SEC-202: Secure Start-Up

Lecture 1 – Secure Start-Up Strategy and Fundamentals

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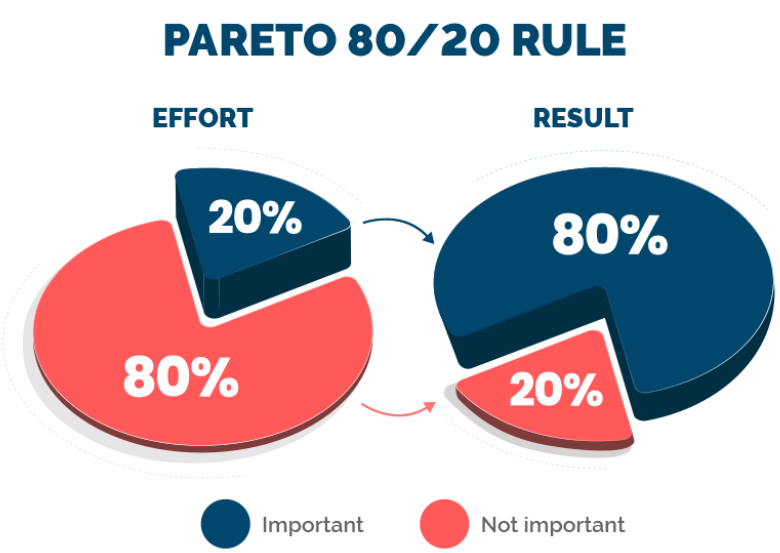
Start-Up Development Phases

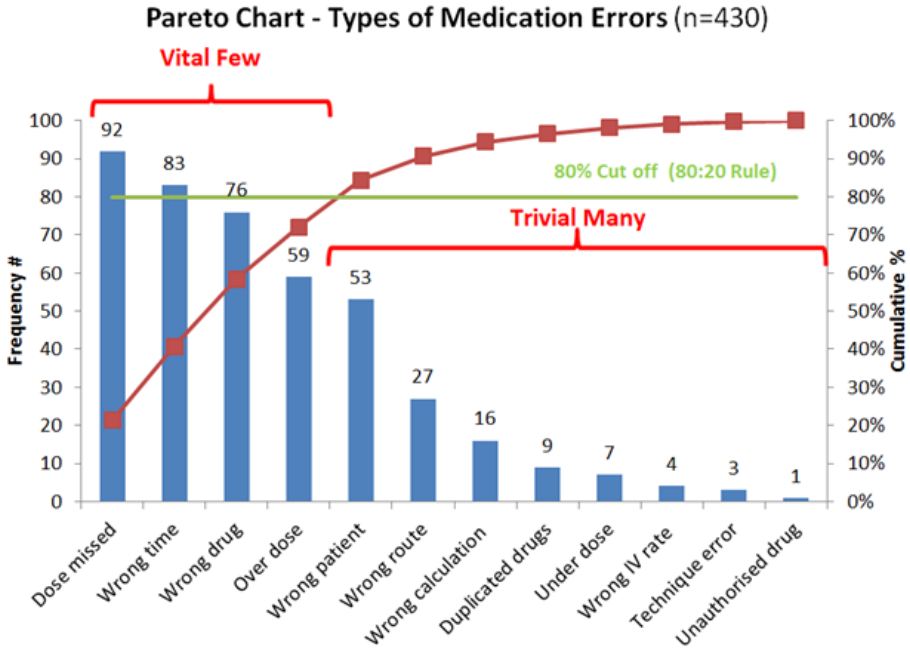
Discussion Time!

If a startup has **a limited budget**, why might it be strategic to invest in ‘Minimum Security’ rather than striving for perfection immediately?

At what point does **'minimum'** become ‘**negligent**’?

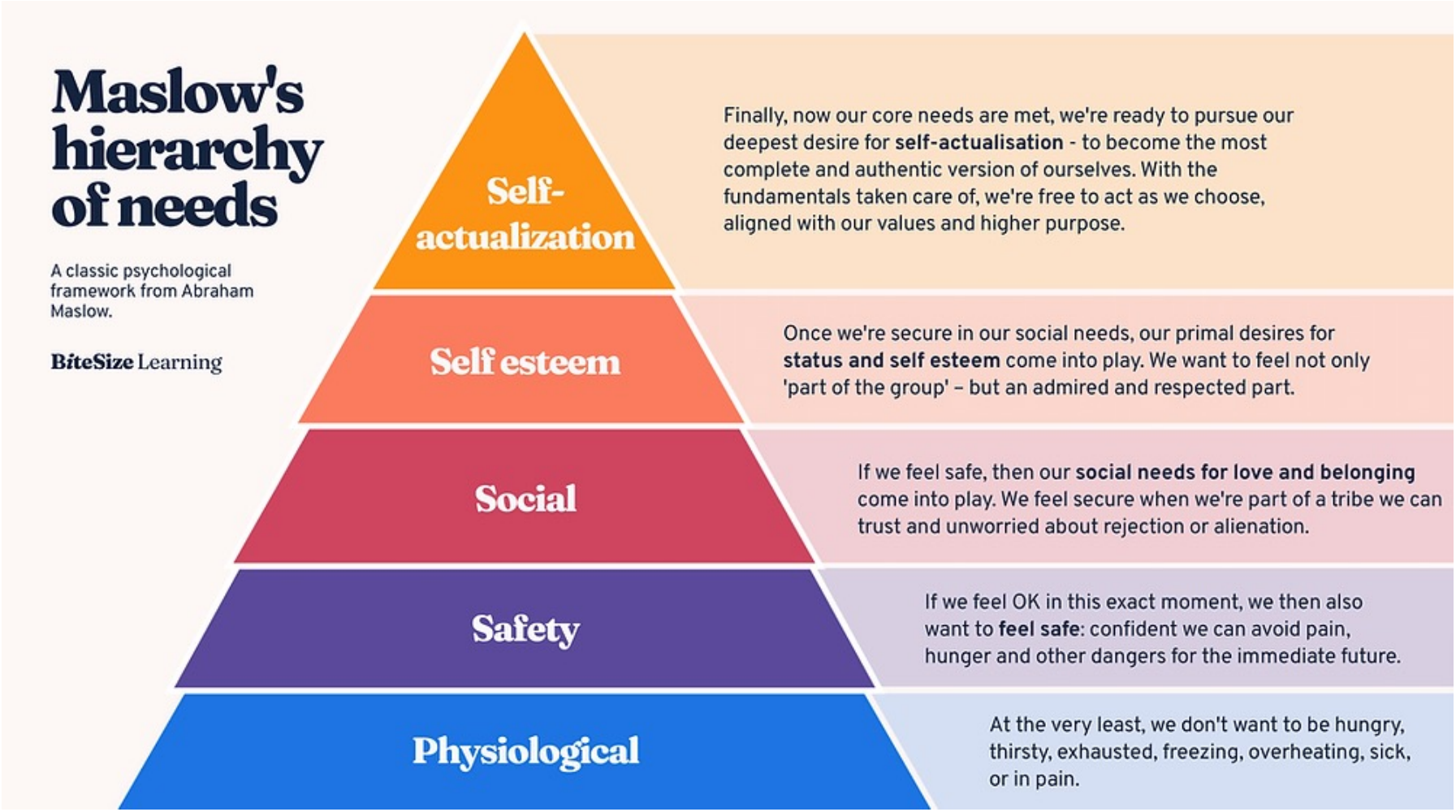
Minimum Investment, Maximum Reduction





- **The Reality of Security:**
  - **Perfection is impossible:** You cannot eliminate 100% of risk without shutting down the business.
  - **The Goal:** Increase the cost of attack for the hacker until it is no longer profitable for them to target you.
  - **The "Minimum" Mindset:** It is not about being lazy; it is about being efficient. We focus resources on the controls that stop the most common attacks.

The Low-Hanging Fruits (The Basics)



The Low-Hanging Fruits (The Basics)

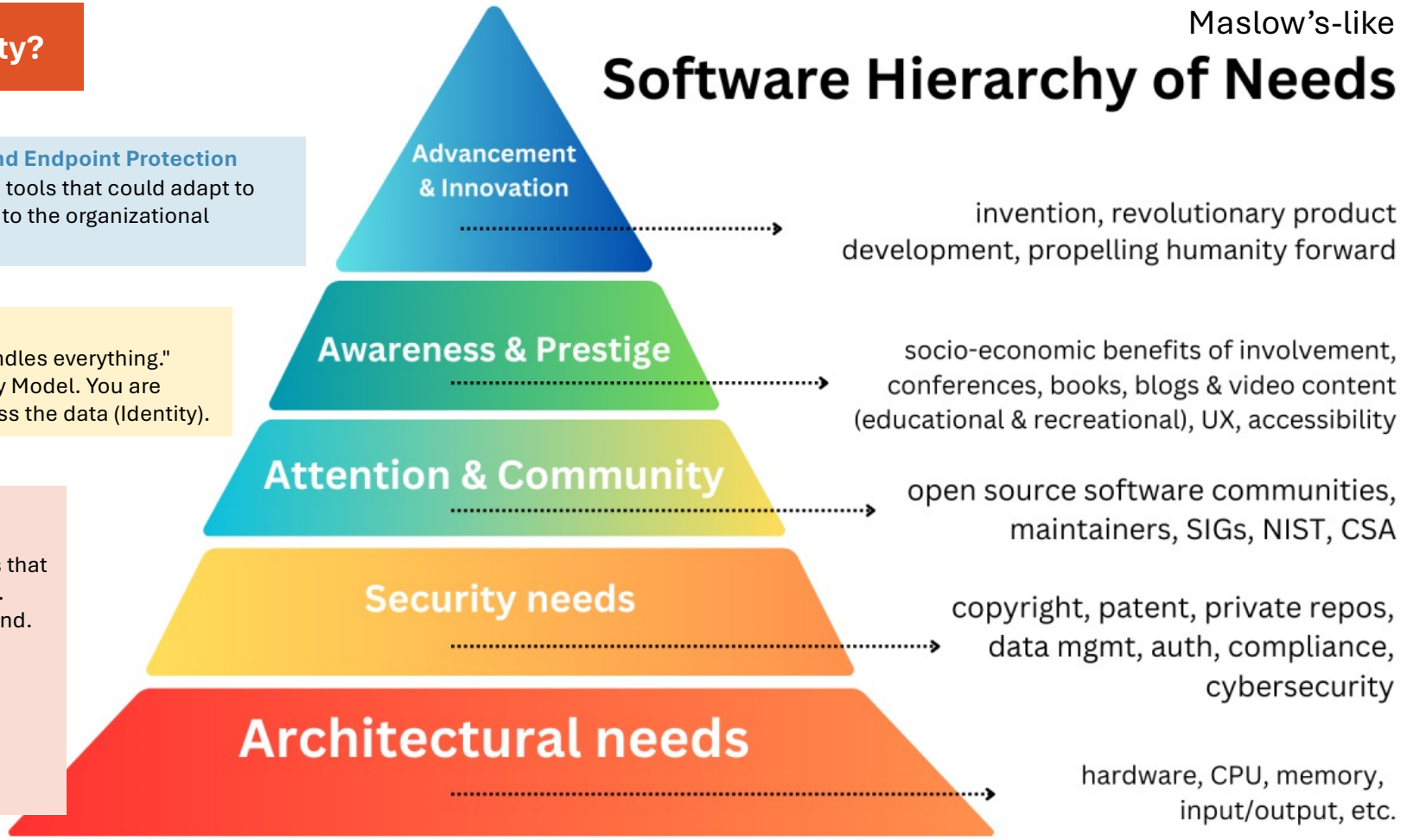
What about Security?

AI Defense | Antivirus and Endpoint Protection
- Advanced AI detection tools that could adapt to various kinds of threat to the organizational system.

SaaS Security
- **Myth:** "The cloud provider handles everything."
- **Reality:** Shared Responsibility Model. You are responsible for who can access the data (Identity).

Patching:
- **The unglamorous truth:** Most breaches exploit vulnerabilities that were fixed months or years ago.
- **Policy:** Auto-update is your friend.

Email Security:
- ~90% of attacks start with a phishing email.
- **Technical controls:** Filtering, SPF/DKIM/DMARC (brief intro).



Business Context – "What Type of Business Is This?"

What are their top risks?

A Bank

A Coffee Shop

A Hospital

- **Context Dictates Strategy:**
  - **Fintech:** High regulation, target for direct theft. Priority = Integrity & Fraud prevention.
  - **Healthcare:** High privacy requirement (HIPAA), life-safety issues. Priority = Availability & Confidentiality.
  - **Retail/E-commerce:** High volume of transactions. Priority = PCI Compliance & Uptime.
- **Management Vision:**
  - **The Board:** Cares about reputation and stock price.
  - **The CFO:** Cares about financial loss and budget.
  - **The CTO:** Cares about system speed and developer friction.

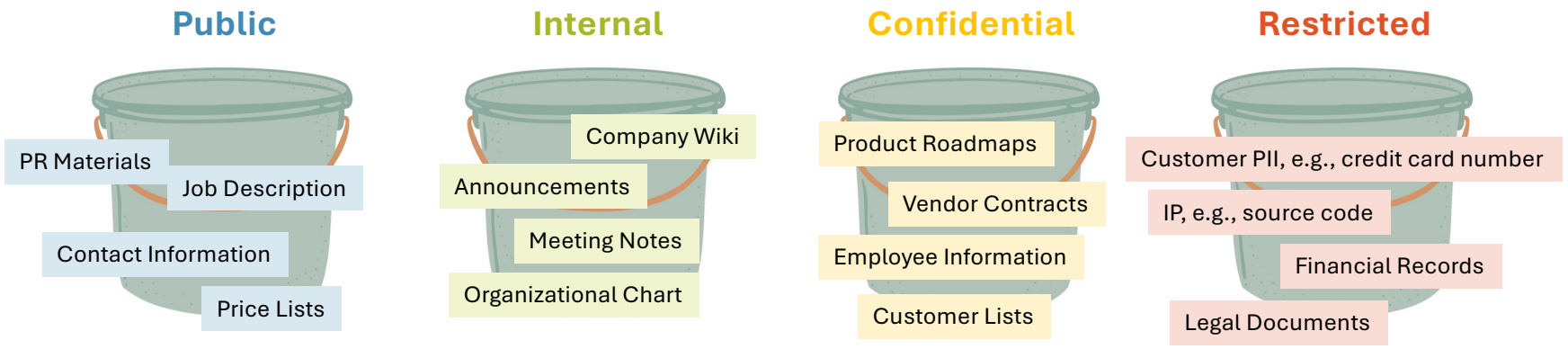
Who cares about security?

You must speak their language, not just "tech" language.

How about your startup co-founder?

Data Classification

- We might know that the sensitivity of data in a system can be classified into multiple levels. But, the scope of data classification for start-up company is broader than that.



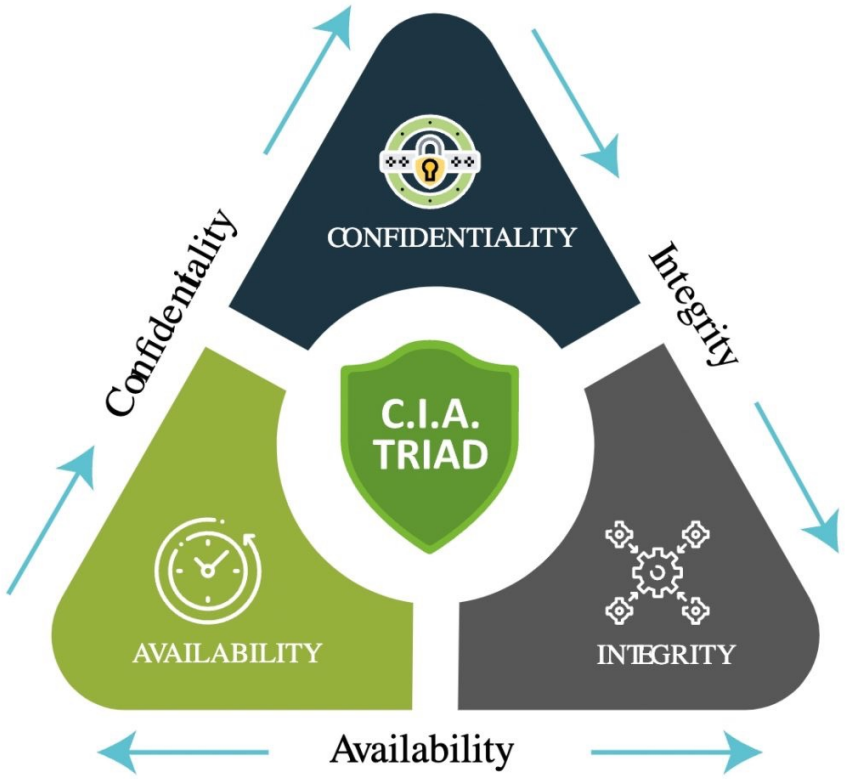
- Identifying the "**Crown Jewels**":
  - **PII (Personally Identifiable Information):** Names, SSNs, emails (Regulatory risk).
  - **IP (Intellectual Property):** Code, formulas, designs (Competitive advantage risk).
  - **Financials:** Bank accounts, transaction ledgers (Direct fraud risk).

Where is data created?

Where is it live?

Where is it sent?

Core Theory Revisit – The CIA Triad



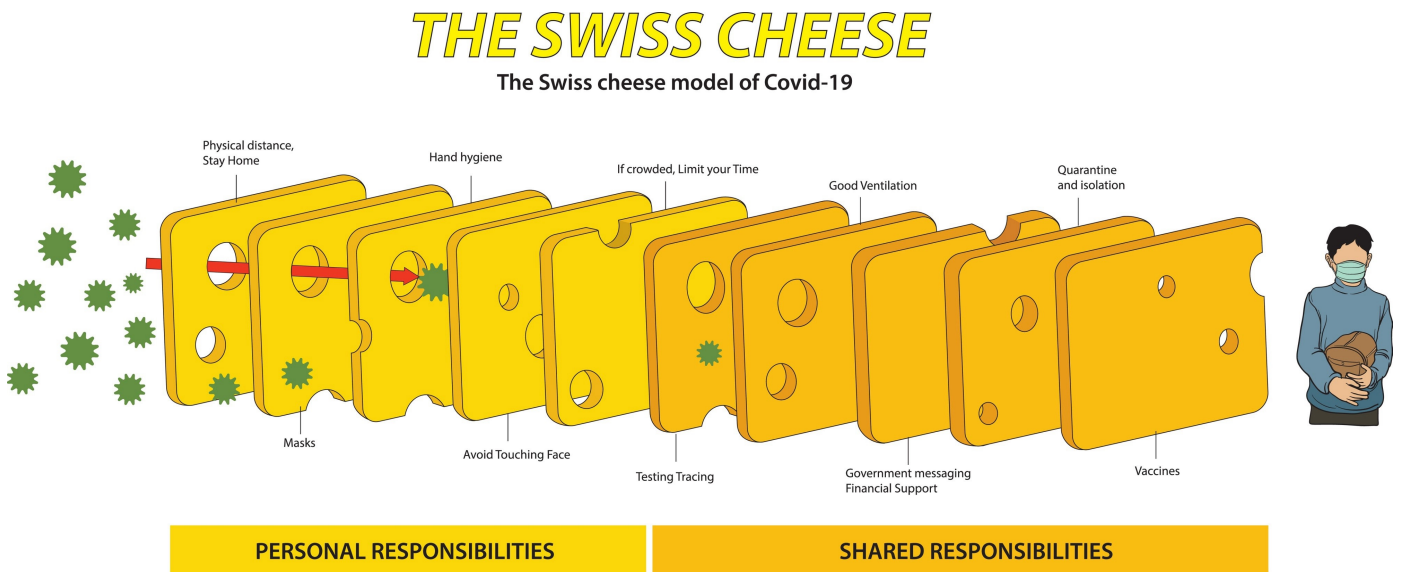
- For start-up companies, the three pillars need to be balanced:
  - **Confidentiality:** Keeping secrets secret
    (e.g., preventing data leaks).
  - **Integrity:** Ensuring data hasn't been tampered with
    (e.g., preventing financial ledger hacks).
  - **Availability:** Ensuring systems are up and running
    (e.g., preventing Ransomware/DDoS).
- **The balancing act:**

  High security often reduces availability (usability).

Question: Which letter of the CIA triad is most important for a Hospital? For a Bank?

How about your start-up company?

The Concept of "Defense in Depth"



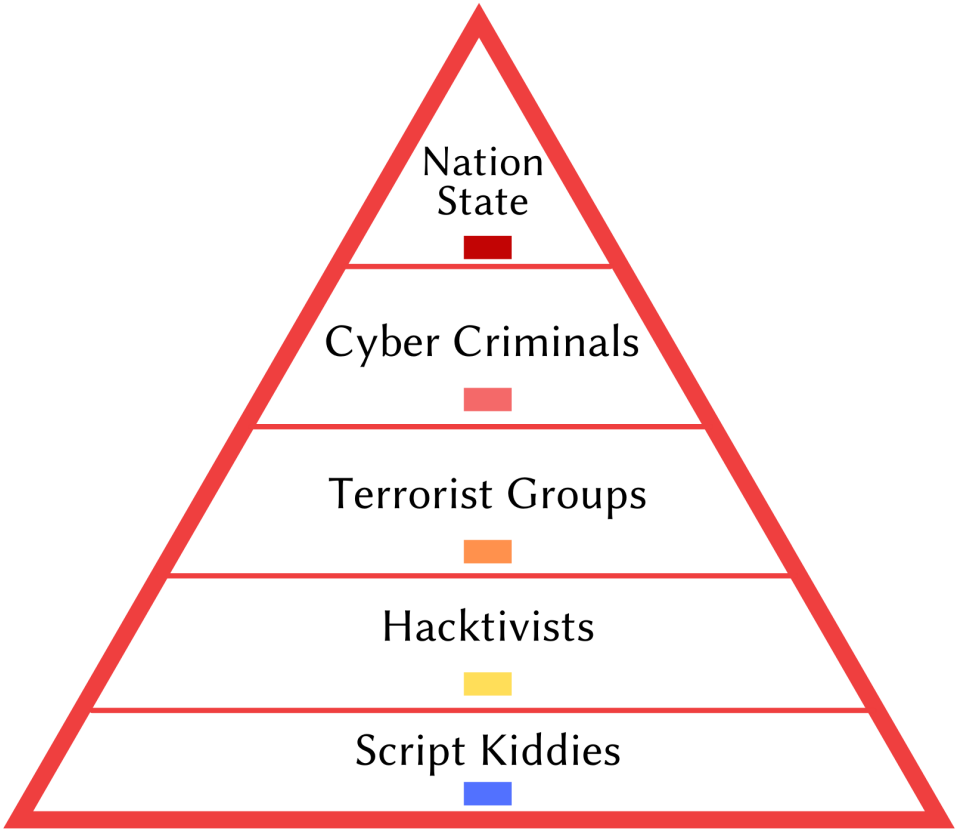
- **The "Swiss Cheese" Model:** Every security control has holes.
- **Layering Controls:**
  - If the **Firewall** misses the attacker, the **Endpoint Protection** should catch them.
  - If that fails, **MFA** should stop the login.
  - If that fails, **Data Encryption** renders the theft useless.

Single Points of Failure:

Relying on just one tool (like a firewall) is a strategy for failure.

Understanding the Adversary (Threat Landscape)

- **Who is attacking you?**
  - **Commodity Threats:** Automated bots scanning every IP address on the internet. (99% of noise).
  - **Cyber Criminals:** Financially motivated (Ransomware gangs).
  - **Nation States (APTs):** Spies. (Unless you are Defense/Gov/Infra, this is rarely your primary threat).
- **Strategic implication:** Don't buy "Nation State" defense tools if your biggest risk is a bot guessing passwords.



The Cost of Security (Budgeting)

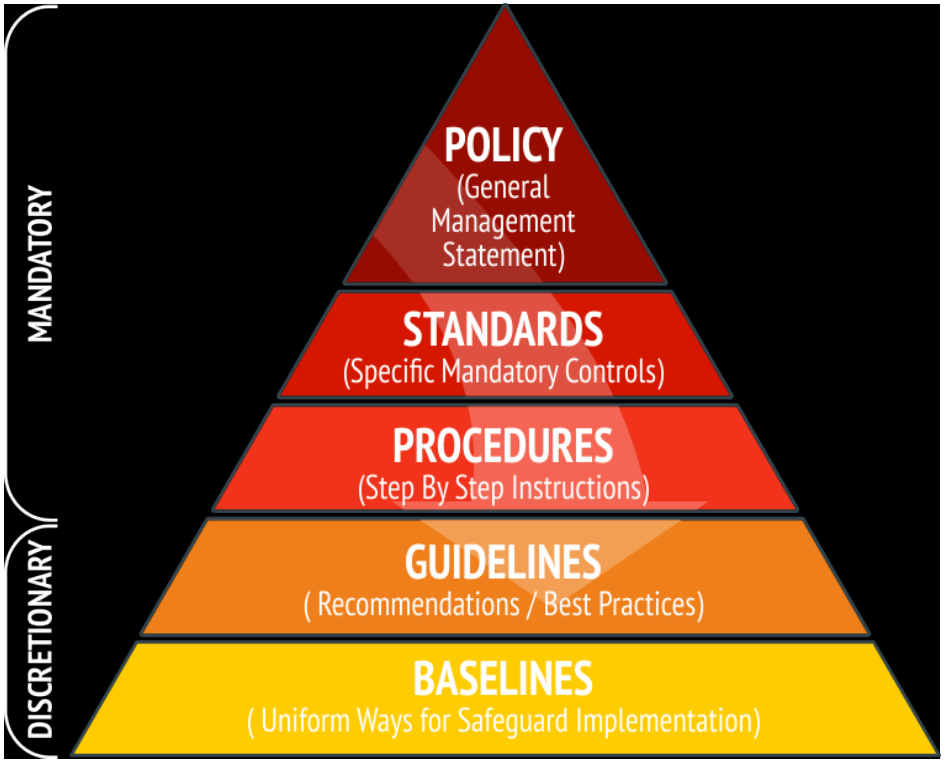
- **Security is a Cost Center:** We don't make money; we save money by preventing loss.
- **CAPEX vs. OPEX:**
  - **Capital Expenditures (CapEx):**
    Buying a $50k firewall box (One time).
  - **Operational Expenditures (OpEx):**
    Paying $2k/month for a SaaS security tool (Recurring).
- **ROSI (Return on Security Investment):**

ROSI (%) = (ALE x Mitigation Ratio) – Cost of Security Solution
Cost of the Security Solution

ALE = Average Loss Expectancy = Cost per incident times the # of incidents
Mitigation Ratio = Efficacy of solution at stopping attacks as a percentage

Example: Spending $10k to stop a likely $100k loss is a good investment.

The Governance Hierarchy (Documentation)



- **Policy (The "Why"):** High-level rules set by management. (e.g., "All employees must secure their accounts.")
- **Standard (The "What"):** Mandatory technical requirements. (e.g., "Passwords must be 12+ characters.")
- **Procedure (The "How"):** Step-by-step instructions. (e.g., "How to reset your password in Okta.")

- **Why it matters:** If it isn't written down, you can't audit it, and you can't fire someone for violating it.

Building the Roadmap (Strategy vs. Tactics)

- **Tactics (The "Now"):**
  - Immediate fires that need putting out (e.g., "Turn on MFA today," "Patch the servers").
  - Quick wins to demonstrate value to leadership.
- **Strategy (The "Future"):**
  - Where do we want to be in 12–24 months?
  - Changing the culture, obtaining certifications (SOC 2, ISO), automating compliance.
- **Measurability:**
  - How do we define success?
  - *Bad metric:* "We blocked 1 million firewalls hits." (Meaningless noise).
  - *Good metric:* "Time to patch critical vulnerabilities dropped from 30 days to 48 hours."

Key Takeaways

- We learned about the **start-up development phases** and how to infuse security into each stage.
- We explored aspects that should be considered for secure start-up companies, such as the **business context**, **data classification**, and **depth of defense**.
- We discussed the **cost** and **governance** of security in a start-up company.

Homework 1:

- Group up with your friends (**Up to 3 students in a group**).
- Pick a hypothetical company and identify the minimum viable product of the company.
- Answer the following questions:
  - **Question 1:** What is the #1 data asset that would kill the company if leaked?
  - **Question 2:** What is the "Minimum Security Investment" for day one?
  - **Question 3:** Who is the key stakeholder they need to convince to spend money?

You don't have to submit it; just keep it for your assessment project.

End of the Lecture

Please do not hesitate to ask any questions to free your curiosity,

If you have any further questions after the class, please contact me via email (charnon@cmkl.ac.th).