ICT158

Introduction to Information Systems

Topic 10

The IS professional

Learning objectives

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After completing this topic you should be able to:

- Define the requirements of a profession
- Explain why IS can be considered a profession
- Describe the major clauses of an IT code of ethics
- Discuss aspects of ethical conduct within the organisation
- Describe privacy issues that arise in the workplace
- Provide examples of cybercrime vulnerability in the organisation, and the measures that can be taken against these.

Key Concepts

- Professionalism
- Codes of Practice
- Ethical organisations
- Privacy
- Cybercrime
- Cyber security

Readings

Baltzan, P, Lynch, K, & Blakey, P. (2013). *Business Driven Information Systems* (2nd Ed.). North Ryde NSW: McGraw-Hill Australia Pty Ltd. Ch 11 [available through MyUnitReadings]

Overview

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What is a profession?

IS as a profession

Ethics in the organisation

Privacy

Cybercrime

Cybersecurity

10.1 Professionalism

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10.1.1 What is *professionalism*?

10.1.2 Ethics

- in professionalism
- in IS

10.1.3 Moral responsibility & relationships

10.1.4 Ethical organisations

Professionalism

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While there is no agreed definition of a profession, the Australian Council of Professions (Professions Australia) defines a profession as:

*a disciplined group of individuals who adhere to **ethical standards** and who hold themselves out as, and are accepted by the public as possessing **special knowledge** and **skills** in a widely recognised body of learning derived from research, education and training at a high level, and who are prepared to apply this knowledge and exercise these skills in the interest of others*

*It is inherent in the definition of a profession that a **code of ethics** governs the activities of each profession. Such codes require behaviour and practice beyond the personal **moral obligations** of an individual. They define and demand high standards of behaviour in respect to the services provided to the public and in dealing with professional colleagues. Further, these codes are **enforced by the profession** and are acknowledged and accepted by the community."*

Source http://www.professions.com.au/defineprofession.html

Professionalism

Other definitions highlight:

- level of proficiency or competency
  - achieved through completion of a required course of study and/or practice
  - measured against an established set of standards
- certification by a professional body

Source: http://www.businessdictionary.com/definition/professional.html#ixzz17U7PonSQ

- consistent exercise of discretion and judgement in performance of work (a high level of autonomy)
- work is predominantly intellectual and varied; the output cannot be standardised in relation to a given period of time

Source: http://www.law.cornell.edu/uscode/5/7103.shtml paragraph 15

- a culture of practice

Source: Johnson & Miller (2009) p 167

- Licensing
- Continuing professional development

Source: McDermid (2008) p 280-282

What is professionalism?

The organisation of a group of occupations into professions can be considered a social mechanism to manage expertise and deploy it to benefit society

- A key feature of all information societies is their dependence on individuals with IT expertise - the operation & use of IT would not be possible without a huge workforce of computing experts. But what are the responsibilities of these experts? What should we expect of them? Should IT employees be held (or hold themselves) to a higher standard of behaviour because their knowledge gives them so much power?

Source: Johnson & Miller (2009) p 167

Ethics in professionalism

Ethics (or moral philosophy) is the rational, systematic analysis of conduct that can cause benefit or harm to others

Because it is based on reason, people are required to explain *why* they hold the opinions they do

Ethics is focussed on *voluntary moral choice* - a decision is made to take one course of action rather than another

The *moral stance* we take determine the ethical decisions we make

Source: Quinn (2011) p 79

How does ethics impact on IS?

With the development of computers and ICT, the use of such resources raises a number of issues that transcend political, linguistic and geographic boundaries

While the Internet expands its world-wide links, questions of standards to regulate its use as a global information structure are emerging

While technology, law and ethics each have a role to play, *ethics* may well ultimately dictate the extent to which a global infrastructure succeeds or fails

The ethical use of computer and IT will loom larger as major societal issues as we move further into the 21st century

Source: Pourciau, (1999) p ix

Ethical conduct in IS

Will you implement systems that you do not approve of?

Do you wash you hands of this responsibility and claim that you were only doing what you were ordered to do?

Nuclear Bomb scenario: Who is responsible?

- Person who orders its deployment?
- Person who invented it?
- Person who develops the guidance system?
- Person who maintains the networks that such an order for deployment could be transmitted over?

Silly questions?

But where does responsibility end?

Do IT professionals have 'additional' moral responsibilities?

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Some ethicists believe all professionals have a moral obligation *as professionals*

In addition, because IT is pervasive, there is increased opportunity to

- do good or cause harm
- enable others
- influence others

Is this a valid consideration?

Professional relationships

Professionals need to manage a number of different relationships in their working environment. These involve:

- employers
- clients
- users
- suppliers
- professionals
- society in general

What conflicts can exist in these relationships?

Professional-employer relationships

The most complex, but probably the most regulated as well:

- conditions of employment are laid out
- expectations, responsibility etc laid out

But - must meet the requirements of the profession as well as abide by organisational policies and codes, where these exist

This may lead to conflict:

- privacy
- piracy
- whistleblowing

Professional-client relationships

The professional provides a service (generally expertise) for compensation (eg payment)

The professional has the responsibility to act in the best interests of the client

However, conflict can exist:

- where the client makes decisions counter to advice
- where there is a conflict of interest in the professional (eg recommending products where s/he gets additional benefits)

Professional-user relationships

A user, as opposed to a client, applies a hardware/software solution to deliver organisational benefits

The professional has a responsibility to ensure appropriate technology is applied, and applied in a way that promotes ethical behaviour through:

- appropriate IT policies
- IT environment that minimises inappropriate use

Professional-supplier relationships

Innovation and increased cost-effectiveness are enhanced where good working relationships exist between the professional and suppliers

Negotiating contracts is one area where a professional approach has impact

Professional-professional relationships

How a profession is perceived is determined by how members are viewed by others

Issues arise where:

- professionals inflate their competency
- ‘mentoring’ leads to bad practice

Professional-society relationships

Professionals are in a position to foresee potential problems within their domain of expertise

They have a responsibility to ensure the appropriate steps are taken to eliminate/minimise hazards before the product or service is completed

Issues arise where:

- the employer or client does not allow this to happen

Do organisations allow for ethical behaviour?

"I'll be in touch if we need somebody with integrity."

Source http://www.cartoonstock.com/directory/i/integrity.asp

The ethical organisation

- Obey laws and regulations (the spirit as well as the letter of the law)
- Honour contracts with employees, customers and suppliers
- Be fair to all employees, customers and suppliers and respect them as people
- Be honest and build trust with employees, customers and the public
- Pay employees reasonable wages and maintain good industrial relations
- Maintain effective occupational health and safety
- Respect the social and cultural norms of employees and customers
- Look after the environment and do not waste resources
- Assist and support good causes in their community
- Produce goods or supply services that meet real human needs
- Support the development of employees' skills
- Support employees' well-being and show appreciation for their work
- Protect customers, employees and the public from being harmed by the organisation's goods or activities
- Prevent their executives from being greedy, selfish or irresponsible

and so forth….

[an amalgam from many organisational codes]

Organisational orientation to ethics

Survivalist. The organisation is solely focused on financial survival, profit and conquest. It has a "win at all costs" mentality. Laws and regulations are treated with complete expediency

Paternal/Machiavellian. The organisation is focused on profit but has developed the concept of "who is on our side". It treats its allies well. Its structure is hierarchical and paternal, and people play stereotypical roles. An "us and them" culture prevails and methods may be manipulative. Laws and regulations are treated expediently

Orderly/Bureaucratic. The organisation is characterised by orderly structure and tradition. Organisational members are loyal and there are established rules and norms of behaviour. Laws and regulations are honoured but in a literalist way

Participative/Creative. The organisation honours laws and begins to look for the principles behind the laws, which sometimes leads to robust debate internally. It recognises individual differences and encourages innovation. It subjects values and goals to question; it fulfils the spirit of the law

Source: Kramar (2005)

Organisational orientation to ethics

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Collaborative/Excellence. Explicit values are being developed that encourage growth and development of individuals and a positive social role for the organisation. Leaders encourage collaboration, networking and a customer service focus

Social well–being. These organisations have developed their own vision of how they can serve the well–being of society. They work from an understanding of the systemic, interdependent nature of the world

Global harmony. These organisations are focused on the highest ideals for humanity and the planet. They operate to improve society. They seek to exhibit in themselves the balance and wisdom that they foster in their environments

Source: Kramar (2005)

Recap

*Organisations employ ICT professionals. This means both the individual and the organisations are aware of the need to act professionally in the relationships maintained. Organisational **orientation** can be a useful way of determining its professionalism.*

10.2 Codes of Ethics

10.2.1 ACS

The place of codes of ethics

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How do we address the issues that can arise from professional relationships?

Codes of conduct relate to choices/decision making at an organisational level. They:

- describe acceptable/unacceptable professional behaviour
- assist new professionals to understand what is expected
- define expectations for the general public
- set the standard of behaviour
- provide a means of ensuring compliance
- provide a means to resolve conflicts

There are many IT-related organisations that have codes of ethics or conduct

These may complement professional codes

ACS

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The Australian Computer Society is the professional association for Australia's Information and Communication Technology (ICT) sector.

It acts as the voice of Australian ICT, representing all practitioners in business, government and education.

A member of the Australian Council of Professions, the ACS is the guardian of professional ethics and standards in the ICT industry, with a commitment to the wider community to ensure the beneficial use of ICT.

Mission

To advance professional excellence in IT

Principal Objective

To promote the development of Australian information and communications technology resources

Source http://www.acs.org.au/

Ethics in ACS

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As a member of the ACS you must uphold and advance the honour, dignity and effectiveness of being a professional

This entails, in addition to being a good citizen and acting within the law, your adherence to the

Code of Professional Conduct

These requirements aim to ensure that members of the ACS work to the highest level of professionalism, providing a quality of service which helps to maintain credibility and prestige among, and the confidence of, the general public

ACS Code of Professional Conduct

The Code of Professional Conduct (the Code) identifies six core ethical values and the associated requirements for professional conduct. The ACS requires its members to abide by these values, and act with responsibility and integrity in all of their professional dealings:

- The Primacy of the Public Interest
- The Enhancement of Quality of Life
- Honesty
- Competence
- Professional Development
- Professionalism

The ACS also has a complaints process for members who do not comply

Source: https://www.acs.org.au/__data/assets/pdf_file/0014/4901/Code-of-Professional-Conduct_v2.1.pdf

The Primacy of the Public Interest

You will place the interests of the public above those of personal, business or sectional interests

- Any conflicts should be resolved in favour of the public interest
- In your work, you should safeguard the interests of your immediate stakeholders, provided that these interests do not conflict with the duty and loyalty you owe to the public
- The public interest is taken to include matters of public health, safety and the environment

The Enhancement of Quality of Life

You will strive to enhance the quality of life of those affected by your work

- The development of ICT has had a significant impact on our society and way of life
- Whilst this impact has been beneficial to a very great extent, like all technologies, ICT has also had some negative effects, and will continue to do so
- An ethical approach to your work will help to recognise and minimise these adverse effects
- You should promote equal access to the benefits of ICT by all members of society

Honesty

You will be honest in your representation of skills, knowledge, services and products

- Do not breach public trust in the profession or the specific trust of your stakeholders
- Observance of utmost honesty and integrity must underlie all your professional decisions and actions
- Circumstances will undoubtedly arise during the course of your professional career where it may appear to be beneficial for you to be deceptive in some way
- This type of behaviour is not acceptable professional conduct

Competence

You will work competently and diligently for your stakeholders

- Accept only such work as you believe you are competent to perform, and do not hesitate to obtain additional expertise from appropriately qualified individuals where advisable
- You should always be aware of your own limitations and not knowingly imply that you have competence you do not possess
- This is distinct from accepting a task of which the successful completion requires expertise additional to your own
- You cannot possibly be knowledgeable on all facets of ICT but you should be able to recognise when you need additional expertise and information

Professional Development

You will enhance your own professional development, and that of your staff

- Keep yourself informed of such new technologies, practices and standards as are relevant to your work
- Others will expect you to provide special skills and advice; and in order to do so, you must keep your knowledge up-to-date
- You should encourage your staff and colleagues to do the same
- Take action to ensure that your hard-won knowledge and experience are passed on in such a way that the recipients not only improve their own effectiveness in their present work but also become keen to advance their capabilities and take on additional responsibilities

Professionalism

You will enhance the integrity of the ACS and the respect of its members for each other.

- The ICT industry is relatively new and characterised by rapid change. It has not had the opportunity to evolve over many years and acquire its own standards and legislation. The ACS is endeavouring to improve public confidence in the ICT industry. It is imperative that members of the Society maintain professional standards that improve and enhance the industry's image, especially in the workplace
- All people have a right to be treated with dignity and respect. Discrimination is unprofessional behaviour, as is any form of harassment. Members should be aware that the ACS can help them resolve ethical dilemmas. It can also provide support for taking appropriate action, including whistle-blowing, if you discover an ACS member engaging in unethical behaviour

Recap

Codes of Ethics or Professional Practice assist the individual to act professionally within their discipline.

In Australia, the ACS maintains a code for ICT professionals.

10.3 Ethics in the workplace

10.3.1 Information management policy

10.3.2 ePolicies

10.3.3 Privacy

10.3.4 Privacy in Australia

The ethics of the individual in the workplace

Employees in the workplace are confronted by many temptations, which bring into question ethical and legal issues, including:

- Using an employer's resources to send personal email; download software; develop products for personal gain
- Carrying out personal work during work time
- Using computer, communications equipment and Internet services for personal gain or pleasure during paid working hours
- Email flooding and spamming using an employer's network

While there may be no illegality, these self-indulgent activities are a breach of trust where it is clear that regulations and codes of practice are being compromised

Information management policies

Corporate information is a valuable resource

Developing a culture based on ethical principles employees can understand and implement is responsible management

ePolicies address the ethical use of technology in the business environment

Several policies (at least) should be implemented

ePolicies in the organisation

- Ethical computer use – starting point & umbrella
- Information privacy – used for intended purpose
- Acceptable use – for network access
- Internet use – legitimate browsing
- Email privacy – user expectation of privacy
- Anti-spam – but not blocking legit email
- Social media – few employees represent the whole organisation – issue of moderation
- Workplace monitoring – surveillance remains controversial

Source: Baltzan, Lynch & Blakey (2013)

What is privacy?

Everyone comes into the world with a right to his/her own person, property and private space set off from the public arena

(Source: Jefferson 1770)

The claim of individuals, groups and institutions to determine for themselves, when, how and to what extent information about them is communicated to others

(Source: Westin 1967)

Privacy is the interest that individuals have in sustaining a personal space, free from interference by other people and organisations

(Source: Clarke 1999*)*

Dimensions of privacy

Privacy of

- person
- personal behaviour
- personal communications
- personal data

The last two are often referred to as

Information Privacy

Information Privacy

Concern about how

information technology

is used in organisations grew from the mid 1960s as organisations increased their

'social distance'

from the people they dealt with

Key Privacy issues

Health privacy

Credit information

Trans-border information

Online privacy

Australian definition of "personal information"

from the legislation applicable at the time:

> *[…] information or an opinion (including information or an opinion forming part of a database), whether true or not, that is recorded in a material form or not, about an individual whose identity is apparent, or can be reasonably ascertained, from the information or opinion*

Source: Privacy Act 1988 (Cth) s 6(1)
https://www.alrc.gov.au/publications/6.%20The%20Privacy%20Act%3A%20Some%20Important%20Definitions/what-%E2%80%98personal-information%E2%80%99

The Australian Situation

- Privacy Act 1988
- Privacy Amendment (Private Sector) Act 2000
- Privacy Amendment (Enhancing Privacy Protection) Act 2012 (Reform Act) -> Australian privacy principles

Other relevant legislation includes:

- Crimes Act 1914
- Data Matching Program (Assistance & Tax) Act 1990
- National Health Act 1953; Healthcare Identifiers Act 2010; Personally Controlled Electronic Health Records Act 2012
- Telecommunications Act 1997; Telecommunications (Interception and Access) Act 1979
- Electronic Services Transactions Act 1999

Source: http://www.oaic.gov.au./privacy/privacy-act/privacy-law-reform

Redefinition of privacy in Australia

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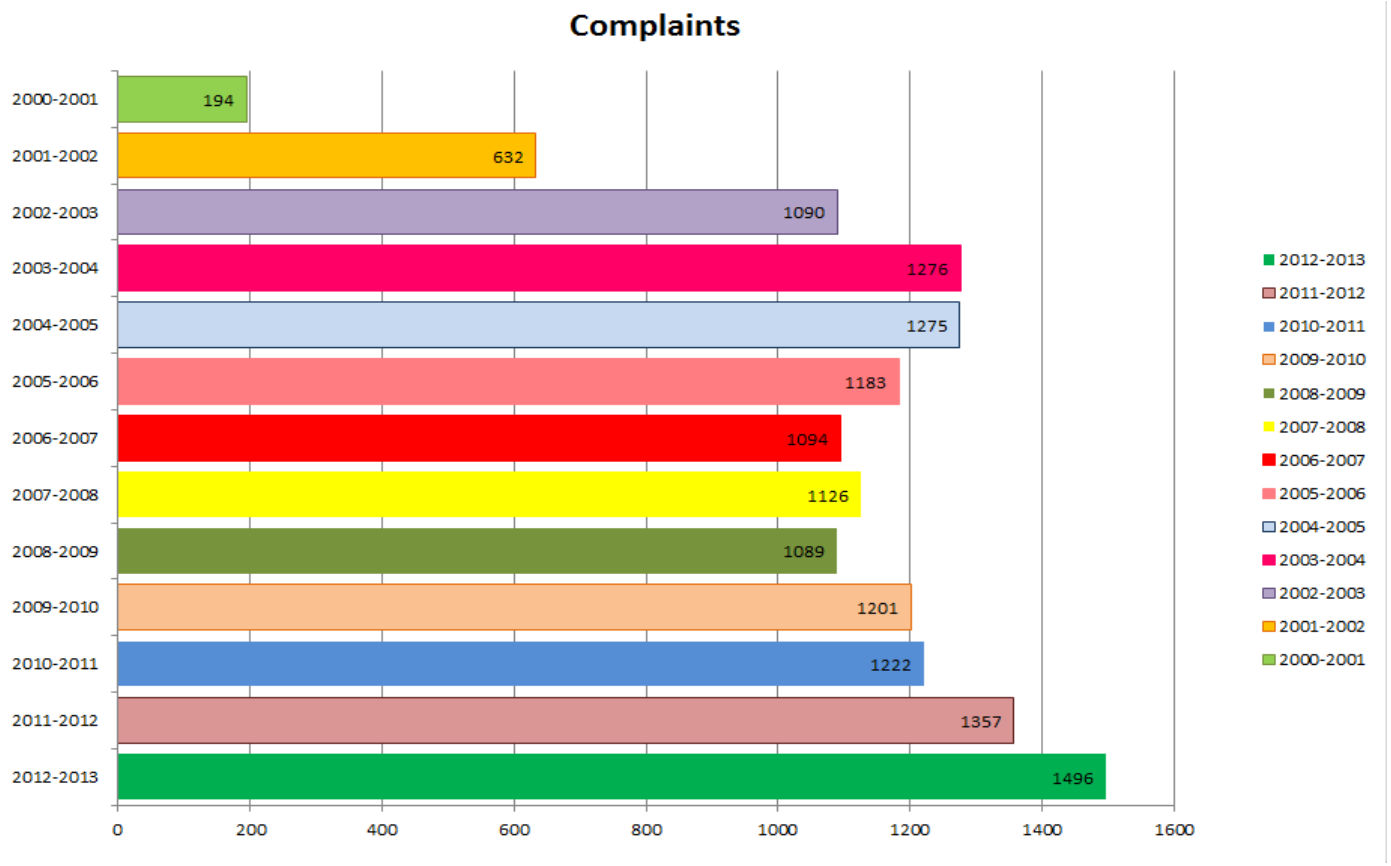
January 19 2017 - the Federal Court dealt a severe blow to Australia's information privacy laws by narrowing the definition of "personal information".

Australia's data privacy laws only protect "personal information", which is defined by whether a person is identified or identifiable from data. This means certain data held by Telstra, including IP addresses, URLs visited and geolocation data, are not protected by Australian privacy law.

They are not subject to any restrictions on processing or disclosure to other entities. By ignoring the possibilities of data linking, the court leaves us with one of the weakest data privacy regimes in the Western world.

Source: http://theconversation.com/australias-privacy-laws-gutted-in-court-ruling-on-what-is-personal-information-71486

Office of the Australian Information Commissioner – privacy complaints



2013-2014 – 4239 privacy complaints; 2617closed

2014 – 2015 – 2841 privacy complaints; 1976 finalised

2015-2016 – 2100 complaints; 2018 finalised

Privacy complaints by sector (2015-2016)

SECTOR	NUMBER
Finance and superannuation	366
Australian Government	223
Health service providers	200
Telecommunications	153
Credit reporting bodies	151
Online services	120
Retail	111
Utilities	98
Debt collectors	88
Business/professional associations	76
Other	542

Source: https://www.oaic.gov.au/resources/about-us/corporate-information/annual-reports/oaic-annual-report-201516/oaic-annual-report-2015-16.pdf

Recap

ePolicies within the organisation provide guidelines for its employees to apply ICT ethically

Privacy breaches, in particular, are the cause of most complaints in Australia

10.4 Cybercrime

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10.4.1 Definitions

10.4.2 Combatting cybercrime

10.4.3 Cybersecurity

- Categories

Cybercrime

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As new cyber technologies are developed, novel types of cyber-related crimes arise:

1970s	disgruntled employees seeking revenge against employers: altering files or sabotaging systems
1980s	launching of viruses to break financial and government institutions
1990s	digital piracy, cyberstalking, cyber pornography and paedophilia
2000s	cyberbullying, sexting, phishing
2010s	hacks into social media, pacemakers

Cybercrime - a definition

A crime in which the criminal act can be carried out only through the use of *cybertechnology* and can take place only in the *cyberrealm*

Source Tavani (2011) p 208

Cybercrimes can be categorised as

- *cyberpiracy-* reproduce or distribute proprietary information
- *cybertrespass-* gain unauthorised access to a system or web site
- *cybervandalism* – disrupt transmission or destroy data or resources

Some crimes span more than one category

Cyber-related crimes

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These are *assisted* (eg using a computer to file a fraudulent tax return) or *exacerbated* (the technology enhances the effect of the crime, eg cyberstalking)

The former are traditional crimes that happen to use technology in some instances

The latter are hybrid crimes – the technology/ Internet have created new opportunities for the crime

Exacerbated cybercrimes

Include

- *identity theft* – using human behaviour to breach security without the participant/victim realising. The 'trust' of the victim is the aim, for personal gain, credit card fraud etc. Hoax emails from banks, system administrators (phishing) fall into this category

  [Ransomware example http://www.abc.net.au/news/2012-10-25/ransomware-targeting-aussie-businesses2c-pcs/4332526]

- *corporate espionage*

Combating cybercrime

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Approaches include

- Data matching – electronic surveillance that cross matches data to ensure a crime is not committed. [eg matching tax records with bank account details with Centrelink payments]
- Encryption technologies
- Biometrics
- Audit trail software such as keystroke monitoring and packet-sniffing programs

Cyber-resilience

Cyber attacks claim 1.5 million victims every day and add up, conservatively, to US$110bn of losses each year. Malware, increased 30 % in 2012 and malware on mobile devices grew by 139 % in the same period. It is especially worrying that 62 % were from legitimate sites that had been compromised.

Source: Systematic (2013)

On a personal level, digital threats undermine our identity and our privacy

On a global level, digital risks threaten the stability of government and banking systems

Private and public sector leaders need to understand that technology is as important as energy, water, food and other essential resources, which is to say, digital security is to be guaranteed as a right, not an afterthought

Cybersecurity

Security in the context of ICT has no universally agreed definition.

The term is often associated with issues relating to:

- reliability
- availability
- safety
- *integrity* – *preventing an attacker from modifying data*
- *confidentiality* – *preventing unauthorised persons from accessing unauthorised information*
- *accessability* – *making sure resources are available for authorised users*

amongst others. The 'big three' are highlighted

Source: Epstein(2007)

First line of defence - people

The majority of information security breaches result from people misusing organisational information

Information security policies and plans can alleviate people-based issues:

1. Develop IS policies
2. Communicate them
3. Identify critical risks
4. Test & re evaluate risks
5. Obtain stakeholder support

Source: Baltzan, Lynch & Blakey (2013)

Second line of defence - technology

After ‘securing’ the people, a focus on deploying technology to combat attacks is required

Technology can assist in

- Authenticating & authorising people
- Prevent & resist data compromise
- Detect & respond to attacks

Source: Baltzan, Lynch & Blakey (2013)

Security countermeasures

Would not be as necessary if better security features were built into computer systems in the first place

Countermeasures include:

- firewall & intrusion prevention technology
- anti-virus and -spyware software
- encryption tools
- security audits

There are clearly tradeoffs that can be measured in cost, convenience and flexibility

Categories of cybersecurity

Three categories of vulnerabilities focus concerns about security:

- *data security* – unauthorised access to data stored or exchanged
- *system security* – attacks on resources (eg hardware, applications etc) by malicious computer programs
- *network security* – attacks on network infrastructure or the Internet

Data security

Affects the confidentiality, integrity and availability of information

The information will be

- either *proprietary* or *sensitive* or both
- secured from access and reading as well as tampering and alteration
- accurate, readily available and accessible ‘on demand’

System security

Disruptive software includes viruses, worms and malware, trojan horses and logic bombs. Denial of Service (DoS) also interferes with normal use

The effects of disruptive software can range from

- minor annoyance to individual computers
- preventing an entire organisation from operating
- disrupting major sections of the Internet

Network security

It is not always easy to determine whether a major network disruption is due to malicious intent or a failure of some aspect of the network infrastructure itself

Because many nations now depend on a secure cyberspace for their national infrastructures (eg power grids) there is increased concern over threats from international hacking groups, hostile governments and state sponsored organisations

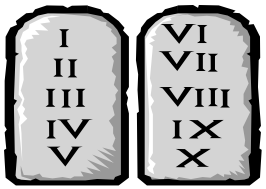
Recap

IT-based crimes affect the organisation and the individual. Cybercrimes and cyber-related crimes require security measures to be put in place.

Recap

Security measures may address the data, the system and/or the network and need to ensure the integrity, confidentiality and accessability of information resources.

10 Commandments of computer ethics



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- Thou shalt not use a computer to harm other people
- Thou shalt not interfere with other people's computer work
- Thou shalt not snoop around in other people's computer files
- Thou shalt not use a computer to steal
- Thou shalt not use a computer to bear false witness
- Thou shalt not copy or use proprietary software for which you have not paid
- Thou shalt not use other people's computer resources without authorisation or proper compensation
- Thou shalt not appropriate other people's intellectual output
- Thou shalt think about the social consequences of the program you are writing or system you are designing
- Thou shalt always use a computer system in ways that insure consideration and respect for your fellow humans

(Source: Computer Ethics Institute)

Summary

This topic addressed the concept of professionalism, both from the ICT practitioner and organisational point-of-view.

Organisational vulnerabilities in relation to privacy and cybercrime were also outlined, and countermeasures identified

Resources used in this topic

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