Risk Based Testing

What It Is and How You Can Benefit

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Risk Based Testing: Setting the Course

- For any complex system, an infinite number of tests exist…

- …but you don't have forever to test!

- So, out of the infinite cloud of possible tests, testers must select a finite number

- Measured as a percentage of what we *could* test, our coverage is always 0%

- So, we need to be very, very selective and smart about our test coverage

Testing as Risk Mitigation

- Risk: a possible future negative event
- The likelihood and the impact of the event determine the level of risk
- In software development, risks to the quality of the product exist and can be mitigated through testing
- Product risk: possibility that a work product may not be fit for use or conform to specifications satisfy the legitimate needs of its users and/or stakeholders
- Most often, for testing, we care about product risks associated with specific quality characteristics which are also called quality risks
- In risk-based testing, we determine what to test, how much, and in what order, through product quality risk identification and assessment

Example: Product Quality Risks

- Some broad categories of quality risks
  - Software does not conform to specifications or is not fit for use
  - System architecture inadequate for non-functional requirements
  - Inadequate response time
  - User experience (UX) is poor
- Some specific, testable quality risks
  - System calculates incorrect totals on a report (functionality)
  - System takes too long to authenticate user (performance)
  - System user interface difficult for color-blind people (accessibility)
  - Improper loop control (object or function structure)
- For testing purposes, you need to be specific during quality risk analysis

Risk-based Testing

- In risk-based testing, knowledge of product quality risk guides the entire test process
  - Appropriate test techniques
  - Levels and types of testing needed
  - Extent of testing necessary
  - Test priority
  - Identify non-test activities that can reduce risk
- Early quality risk analysis contributes to project success through early defect detection and removal

Pragmatic Risk Analysis and Management

- Plan for either a group brainstorming session or a series of interviews
  - Sequential can use either, but usually goes with interviews
  - Agile incorporates quality risk analysis into release and iteration planning
- Start with a checklist of classic quality risk categories (functionality, performance, reliability, etc.)
- Identify specific product quality risks in each category
- Assess likelihood and impact for each quality risk item
- Determines what should be tested, how much, and in what order
- Keys: cross-functional stakeholder participation, consensus, and a best-possible-outcome outlook
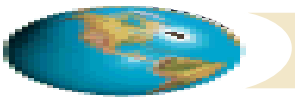
Quality risks (aka product risks) are potential system problems which affect product quality

Risk priority number: Aggregate measure of problem risk

Tracing information back to requirements, design, user stories, acceptance criteria or other risk bases

Assess based on business considerations

Assess based on technical considerations

Quality Risk	Likeli-hood	Impact	Risk Priority	Extent of Testing	Tracing
Risk Category 1					
Risk 1					
Risk 2					
Risk *n*					

A hierarchy of risk categories can help organize the list and jog your memory.

1 = Very high
2 = High
3 = Medium
4 = Low
5 = Very low

The product of likelihood and impact, from 1-25.

1-5   = Extensive
6-10   = Broad
11-15 = Cursory
16-20 = Opportunity
21-25 = Report bugs

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Example: Tips for Quality Risk Analysis

- RBCS clients that have successful risk-based testing usually:
    - Use a cross-functional brainstorming team
    - Identify the risk items, then assign the level of risk
    - Only separate risk items when necessary to distinguish between different levels of risk
    - Consider sources of risk from both technical <u>and</u> business aspects
    - When appropriate, be willing and able to triage tests based on risk
    - Follow up and re-align risk analysis, testing, and the project at key project milestones
- Risk-based testing *is not about* letting the testers test whatever they feel like or cutting corners to save time

Flash Exercise: A Quick Risk Analysis

- Break into small groups of 3-5
- Pick an app on a mobile device
- Identify 3-5 quality risks
- Assess the likelihood and impact of each risk to determine the risk priority number

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