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Basic Concepts of Security in the Digital Age

August 2021

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1.   Security

The definition of security is nebulous but most agree that security is the protection and exclusion of something from unauthorized access. This manifests itself in many forms the easiest to understand is physical security: keep people from changing or entering a certain thing. This could be something like a human life or a bank vault. The digital age has complicated matters. It is said that today the most valuable thing is data, and just as gold needs security data does too. Security services therefore must work to reduce any vulnerability in both the physical and digital world.

2.   Cyber Security and others

Protecting the digital world inside computers and networks is commonly thought to be in the realm of cyber security, but many other branches encompass the digital domain. The most general of these is information security which is a more general types being the protection of information and systems of information from unauthorized access, usage, modification, or destruction. Computer security is the protection of computer systems and networks from information disclosure, theft or damage. Cyber security definition is either identical to computer security or has the addition of being connected to the internet. Network security is the process of protecting underlying networking infrastructure from unauthorized access, misuse, modification, or destruction to create a secure platform for computers, users and programs to preform authorized functions securely. Data security deals with personal data and its treatment.

3.   Meaning of Data, Information and Personal Data

Data and information are not the same thing. There are several distinctions:
(1) Data is a raw and unorganized fact unlike information which is processed to a requirement.
(2) Data has no specific purpose unlike information which carries meaning.
(3) Data has no independent significance whereas information is inherently significant, information depends on data but not the reverse.

(4) Data is measured in bytes while information is measured in meanings.

In brief, data is unrefined information. This definition is not universally applicable, for example information theory defines data and information differently.

Personal data is a special type of data which has certain legal requirements on its use and protection. Personal data in Hong Kong under the Personal Data (Privacy) Ordinance refers to information relating to a living individual that can be used to identify that individual. This encompasses more than just a name or residential address but also includes IP address, cookie (in a computer sense) and other factors. The definition of personal data in Hong Kong is similar to those in the EU under the General Data Protection Regulation and USA through several federal statutes such as the Children's Online Privacy Protection Act of 1998 (COPPA), the Gram-Leach-Bliley Act (GLBA), Health Insurance Portability and Accountability Act as well as state statues like the California Consumer Privacy Act and the California Privacy Rights Act of 2020, though the protections differ.

4.   Information Security vs Cyber Security

These two forms of security have similar definitions but they have a spurious distinction.

Information security is broader than cyber security and deals with information store on more things than computer security. Cyber security is focused on protecting the information existing on a digital substrate.

Both of these terms do ultimately relate to the same issue: protecting information and data. Cyber security primarily deals with actors in cyberspace while information security is more encompassing. The distinction between lies not in the objective but rather what they focus on.

5.   Data Privacy and Security

Privacy is often brought up in the realm of digital security since the digital age has allowed privacy violations impossible before. Data privacy and security is distinct from information/cyber security as it has different requirements in terms of a protection but also because it must ensure that usage complies with individual rights. Data security is the processes by which personal data is secured; data privacy is the methods for the proper collection, retention, storage, usage and destruction of data.

6.   The importance of security in the digital world

Information security is a prime concern to government, military, corporate, financial, medical and other actors since they now immerse themselves in a massive flow of data through the internet and other means.

This ocean of data has had it called the new oil, but data is more complex than oil. Portions of data can be confidential and can take many forms which can if known to the wrong actors can cause untold damage. Organizations transmit data across networks as a matter of course and information and cyber security is necessary to ensure that that data is protected. The number of hostile cyber actors grows each year from lone hackers, collectives, and even state actors, so it is paramount that critical information is protected.

These cyberattacks have very real consequences, from crippling the largest gas line in the USA to turning off part of Ukraine's power grid, to destroying nuclear refineries. Small businesses can also suffer irreparable harm as cyberattacks can destroy credibility and dramatically impact productivity.

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