



Risky Business – The Perils and Pitfalls of Risk-based Testing




Risky Business

The Perils and Pitfalls of Risk-Based Testing


Randall W. Rice, CSTE, CSQA, CTFL
www.riceconsulting.com


© 2007, Rice Consulting Services, Inc. 



At The Outset

- I'm a big believer in risk-based testing!
- I've designed and applied risk-based test approaches for the past 17 years.




2 


Risky Business – The Perils and Pitfalls of Risk-based Testing

However...

- I've been fooled by risk assessments before.
 - Some risks were higher than assessed and have exhibited more defects than expected.
 - Other risks were lower than expected and I didn't know if my tests were weak or if the software was better than expected.




3




Questions to Ponder

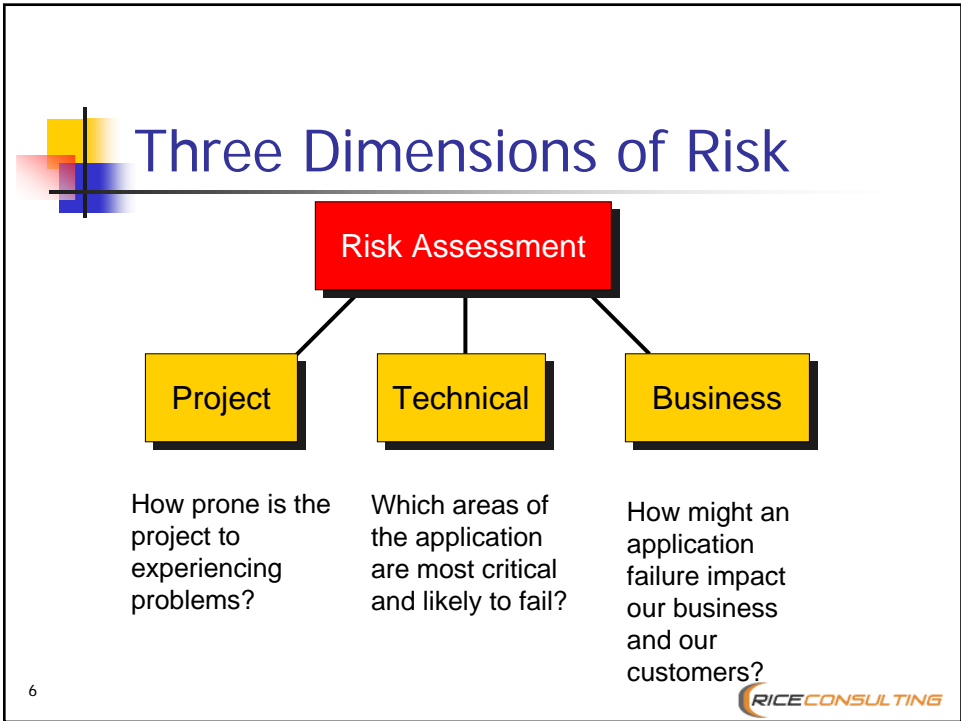
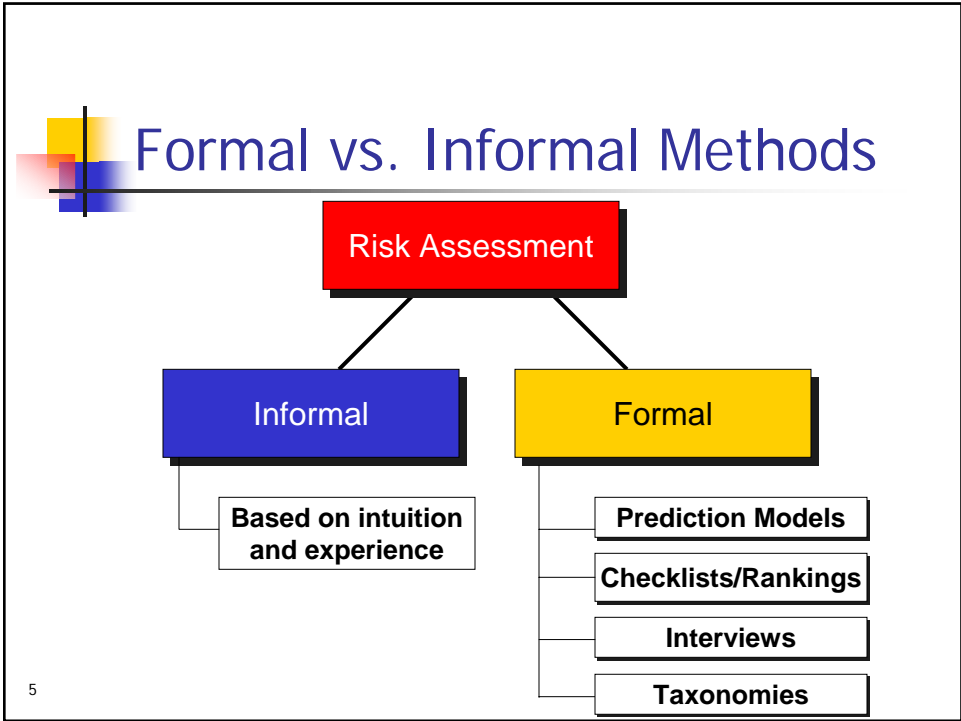
- How can we be “fooled” by inaccurate risk assessments?
- How reliable is risk-based testing?
- How can we build a safety net in case of inaccurate risk assessments?
- What can we learn about risk from other risk-based industries?



4




Risky Business – The Perils and Pitfalls of Risk-based Testing




Risky Business – The Perils and Pitfalls of Risk-based Testing

Causes of Missing Risks

- Unexpected events
 - That's why insurance policies have clauses for "Acts of God", war and terrorism, to keep from paying claims far outside the norm.
 - In software, however, we can't transfer the risk that easily.




7




Causes of Missing Risks (2)

- Incorrect information
 - People sometimes provide inaccurate information (lie) on insurance applications, just like they do in software risk assessments.
 - In the insurance business, the company is protected by the policy contract against false statements used to obtain coverage.
 - In the software business, we have no such protection.



8



Risky Business – The Perils and Pitfalls of Risk-based Testing

Causes of Missing Risks (3)

- Flawed assumptions
 - Professional risk assessors, such as insurance underwriters, actuaries, and loan officers have significant experience in assessing risk.
 - Their methods are pretty solid, although not perfect.
 - In the software business, our assumptions tend to depend on the situation at hand.

9

 RICECONSULTING

Ways I Have Been “Fooled” by Inaccurate Risk Assessments



Risky Business – The Perils and Pitfalls of Risk-based Testing

#1 – No Software “Physics” for Defects

- Just because our risk assessment may indicate a software function should not fail, the software may not behave that way.
- An example of this is the complexity of software.
- As testers, we need to understand that all the tricks and techniques we use may be helpful, but are not guaranteed to be totally accurate or effective.

11



#2 - We Can't Think of Everything

- Unexpected things can happen that can change the risk equation by a little or a lot.
- Risk, by its very nature, implies a degree of uncertainty.
- To address this risk, always remember that you don't know everything.
 - Use the “Columbo” approach and ask questions even when the answers may seem obvious.
 - Obtain other perspectives in the risk assessment to evaluate your own conclusions.

12



Risky Business – The Perils and Pitfalls of Risk-based Testing

#3 - People Do Not Always Provide Accurate Information

- When we base a risk assessment on information obtained from people, there is always the possibility the information could be skewed, inaccurate, or misleading.
 - Ask multiple people the same questions in the same way.
 - Ask the same question in a slightly different way.
 - Look for inconsistencies and similarities to determine a confidence level.

13



#4 - The "I Want to Believe" Syndrome

- There are times that we don't have a rational reason to believe in something, but we would really would like to.
- Risk denial is one approach to dealing with risk, just not a good one.




14




#5 - The "High Risk" Effect

- This is the opposite of the "I Want to Believe" syndrome.
- So many things are seen as high risks that the value of risk assessment is lost.
- To deal with this problem we must find ways to make the assessment criteria more specific, objective and detailed.




15




#6 - Flawed Risk Assessment Methods

- Applying someone else's methods that don't fit your context
- Devising an inaccurate and unproven method on your own
- Misapplying a good method incorrectly because of a lack of understanding



16



Risky Business – The Perils and Pitfalls of Risk-based Testing



#7 – Using Informal Methods

- You can be fooled by informal risk assessment methods, but at least you are aware that the assessment may be a guess
 - Perhaps an informed one, but still a guess.
- A major problem is that you have nothing upon which to base risk assumptions.
- To balance this risk, add some structure to your risk assessment.
 - You don't have to eliminate intuition and experience, just document your rationale for your risk-based decisions.

17



#8 - Failing to Incorporate Intuition

- Many times I followed a hunch and found defects even when the risk assessment indicated a low risk of failure.
- To address this risk, take a step back from any risk assessment and ask critical questions, such as:
 - “What looks odd about this?”
 - “What looks too good to be true?”
 - “What am I not seeing or hearing?”

18



#9 - Only Performing the Risk Assessment Once

- Risk assessment is a snapshot taken at a given point in time.
 - The problem is that risks change throughout a project.
- Ideally, there should be pre-defined risk assessment checkpoints throughout the project.
 - concept stage, requirements, design, code, test and deployment.



19

RICECONSULTING

#10 - Failing to Report Risk Assessment Results Correctly and Timely

- The longer a known risk remains unreported, the less time is available to address it.
 - The risk may increase or decrease over time.
- Risk assessment results are like any other form of measurement and can be manipulated to suit the objectives of the presenter or the receiver.
 - Example: The situation where the presenter of the results is fearful of giving bad news for political or legal reasons.

20

RICECONSULTING

#11 - Failing to Act on Assessment Results

- Unless you take action on a risk, the risk assessment is little more than an exercise.
- To address this risk, your testing process should specifically include the results from your risk assessment.



21

RICECONSULTING

#12 - A Limited View of Risk

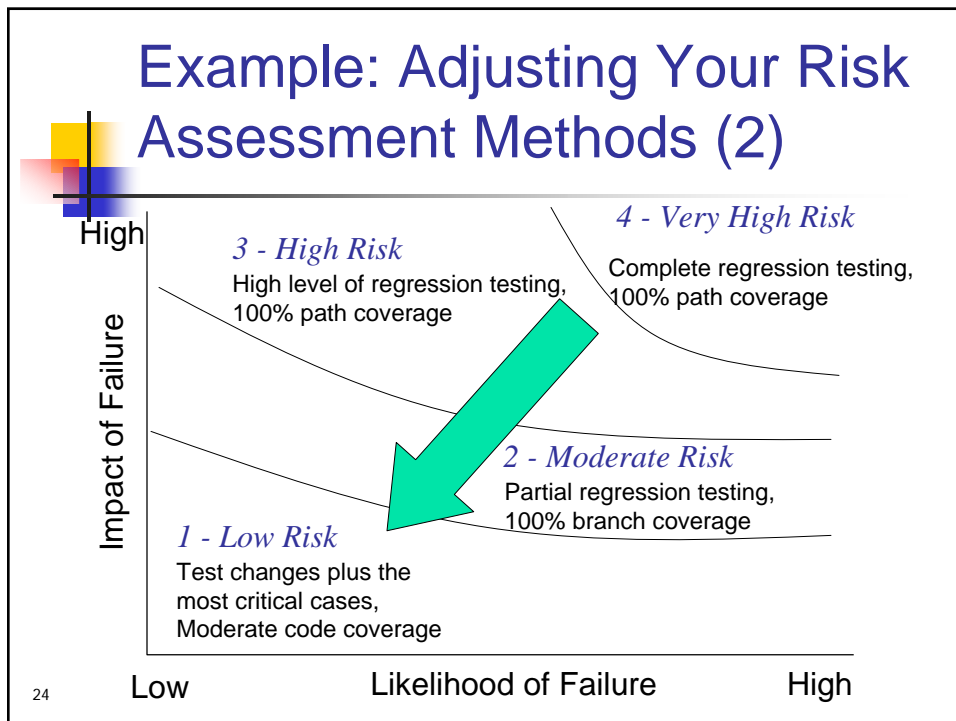
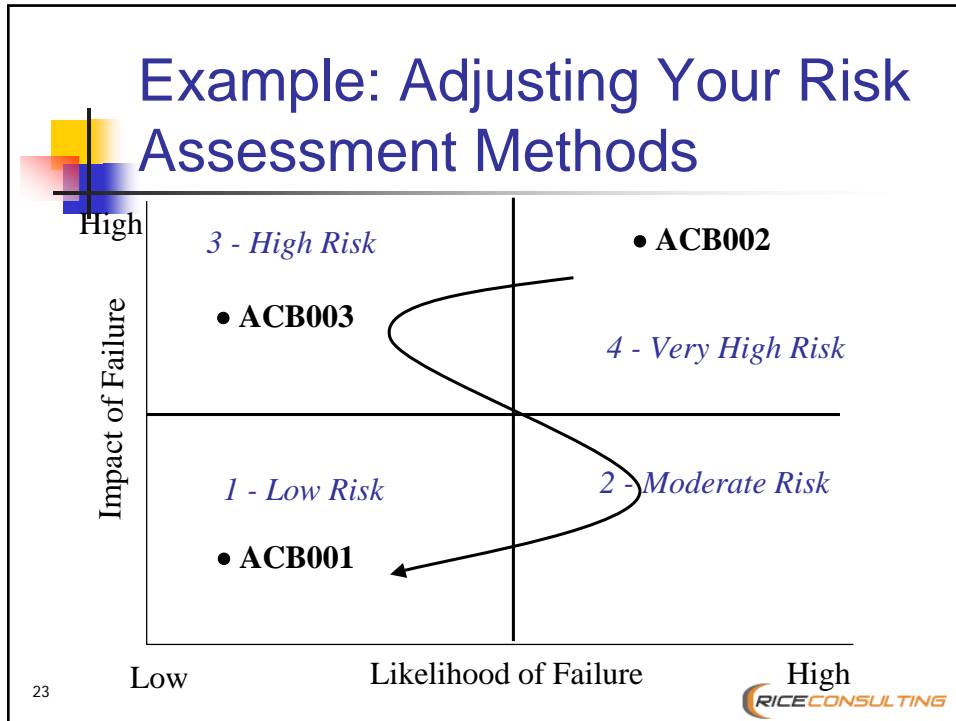
- If you view the project from only one perspective (the “seasoned veteran user” perspective or the “novice” perspective), then you will only identify risks in that profile.
- Remember to view risk from multiple perspectives to get an accurate assessment.



22

RICECONSULTING


Risky Business – The Perils and Pitfalls of Risk-based Testing




Risky Business – The Perils and Pitfalls of Risk-based Testing

The Safety Net

- There is a word that is often used in conjunction with risk, that people sometimes omit - "contingency"
 - a possibility that must be prepared for.
- Contingencies are needed because we have a rich history of seeing how real life events may not match the risk assessment.
 - Think of a contingency as your "Plan B" in case the unexpected happens.




25




An Example From the Insurance Industry

- Reserves are established to cover higher levels of loss than normal premiums would cover.
- Minimal reserve levels are set by law.
 - An insurer may set higher levels if they need more assurance they can cover unexpected losses.



26



Risky Business – The Perils and Pitfalls of Risk-based Testing

However, in the Software Industry...

- There are no regulations about such reserves for projects.
- To make matters worse, in software projects, people tend to be optimists that reserves won't be needed.
 - "In fact," some will say, "we will beat our estimates and finish the project early. That will get us bonuses for sure!"

27




What About "Padding" Estimates?

- Some feel that the estimate should be carefully calculated as accurately as possible and that should be the actual working estimate.
- Others feel that this approach is a recipe for disaster because there is no room for dealing with contingencies.



28







Reframing the Debate


- Instead of “padding”, I prefer to call these "project reserves".
- When used as intended, project reserves help us deal with the unexpected.
 - Problems arise, however, when people abuse reserves.

29



Project reserves are vital for times when we are fooled by risk.



Risky Business – The Perils and Pitfalls of Risk-based Testing



Plan "B"


- Reserves are just time and money - they don't tell you what to do, but a contingency plan does.
- Contingency plans can be created for just about any project activity.

31




Major Project Activities Deserve Priority Consideration


- What if...
 - The requirements are inadequate?
 - The degree of requirements change is excessive?
 - High levels of defects are discovered during testing or reviews?
 - Severe problems are encountered during implementation?



32





Risky Business – The Perils and Pitfalls of Risk-based Testing



A Risk Mitigation Strategy

- Should address:
 - How risks will be addressed
 - Who will address the risks
 - When risks will be addressed
 - When risks will be reassessed

33




A reasonable conclusion is that every risk assessment should also address project reserves and contingencies.


Risky Business – The Perils and Pitfalls of Risk-based Testing

Summary

- I hope this doesn't frighten you from applying risk-based testing.
- Many times our biases form the basis of our perceptions.
 - This causes us to fail to recognize important risks, and in some cases, entire classes of risks.




35




Summary (2)


- The key to dealing with risk is not to rely on just one aspect of the risk picture.
 - We must also balance risk with contingencies to to have a safety net for any risk assessment approach.



36



Risky Business – The Perils and Pitfalls of Risk-based Testing



Bio - Randall W. Rice

- Over 30 years experience in building and testing information systems in a variety of industries and technical environments
- Certified Software Quality Analyst
- Certified Software Tester
- ASTQB Certified Tester – Foundation level
- Director on the American Software Testing Qualification Board (ASTQB)
- Chairperson, 1995 - 2000 QAI's annual software testing conference
- Co-author with William E.Perry, *Surviving the Top Ten Challenges of Software Testing* and *Testing Dirty Systems*
- Principal Consultant and Trainer, Rice Consulting Services, Inc.



37



Contact Information

Randall W. Rice, CSTE, CSQA, CTFL
Rice Consulting Services, Inc.
P.O. Box 6127
Moore, OK 73153
Ph: 405-691-8075
Fax: 405-691-1441
Web site: www.riceconsulting.com
e-mail: rrice@riceconsulting.com



38