Joint Universities Computer Centre Limited
("JUCC")
Information Security Awareness Training- Session One

Information Security- Perspective for Management

Information Security Management & Change Management

Agenda

- Information Security Management
- Information Security Fundamentals
- The Standard – ISO27001
- ISO27001 – 11 Domains
- Information Security Change Management
- Information Security Change Management – Example

Information Security Management

Information Security Management

- Physical Information
  - e.g. paper forms / answer scripts / proposals / project progress reports …
- Electronic Information
  - e.g. financial data (accounting system)
    student information (registry system)
    payroll information (HR system) …

Information Security Management

Information Security Management

"Information security means **protecting information** and information systems from unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction"

(Wikipedia)

Information security exists to: "ensure **adequate and proportionate security controls** that adequately protect information assets and give confidence to customers and other interested parties. This can be translated into maintaining and improving competitive edge, cash flow, profitability, legal compliance and commercial image."

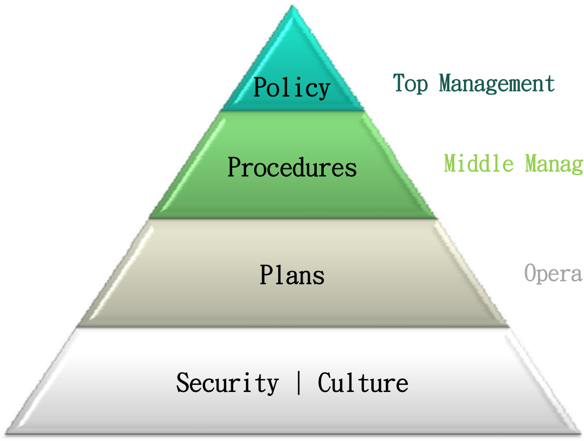
(ISO27001)

Information Security Management

Information Security Management

- The risks associated with information
- The corresponding controls in place to manage those risks
- Controls:
  - Technology measures
  - Organisational structures
  - Procedures
  - Policies
  - Plans

Information Security Management



Top Management

Middle Management

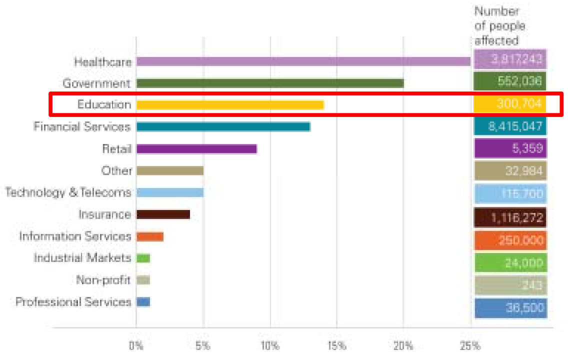
Operation Level

Information Security

Why manage information security?

Data Loss Statistics

By sector: number of incidents as a % of total for 2010



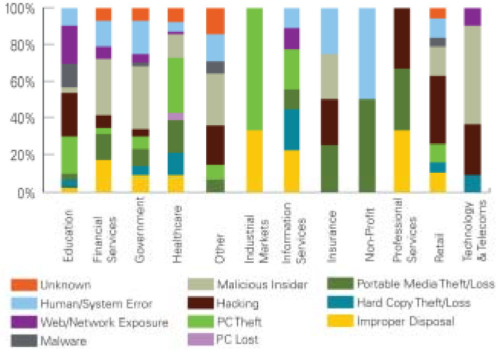
Source: KPMG International. October 2010

Information Security

Why manage information security?

Data Loss Statistics

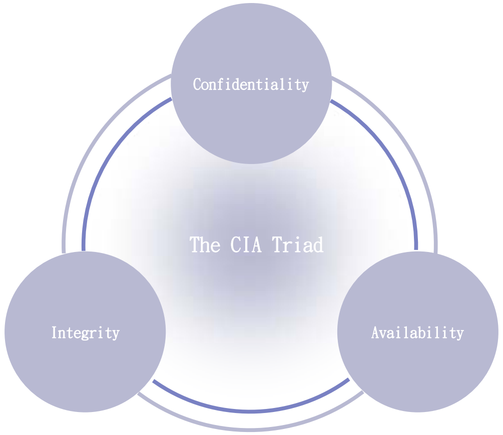
Cause of data loss v Industry: number of incidents as % of total for 2010 (January-June)



Source: KPMG International, October 2010

The core principles of information security:

- "Confidentiality" is keeping sensitive information protected
- "Integrity" is keeping information intact and valid
- "Availability" is keeping information available and accessible

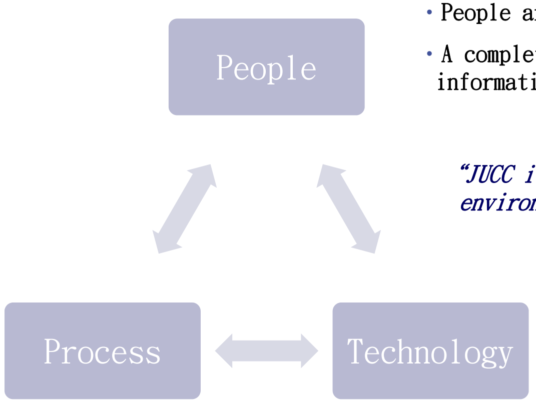


Confidentiality

The CIA Triad

Integrity

Availability



People

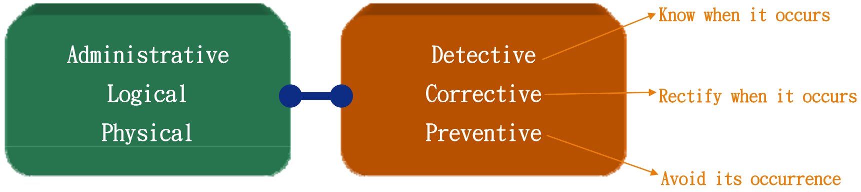
Process

Technology

- Information security is not only related to computer systems.
- People are always the weakest link.
- A complete framework is required to manage information security.

"JUCC is committed to improve the security environment of the universities in all 3 perspectives"

Types of Information Security Controls



Administrative

Logical

Physical

Detective

Corrective

Preventive

Know when it occurs

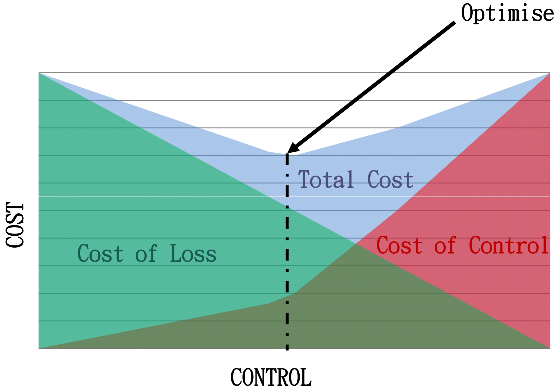
Rectify when it occurs

Avoid its occurrence

Limitations

- No 100% assurance
- Breakdown e.g. misunderstand/ mistake
- Involve human judgement
- Management override
- Collusion

Control Implementation- Cost vs Loss



Standard- ISO27001

- Information Security Management System (ISMS) standard
- Published by International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC)
- Requires management:
  - Systematically **examine** the organization's information security risks, taking account of the **threats, vulnerabilities and impacts**;
  - **Design and implement** a coherent and comprehensive suite of information security controls and/or other forms **of risk treatment** (such as risk avoidance or risk transfer) to address those risks that are deemed unacceptable; and
  - Adopt an overarching **management process** to ensure that the information security controls continue to meet the organization's information security needs on an **ongoing basis.**

(Source: Wikipedia)

ISO27001- 11 Domains

1. Security Policy
2. Organisation of Information Security
3. Asset Management
4. Human Resource Security
5. Physical and Environment Security
6. Communication and Operations Management
7. Access Control
8. Information System Acquisition, Development and Maintenance
9. Information Security Incident Management
10. Business Continuity Management
11. Compliance

ISO27001- 11 Domains (cont’d)

- Security Policy
  - Security **policy document** approved and communicated
  - Regular **review** of the policy document
- Organisation of Information Security
  - Clear direction and visible **management support**
  - **Managed implementation** of security controls
  - Information security **responsibilities** defined

ISO27001- 11 Domains (cont’d)

- Asset Management
  - Information, software & physical asset **inventory**
  - Information **classification**
  - Information **handling** procedures
- Human Resource Security
  - **Employment checks**
  - Confidentiality/ non-disclosure **agreements**
  - Information security **training**
  - **Disciplinary process** for security violation

ISO27001- 11 Domains (cont’ d)

- Physical and Environment Security
  - **Physical protection** of premises/ facilities
  - Protection against **natural disasters**
  - Protection against communication **interception**
  - **Clear desk** policy
- Communication and Operations Management
  - Operating **procedures**
  - Security requirements for **contractors**
  - Detection and prevention of **malicious software**
  - Data **backup**
  - Network, email, portable media and disposal **management procedures**

ISO27001- 11 Domains (cont’ d)

- Access Control
  - User registration/ deregistration **process**
  - **Password** controls
  - User access **review**
  - **Remote access** control
  - **Audit** logging
- Information System Acquisition, Development and Maintenance
  - Data **validation**
  - Message **authentication**
  - **Cryptography** management
  - Control over **testing data**
  - System **change controls**
  - Prevention against **covert channels**

ISO27001- 11 Domains (cont’ d)

- Information Security Incident Management
  - Incident **prioritisation & classification**
  - Channels for incident **reporting**
  - Incident **escalation** procedures
  - **Contacts** of regulatory bodies and law enforcement agencies
- Business Continuity Management
  - Business continuity **framework**
  - Established business continuity **plans**
  - Regular business continuity **test**

ISO27001- 11 Domains (cont’ d)

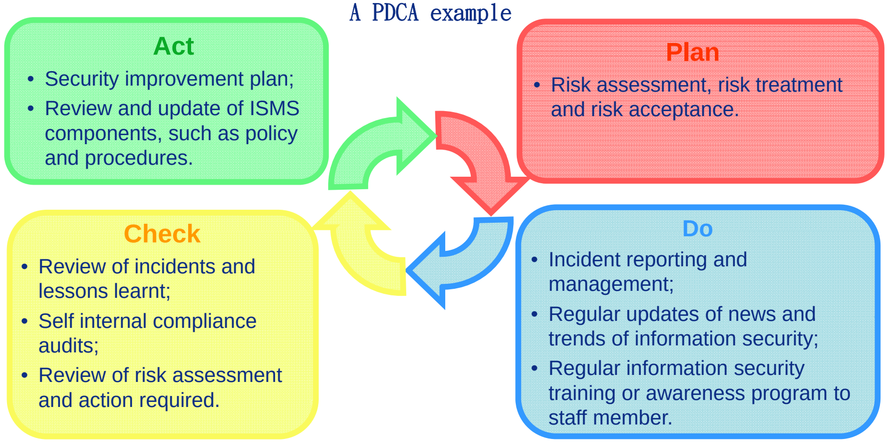
- Compliance
  - Defined compliance **requirements**
  - Procedures implemented to **comply** with requirements (e.g. personal data/ privacy protection)
  - Regular compliance **checks**

Information Security Management – ISO27001

Plan-Do-Check-Act (PDCA)

A model adopted by ISO27001

A PDCA example



Act
- Security improvement plan;
- Review and update of ISMS components, such as policy and procedures.

Plan
- Risk assessment, risk treatment and risk acceptance.

Do
- Incident reporting and management;
- Regular updates of news and trends of information security;
- Regular information security training or awareness program to staff member.

Check
- Review of incidents and lessons learnt;
- Self internal compliance audits;
- Review of risk assessment and action required.

Information Security Change Management

Information Security Change Management

Change Management

Change management is a structured approach to shifting/transitioning individuals, teams, and organisations from a current state to a desired future state.

Examples of change:
- Missionary changes
- Strategic changes
- Operational changes (including Structural changes)
- Technological changes
- Changing the attitudes and behaviors of personnel

(Wikipedia)

Information Security Change Management

Information Security Change

- Includes changes to policy, direction, strategy and operations relating to information security
- May affect a large number of personnel in an organisation
- May face resistance from change audience
- Should be well managed

Information Security Change Management

Process

- Evaluate the **current situation**
- Assess the scope of change
  - **Need** for change
  - **Capability** to change
- Define the **objective, goal and process**
- Develop the change management **plan**
- **Communicate** the change to stakeholders and relevant personnel (the plan, reasons and benefits)
- **Execute** (including training to personnel)
- **Counter resistance**
- Progress **tracking**, evaluation & fine-tuning

Information Security Change Management

Example

To Implement password expiry requirement (e.g. 90 days) across the institution

- **Current Situation:**
  No password expiry, users are not used to changing and remembering new passwords
  Unauthorised access identified due to leakage of username and password
- **Need for Change:**
  Improve access security
- **Capability to Change:**
  System – Ready for password expiration requirements
  Users – Resistance towards implementation of password expiry

Information Security Change Management

Example

- **Objective & Goal:**
  Implement consistent password expiry requirement across the university for all information systems
- **Change Management Plan:**
  Timeline, budget, performance indicators, instructions, technical support, contacts
- **Communication:**
  Early communication to staff and students, explaining the new processes, as well as the benefits and needs
- **Counter Resistance:**
  Understand the source of resistance, provide training and counseling
- **Progress Tracking:**
  Monitor the helpdesk request raised by users and fine tune parameters such as the expiration period (e.g. from 90 days to 180 days for the first phase of implementation)

Summary

- Information security management framework is **essential** for the overall security of data in the university.
- Defining sound information security management is the **responsibility** of university' s management.
- Information security changes should be **well managed**.

Q&A

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