Introduction to IBM Rational Solution for Systems and Software Engineering (SSE)

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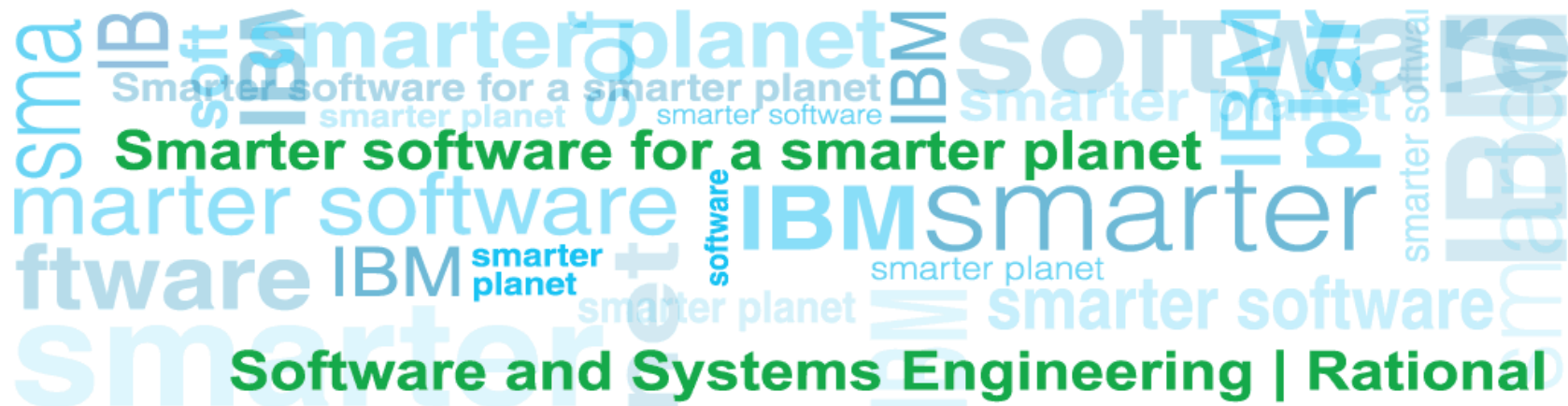*IBM Rational Brand Technical Specialists*

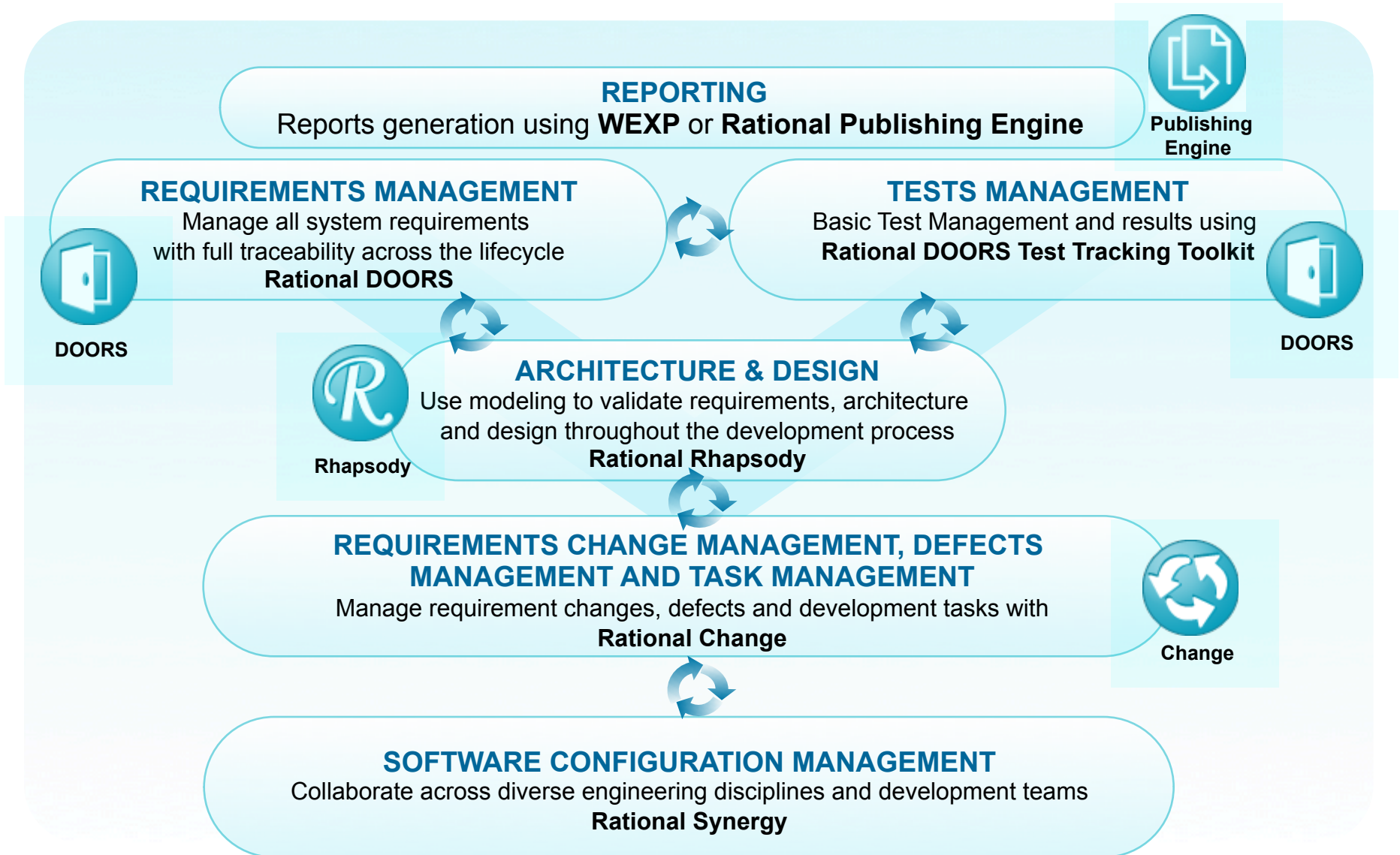DOORS: Next Steps
July 11, 2013
IBM Client Center (Madrid)

Agenda

- **Current** IBM Rational Solution for Systems and Software Engineering

- **New** IBM Rational Solution for Systems and Software Engineering

- **Next** IBM Rational Solution for Systems and Software Engineering

Current IBM Rational Solution for Systems and Software Engineering

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Current IBM Rational Solution for Systems and Software Engineering

REPORTING
Reports generation using **WEXP** or **Rational Publishing Engine**

Publishing Engine

REQUIREMENTS MANAGEMENT
Manage all system requirements
with full traceability across the lifecycle
Rational DOORS

TESTS MANAGEMENT
Basic Test Management and results using
Rational DOORS Test Tracking Toolkit

DOORS

DOORS

ARCHITECTURE & DESIGN
Use modeling to validate requirements, architecture
and design throughout the development process
Rational Rhapsody

Rhapsody

**REQUIREMENTS CHANGE MANAGEMENT, DEFECTS
MANAGEMENT AND TASK MANAGEMENT**
Manage requirement changes, defects and development tasks with
Rational Change

Change

SOFTWARE CONFIGURATION MANAGEMENT
Collaborate across diverse engineering disciplines and development teams
Rational Synergy

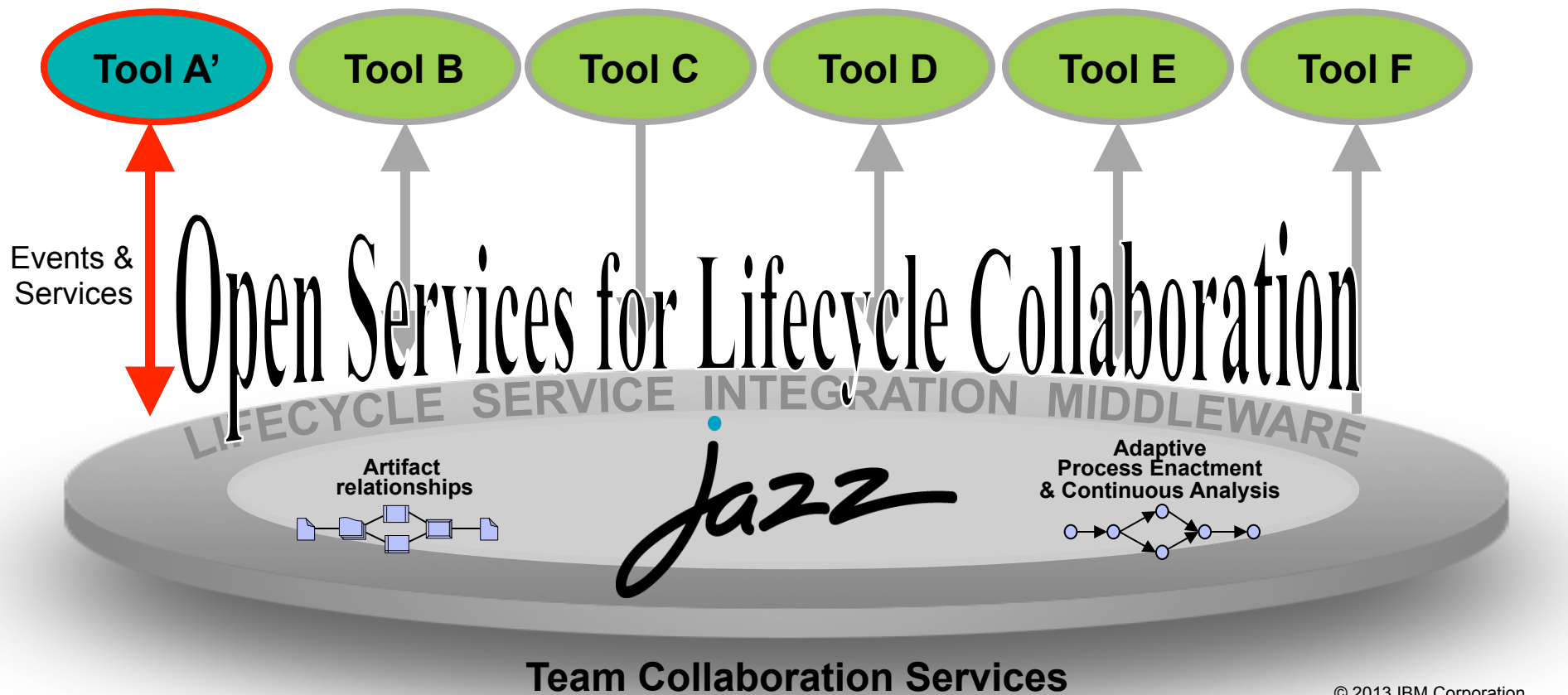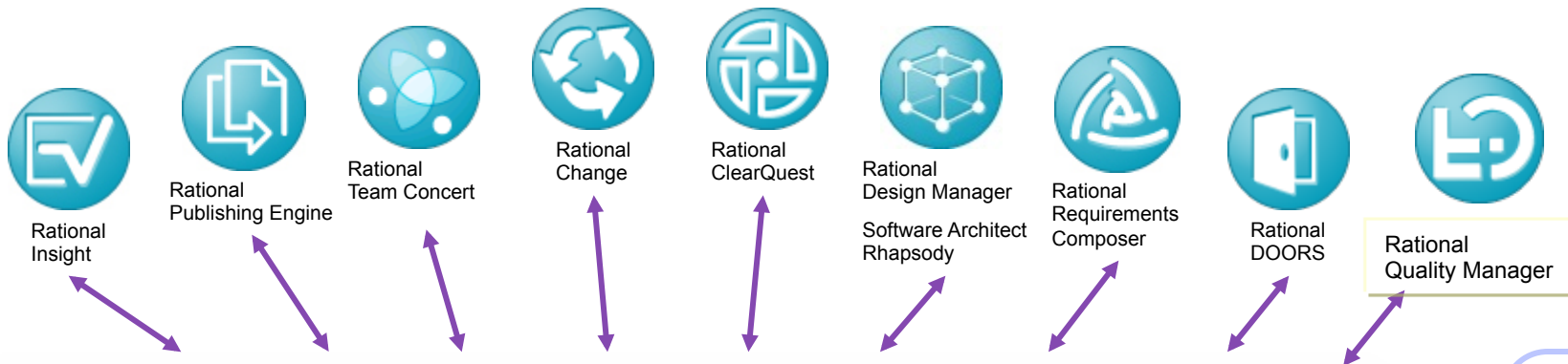# Current IBM Rational Solution for Systems

Issues in current solution

- Different UI – Web, desktop

- Different storage – commercial & proprietary databases, file system…

- Different users management and security policies

- Integrations point-to-point:
  - Specific product versions
  - Installation of integration components required
  - Synchronization usually required.
  - Data duplicity
  - Hard to administer and maintain
  - Different APIs

- No easy access to all engineering information from a single point

- Difficult collaboration for distributed teams

New IBM Rational Solution for Systems and Software Engineering

New IBM Rational Solution for Systems and Software Engineering based on the *Jazz Technology Platform*

- Tools collaborating using middleware services
- With the Jazz platform, the tools communicate only with the platform:
  - By listening to normalized/standardized events from the platform
  - By sending normalized/standardized events to the platform

Team Collaboration Services

New IBM Rational Solution for Systems and Software Engineering

Rational Insight

Rational Publishing Engine

Rational Team Concert

Rational Change

Rational ClearQuest

Rational Design Manager

Software Architect Rhapsody

Rational Requirements Composer

Rational DOORS

Rational Quality Manager

Open Services for Lifecycle Collaboration

http://open-services.net/

Rational DOORS

Rational Insight

Rational Publishing Engine

Rational Rhapsody

Rational System Architect

Rational Focal Point

3rd Party tools

hp

HP Quality Center

Microsoft

Team Foundation Server

JIRA
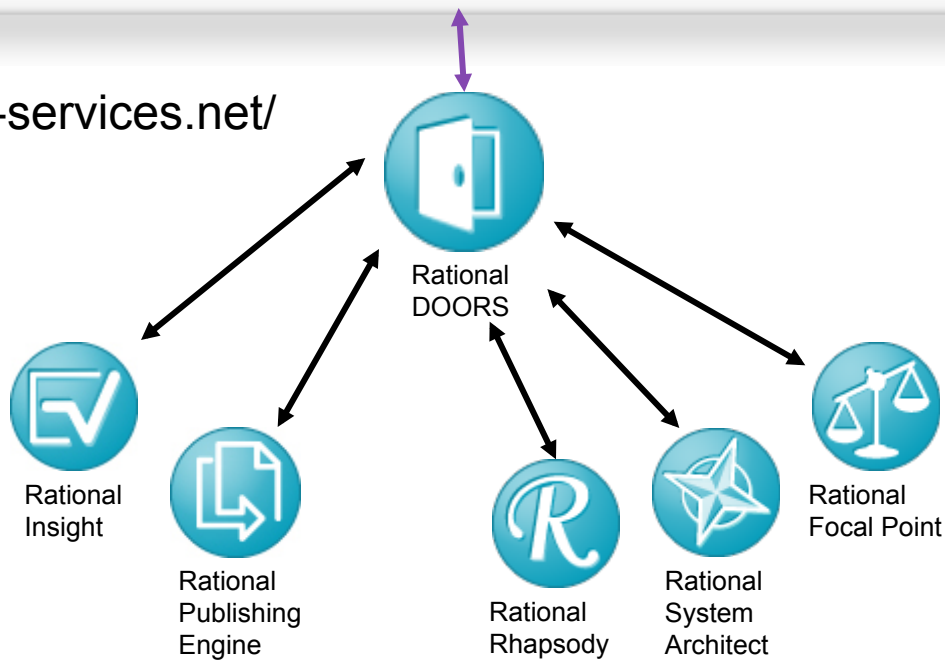
New IBM Rational Solution for Systems and Software Engineering

Benefits of the new SSE solution based on Jazz and OSLC

- **No** point-to-point **integration** needed, just connect your tool to the platform

- Common **user interface**, access to everything from the web

- Common **storage** for all engineering artifacts and their relationships

- Common **users management** and security policy

- **Collaboration** tools for distributed and not distributed teams.

- **Dashboards** to control project progress and obtain metrics in real time

Open Services for Lifecycle Collaboration

IBM

New IBM Rational Solution for Systems and Software Engineering

REPORTING
Reports generation using **Rational Publishing Engine**

Publishing Engine

REQUIREMENTS MANAGEMENT
Manage all system requirements
with full traceability across the lifecycle
Rational DOORS

DOORS

QUALITY MANAGEMENT
Achieve "quality by design" with an
integrated, automated testing process
Rational Quality Manager

Quality Manager

ARCHITECTURE & DESIGN
Use modeling to validate requirements, architecture
and design throughout the development process
Rational Rhapsody

Rhapsody

Rhapsody Design Manager

COLLABORATION, PLANNING & CHANGE MANAGEMENT
Collaborate across diverse engineering disciplines and development teams
Rational Team Concert

Team Concert

jazz

Open Services for Lifecycle Collaboration

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New IBM Rational Solution for Systems and Software Engineering

Rational Quality Manager 4.0.3 – Quality Mngmt integrated with automated testing

IBM Rational Quality Manager

Quality Dashboard

Requirements Management

Test Management and Execution

Create Plan

Define Tests

Manage Test Lab

Report Results

Defect Management

JAZZ TEAM SERVER

Functional Testing

Performance Testing

Web Service Quality

Code Quality

Security and Compliance

Open Platform

Tivoli software

Microsoft

hp

COMPUWARE

homegrown

Integration between RQM and DOORS (DWA)

- Live links between test artifacts to requirement instead of a synchronization mechanism
  - Test plans to DOORS views
  - Test cases to DOORS requirements
- Links can be created using the reconcile wizard or one-by-one from DOORS or from RQM
- Direct visibility on DOORS requirements from RQM via rich hover
- Use OSLC RM specification v2

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Requirement driven-testing

- Rich text test requirements can be defined in the RM application

- Test artifacts can be linked to requirements in IBM Rational DOORS

- Explore traceability from RQM

Requirement reconciliation wizard

- Show requirements not covered by test cases in the current test plan

- Can create automatically new test case for those requirements

- Can add existing test cases linked to those requirements to the current test plan

- Show modified and removed requirements

- Can update the links and mark test cases as suspect
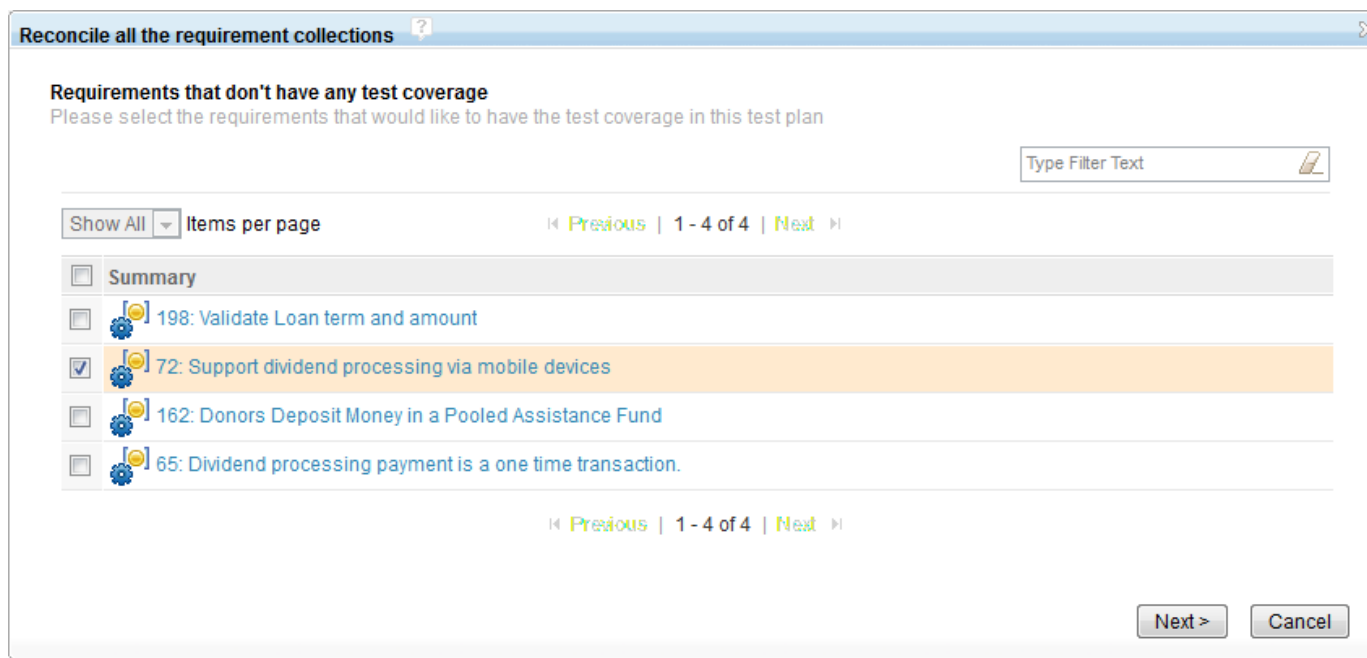
Requirements to test steps traceability

- Each test step of a manual test script can be linked to one or several requirements

- Can be restricted to requirements already associated with the related test cases

- Links are shown during test execution and in test case result details

IBM

New IBM Rational Solution for Systems and Software Engineering

Rational Team Concert 4.0.3 – Collaboration, Planning, Change & Configuration Mng

- **Integrated capabilities**
  - ▸ Planning
  - ▸ Work items management
  - ▸ Source Control
  - ▸ Build management
  - ▸ Process guidance and instant messaging
- **Out-of-the-box agile and traditional processes** (Scrum, OpenUp and Formal Project Management). Fully customizable processes.
- **Automate governance**
  - ▸ Asses project status and trends in real-time with auto-refreshed graphical dashboards
- **Scale with your enterprise**
  - ▸ Supports teams ranging from a few to thousands of members
- **Unify teams working with different technologies**
  - ▸ Supports J2EE, .NET, Power Systems, System z, ClearCase, ClearQuest, Subversion, Synergy, Change

IBM Rational Team Concert

transparent *integrated presence*
wikis OPEN real-time reporting
chat documents Web 2.0 *custom*
dashboards automated data gathering
EXTENSIBILITY *Eclipse plug-ins* services
architecture ***FREEDOM TO CREATE***

JAZZ TEAM SERVER

Rational DOORS and Rational Team Concert OSLC integration

Link RTC work item (CR, IR, Defect, …) to DOORS Requirement

Rational DOORS and Rational Team Concert OSLC integration

Navigate and explore traceability links

New IBM Rational Solution for Systems and Software Engineering

Rational Rhapsody 8.0.3 and Design Manager 4.0.3 – Architecture and Design

- **IBM Rational Rhapsody** is a visual development environment for systems engineers and software developers to create real-time or embedded systems and software.

- **IBM Rational Rhapsody Design Manager**, is a Rhapsody extension that:

  – Allow teams to review, search, and browse designs, published from Rhapsody

  – Allow link design artifacts with other lifecycle artifacts to integrate software and systems design into the lifecycle. OSLC Linking to DOORS requirements, RTC workitems, etc.
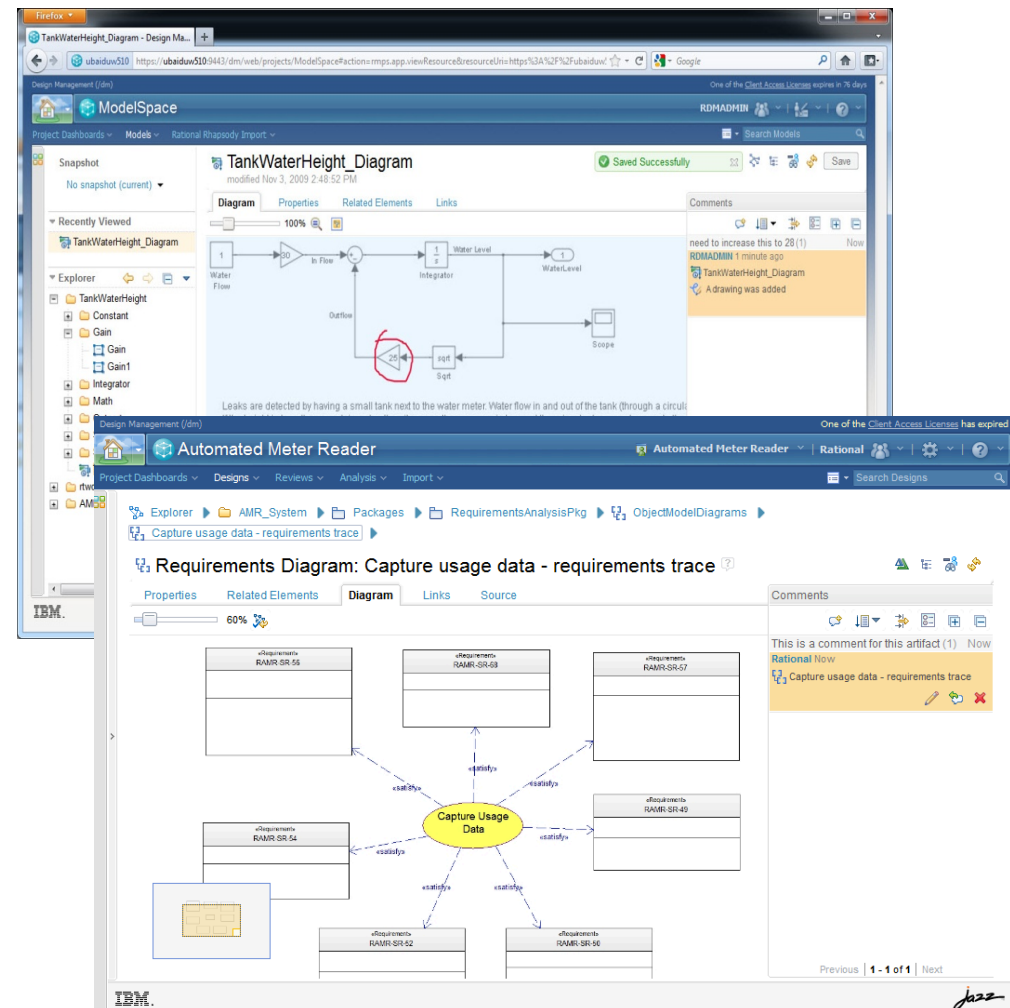
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New IBM Rational Solution for Systems and Software Engineering

***IBM Rational DOORS 9.5.1** – Reqs Management – What's New?*

- Released in June 2013

- RPE Export improvements

  – Objective to replace RPE client install for DOORS (Started in DOORS 9.4, continues with DOORS 9.5.1)

  – Support for parameterized RPE templates

  – Create multiple outputs of different formats in a single operation

  – Advanced configuration and styling options

  – Still work to do in a future release

    • Additional template parameters – e.g. Word macro execution

    • Document Specifications from the database explorer to produce compound documents

- Richer Integrations

  – OSLC improvements: Database-Wide OSLC Link Query for 3rd party integrations, DM integration

  – Support for HP ALM 11.5

  – Support for TFS 2012
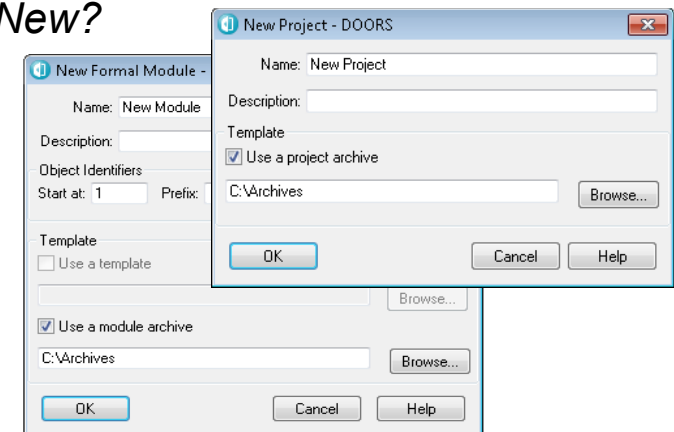
- Reporting over system engineering metrics
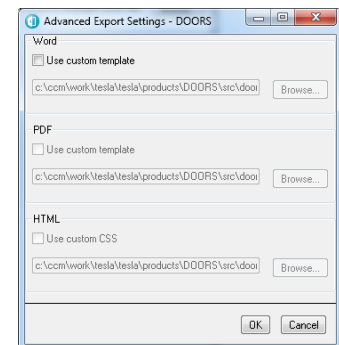
New IBM Rational Solution for Systems and Software Engineering

IBM Rational DOORS 9.5.1 – Reqs Management – What's New?

- **Project/Module** creation based on archives
  - Ability to use DPA or DMA files during Project / Module creation.
  - Database Managers can configure a default location

- New **Project templates** supplied from SSE

  1. Systems Engineering Template
     - A simple, pre-configured information schema for using DOORS to support systems engineering
  2. Aerospace & Defense
     - Developing requirements against the DO-178B safety standard
  3. Automotive
     - Supporting the ISO26262 functional safety standard
  4. Medical Devices
     - FDA Design Control practices defined in 21 CFR Part 820

IBM

New IBM Rational Solution for Systems and Software Engineering

IBM Rational DOORS 9.5.1 – *Reqs Management – What's New?*

- Usability improvements

  - Reporting history across baselines.Object properties
    to have a "more" button to navigate into baselines

  - Add/remove modules in a baseline set using a single dialog

  - Improved support for DOORS table formatting

- Memory management

  - DOORS is now Large Address Aware (LAA). Build setting allows 32 bit apps to handle addresses > 2gb.

	32 bit OS	64 bit OS
Standard 32 bit application	2gb	2gb
LAA 32 bit application	3gb	4gb
64 bit application	Will not run	Limited by physical RAM

- Making progress for 2014

  - 64 bit native client

  - Investigating SSO & coordinated baselines across lifecycle products

Key Systems Announcements
Solution updates

- Automotive (Rational Solution for Automotive Engineering)
  - Updated support for ISO26262, with enhanced practices and new templates for DOORS and RTC
  - New DOORS and Rhapsody kits with TUV certificate to support ISO-26262 compliance

- Aerospace and Defense (Rational Solution for Aerospace and Defense)
  - New practice mapping to DO-178C and related supplements
  - New DO-178 Templates for DOORS and RTC
  - New Rhapsody kit to support DO-178 compliance
  - New practice guidance to support Defense Architecture Frameworks (DoDAF)

- Medical Devices (Rational Solution for Medical Devices)
  - Cross product visualization and compliance reporting

- Semiconductors and microelectronics (Rational Solution for Electronic Design)
  - Hardware and software co-development

Next IBM Rational Solution for Systems

IBM Rational Engineering Lifecycle Manager (RELM)

IBM

IBM Rational Engineering Lifecycle Manager v4.0.3

Search, reporting, analysis and logical organization of engineering artifacts

- IBM Rational Engineering Lifecycle Manager is an intelligent environment for **showing relationships** among Rational Team Concert, Rational DOORS, Rational Rhapsody Design Manager, and Rational Quality Manager.

- These tools **contribute artifacts** (work items, requirements, design models, and quality test cases) to a common index.

- Rational Engineering Lifecycle Manager provides a **portal into that index**, so that users can **view and navigate** easily through the different types of data.

- Extended to additional IBM and third-party data sources:

  – Beta HP Quality Center – test management artifacts

  – New National Instruments – hardware & software test execution results

  – New Mathworks Simulink – dynamic systems models

  – New Client-specific integrations to PLM and ERP tools

Visualize	Analyze	Organize
Cross discipline views and navigation	*Query, reporting, and impact analysis*	*Logical organization of product artifacts*

Index of Linked Lifecycle Data

HTTP/REST

Open Lifecycle and Service Management Integration Platform

jazz
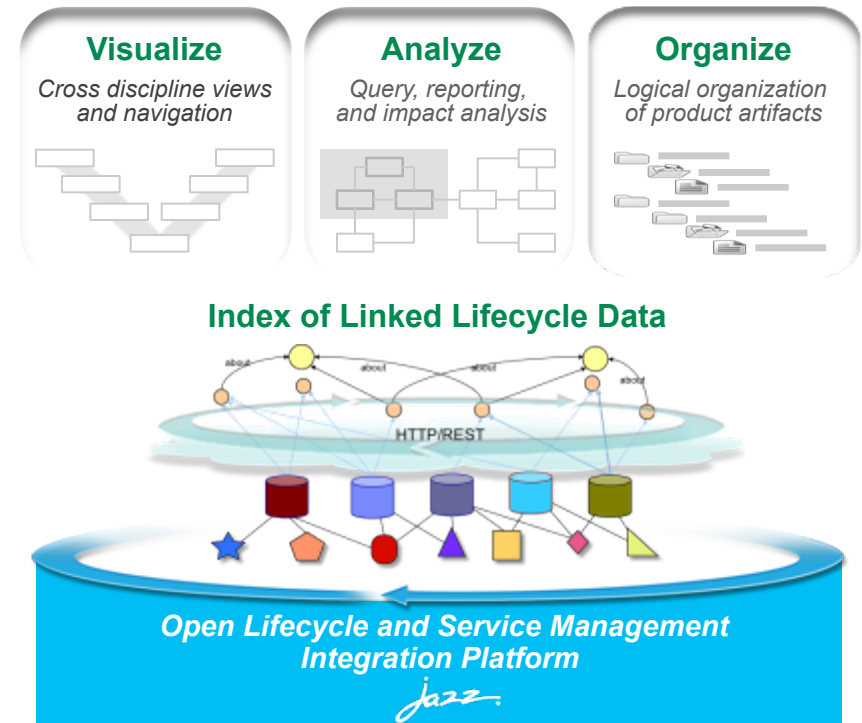
"RELM demonstrates the power of linked data and provides an enterprise a new way to integrate tools and project tasks in one interface."

Systems Engineer

RELM Screenshots

IBM Rational DOORS Next Generation

Common Questions

- Is DOORS Next a replacement for DOORS 9.x?
  - No, DOORS Next Generation is a separate stream based on Jazz

- Is DOORS Next really DOORS 10?
  - No, DOORS Next Generation is a separate stream based on Jazz

- What's the migration path?
  - There is NO migration in this first version, DOORS Next can be used with interoperation with DOORS 9.x

- Can DOORS Next Generation be used without DOORS 9.x?
  - Yes of course, it is a stand alone product

- How does my customer get DOORS Next Generation? >>
  - You can download from Jazz.net
  - You can purchase DOORS
    - In which case you will receive both DOORS and DOORS Next Generation

- What additional features does DOORS Next Generation give over RRC?
  - DOORS Next Generation provides a rich client which is not available to RRC customers

Common Questions (2)

- If my client has DOORS 9.x do they need to pay for DOORS Next?

  – No, DOORS Next Generation available at no additional license cost for existing customers with active subscription and support

- Which types of license keys can I use with DOORS Next Generation?

  – Jazz based license – YES

  – Tokens - YES, same value as current DOORS 9

  – FlexLM – YES, but only for Tokens

- How do I decide which tool is best for my client?

  – A white paper has been written to help clients decide

Common Questions (3)

- Is DOORS at its end of life?

  – No, DOORS has a long and productive life ahead of it providing value for customers. It will be some years before DOORS Next is sufficiently capable to replace DOORS 9.x in large deployments. We haven't taken a decision when to stop producing new DOORS 9.x upgrades, and even after we do, it will be supported for another 5 years under IBM's standard support policies. We expect DOORS Next will propel the DOORS business far into the future. In any case, we predict there will be customers using DOORS 9.x through much of this decade – and maybe longer

- Will DOORS Next be a Jazz product?

  – Yes it will share a server with RRC. In Jazz terminology, they will share the same RM application running in the Jazz Team Server. But keep in mind that a Jazz product need not be built to use the Jazz Team Server; products like DOORS 9.x that employ the Jazz integration services are also Jazz products.

- How do I migrate my DOORS database to DOORS Next?

  – The initial focus for DOORS Next will be on interoperation with DOORS 9.x rather than migration. We expect you will be able to move data to DOORS Next, but you shouldn't expect DOORS Next to work exactly like DOORS 9.x or implement exactly the same data model.

Common Questions (4)

- **My customer loves DXL. What do I tell them?**

  - People do amazing things with DXL; it's one of DOORS special capabilities. In DOORS Next we intend to support DXL in the rich client, though in the initial release it will be used under the covers only (not exposed for customer use); in the first release we intend to focus on delivering fundamental and expanded DOORS capabilities that do not require scripting.

- **Will DOORS Next support tokens?**

  - Yes. Tokens are strategic for Rational. RRC supports them today, and we expect DOORS Next will support tokens in its first release.

IBM

Adopt DOORS Next Generation at your own speed
Both products can be used in parallel to ensure pragmatic low-risk stepwise migration

- Continue to work with DOORS and DWA

  - Gain the benefits of DOORS 9.x and future 9.x releases

- Participate in beta programs

  - Follow DOORS Next Generation on jazz.net

  - Participate in the beta, managed or unmanaged

  - Download milestone releases

  - Participate in development discussions

  - Submit defects/enhancements

- Use DOORS Next Generation with DOORS 9.x

  - "Recognizably DOORS" to aid adoption

  - Use DOORS Next Generation for new projects as it meets your needs

  - Data Import / Export between DOORS Next Generation and DOORS 9.x projects

  - Bi-directional linking between DOORS Next Generation and DOORS 9.x
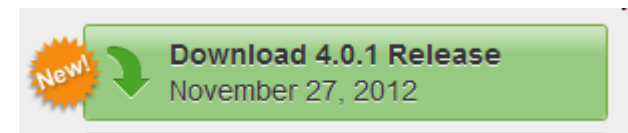
Why DOORS Next Generation?
the demands for RM systems are expanding

Managing complexity

Extended Traceability between project teams

Collaboration

Managing changes to requirements

Process maturity

Improving Usability

Managing requirements-related tasks

Dashboard & Project Metrics

Commercial Database, Security & User administration

Controlled Requirement Reuse

Web based working or local workstation
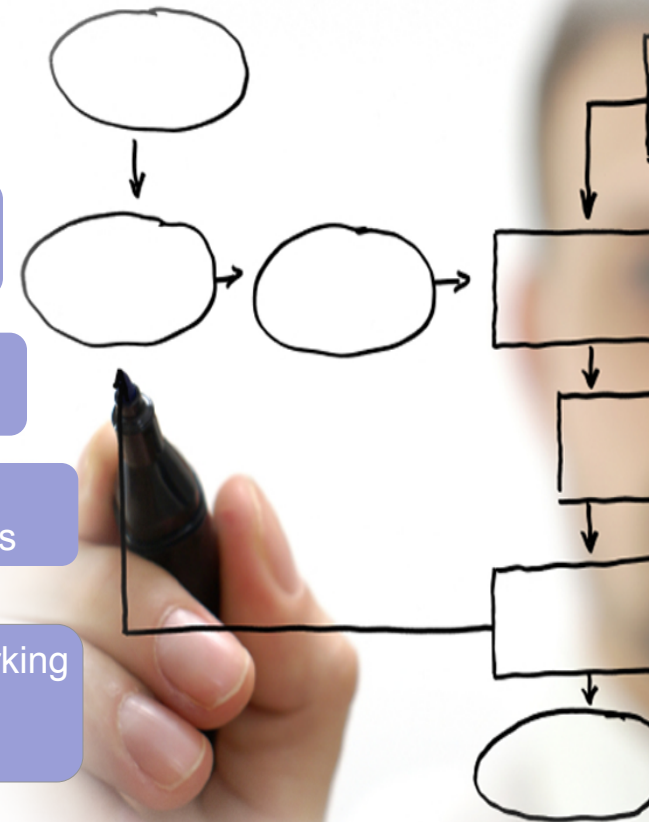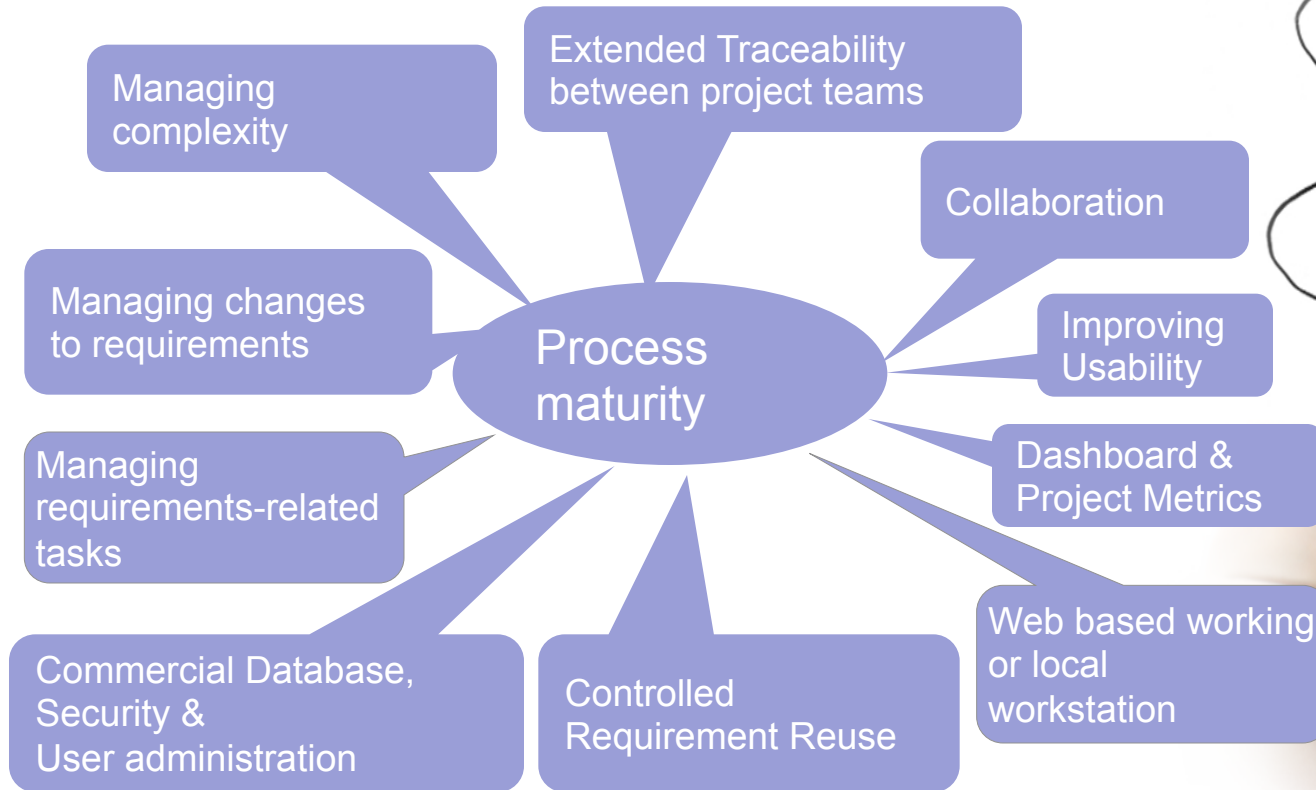
IBM Rational DOORS Next Generation
DOORS concepts improved and much more….

Definition
- Rich-text documents
- Diagrams: Process, Use Case
- Storyboards, UI sketching & flow
- Project glossaries
- Templates
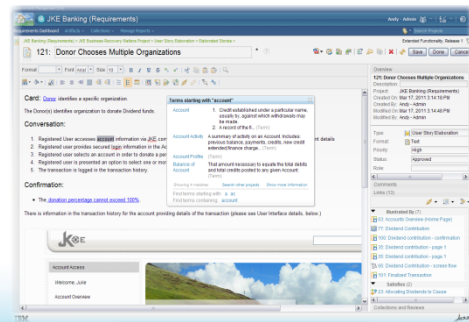
Visibility
- Customizable dashboards
- Analysis views
- Collections
- Milestone tracking & status

Collaboration
- Review & Approval
- Discussions
- Email Notification

Management
- Structure, Attributes/Types
- Traceability, Filtering, Tags
- Baselines, Change History
- Reuse (reqs & types)
- Reporting Metrics & Doc.

Lifecycle
- Central requirements, test, & development repository
- Common administration and role-based user licensing
- Warehouse reporting

Planning
- Integrated planning
- Effort estimation
- Task Management

Choosing the Right RM solution for your teams
Buy DOORS; deploy one or both flavors

DOORS 9 indicators	DOORS NG indicators
You are part of a development program using existing DOORS infrastructure, which is likely to stay in place as-is for a long time.	A single-server solution native to the Jazz Team Server making it easier to deploy a multi-product solution.
You need the more mature capabilities of DOORS 9, for example: • Electronic signatures • Baseline comparisons • Round trip data import/export • Requirements change management driven by a change management tool	Simplest on-ramp from MS Word and Excel • Built-in visual notations for collaborating around requirements • Built-in capabilities for task management and planning • A solution using a commercial off-the shelf (COTS) database
You need significant product customizations, integrations, or automation based on DXL	A web-based RM solution offering the most up-to-date web UI experience (with optional local rich client and interop with DOORS 9.5)

Teams need high rigor and high levels of automation

Teams seek lightweight RM … an alternative to DOORS 9

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Rational Insight

Rational Publishing Engine

Rational Team Concert

Rational Change

Rational ClearQuest

Rational Design Manager

Software Architect Rhapsody

Rational Requirements Composer

Rational DOORS

Rational Quality Manager

Open Services for Lifecycle Collaboration

3rd Party tools

hp

HP Quality Center

Microsoft

Team Foundation Server

JIRA

Rational DOORS **Interoperation** **Rational DOORS Next Generation**

Rational Insight

Rational Publishing Engine

Rational Rose

Rational Rhapsody

Rational System Architect

Rational Focal Point

Rational RequisitePro

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Two products from one technology base

- Requirements visibility and traceability across the lifecycle
- Open integration architecture built on the Jazz Team Server
- Integrations using Open Services for Lifecycle Collaboration (OSLC)

Rational Requirements Composer

DOORS Next Generation

RM Services

jazz
Team Server

COTS database

OSLC

Requirements Management Services — **Publish Consume**

Change Management Services — **Consume**

Quality Management Services — **Consume**

Architecture Management Services — **Consume**

Publishing Services — **Publish**

Additional Services — **Publish Consume**
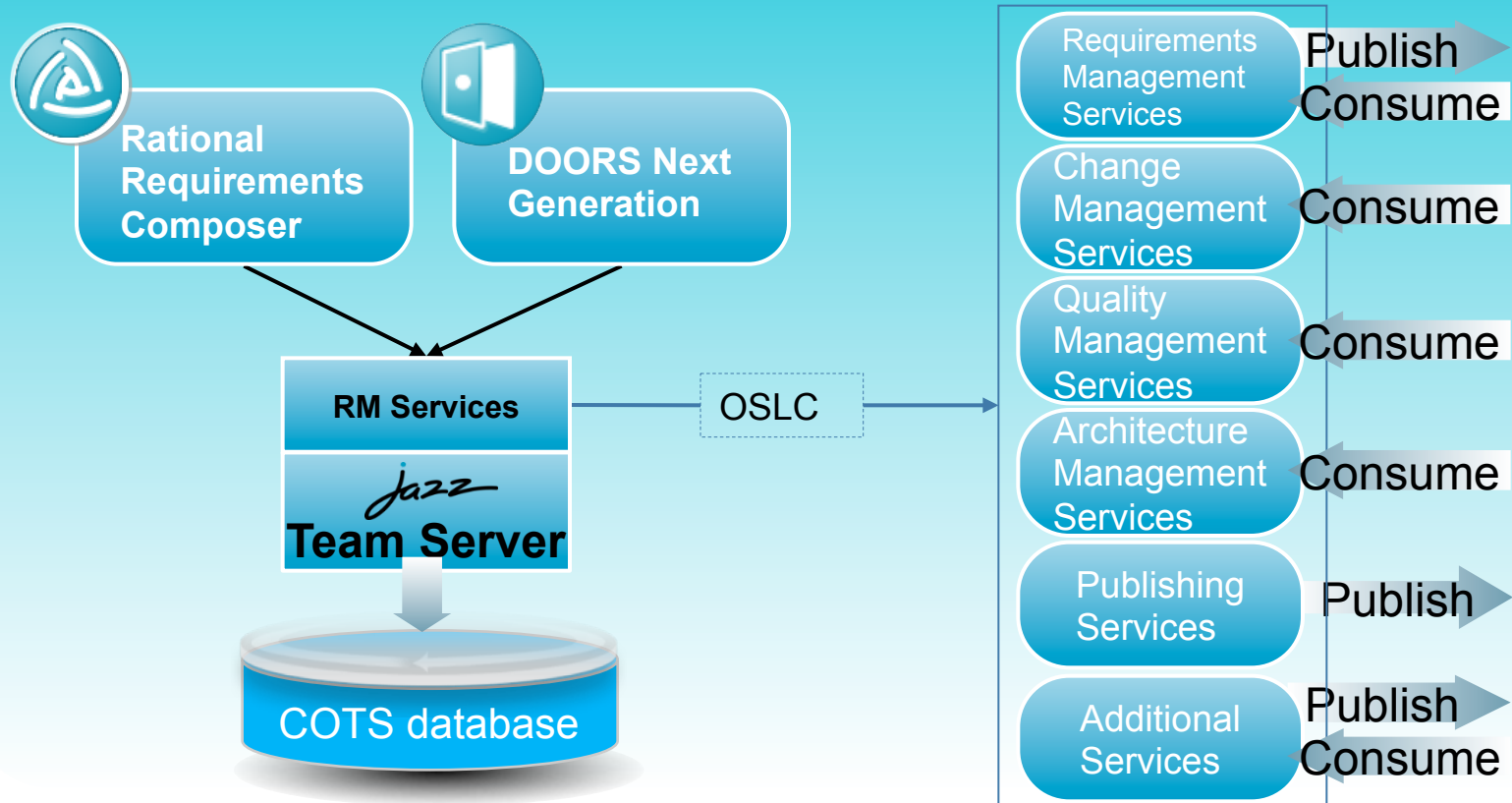
New Concept: Artifact

Artifact - general term within the repository of something that is part of a project.

Informal Uploads
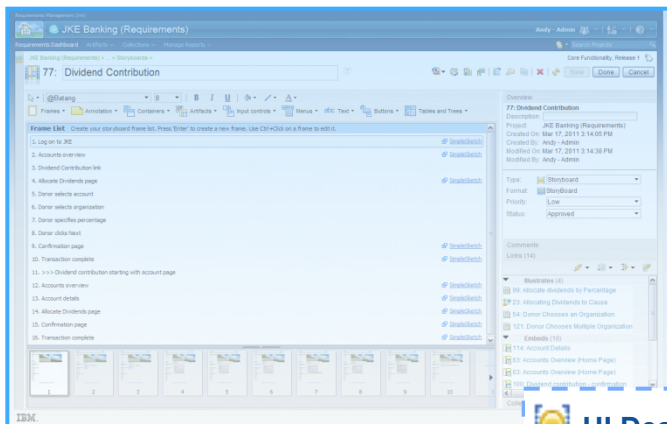
UI Design
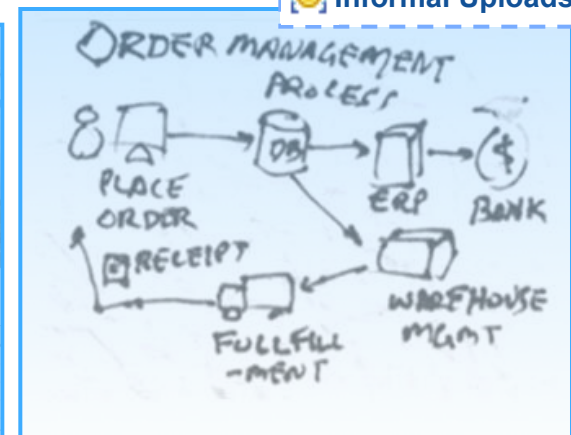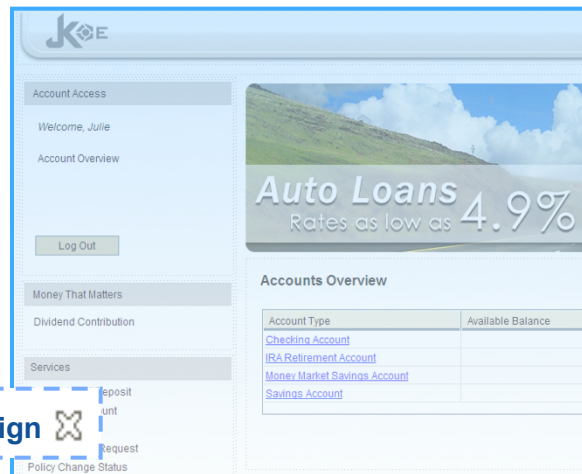
Screenflow
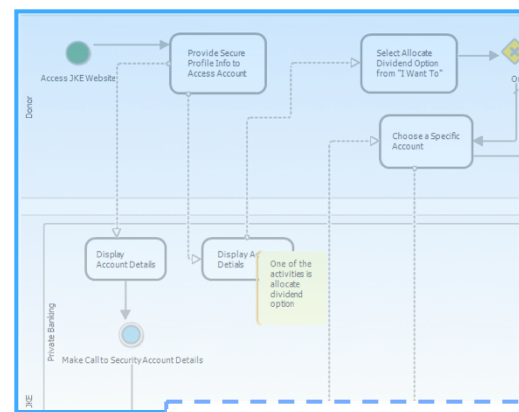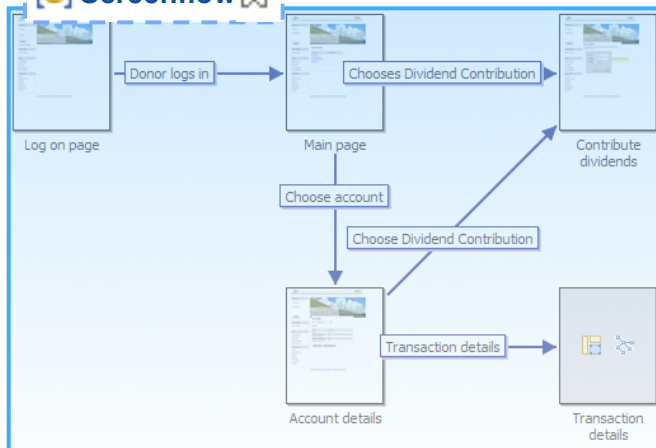
Process Diagrams

Use Cases
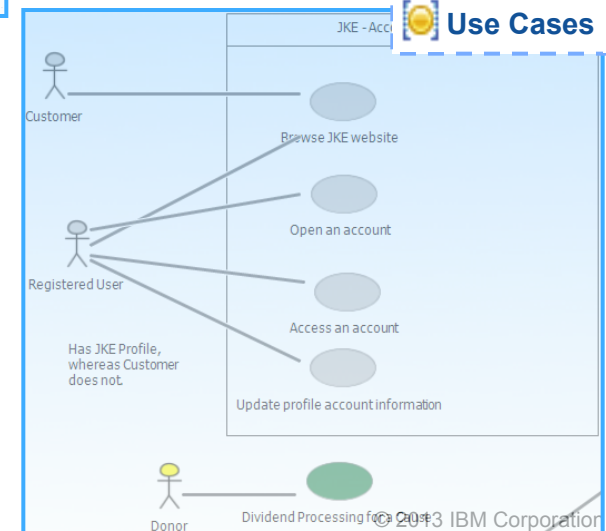
Fully functional web client
DOORS NG module view (web client)

Modern web look and feel minimizes adoption cost for new and casual users

Module

Properties

Filter Pane

Glossary Terms

Traceability

■ Multi-level graphical analysis
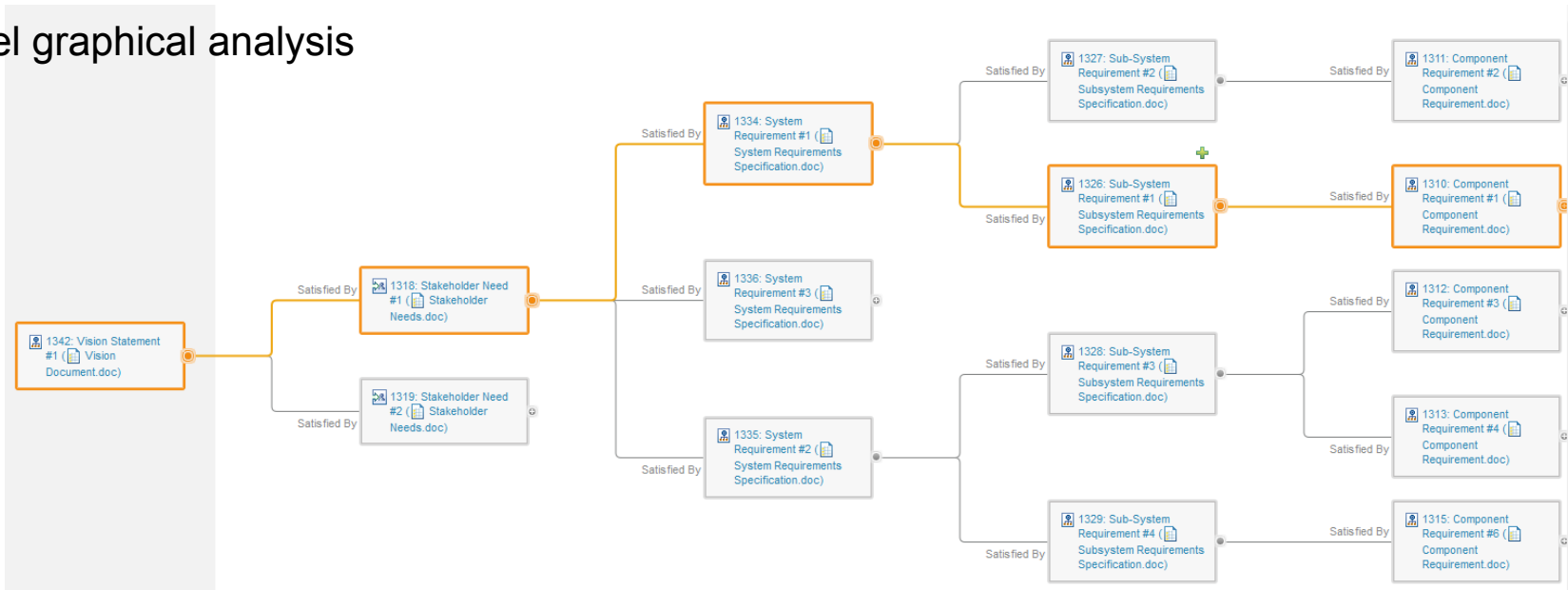
■ Traceability views similar to DOORS

Analysis (views & filters applied to requirements)
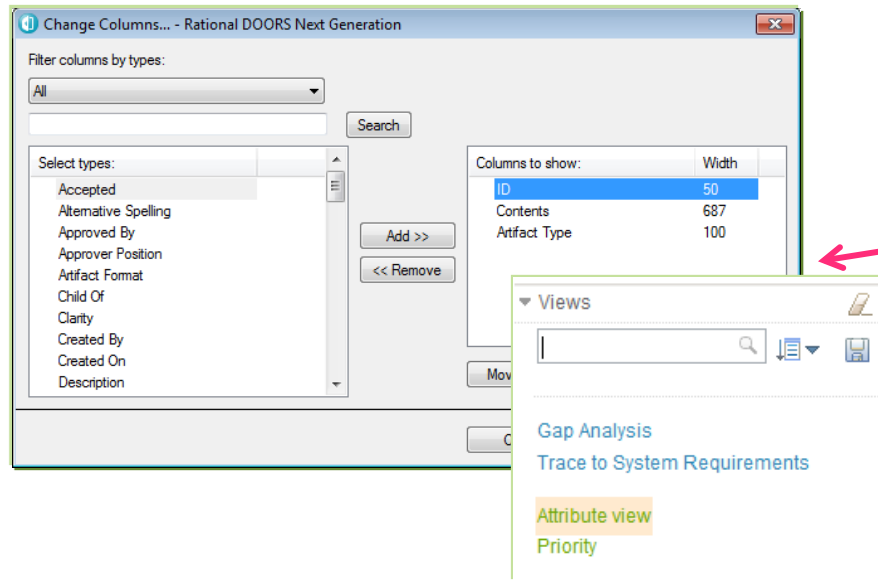
- **View definitions**
  - Display configurations saved as Views
    - Similar to DOORS
    - User specific or shared across project or even modules!
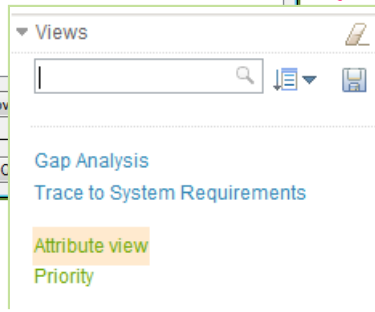
Filter definition
- Filter information in a module to make finding information easier
- Compound filters easy to define and change later
- Can be saved as part of the view definition
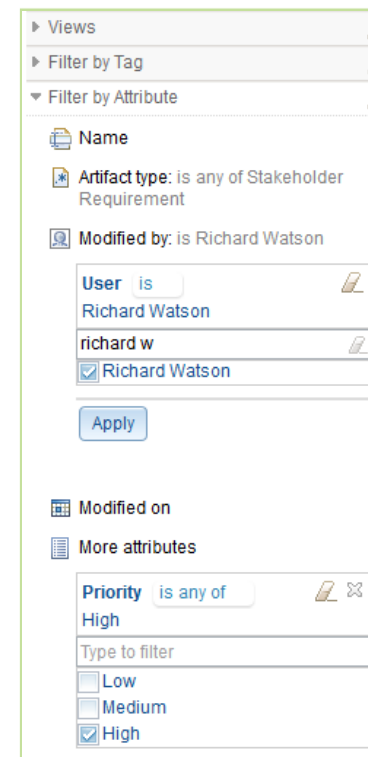
Requirements reuse

- Central store of requirements information

- Referenced by specifications

- Reuse on an individual basis
  - Or as part of a module template

Reusing the same requirements
in multiple places

Centrally defined type system

- **Harmonized process across your projects**

  - Single definition for information structure

  - Artifact types

  - Attribute types

  - Link types
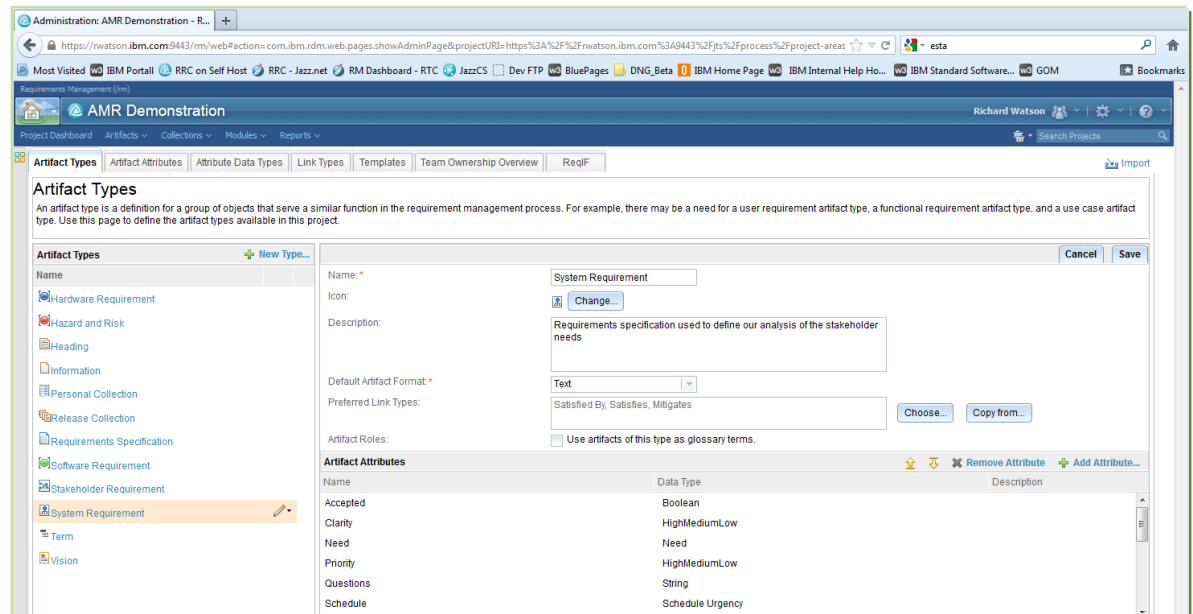
- **Coordinated deployment of**

  – Project templates

  – Module templates

  – Artifact template
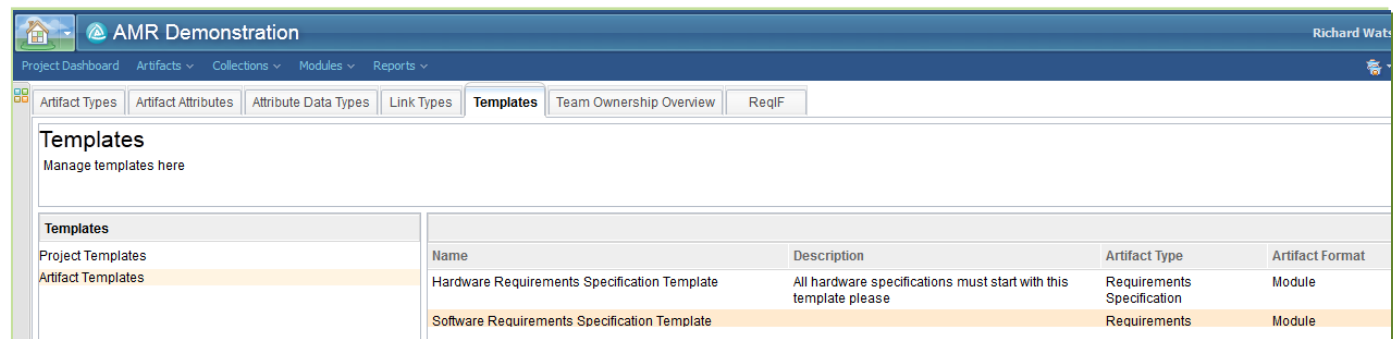
Collaboration

- Collaboration through information discussions or by formal review

- Email notification available for updates

- Dashboard widgets to show review participation

Notification to personal dashboard

Comments can be used inside or outside of a review

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Audit trail

- **Requirements updates are monitored and recorded in history**
  - See *who* did *what* and *when*

- **Record a milestone as a retrievable version**

Security, Roles and Permissions

▪ Controlling who can see and modify information can be critical

– Control access to data through "Team Areas"
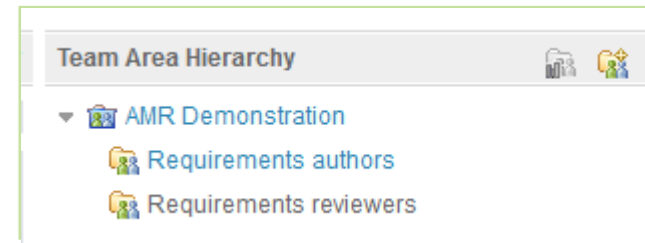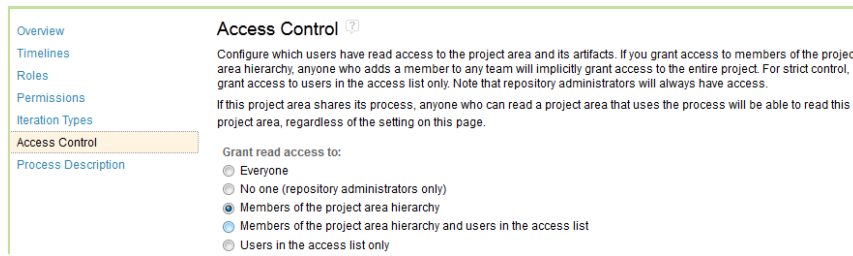

▪ Controlling which functions are visible can simplify product usage within teams

– Limit who can run functions by defining user roles

– Refine user roles to your specific project needs
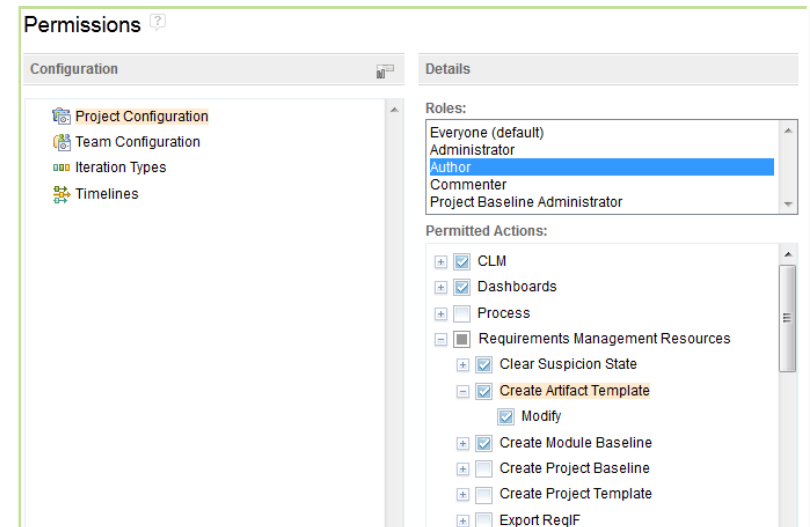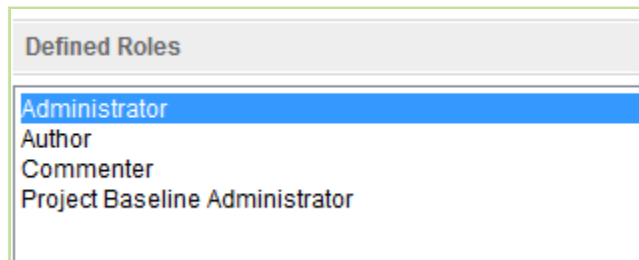
Centrally integrated repository

- Share Jazz based servers between multiple products

  - Simplify administration

  - Single point of configuration for users

  - Single place for backups and disaster recovery

- Support for COTS databases

  - Oracle, SQL Server, DB2 etc

- Integrated systems work closer together

  - Example scenarios for DOORS & RQM users

    - DOORS user:
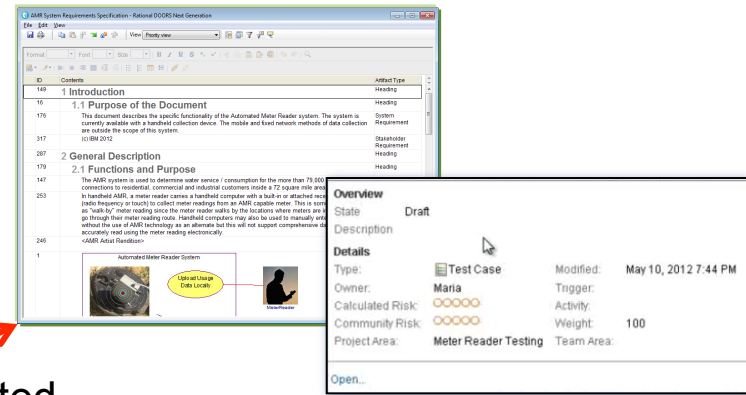
      Specifies requirements needing to be tested

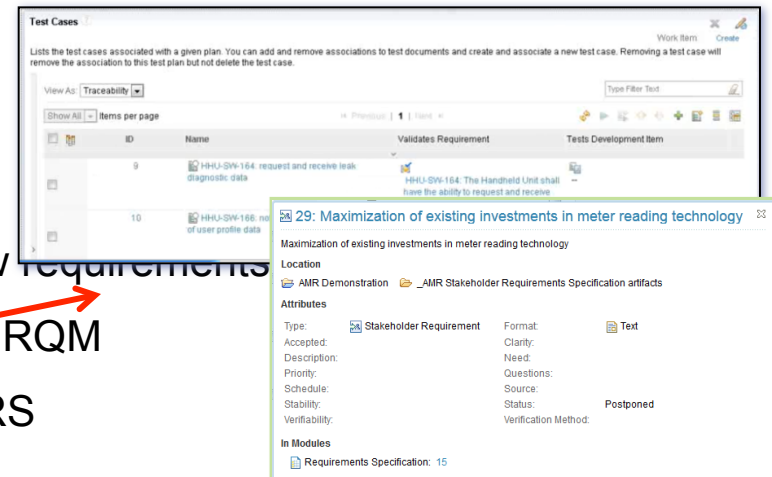   Monitors traceability to tests

      Follows test reviews down into RQM

    - RQM User:

      Automatically creates draft tests based on new requirements
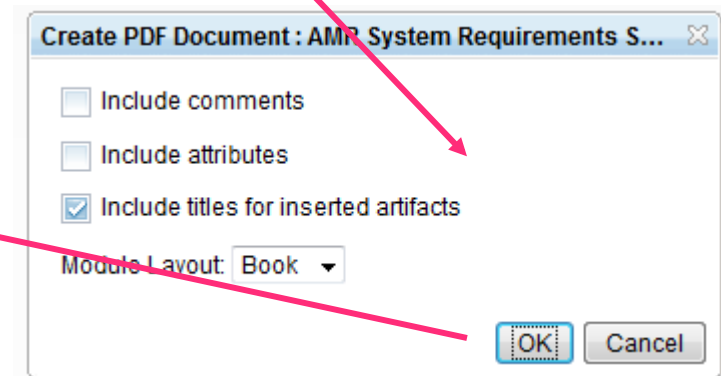
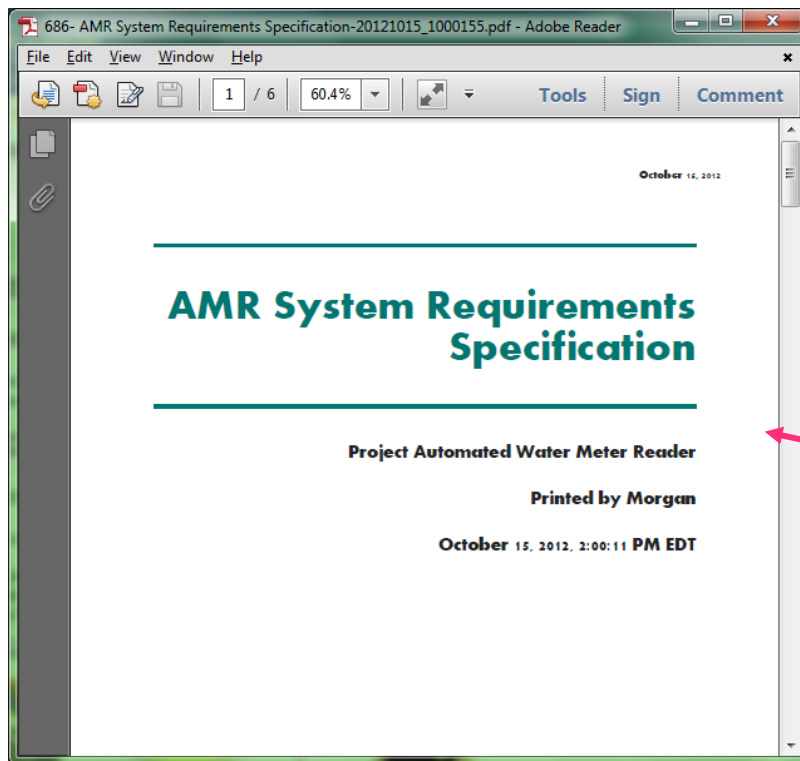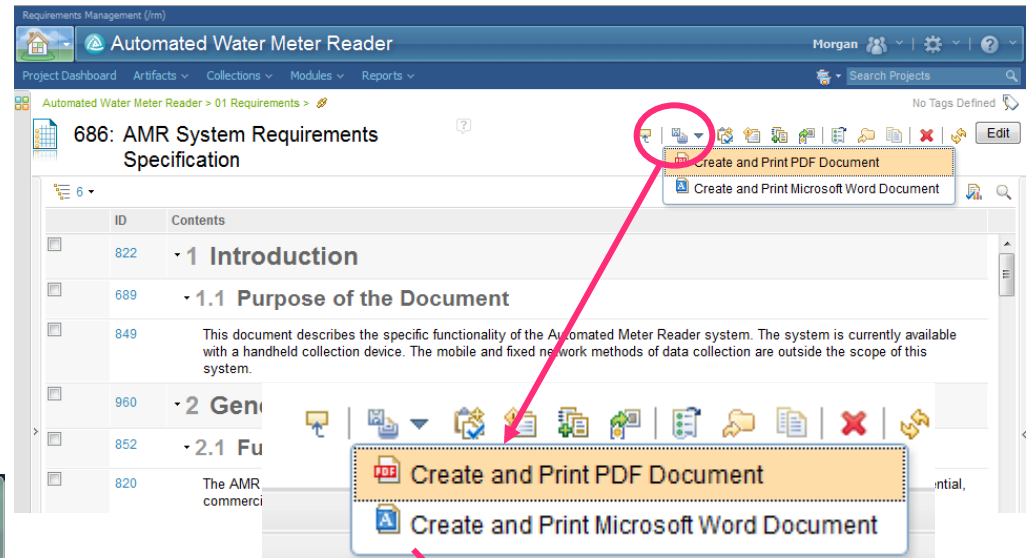   Reviews requirements information from within RQM
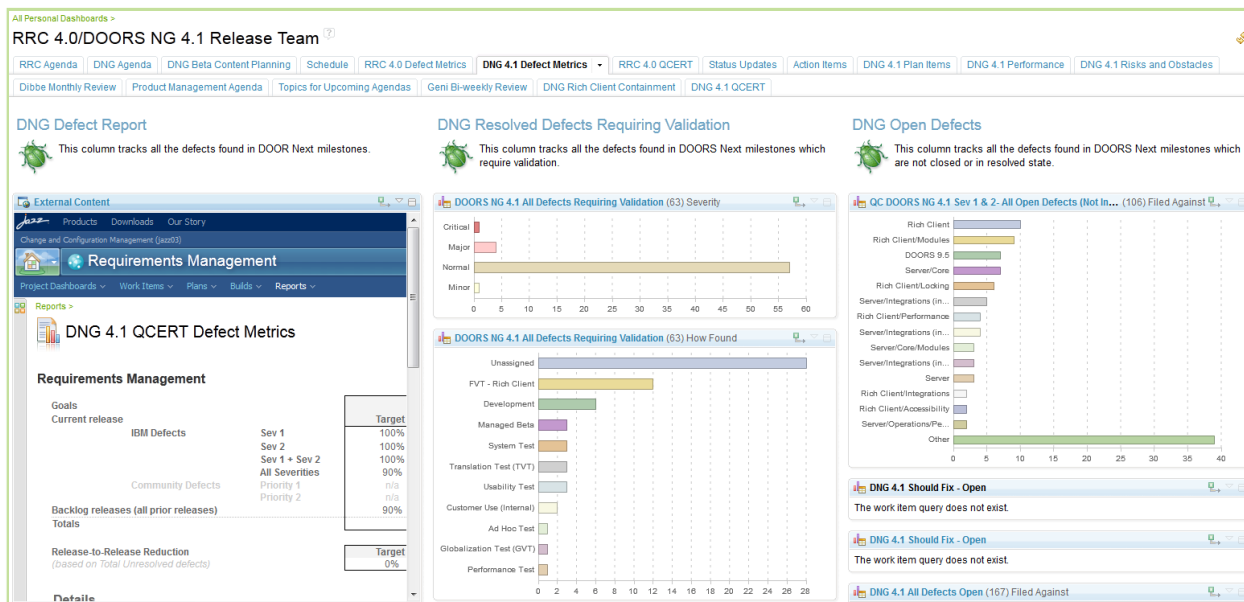
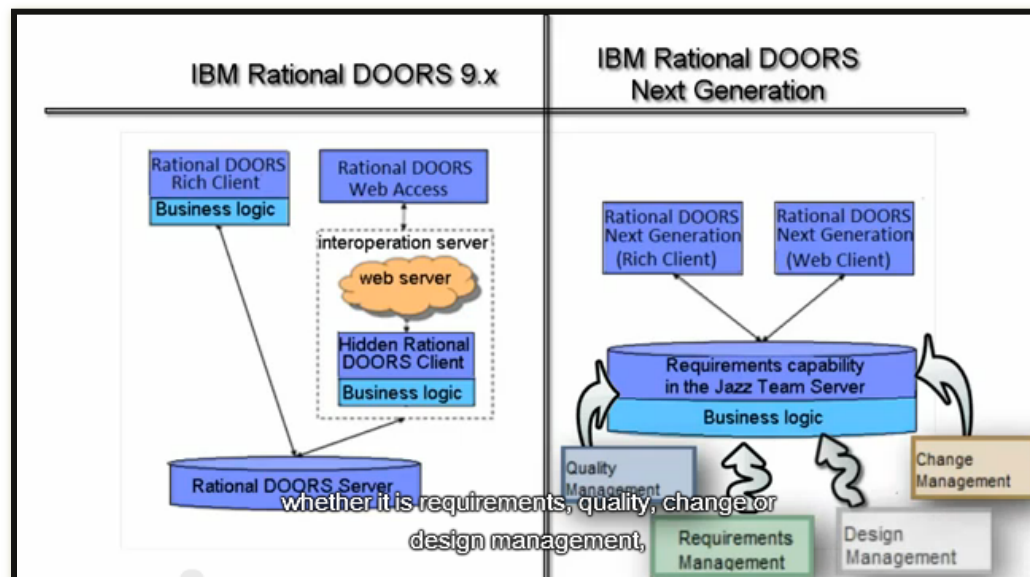   Follows requirements audit trail back to DOORS

Reporting

– Built in document generation is often crucial to communicate with customers

Integrated planning

- Support for flexible dashboards

- Show information across the lifecycle
  - RM, CM, QM etc

- Supplied as part of DOORS NG
  - No additional license required

# DOORS 9 and DOORS Next inter-operation scenarios under consideration

1. Offline data exchange

– Support import / export of ReqIF requirements data between DOORS 9.x and DOORS Next Generation.

– Support supply chain scenarios where downstream suppliers can use the DOORS Next Generation and exchange data with your DOORS 9.x projects.
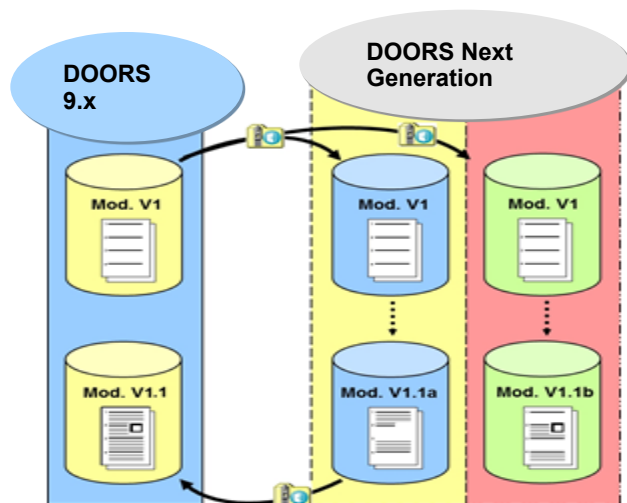
2. Cross application linking and query

– Support linked data across DOORS 9.x and DOORS Next Generation projects.

– Rich hover and traceability columns supported in DOORS 9.x and DOORS Next generation
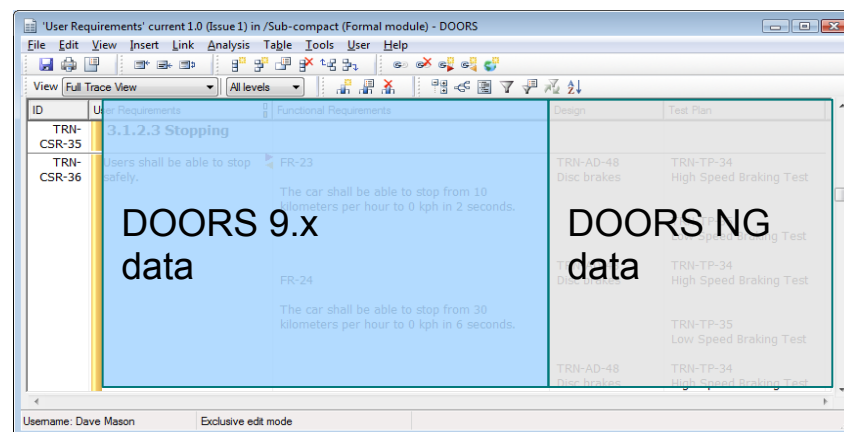
3. Cross application reporting and publishing

– Metrics reporting across DOORS 9.x and DOORS Next Generation via Rational Insight.

– Document generation across DOORS 9.x and DOORS Next. Generation via RPE

4. Dashboards

– View data from DOORS Next Generation and data in DOORS 9.x.

Positives

- - Reuse of artifacts, i.e. they are stored at project level and can be selected in collections and modules

- - It is very simple to define a new meta-model: types, attribute types, artifacts types, preferred links

- - Easy-to-use UI

- - Easy to install and deploy

- - RTF support in artifacts including tables, images, links, etc.

- - Import of Word, ReqIF and Excel (CSV)

- - Multiple editing: you select several artifacts and you edit an attribute or add them to a collection in one operation.

- - Webclient: fresh and innovative "look & feel" [JAZZ]

- - Dashboard with nice widgets (changes, reviews, pictures of the team)

- - Clicking direct to Module view (most of customers are using still a document based approach)

- - The project should contain only few modules and only few artifacts (not more than 100 inside a module)

- - Quick-Report

- - Linking from the Module view

- - Linking explorer and link columns

- - Reusing of a requirement (showing the update of the reused artifact in both modules)

New Videos for DOORS Next

Developer Works Link

YouTube Link

- **Rational Publishing Engine:**

  Value Proposition

Rational Publishing Engine

Data Sources → Generation → Output

Native API's
- DOORS Client
- TAU Client

← **Native API** →

Remote RPE Web Service

RPE Engine

→ MS Word

- XML Files

← **Direct** →

→ PDF

Reportable REST Services
-- REST Enabled Tools --
- AppScan | Change | RTC
- Focal Point | RAM | RQM
- System Architect | RRC
- Rhapsody | Etc ...

← **REST** →

→ HTML

RPE REST Data Services
- CQ Client
- CC Client
- ReqPro Client
- TestManager Client

← **REST** →

→ XSL-FO

etc....

↕ **HTTP/ HTTPS**

Local RPE Launcher Client
- DOORS Client

LEGEND
| Apache Tomcat or WAS |
| Deploy on same machine |
| Windows OS Only |

**DOORS Client needed on RPE Client to support "Configure DOORS Data Source" wizard
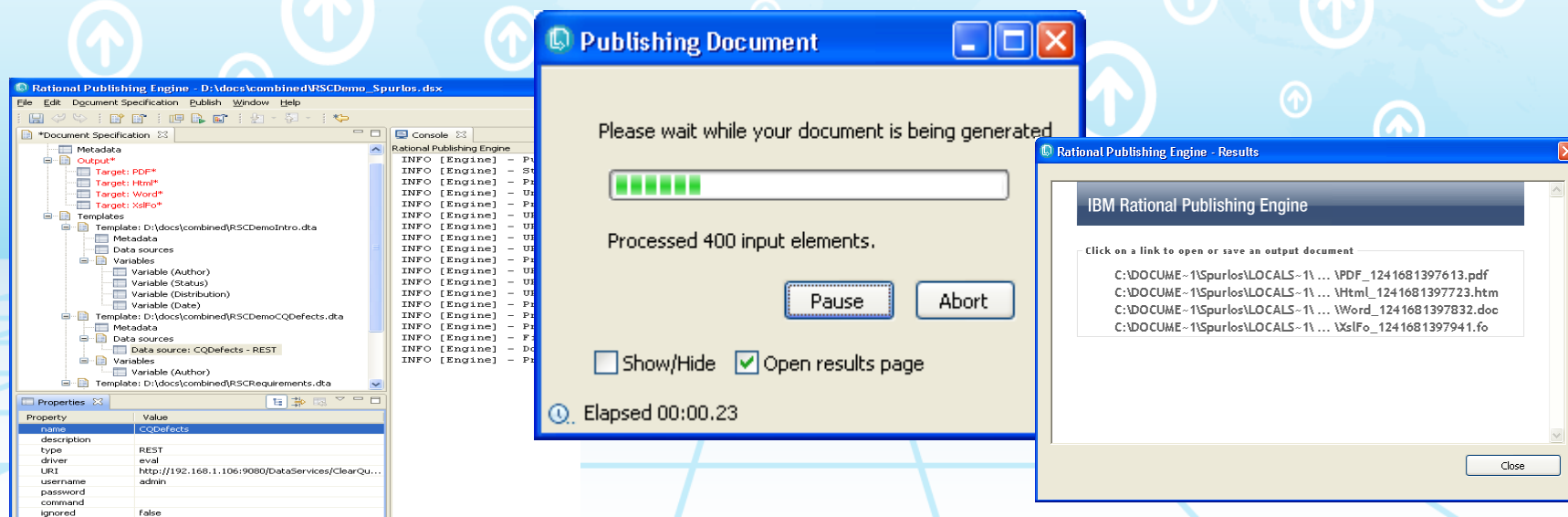
Rational Publishing Engine: document creation made simple
Simple generation of complex documents

Usability

- Launcher interface to quickly and easily control document generatio

- Also available as a wizard embedded into some data sources

- The user generating the document requires no domain knowledge

- Use out-of-the-box templates for quick ROI

Rational Publishing Engine: high quality, compliant documents

Flexible output

- Support for a huge range of document features

  - Richly formatted text

  - Images

  - Tables

  - OLEs

  - Tables of Contents

  - Figures & Captions

  - Headers & Footers

  - Page size & Orientation

  - Hyperlinks – Internal or external

  - Full multi-cultural support

  - Conditional formatting

  - Etc…

PR9

GUID	{C136435B-28AA-4D3B-A0F4-2B1343D15D6A}
HREF	link
Loc.	

Unique ID	7
Bookmark	REQJUIPGS
Doc pos	4194

Location table 9

Desc Info The QBS system shall provide the following reports:

Priority	*Difficulty*	*Stability*	*Status*
High	High	Medium	Proposed

test.pdf

Thank You

www.ibm.com/software/rational