



**African
Energy
Week**

Africa Energy Week 2021

Cybersecurity of Energy Infrastructure and its role within the Energy Transition

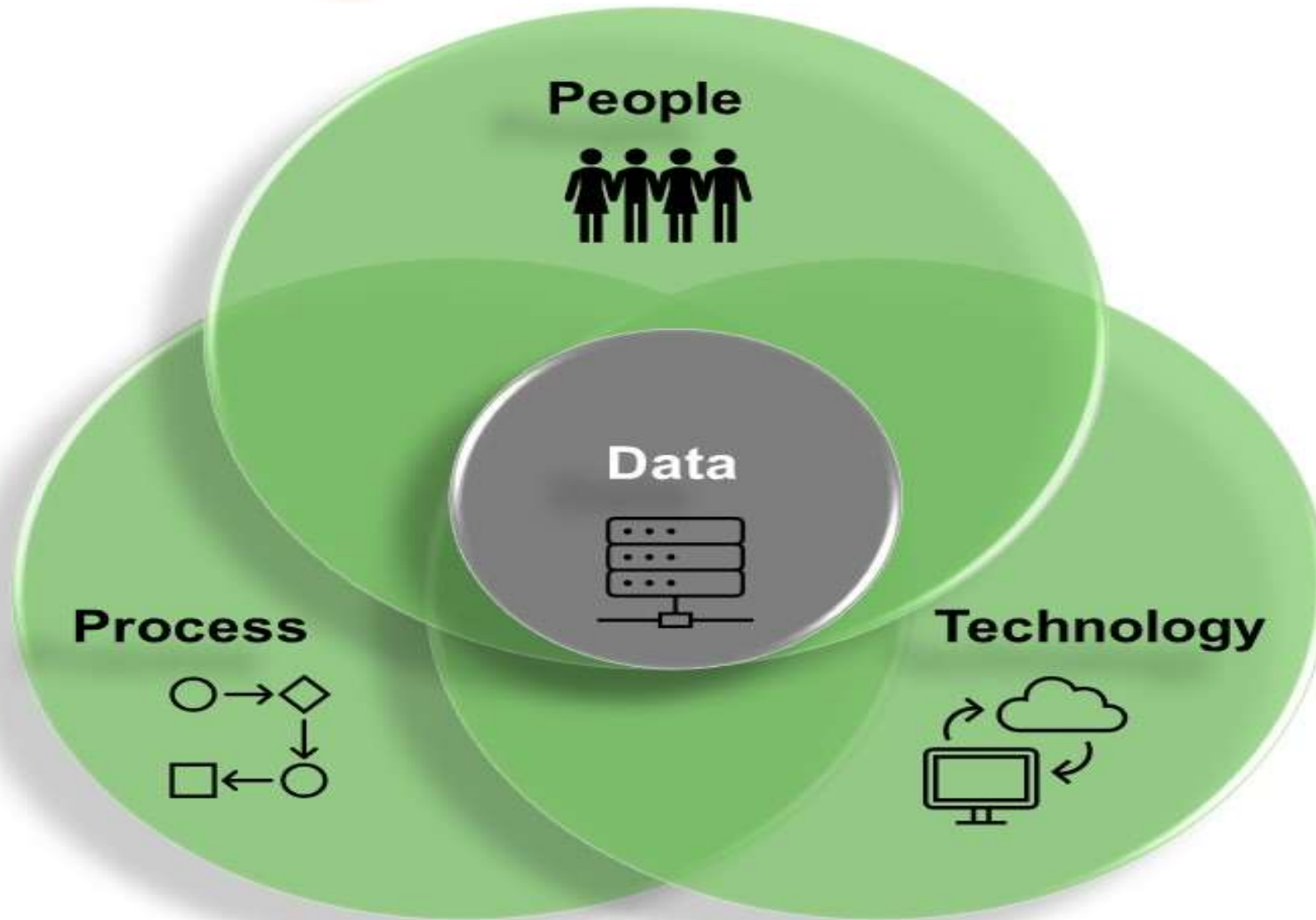


Anthony Aming
12th November 2021

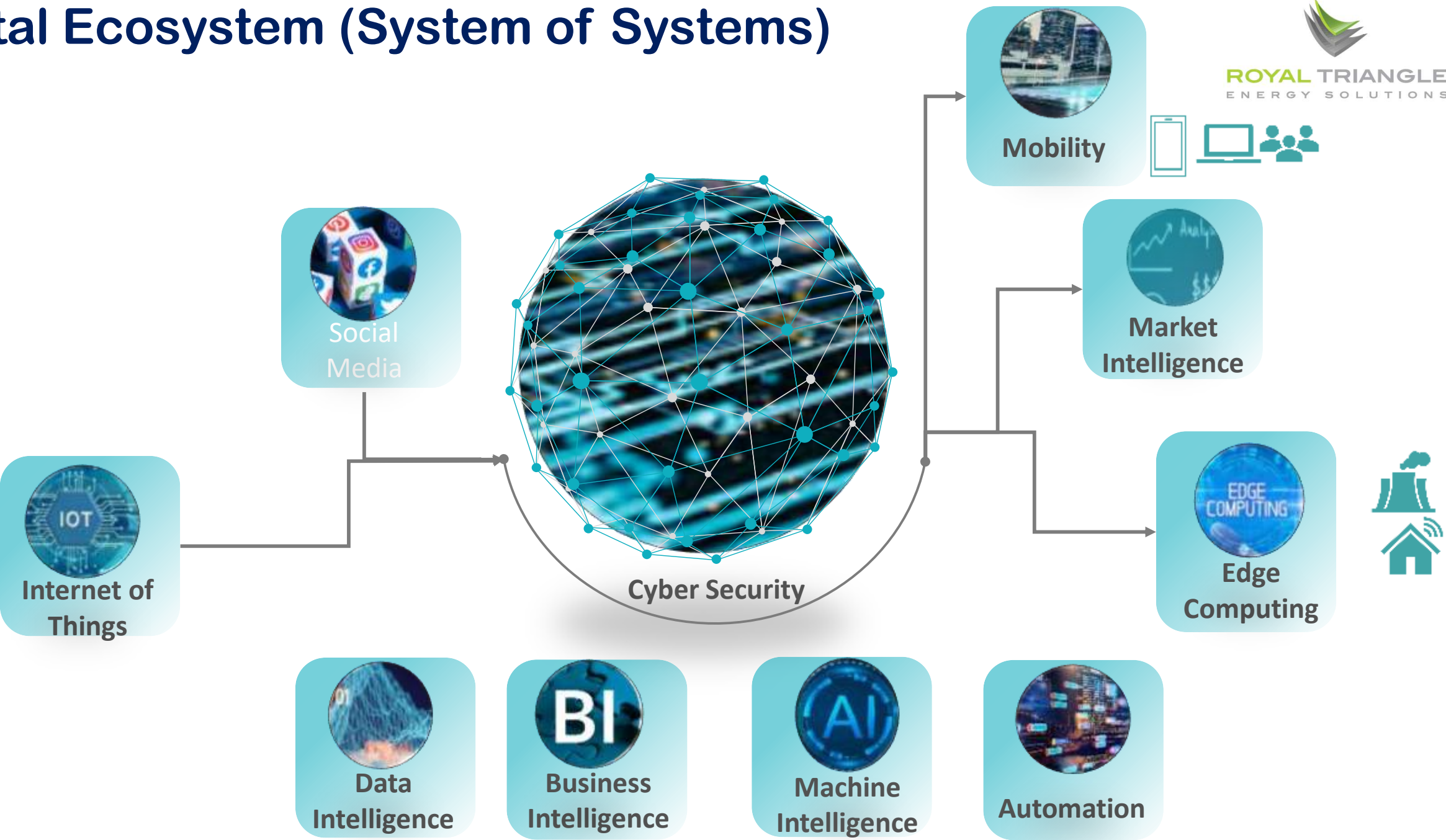


ROYAL TRIANGLE
ENERGY SOLUTIONS

Digital Transformation/Disruption



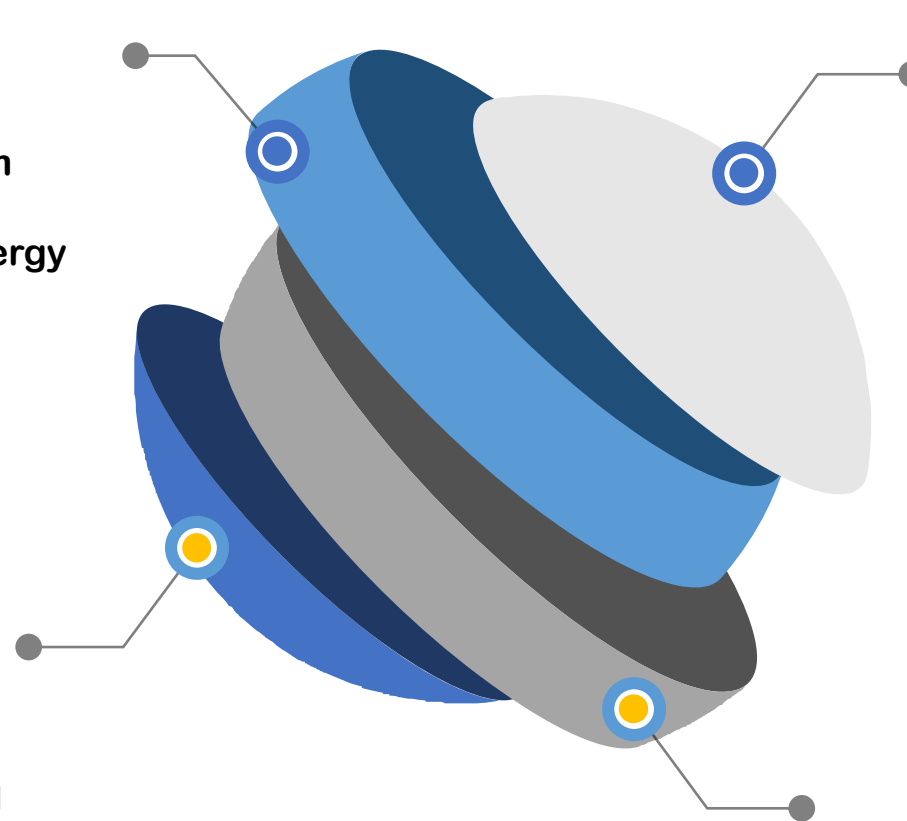
Digital Ecosystem (System of Systems)



Why Cyber Security – Its role in the energy sector

- There is an increasing trend from cyber criminals to attack critical operations infrastructure eg. energy & healthcare

- Year on year there has been an increase in cyberthreat to critical energy operations.
- A study suggest that last year 6 out of 10 organizations suffered a ransomware attack

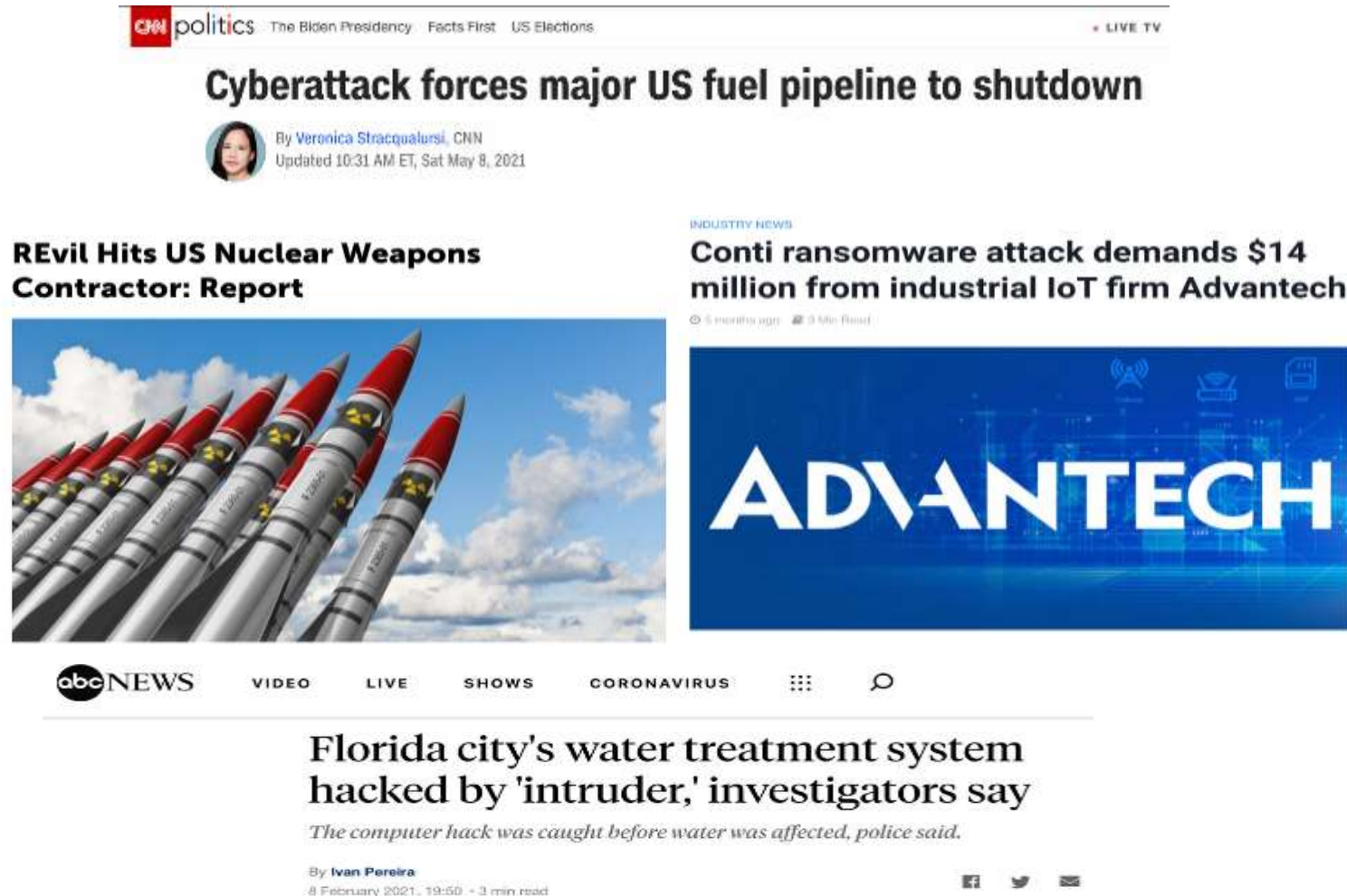


- With pandemic working in a hybrid mode of operations, brings additional threats for cybercrime.
- The social engineering attacks were highest in 2020.
- Most times the user is **not even aware** of the attack

- More than 70% of the companies were hurt by the **unpreparedness**.
- Until it hits everyone thinks its not going to impact them and once it hits companies are **reluctant to admit it**.

VPN is NOT SUFFICIENT to SECURE OT & IT

Critical infrastructure and public safety is at risk.
World needs an advance solution to fight against
advance cyber attacks.



VPN - VIRTUAL PRIVATE NETWORK

Middleware

- Centralized CA
- Middleware driven
- Password/IP Address/ MacAddress

No Intrusion Detection

- No continuous realtime network monitoring.

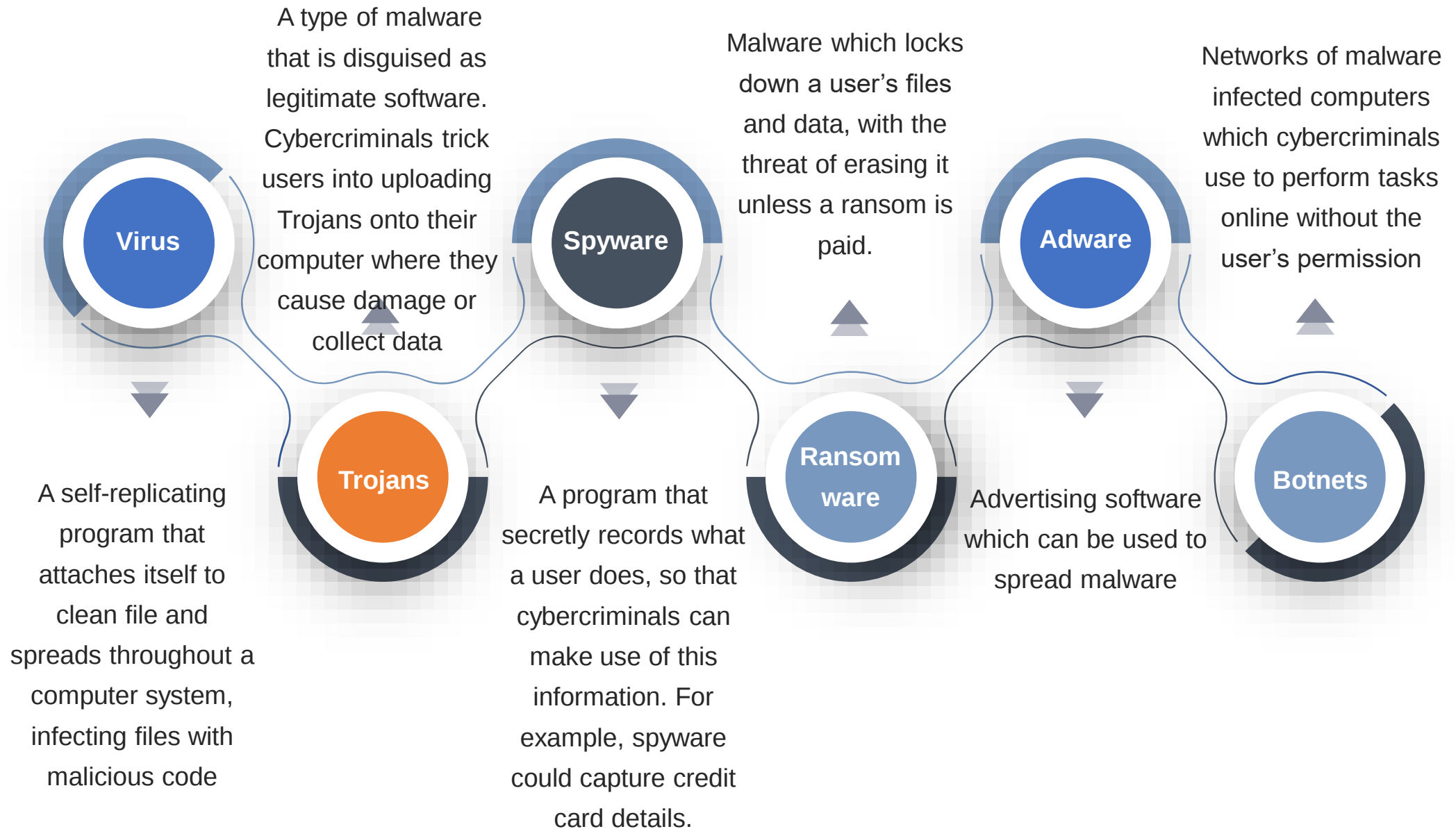
Poor Security Practices

- At enterprise level no visibility for poor security practices

Compliance

- No device in-compliance with security standards

Types of Malicious Software



Social Engineering Attacks

Hook

Deceiving the victim to gain trust

- Engaging the victim
- Creating a story
- Controlling the interaction

Play

Slowly and Steadily gather information

- Expanding the hook by being more personal
- Implement the attack
- Steal data or block the access

Investigation

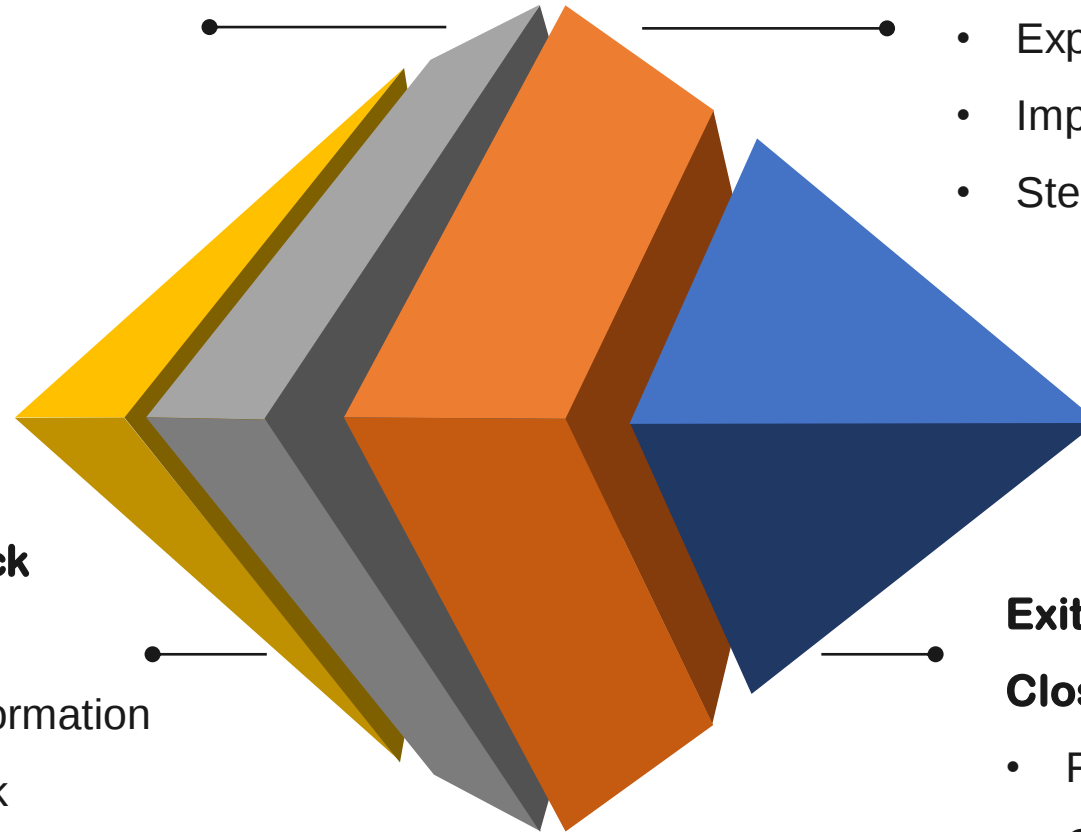
Preparing Ground for Attack

- Identifying Victims
- Gathering background information
- Selecting Method of attack

Exit

Closing without suspicion

- Removing all traces
- Covering tracks



What is Cyber Security

Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks

Network Security

is the practice of securing a computer network from intruders, whether targeted attackers or opportunistic malware

Application Security

focuses on keeping software and devices free of threats

Information Security

protects the integrity and privacy of data, both in storage and in transit

Operational Security

includes the processes and decisions for handling and protecting data assets

Disaster recovery and business continuity

define how an organization responds to a cyber-security incident or any other event that causes the loss of operations or data

End-user Education

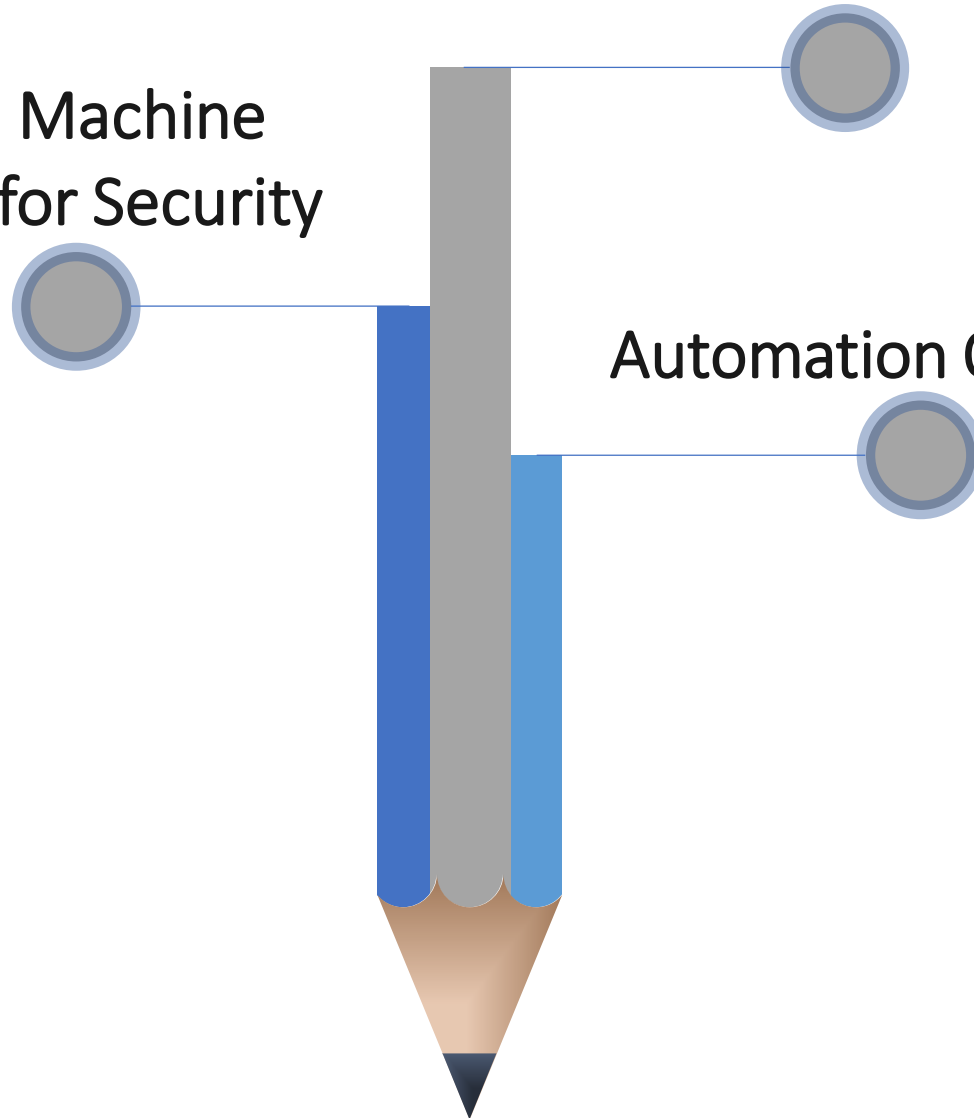
addresses the most unpredictable cyber-security factor: people

Neutralization of new attack Vectors

Advance Cyber Defense Solution

Focus on Machine
learning for Security

Automation Of Security



Improved Supervisory Control

Enterprise data management Strategy

Advance Cyber Defense Solution

Implementing Digital Twin

For simulation and preparedness

Blockchain assisted control

Create immutable records for early threat detection

Edge Computing

Localize Decision making



Difference between IIOT and Traditional VPNs

Intelligent Blockchain IOT

- Remote management of firewall
- Distributed network
- Cryptographic chain
- Machine to machine trust
- Data immutability
- Realtime intrusion detection

Traditional VPNs

- Firewall driven security
- Middleware driven security
- Password driven security
- No machine-to-machine trust
- No data immutability
- No intrusion detection

Intelligent IoT - Blockchain in IoT

Value Propositions

Protected

Embedded nature of blockchain IoT(BIoT) protocol provides protection against advance cyber attacks.

Predictive / Prescriptive

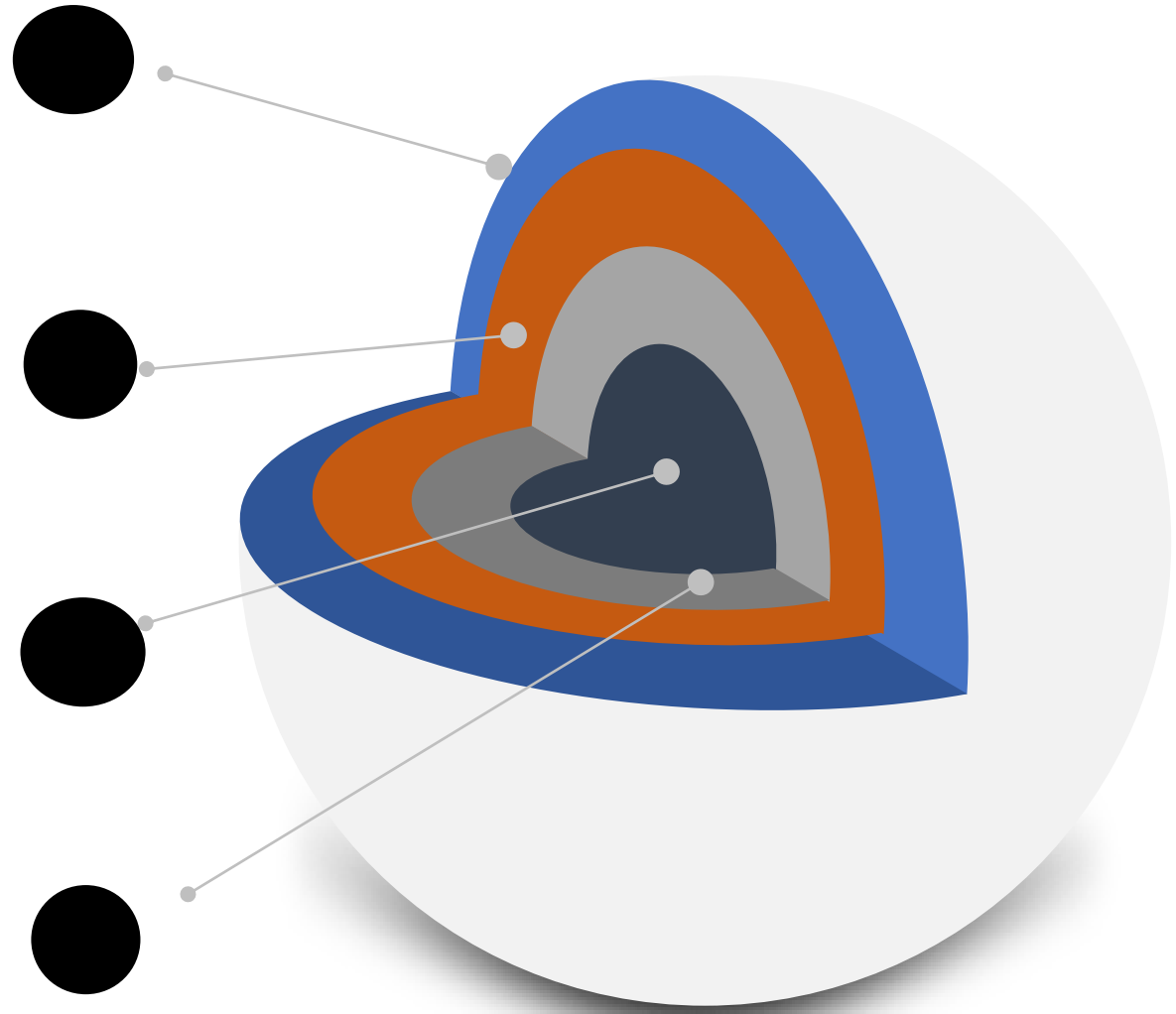
Detect abnormalities in the system

Contained

Distributed nature of BIoT help containing cyber attack to one device.

Compliance

Real Time device in compliance accepted cyber security standards.



Resource Rich African Regions Going Beyond Digitalisation Broadening their Digital Transformation Role

- **Know** what you need to **know** when you need to **know** it?

Increase AGILITY, CAPITAL EFFICIENCY

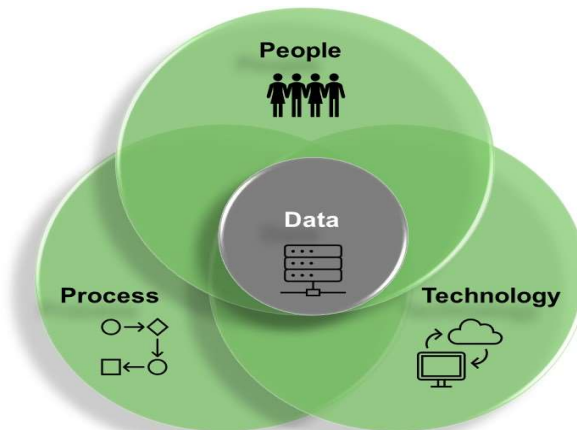
Reduce RISK & UNCERTAINTY

- **Be aware** and **how to avoid Ransome Ware Attacks** and be **Cyber Security safe?**

Prevention by being Aware & Prepared

- **Manage, survive, and adapt to changes** of the new **Society 5.0 & Industry 4.0?**

Adapt to Necessary Changes



How easy or difficult is to launch advance cyber attack?

Drakweb is full of tutorials

What is the minimum need?

- End point management
- Embedded security
- File Integrity Management
- Vulnerability Alerts

Air gap system hacked demo

BIOT- BLOCKCHAIN IOT NETWORK

Digital Twin Data Incorporation

- Process Operation Data
 - Sensors/Instrument Data
 - Calculations/Simulation Data
 - Control Logics/HMI
 - Design Data
 - Documents

- Maintenance Data
 - Spare Parts Inventory
 - Maintenance Schedule
 - Predictive Maintenance

- Monitoring Data
 - Video Surveillance

- As reliance on digitised systems increases, new possible cyber vulnerabilities arise that need to be identified, assessed and managed. Can the experts provide a snapshot overview of the latest role for system operators using digital systems and significantly decrease the number of entry points for malintents?
- What strategic methodologies can power and energy leaders create to develop security-minded plans to address the location and neutralization of new attack vectors
- What is the key role and viability of cybersecurity within the global uptake of the energy transition?
- What are the key examples of adopted techniques for improved supervisory control?
- Digitalisation as a game changer in Africa's just energy transition: How can some resource rich African regions broaden their digital transformation in order to advance their role as a global energy contender?