



University of Essex

Online

Launching into Cyber Security

Week 2 Seminar

Sammy Danso, PhD



Announcement

- Collaborative discussion 1
- Tutor office hours
- E-portfolio
 - ✓ Artefacts
 - ✓ Feedback
 - ✓ Reflections



Introductions: about you

- Your name
- Where you are based
- Background
- Why you enrolled on this course



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This week's task



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"Can Shell transform? Yes. And we will"

An interview with Ben van Beurden on reshaping Shell into the energy business of the future.

[Read more](#)

FEATURED CONTENT



This week's task

- Investigate the various security concerns this company has had, and might have in the future.
- Provide exemplars of how these concerns have been or can be dealt with by the company.
- How have other multi-national organisations mitigated such issues?
- Based on this example, what issues do you foresee as a Cyber Security professional if employed by multinational companies?
- How does this compare with issues faced by small and medium-sized companies?
- We will also discuss various Cyber Security roles during this seminar.



Discussion outline

- What we know about Shell Global
- Challenges
- Solutions



Discussion outline

- **What do we know about Shell Global?**
- Challenges
- Solutions

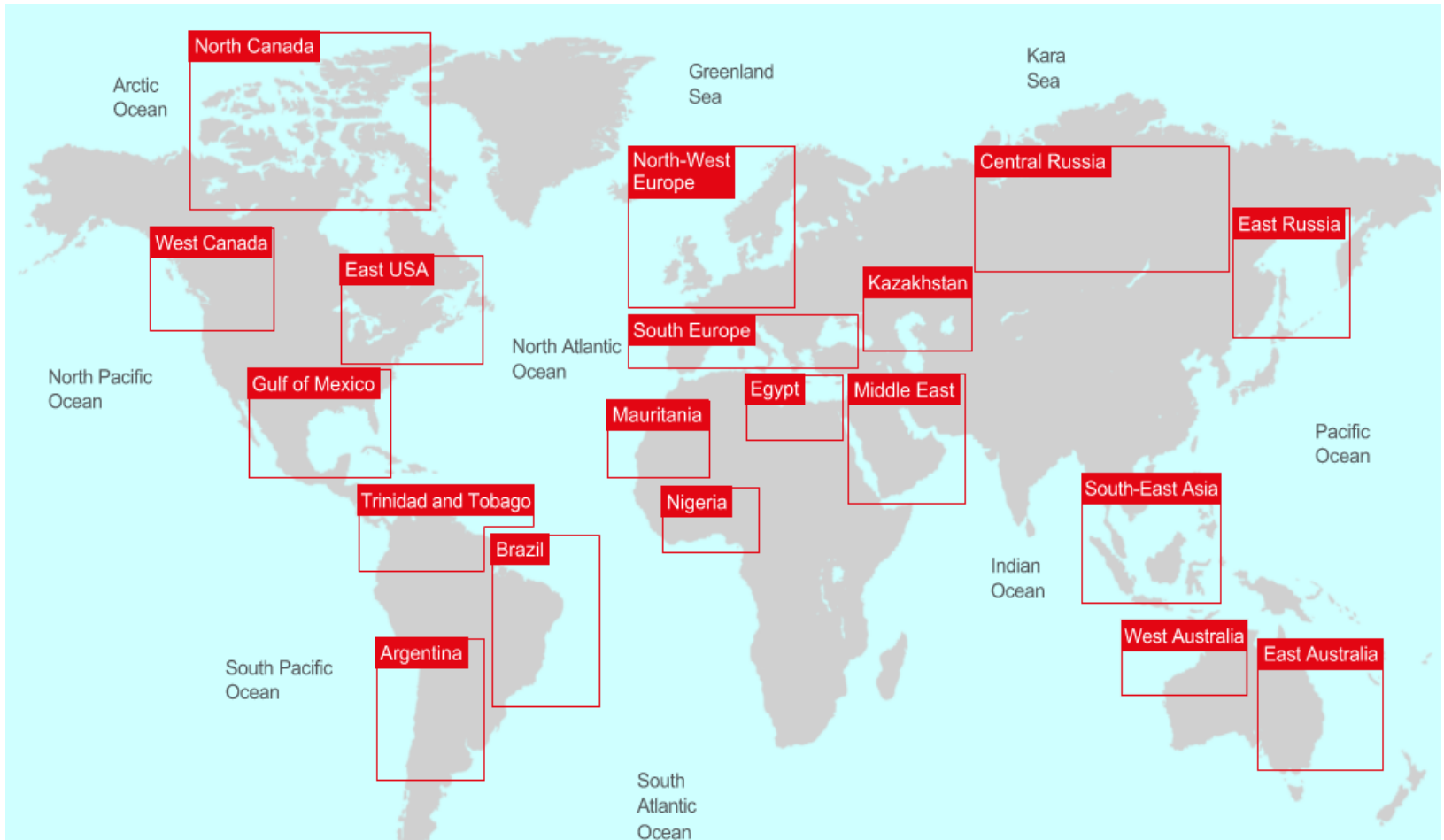


About Shell Global

- “We are a global group of energy and petrochemical companies with more than 80,000 employees in more than 70 countries”.
- “We use advanced technologies and take an innovative approach to help build a sustainable energy future”.
- Head office in The Netherlands



About Shell Global





About Shell Global

- 20 million customers visit a day
- Loyalty schemes
- Credit card schemes
- Shell apps and station locator



Shell credit cards

Shell credit cards offer rewards for your purchases at Shell and provide a more secure way to do your shopping. Filling up has never been so rewarding!



Loyalty

With Shell loyalty programmes in 16 countries, customers can collect points when they visit Shell, and convert these into their choice of rewards.



Shell App

From great journey destinations to expert vehicle information and everything in between – we've got you covered.



Shell station locator

More than 20 million customers a day visit Shell service stations for fuels, motor oils, car care products and more.



Discussion outline

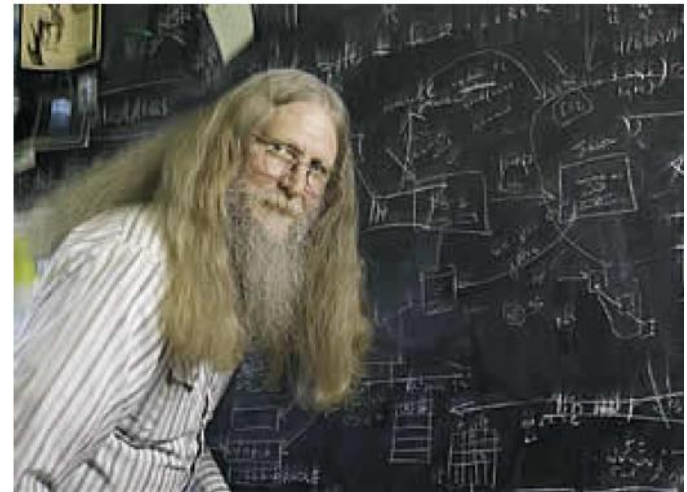
- What we know about Shell Global
- **Challenges**
- Solutions



Challenges

“relational databases are the bedrock of western civilisation” Bruce Lindsay

- A collection of multidimension data for storage
- Efficient access to stored data
- Management
- Analytics - Knowledge



Bruce Lindsay

Source: SIGMOD Record



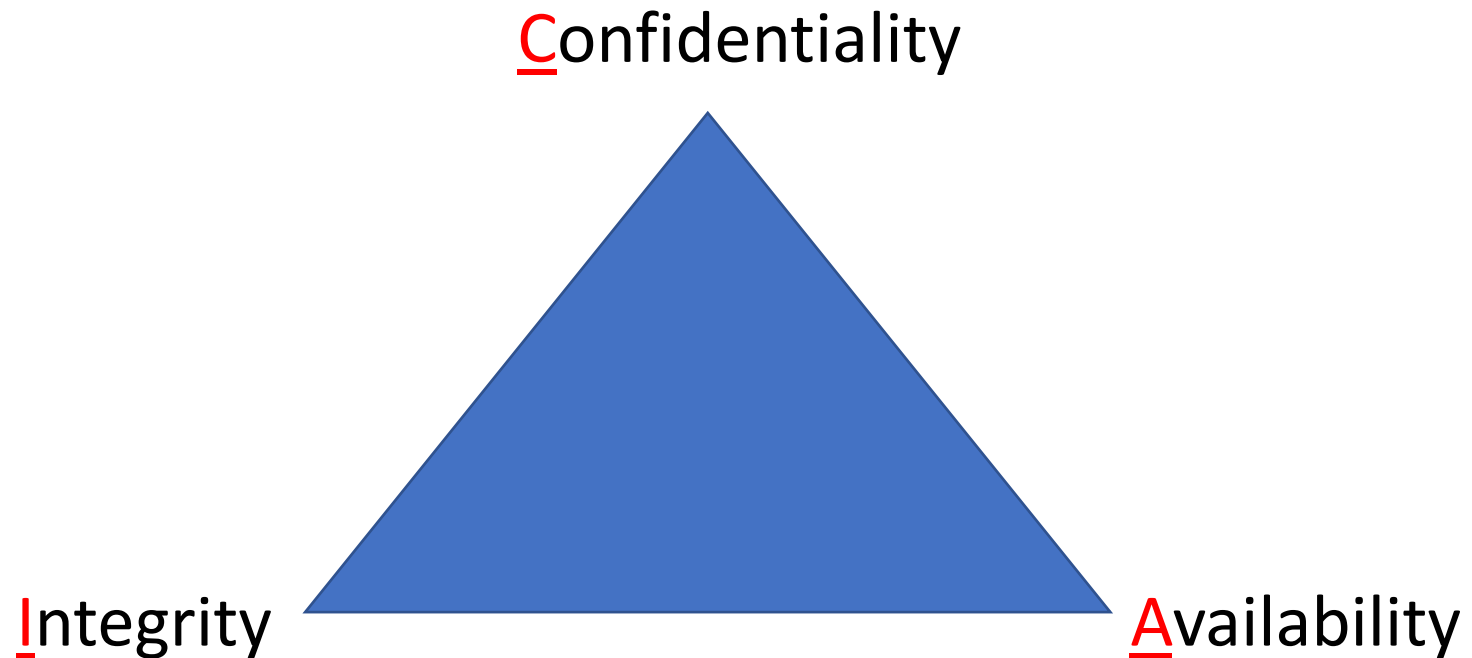
Challenges

“for every action to store, secure, and use data, there is an equal or greater reaction to steal data” Leah VanSyckel



Challenges

The CIA triangle model





Challenges

Ethical and legal responsibilities

- Territorial jurisdiction considerations within the context of cyber security
- see Carolina (2019).
- Applying law to IT infrastructure – e.g data processing and storage.
- Some regulations do apply to multiple countries – eg General Data Protection Regulations (GDPR).



Challenges

Ethical issues

- Societal harm
- Physical and psychological damage to individuals
- Human rights

See article by Gambs et al (2011) titled “Show me how you move and I will tell you who you are.”

- Network traffic metadata
- Location metadata linked with geolocation databases
- Device metadata



Discussion outline

- What we know about Shell Global
- Challenges
- **Solutions**



Solutions

Information system components

- Hardware
- Software
- Databases
- Telecommunication (network)
- Procedures
- People

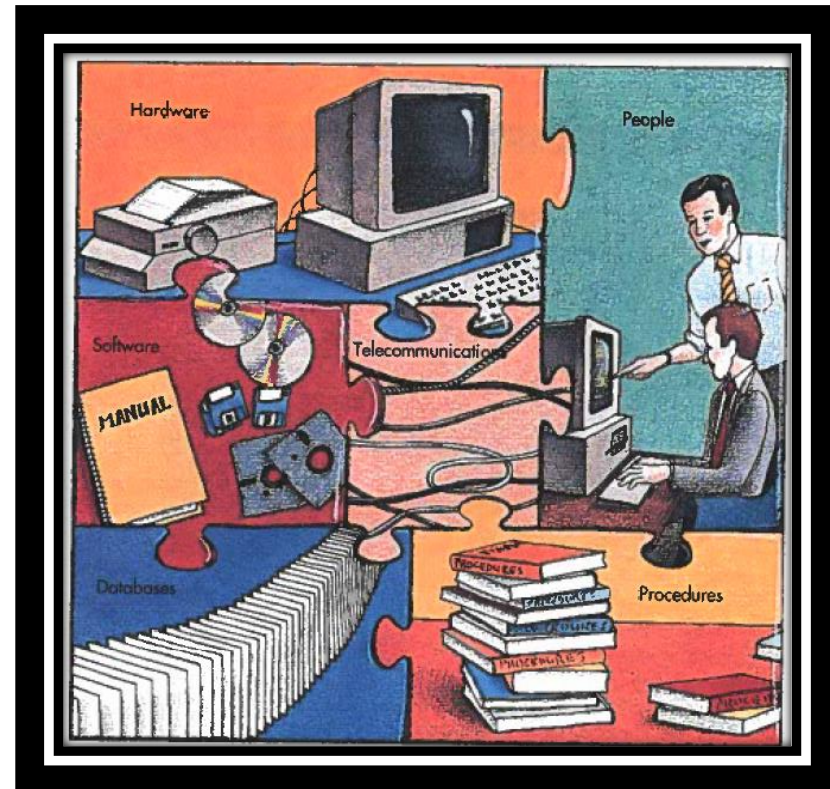


Image source: Stair (1996)

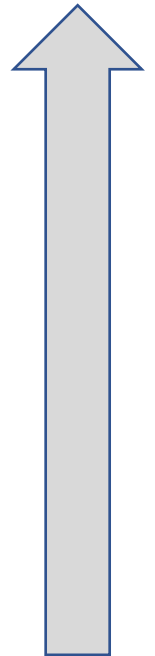


Solutions

Network security

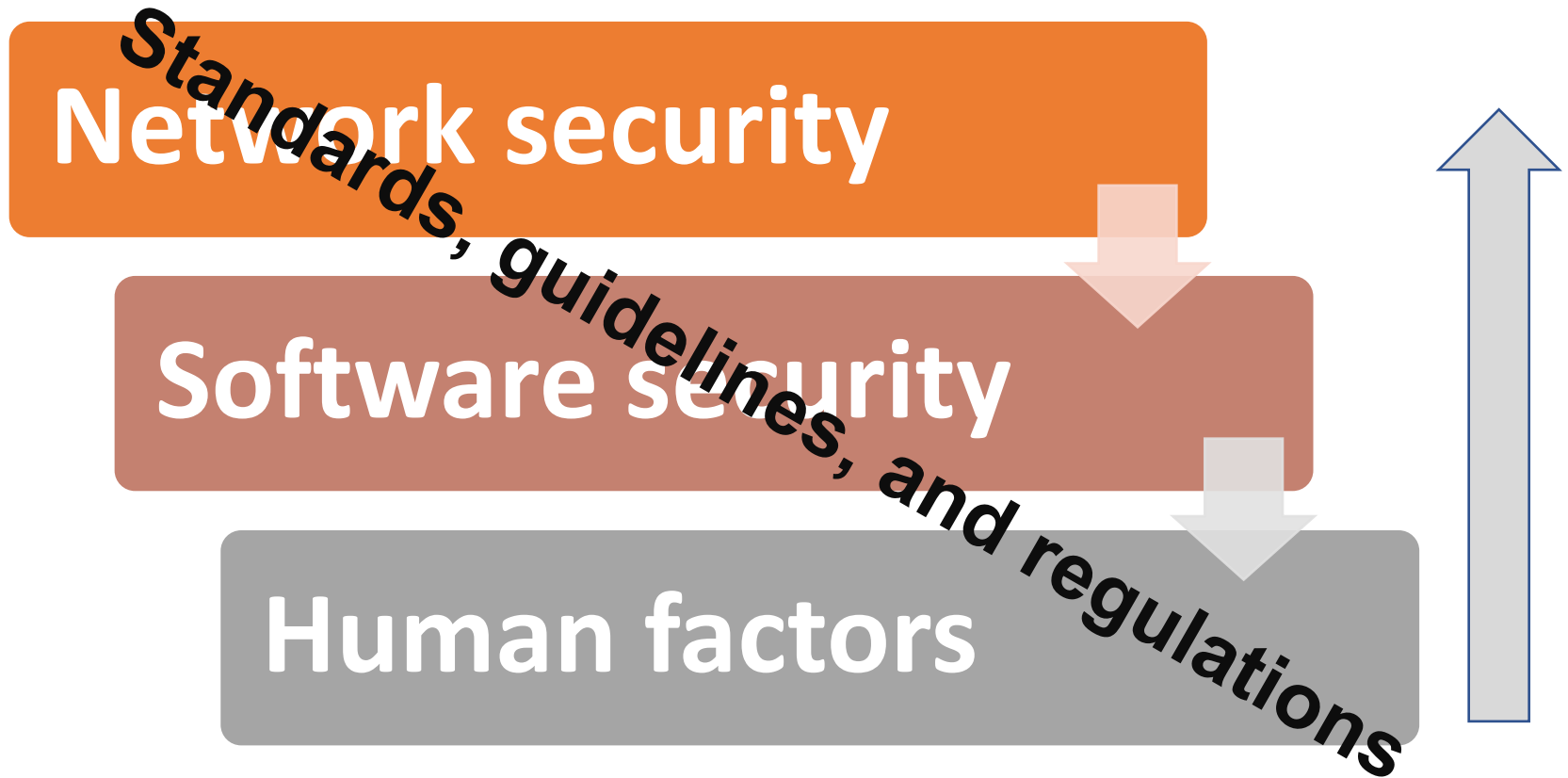
Software security

Human factors





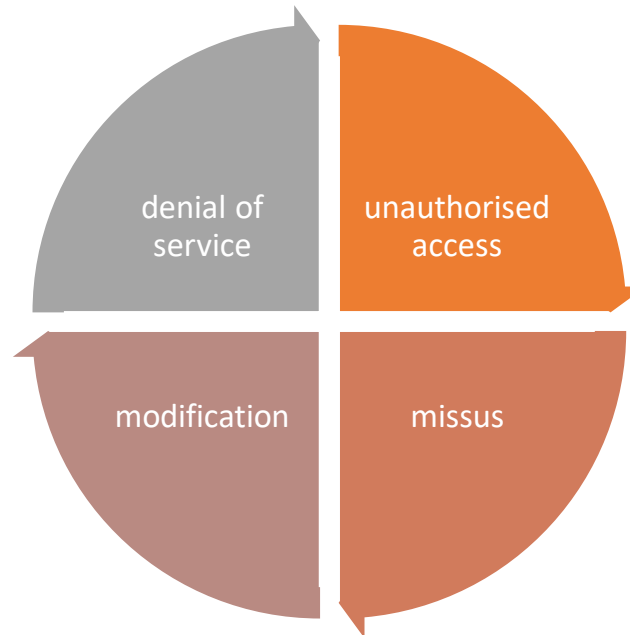
Solutions





Solutions

- Network security - focuses on networked-resources



- Overall objective is to stop threats from spreading over networks



Solutions

Software security – focusing on vulnerabilities in software.

- Code
- Databases
- Data exchange & transmission
- Algorithms



Solutions

Human Factors

- Threat exploits are psychology as much as technology e.g deception
- Psychology based attacks or social engineering attacks:
 - Pretexting
 - Phishing
- User abilities and training
- Anderson (2008) discusses the psychology of the human mind and why these attacks tend to be successful.



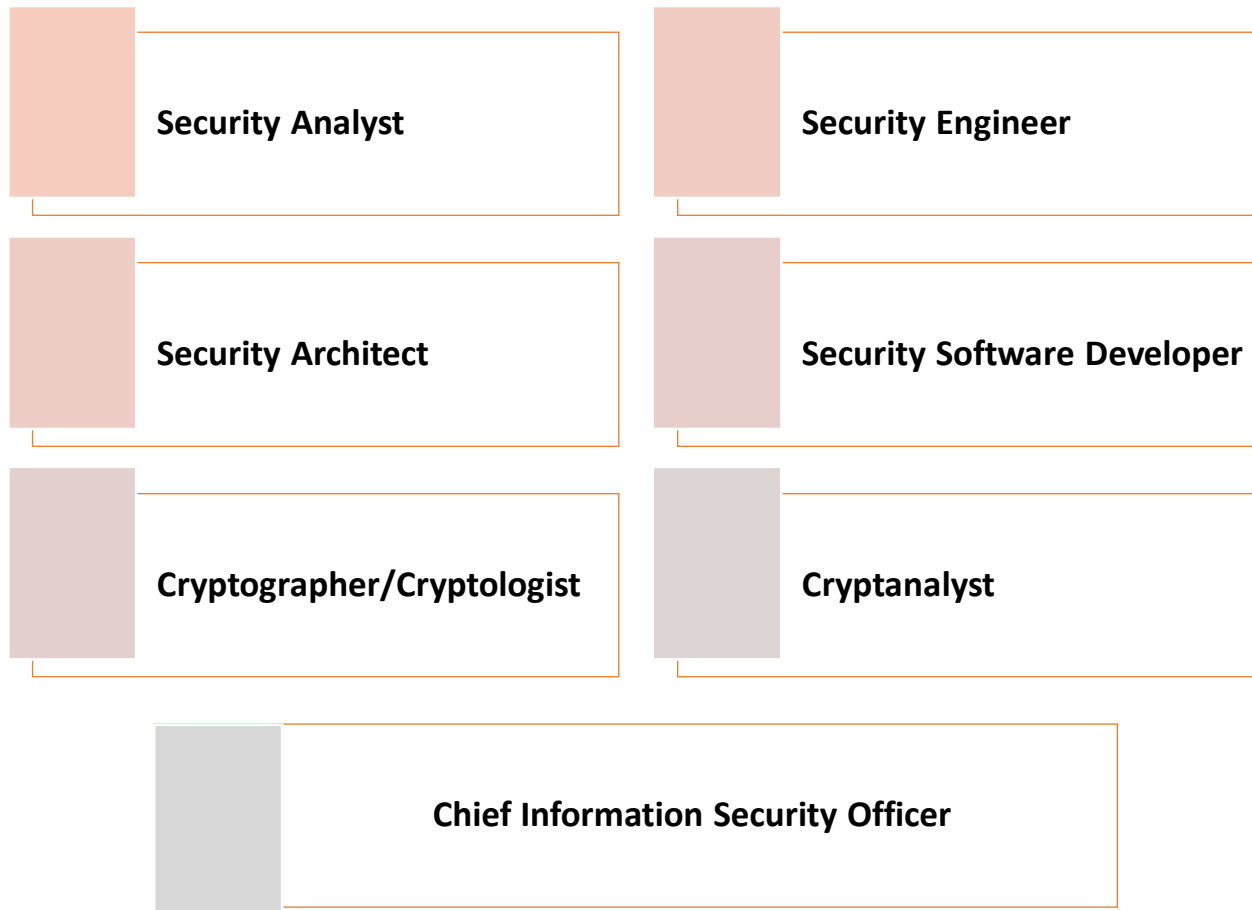
Solutions

Standards, guidelines, and regulations

- GDPR core regulatory principles:
 - ✓ lawfulness, fairness and transparency
 - ✓ purpose limitation
 - ✓ data minimisation
 - ✓ accuracy
 - ✓ storage limitation
 - ✓ integrity and confidentiality
- The UK National Cyber Security Centre (2019)

Solutions

Cyber Security professionals needed





Further information

Please get in touch

Tutor office

Dr Samuel Danso

Email: samuel.danso@kaplan.com

Skype: samdansobe

Office Hours:

Wednesday 6.30-7.30pm (18.30-19.30)

Saturday 5-6pm (17.00-18.00)

