



IBM Software Group

Adopting Requirements Definition Principles and practices with Rational Requirements Composer

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Rational software



ON DEMAND BUSINESS™

Traditional approaches to requirements have been ineffective

Need to develop a more collaborative, automated business process for requirements



CIO



Project Manager



Analyst

No shared vision

Delays and changes

No consensus

Only 41% of projects are considered successful

IBM CIO Study

CIO Magazine recently reported 'as many as 71% of software projects that fail, do so because of poor requirements management, making it the single biggest reason for project failure.'

Stakeholder



QA



Developer



Unacceptable solution

Defects slip through

Constant rework



Agenda

- **Requirements Definition and Requirements Management**
- **Some Key Principles**
- **Effective Practices**
- **Introduction to Rational Requirements Composer**

*“The beginning
is the most important part
of the work”
Plato, *The Republic**



Requirements definition and management

Requirements Definition

Identify the stakeholder needs a project must satisfy, then translate those needs into business objectives and software requirements.

Move from:

- Accumulated to organized
- Ambiguous to precise
- Analyze to Validate

Requirements Management

Communicate and control scope while incorporating changes that occur during a project.

Move from:

- Approved to implemented
- Implemented to verified

Requirements Definition

Elicit
Analyze
Specify
Validate

Prioritize
Implement
Track

Requirements Management



Key principles

- Don't leave your requirements process to chance
- You won't get it right the first time
- Understand the problem before you try to solve it
- You can't say everything that needs saying the same way
- Quality requires constant vigilance

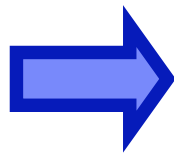


1. Don't leave your requirements process to chance

Adopt a requirements life-cycle

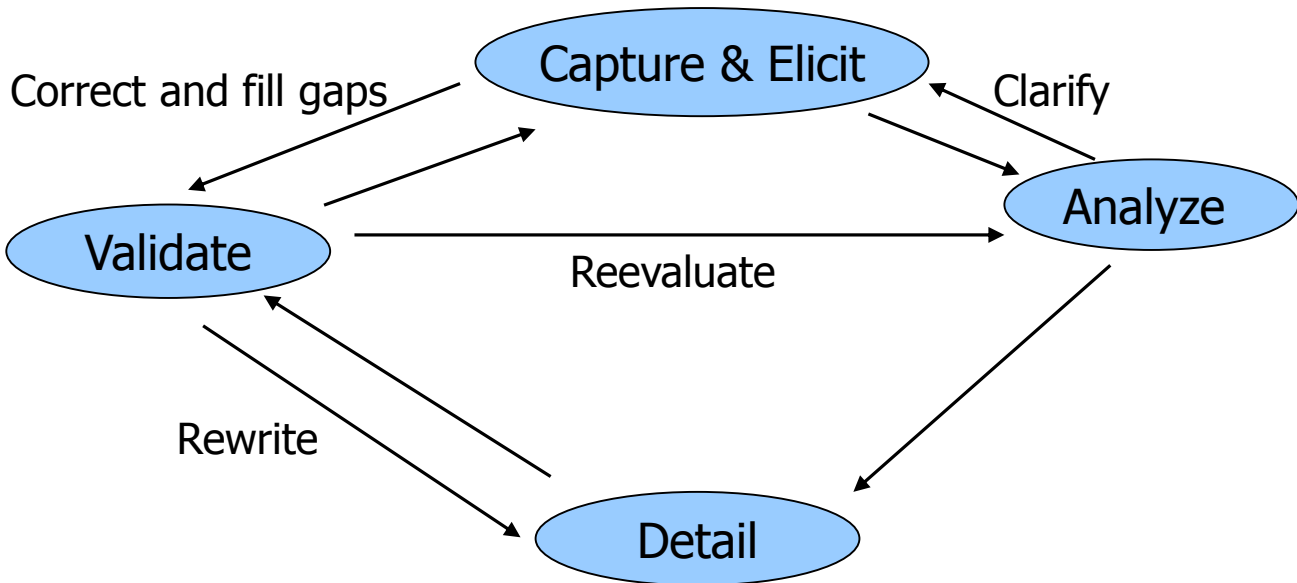
Requirements Definition

- Elicitation
- Analysis
- Specification
- Validation



Requirements Management

- Change Management
- Version Control
- Tracking and Reporting
- Requirements Tracing



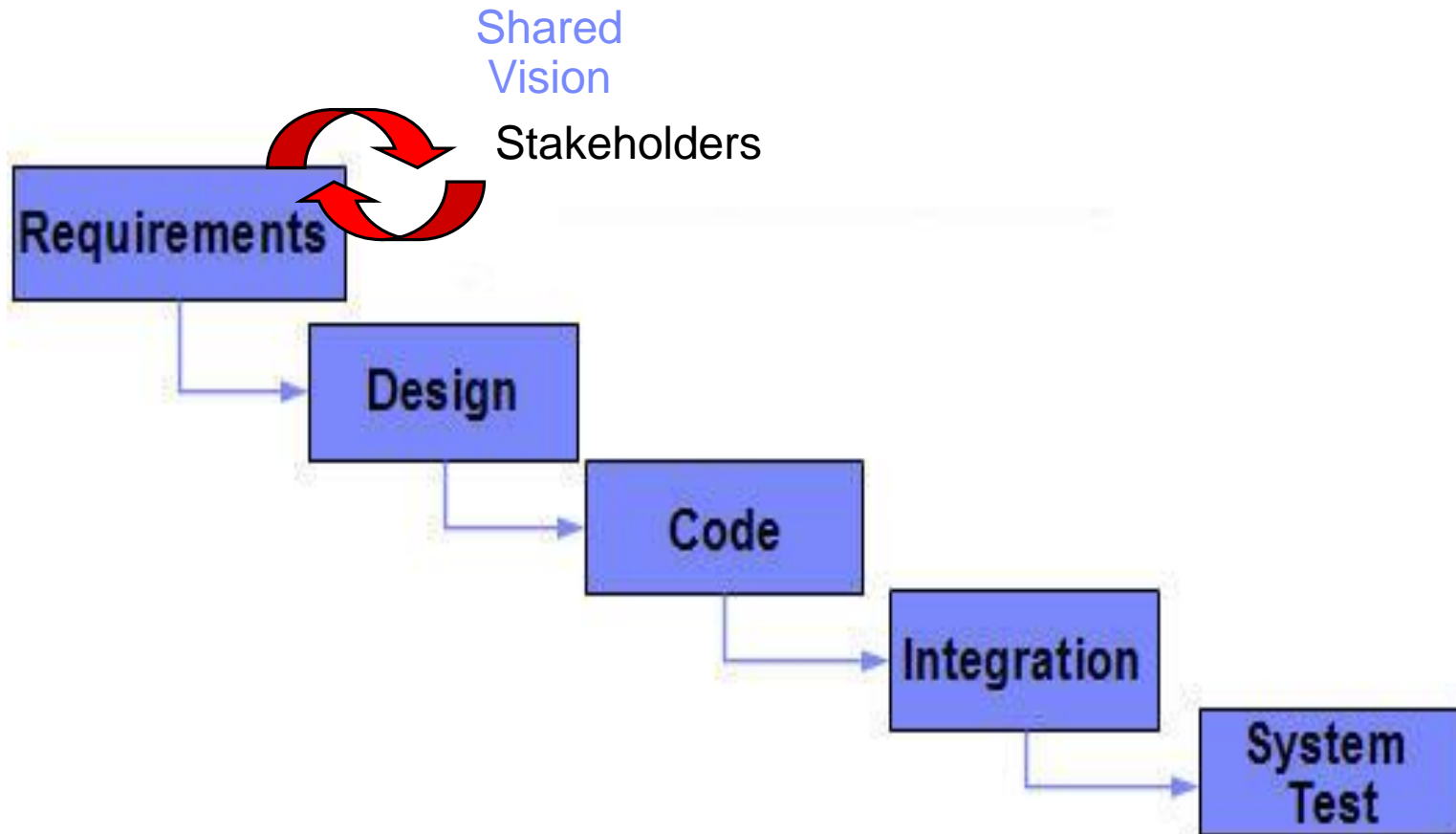
Source: Karl Wiegers



2a. You won't get it right the first time

Define requirements using an iterative approach

Waterfall

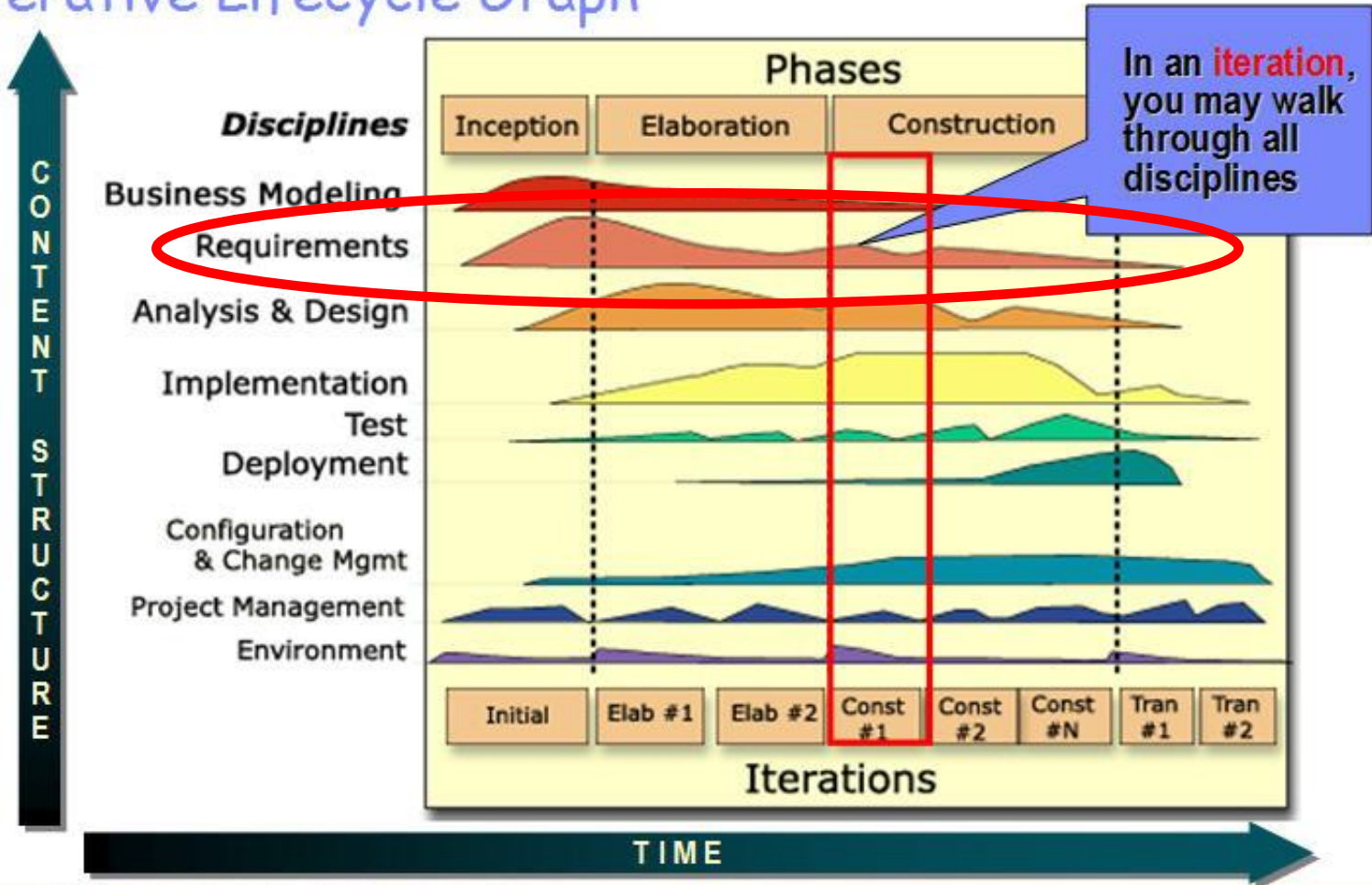


2b. You won't get it right the first time

Define requirements using an iterative approach

Iterative development

Iterative Lifecycle Graph



3. Understand the problem before you try to solve it

Distinguish between problem and solution

1. Stakeholders identified.
2. Requirements collected.
3. Domain terms.



Needs

Problem Space

← Highly diverse, unstructured information

Problem statement



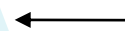
4. Scope of system determined.
5. Requirements selected.



Features and Requirements

Solution Space

← Formalized, structured information



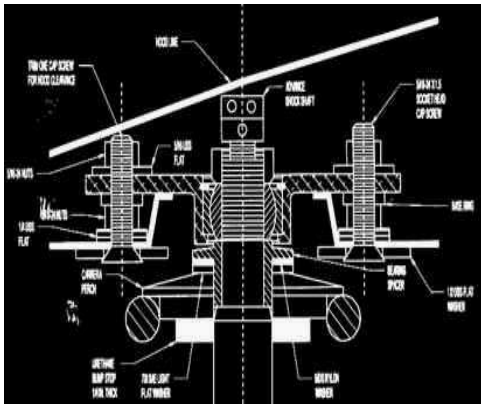
•Requirements Models



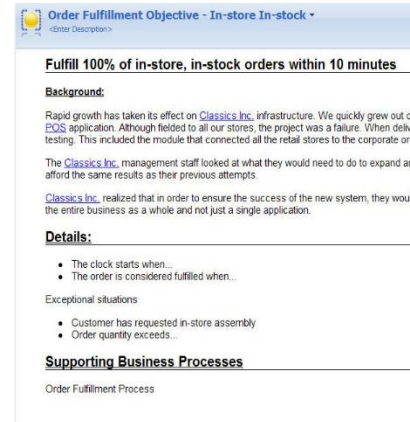


4. You can't say everything that needs saying the same way

Use appropriate requirements definition techniques



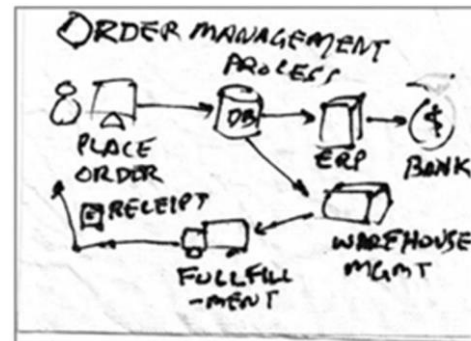
Modeling



Documents



Meeting Notes



Sketches



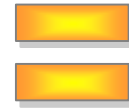
5. Quality requires constant vigilance

Achieve quality through continuous improvement

Create
Collaborate
Concur



Review
&
Validate



Quality Requirements

Criteria	Description
Unambiguous	All readers of requirements should arrive at the same interpretation...
Complete	Requirements as stated have no missing elements All Requirements are captured
Correct	Is a true statement of something the system must do
Verifiable	Means that the requirements states something that can be confirmed by examination, analysis, validation, test, or demonstration. (<i>BaBoK definition</i>)
Consistent	Does not conflict with other requirements
Testable	Testers should be able to verify whether the requirements is implemented correctly





Requirements definition practices

- Why practices matter
- Shared Vision & Outside-in Thinking
- Express Requirements in Context
 - ▶ Business Processes
 - ▶ Use Cases & Scenarios



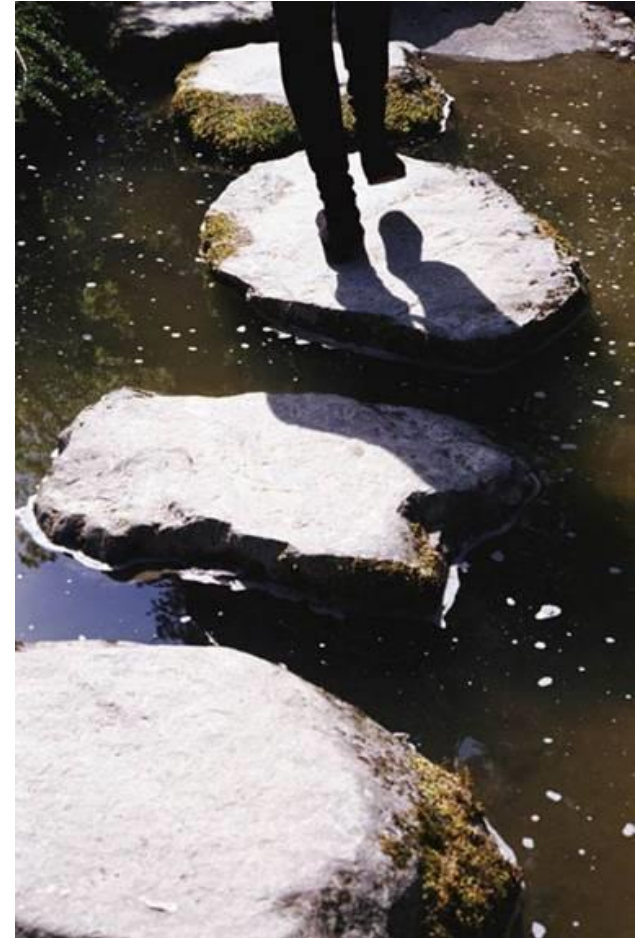
Why practices matter

A Practice is ...

A proven pattern of success

A **framework** and approach that capture techniques, guidance and measures

A mature starting point for tailoring project plans and activities.



Practice: Shared Vision

■ What it is

- ▶ Establishing and maintaining a shared vision of the problem being solved (stakeholders needs)
- ▶ Maintaining high level properties of the proposed product (product features)
- ▶ Communicating this shared overall vision of the project

■ Benefits

- ▶ Ensures the business problem is understood and agreed upon by stakeholders and development team.
- ▶ Provides foundation for project development activities.





Outside-in Thinking

Deliver what your stakeholders need

- Understand your stakeholders. They will determine your project's real value and success
- Shape every decision around stakeholder goals and needs – define success in their terms
- Communicate with stakeholders on their terms – and communicate often
- Make “consumability” a high priority



From Outside-in Software Development: A Practical Approach to Building Successful Stakeholder-Based Products by Carl Kessler and John Sweitzer



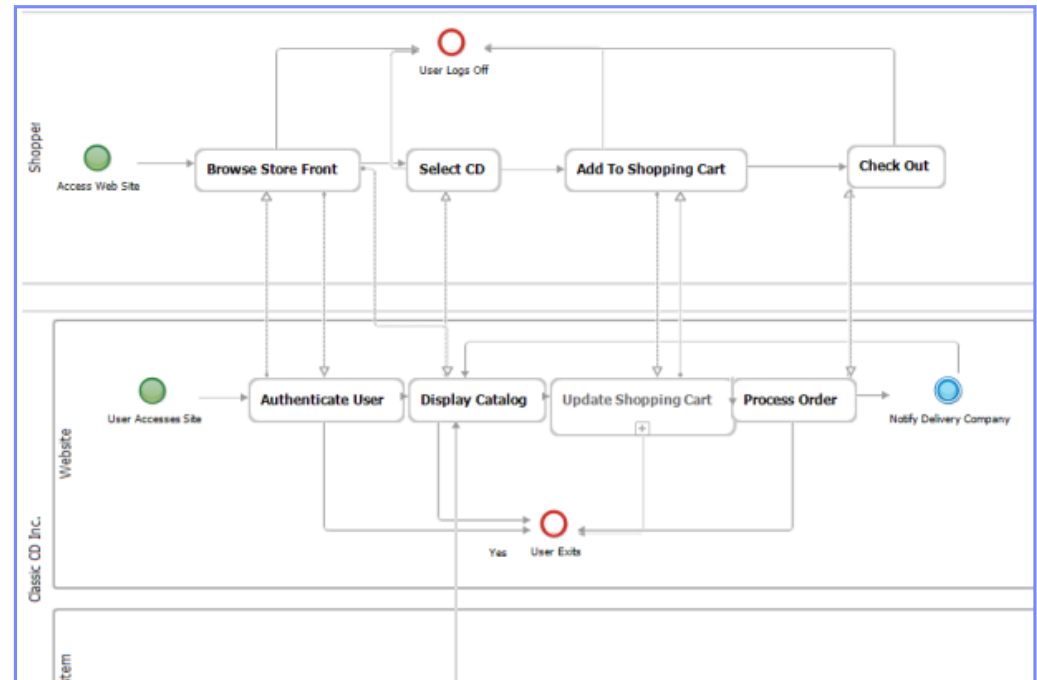
Practice: Business Processes

■ What is it

- ▶ Graphical representations of the as-is and to-be business processes

■ Benefits

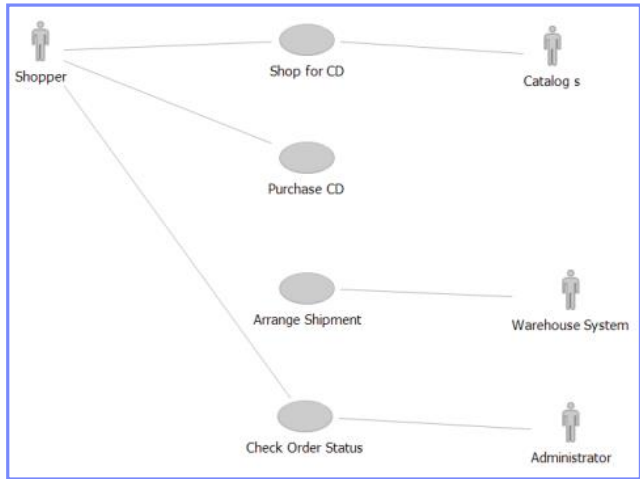
- ▶ Prompts clear articulation of current business processes and how your project will change them
- ▶ Provides context for use cases and other elaborated requirements



Practice: Use Cases

What it is

- ▶ A way of capturing functional requirements in sequential order.
- ▶ Captures behavior that results in something of value to a user of the system.
- ▶ Represent the complexity of using the system
- ▶ Describes the behavior of a system which includes interactions of actors with that system



Benefits

- ▶ Minimal resources required
- ▶ Easily consumable for stakeholders
- ▶ Provides quick turnaround for validating system

Use Case Specification

use case name	Use case: TakeOrder
use case identifier	ID: 1
brief description	<u>Brief description:</u> Take the food and drink order from a customer.
the actors involved in the use case	<u>Primary actors:</u> Server <u>Secondary actors:</u> Customer
the system state before the use case can begin	<u>Preconditions:</u> 1. The Server must be authenticated to the system.
the actual steps of the use case	<u>Main flow:</u> 1. The use case starts when the Server selects the table number. 2. The Server enters the items per seat for the table. 3. The system sends the order to the kitchen system.
the system state when the use case is finished	<u>Post conditions:</u> 1. The order is queue in the kitchen for preparation.
alternative flows	<u>Alternative flows:</u> ItemOrderedNotAvailable



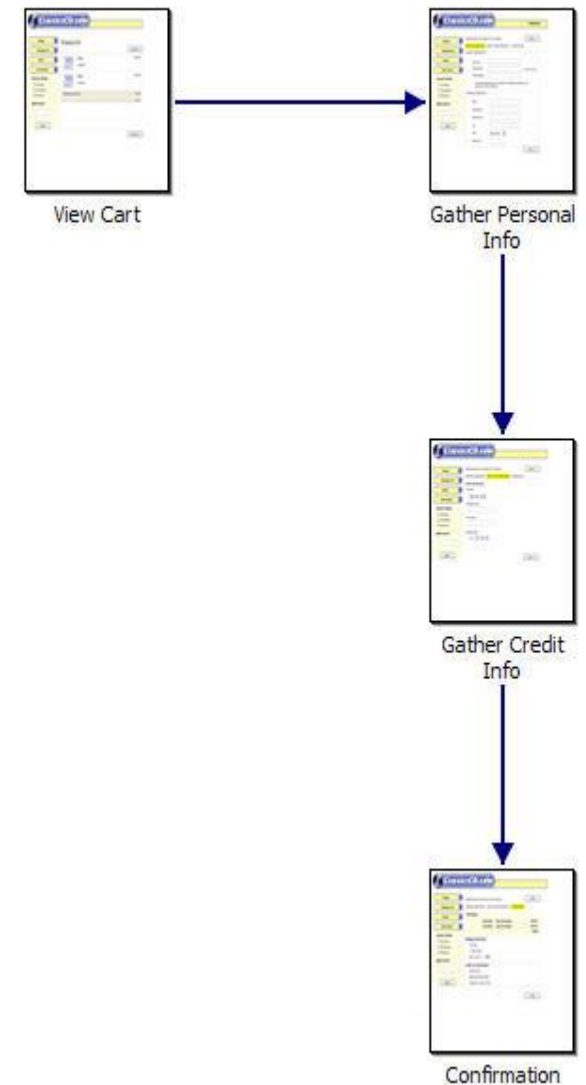
Practice: Scenarios/Storyboards

■ What is it

- ▶ Scenarios provide lightweight or partial use cases
- ▶ Visual scenarios = storyboards, simulations

■ Benefits

- ▶ Intuitive for nontechnical stakeholders
- ▶ Gain rapid stakeholder validation



Requirements definition with IBM Rational Requirements Composer

Enabling business and IT experts to collaborate

- **Achieve consensus with business stakeholders**
 - ▶ Work across boundaries to elicit and validate requirements
 - ▶ Communicate clearly using proven techniques

- **Reduce project cost and time to market**
 - ▶ Shorten review/approval cycles for more productive iterations
 - ▶ Better requirements and greater team visibility reduces wasted effort

- **Enhance quality through maximizing reuse of requirements**
 - ▶ Organize, share, and find requirements using flexible mechanisms
 - ▶ Synchronize with RequisitePro to connect requirements with test cases, designs and change requests

- **Unify teams on an extensible collaboration platform**
 - ▶ Review and comment via wiki-like interaction
 - ▶ Include a variety of information sources in the web of requirements



Open and extensible on

- ✓ Collaborate in context
- ✓ Right-size governance
- ✓ Day one productivity

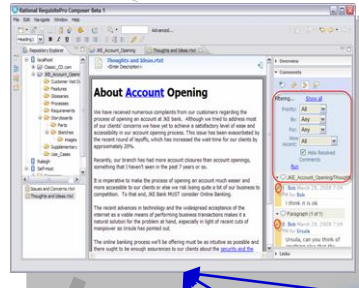




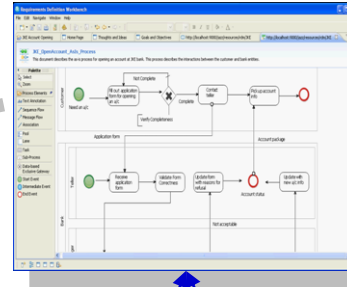
Capture and connect the web of requirements information

Unify multiple perspectives to ensure alignment to changing business objectives

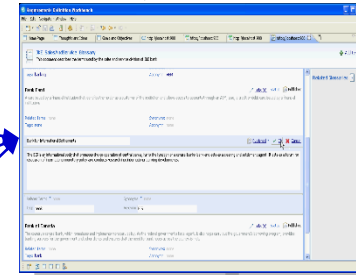
Use **Documents** to capture structured and unstructured information



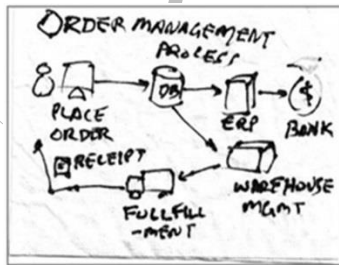
Capture current and future state with **Business Process Diagrams**



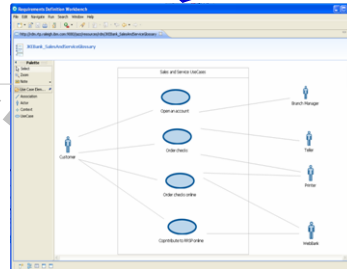
Remove ambiguity with shared business and technology **Glossaries**



Include pictures, presentations, or any other kinds of file in your web of requirements context



Build **Use Cases** in text and diagrams



Visualize the User Experience with **User Interface Sketches and Storyboards**



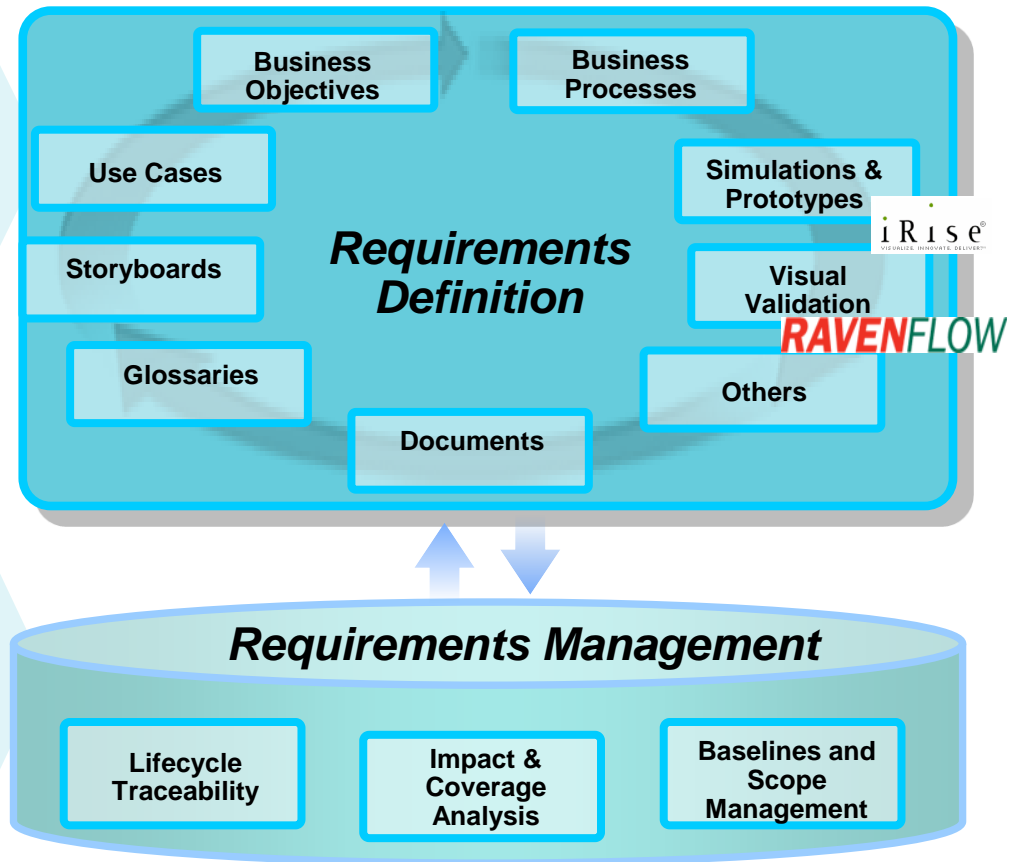


Enabling business and IT experts to collaborate

Use principles and practices to maximize your success on the collaborative platform

Rational
Requirements
Composer

Rational
RequisitePro



Learn more

- **Introduction to IBM Rational Requirements Composer**
 - ▶ Product Page:
 - <http://www.ibm.com/software/rational/announce/rrc/>
 - ▶ Requirements Composer Demo
 - <http://www.ibm.com/developerworks/offers/lp/demos/summary/r-rrcoverview.html>

- **Address business challenges with targeted practices using the Measured Capability Improvement Framework**
 - ▶ <http://www.ibm.com/software/rational/announce/mcif/>

- **Outside-in Software Development**
 - ▶ http://en.wikipedia.org/wiki/Outside-in_software_development

- **Use Cases**
 - ▶ <ftp://ftp.software.ibm.com/software/rational/web/whitepapers/RAW14023-USEN-00.pdf>





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