

Cybersecurity in the Land Administration Ecosystem

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CCISO, CISA, CRISC, CISM, CGEIT, Prince2, ISO 27001 LI

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Cybersecurity Threat Landscape



CRIMINALS

- **Impact:** Costly regulatory inquiries and penalties, consumer and shareholder lawsuits, loss of consumer confidence
- **Motivation:** Financial gain
- **2017 Outlook:** Cyber-extortion will continue to rise

INSIDERS

- **Impact:** Competitive advantage, trade secret disclosure, operational disruption, brand and reputation
- **Motivation:** Personal advantage, monetary gain, professional revenge, patriotism
- **2017 Outlook:** More organizations will implement insider threat mitigation programs and processes

HACKTIVISTS

- **Impact:** Disruption of business activities, brand and reputation, loss of consumer confidence
- **Motivation:** Negatively impact reputation, drive attention to a cause, pressure for change
- **2017 Outlook:** Expected to escalate attack methods with high-profile data breaches

NATION STATES

- **Impact:** loss of competitive advantage, disruption to critical infrastructure
- **Motivation:** Economic, political, and/or military advantage
- **2017 Outlook:** Will continue to strengthen their defensive and offensive cyber skills



No.1

**THE RISE OF CYBER-
CRIME AS A SERVICE**

Cybercrime as a-Service Is a Top Threat

Exploit kits (toolkits for hire that make cyber-crime easier by automating the creation and delivery of malware) remain the biggest threat. They account for 50% of the index.

CIO INSIGHT



SERVICE

HACKING WEB SERVER
(VPS OR HOSTING)

SETTING UP KEYLOGGER

DDOS (PRICES MAY VARY)

HACKING PERSONAL COMPUTER

HACKING CELL PHONES

EMAIL HACKING

SOCIAL MEDIA ACCOUNT HACKING

CHANGE SCHOOL GRADES

FUD RANSOMWARE + DECRYPTER



BITCOIN

*(Typical price range listed along with
the highest listed price)*

0.034 - 0.0449, 0.47

0.0263

0.0534, 0.078 - 0.39

0.0364, 0.044 - 0.55

0.047 - 0.093

0.078 - 0.12

0.0352, 0.054 - 0.11

0.19 - 0.58

12 MO / 0.14

6 MO / 0.076

1 MO / 0.019



USD

*(Typical price range listed along with
the highest listed price)*

\$220 - \$500, \$3,000

\$170

\$350, \$500 - \$2,500

\$280, \$500 - \$3,500

\$300 - \$600

\$500 - \$800

\$230, \$350 - \$700

\$1,200 - \$3,750

12 MO / \$900

6 MO / \$490

1 MO / \$120

Surface Web is only the Tip of the Iceberg

SURFACE WEB

Google, Yahoo, Naver, Yandex, Wikipedia, Reddit, ...

5 %



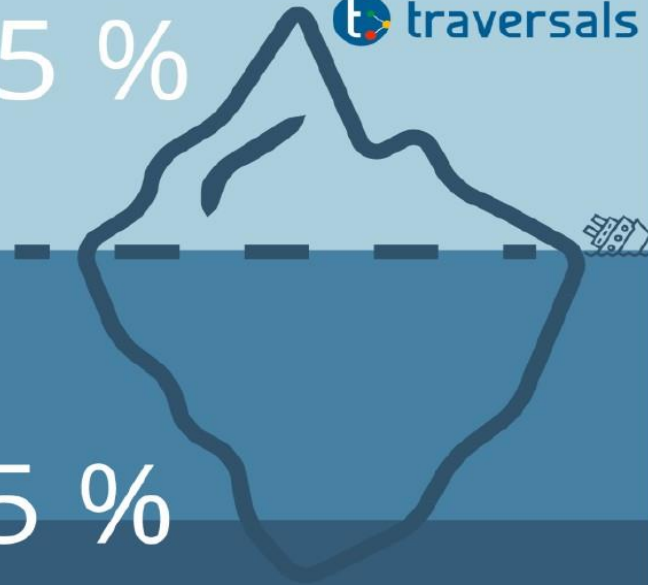
DEEP WEB

Cloud Storage, Patent Data, Research Articles, Legal Documents, Financial Records, ...

95 %

DARK WEB

Onion Sites, Hidden Marketplaces, Anonymous Journalism, ...





Ghana's Cybersecurity Laws

- **The Data Protection Act, 2012 (Act 843)** - sets out the rules and principles governing the collection, use, disclosure and care for personal data.
- **Cybersecurity Act, 2020(1038)** –This is an act established to regulate the Cyber Security Authority and it also applies to cybersecurity activities in the country.
- **Electronic Transactions Act, 2008 (ACT 772)** - This Act applies to electronic transactions and electronic records of every type.
 - The validity of electronic contracts, signatures and transactions



CYBERSECURITY ACT 2020 (ACT 1038)



REPUBLIC
OF GHANA



DIRECTIVE FOR THE PROTECTION OF CRITICAL INFORMATION INFRASTRUCTURE (CII)



A Secure and Resilient Digital Ghana

- Critical Information Infrastructure of Ghana
- Lands Commission has been gazetted as a CII
- Lands Commission must comply with the CII Directive

CYBERSECURITY ACTS 2020, CII REQUIREMENTS

Develop and Implement an Asset Management System

Develop and Implement an Access Control System

Supply Chain Cybersecurity

Security Screening of Critical Personnel

Cybersecurity Awareness and Training programme

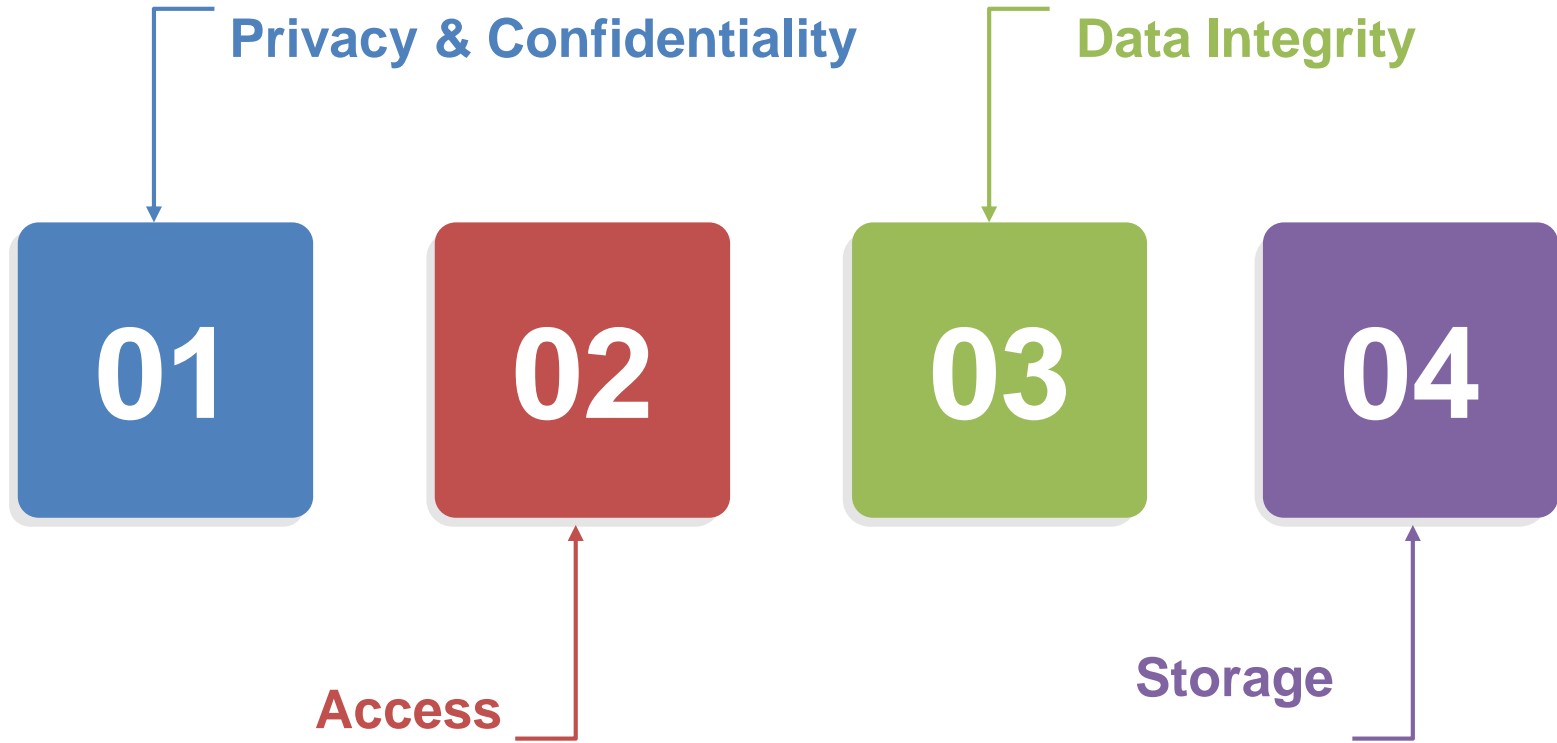
Implement Security Monitoring and Response System

Develop and Implement Business Continuity and Disaster Recovery Plans

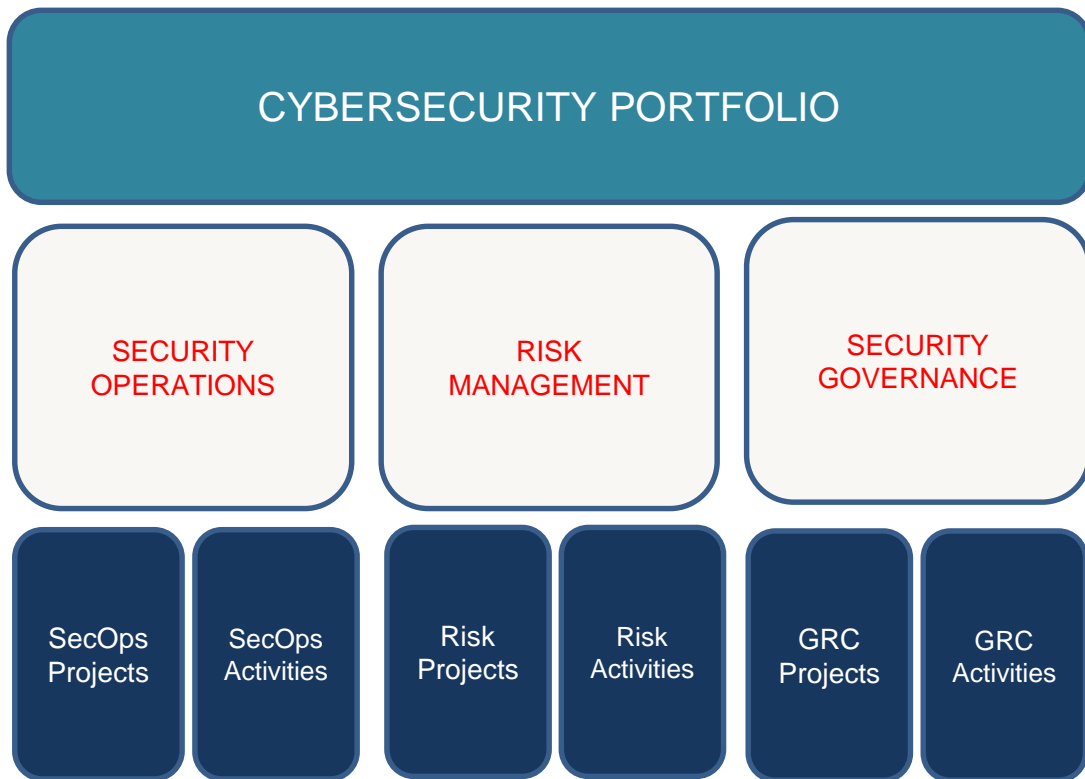
Conduct periodic cybersecurity risk assessments and audits

Adopt International Cybersecurity best practices, framework and standards

Key Risk Areas in Land Administration System



Cybersecurity Portfolio Management



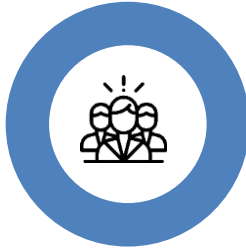
A portfolio is a collection of programs, projects, and operations managed as a group.

Benefits of ISO 27001

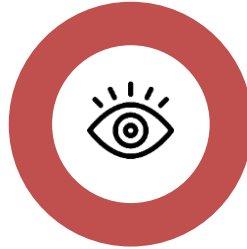
- Provides a structured framework for setting information security objectives
- Ensures that an appropriate process is followed to establish effective information security controls
- Encourages continual improvement in information security
- Ensures that everyone is aware of their roles and responsibilities for information security



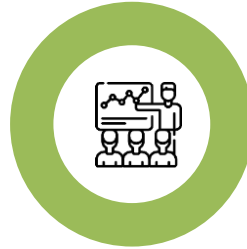
ISO 27001: Information Security Management System Components



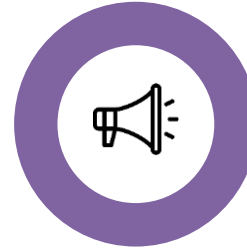
Management
Commitment



Awareness



Training



Communication



Policies &
Plans



Risk-based
Approach



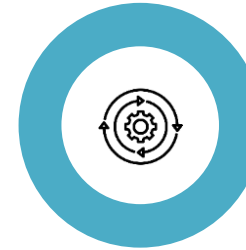
Security
Metrics



Audit



Management
Reviews



Continuous
Improvement

CYBERSECURITY MATURITY MODEL

To be effective, executives should have adequate understanding of the organization's capability and define the future direction for risk controls. To achieve this, ports and port facilities may wish to consider first performing a cybersecurity capability maturity assessment of their entire organization.

IMMATURE	DEVELOPING	INVESTING	ADVANCED	LEADING
Limited awareness	Discussion of what it means for your entity	Investing to improve security posture	Active involvement of Board & Senior management	Build a cyber ecosystem with business partners
Reliance on basic technology	Reaching out for support / advice	Implementing technical solutions	Move towards structured security governance	Intelligence led approach linked to business
No controls or compliance process	Policies in place & basic security processes	Strengthening policies & compliance	Build security operations	Sustained cyber resilience
Seen as a technology issue	Often driven by regulatory concerns	Initial security architecture	Ramp up testing	Risk quantification & mitigation strategy
		Education & awareness campaign	Begin supply chain security initiatives	Technology enabled & data driven

Poor cybersecurity outcomes are typically as a result of poor governance and management

Thanks for your Attention

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