Introduction of Risk-based Testing

Advanced Testing Process with Risk

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Introduction

Sony Corporation

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ADVANCED RISK BASED TEST RESULTS REPORTING:

Putting Residual Quality Risk Measurement in Motion

Software Test & Quality Assurance
Best Speaker Awards

Advanced Risk-Based Test Reporting
Agenda

Fallacies of Risk-Based Testing

Heart of Risk-based Testing

Test monitoring in Risk-based Testing
Fallacies of Risk-Based Testing

• Risk based testing is just a method to cut corners.

• Risk based testing can be done entirely by the test team.

• Risk based testing only influences selection of test cases.

Heart of Risk-Based Test
Honesty

Open

Optimization
Honesty

Exhaustive testing is impossible

Exhaustive Risk Identification is impossible

Exhaustive Risk Mitigation is impossible
OPEN
Challenge
What kind Mountain?
No Risk
Not Enough
This is it!
Sharing Value of Risk or ..
Tragedy
Along with Specification
Trouble in past
Change Specification

Risk!
Sharing Risk
Cooperation
Respect
Teamwork
Trust
Risk Treatment
Preparation
Risk based testing can be done entirely by the test team.

Share the Value of Risks with Stakeholders.
Share Responsibility for Risk
Optimization

Adaptive

Re-active
Risk-Based Testing

Risk Management
Risk Management Process

ISO 31000: 2009
Risk management process and Risk-based testing

ISO 31000:2009

Establishing the context

Risk Assessment

Risk Identification

Risk Analysis

Risk Evaluation

Risk Treatment

Risk Identification

Risk Analysis

Risk Mitigation (Risk Control)

ISQTB Advanced Syllabus
CAT
Changing Point
Risk Identification
Architecture
Trouble in the past
## Which risk is higher?

<table>
<thead>
<tr>
<th>Risk Item</th>
<th>Phenomena</th>
<th>Likelihood</th>
<th>Impact</th>
<th>Likelihood</th>
<th>RPN</th>
</tr>
</thead>
<tbody>
<tr>
<td>System did not boot-up</td>
<td>Recover after power cycle</td>
<td>once per 1000</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Customer data was erased when the system booted up.</td>
<td>Data was not recovered</td>
<td>No reproduce</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

The risk of the system not booting up after a power cycle once per 1000 is higher with an RPN of 8 compared to the risk of customer data being erased when the system booted up with an RPN of 5.
Test Process = Risk Mitigation

Risk Mitigation (Risk Control)

- Test Plan/Test monitoring
- Test Analysis
- Test Design
- Test Execution
- Test Report
Test monitoring of Risk-based Testing

Risk Mitigation (Risk Control)

Test Plan/ Test Monitoring

Test analysis → Test Design → Test Execution → Test Report

Relationship between Risk and Test Monitoring
Actual Residual Risk pattern
Case study

Version Up

Actual Residual Test Caves

Plan of Residual Test Caves

Actual Residual Risk

Plan of Residual Risk

Test Execution Schedule

Residual Rate %

2011/11

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Test => Pass

No Risk?
Test => Pass

Likelihood

Impact

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Revised Residual Risk Chart

- Residual rate vs. Test Execution Time
- Residual Test Cases
- Actual Curve
- Residual Risk
- Ideal Residual Risk
- Minimum Risk Level

2011/11
Case study

- Actual Residual Test Caves
- Critical Problem
- Critical Problem
- Actual Residual Risk
- Plan of Residual Test Caves
- Plan of Residual Risk
- Minimum Risk Level

Test Execution Schedule vs. Release

Residual Rate %

2011/11

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Case study

Actual Residual Test Caves

Critical Problem

Actual Residual Risk

Plan of Residual Test Caves

Plan of Residual Risk

Minimum Risk Level

Test Execution Schedule

Release
Traceability
Traceability

Risk ↔ Test Cases

Test Design
If you want to success with Risk-Based Testing

We need our test process matured
Much more !!
Test monitoring of Risk-based Testing

Risk Mitigation = Test Process

Test Plan/monitoring

Test analysis → Test Design → Test Execution → Test Report

Test Design is Key
Master Test Plan : Risk Distribution

- Risk Analysis
- Master Test Plan
- QA Level Test Plan
- System Test Level Plan
- Component Test Level Plan
- Component Test
- Integration Test
- System Test
- Boundary between Test Level
- Boundary between Test Level

- Requirements
- Specifications
- Software design
- Software Detail Design
- Implementation

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Heart of Risk-Based Testing

Honesty

Open

Optimization
Thank you