

Security Issues in a Knowledge-Based Economy

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Objective

To enlighten us on some of the information security issues a knowledge based economy would encounter and how to address them



Outline

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Pillars of the Knowledge Economy

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How can we address the Security Issues

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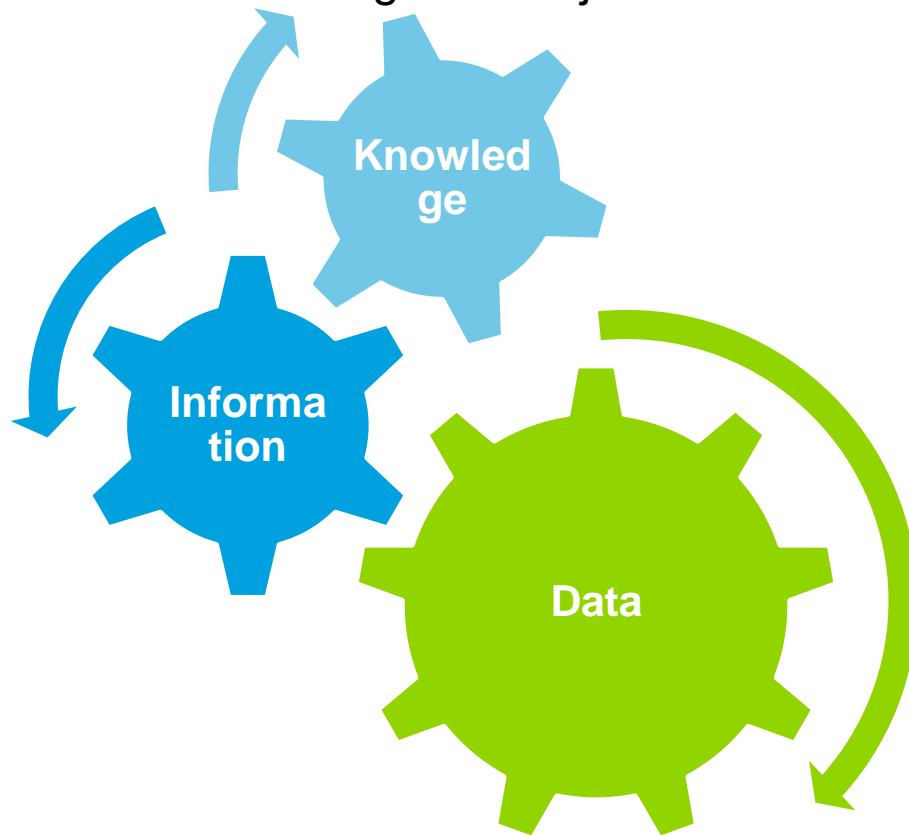
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Definitions: What is Knowledge?

“Information, understanding, or skill that you get from experience or education”¹ – Merriam Webster Dictionary”

“Facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject”² - Oxford Dictionary

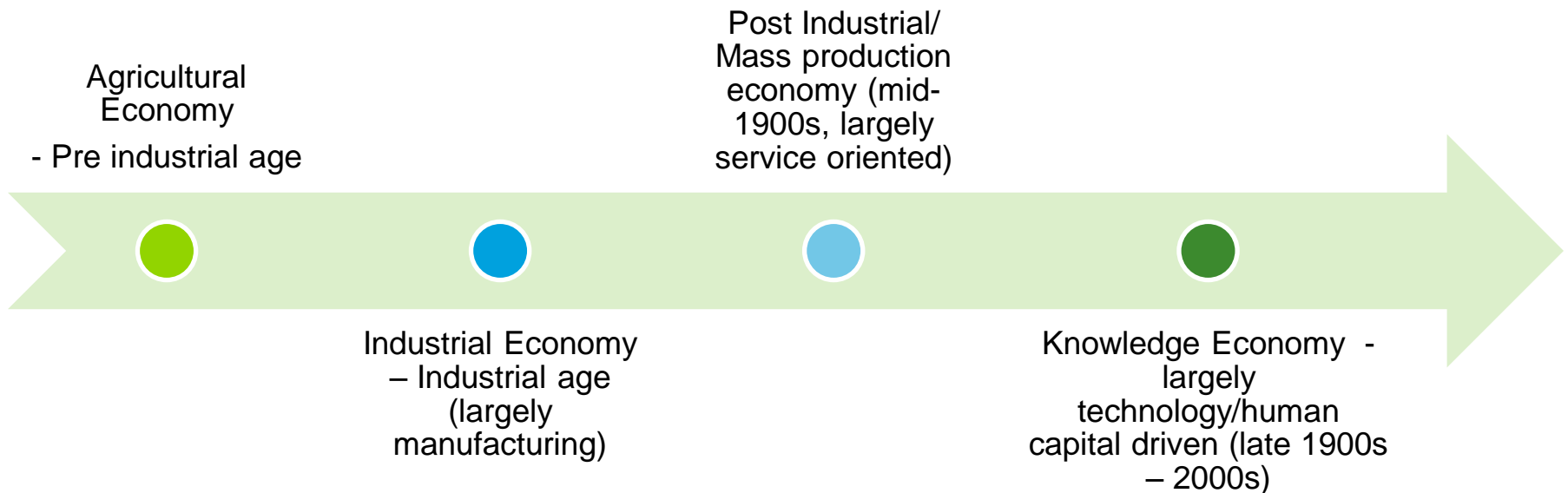


Definitions: A Knowledge Based Economy is ...

“one where organizations and people acquire, create, disseminate, and use knowledge more effectively for greater economic and social development..”³

“ an economy where knowledge is recognised as the driver of productivity and economic growth. As a result, there is a new focus on the role of information, technology and learning in economic performance.”⁴

Evolution of the World's Economy



3. http://www.scientificpapers.org/wp-content/files/1323_Madalina_TOCAN_Knowledge_based_economy_assessmen.pdf
4. <http://www.oecd.org/science/sci-tech/theknowledge-basedeconomy.htm>

Definitions: A Knowledge Based Economy

The late Peter Drucker wrote in the November 2001 edition of *The Economist*:

*“The next society will be a knowledge society. Knowledge will be its key resource, and **knowledge workers** will be the dominant group in its workforce”*

This economy is based on the production and dissemination of **ideas**, **data**, **information** and **knowledge**, information is the capital in this new economy. It is characterized by three main factors.



Borderlessness : Knowledge now travels at the speed of light



Upward Mobility : Available to everyone through easily acquired formal education.



The potential for failure as well as success. Anyone can acquire the "means of production," i.e., the knowledge required for the job, but not everyone can win

Pillars of the Knowledge Economy according to World Bank



Economic and institutional regime for the efficient use of existing and new Knowledge.

Education and skills that enable people create, share and use knowledge well.

Information and Communication Technologies (ICT) that can facilitate the effective communication, dissemination, and processing of information.

Efficient innovation system (firms, research centers, universities, think tanks, consultants, and other organizations).

Top 10 Knowledge Economies in the world.

Rank	Country	KEI	KI	Economic Incentive Regime	Innovation	Education	ICT
1	Sweden	9.43	9.38	9.58	9.74	8.92	9.49
2	Finland	9.33	9.22	9.65	9.66	8.77	9.22
3	Denmark	9.16	9	9.63	9.49	8.63	8.88
4	Netherlands	9.11	9.22	8.79	9.46	8.75	9.45
5	Norway	9.11	8.99	9.47	9.01	9.43	8.53
6	New Zealand	8.97	8.93	9.09	8.66	9.81	8.3
7	Canada	8.92	8.72	9.52	9.32	8.61	8.23
8	Germany	8.9	8.83	9.1	9.11	8.2	9.17
9	Australia	8.88	8.98	8.56	8.92	9.71	8.32
10	Switzerland	8.87	8.65	9.54	9.86	6.9	9.2

Nigeria is 118th in the world

World Bank 2012 ranking of countries by Knowledge Economy Index (KEI) which is based on the Four Pillars of the Knowledge Economy

Security Issues in a Knowledge based economy



Data Protection and Privacy



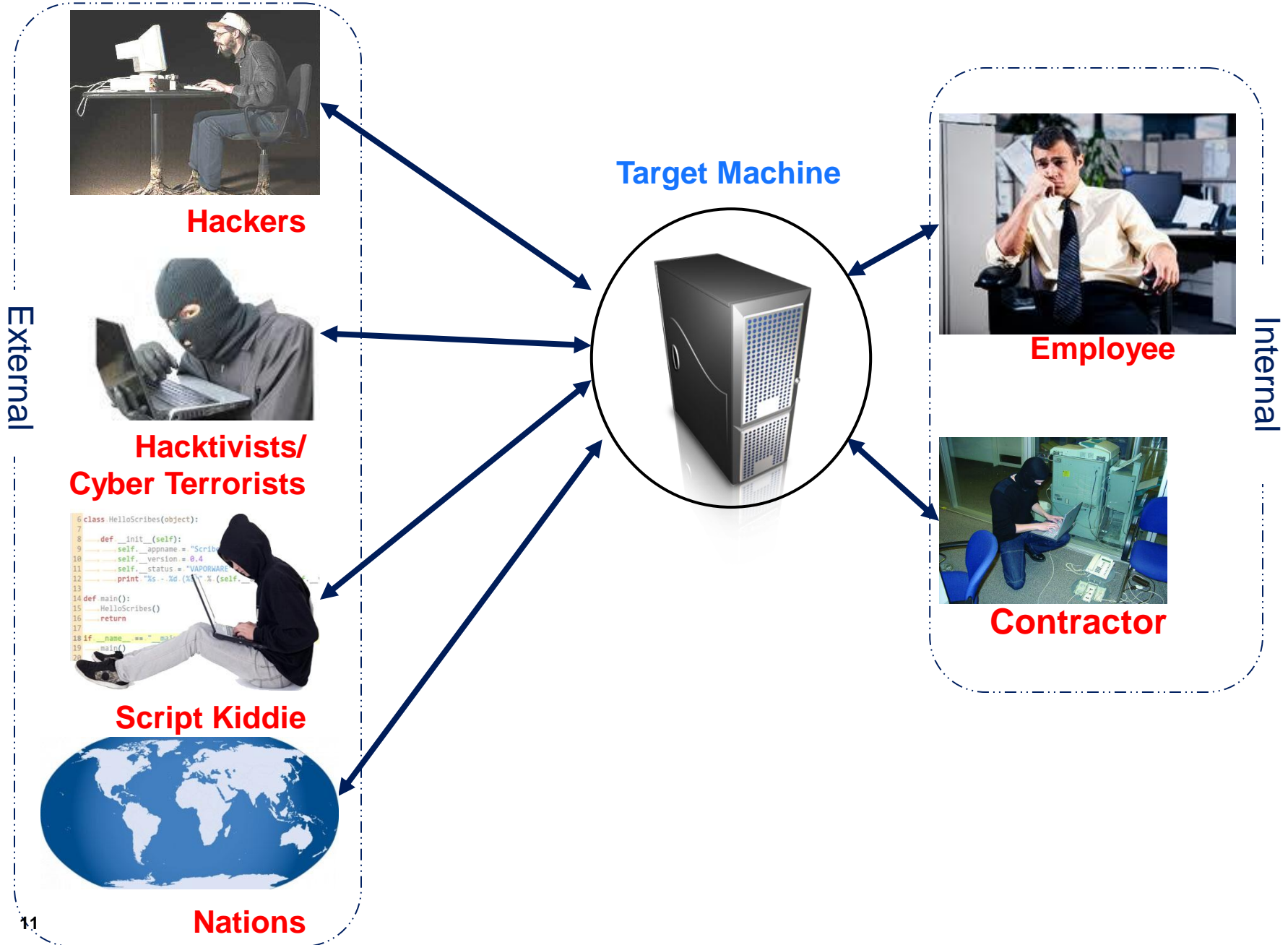
In the economy of knowledge, data is collected about everyone and it is a prime currency for activities and business. Protection of this information/data within the economy therefore, has to be of topmost importance.

Do we have visibility of

- who has access to information
- what information is being accessed
- which information is flowing out of our organisations and nation.
- how is this information flowing out

Data would need to be protected from several threat sources within and outside organisations and institutions.

Sources of Threats to Data/ Information



Some of the mechanisms used to obtain confidential information include:

Social
Engineering

Phishing

Malicious
software

Collaboration
with insiders

Rogue
wireless
networks

Piracy



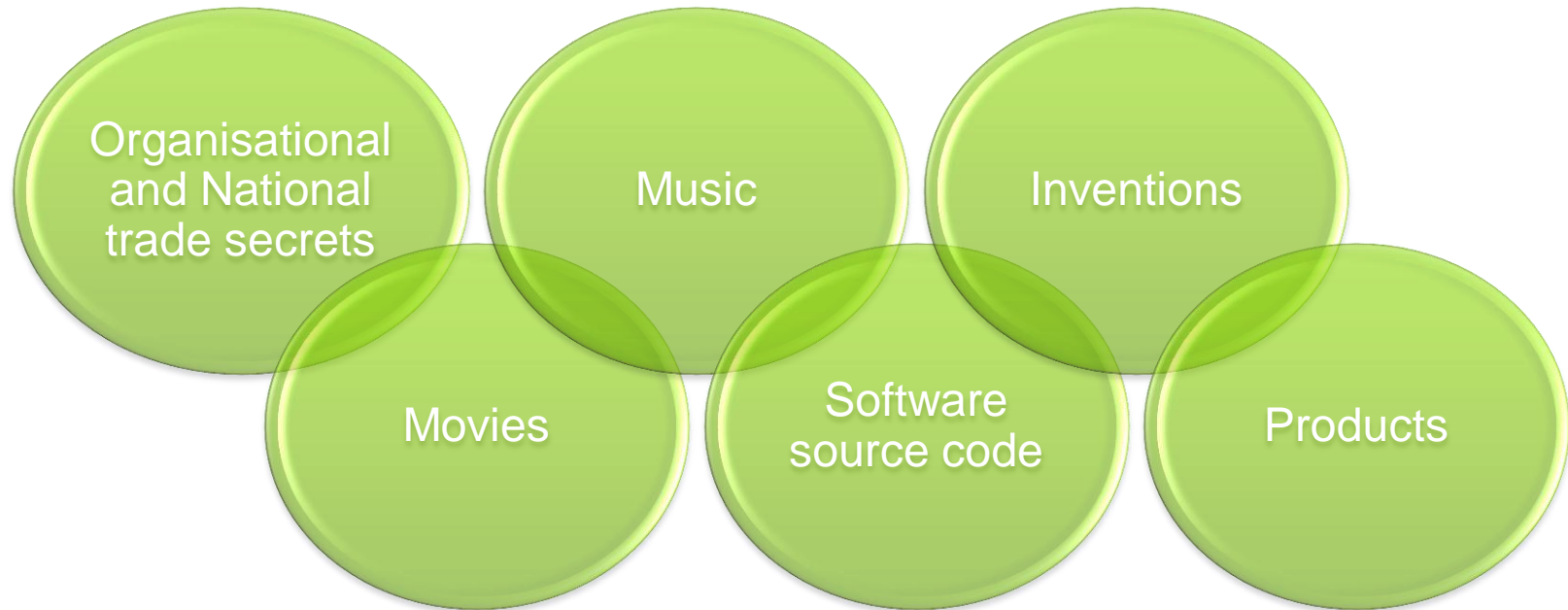
One of the biggest security issues that will spring up from a knowledge based economy is the issue of Piracy. The reliance on knowledge as a means of exchange makes susceptibility to piracy a grand and growing problem.

Piracy is the act of illegally copying someone's product or invention without permission.⁵

The BSA and IDC, global software piracy study revealed that **the commercial value of unlicensed PC software installations totaled \$62.7 billion globally in 2013**

Piracy

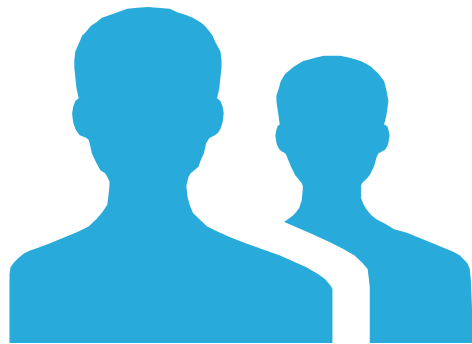
Piracy is not restricted to software alone, it covers several types of intellectual property including:



Impact of Piracy includes:

- Loss of revenue
- Less innovation
- Reputational damage
- Loss of competitive advantage

Identity Theft



Identity theft is a form of stealing someone's identity in which someone pretends to be someone else by assuming that person's identity, usually as a method to gain access to resources or obtain credit and other benefits in that person's name.⁶

In a knowledge based economy where most information is digital, the challenge will be confirming the identity of each and every person.

Although identity theft is not restricted to social media sites but social media can be a good place to harvest information.

With a stolen identity, the attacker can perpetrate all kinds of activities.

Industrial Espionage



The act of attempting to obtain trade secrets by dishonest means, as by telephone- or computer-tapping, infiltration of a competitor's workforce, etc.⁷

With the advent of knowledge as a means to corporate wealth, the race for a company's knowledge-base takes the fight to a whole new level.

Industrial espionage is conducted for commercial purposes rather than national security purposes (espionage), and should be differentiated from competitive intelligence, which is the legal gathering of information.

*Some Notable cases of Industrial Espionage*⁸

Hilton and Starwood

- In April 2009 the US based hospitality company Starwood accused its rival Hilton of **stealing corporate information relating to its luxury brand concepts**, used in setting up its own Denizen hotels.

Opel vs Volkswagen

- In 1993, car manufacturer Opel, the German division of General Motors, accused Volkswagen of industrial espionage after **Opel's chief of production, Jose Ignacio Lopez, and seven other executives moved to Volkswagen.**

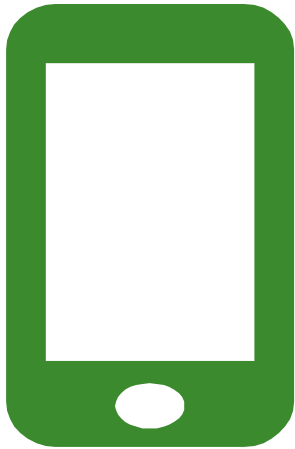
Microsoft vs Oracle

- Larry Ellison, the head of Oracle was said to have involved **bribing the cleaning staff at Microsoft's Washington office in order to lay their hands on documents.**

Gillette vs Steven Louis Davis

- In 1998, Steven Louis Davis was sentenced to 27 months in prison and ordered to pay \$1.3 million in restitution for his theft of trade secrets from Gillette. **Davis was alleged to have sent confidential designs to various competitors of Gillette.**

Platform Interoperability



In a knowledge based economy, reliance on infrastructure for data delivery is more emphasized than ever.

Information may be accessed via different media and platforms that have different levels of security. At the point of interoperation and interface there is a wide gap that may be skillfully exploited by a seasoned attacker. What appears to be a minor platform glitch may become a door for an attacker.

When the knowledge cannot be confined to a singular location, it faces the risk of being misused by anyone who has access to it outside a confined physical location.

How can we address the Security Issues in a Knowledge based economy



Effective Identity Management

Identity management is a set of processes and supporting technologies for maintaining a person's complete set of identity spanning multiple business and application contexts.

Identity Management is the key to combating identity theft.

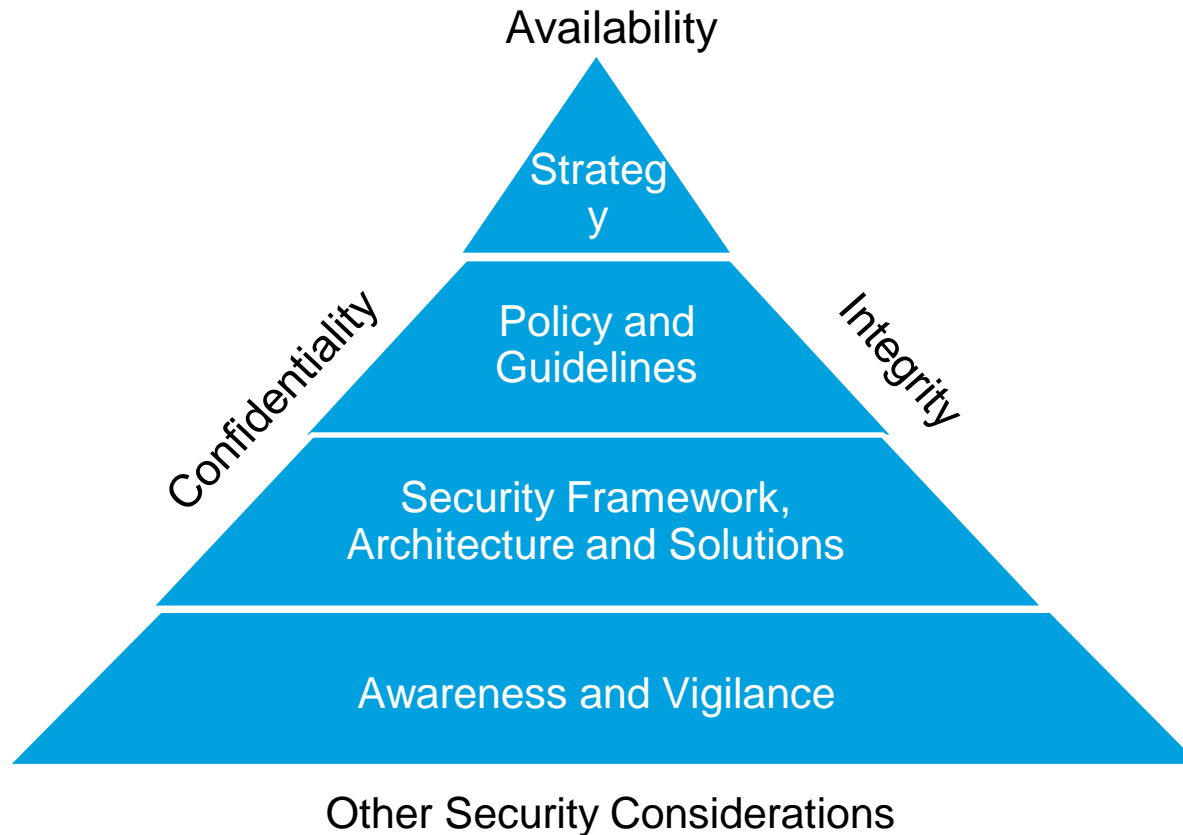
The National Identity Management Commission (NIMC) has commenced a project of creating an Identity Management System (IMS) for Nigerians, everybody's information would be tied to their unique National Identity Number (NIN) that would be verifiable.

This would make it harder for criminals to impersonate people.



Robust Information Security Framework

An Information security framework is the **collection of processes and practices** that are used to manage the **definition and ongoing operation and management of the information security risks**. It should address the following:



Nigeria has developed a draft ICT Policy and draft Cyber security policy and strategy documents.





Adequate Legislation

In order to foster the knowledge economy, people have to be assured that the hands of justice would be served in the case of abuse of knowledge.

Legislation should be developed to cover the following:

- Piracy
- Cyber Crime
- Corporate Espionage
- Identity Theft
- Data Privacy

Cyber Security Awareness

In a knowledge based economy, the populace have to be educated on the value of information/knowledge and the schemes that can be used by criminals to obtain this knowledge from them.

This can be achieved through the following:

Government Leadership	Raising awareness and setting the course for collaboration amongst entities(e.g. parastatals, private sector, academia, and the general public)
Seminars and Conferences	Can be used to facilitate engagement of particular segments of the community (e.g. small businesses and school children) with targeted specific messages.
Assistance for SMEs	Some countries use a security 'health' check for SMEs as a mechanism to raise awareness.
Collaboration	Government ministries, regulators, organisations as well as multinational companies, academia and individual users have a role to play in awareness.



Bottom line

Nigeria is fast becoming a Knowledge Based economy and we all have to work together to deal with the incumbent security issues.

Thank You

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