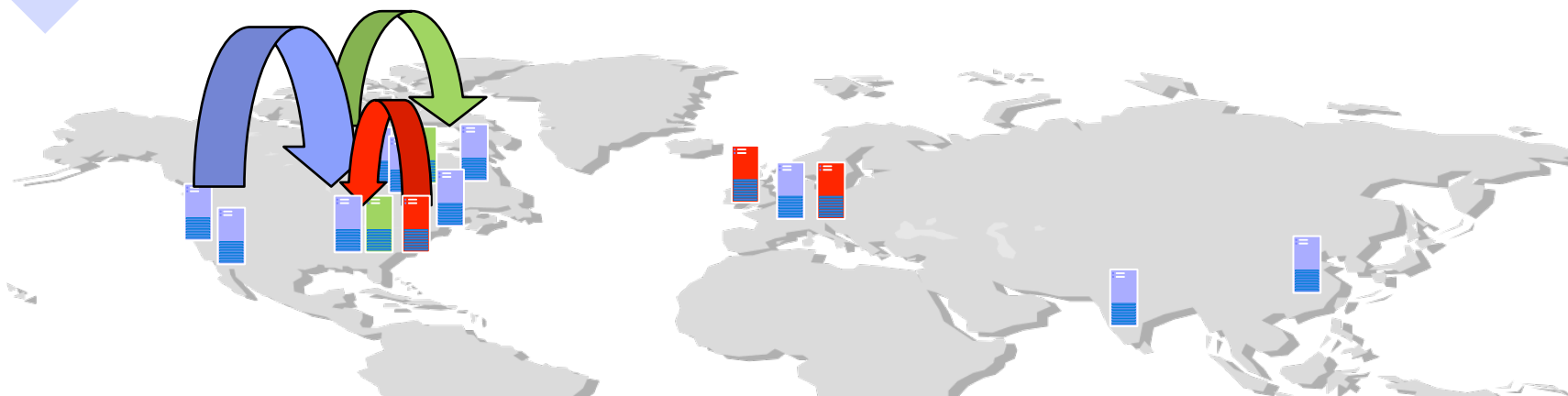
- The IBM Rational Support information flow



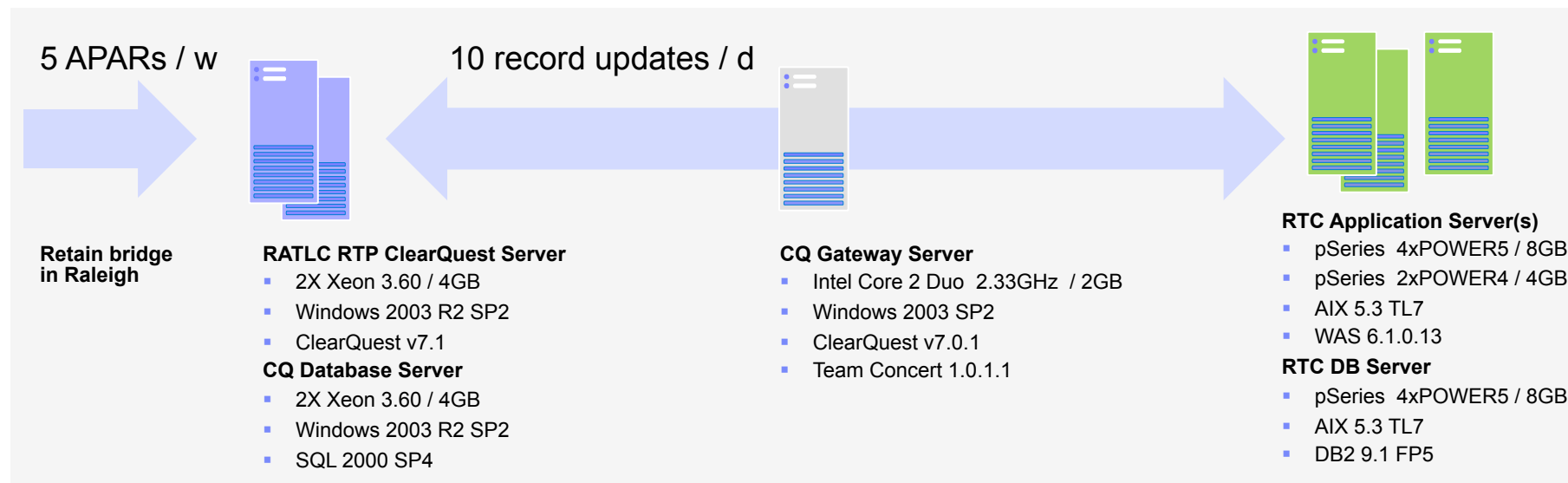
**ReTAIN** is a world-wide system that IBM use to support clients with hardware and software products. ReTAIN is an acronym for Remote Technical Assistance Information Network and is supported by MVS systems (Boulder / Lexington / Portsmouth / Ehningen).

**RATLC** is the internal Rational change management solution for Support issues, RFEs, release and change requests and other workflows. RATLC developed by the IBM Rational Internal Deployment team in ClearQuest and replicated to 10 global Rational development sites. A Retain – RATLC bridge in Raleigh synchronizes records.

**Jazz.net** is used by the Jazz teams for open commercial development. The jazz.net deployment is staged with an internal (Raleigh) and one external repository (Toronto). The RATLC – RTC connector in Raleigh synchronizes records. Customer support cases are scrubbed before published on external jazz.net.



# RATLC ◀▶ Jazz.net Interop Configuration



- ClearQuest and Team Concert interoperability solution developed, deployed and maintained by Rational Development Operations in 2008.
- Configuration details
  - Used by Rational Tech Support (60) and RTC component team leads (20)
  - RATL 'ChangeRequest' record type contains ~ 400 fields
  - ~ 60 of these fields were added to the RTC Work Item (internal) and are synchronized to RTC repository in Raleigh
  - ~ 12 of the RATLC CR fields are reference types and are implemented as 12 supporting sync rules to the main CR sync rule.
  - 2 custom fields, and 1 global script was added to the CR record type
  - A complete test environment available for pre-production testing

## RATLC ◀▶ Jazz.net Interop – Lessons Learned

- The complexity of the CQ/RTC interop solution depend on
  - ▶ Size and **complexity of the ClearQuest record type**
  - ▶ Number of **reference fields**
  - ▶ The **consistency in vocabulary** and field enumeration values
  - ▶ The frequency of CQ / RTC **schema changes** and vocabulary / name changes
- Best practices
  - ▶ Have a good - solid - cooperative user community
  - ▶ Be prepared to initially manage up to 80% sync failures.  
Institute a '**root cause analysis**' process to investigate every sync error and take preventive actions to resolve future errors and bring down sync failures to ~10%.
  - ▶ Always deploy sync rules to a production (replica) test environment.  
**Never deploy new or updated sync rules without sufficient testing.**
- Other notes
  - ▶ All fields needs to be visible to a query to be sync'able by the gateway
  - ▶ (No backwards compatibility for the CQ Gateway 2.0. All repositories has to be upgraded)

## Blue Harmony Project



- Blue Harmony is an enterprise transformation program that will enable IBM's **Globally Integrated Enterprise (GIE)** vision
  - ▶ Integrating core processes, that are now business unit and region specific, horizontally across the enterprise on a common systems platform – SAP
  - ▶ The name reflects how we are harmonizing process, technology and people across the IBM enterprise
- The focus through 2009 is the **Blueprint** phase
  - ▶ Identify business and technical requirements and to compare to best practices
  - ▶ Following phases are **Realization, Final Preparation, Go Live** and **Support**
- **Global Team**
  - ▶ Approximately 300 – 400 global program team members
  - ▶ SMEs participate in requirements and capabilities gathering activities within their geography, Business Unit and or organization
  - ▶ 5 Regional Hubs located across the globe including Asia Pacific, Japan, EMEA, Latin America, and North America
  - ▶ One centralized change management implementation using ClearQuest ALM

# Blue Harmony Project – CQALM Configuration



## ClearQuest and Web Server

- xSeries 345 / 2.9 GB
- Windows Server 2003
- CQ version 7.1



## ClearQuest Database Server

- pSeries 2xPower5 1.9 GHz / 2GB
- AIX 5.3.0
- DB2 v9.1.0.5



## Blue Harmony CQ Gateway Server

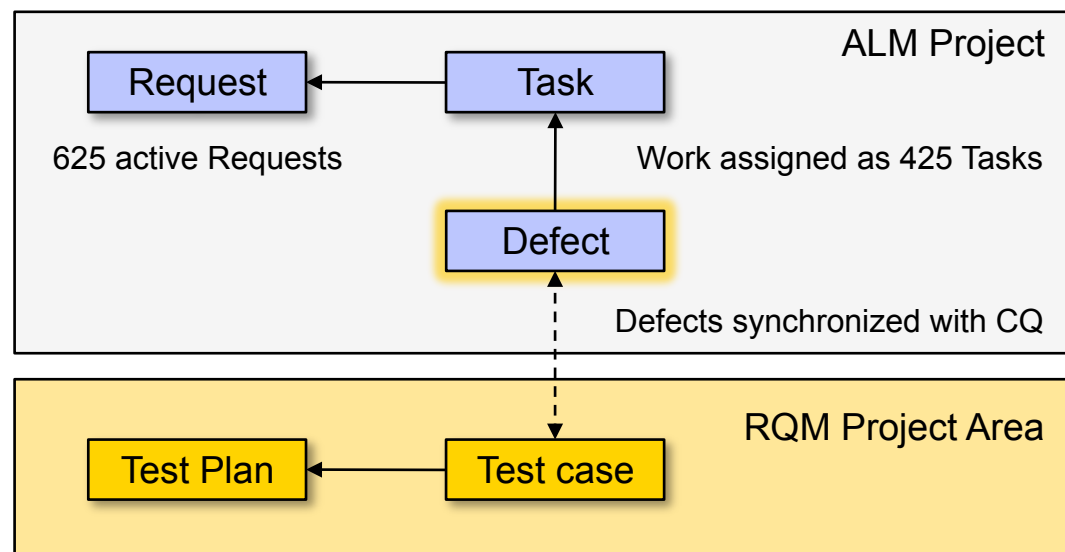
- Intel® Xeon™ MP CPU 3GHz/16 GB
- Windows Server 2003
- CQ Gateway version (Not yet installed)



## Blue Harmony Quality Manager Server

- Intel® Xeon™ MP CPU 3GHz/16 GB
- Windows Server 2003
- RQM version 1.0.1

- Centralized service with 100% CQ Web usage
- Single ALM Project using OOTB ALM process
- Production use of Rational Quality Manager (RQM) starting
- Interoperability with ClearQuest piloted using a **stateless 'proxy' of a RQM Defect** with all defect properties required for the change workflow
- New defects are triaged and **associated with ALM Tasks for planning and resolution.**





## Blue Harmony – Lessons Learned

- Benefits with ClearQuest ALM Solution
  - ▶ Centralization of request information
  - ▶ No need for client installs.
  - ▶ Email notification
  - ▶ Benefits with centralized IT support enabling quick system updates
  - ▶ Authentication integrated with IBM LDAP
  - ▶ ClearQuest offers an easy way to build queries
  
- Worse...
  - ▶ ClearQuest ALM Solution is a bit hard to use and need some usability improvements
  - ▶ Take a bit of training to learn to navigate the ALM assets
  - ▶ No OOTB integration with RQM (but the pilot was implemented quickly)

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  - ▶ ClearQuest ALM Solution

# Enterprise C/ALM Interoperability Solution

- The C/ALM Dashboards display role based ALM information from the ALM web
- C/ALM relationships improves transparency and provides ALM web navigation

## Stakeholders, Product Owner and Product Managers

- Solution requests
- Program and Project plans
- Delivery and Quality

## Build and Solution Integration Dashboards

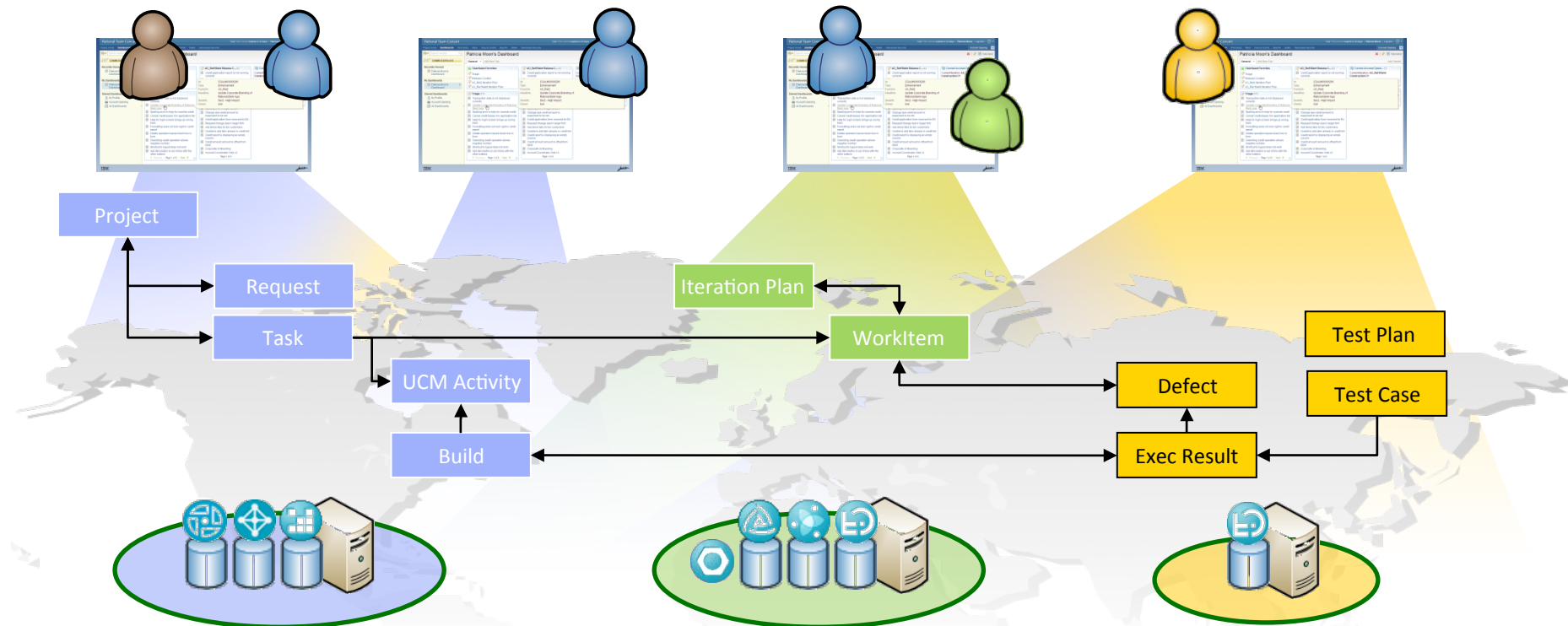
- Monitoring of change delivery
- Solution Integration and Build Monitoring
- Work tracking

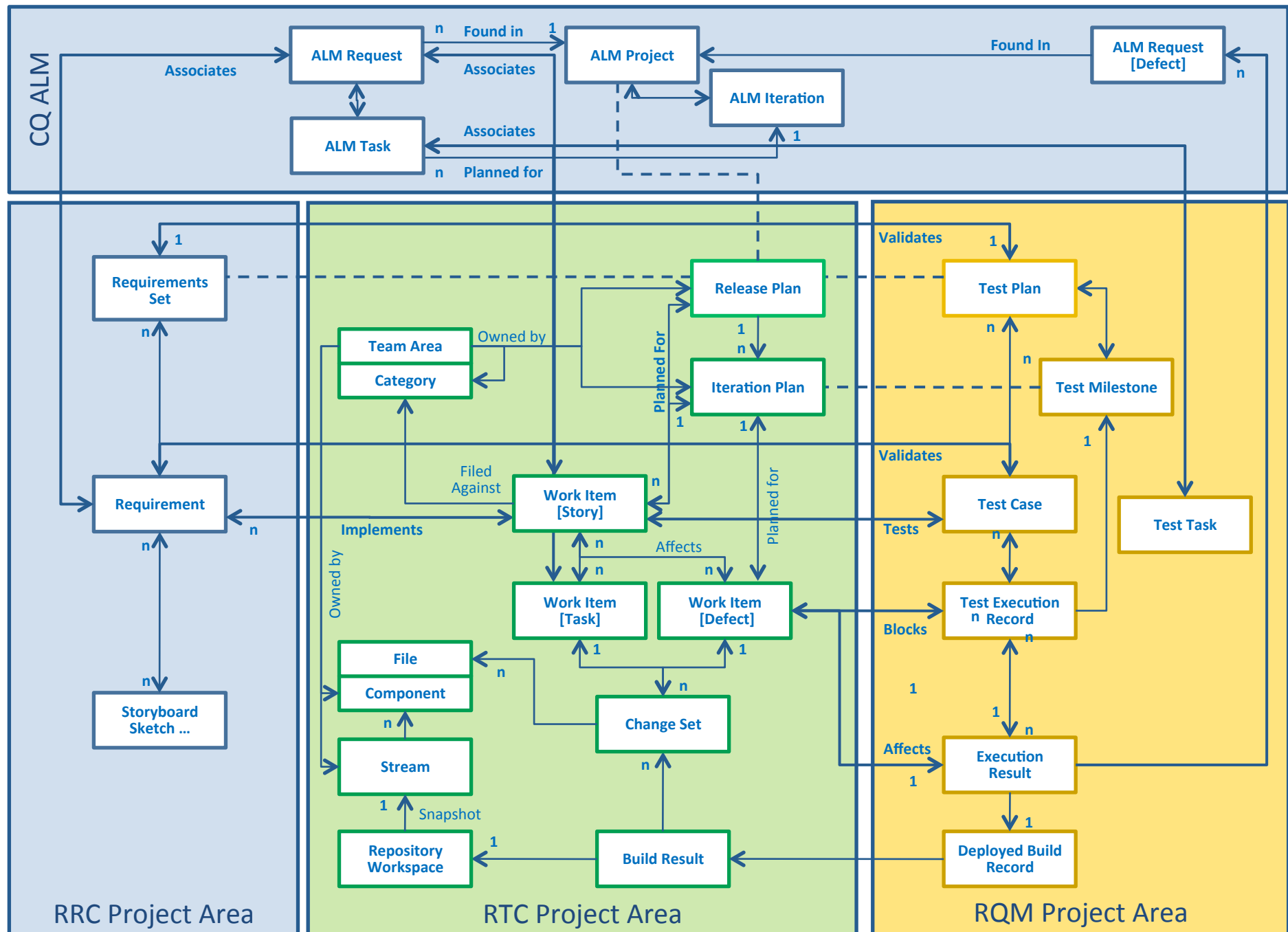
## Development Dashboards

- Project transparency, collaboration and health
- Work Items and Iteration plans
- Release quality
- Stakeholder integration

## Quality Dashboards

- Application quality
- Test planning and plan health
- Work tracking
- Requirements coverage
- Test lab management





See <https://jazz.net/wiki/bin/view/Main/CALMLinkTypes> for details

# Integrating the Collaborative ALM Information Web

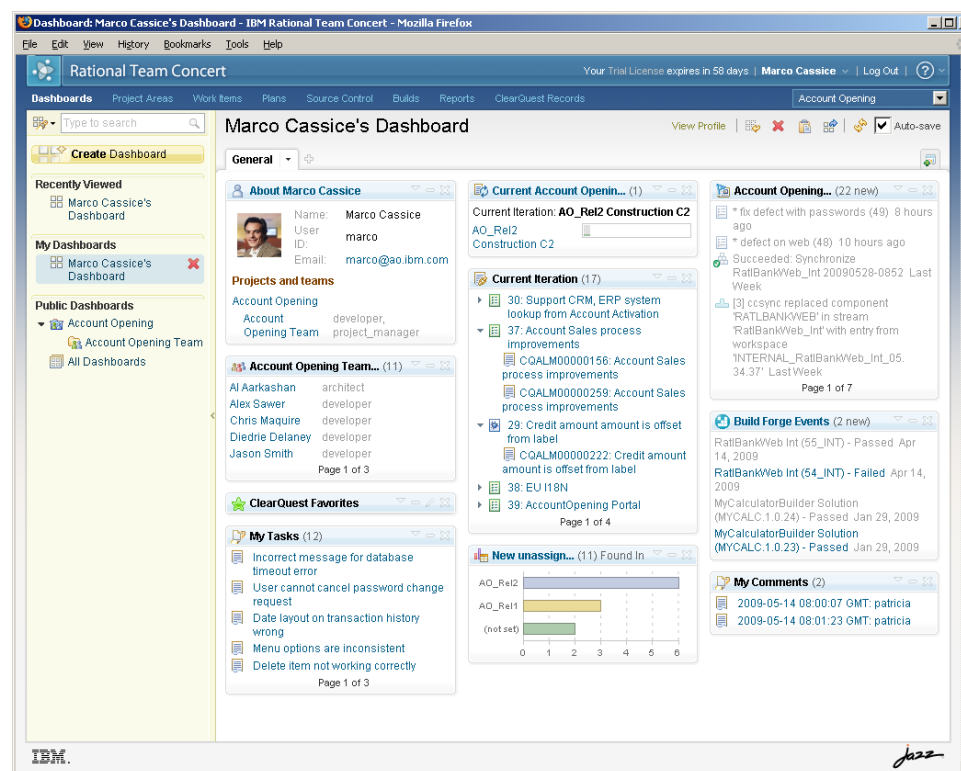
## ▼ Planned Requests

Requests planned for the iteration

## Me and My Team Members ►

## My Tasks ► Overview of assigned work

## New to triage ► Overview stakeholders requests to the project



## New unassigned ▲

Charts to overview the health of the project

## ◀ Solution Plans and Backlogs

Requests planned for the project

## ◀ Project events

## ◀ Build events

Events that matter

## ◀ My Comments

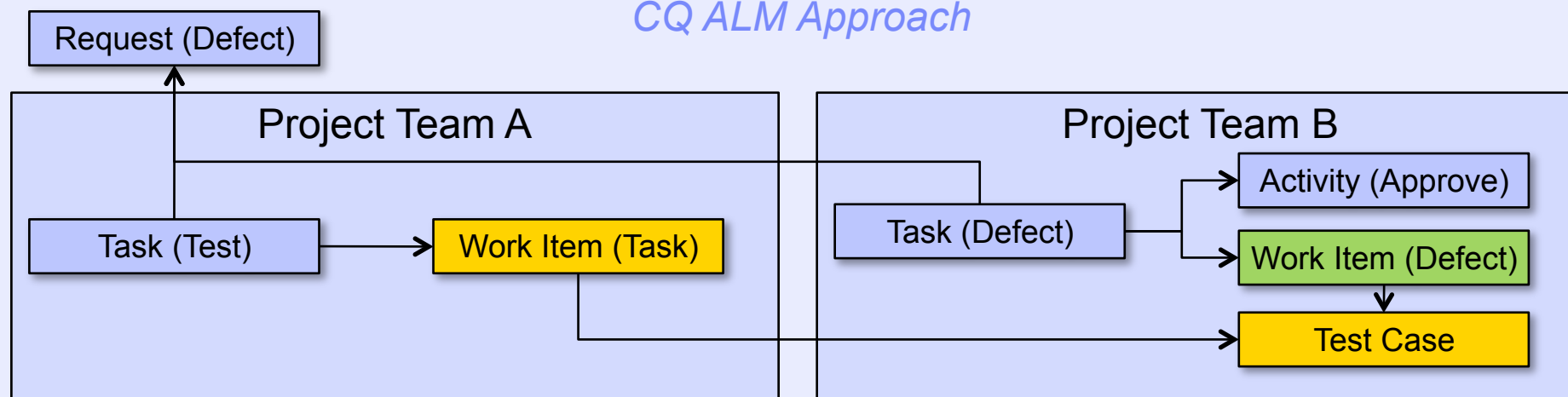
Track discussions in context of requests

## Choosing an Interoperability Solution

- Choosing the ClearQuest ALM Solution
  - ▶ The ClearQuest ALM Schema provides a flexible and scalable solution for global teams depending on a solution that unify and integrate collaborative teams
- ClearQuest Connector of type Bridge
  - ▶ The ClearQuest Bridge, provided in the RTC 2.0 release, will be the **recommended solution for associating records in ClearQuest with Jazz Work Items**.
  - ▶ The ClearQuest Bridge solution provides an interoperability solution **based on cross repository linking** using open internet standards and the Rational OSLC initiative.
  - ▶ The bridge enables ClearQuest, and CQALM, to integrate and contribute to C/ALM integrations on Jazz Foundation.
- ClearQuest Connector of type Synchronizer
  - ▶ The ClearQuest Synchronizer solution provides an interoperability solution based on **data replication** between one ClearQuest repository and multiple Jazz repositories.
  - ▶ The ClearQuest Synchronizer is an **extended solution for many traditionally developed customer ClearQuest schemas** where the workflow is governed by a single well aligned record or a single state model.

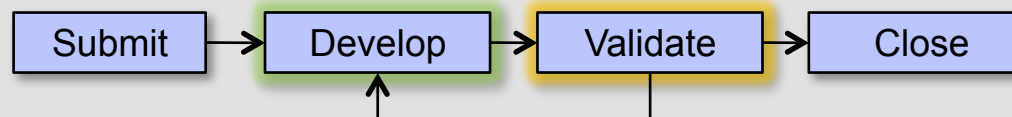
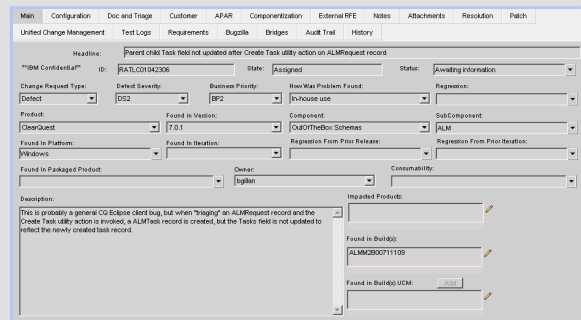
# Choosing an Interoperability Solution

## CQ ALM Approach



- The **CQ bridge**, and the C/ALM relationships, allow teams to create, assign and own the lifecycle assets, and establish required traceability cross repositories

## Traditional CQ Approach



- The **CQ synchronizer** allows team members to integrate and contribute to a shared change management process

## Conclusions

- Rational, and other IBM teams, are depending on integration of change management solutions. Several teams are successful in deploying the **Rational ClearQuest ALM solution**, and the **ClearQuest Connector components**, into production use - Several lessons learned have been presented
- New **C/ALM integrations** are implemented using Open Services for Lifecycle Collaboration standards in the 2009 Rational products, and improves team transparency and simplifies cross repository traceability and interoperability
- **CQALM and the CQ Bridge form natural steppingstones** for organizations with existing ClearQuest implementations to extend and integrate with a new flexible C/ALM framework, enabling an incremental adoption of new Jazz technologies
- CQALM and the CQ Bridge provides a key separation of the **Found-in context** in ClearQuest for stakeholders, and the **Planned-for context** in Team Concert for delivery teams.
- **Engage in our open commercial development** of the Enterprise ALM solution on <https://jazz.net/>



# Questions

## References

- Robert Pierce, Change management at IBM Rational  
<http://www.ibm.com/developerworks/rational/library/nov06/pierce>
- DevWorks Articles  
[Whitepaper: Simplifying Application Lifecycle Management with IBM Rational ClearQuest](#)  
ALM with CQ 7.1 Part 1 - <http://www.ibm.com/developerworks/rational/library/edge/08/mar08/pampino-pierce>  
ALM with CQ 7.1 Part 2 - <http://www.ibm.com/developerworks/rational/library/edge/08/apr08/pampino-pierce>  
ALM with CQ 7.1 Part 3 - <http://www.ibm.com/developerworks/rational/library/edge/08/may08/pampino-pierce>
- C/ALM Redbook - <http://www.redbooks.ibm.com/abstracts/sg247622.html>
- ClearQuest ALM Appliance  
[http://www.ibm.com/developerworks/downloads/r/rcq/appliance.html?S\\_TACT=105AGX28&S\\_CMP=DLMAIN](http://www.ibm.com/developerworks/downloads/r/rcq/appliance.html?S_TACT=105AGX28&S_CMP=DLMAIN)
- C/ALM on jazz.net - <https://jazz.net/wiki/bin/view/Main/RtcIntegration>
- Enterprise ALM on jazz.net - <https://jazz.net/wiki/bin/view/Main/EnterpriseALM>



Thank You

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