IBM Rational System Workbench

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Innovate2010
The Rational Software Conference

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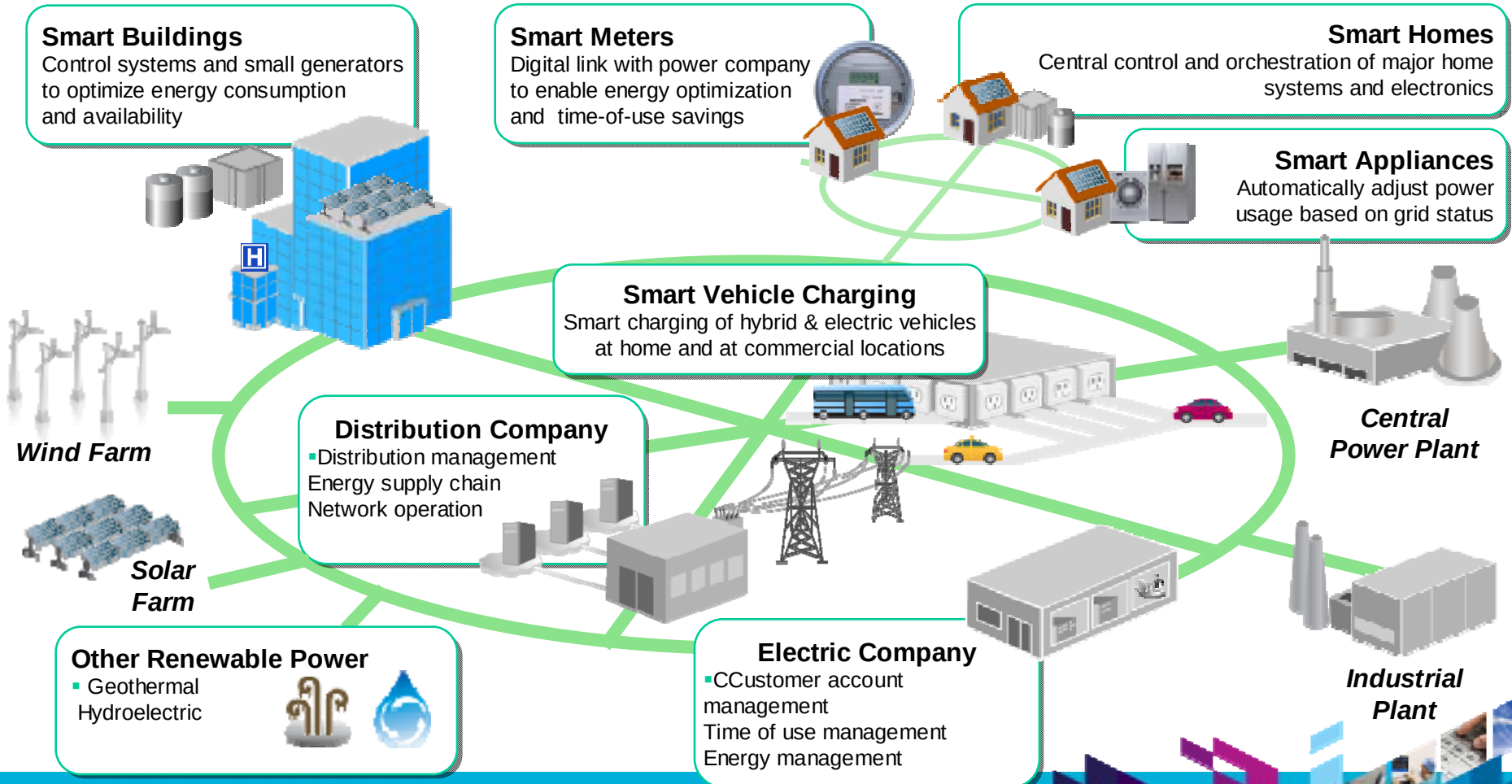
The premiere software and product delivery event.

Agenda

- What's the problem?
- What's a workbench?
- The Rational System Workbench

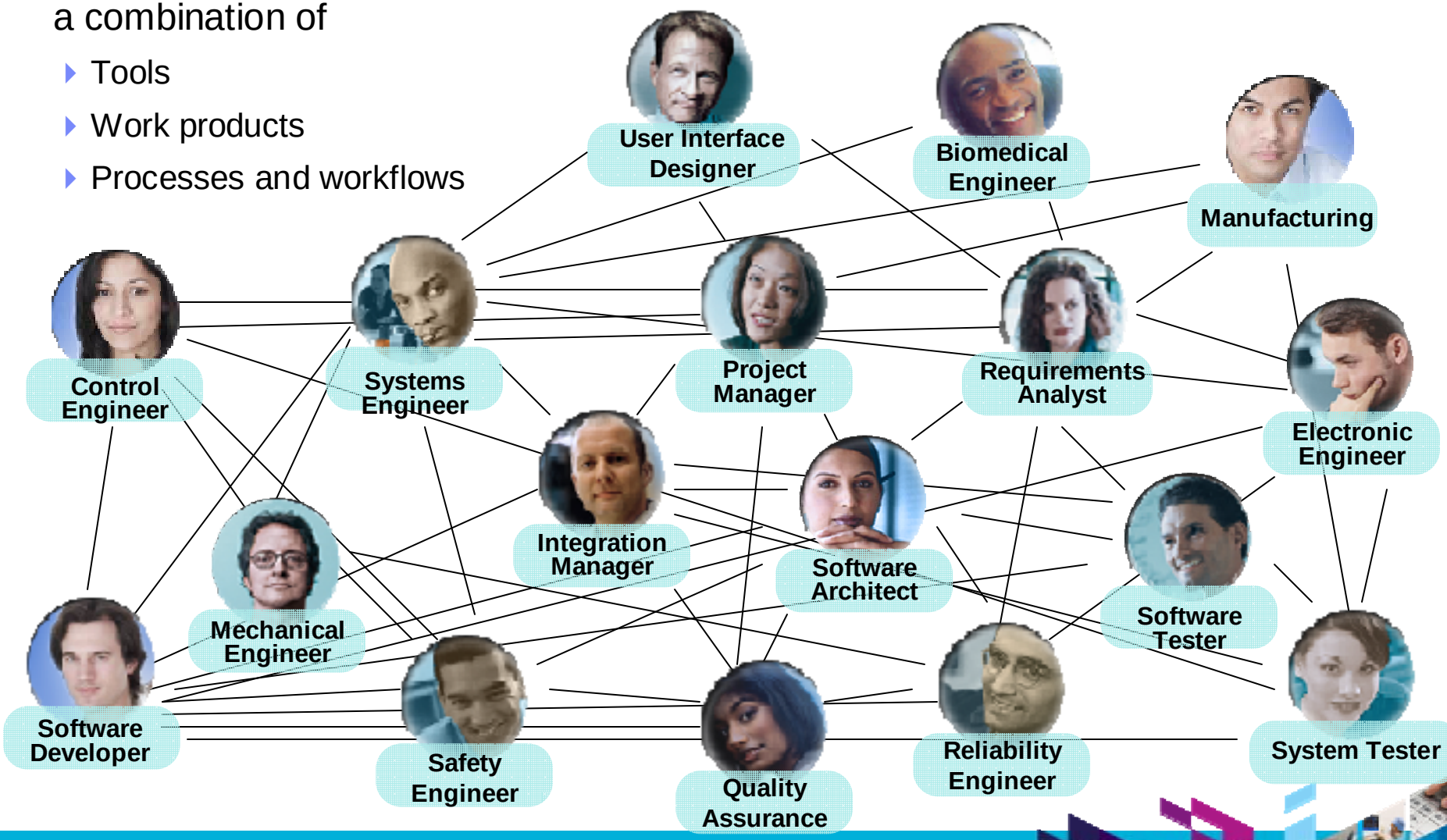
The Systems Space

- Systems are getting more larger, more complex, and more mission-critical
- Systems interconnect in complex, chaotic ways and must meet the needs of many stakeholders simultaneously



Systems Development

- Requires the collaboration of many different disciplines. They collaborate through a combination of
  - Tools
  - Work products
  - Processes and workflows



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- What's a workbench?
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So what is a workbench ?

- Collins English Dictionary says
  - “A heavy table at which work is done by a carpenter, mechanic, toolmaker etc”
- We mean
  - An organized place to undertake useful work efficiently
- We assume
  - A clear purpose for the place i.e. useful outcome
  - A collection of useful tools for some related work types
  - Clear support for our work through some kind of configuration of interworking methods and tools
- We have in mind that a workbench increases productivity or quality or perhaps both
  - Manufacturers have experimented with
    - task specific, multi-task and multi-discipline team workstations
    - personal and team workstations
    - manual, semi or automatic processing
- Perhaps we also mean a place to
  - demonstrate and grow our prowess
  - gain guidance of how to do things or get some results
  - exercise flexibility to support skill levels, work variation, size of job
  - provide segmented support for technologies or disciplines

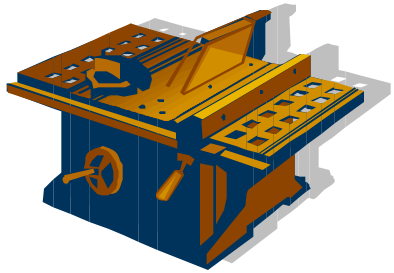
What a user wants ?

Visibility of where are we ?

Faster results, support for optimisation

Enterprise collaboration in context

Measures and indicators of how things are going ?



Clearer, simpler, fewer interfaces

Tools that work together easily

Tool flows that support my “day job”

Support for context switching

Sandbox

Guided usage

A Workbench is

- An integrated environment that
  - Supports the development of high-quality work products
  - Enables collaboration among workers
    - within a single discipline
    - across disciplines
  - Supports project management by
    - Identifying work items and goals to various team members
    - Providing guidance as to how to accomplish the work
    - Allows tracking of relevant project metrics, such as
      - Defect density
      - Project velocity
      - Schedule adherence
  - Is extensible by allowing teams to plug in
    - Different tools
    - Different workflows
    - Different tracking metrics
    - Different reporting mechanisms

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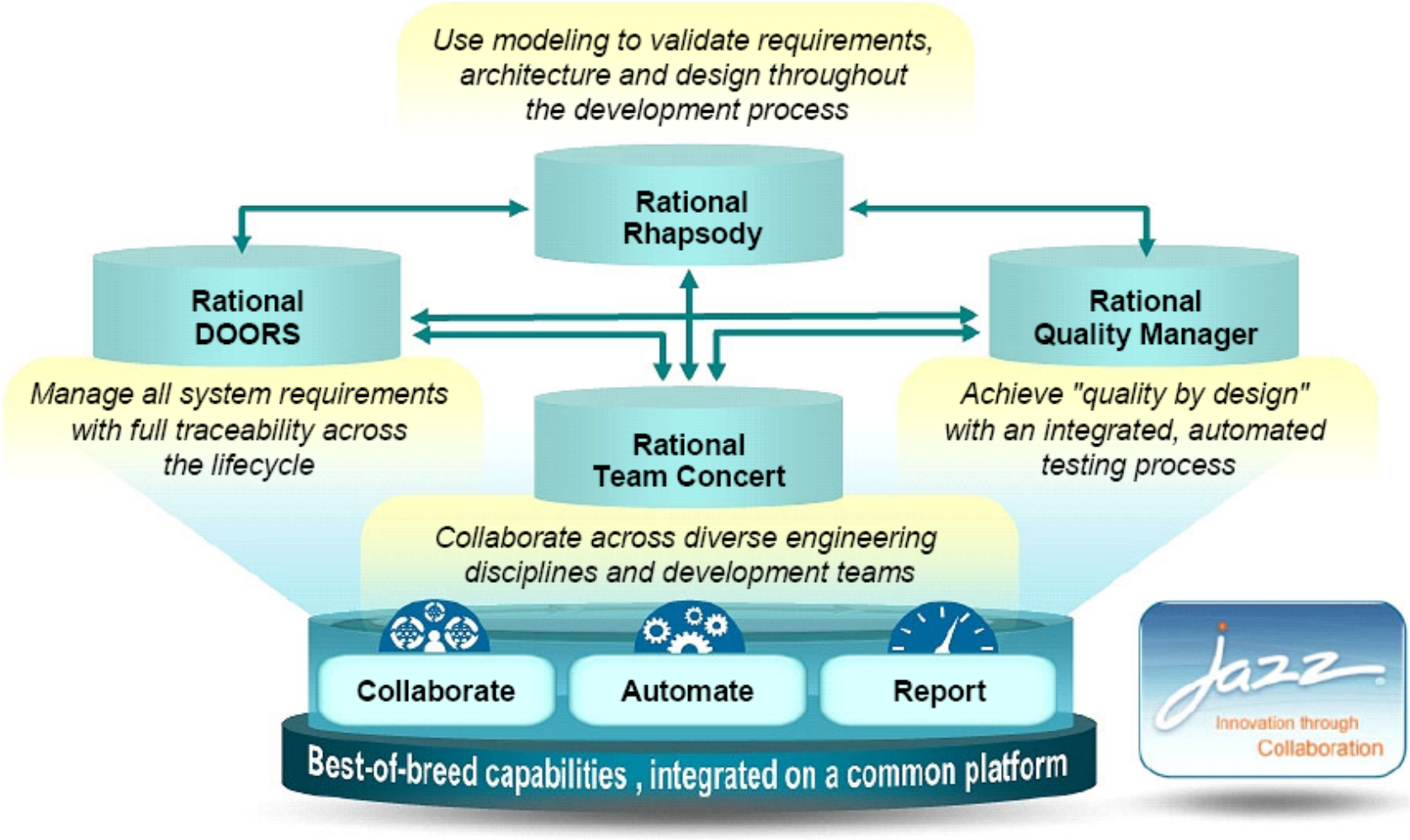
Rational System Workbench

- Integration of best-in-breed tools provide an unparalleled collaborative environment



Key roles supported by the Rational System Workbench

- Project, development and test team lead engineers and managers
  - Provides work and plan management for system delivery teams across the project lifecycle and enables live transparency through collaboration, automation, and reporting to the system delivery work products and project health.

- Requirements engineers
  - Provides environment for requirements authoring, analysis and management with DOORS and good interfaces to team leads, engineers, and testers. Managing traceability to system engineering and software engineering work products as well as test plans and test cases.

- System engineers
  - Provides an integrated and collaborative environment for requirements analysis, architecture management, and work, change and configuration management for teams of system engineers. The leading products are DOORS and Rhapsody for system engineering tasks, integrated with Team Concert for lifecycle management of the work products. The integrations with Rational Quality Manager provides for strong collaboration with System Validation teams from the start of the project.

Key roles supported by the Rational System Workbench

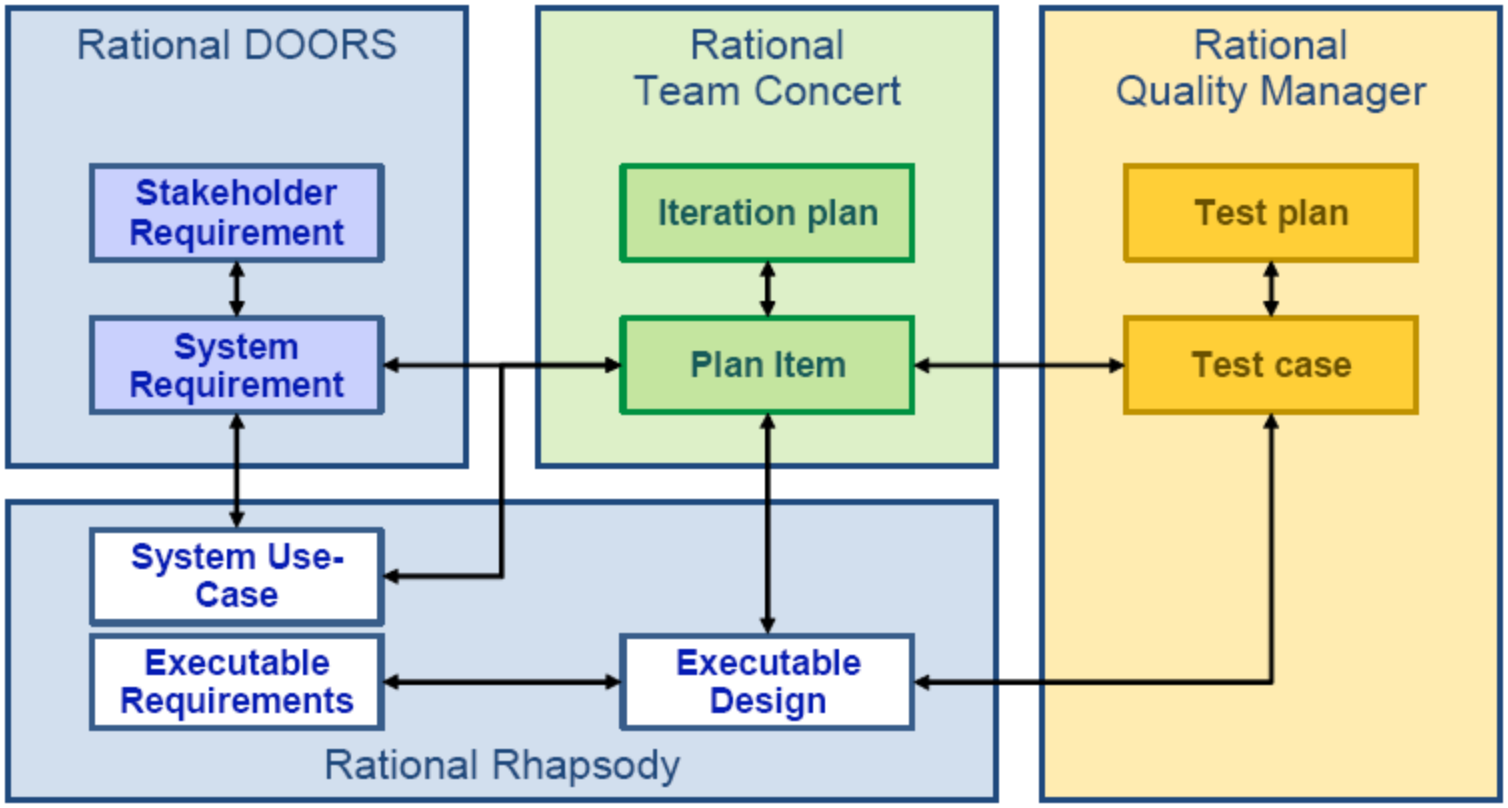
- Software engineers
  - With Rhapsody integrated with Rational Team Concert in the Eclipse IDE, provides a software development solution for Software Engineers. This integrates model driven development using UML with the Rational Team Concert capabilities for team collaboration, like model configuration management, work items, change sets, and continuous software build support. The System Workbench also provides traceability to up-stream System Engineering work products in DOORS and Rhapsody, or down-stream traceability to System Integration and Validation.

- Software and system test engineers
  - Rational Quality Manager provides a collaborative environment for test planning, construction, and execution supporting continuous testing as part of the software engineering teams, as well as test management of system validation and acceptance testing. Rational Test Lab Manager improves the efficiency of system test labs and manages how test resources are requested and provided.

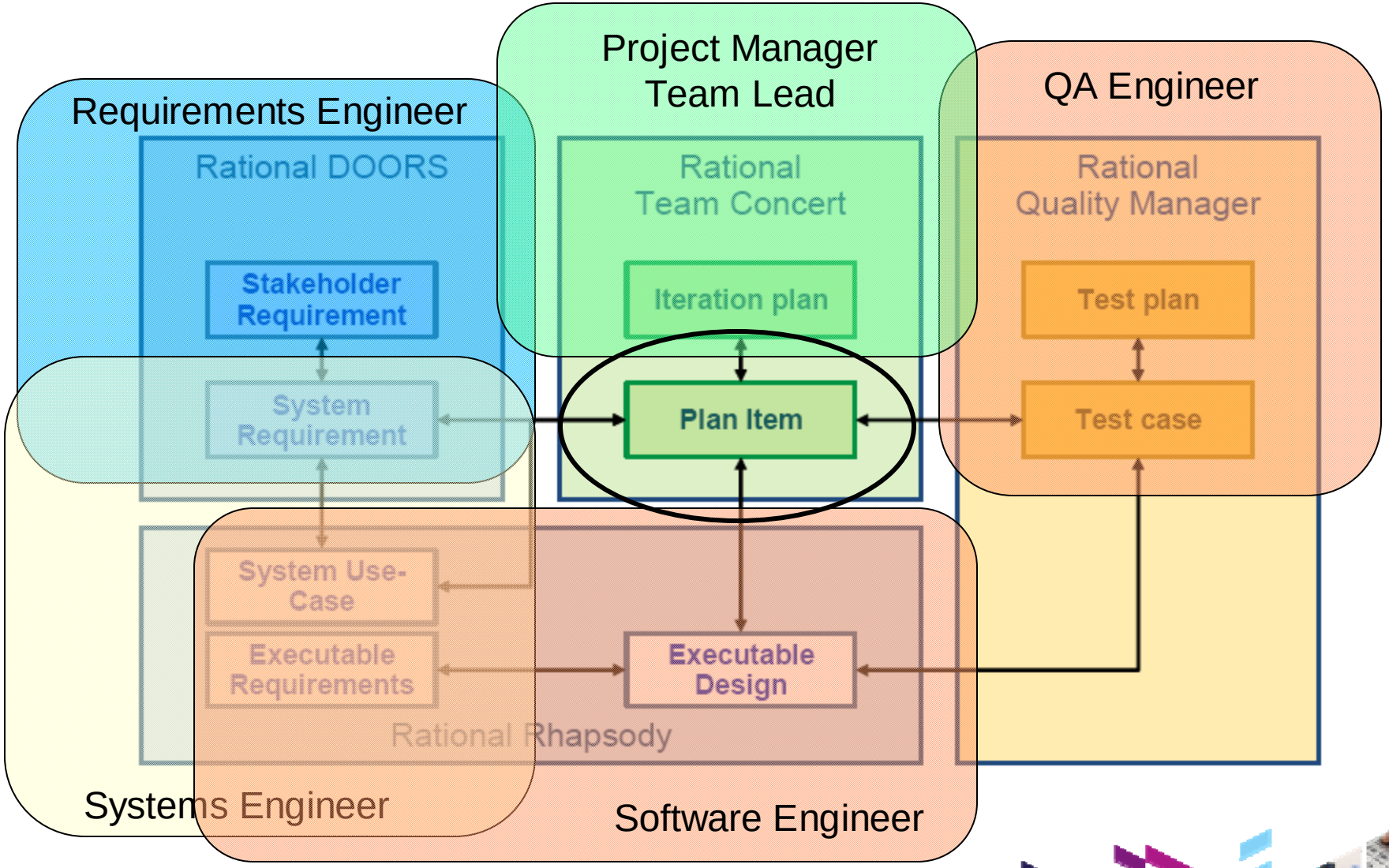
Rational Workbench: Rational Team Concert

- Rational Team Concert (RTC) is a commercial realization of the Jazz platform
- RTC provides
  - Process automation and workflow support
    - Processes are supported through process templates that provide governance and guidance during project execution, including the detection of process violations
  - OLSC tool integrations
    - Standardized interfaces allow tools to be plugged into to meet business and team needs
  - Work item tracking
    - Work items are the fundamental mechanism to track and coordinate development tasks and workflows, all governed by your team's associated process
  - Agile Planning
    - Provides tools to assist with the planning and execution of development iterations
  - Project health tracking
    - Team Reports and Web Dashboards help you to keep tabs on the health of your project. Dashboards provide an at-a-glance view of work item queries, event feeds, reports, and other items that are critical to understanding your progress.

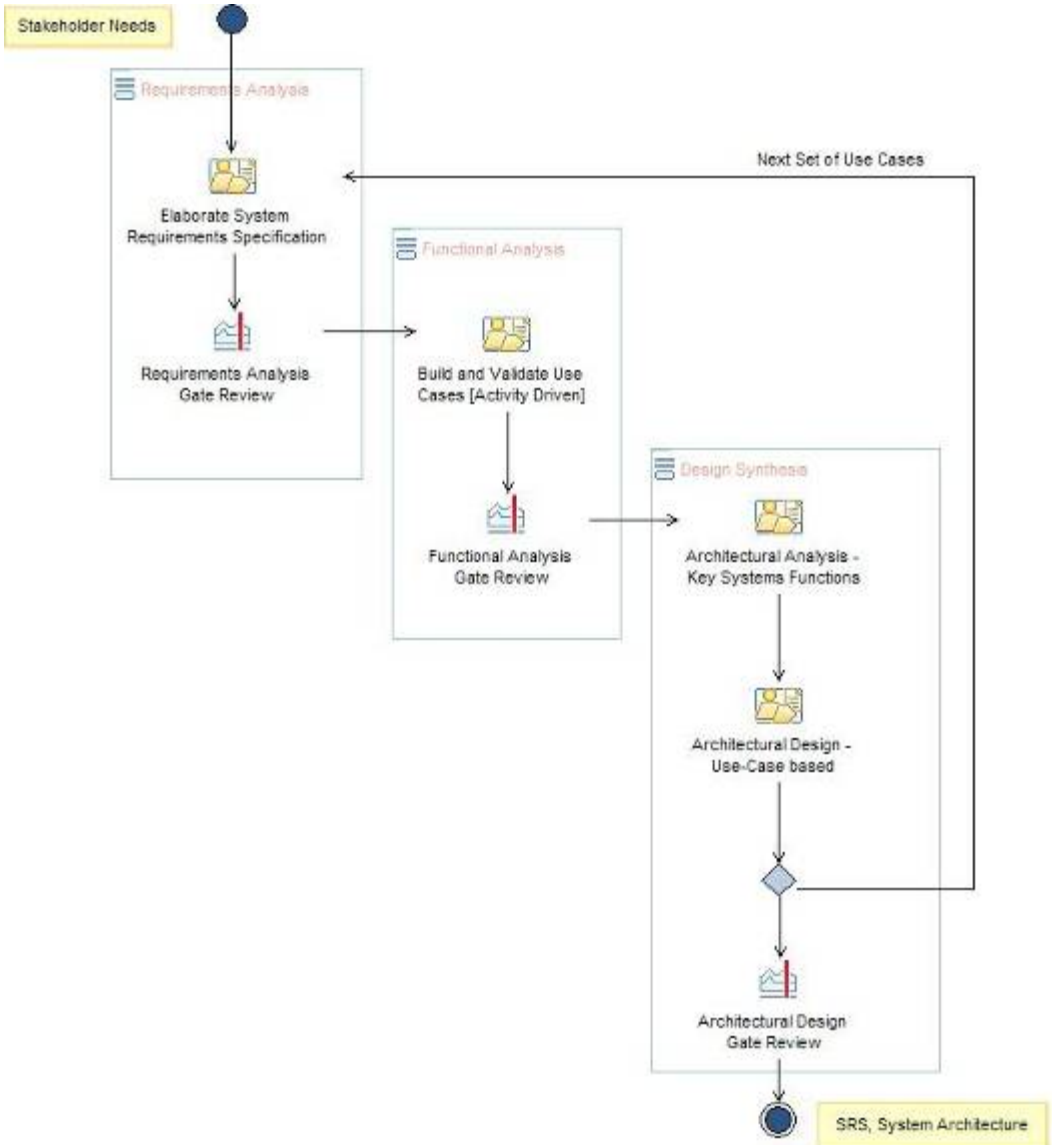
RTC: Project Planning and tracking workflows



RTC: Role responsibilities



RTC: System Engineering Workflows (Harmony/SE or MDSD)



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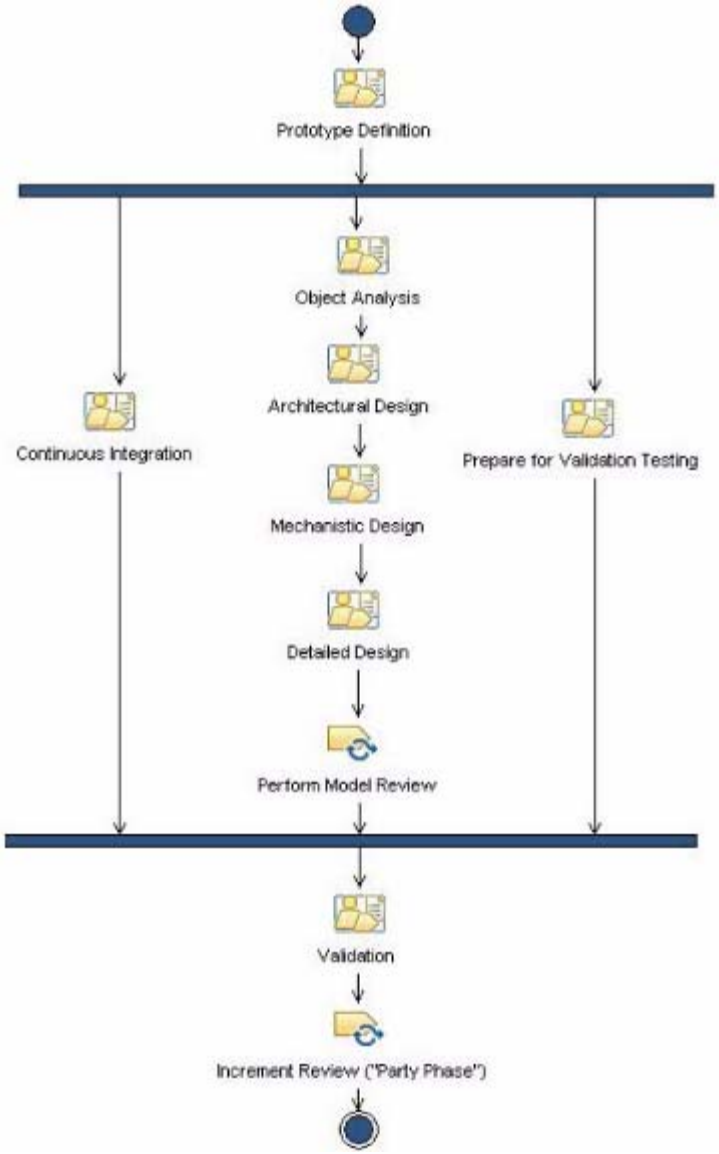

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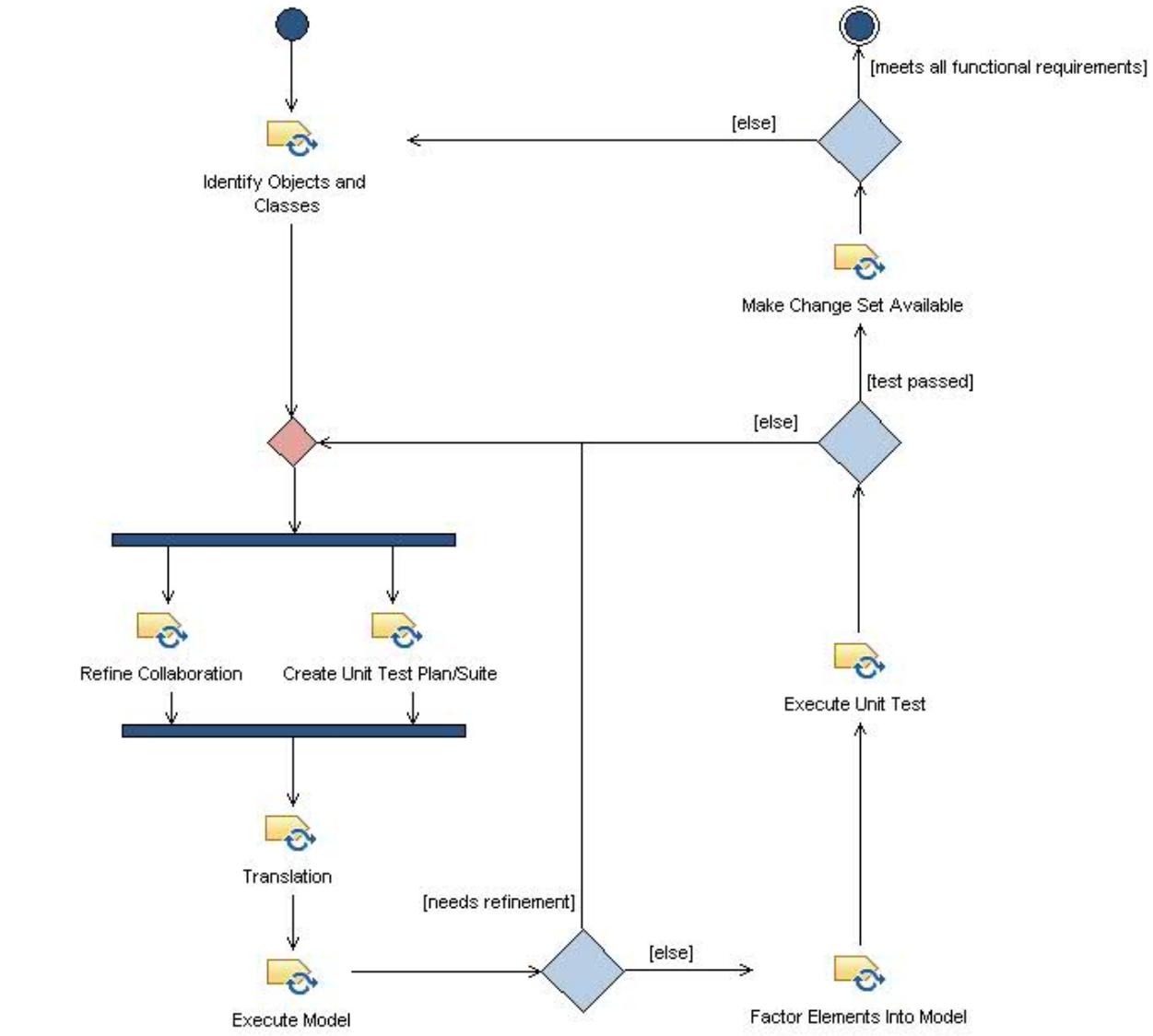

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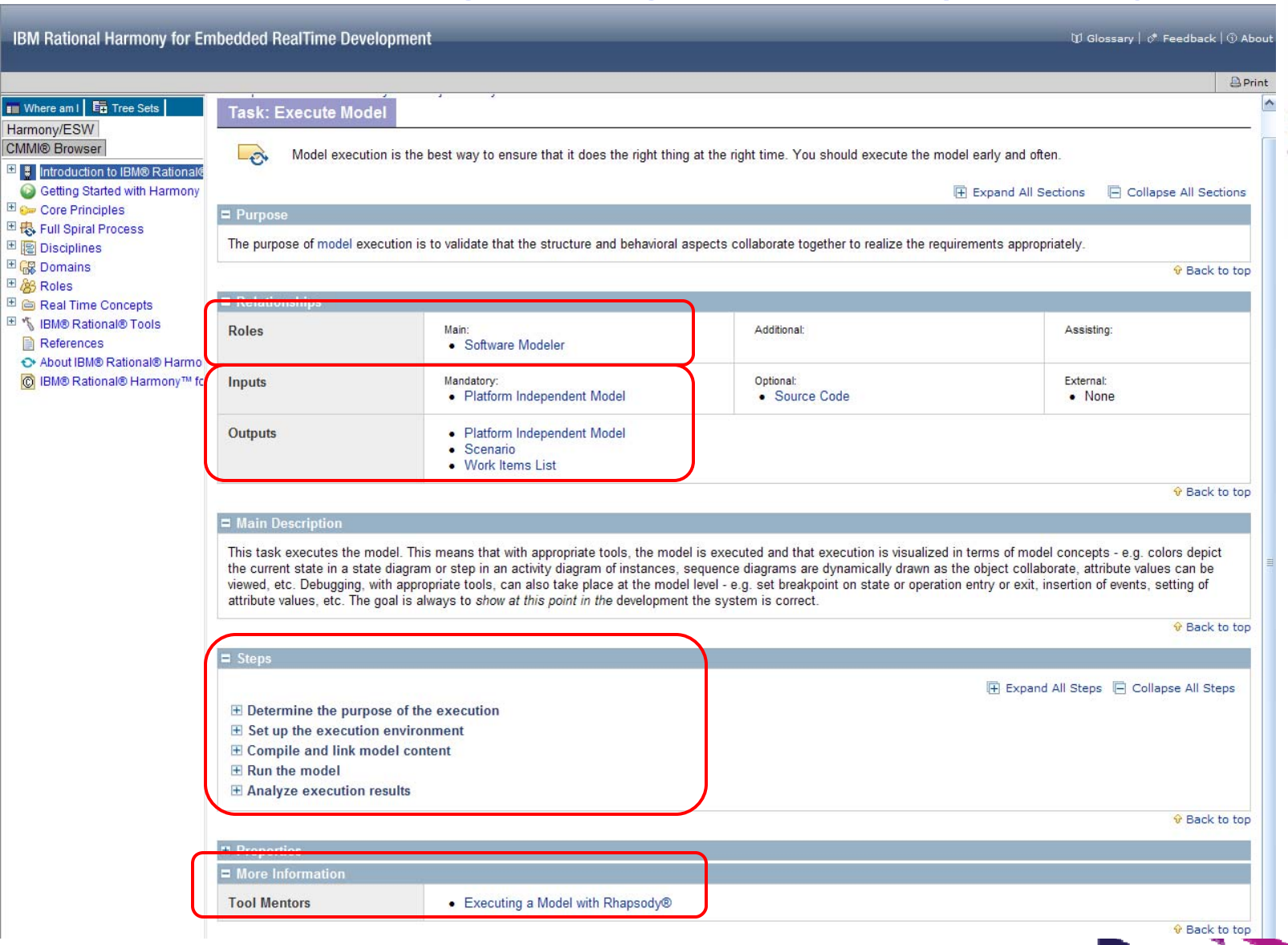
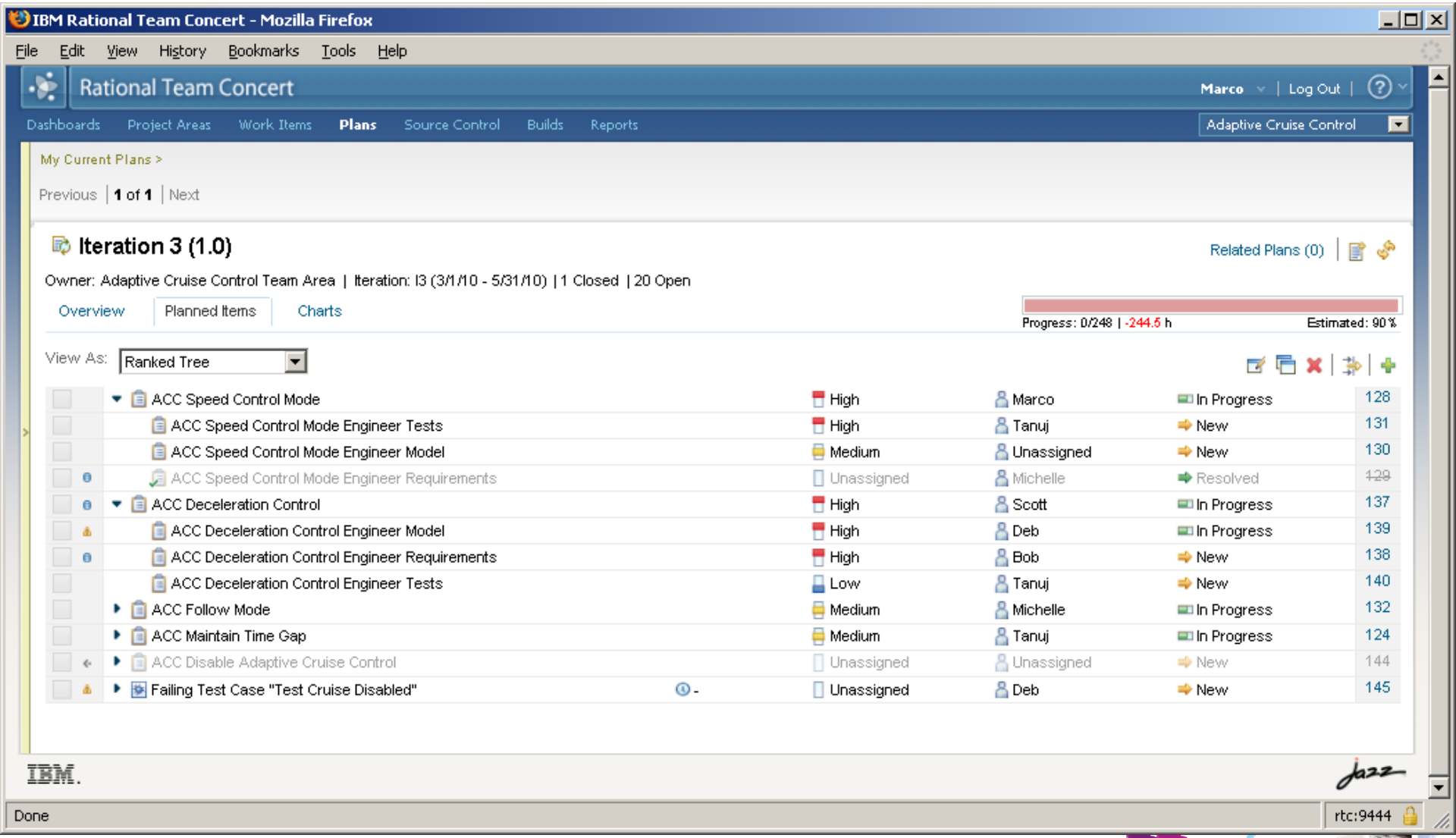


RTC: Tracking via dashboards



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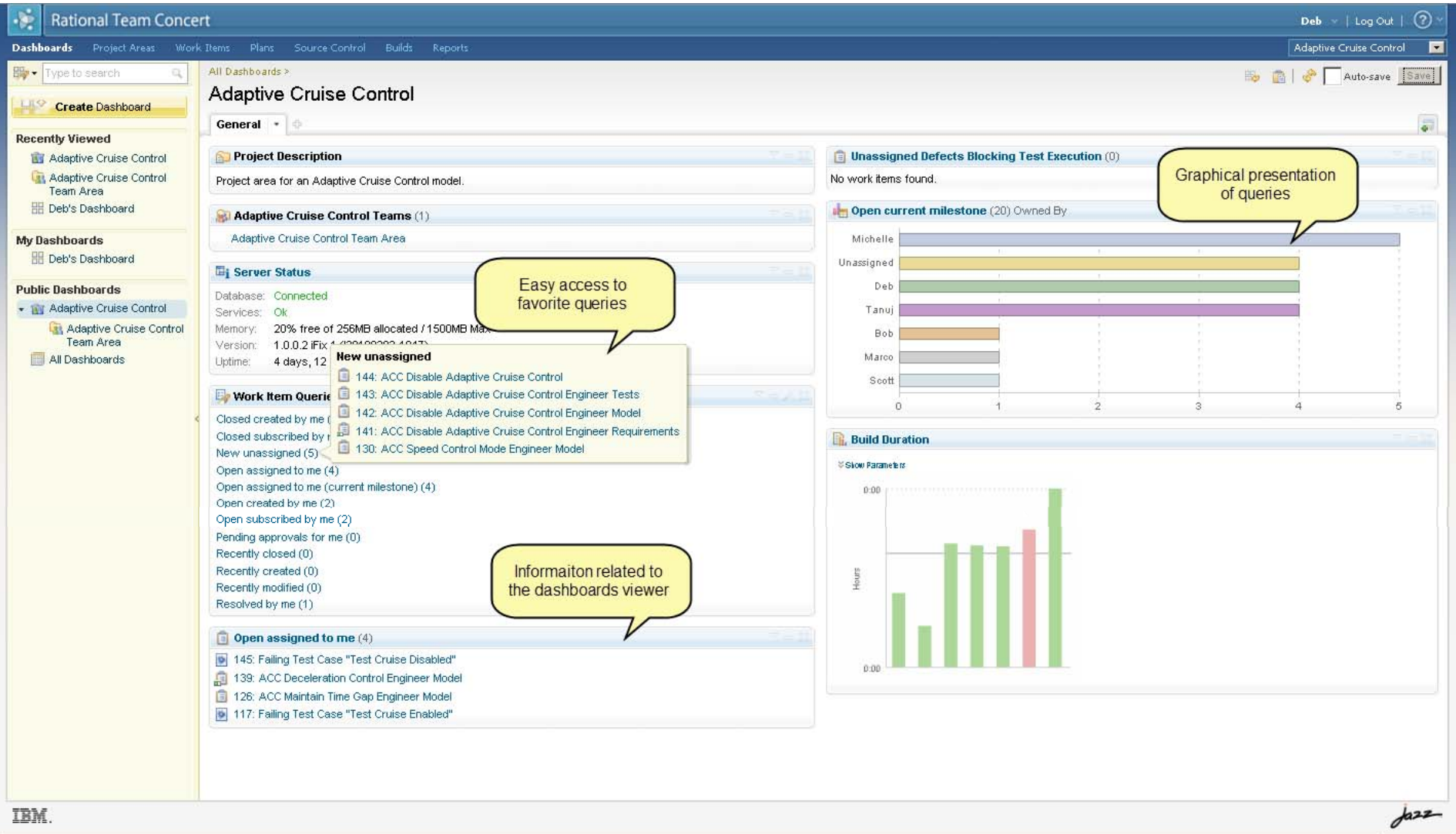
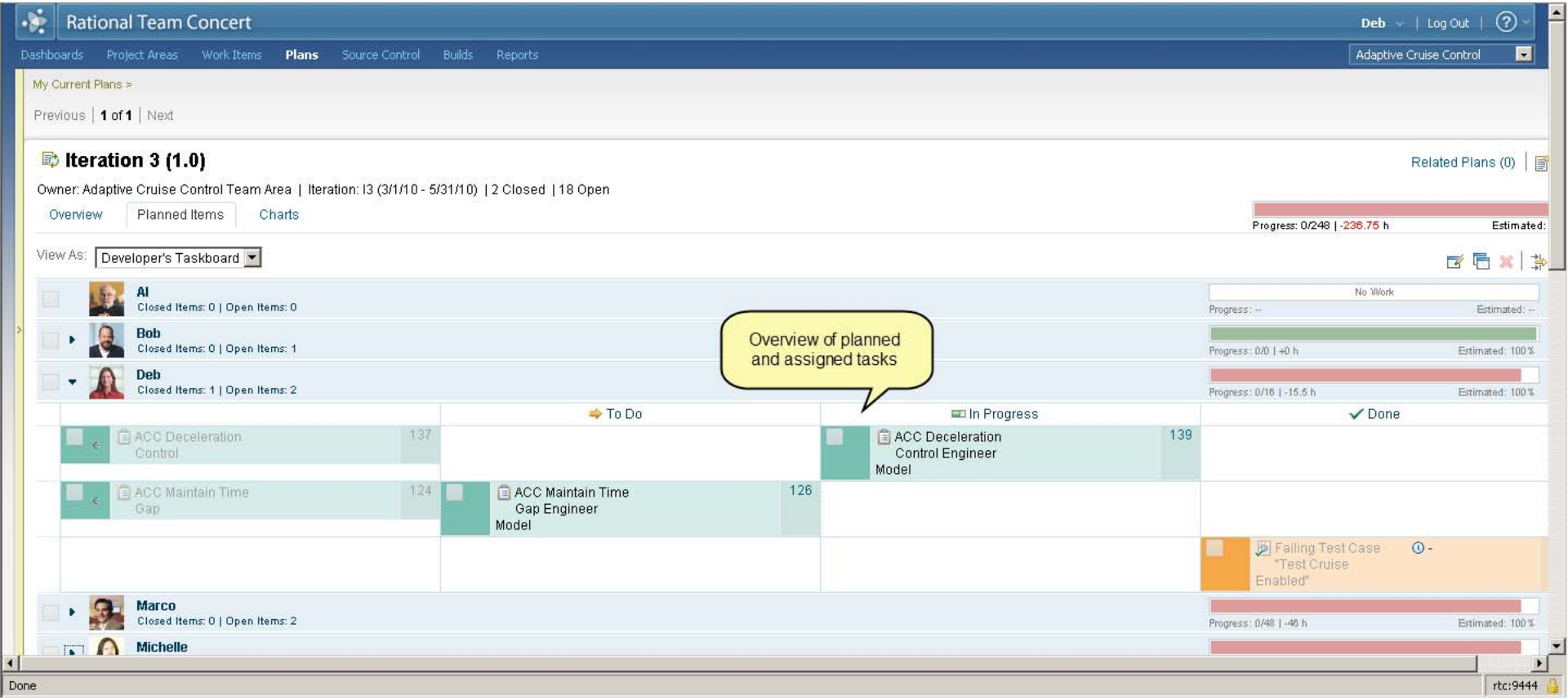


RTC: Developer's Dashboard

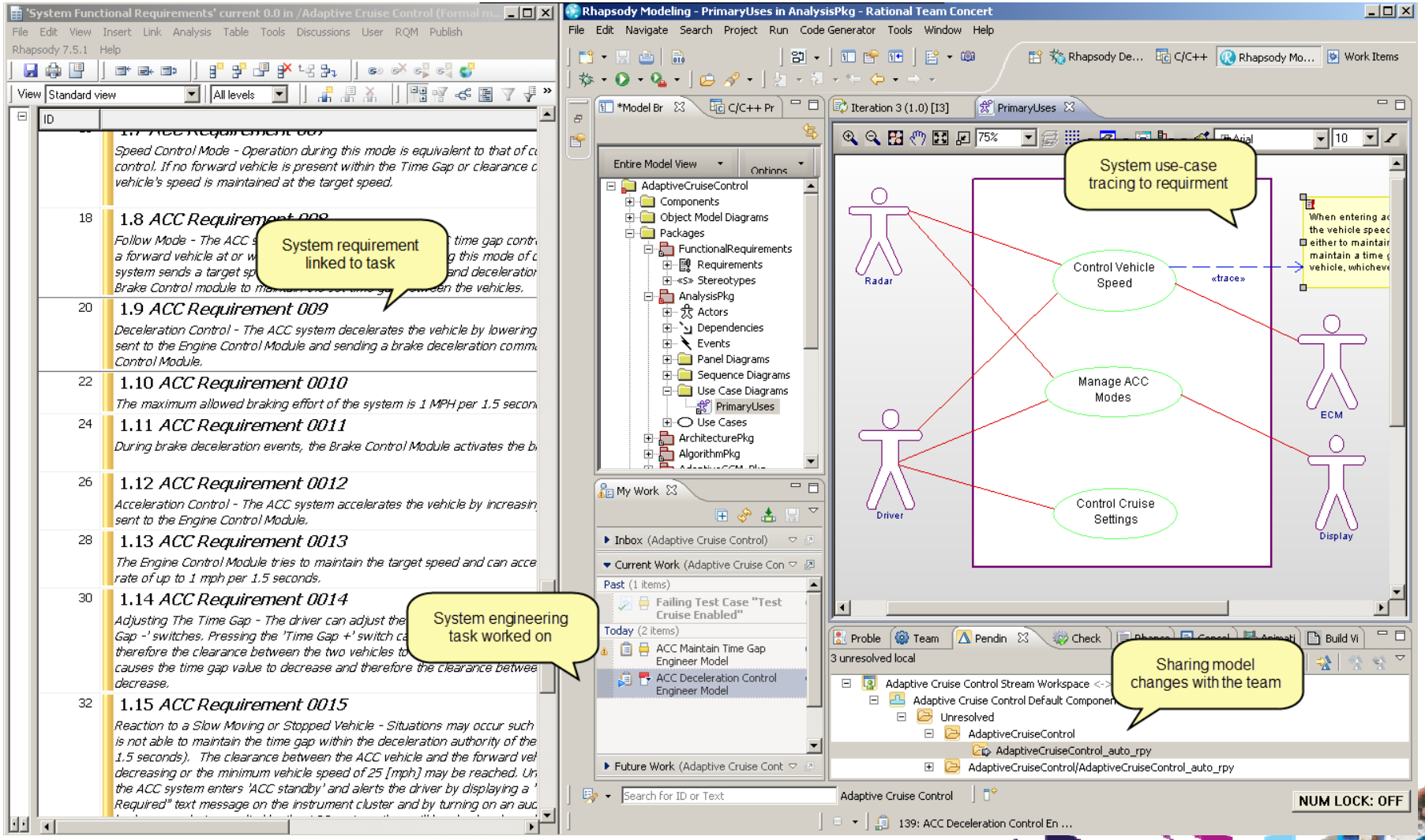


Rational System Workbench: DOORS

- DOORS is the best of breed requirements management tool
- DOORS provides
  - Collaborative environment for requirements stakeholders to participate in the requirements definition and review activities
  - Ability to manage changing requirements
  - Scalability from small to very large projects
  - Exchange requirements with other requirements tools

RTC Tool Integrations

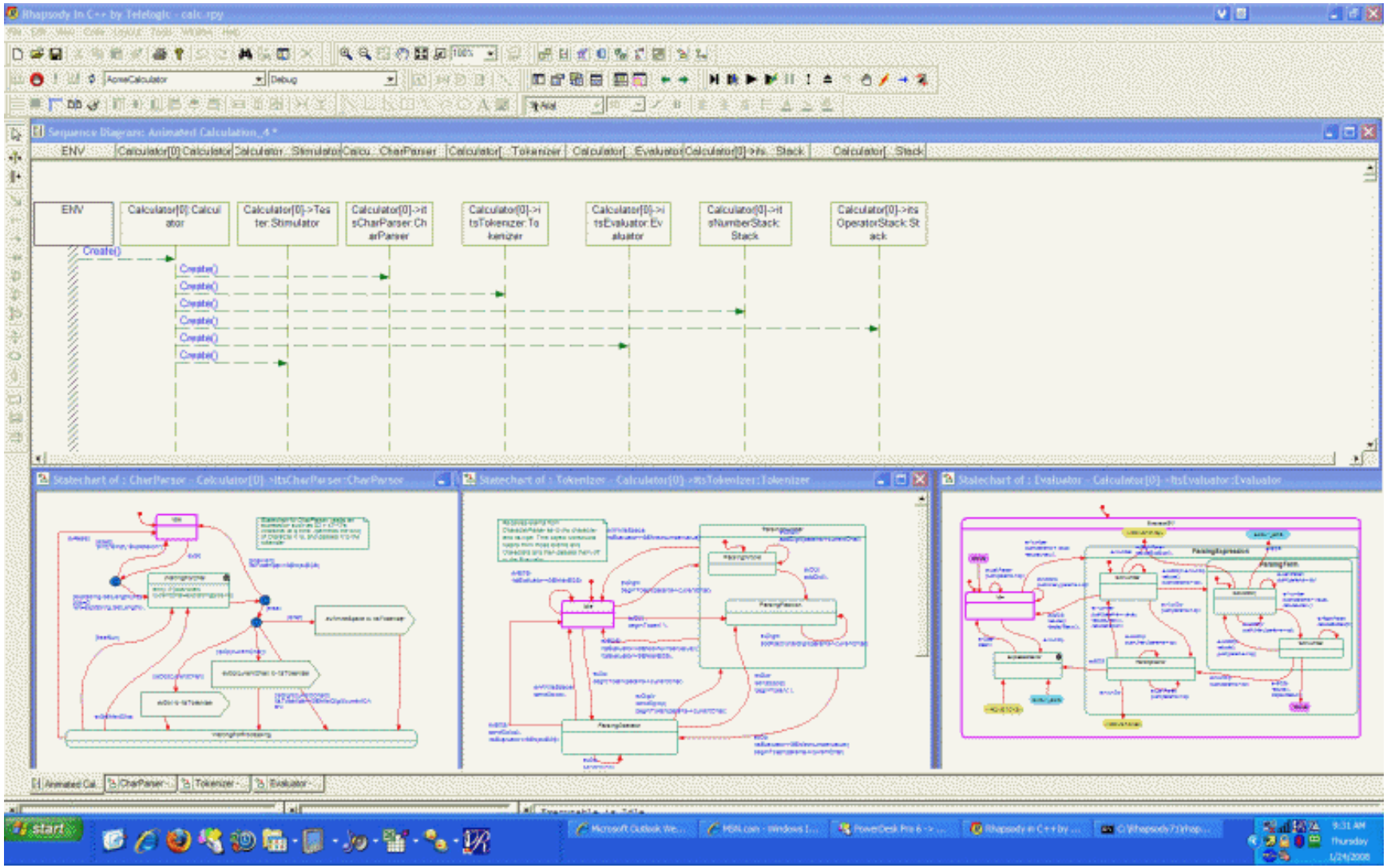
- Managing stakeholder and system requirements



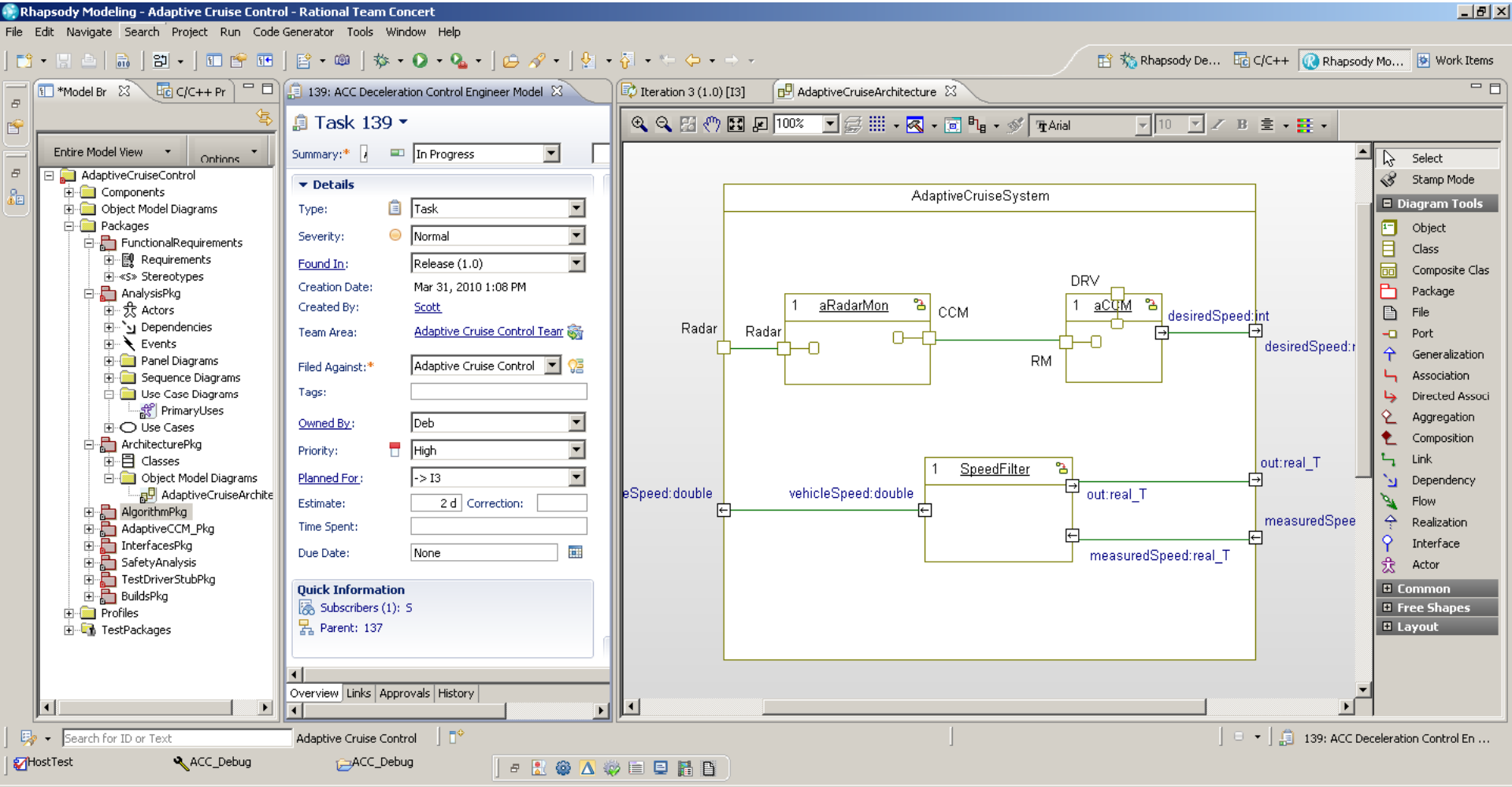
Rational System Workbench: Rhapsody

- Support for Systems Engineering
  - SysML
  - DoDAF and MODAF (UPDM)
  - Simulation and model-based debugging
- Support for Software Development
  - Rhapsody has specialized support for technical and embedded software development
  - Supports
    - Model-based execution and debugging
    - Model-code associative always maintains your models in sync with your code
    - Production-quality code generation (C, C++, C#, Java, Ada)
    - Dozens of embedded RTOS environments and compilers out-of-the-box
- Systems extensions with profiles for
  - Safety analysis
  - Schedulability analysis
  - Simulink integration
  - Functional C modeling
  - AutoSAR
  - CORBA
  - …

Rhapsody – Model Execution and Debugging



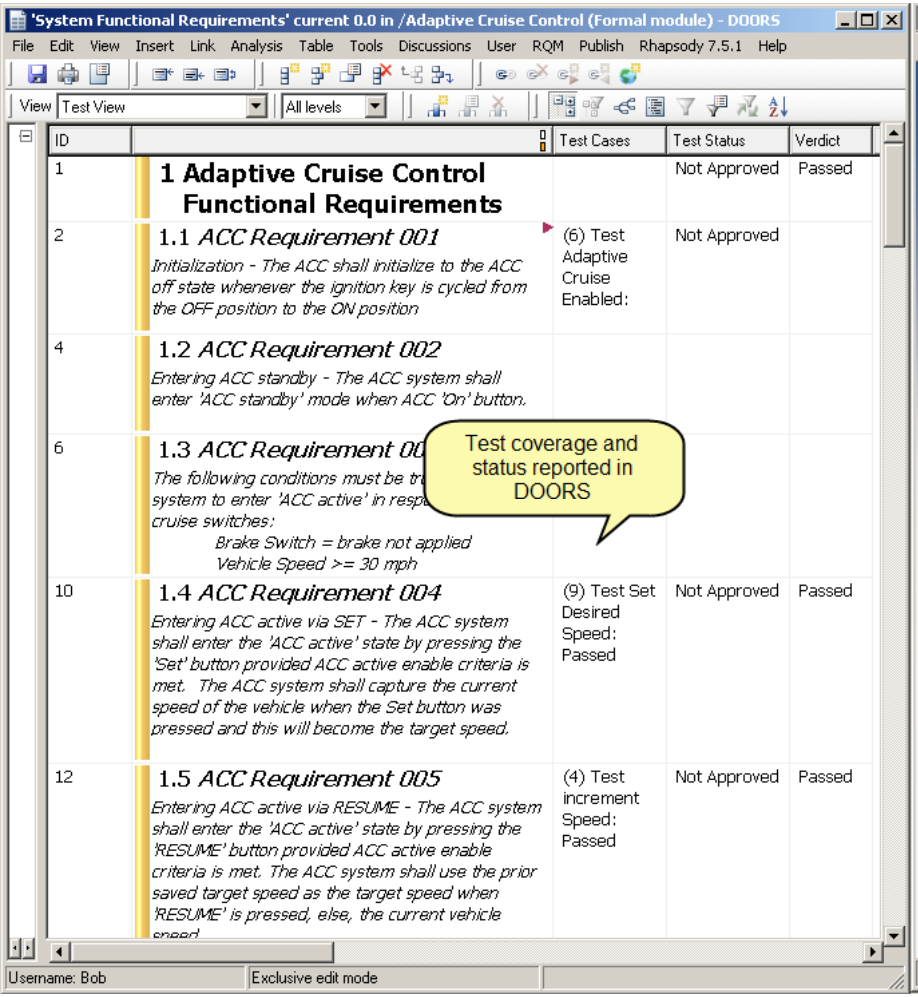
Rhapsody integration with RTC (and DOORS and RQM …)

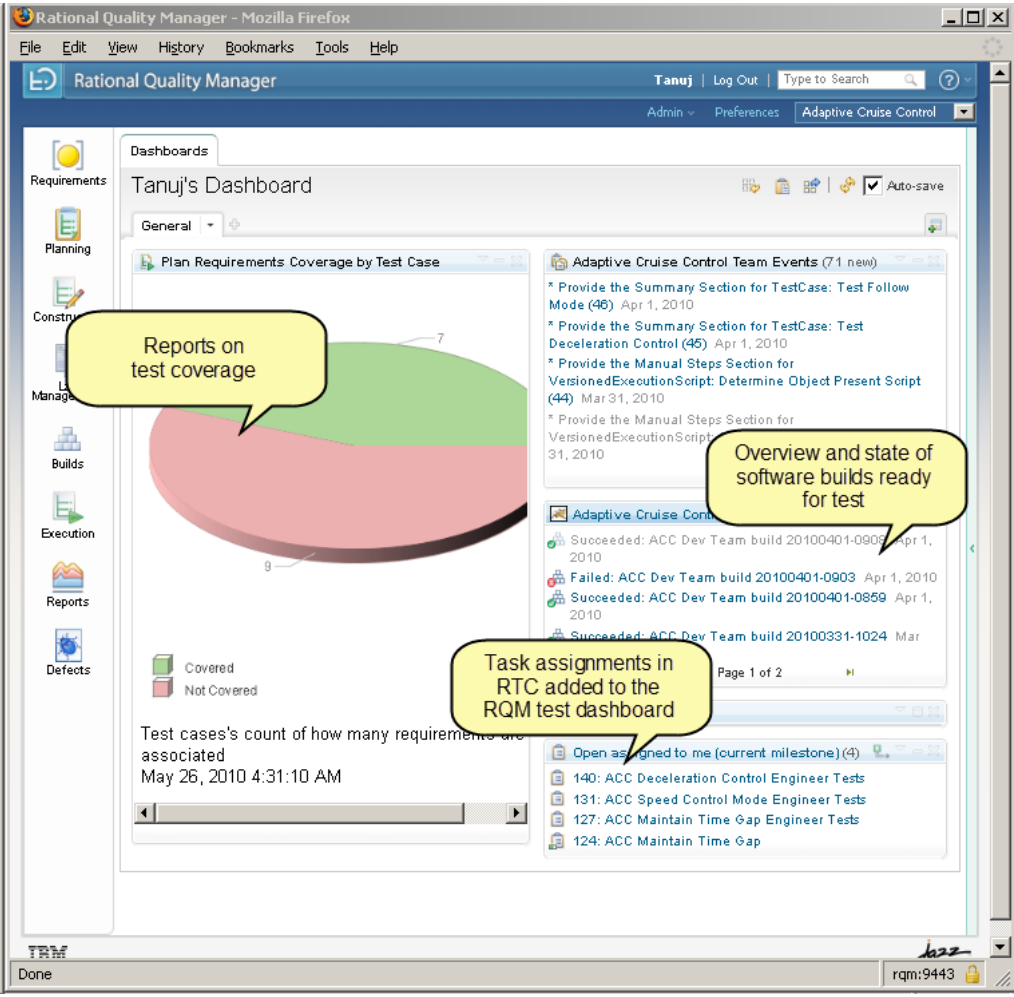


Rational System Workbench: Rational Quality Manager (RQM)

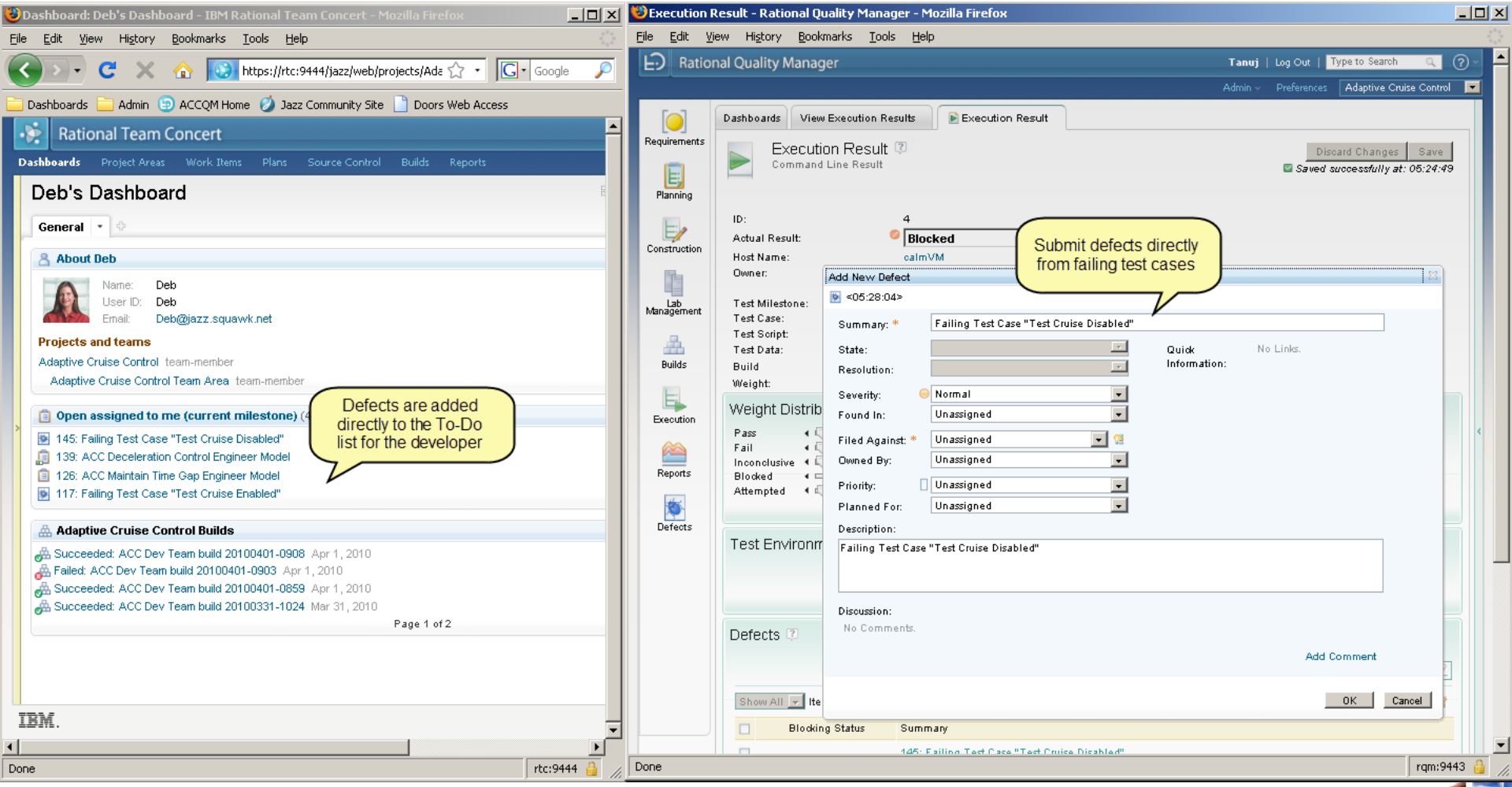
- RQM tracks and manages the quality aspects of system development
- RQM provides
  - Risk-based testing – prioritize features and functions to be tested based on criteria such as
    - Criticality
    - Likelihood of failure
    - Impact of failure
  - Duplicate defect identification
  - Multi-level test planning for big projects
  - Test authoring
  - Test reuse
  - Test coverage optimzation
  - Built-in ROI metrics reporting

RTC with Rational Quality Manager



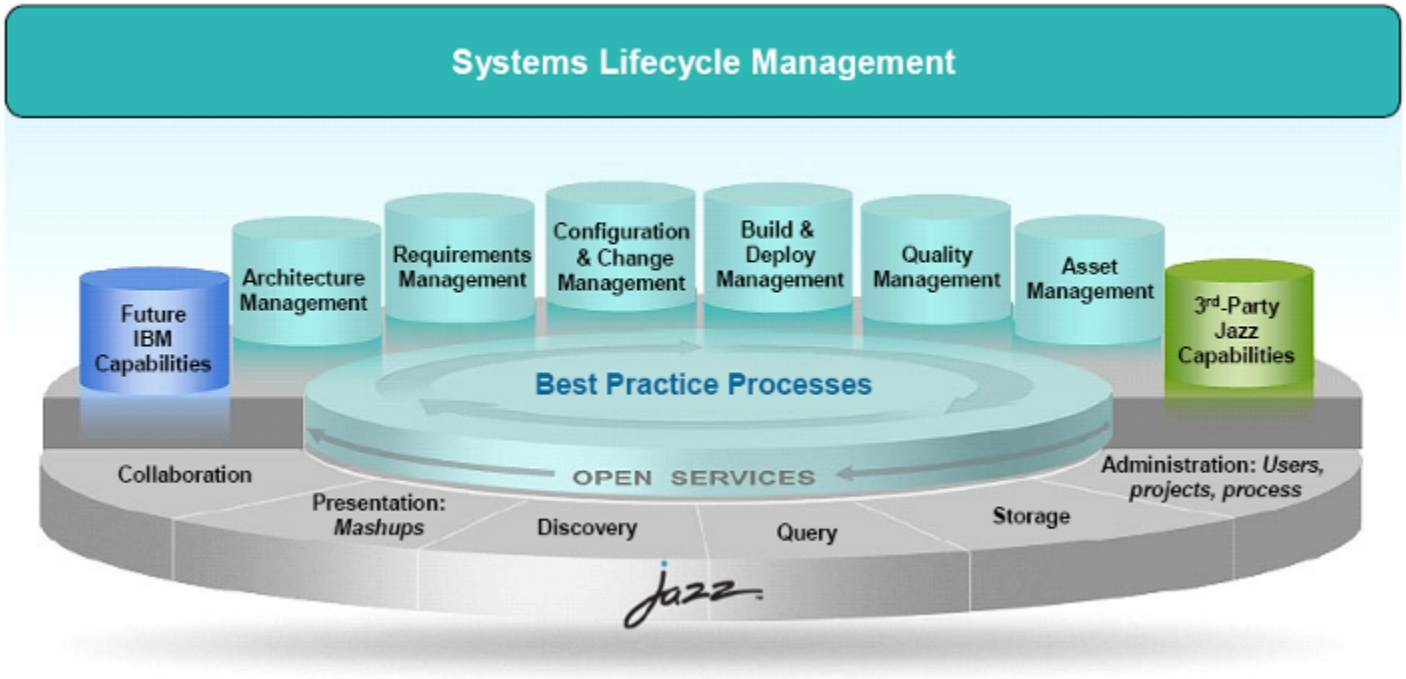


RQM Dashboard



Extending the Rational System Workbench

- Of course these tools aren't all you need or want. Typical extensions include:
  - System of Systems
  - Product life cycle management
  - Reporting and metrics (Rational Publishing Engine and Insight)
  - Service management
  - Configuration management (e.g. ClearCase or Synergy)
  - Change management (e.g. ClearQuest or Change)



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