Tishk International University
Faculty of Applied Science
Cybersecurity Department

Lecture 6: Cybercrime and Cyber Laws

CBS221/A : Ethics and Legal Issues in Cybersecurity

Week 6: 09-13/11/2025

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Introduction

- **Definition of Cybercrime:**
- **Cybercrime refers to criminal activities carried out using computers or the internet.**

- **Categories:**
- **- Crimes against persons (harassment, identity theft)**
- **- Crimes against property (hacking, fraud)**
- **- Crimes against government (cyberterrorism)**

- **Theoretical Principle: Risk = Probability of Threat x Impact(Loss)**

- **Exercise: List 3 types of cybercrime relevant to your country.**
- **Solution: Identity theft, ransomware, phishing.**

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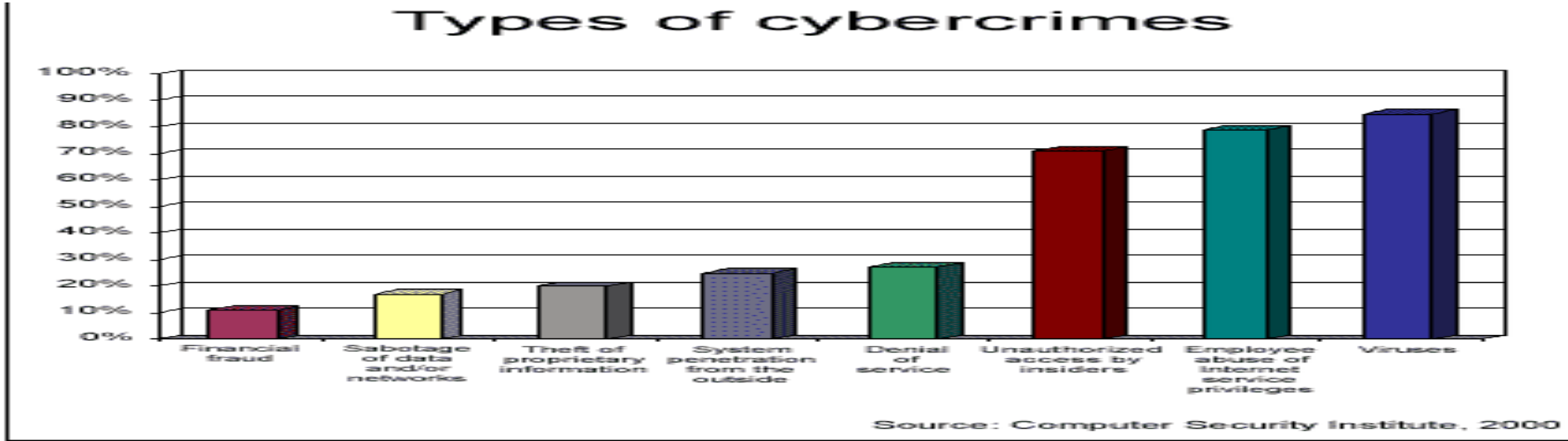
Types of crime in cybercrime

There are several types of crime in cybercrime that can be classified according to activity, such as:

- Unauthorized Access
- Illegal Contents
- Deliberate virus spread
- Cyber Espionage, Sabotage, and Extortion
- Carding
- Hacking and Cracker
- Cybersquatting and Typosquatting
- Cyber Terrorism



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Computer Fraud & Abuse Act (CFAA)

- Overview: U.S. federal law enacted in 1986 addressing computer-related crimes.
- Key Provisions:
- - Unauthorized access to computers
- - Theft of information
- - Fraud and damage to systems
- - Trafficking in passwords and hacking tools

- Real Example: 2014 Sony Pictures hack

- Exercise: Calculate E(L) if P=0.2, L=$500,000, Detection=0.7
- Solution: $30,000

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Other U.S. Cybercrime Laws

- **ECPA: The Electronic Communications Privacy Act (ECPA) is a 1986 U.S. federal law that protects the privacy of wire, oral, and electronic communications, including email and telephone calls, from unauthorized access and interception. It prohibits the intentional interception, use, or disclosure of communications without consent or proper legal authorization, like a warrant, and establishes different rules for communications in transit versus those stored electronically.**

- **Protects wire, oral, and electronic communications**
- **Identity Theft and Assumption Deterrence Act: Criminalizes identity theft**
- **COPPA: COPPA, the Children's Online Privacy Protection Act, is a U.S. federal law that protects the online privacy of children under 13. It requires online operators to get verifiable parental consent before collecting, using, or disclosing personal information from children. This gives parents control over what information is collected and how it's used, and it applies to websites, apps, and online services that are directed to children or have actual knowledge they are collecting data from them.**
- **Protects children's personal data online**

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The CIA triad refers to confidentiality, integrity and availability, describing a model designed to guide policies for information security (infosec) within an organization. The model is sometimes referred to as the AIC triad -- which stands for availability, integrity and confidentiality -- to avoid confusion with the Central Intelligence Agency.

In this context, confidentiality is a set of high-level rules that limits access to all types of data and information. Integrity is the assurance that the information is trustworthy and accurate. And availability is a form of risk management to guarantee reliable access to that information by authorized people.

Theoretical Principle: CIA Triad - Confidentiality, Integrity, Availability

Equation: Compliance Score CS = Implemented Policies / Required Policies x100%

Exercise: Identify applicable law for a phishing incident

Solution: CFAA and ECPA

Understanding the CIA Triad: Confidentiality, Integrity, Availability

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International Cybercrime Treaties

- **Budapest Convention (2001):** First international treaty on cybercrime
- Other Treaties: UN Convention against Transnational Organized Crime, G8 24/7 Network
- https://treaties.un.org/

- **Mathematical Model:** Probability of prosecution P(prosecution)=f(treaty ratification, evidence quality, jurisdiction cooperation)

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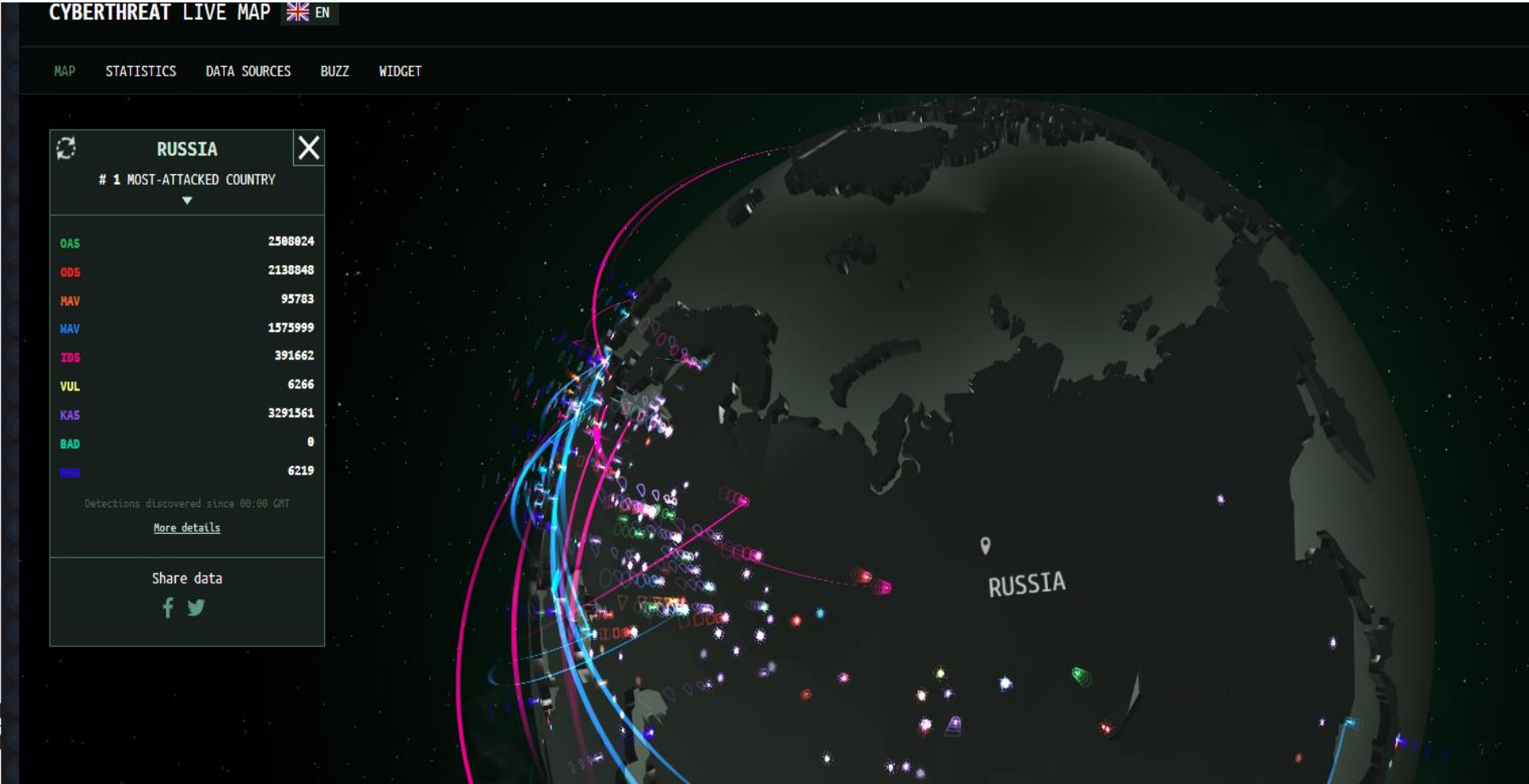
https://cybermap.kaspersky.com/
Very important



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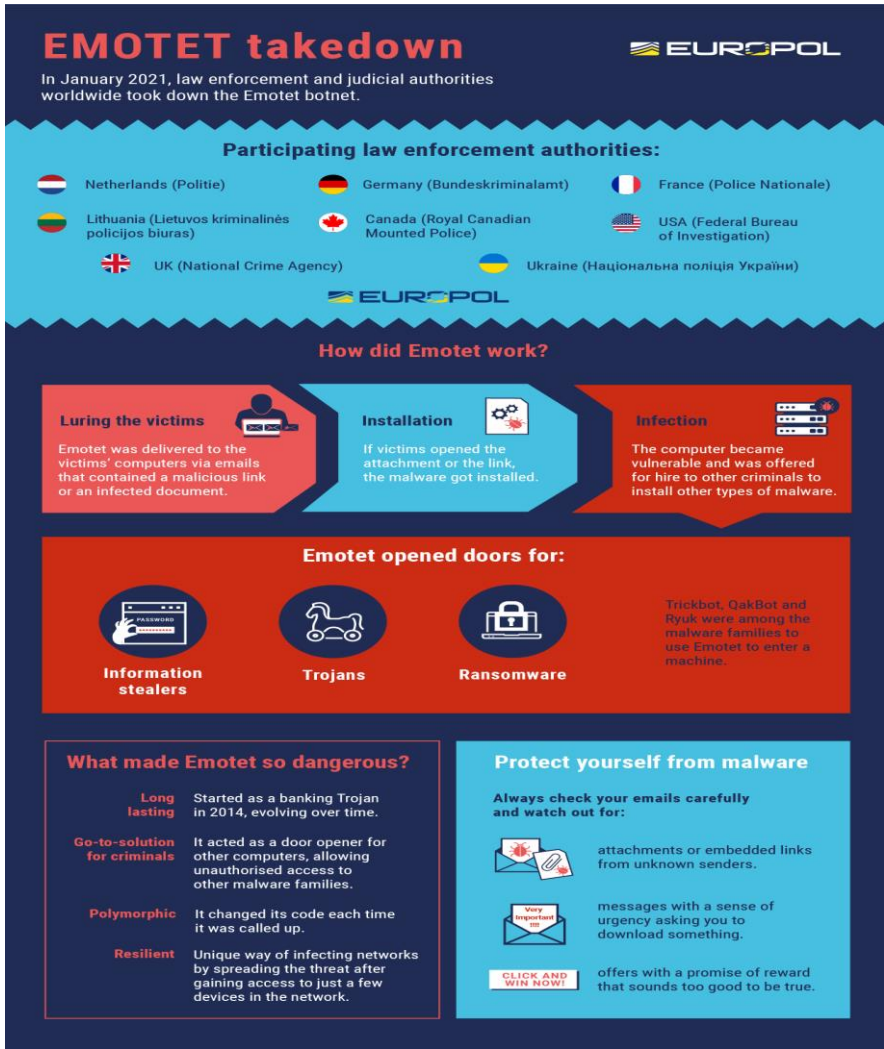
Real Example: **Interpol operation against Emotet malware**
Exercise: List 2 treaties your country participates in
Solution: Budapest Convention, UN Convention

The following authorities took part in this operation:

- **Netherlands: National Police (Politie), National Public Prosecution Office (Landelijk Parket)**
- **Germany: Federal Criminal Police (Bundeskriminalamt), General Public Prosecutor's Office Frankfurt/Main (Generalstaatsanwaltschaft)**
- **France: National Police (Police Nationale), Judicial Court of Paris (Tribunal Judiciaire de Paris)**
- **Lithuania: Lithuanian Criminal Police Bureau (Lietuvos kriminalinės policijos biuras), Prosecutor's General's Office of Lithuania**
- **Canada: Royal Canadian Mounted Police**
- **United States: Federal Bureau of Investigation, U.S. Department of Justice, US Attorney's Office for the Middle District of North Carolina**
- **United Kingdom: National Crime Agency, Crown Prosecution Service**
- **Ukraine: National Police of Ukraine (Національна поліція України), of the Prosecutor General's Office (Офіс Генерального прокурора).**



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Types of Cybercrime

- **Hacking: Unauthorized Access**

Gaining illegal entry into computer systems or networks.

- **Phishing: Deceptive emails or messages designed to trick users into revealing sensitive information like passwords and credit card numbers.**
- **Fraud: Deceptive activities to gain financially, such as credit card fraud and scams.**
- **Ransomware & Malware: Malicious software like viruses, worms, and ransomware that infect systems to damage them or extort money.**
- **Identity Theft:**

Stealing personal information to impersonate someone for fraudulent purposes.

- **Cyber Terrorism: Using cyberattacks to create fear, disrupt essential services, or threaten a nation's security**

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Common Types of Cybercrime

Real Example: WannaCry ransomware attack 2017
Exercise: Rank 3 cybercrime types by expected impact.

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Cybercrime Investigation Process

A cybercrime investigation process of digital forensics, including identification of the incident, preservation of digital evidence, analysis of that evidence, and reporting the findings. It should also include sections on legal frameworks, tools and techniques, and challenges like admissibility and global issues.

•Legal and procedural framework:

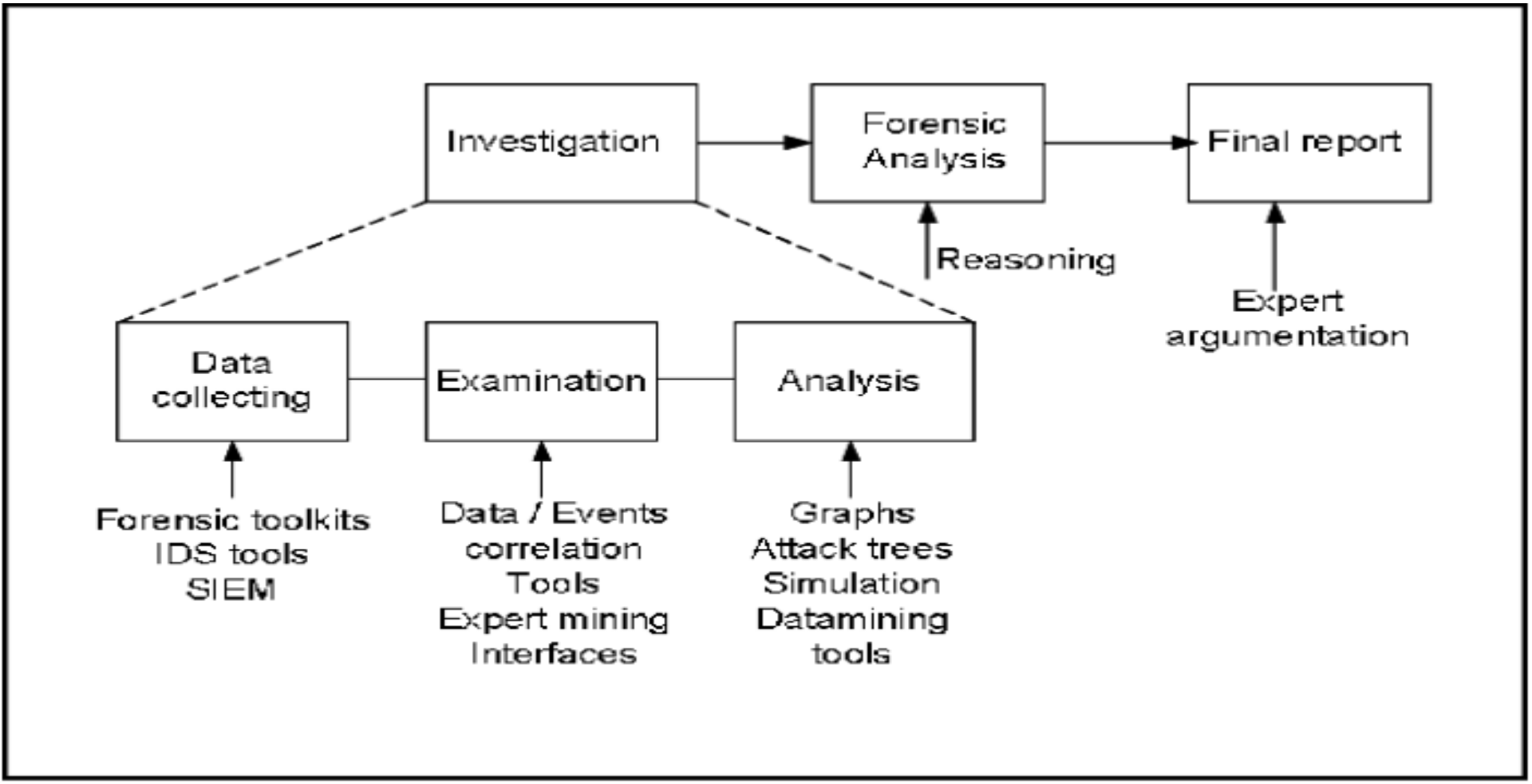
- **Legal authority (e.g., search warrants)**
- **Admissibility of digital evidence in court**
- **Cognizability and police powers**
- **Victim relief strategies ’**

•The digital forensics process:

- **Preparation: Assembling a team and defining the scope**
- **Collection: Acquiring digital evidence (e.g., seizing devices)**
- **Examination: Identifying and extracting data**
- **Analysis: Investigating the data for evidence**
- **Reporting: Documenting the findings for legal proceedings**

- **Evidence handling and chain of custody:**
- **Maintaining a strict chain of custody for evidence**
- **Techniques for specific data types (e.g., email forensics)**
- **Tools and techniques:**
- **Forensic analysis tools**
- **Incident response techniques**
- **Profiling and authorship identification methods**
- **Challenges and solutions:**
    - **Technical and operational challenges**
    - **Global issues and the need for information sharing**
- **Conclusion:**
    - **Cybercrime and security measures**
    - **Future directions in cyber forensics**

- **The digital forensics process involves**
- **detection (identifying a potential incident),**
- **evidence collection (gathering and preserving digital evidence),**
- **forensic analysis (examining the evidence to find facts),**
- **reporting (documenting the findings),**
- **and legal action (using the evidence in legal proceedings).**
- **Key tools include network monitoring for detection, log analysis, and digital forensics software for evidence collection and analysis.**
- **Exercise: Assign weights to 5 types of evidence and calculate EW.**



Cybercrime process III. DETECTION

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Challenges in Cyber Law Enforcement

- Includes ;
- Jurisdiction Issues,
- Rapid Technology Evolution,
- Anonymous Criminals,
- International Cooperation

- LEGISLATIVE FRAMEWORK
- Robust legislative framework in place to deal with cyber offences.
- Electronic Transactions Act, 2008 (Act 772): mainly sets out the cyber crimes
- Electronic Communications Act, 2008 (Act 775)
- , Mutual Legal Assistance Act, 2010 (Act 807)
- Data Protection Act, 2012 (Act 843)
- Criminal Offenses Act, 1960 (Act29)
- Criminal and other Offences Procedure Act, 1960 (Act 30).

Real Example: Cross-border ransomware attacks

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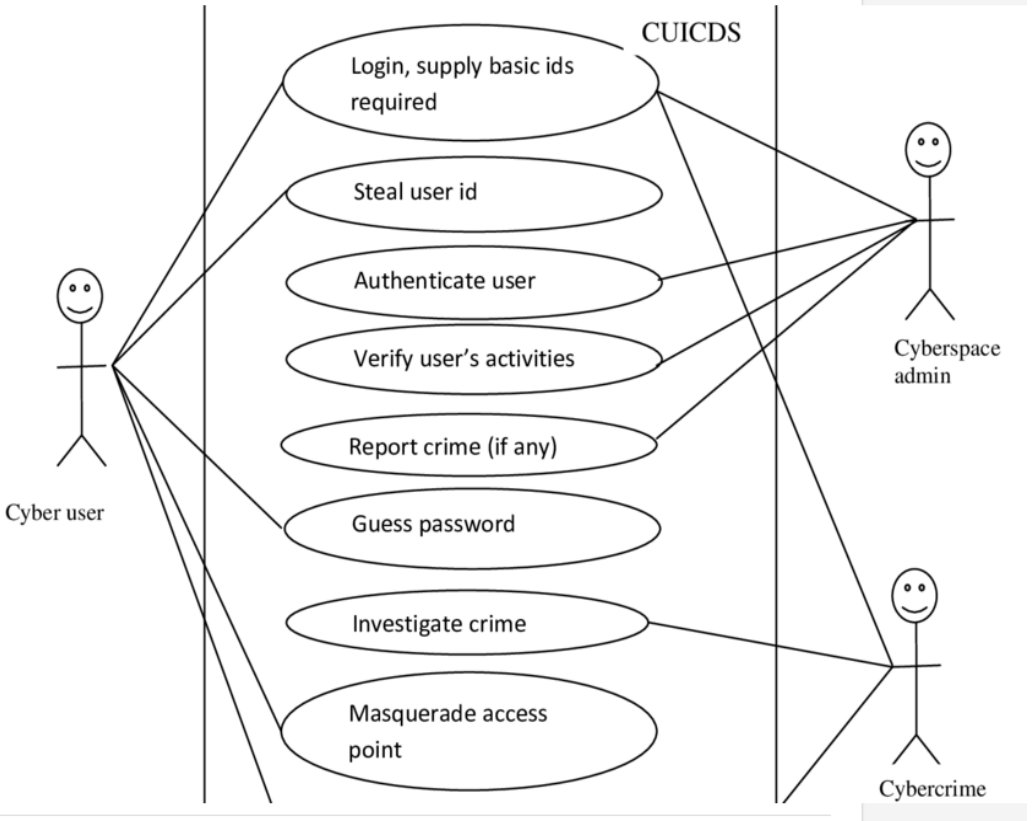
Case Study

- **Scenario: International hacker group stealing banking credentials.**
- **Discussion Points: Applicable laws (CFAA, Budapest), Investigation steps, International collaboration.**
- **Exercise: Propose steps for prosecution**
- **Solution: Follow CFAA, gather evidence, coordinate via Budapest Convention**



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Responsibilities of Organizations

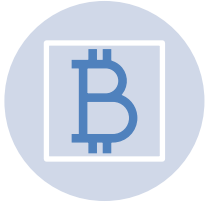
Implement cybersecurity policies,

Train employees,

Report incidents promptly,

Maintain digital evidence

Real Example: Multi-factor authentication reduces phishing losses



Exercise: Compute optimal security investment if potential loss $1,000,000, security cost $200,000, reduction factor 50%

Summary

- **Key cybercrime types, laws, and enforcement challenges.**
- **Mathematical modeling helps quantify risk and decision-making.**
- **Organizations must implement preventive, detective, and responsive measures**

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References / Discussion

- CFAA – https://www.law.cornell.edu/uscode/text/18/1030
- Budapest Convention – https://www.coe.int/en/web/cybercrime/the-budapest-convention
- Whitman, M., & Mattord, H. Principles of Information Security (7th Edition)

- Discussion Questions:
- 1. How to mathematically estimate expected loss from cybercrime?
- 2. Which international treaties are most effective in cross-border prosecution?
- 3. How can organizations optimize cybersecurity investments?

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Thank you for your listening