Why do Project Fail?

- Unclear or continually changing product definitions: 42%
- Product does not meet customer or market requirements: 37%
- Unrealistic schedule expectations: 27%
- Projects not adequately staffed: 26%
- Unclear or continually changing priorities: 24%
- Unrealistic financial expectations: 24%

Source: Aberdeen Group, August 2006
Why is requirements management so critical?

“Analysts report that **as many as 71 percent of software projects that fail** do so because of **poor requirements management**, making it the **single biggest reason for project failure** - bigger than bad technology, missed deadlines or change management fiascoes”

- CIO Magazine, November 2005
How to Manage Requirement
Requirements Are Everywhere
V-Shape Requirement Development

Statement of need

Stakeholder Requirements

validating the product

Operational use

Acceptance test

System Requirements

verifying the system

System test

Subsystem Requirements

evaluating the subsystems

Subsystem test

Component Requirements

evaluating components

Component test

ITIL, ISO9001

confront

Company Standard

satisfies

satisfies

satisfies

IT Outsourcing

Design Outsourcing

Implementation Outsourcing
Requirement Database

- Unlimited hierarchy of Projects/Folders supports scalability

Organize Your Projects
Document Views
Everything you need in one window!

Improves productivity, reduces errors, increases quality
How to Manage Requirement Relationship?
### Traceability is the key to Requirement Management

<table>
<thead>
<tr>
<th>User Reqs</th>
<th>Technical Reqs</th>
<th>Design</th>
<th>Test Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial user requirements should be decomposed to detailed requirements, then to design, tests, etc.</td>
<td>Decomposition creates traceability relationships</td>
<td>Relationships define your traceability model</td>
<td>Your traceability model is the basis for your process</td>
</tr>
</tbody>
</table>
Traceability; drag-and-drop linking

Drag-and-drop to link within a document . . .

. . . or from document to document
Traceability view

User Reqs | Technical Reqs | Design | Test Cases
--- | --- | --- | ---

"End-to-end visual validation in a single view"
Traceability Verification or “Completeness”

- Increases customer confidence
- Detect missing links
- Creation and deletion of links is recorded in history

Traceability through an Orphan report shows “missing” links
Impact / Derivation Analysis

Impact Analysis

Derivation Analysis

Stakeholder Requirements

System Requirements

Subsystem Requirements

Component Requirements

System test plan

Integration test plan

Component test plan

Acceptance test Plan

Impact / Derivation Analysis
Requirement Coverage Analysis

- Stakeholder Requirements
- System Requirements
- Subsystem Requirements
- Component Requirements
- Acceptance test Plan
- System test plan
- Integration test plan
- Component test plan

**All requirements are allocated to sub requirements?**

**All requirements are tested without an exception?**
How to Manage Requirement Change?
Suspect Links

Suspect links are visible directly in the document -
structured, linked and traced, to produce reports of managed information.

Non-integrated project data is imported, structured, linked and traced, to produce reports of managed information.
Problems (or Risk) of Outsourcing –
Risks are not fully shifted to outsourcing as Stakeholders bear the risk of project failure.

- Requirements are not fully covered by testing
- Lack of defect management process
- Lack of validation and verification
- Lack of Project Transparency
The unsuccessful failure rate for software projects is still alarmingly high

Software project results
- Project success rates average less than 55%
- Cancelled projects cost $81 Billion worldwide each year
- Of the 50% of projects which are successfully delivered, 28% of these projects are not yielding the expected planned value

Software project waste
- $55 Billion
- $38 Billion in lost dollar value
- $17 Billion in cost over runs

Although cancellation rates are down and fewer projects are troubled, improving software development governance provides increased value to projects, producing about 30% more projects that deliver expected value.

Source: Standish Chaos Report, Allianan ROI of Software Development
How to Plan?
Quality management plan
First step to succeed

Structured plan to fulfill Software Sub-contact Management, e.g. Business Objectives, Requirements, Acceptance Criteria, Schedule, Attachments, & etc

Create snapshot to record of your progress.
How to Manage Test Coverage?
Test Coverage
Find requirements that have or have no test case

Plan Requirements Coverage Detail

- Parameters
  - Select Plan
  - (No selection)

Requirements covered by test case

<table>
<thead>
<tr>
<th>Requirement ID</th>
<th>Requirement name</th>
<th>Test case</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Return Customer Order</td>
<td>Return Customer Order</td>
</tr>
<tr>
<td>14</td>
<td>Order Multiple CDs</td>
<td>Order Multiple CDs</td>
</tr>
<tr>
<td>11</td>
<td>Login</td>
<td>Login</td>
</tr>
<tr>
<td>12</td>
<td>Logout</td>
<td>Logout</td>
</tr>
<tr>
<td>15</td>
<td>Order single CD</td>
<td>Order single CD</td>
</tr>
<tr>
<td>13</td>
<td>View Report Requirement</td>
<td>View Report Requirement</td>
</tr>
</tbody>
</table>

Plan Requirements Not Covered Detail

- Parameters
  - Select Plan
  - (No selection)

Requirements not covered by test case

<table>
<thead>
<tr>
<th>Requirement ID</th>
<th>Requirement name</th>
<th>Requirement status</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>New Customer Order</td>
<td>unsignned</td>
</tr>
<tr>
<td>7</td>
<td>Add New Customer</td>
<td>unsignned</td>
</tr>
<tr>
<td>8</td>
<td>Add New Product</td>
<td>unsignned</td>
</tr>
<tr>
<td>9</td>
<td>Administer Orders</td>
<td>unsignned</td>
</tr>
<tr>
<td>16</td>
<td>Remove Product</td>
<td>unsignned</td>
</tr>
<tr>
<td>19</td>
<td>Update Existing Product</td>
<td>unsignned</td>
</tr>
<tr>
<td>20</td>
<td>View Order Status</td>
<td>unsignned</td>
</tr>
</tbody>
</table>
Test Coverage on updated (suspect) requirement
Test Coverage on updated (suspect) requirement

### Test Cases Associated with Requirement 16

<table>
<thead>
<tr>
<th>ID</th>
<th>Suspect Name</th>
<th>State</th>
<th>Category</th>
<th>Function</th>
<th>Theme</th>
<th>Weight</th>
<th>Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>bid on item</td>
<td>Draft</td>
<td>Web UI</td>
<td>Execution</td>
<td>Functionality</td>
<td>10</td>
<td>33 minutes ago</td>
</tr>
<tr>
<td>10</td>
<td>Remove Product</td>
<td>Draft</td>
<td>Unassigned</td>
<td>Unassigned</td>
<td>Unassigned</td>
<td>40</td>
<td>3 minutes ago</td>
</tr>
</tbody>
</table>
How to Manage Defect?
Defect Management
Transparent and centralised overview of development requests and status

<table>
<thead>
<tr>
<th>Type</th>
<th>Id</th>
<th>Summary</th>
<th>Owned By</th>
<th>Status</th>
<th>Priority</th>
<th>Severity</th>
<th>Modified Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>29</td>
<td>Design Document cannot be opened by Word 2007</td>
<td>vendor1 (IT)</td>
<td>New</td>
<td></td>
<td></td>
<td>2 hours ago</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>TC doc is not in doc format</td>
<td>vendor1 (IT)</td>
<td>New</td>
<td></td>
<td></td>
<td>2 hours ago</td>
</tr>
</tbody>
</table>

List of defects with status
Defect Management – Dashboard
Provide information about the project status

Notifications, and defects will be displayed in dashboard

profile: know which projects are involved

Know what is happening in this project
Defect Management – Vendor to fix defects

Find Potential Duplicates

Vendor fixes defect and update status

Important communication is kept in discussion section
Defect Management – Audit Trail

<table>
<thead>
<tr>
<th>History</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Change by Paula (Project Manager) (Feb 19, 2009 1:44:46 AM)</td>
<td></td>
</tr>
<tr>
<td>Filed Against: Unassigned → Quality Manager</td>
<td></td>
</tr>
<tr>
<td>Change by Paula (Project Manager) (Feb 19, 2009 1:08:06 AM)</td>
<td></td>
</tr>
<tr>
<td>Status: Resolved → Closed</td>
<td></td>
</tr>
<tr>
<td>Change by vendor1 (IT) (Feb 19, 2009 1:05:31 AM)</td>
<td></td>
</tr>
<tr>
<td>Status: In Progress → Resolved</td>
<td></td>
</tr>
<tr>
<td>Resolution: Unresolved → Fixed</td>
<td></td>
</tr>
<tr>
<td>Comments: ok, please check if Word2007 can open the design doc.</td>
<td></td>
</tr>
<tr>
<td>Resolved by: vendor1 (IT)</td>
<td></td>
</tr>
<tr>
<td>Change by vendor1 (IT) (Feb 19, 2009 1:04:39 AM)</td>
<td></td>
</tr>
<tr>
<td>Status: New → In Progress</td>
<td></td>
</tr>
<tr>
<td>Due Date: Feb 25, 2009 → Feb 24, 2009</td>
<td></td>
</tr>
<tr>
<td>Change by Paula (Project Manager) (Feb 18, 2009 10:46:49 PM)</td>
<td></td>
</tr>
<tr>
<td>Description: Design Document cannot be opened by Word 2007</td>
<td></td>
</tr>
<tr>
<td>Due Date: &lt;Unassigned&gt; → Feb 25, 2009</td>
<td></td>
</tr>
<tr>
<td>Comments: Design Document cannot be opened by Word 2007, please check if you can open in Word2007</td>
<td></td>
</tr>
</tbody>
</table>
Defect Management – Traceability
understand which requirement has defect

Requirements
Planning
Construction
L2 Management
Execution

Plan Requirements Defect Impact*

Requirements blocked by defects

Test cases impacted by blocked requirements

Test suites impacted by blocked requirements

Existing Customer Order
Existing Customer Order
Existing Customer Order

incomplete customer name in Classic Java
How to Verify Quality?
Validation on Quality Management Plan

Reviewal and Approval
Verification on Quality

Test Execution overview

Result Details

Vendor provides step-by-step screenshots evidence as attachments.
How to Manage Project Transparency?
Project Transparency - On demand reporting
Snapshot views of project status from multiple perspectives

Customizable reporting enables sharing and communication of vital project information
Project Transparency - Finding overdue items
Project Transparency – Finding all outstanding defects

Have vendor fixed all the defects?
# Project Transparency – Acceptance Criteria

## Online Trading Platform v1 M1

**Test Plan Overview | View Snapshots**

**Originator:** Paula (Project Manager)  
**Action:** Select Action  
**State:** Draft

OTP: M1 delivers Design Doc & Test Cases. Doc M2 delivers Products and Test Results.

### Acceptance Criteria

Defines the conditions that need to be met before the testing can be concluded.

<table>
<thead>
<tr>
<th>Acceptance Criteria Description</th>
<th>Current Value</th>
<th>Status</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submit Design Doc &amp; Test Case Doc</td>
<td>submitted</td>
<td>Successful</td>
<td>Design Doc has been checked</td>
</tr>
<tr>
<td>Software has no high severity defect</td>
<td>30% unclosed defects</td>
<td>Low or Not Successful</td>
<td>Dev are fixing all high severity defects</td>
</tr>
</tbody>
</table>
How to Manage Multiple Projects
Multi-Project Support
Representation of software projects

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Registration Platform</td>
<td>Online Registration Platform</td>
</tr>
<tr>
<td></td>
<td>Vendor2 (IBM Services Team) responsible for design, implement, test, &amp; deploy ORP solution.</td>
</tr>
<tr>
<td>Online Trading Platform</td>
<td>Online Trading Platform</td>
</tr>
<tr>
<td></td>
<td>Vendor1 (IT) responsible to design, implement, test &amp; deploy OTP Solution.</td>
</tr>
<tr>
<td>Quality Manager</td>
<td>Quality Manager</td>
</tr>
</tbody>
</table>
Summary

Business Benefits:

- Requirement Coverage – Make Sure that Project is focusing on defined Requirement inside the lifecycle, not at the end.
- Defect Management – All parties have visibility on defects and all activities, Sub-Contractor will be notified when new defects raised. Can be traced to requirements.
- Business Stakeholders and subcontractors can be anywhere in the world and work around the clock.
Centralized Quality Management Solution

**Telelogic DOORS**
- Collaborative Requirement Repository
- Requirement Traceability
- Impact Analysis

**Rational Quality Manager**
- Quality Dashboard
- Quality Management

**IBM Collaborative Application Lifecycle Management**

- **Telelogic DOORS**
  - Bi-directional auto-synchronization

- **Rational Quality Manager**
  - Create Plan
  - Build Tests
  - Execute Tests
  - Report Results
  - Manage Defects

Test Requirement

Test Result
Flexible Deployment

**Customer**

- Telelogic DOORS
  - Collaborative Requirement Repository
  - Requirement Traceability
  - Impact Analysis

**Rational Quality Manager**

- Quality Dashboard
- Quality Management
  - Create Plan
  - Build Tests
  - Manage Test Lab
  - Execute Tests
  - Report Results

**Outsourcing**
Benefits

- Reduce outsourcing projects still have high failure rate
  - [DOORS] Requirement Repository to maintain the “Source of Trust”
  - [DOORS] Requirement Integrity through Traceability
- Mitigate Potential risks of using Sub-contractors
  - [RQM] Real Time Quality Dashboard to increase Transparency
  - [RQM] Test Coverage visibility
  - [RQM] Defect Management
- Improve your winning chance when outsourcing projects
  - Real Time Monitoring & Tracking during lifecycle
  - Full Lifecycle Traceability ensure No Missing Issue
  - Highly Quality project delivery
Thank You