

**Controlling
complexity.**

IBM Rational Requirements Management Tools

Achieving better control over your
requirements



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**Controlling
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Agenda

- Requirements Markets
- Rational DOORS
- Introducing Rational DOORS Web Access (DWA)
- DOORS Integration Landscape
- Introducing Rational Requirements Composer (RRC)
- Want to know more?



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Rational RM portfolio

Addressing different cultures and different needs

Group	RM Needs	
<p>Engineering & Compliance cultures <i>Good outcomes are the result of good, controlled processes. "Have we missed anything?"</i></p>	<p>As rigorous & customised as necessary</p> <ul style="list-style-type: none"> •Reliance on formal process •Manufactured Systems •Mission-critical systems •Regulated, compliance, and contract-driven industries 	<p>Rational DOORS Rational Web Access</p>
<p>Market-driven culture <i>Balance process and expedience. "How can we get this out faster?"</i></p>	<p>Effective teams, efficient tools</p> <ul style="list-style-type: none"> •Business-oriented software applications •Fast-to-market manufacturers 	<p>Rational RequisitePro</p>
<p>Ad-hoc culture <i>"We use general-purpose tools for RM"</i> <i>"We don't do RM"</i> <i>"What is RM?"</i></p>	<p>Just a little more requirements</p> <ul style="list-style-type: none"> •Fast-paced projects using light-weight processes •Emphasis on team collaboration and stakeholder engagement 	<p>Rational Requirements Composer</p>
	<p>Using tools at hand: is that really enough?</p> <ul style="list-style-type: none"> • Using general-purpose tools: MS Office, groupware, defect database. • May employ RM, "pure agile" methodologies or no defined methodology at all 	

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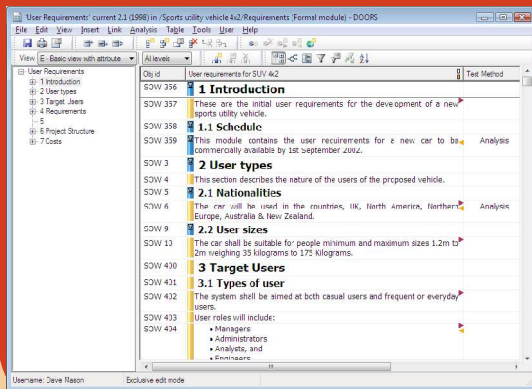


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IBM Rational DOORS product family

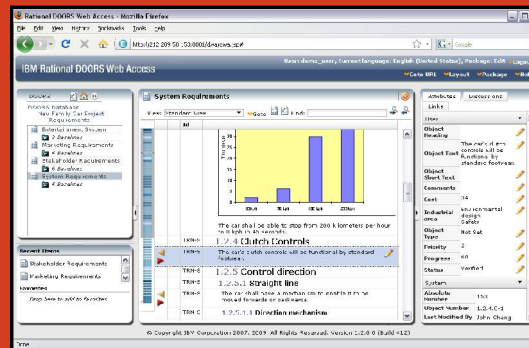
Rational DOORS

Requirements management and traceability platform for complex systems and software development



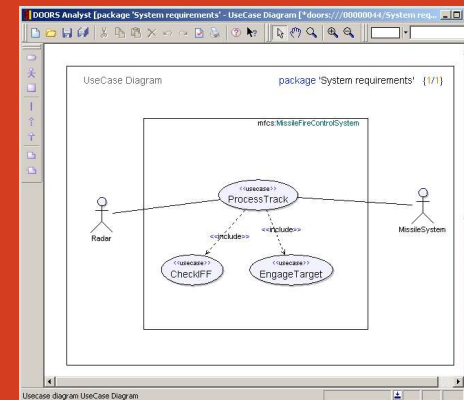
Rational DOORS Web Access

Rich Internet application providing globally distributed stakeholders access to review, edit, and discuss requirements in the DOORS database through a Web browser



Rational DOORS Analyst

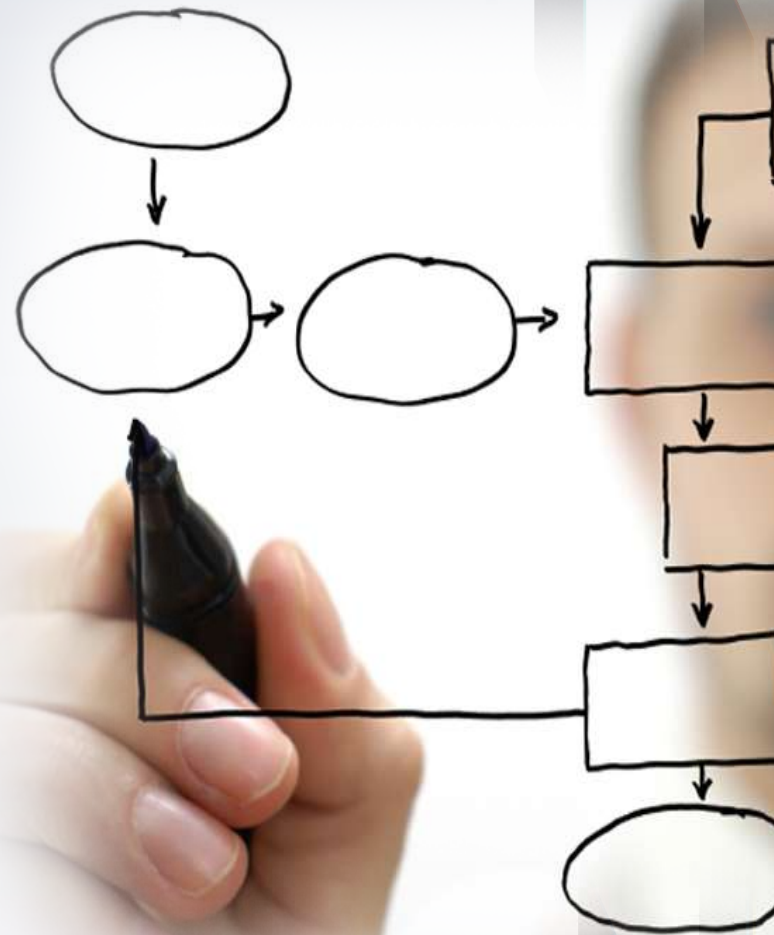
Add-in to DOORS for modeling of systems requirements using the Unified Modeling Language (UML)



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Good Requirements Management Allows Deep Analysis

- Query attributes to find specific properties
 - *“How many requirements are listed as high risk?”*
- Use traceability reports for checking dependencies
 - Before change is committed
- Find “missing” links
 - *“Which detailed requirements has no relation to a high-level user requirement?”*
- Coverage analysis
 - *“Which higher level requirement has no lower-level requirement?”*
- Impact analysis
 - *“What lower level requirements are affected if a high level requirement changes?”*
- Keep traceability
 - For each increment, if you develop incrementally with concurrent phases
 - For each variant, if you manage variants and product lines



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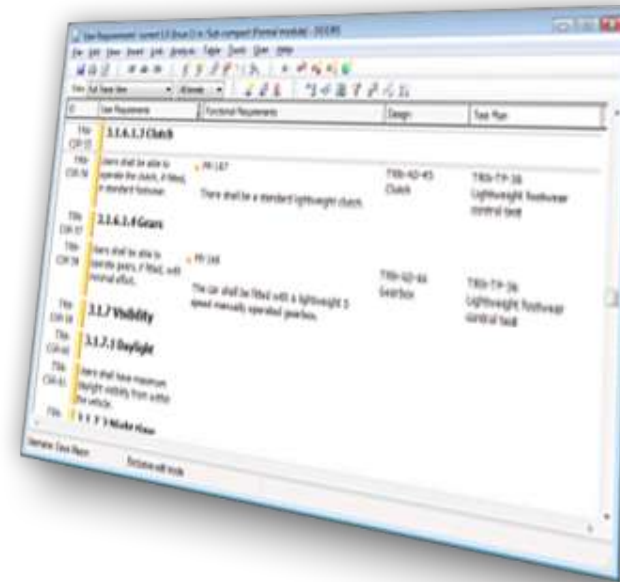


Rational DOORS

Manage All Requirements Across the Lifecycle and Across Disciplines



- Provides end-to-end visibility of requirements
- Comprehensive support for recording, structuring, managing, and analysing requirements and their traceability
- Requirements are persistent at all levels of decomposition



- *Can manage requirements across multiple engineering disciplines - Software, Electronic & Mechanical*
- *Scalable for large projects with many users*



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Rational DOORS

Manage All Requirements Across the Lifecycle and Across Disciplines

- Combined document and spreadsheet views
- Simple, intuitive interfaces for easy adoption
- History and baselines

User Reqts

Technical Reqts

Design

Test Cases

The screenshot shows a table with columns for ID, User Requirements, Functional Requirement, Design, and Test Plan. Red arrows point from the column headers to the corresponding data in the table.

ID	User Requirements	Functional Requirement	Design	Test Plan
TRN-CSR-35	3.1.2.3 Stopping			
TRN-CSR-36	Users shall be able to stop safely.	FR-23 The car shall be able to stop from 10 kilometers per hour to 0 kph in 2 seconds.	TRN-AD-48 Disc brakes	TRN-TP-34 High Speed Braking Test
		FR-24 The car shall be able to stop from 30 kilometers per hour to 0 kph in 6 seconds.	TRN-AD-48 Disc brakes	TRN-TP-35 Low Speed Braking Test
			TRN-AD-48 Disc brakes	TRN-TP-34 High Speed Braking Test
			TRN-AD-48 Disc brakes	TRN-TP-35 Low Speed Braking Test
			TRN-AD-48 Disc brakes	TRN-TP-34 High Speed Braking Test

Browser

Requirements

Context

The screenshot shows a hierarchical tree view on the left (Browser) and a detailed view of requirements (Requirements) with a bar chart (Context). Red arrows point from the labels to the corresponding parts of the interface.

1.2.4 Control direction

1.2.4.1 Straight line

The car shall have a mechanism to enable it to be moved forwards or backwards.

End-to-end visual validation in a single view

- Input and output from/to various common formats

Solve the right problem because the requirements are visible at all times

Writing Requirements within Context

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Proven Technology

Successful on some of the most complex engineering projects in the world

Highly secure object oriented architecture

Scalable for large globally diverse enterprises

Communicate across your supply chain without compromising security

Robust and efficient floating license technology to maximise ROI



A strong foundation to your systems and software delivery platform

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Role Based Document Style Interface

Underpinned with the power of an object oriented database

Highly flexible display gives the right people the right information at the right time

Intuitive interface means you'll be up and running quickly

Document based for efficient organisation and reporting

Classic or Web Access client both on the same database

The image displays two screenshots of the IBM Rational DOORS software. The top screenshot shows a document view titled 'User Requirements for SUV 4x2' with a table of requirements (SOW 356-404) and a 3D wireframe model of a van. The bottom screenshot shows the 'IBM Rational DOORS Web Access' interface, featuring a 'System Requirements' section with a bar chart and a list of requirements, alongside a 'Attributes' table.

Obj id	Test Method
SOW 356	1 Introduction
SOW 357	These are the initial user requirements for the development of a new sports utility vehicle.
SOW 358	1.1 Schedule
SOW 359	This module contains the user requirements for a new car to be commercially available by 1st September 2002.
SOW 3	2 User types
SOW 4	This section describes the nature of the users of the proposed vehicle.
SOW 5	2.1 Nationalities
SOW 6	The car will be used in the countries, UK, North America, Northern Europe, Australia
SOW 9	2.2 User sizes
SOW 10	The car shall be 2m weighing 3500kg
SOW 400	3 Target users
SOW 401	3.1 Types
SOW 402	The system shall be used by the following user roles:
SOW 403	User roles will include:
SOW 404	Managers, Administrators, Analysts, Engineers

Object Heading	Comments
The car's clutch controls will be functional by standard footwear.	34
Environmental design	
Safety	
Not Set	
Priority	2
Progress	60
Status	Verified
System	
Abandon Number	153
Object Number	1.2.4.0-1
Last modified by	John Chang

Gives you access to complex interconnected data presented in a single display

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Multi-Level Traceability

Information transparency allows you to take control

Complex traceability made as simple as drag and drop

Trace through multiple levels of documentation in a single display

Product Reqs **System Reqs** **Design** **Software Requirements** **Test Plans**

The screenshot shows a software application window titled 'Product Definition' current 0.3 (Second Internal) in /Transmissions (Formal Module) - DOORS. The interface is divided into five columns representing different levels of documentation: Marketing Features, System Requirements, System Design, Software Requirements, and Software Test Plan. The 'Marketing Features' column shows a tree structure with '3 Product Features' and '3.1 Features'. The 'System Requirements' column shows requirement SR-45: 'The system must provide a manual mode for the driver to select a gear.' The 'System Design' column shows a 'System overview diagram' with images of a transmission and electronic components. The 'Software Requirements' column shows requirement SRS-81: 'The CSCI will support 2 fundamental states labelled 'Manual Mode' and 'Auto Mode''. The 'Software Test Plan' column shows requirement STP-32: 'Use the Testword code 758 to switch from Manual to Auto mode and check the state message identifies the correct state of the system.' Below the text is a timing diagram for a Manchester Code telegram, showing 'Start of telegram', 'End of telegram', 'Baudrate', and 'Manchester Code' with a 'Telegram' label and a 'Testword (A... 5 Hex)' label.

Make maintaining traceability an asset rather than an overhead

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Visualise Requirements with DOORS/Analyst

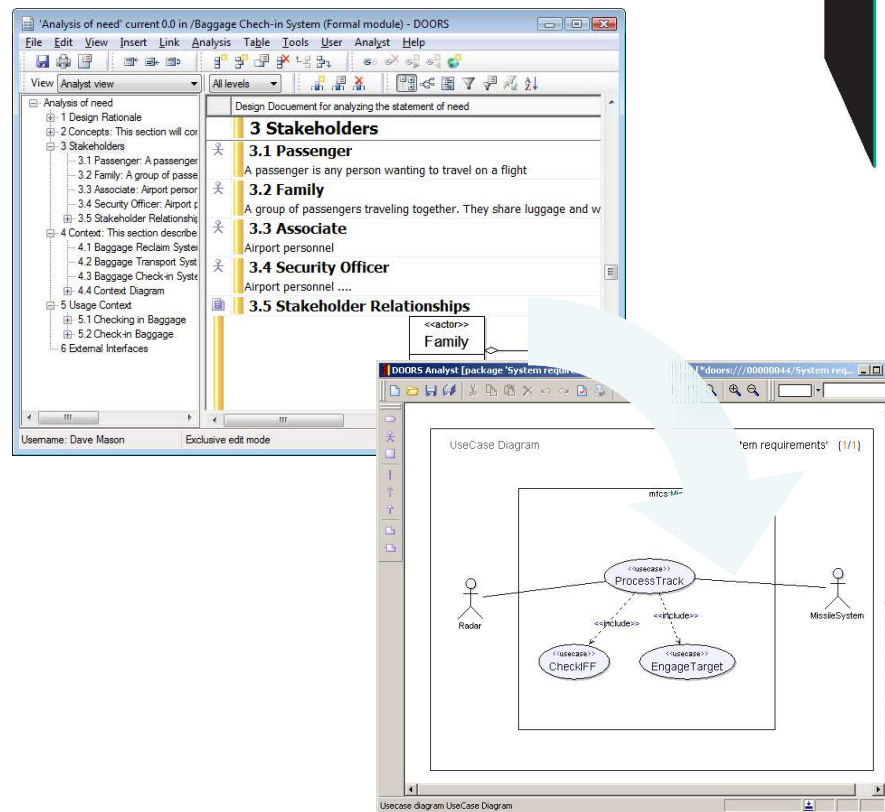
*Enrich your requirements with UML based diagrams**

Analyse requirements by building visual models right inside DOORS

Link the models directly to the textual requirements

Reuse the models throughout the design lifecycle

SySML and DoDAF support



*Requires DOORS/Analyst

Capture design rationale between every layer of requirements

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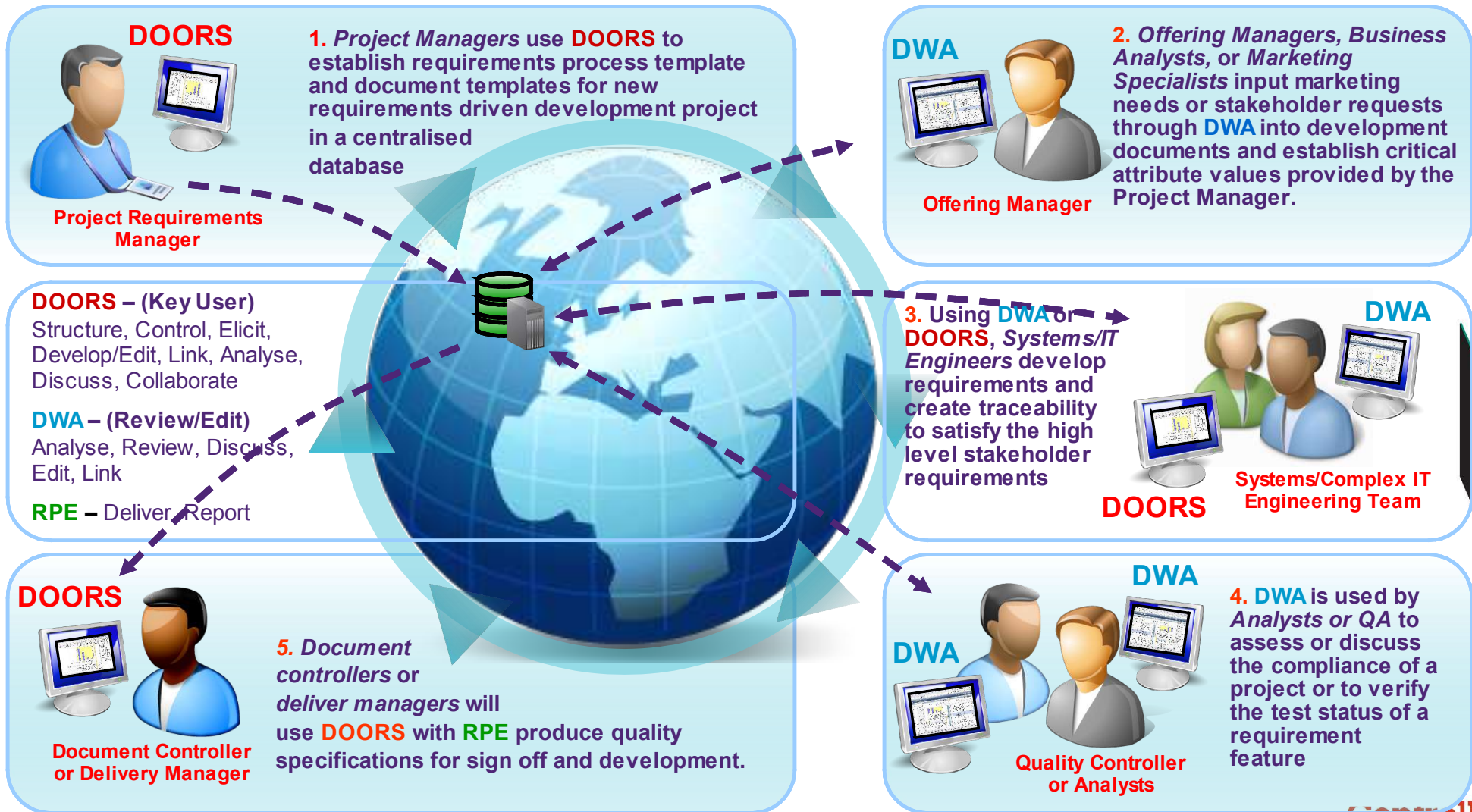
Introduction to DOORS Web Access (DWA)

- The DOORS Web Access Solution
 - DWA combines the best Web 2.0 browser paradigms for easier tool adoption and increase user productivity for general requirements management activities
- Distributed Collaboration
 - Extend RM to virtual workgroups collaborating on a central requirements database
 - No need to physically move (replicate) data around globally and synchronise databases
 - Allows you to work without installing software
- Wider Adoption of Requirements Management Across Enterprise
 - Requirements can be easily created/edited through commercial web browsers
 - Fast, efficient global access and editing with comprehensive data security
 - Document displayed in desired sections through configured views
 - Requirement link creation and tracing for RM impact analysis



Extending Requirements Driven Development

Using DOORS and DWA



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Create or Modify Requirements Using DOORS Web Access

Team members are able to:

- **Review** complete rich requirements specifications
- **Create, Modify, Delete** requirements in the **edit** profile
- Use **create/edit controls** in any existing module
- Have **shared access** with other team members
- Use **configured** document views

The screenshot displays the IBM Rational DOORS Web Access interface. At the top, it shows the user 'jared', current language 'English (United States)', and package 'Edit'. Navigation options include 'Goto URL', 'Layout', 'Package', and 'Help'. The main content area is divided into two panes: 'Stakeholder Requirements' and '*System Requirements'. Both panes show a list of requirements with columns for 'Id' and 'Text'. A red dashed box labeled 'Module Views' points to the top navigation area. Another red dashed box labeled 'Edit Menu' points to a context menu with options like 'Edit Value', 'New Object After', 'Delete', and 'Start Link'. A third red dashed box labeled 'Pictures' points to a bar chart showing data for 10 kph, 30 kph, and 100 kph. A fourth red dashed box labeled 'Edit Controls' points to a rich text editor toolbar with options like 'Bold', 'Italic', 'Underline', and 'Text Color'. A fifth red dashed box labeled 'Tables' points to a table at the bottom of the 'Stakeholder Requirements' pane.

Entertainment System	Reliability	Manufacture
Radio	85%	Acme
Compact Disk	85%	Acme

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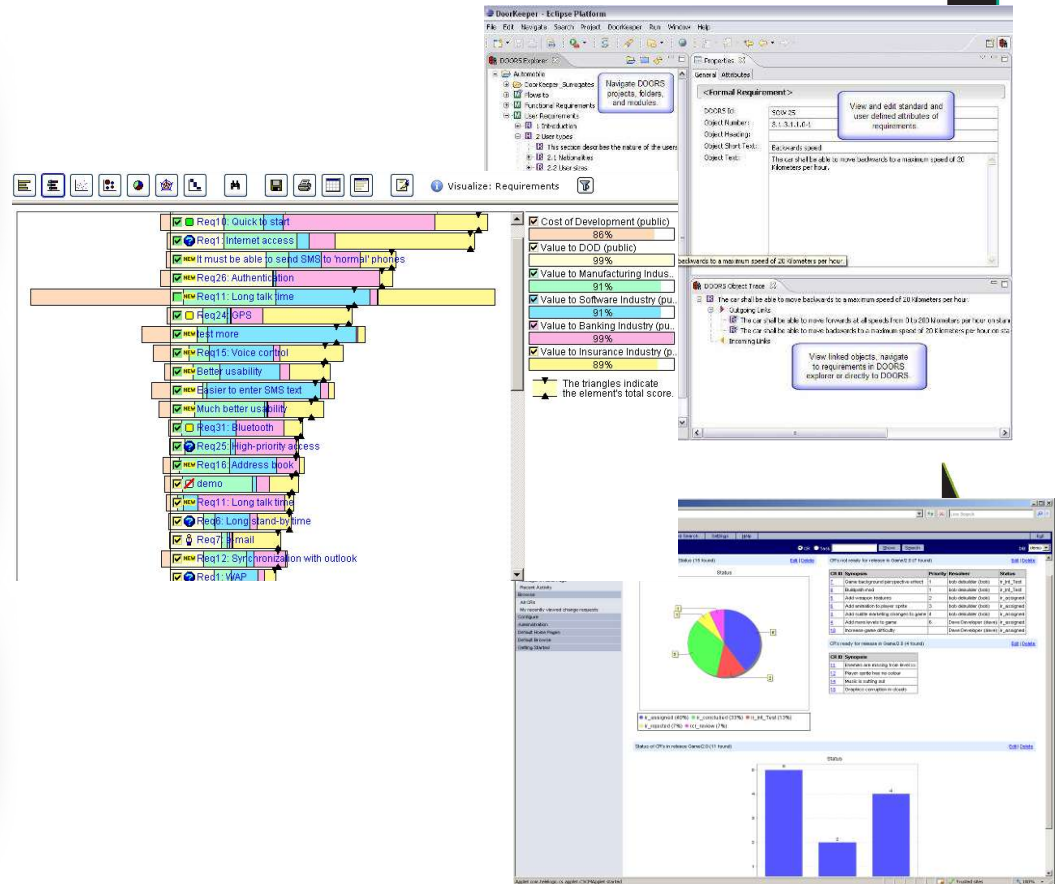
DOORS Integration Landscape

Requirement visibility and collaboration across the entire lifecycle

Integrates with other Rational tools to give complete lifecycle coverage

An extensive range of 3rd party integrations to non IBM products

Open API allows for custom integrations to unsupported products

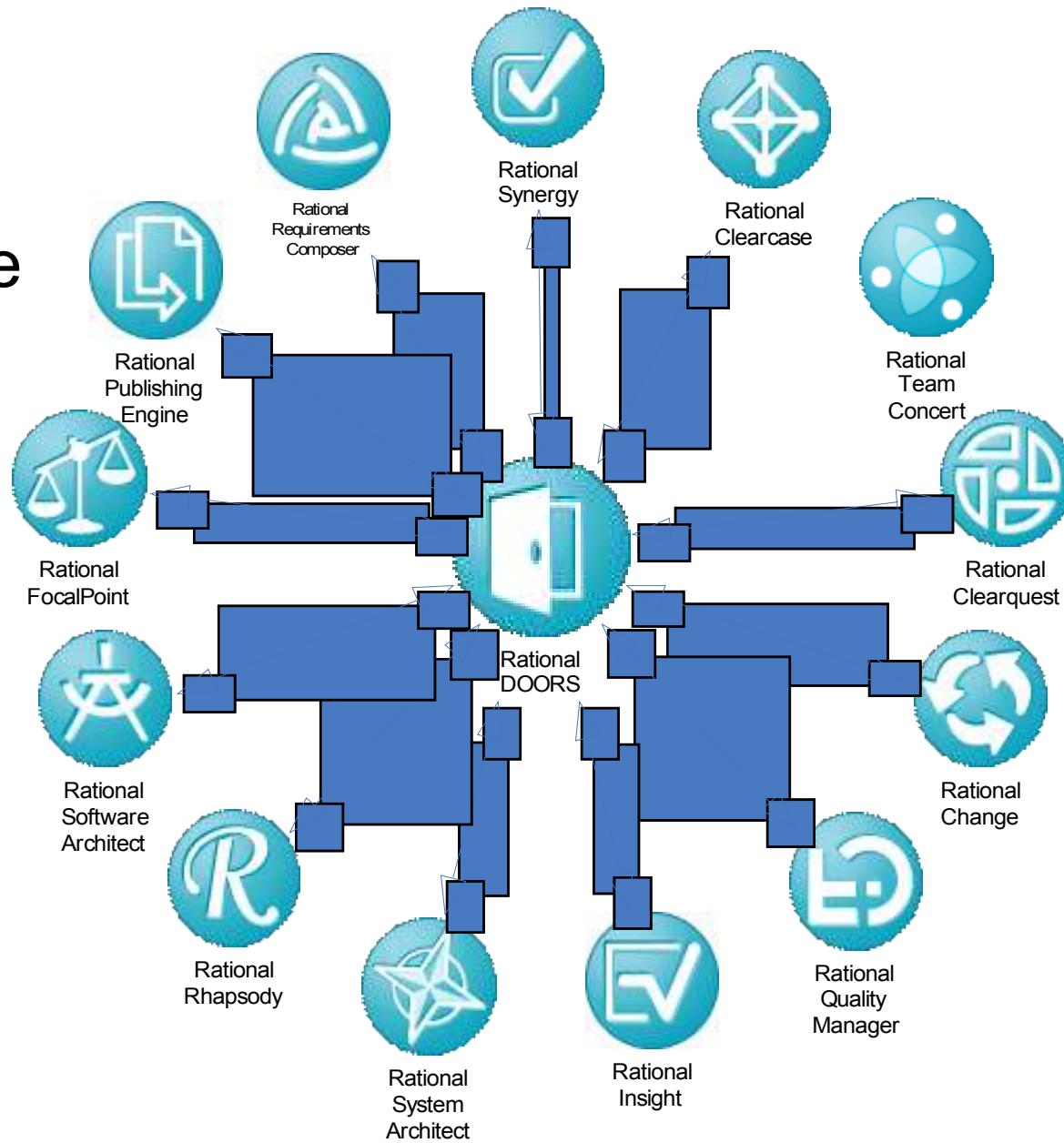


Integration of people & processes across tools and disciplines

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Rational DOORS Integration Landscape



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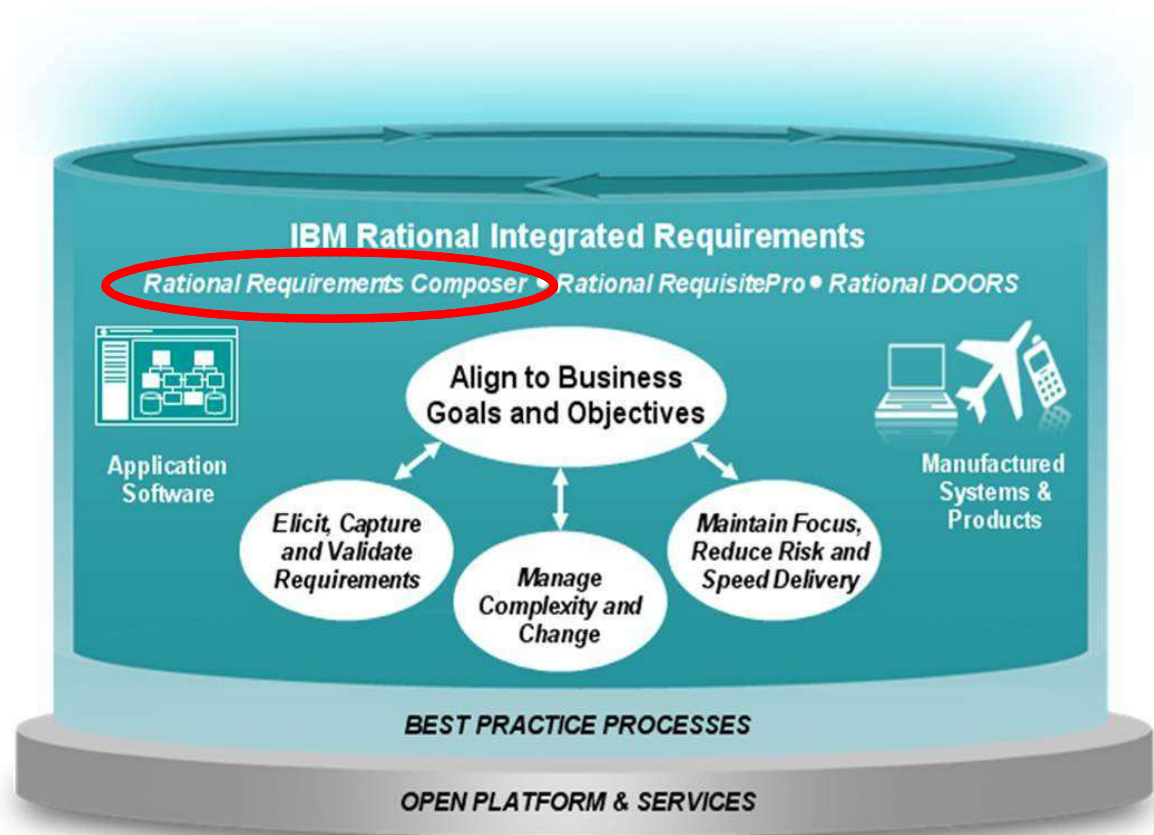


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Rational Requirements Composer

Better business outcomes through light-weight requirements practices

- **Engage stakeholders** early and often to converge on the “right” requirements faster
- Improve agility and align project activities with customer value in **light-weight practices**
- **Reduce rework and get to market faster**



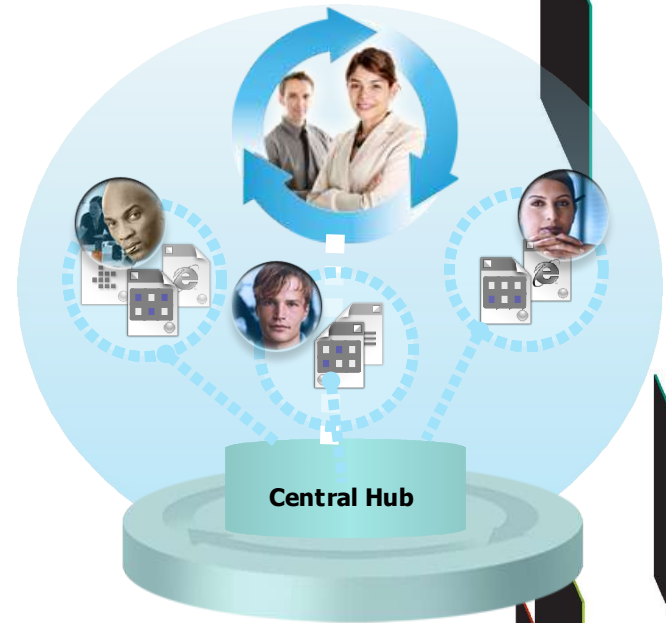
Better requirements. Less rework. Better results


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Good requirements are key to project success

- **Understand what your customers really need**
 - Engage a wide range of stakeholders to capture real business needs and project constraints
 - Uncover missing, incorrect, and ambiguous requirements that drive project overruns and cancellations
 - Work across boundaries: organisational, geographical, time zones



 “Rational Requirements Composer has been engineered with the business analyst in mind. The web access to these artifacts brings the requirements domain into the current technology space. I can simply send a URL out for review.”

Randy Haven, IBM Global Business Services

 “In general, [RRC] is very simple and easy to use with a nice and customisable UI. The Web UI is a great addition ... so that we can review, comment and verify artifacts with clients and other team members.” - Anthony Gock, Deloitte

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Use scenarios to uncover customer needs

Describe flows and capture requirements in **Rich-text Documents**

Define and reuse common terms in **Glossaries**

1. Brief Description

A registered customer has applied to open a new **Account**. Based on existing **Customer** information, the eligibility system will use predefined heuristics to determine whether or not the customer is eligible. In certain circumstances, intervention by the **Branch Manager** may be necessary.

2. Basic Flow of Events

The bank's web portal has validated the contents of a new **Account** application.

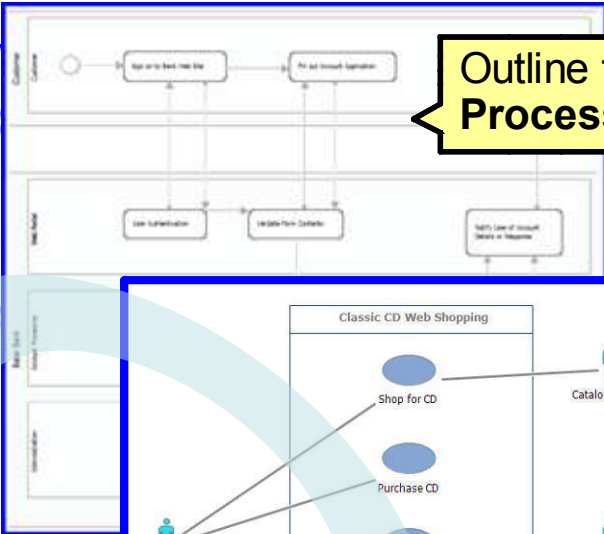
...ing banking records from the bank's files. Depending on the circumstances, third parties may also be consulted (eg: the credit bureau).

... predefined heuristics to the available data based on history, **Credit History** etc. Based on this information the system will either approve or automatically reject the application.

...ation has been either approved or rejected.

Five Flows

... related to a single area of functionality (for example specialist handling for the Withdraw Cash use case of an Automated Teller). Conceptually related sets of flows are grouped into their own clearly



Outline flows with **Process Diagrams**

Group related scenarios, describe actors, system boundaries and user goals with **Use Cases**

ClassicsCD Header with Logo

Shopping Cart

Cart is empty

Catalog

Shopping Cart

Cashier

Order Status

Search Criteria

- Composer
- Composition
- Performer

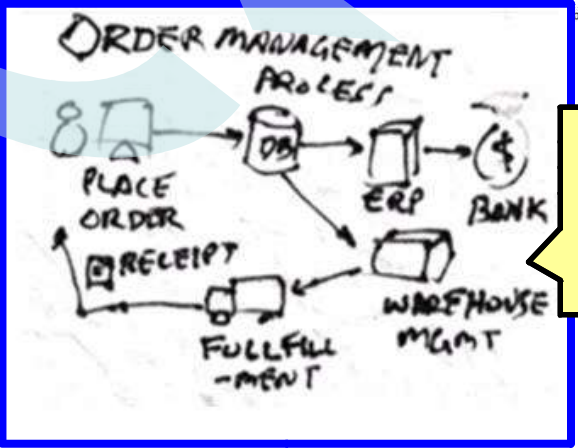
Bach: Brandenburg Concertos 1 + 3
Burlington Symphony Orchestra, Wilhelm Storrer

Bach: Violin Concertos
Burlington Chamber Orchestra, Torrence Spang

Beethoven: Symphonie Nr. 7
The Burlington Orchestra, Wilhelm Storrer

Beethoven: Symphonie Nr. 5
Burlington Symphony Orchestra, Wilhelm Storrer

Visualise scenarios with **Storyboards** and **Screen Flows**



Use whiteboard snapshots and other **Informal Documentation**

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Questions