Cyber-Threats and Countermeasures in Financial Sector

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SEV: “Workshop on Digital Enablers”
(Cloud & Cybersecurity)

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Agenda:

CYBERSECURITY

- Potential Targets
- Attack Examples
- Insider vs Outsider
  - Threats' Origin, Motives, Targets, Methods, Attacks
- Target: Customers (Methods & Impact)
- Countermeasures for Internal and External Threats
- Cybersecurity Architecture
- Steps Taken to Address Cybersecurity Risks

Potential Targets: All Types of Industries

AIRLINE CYBER ATTACKS

VIETNAM AIRLINES 29 July 2016

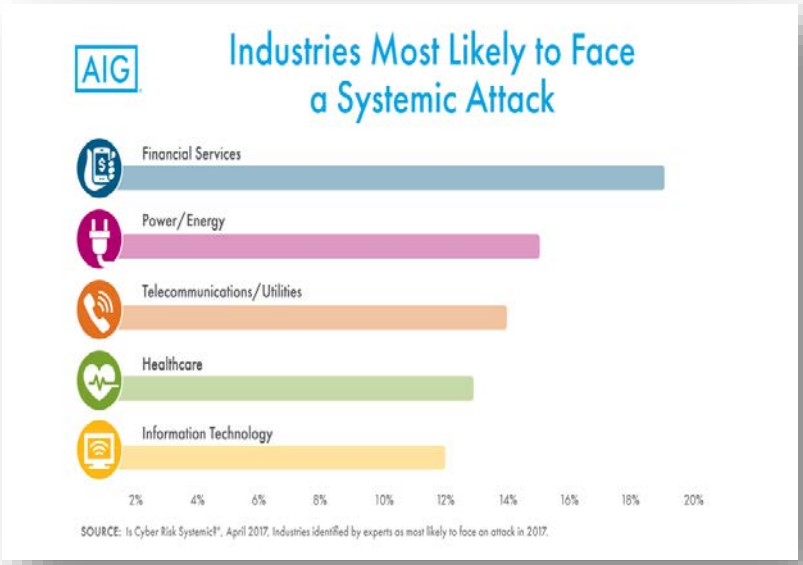
A website breach by hackers released confidential customer data, including the names, addresses and birthdates of 400,000 members of Vietnam Airlines' frequent flyers' club. The hackers accessed screens displaying Vietnam Airlines' flight information, and took over the tannoy system, airing political messages regarding China's claims to the South China Sea.

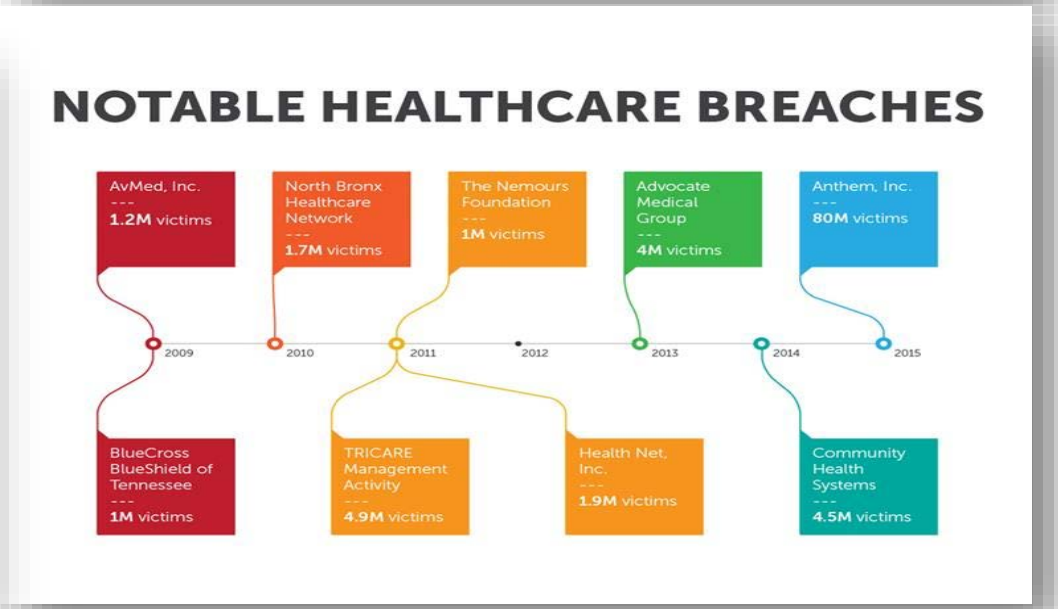
LOT 21 June 2015

More than 1,400 passengers at Warsaw's Frederic Chopin Airport were grounded due to a cyber-attack. The incident prevented the airline from creating flight plans, grounding scheduled flights until the issue was resolved.

BRITISH AIRWAYS 27 March 2015

British Airways reported that the accounts of its frequent flyer programme were compromised, as members were sharing credentials on another online service that could have been hacked. Tens of thousands of British Airways Executive Club accounts of were broken into via credentials stolen from a third party – and the attackers managed to redeem members' reward points.





Attack Examples: Money & Capital Loss

"How Hackers Stole $80 Million from Bangladesh Bank"

18th of May, 2016

"The attack on Bangladesh's central bank that let **hackers stole over $80 Million** from the institutes' Federal Reserve bank account was reportedly caused due to the **Malware** installed on the Bank's computer systems"

"A typo in some transaction prevented a further **$850 Million Heist**"

September, 2017

"Massive Equifax Data Breach Could Affect Half of the U.S. Population" (145,5M)

Equifax, Inc. Stock Chart

"US-based credit ratings firm says records of UK citizens were among those unlawfully accessed during cyber-attack in July"

→ Potential GDPR Fines

Attack Examples: Blackmail (Ransomware)

Insider vs Outsider: Threats' Origin

Insider Threats: Originate from within a business. Can include any party that introduces risk through malicious of unintentional behavior.

- Employees
- Business Partners
- Contractors
- Compromised Internal Accounts

Outsider Threats: Originate from external sources. Can be any threat actor that isn't affiliated with the business directly.

- Cybercriminals
- Hacktivists
- Competition - sponsored attackers
- Nation - sponsored attackers

Insider vs Outsider: Threats' Motives

Insider Threats

Financial Gain

Personal Advantage

Professional Revenge

Outside Influence (Competitor/Nation State/Criminals)

Outsider Threats

Financial Gain

Corporate or Nation – Sponsored espionage

Political or Military Advantage

Political or Social Change

Insider vs Outsider: Threats' Targets

Insider Threats

- Intellectual Property and Trade Secretes
- Business Plans and Corporate Secrets
- Products and R&D Information
- Source Code
- Personal Information
- Financial Information

Outsider Threats

Cybercriminals

- Likely Targets:
  - Financial and Personal information

Hackivists

- Likely Targets:
  - Corporate Secrets & Business Information

Competition Sponsored Attackers

- Likely Targets:
  - Trade Secrets & Business Plans

Nation - Sponsored Attackers

- Likely Targets:
  - Trade secrets
  - Business Information
  - Critical Infrastructure
  - Employee/Customer Personal Information

Insider vs Outsider: Threats' Methods

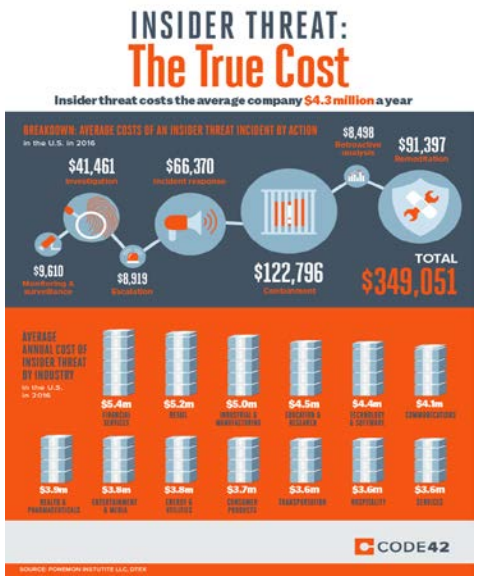
Insider Threats

- Social Engineering
- Physical Theft
- Privileged Abuse
- Copying or Offloading Sensitive Data to Personal Accounts/Drives
- Unintentional Data Leaks or Loss of Company Property

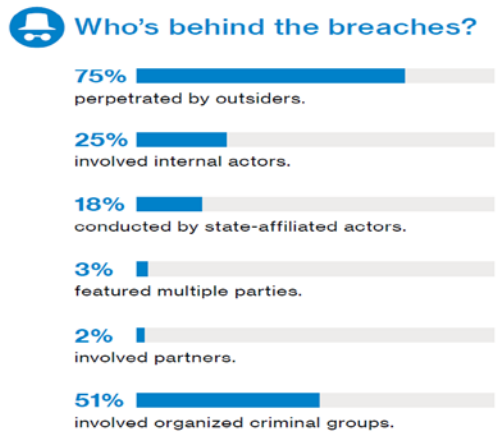
Outsider Threats

- Social Engineering
- Hacking
- Malware
- Distributed Denial Of Service (DDoS)
- Malicious USB Drops
- Physical Theft

Outsider Insider vs Outsider: Threats' Attacks



Source: 2016 Ponemon Instutute



Source: 2017 Verizon, Data Breach Investigation Report

Malicious Insider Attacks Are:

Much More Costly than Outsider Attacks

Outsider Attack Methods like DDoS and Web Attacks Are:

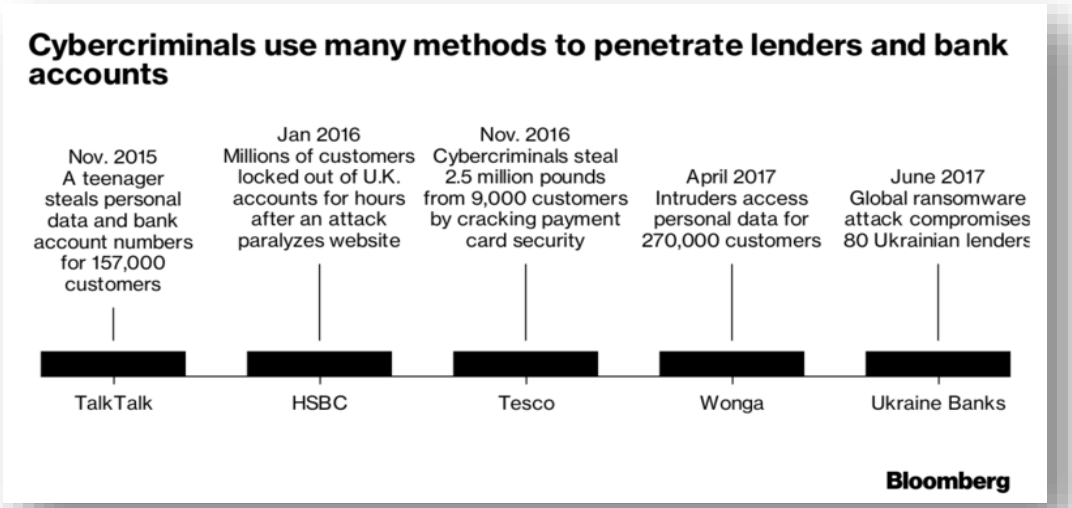
More Prevalent Than Attacks By Malicious insiders

Are Insiders or Outsiders BIGGER Threat to Your Business?

THE MOST LIKELY ROOT CAUSES OF DATA BREACHES ARE:

- Careless Insider
- Malicious or Criminal Insider
- External Attacker
- Combined Insider and External Attacker

Target: Customers
Attack Methods & Impact



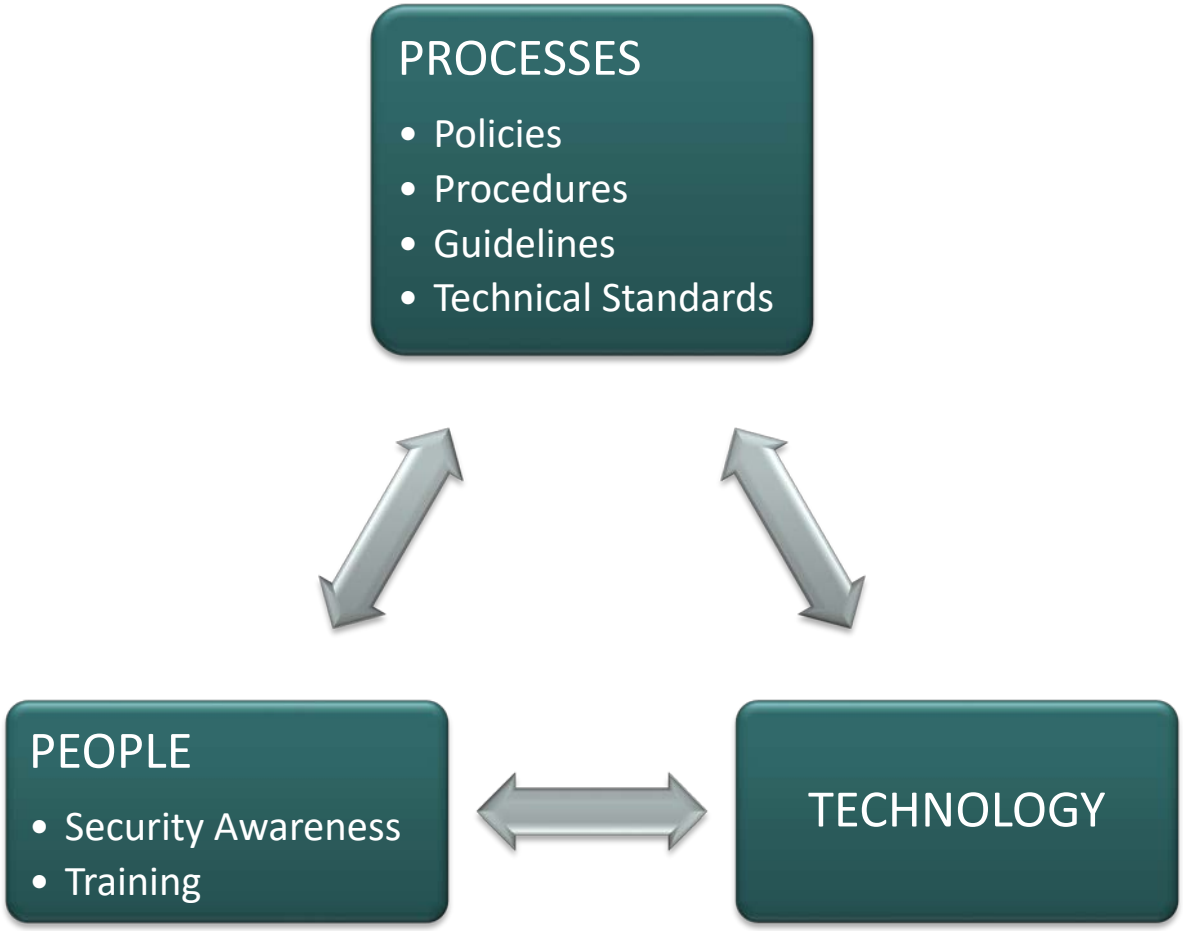
Attack Methods

- Phishing
- Identity Theft
- Account Takeover
- Malware
- Card Fraud

Impact

- Financial Loss
- Reputational Damage
- (Dramatic) Customer Base Shrinkage
- Penalties / Compensations
- Legal Implications

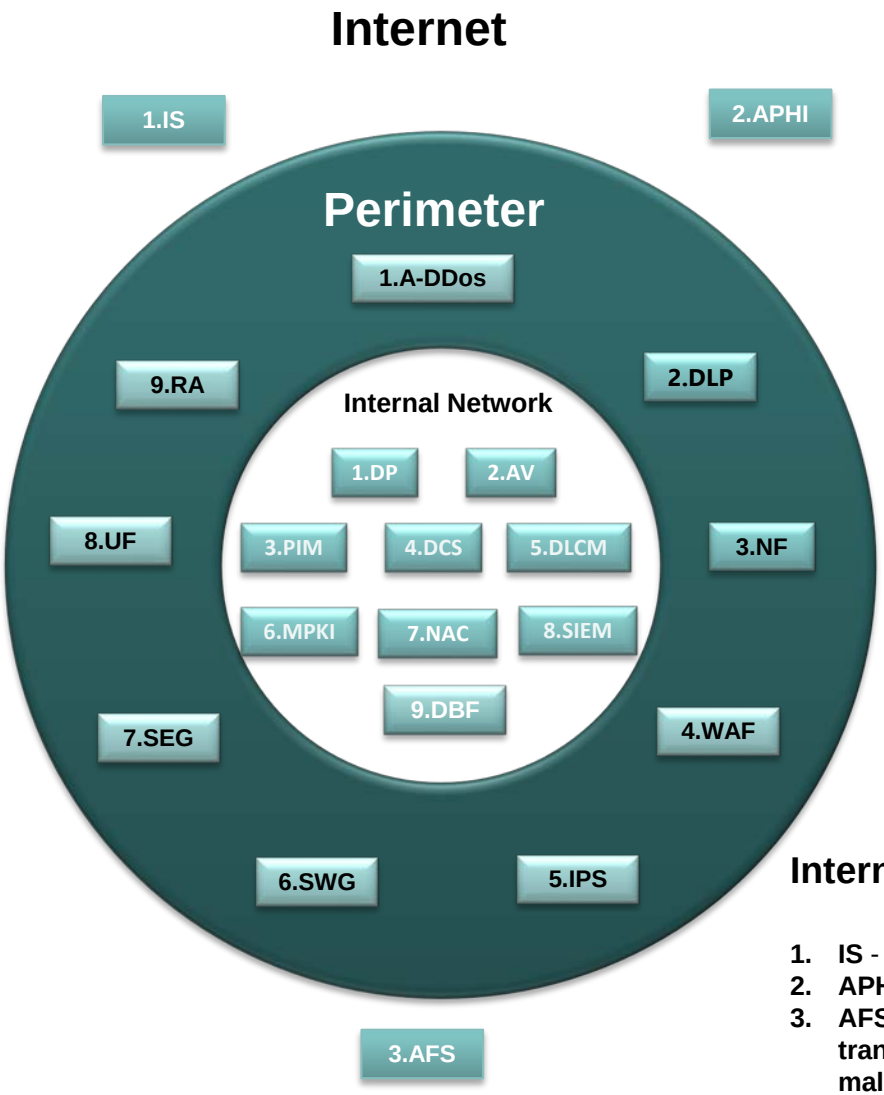
Countermeasures for Internal and External Threats



Cybersecurity Architecture: **Typical Example**

Internal Network

1. **DP -** Directory Policies
2. **AV –** AntiVirus
3. **PIM** - Privileged Identity Management
4. **DCS** - Database Compliance System
5. **DLCM** - Data Life-Cycle Management
6. **MPKI**-Managed Public Key Infrastructure
7. **NAC** - Network Access Control: **Allow only authorized Devices to Connect to Network (wired or wireless)**
8. **SIEM** - Security Information & Event Management: **From several billion alerts per month a few cases are investigated leading to successful resolution of all high severity incidents**
9. **DBF** - Data Base Firewall



Perimeter

1. **A-DDoS** - Anti-Distributed Denial of Service: **Up to Tenths of serious DDos attacks per month**
2. **DLP** - Data Loss Prevention
3. **NF** - Network Firewall: **Several million attacks per month, are successfully confronted**
4. **WAF** - WEB Application Firewall: **Thousands attacks per week are successfully confronted**
5. **IPS** - Intrusion Prevention Systems: **Thousands of attacks per week are successfully confronted**
6. **SWG** - Secure Web Gateway: **Several billion attacks per month, are successfully confronted**
7. **SEG** - Secure Email Gateway: **Millions rejects per week**
8. **UF** - URL Filtering
9. **RA** - Remote Access

Internet

1. **IS** - Internet Surveillance
2. **APHI** - Anti-Phishing
3. **AFS** - Anti-Fraud Services: **From several million transactions per month several thousand malicious transactions are blocked**

Steps taken to address Cybersecurity risks

We can't eliminate the risk of cyber attacks, but we can minimize their consequences. Five (5) things we do to combat cybersecurity risks:

1. ***Own the Risk***
   - Cyber risk is owned by leadership and is not relegated to the IT function.
   - Periodic cybersecurity briefings are provided to the Board and C-Suite.
2. ***Prioritize Initiatives***
   - Leadership prioritizes and monitors cybersecurity investments.
   - Investments are made in new capability, not just technology.
   - Critical Assets are identified and their protection prioritized.
3. ***Learn and Incorporate***
   - Work with leading various external parties, share information on current threats and incorporate learnings into our own cybersecurity strategy and tactics.
4. ***Enhance Culture***
   - A security culture and mindset is established through training, measurement and evaluation.
   - Behaviors and capabilities of the organization are established and reinforce the importance of cybersecurity.
5. ***Secure the Business***
   - Security of the business value chain including suppliers, third party providers and high-risk interconnection points is considered.
   - Adapt to the challenges of new and emerging digital business models.

Source: PwC