Lecture 1: Relevance of the Problem of Information Security

An Introduction to Core Concepts

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TheConceptofInformation Security

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The Main Components of Information Security (The CIA Triad)

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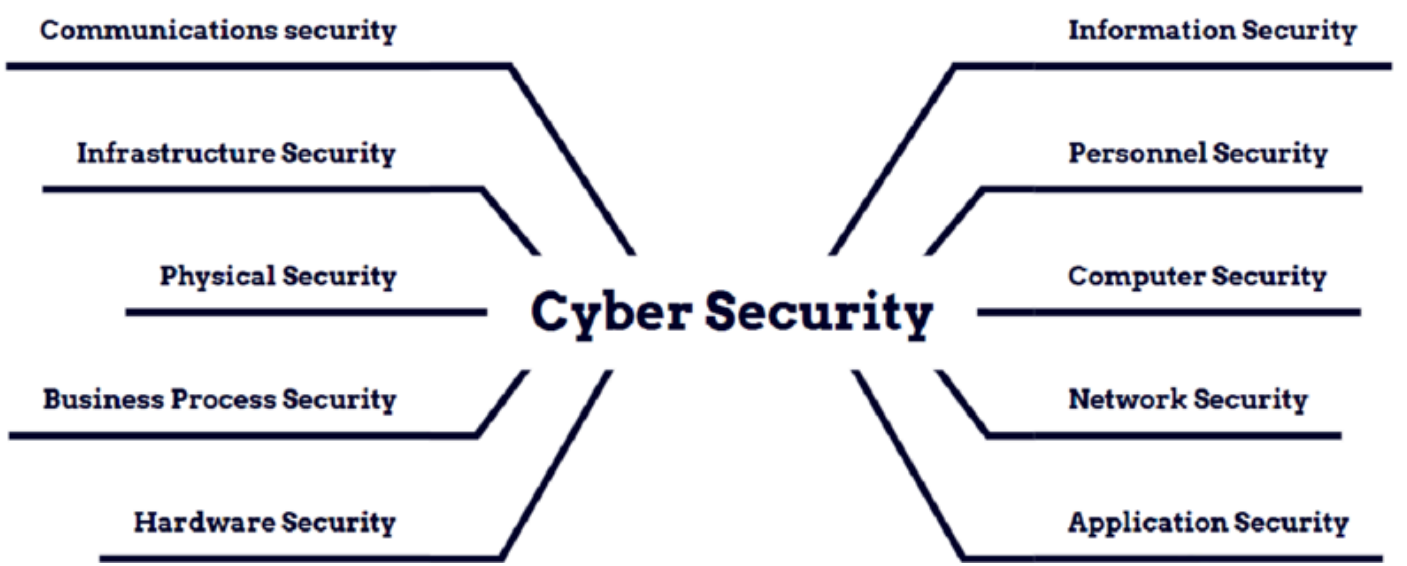
Practical Relevance & Key Takeaways

Introduction: What is Information Security?

InformationSecurity(IS)isdefinedas theprotection ofinformation and its supporting infrastructure from influences that could cause unacceptable damage.

- IS is a broader concept than "computer security."
- The weakest link is often the human element, not just technology.



Core Concepts: Infrastructure & Risk

Supporting Infrastructure

Referstoall componentsnecessary for an information system to function.

- Includes electricity, water, air conditioning, communications, and maintenance personnel.
- Failure in any component can lead to information security failure.

Unacceptable Damage

ThegoalofIS istoreduce damage to acceptable values, not 100% protection.

- Protection against all damage is economically unfeasible.
- Damage can be financial, or relate to human health or the environment.

The "CIA Triad": Main Components of IS

This model categorizes the interests of subjects associated with information systems.

Confidentiality

Protection against unauthorized access to information.

Integrity

Maintaining relevance, consistency, and accuracy of information.

Availability

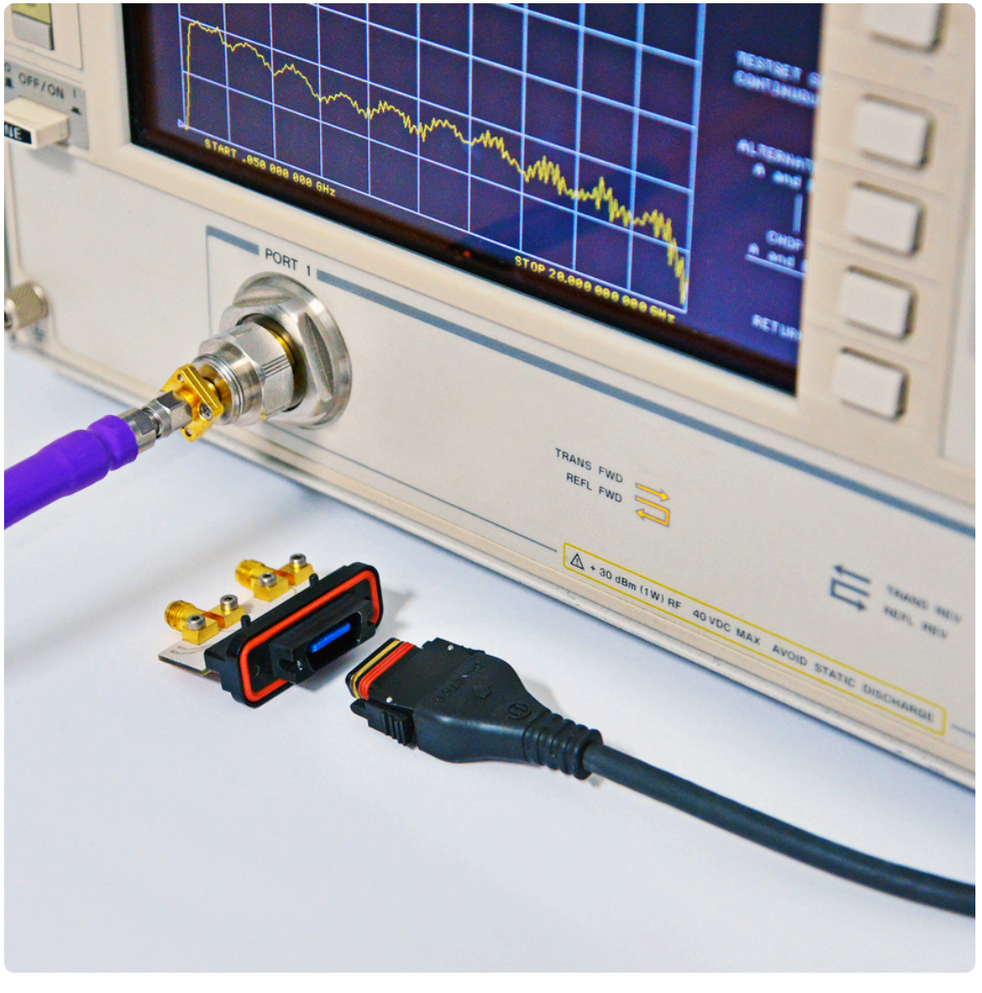
Ensuring access to required information services in an acceptable time.

Integrity: Static vs. Dynamic

Integrityensuresinformationisrelevant,consistent,andaccurate,protected from unauthorized modification or destruction.

Static Integrity

- Immutability of information objects.
- Example: Protecting a saved file from unauthorized changes.



Dynamic Integrity

- Correct execution of complex actions or transactions.
- Example: Ensuring a financial transfer is processed correctly without duplication or loss.

Subject Directions of Information Protection: Types of Secrets

Information requiring legal protection falls into various categories, each with different scopes and purposes.

State Secret

Classified by government for national security.

Commercial Secret

Information giving a business a competitive edge.

Bank Secrecy

Non-disclosure of client financial information.

Professional Secrecy

Information entrusted to a professional, legally and ethically bound.

Official Secret

Confidential government information, less critical than state secrets.

Professional Secrecy: Diverse Applications

Professionals are legally and ethically bound not to disclose entrusted information.

Medical Confidentiality

Physician's knowledge of patient diagnosis or health status.

AdvocacySecret

Information provided by a client to their attorney.

Notarial Secret

Information disclosed to a notary for legal acts.

Secrecy of Confession

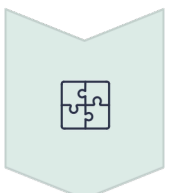
Information given to a religious minister in confession.

Secrecy of Communication

Protected content like letters, calls, and emails.

Practical Relevance and Key Takeaways

Informationsecurityisa holisticbusiness,human,andorganizationalissue,notjusttechnical.



Security is Holistic

Beyond technology: human element (passwords on sticky notes) and supporting infrastructure (power outages) are critical.

CIA Triad as a Balancing Act

Essential framework for balancing security priorities; different organizations prioritize differently (e.g., bank: Integrity, military: Confidentiality).

Protection is About Risk and Value

Not 100% perfection, but reducing risk to an "acceptable level" based on information value (e.g., State Secret vs. public info).

Control Questions & Recommended Literature

Control Questions

1.What is information security and its aspects? 2.What relates to the supporting infrastructure? 3.List the tasks of information security. 4.What is a state secret? 5.What is a trade secret? 6.What is a professional secret? 7.What is an official secret? 8.What are the main protected objects?

Recommended Literature

- Partyka T.L., Popov I.I. Information Security. Textbook for students of vocational schools. M.: FORUM: INFRAM, 2002.
- Galatenko V.A. The basics of information security. Lecture course. - M, 2008.