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An Opportunity-Based Approach to Information Security Risk

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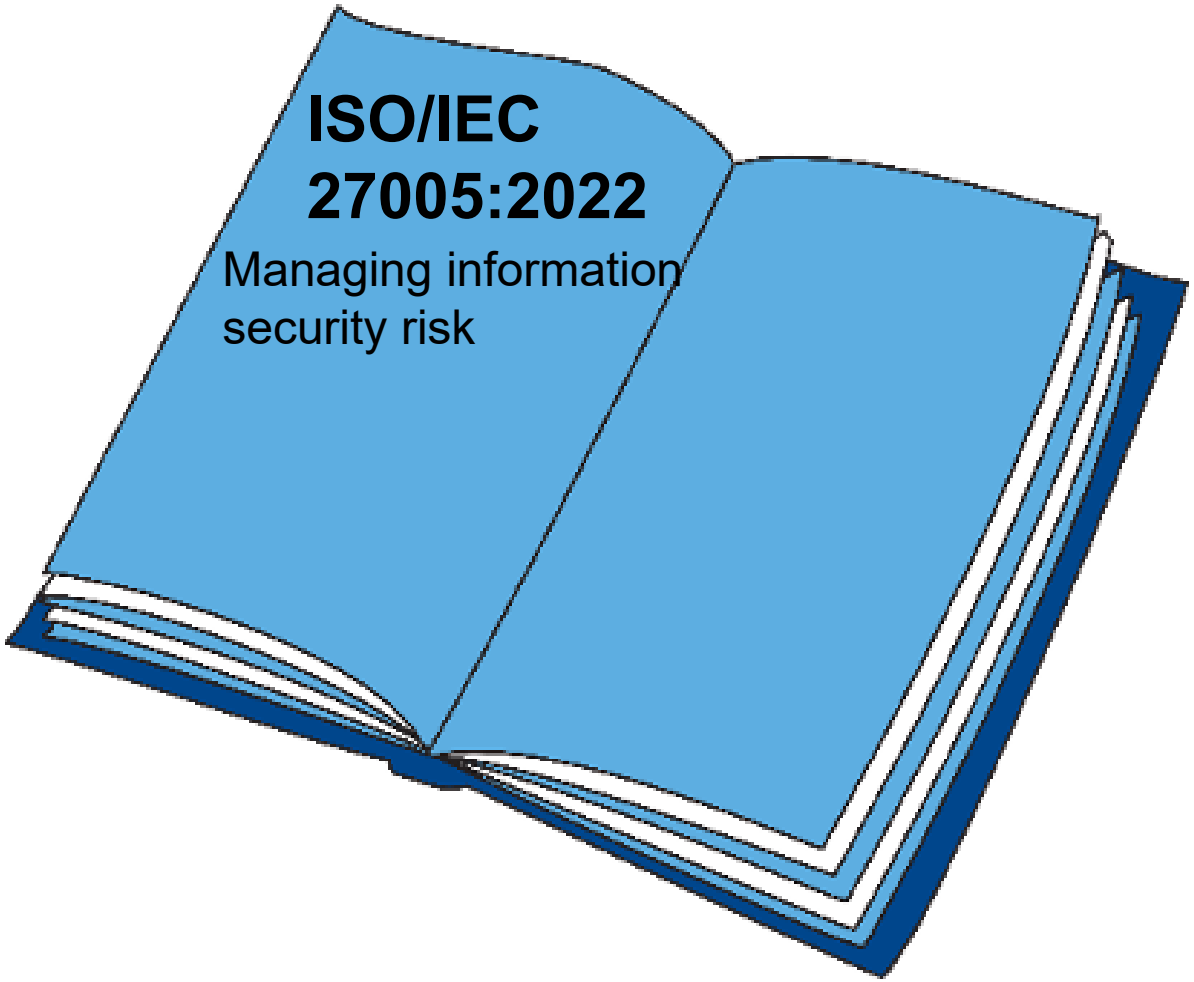
Outline

- Finding/Motivation
- Research questions
- Method
- Results
- Sample case
- Conclusion

Finding/Motivation



Definition of Risk:

"the effect of uncertainty on objectives"

Positive risk

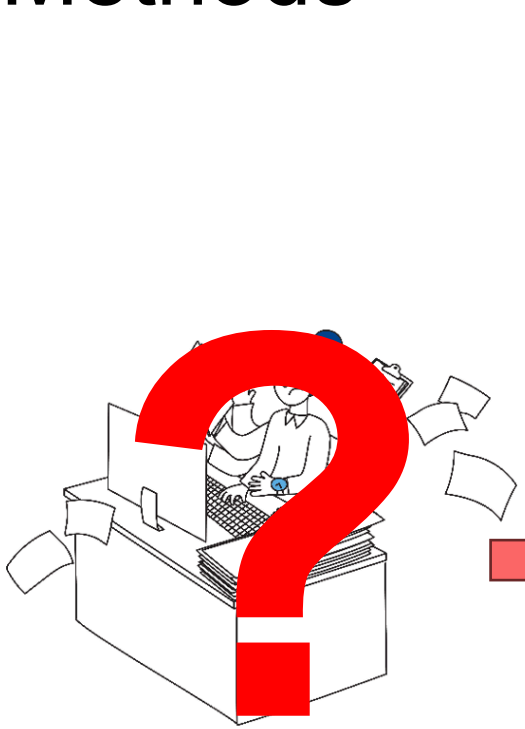
Research questions

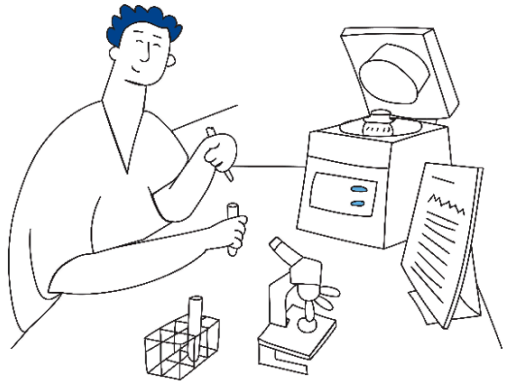
1. How should practitioners interpret the concept of risk as defined in ISO/IEC 27005:2022 to make it more applicable to both positive and negative risks?

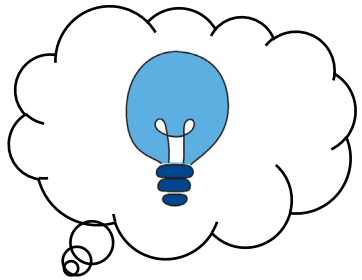
2. What should a definition of positive risk be articulated?

3. How can the definition of risk be applied to describe and assess both positive and negative risks?

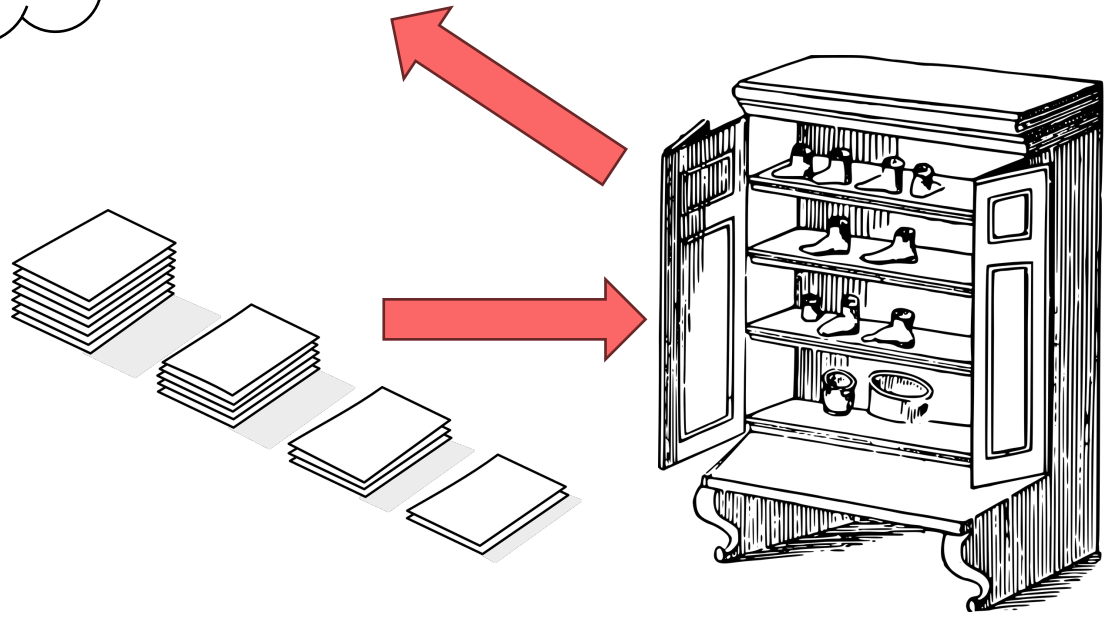
Methods







Generate new theory



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Systematic literature review

Grounded theory

Coding and sorting

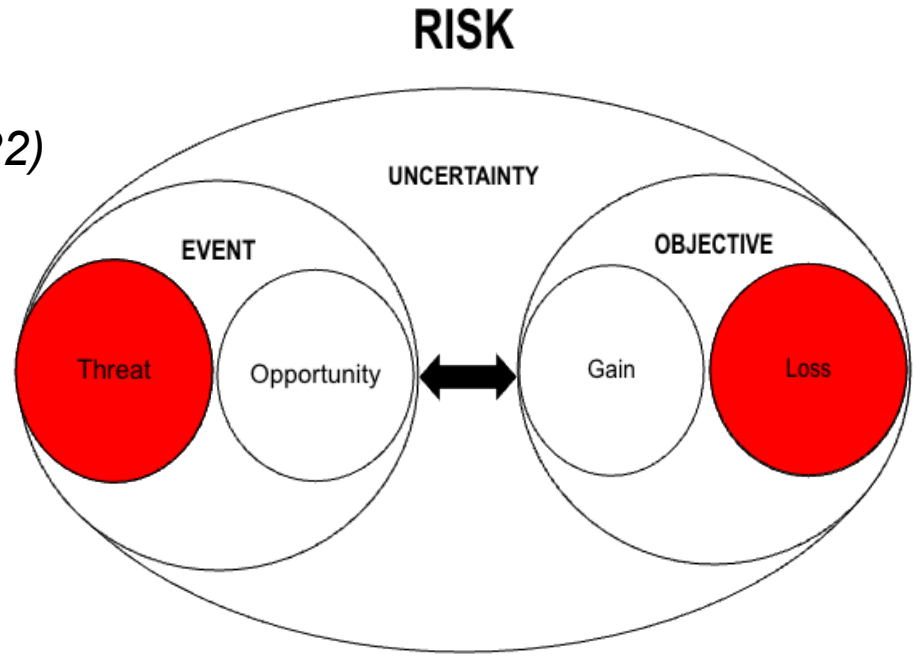
Categorisation and axial coding

Results – 1. How should practitioners interpret the concept of risk as defined in ISO/IEC 27005:2022 to make it more applicable to both positive and negative risks?

1. Tier *The effect of uncertainty on objectives (ISO/IEC 27005:2022)*

2. Tier ***"An information security risk is a possible security-related event that could affect business objectives."***

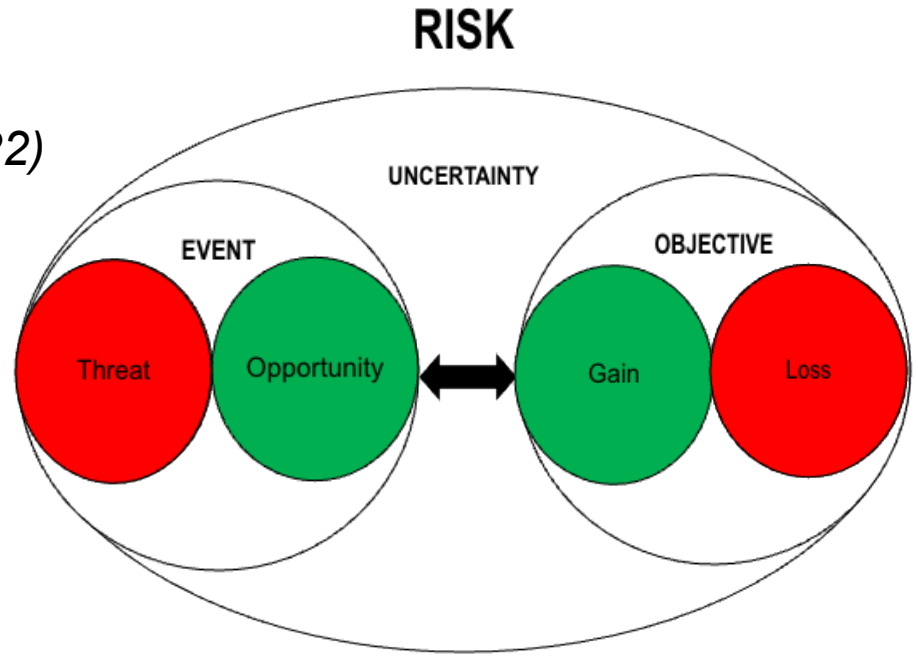
3. Tier Risk is the potential that a given threat will exploit vulnerabilities of assets and thereby cause harm to the organization *(ISO/IEC 27005:2018)*



Results – 2. What should a definition of positive risk be articulated?

1. Tier *The effect of uncertainty on objectives (ISO/IEC 27005:2022)*

2. Tier ***"An information security risk is a possible security-related event that could affect business objectives."***

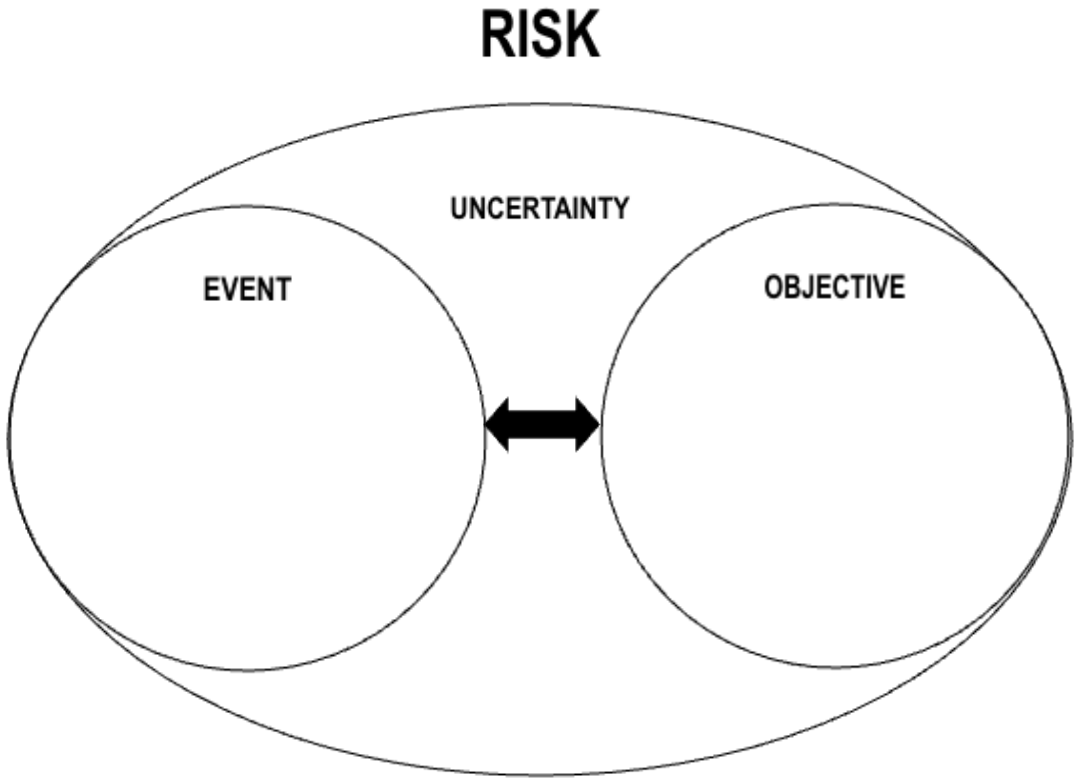


3. Tier Risk is the potential that a given threat will exploit vulnerabilities of assets and thereby cause harm to the organization *(ISO/IEC 27005:2018)*

"A positive information security risk is a possible security-related opportunity that could help businesses achieve their business objectives."

Results – 3. How can the definition of risk be applied to describe and assess both positive and negative risks?

Results – 3.1 How to describe ~~positive~~ and ~~negative~~ risk?



"An information security risk is a possible security-related event that could affect business objectives."

"There is a possibility that <insert event> could result in <insert outcome>"

Results – 3.1 How to describe positive and negative risk?

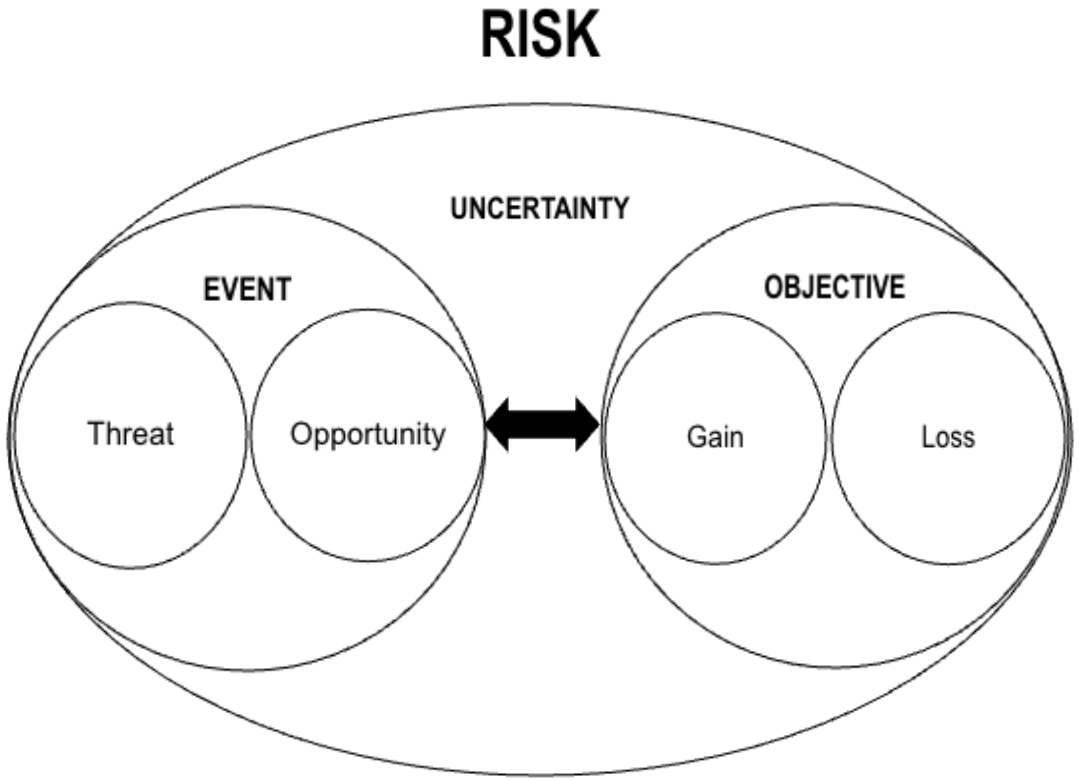


Table 2. Risk description strategies.

Alternative	Risk description alternatives
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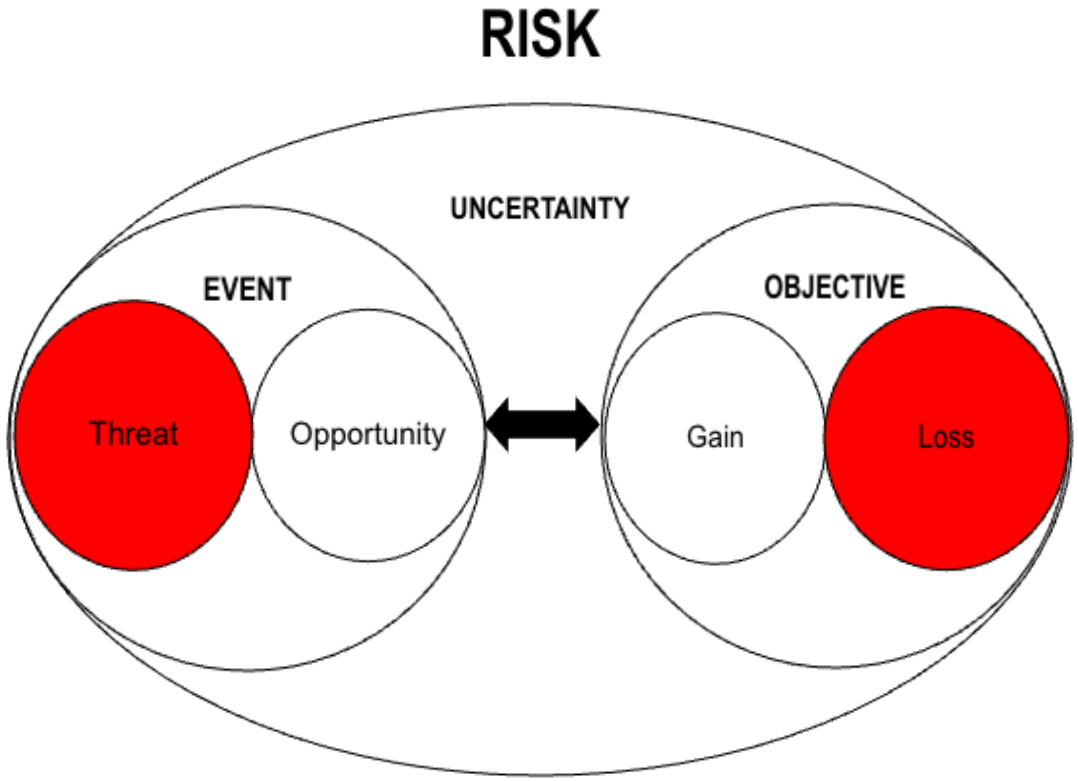
Results – 3.1 How to describe positive and negative risk?



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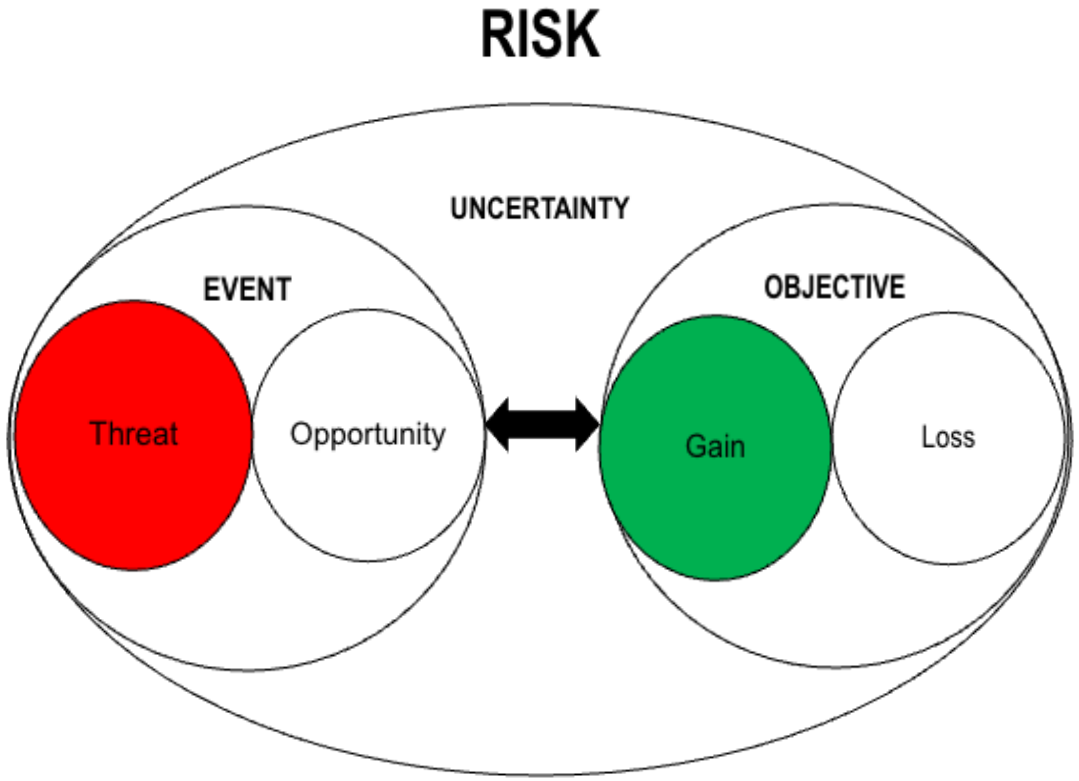

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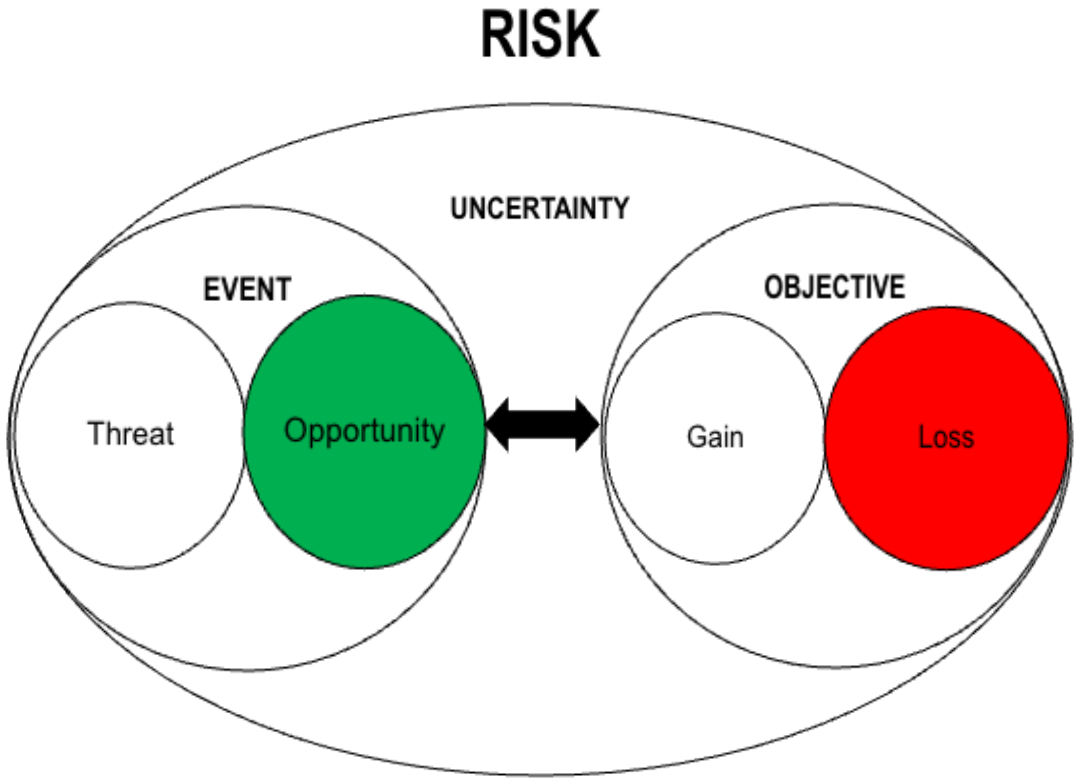

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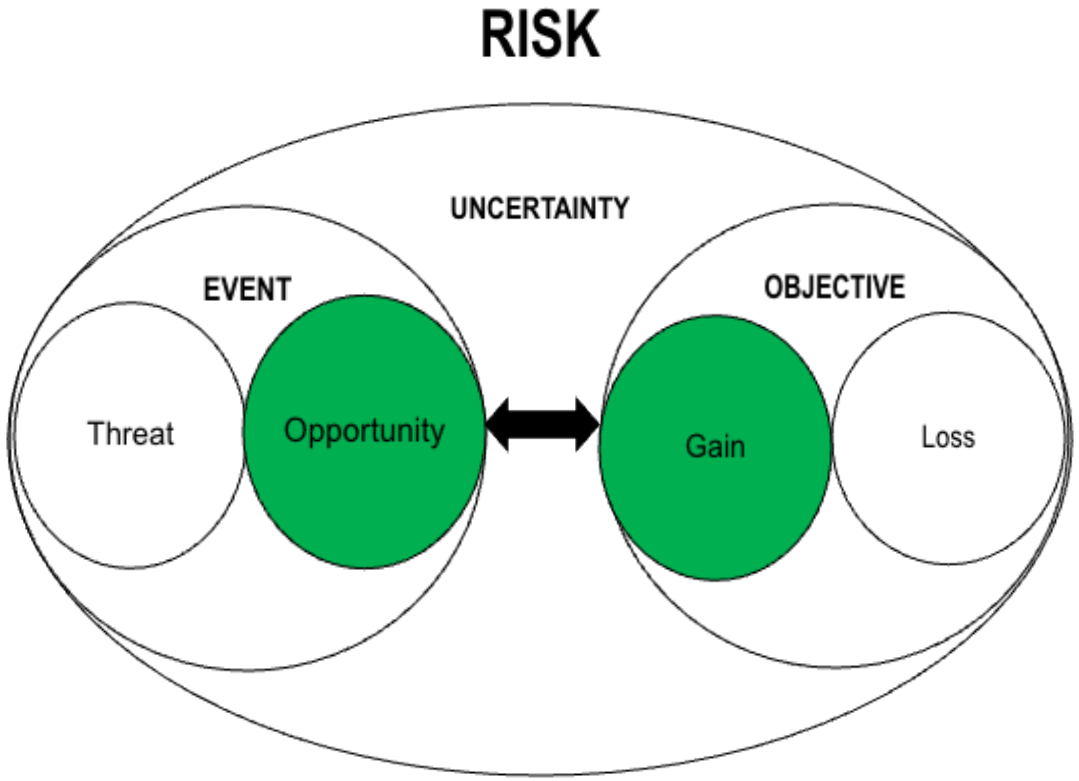

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Results – 3.2 How to assess positive and negative risks?

Table 2. Risk description strategies.

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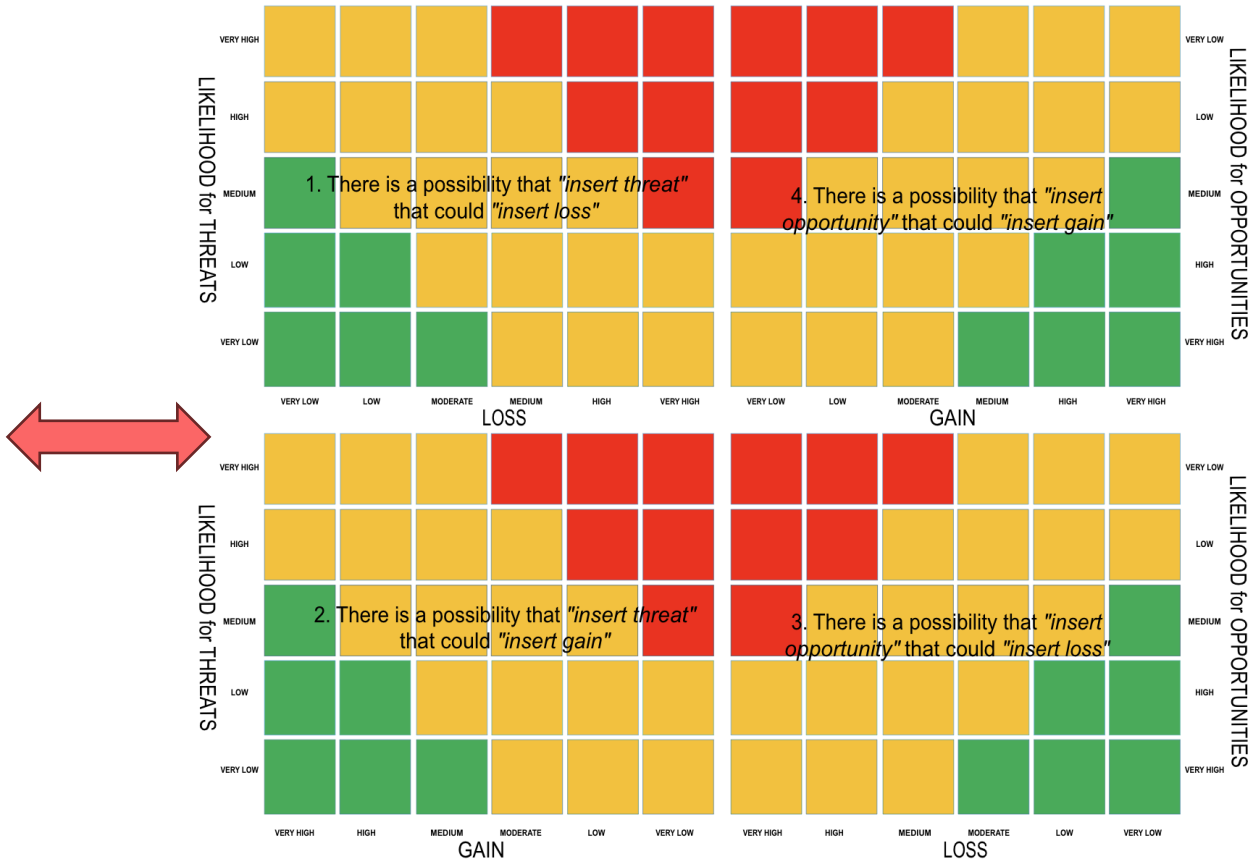
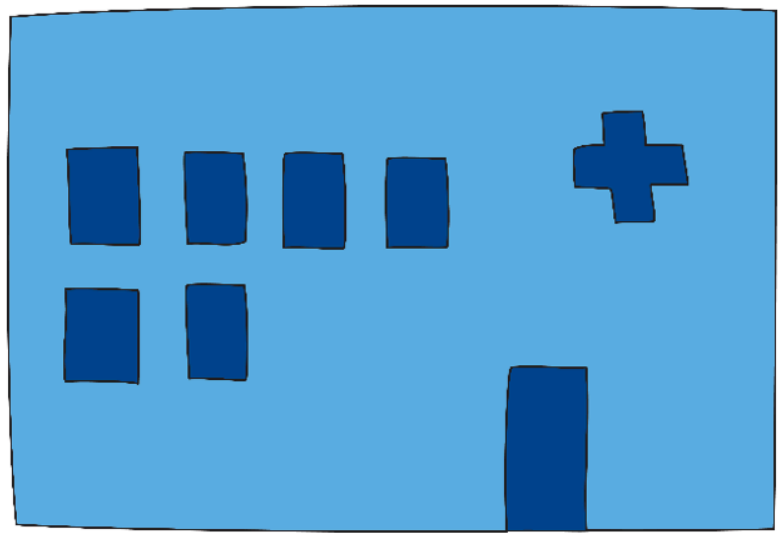
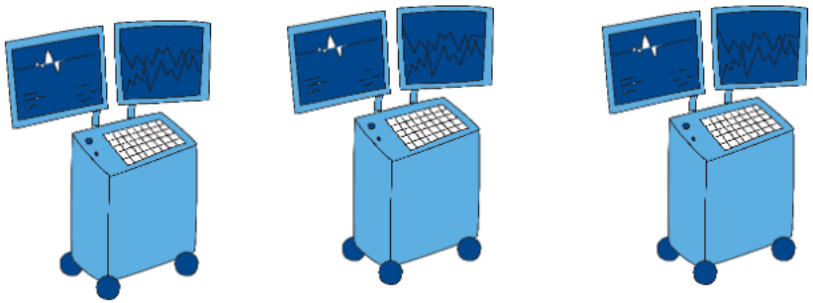


Sample case – Emergency healthcare

- Purpose
  - Doctors rely on advanced technology to perform emergency health care procedures
  - Lately some technical issues
  - Hired a risk analyst to get a better understanding of risk related to information security

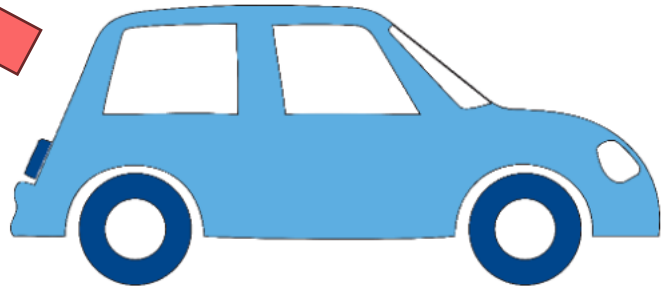


Findings



The same system is installed locally on different equipments

Travel time: 30 minutes

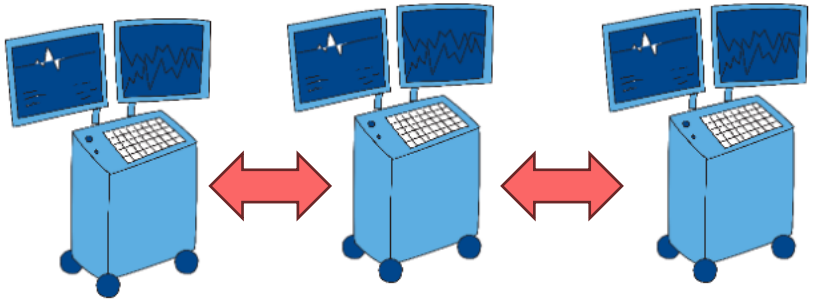


Staff must be on-site to the fix issue

Solution

Centralized

Monitoring



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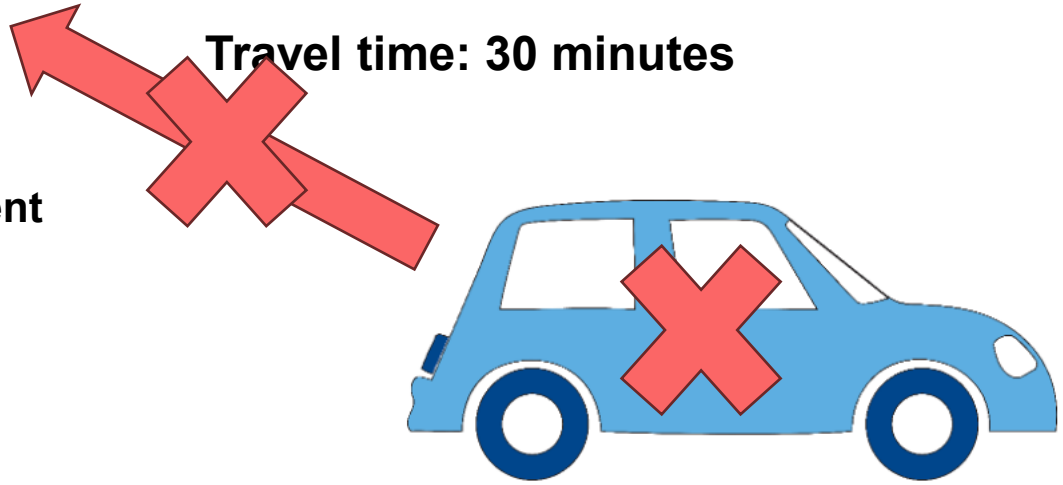


Staff must be on-site to fix the issue

Risk description alternative 1

Threat

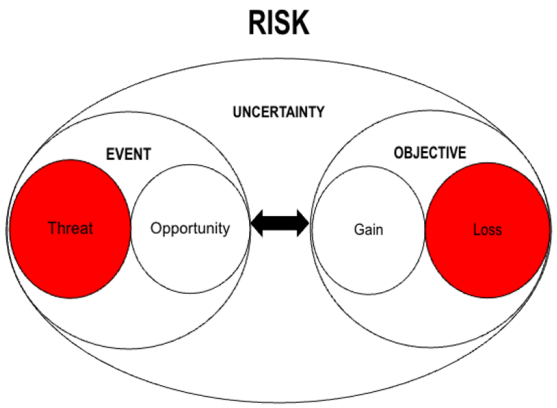
“There is a possibility **that malware can be installed without detection**, which could **cause business disruption.**”

Loss

Who?: Top-level management and Security staff

Likelihood: Very high, lack of monitoring tools

Impact: Very high, not centralized and time consuming



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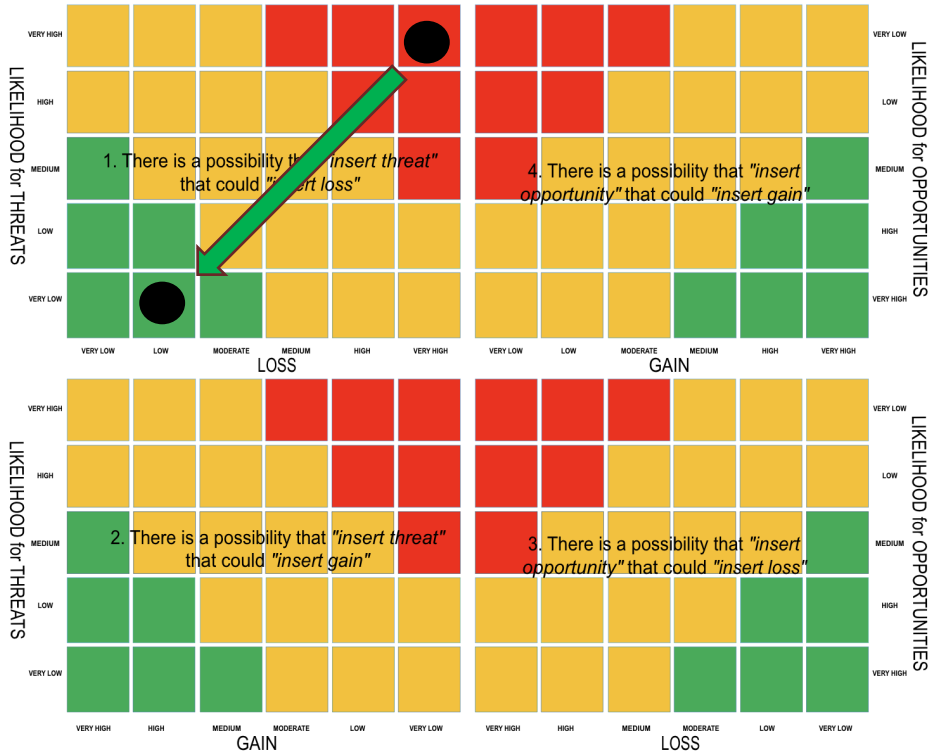

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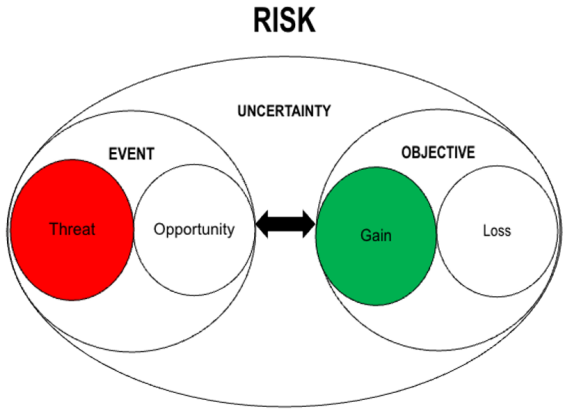
Risk description alternative 2



Threat

”There is a possibility **that malware can be installed without detection**, which would **not cause any business disruption**.”

Gain

Table 2. Risk description strategies.

Alternative	Risk description alternatives
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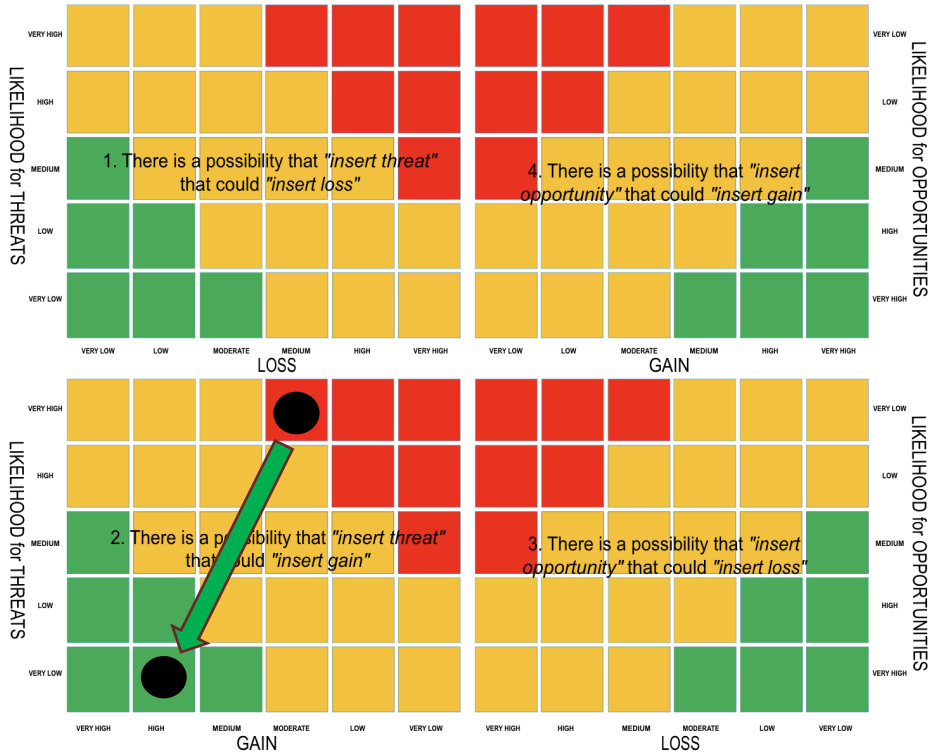

Who?: Security and IT staff

Likelihood: Very high, lack of monitoring tools

Impact: Medium, Experienced IRT team

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Risk description alternative 3

Opportunity

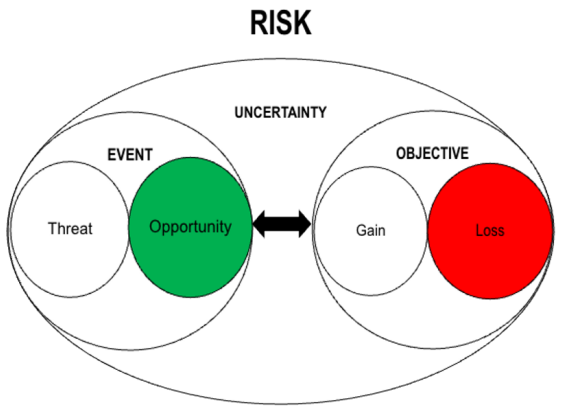
”There is a possibility that **acquiring updated infrastructure (centralised, monitoring capabilities)** could **cause business disruption**.”

Loss

Who?: All stakeholder who prefer solutions

Likelihood: Depends on aquisition and project management skills

Impact: Depends on ICT architecture skills and IRT



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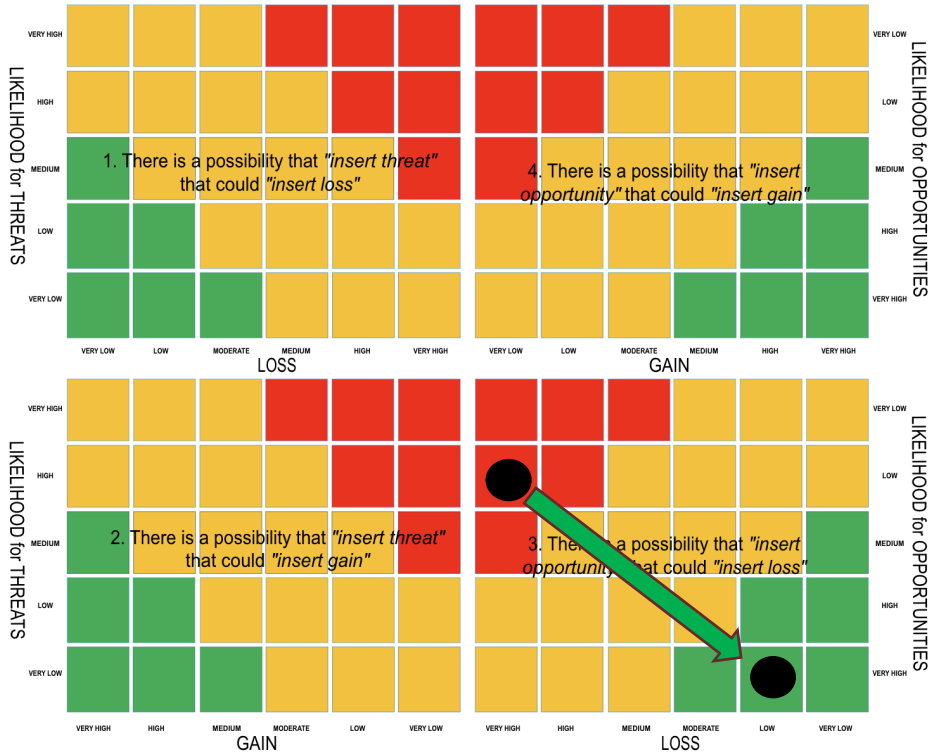

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Risk description alternative 4

Opportunity

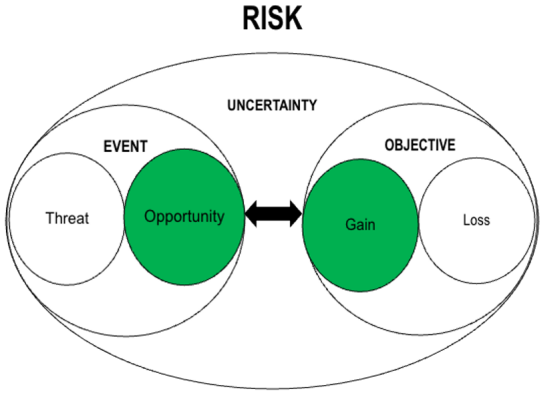
”There is a possibility that **acquiring updated infrastructure detection of faults in the system(centralised, monitoring capabilities)**
could **reduce the workload of the IT and security staff, and give a more reliable system**.”

Gain

Who?: All stakeholder who prefer solutions

Likelihood: Depends on aquisition and project management skills

Impact: Depends on ICT architecture skills and involvement of staff



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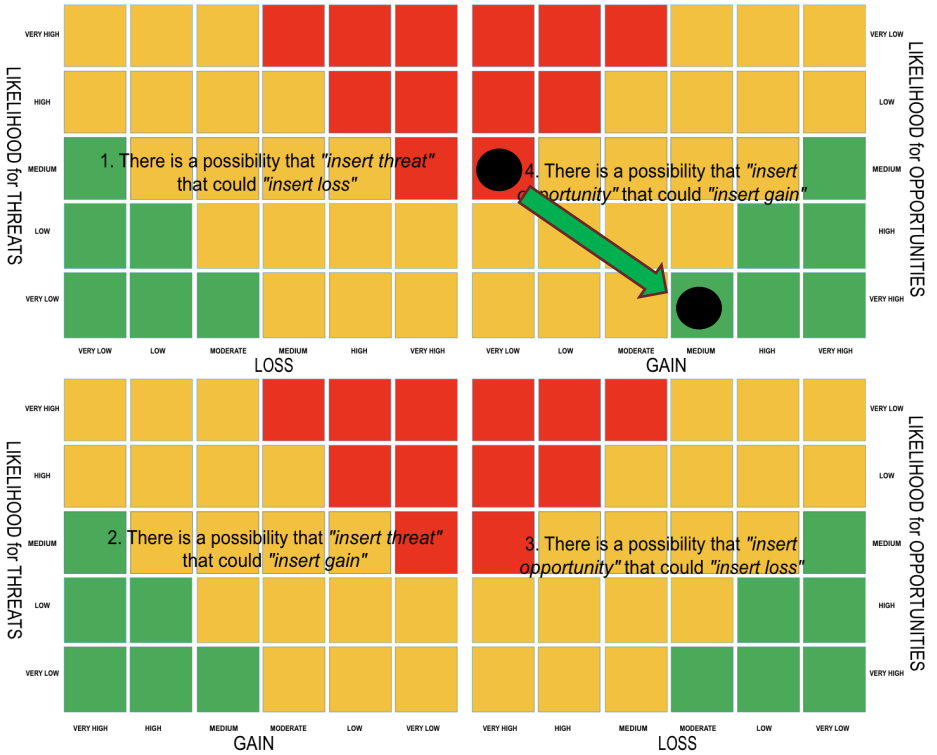

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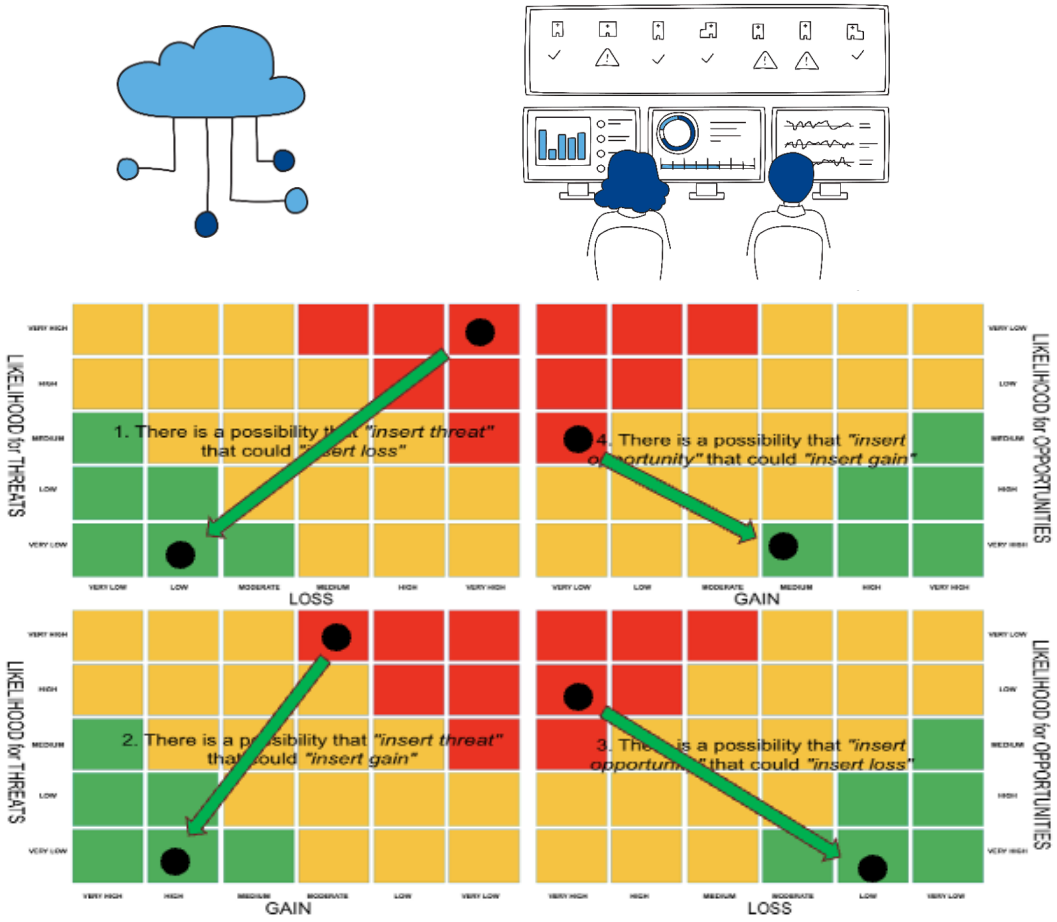
Summary

-Same solutions but different strategies

-Management of positive and negative risk

-Apply security measures to ensure residual risk is at an acceptable level



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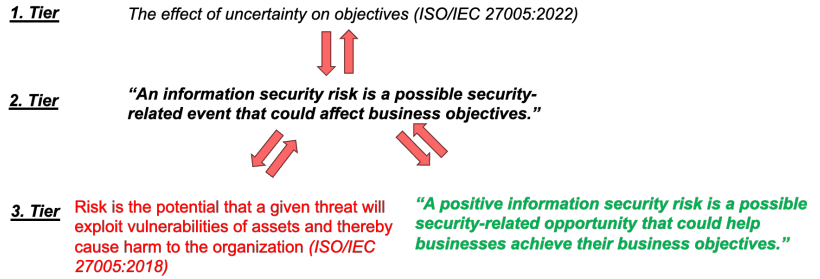
Conclusion

- Contributions
  - Proposed an updated definiton of risk
  - Proposed a new definiton of positive risk
  - Conceptualisation of risk
  - Risk decription strategies
  - Four dimensional risk matrix
- Future leaders might expect security professionals to manage positive risk
- We need to adapt to a business-oriented approach!



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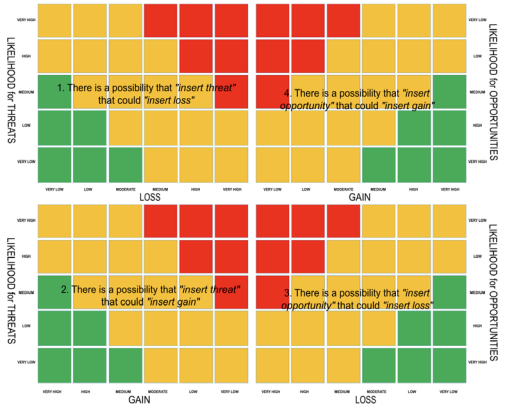

Thank you for your attention!

Contact information

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- Linkedin: www.linkedin.com/in/uydinhtran
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