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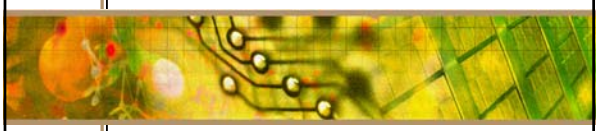
Assessing Risk for Fun and Profit



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What is risk assessment?

- In terms of this presentation, Risk assessment is the process of enumerating risks, determining their classifications, assigning probability and impact scores, and associating controls with each risk.

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What is NOT risk assessment?

- Vulnerability Scanning
- Penetration testing
- Security reviews

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Types of Risk Assessment

- Qualitative – measure in terms like "high, medium, and low" for probability and impact. Look at relative value, risk.
- Quantitative – measure in dollars and formulas.
- ITSP uses a qualitative, customized, expedited version of the Facilitated Risk Assessment Process (FRAP) called EFRAP.
- The government has switched to more qualitative processes – quantitative processes tend to take a very long time and while they generate "hard" data, they are rarely completed!

A quick vocabulary lesson

- Risk: potential events that have a negative impact on the Integrity, Confidentiality, and Availability of information.
- Vulnerability: condition of a missing or ineffectively administered safeguard or control that allows a risk to occur with a greater impact or frequency or both.
- Impact – the potential effect a risk may have on an asset.
- Control – measures taken to prevent, detect, minimize, or eliminate risk to protect the Integrity, Confidentiality, and Availability of information.
- Probability – the likelihood of the event occurring, rated from 0 (yeah, right, that'll never happen) to 1 (I am currently experiencing this event, I wish I had conducted a risk assessment).

What is a risk assessment?

- Risk Assessments measure the risk, the potential loss, and the probability that the loss will occur.
- For the formula folks – Risk (R) = Loss value (L) * Probability (P)

  R=L*P

A quick example

- People do risk assessments every day and don't even think of them that way.
- "If I don't get my wife a Christmas present, she's going to kill me"
  - Risk = Loss (life) * probability (definitely going to happen = 1)
  - In this example, an appropriate control is buying a gift, right?

A quick example (part 2)

- Part of any risk assessment is determining appropriate controls.
- There can be alternate controls
  - A pair of diamond earrings
  - Dinner out
  - Cookie cooling racks.
- Some controls may not be as effective, and assessments should recommend effective controls!

Dealing with risk

Accept the risk

- You accept responsibility and acknowledge awareness of the risk.
- Not always an acceptable alternative
- Who would you rather be?
- Formal acknowledgement can be a useful tool!

Dealing with risk

- Address and control the risk
- Determine appropriate controls, from both a risk remediation and a cost and effort to implement standpoint

Denial?

Why would I bother?

- Risk assessments are required for compliance
- Risk assessments provide direction for security controls
- Assessments can help justify resource expenditure
- Assessments can provide greater insight into process and architecture

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So, how do we do an assessment?

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Meta process

- Sponsor
- Scope
- Team
- Risk enumeration
- Risk classification and rating
- Control identification
- Report
- Action plan and execution

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Risk Assessment Foundation

A strong foundation is essential to the success of a risk assessment!

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Now we're ready to assess risk!

- Sponsorship
  - A key factor in the success of your risk assessment is having an effective sponsor.
  - The sponsor should be in charge of the area or system being assessed.
  - Sponsors should be willing to take responsibility for the assessment and to use its findings.

Risk Assessment

- Scope
  - Carefully scope your assessment
  - Write a scope statement and make sure your group understands it.
  - Use scope to keep on topic during brainstorming, but do not limit brainstorming.

Choosing a team

- Diversity
- Expertise
- Sanity
- Leadership
- Numbers

Diversity and Expertise

- Get the people who know the system or area
- Don't pick your top administrator
- Don't forget the people who use the system!
- Look for different viewpoints

Ever elusive sanity…

- Don't pick the two people who cannot ever get along
- Do pick people with differing viewpoints
- Remember, you want information from your team – pick people who will contribute!

Leadership: Herding Cats

- Choose a neutral leader
- Their goal is not to lead so much as to facilitate and keep the group on track. Think debate moderator, not dictator.
- Set rules and follow them

Numbers

What has twenty legs, ten heads, and can't get along with itself for long enough to make a decision?

- Smaller teams are more effective
- Size your team for the scope of the assessment
- Balance a nimble, manageable team with the need to have subject matter experts.
- Our magic number is usually 5-8 participants.

Now you have a crack team – what next?

Formal Risk Assessment

- Introduction - team members introduce themselves and very briefly describe their area of responsibility or expertise relevant to the scope of the assessment.
- Brainstorm - Risks are brainstormed, no idea will be rejected or negatively discussed in the initial brainstorm.
- Identification - risks categorized as affecting Confidentiality, Integrity, or Availability
- Prioritization - risks are prioritized by their impact, and probability
- Controls - controls are identified and recommended based on the risks identified. Controls are prioritized based on cost, priority, and capability to implement.
- Report - a report is prepared by the facilitator and approved by the team.
- Sign-off - the project lead is given the document and signs off on it.

Risk Assessment

- Brainstorm
  - There are no wrong answers
  - Don't contradict
  - Duplicates are ok
  - Keep it moving
  - One person talks at a time
  - Only one person may be angry at a time!

Categorization

- Label each risk as a risk to one or more of confidentiality, integrity, or availability.

Risk Types – CIA, another TLA

- **Confidentiality**: information has not undergone unauthorized disclosure
- **Integrity**: information is as intended, without unauthorized or undesirable modification or corruption.
- **Availability**: protection from unauthorized attempts to withhold information or computer resources.

High, Medium, and Low

- High, medium, and low mean something different to everyone.
- Assign understandable values, then seek group agreement.
- Document thought process if necessary or appropriate.

Assessing Risk Levels

- Confidentiality Risk is:
- HIGH – if unauthorized use or disclosure would severely impact business operations, make a segment of the company unable to function, or cause high monetary loss.
- MODERATE – if use or disclosure does not severely affect operations or does not result in high monetary loss.
- LOW – if use or disclosure does not affect operations or result in significant monetary loss.

Assessing Risk Levels

- Integrity Risk is:
- HIGH - if data inaccuracy, incompleteness or unauthorized modification causes failures of operations, revenue loss, wrong decisions to be made, loss in productivity or loss of customer confidence or market share.
- MODERATE - if it causes inability to make some decisions, but the problem is not difficult to detect and correct, and does not severely impact business operations.
- LOW – if alternative validations of the information make it possible to continue business operations.

Assessing Risk Levels

Availability Risk is:

- HIGH – if unavailable information impairs business operations, affects customer service, or makes it impossible to process revenues.
- MODERATE – if unavailable information causes productivity loss, but does not interrupt customer service or revenue generation.
- LOW – if unavailable information does not severely impact business operations.

Probability and Impact

- Probability
  - How likely is the event?
    - » High: It has happened in the past year, or is happening now.
    - » Medium: It has happened in the past 2 years, or is somewhat likely to happen in the next two years.
    - » Low: It rarely happens, or is unlikely to happen in the next 2 years.
  - Probability ratings should be determined as appropriate to the goals of the assessment!

Probability and Impact

- Impact
  - Financial, reputation, time
    - » High impact: will cost a significant amount of your yearly budget, will consume large amounts of time, will severely hurt your reputation.
    - » Medium impact: will cost some of your yearly budget, will consume some time, or will damage your reputation.
    - » Low impact: negligible effect or cost.

Group example

- Suggest a risk
- Classify the risk
- Rate Probability
- Rate Impact
- Suggest controls

Reporting

- Reports should include risks, probability and impact ratings, and controls for each risk.
- Reports should be signed off on by the project sponsor and the areas that must implement controls.
- Choose a reasonable implementation timeframe and follow up!

Nobody else wants to play

- You can conduct risk assessments on your own
- Mini-assessments are useful as a starting point for projects and to review existing systems and applications
- Beware of your own bias
- Document it!

Next steps in campus RA

- ITSP is working with Prevari to provide a web based compliance and risk assessment tool.
- Early testing will begin late this year.
- Roadmap includes GLBA compliance as our first large scale use.

High risk Q&A

Ask away!

Bonus Risky Behavior

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