

A Methodology of Health Information Security Evaluation



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Health Information Security



- **The need for (information) security is more acute**
 - Relationships between entities change much faster
 - Data ownership is more complex
 - Information is always personal / sensitive
- **Breaches in security can have serious ramifications**
 - Unauthorised access/disclosure of information
 - Reliability of information can be life threatening
 - Loss of patient confidence
 - Reputable damage to the health establishment

Health Information Security Standards



- **Traditional security measures do not provide sufficient protection**
 - i.e. Security risk analysis and baseline security standards
 - Both do not take into account privacy and legal health regulations
 - Lack of focus on social and environmental factors
- **Health organisations are becoming increasingly dependent on IT and their expanding boundaries**

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Health Information Security Evaluation Methodology



- **The aim of to develop a Health Information Security Evaluation Methodology that relates to:**
- **Builds upon Security Standards - HB 174-2003.**
- **Allows the use of Object Oriented Approaches to Explore security issues.**
- **Validated within Health organisations.**

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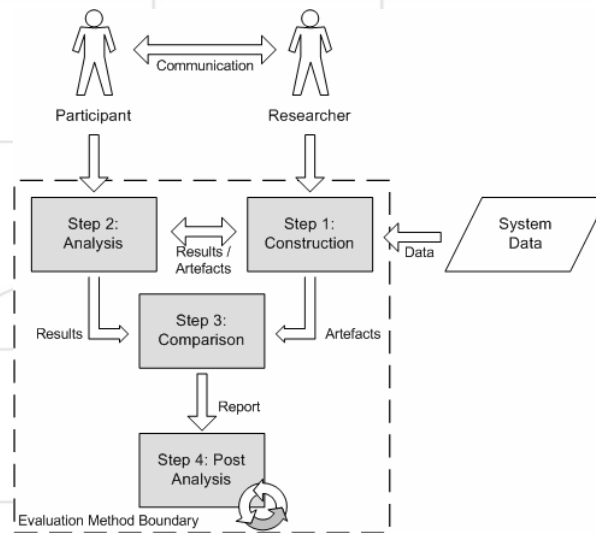
Overview of the Evaluation Method



- **Step 1: Scenario Construction and Modelling**
- **Step 2: Health Information Security Analysis**
- **Step 3: Comparison of the Current and Ideal Security**
- **Step 4: Post-Implementation Analysis**

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Overview of the Evaluation Method



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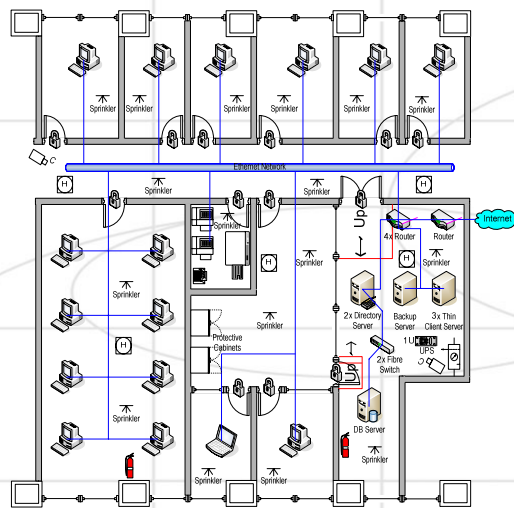
Step 1: Scenario Construction and Modelling



- **Gather information about the system**
- **Define the physical model**
 - Building layout, computer system, various entities that interact with system
 - UML Use Case Diagrams for human interaction
- **Use Case Scenarios**
 - Define logical operations performed by the system or a user

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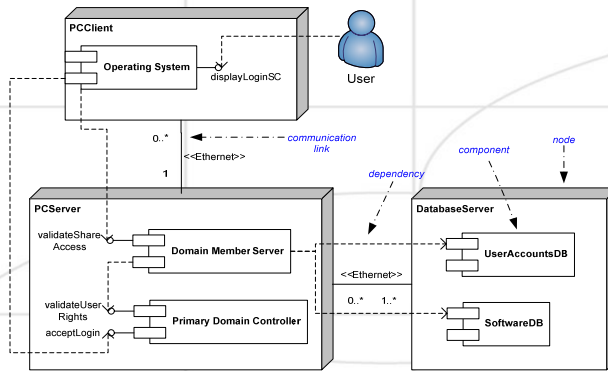
Application of Step 1



Physical Model

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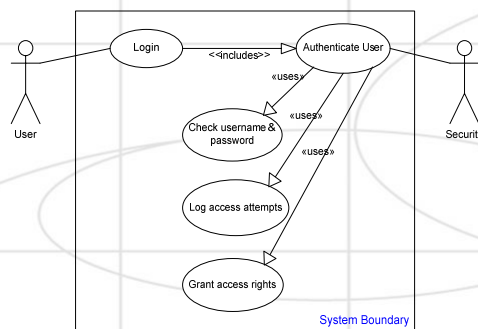
Application of Step 1



Logical Model

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Application of Step 1



Use Case Scenario: user logs in to system

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Step 2: Health Information Security Analysis



- For this step the participant will analyse the security countermeasures in place by means of a checklist.
- The checklist is a set of information security categories based primarily on the HB 174-2003 Australian Standard named “Information Security Management – Implementation guide for the health sector.”

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Step 3: Comparison of the Current and Ideal Security

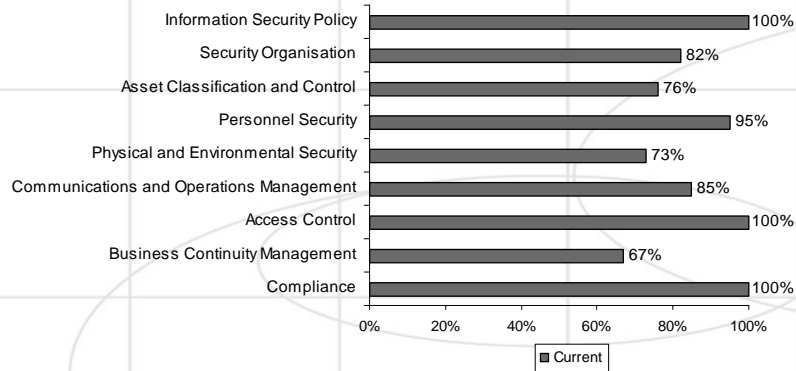


The security professional converts the results (i.e. current security level) from the checklist into a percentage and plots them onto a two-dimensional evaluation histogram.



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Outcome of Step 3



Example results for each key control.

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Step 4: Post-Implementation Analysis



- **Improve the overall level of security**
 - Organisation review analysis results
 - New security controls suggested

- **Baseline security level defined**
 - Compare security levels

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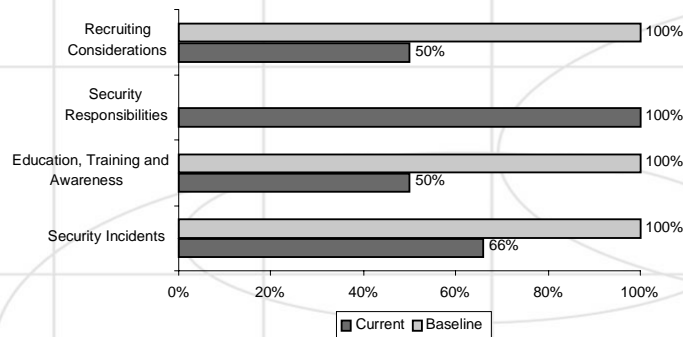
Step 4: Post-Implementation Analysis



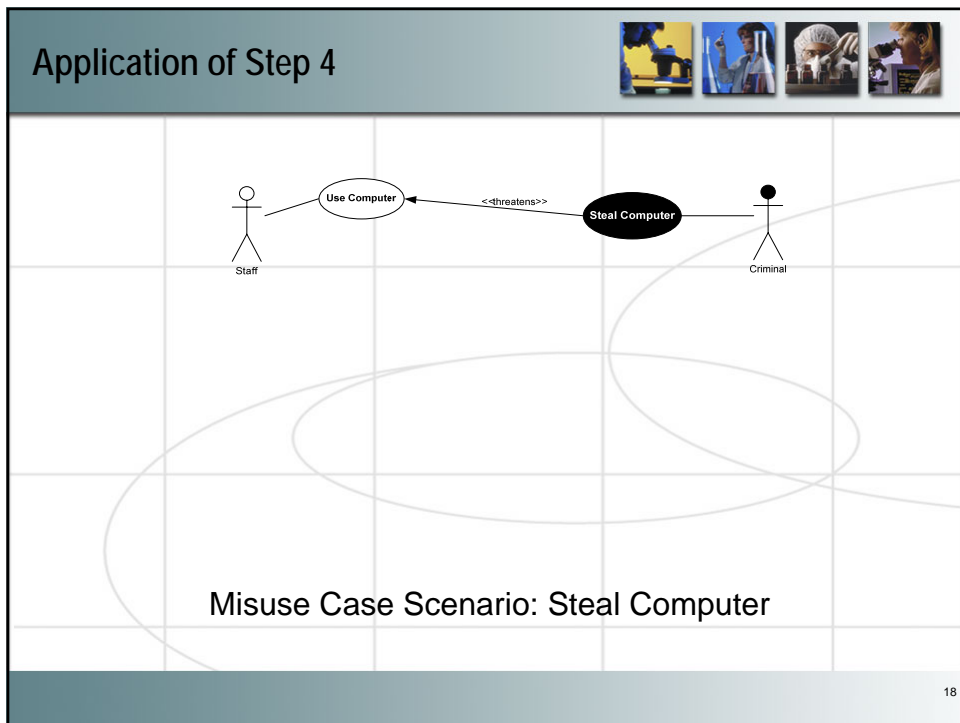
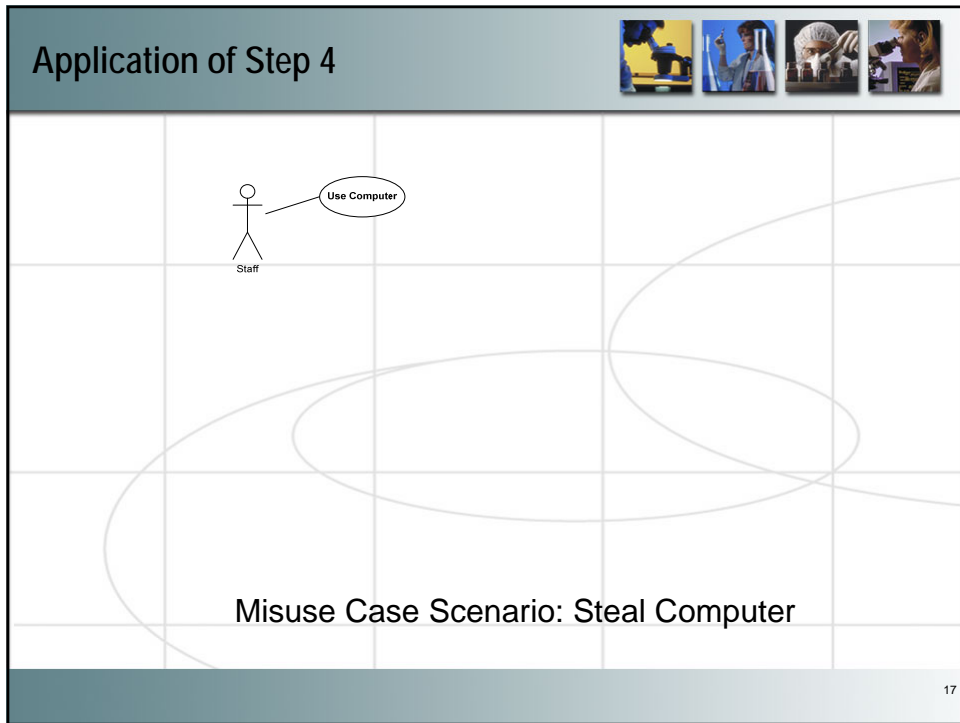
- It is quite simple to suggest security features to mitigate the level of risk and threat in a scenario but it may not always be physically or logically possible.
- By reconstructing the physical and logical models top management and IT personnel will have a visual analysis of the projected security level for the system, which will take into account physical and logical constraints.

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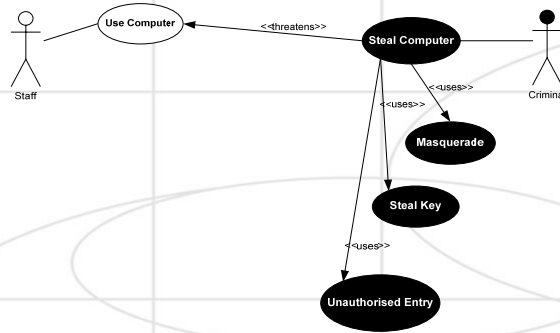
Step 4: Outcome



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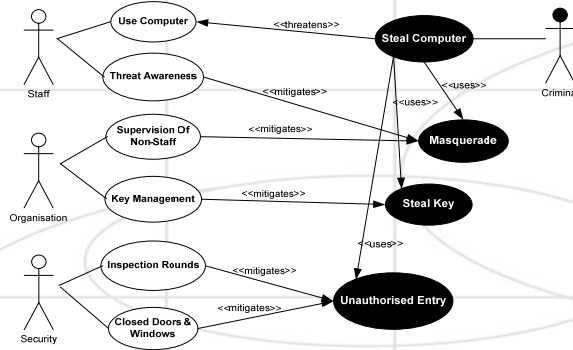


Application of Step 4



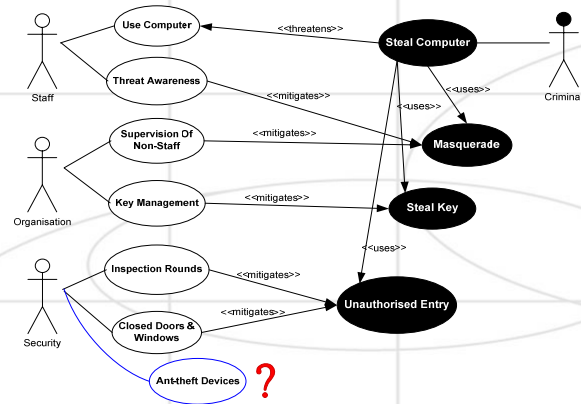
Misuse Case Scenario: Steal Computer

Application of Step 4



Misuse Case Scenario: Steal Computer

Application of Step 4



Misuse Case Scenario: Steal Computer

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Future Work



- **Validate Research**
 - **Validate Evaluation method at Barwon Health.**
 - **Barwon Health located in state in Victoria, Australia, based in Geelong.**
 - **Barwon Health is Victoria's largest regional health care provider.**

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Q & A



Thank you