Information Age:

Security as a Mechanism of Healthcare Safety and Privacy

The Vision: **Patients First**

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Improving access

Faster access to the right care

Connecting services

Better care coordination, integration, delivery

Informing people and patients

Education, information, transparency; protecting privacy

Protecting our public health care system

Evidence-based decisions on value and quality

Information Age and Healthcare

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What is Information Security?

What is Information Security?

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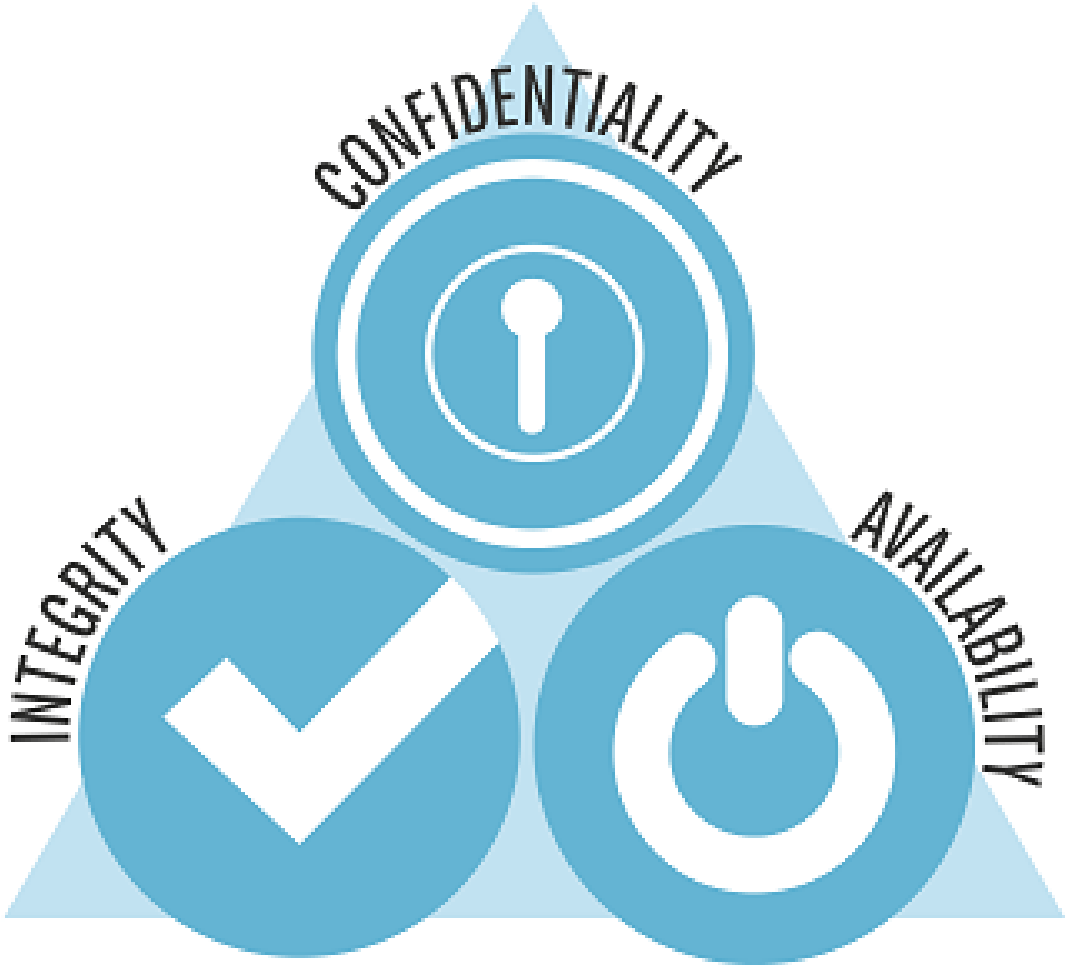
Information is restricted from those who are not authorized to access it



Information is whole, uncorrupted, and complete

Information is accessible to those who require it

Where Security & Privacy Meet

There is no privacy without security!

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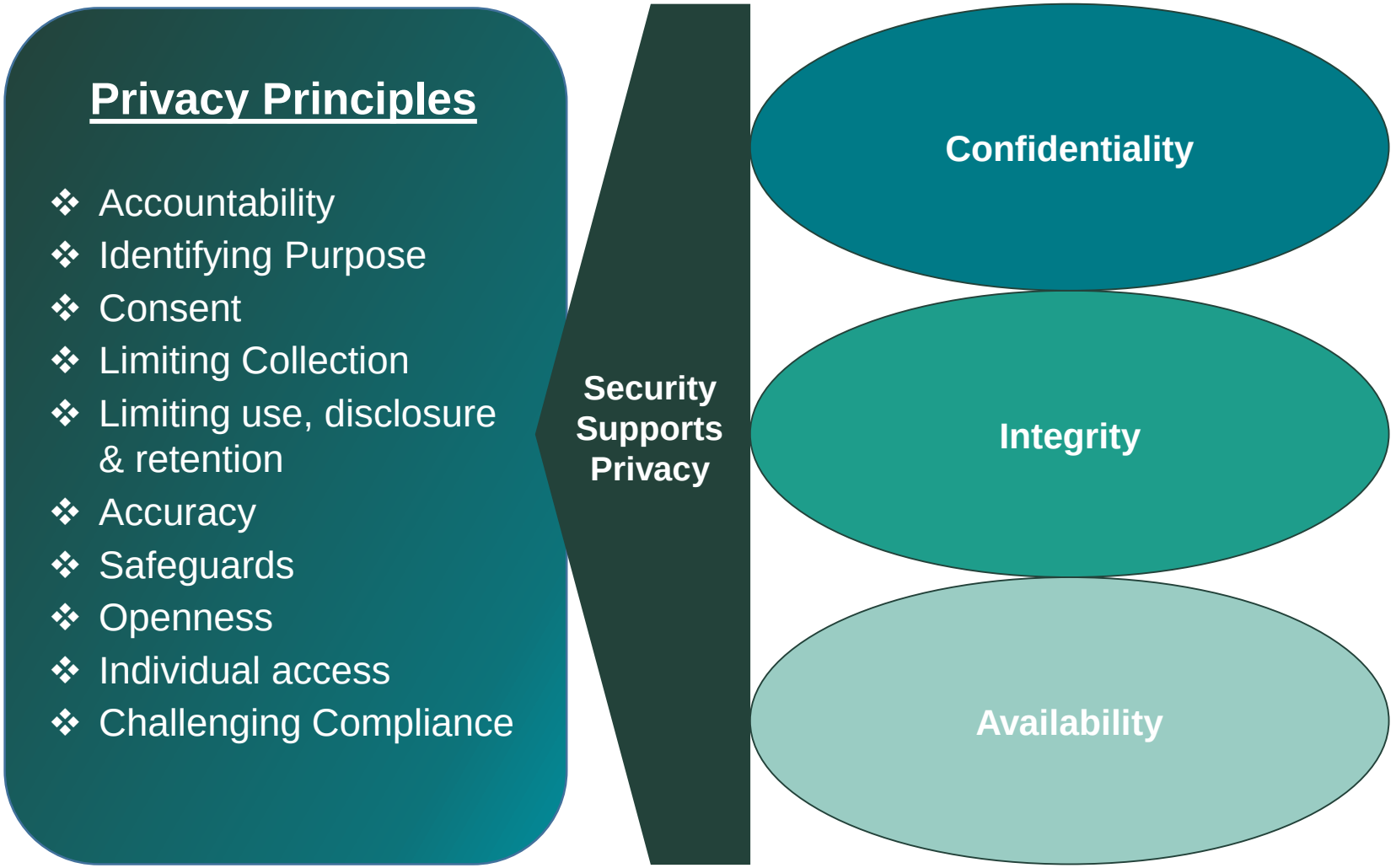

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Security in Home & Community Care

Security Supports Patients First

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Improving Access

Allowing availability of electronic health records and medical services to reach previously inaccessible areas; fast and more efficient access

Connecting Services

Allowing availability for confidential, efficient, disruption-free, unified, and consistent technical services across the province

Informing People & Patients

Ensuring dissemination of information and education about privacy; Using security controls to protect patient privacy while still providing transparency

Protecting Health Care

Ensuring the confidentiality, integrity, and availability of electronic health records in an efficient, valuable, and cost-effective manner

Security Challenges in Home & Community Care

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Growing Threat Surface

- Universal adoption of electronic health records
- New technologies ➔ more nodes, different risks
- Demand for access outside of organizational setting

Awareness & Education

- Limited awareness of risk extent due to data breach
- Limited awareness of role of non-IT personnel
- Lack of resources for security education & training

Legal Framework Development

- No strictness from regulating bodies
- Accountability is unclear
- Balancing transparency and patient trust

Expanding Access

- Risk implications of expanding to business partners
- Smaller organizations with less mature security programs

Securing Technical Infrastructure

- Demand for features outruns security
- Difficult to upgrade and maintain complex infrastructures

Limited Resources

- Lack of allocation of resources and funding
- Lack of high-level support

Protecting Privacy

- Severity of consequences for PHI breaches

Unique Risk Appetite

- System outages unacceptable: patients as customers

Understanding Healthcare's Security Threats

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Physical Theft

Laptops • Mobile devices • Paper Records

Malicious Employees

Selling PHI • Selling credentials • Disgruntled employees

Accidents & Negligence

Phishing • Social Engineering • Insufficient employee awareness/education/training

Insider Threats

April 2017

Remote worker's laptop stolen, exposing PHI of thousands of patients

June 2015

Thousands of patient records sold to third parties by malicious employee

April 2017

Hundreds of records misused by malicious employee

May 2017

Patient PHI left on provider property's front lawn

Understanding Healthcare's Security Threats

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Vulnerable & Outdated Infrastructure
Software • Hardware • Patching

Adopting New Technologies
Mobile • Wi-fi • Bluetooth • IoT • Cloud • BYOD

Vulnerable Code
Known vulnerabilities • 0 day attacks

Accidents & Negligence
Misconfigured Systems & Devices

Hacking & Malware
Malware • DoS • Ransomware

Insecure Technical Architecture

March 2016
Medical provider website serving ransomware to website visitors

May 2017: WannaCry
Over 150 countries, 400,000 machines • Nation-wide health systems offline for days

May 2017
Thousands of records left on server with no authentication for months

Why Does it Matter?

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Organizational Consequences of Poor Security

Functional Consequences

- Malfunctioning systems; outages
- Incorrect data transferred or stored

Inefficient Use of Resources

- Expenditure on remediation efforts
- Legal Fines (PHIPA)

Possibility of Privacy Breach

- Breach of mandate to protect PHI
- Incurs extra consequences for patients

Damaged Relationships

- Patient distrust
- Class actions against providers

Why Does it Matter?

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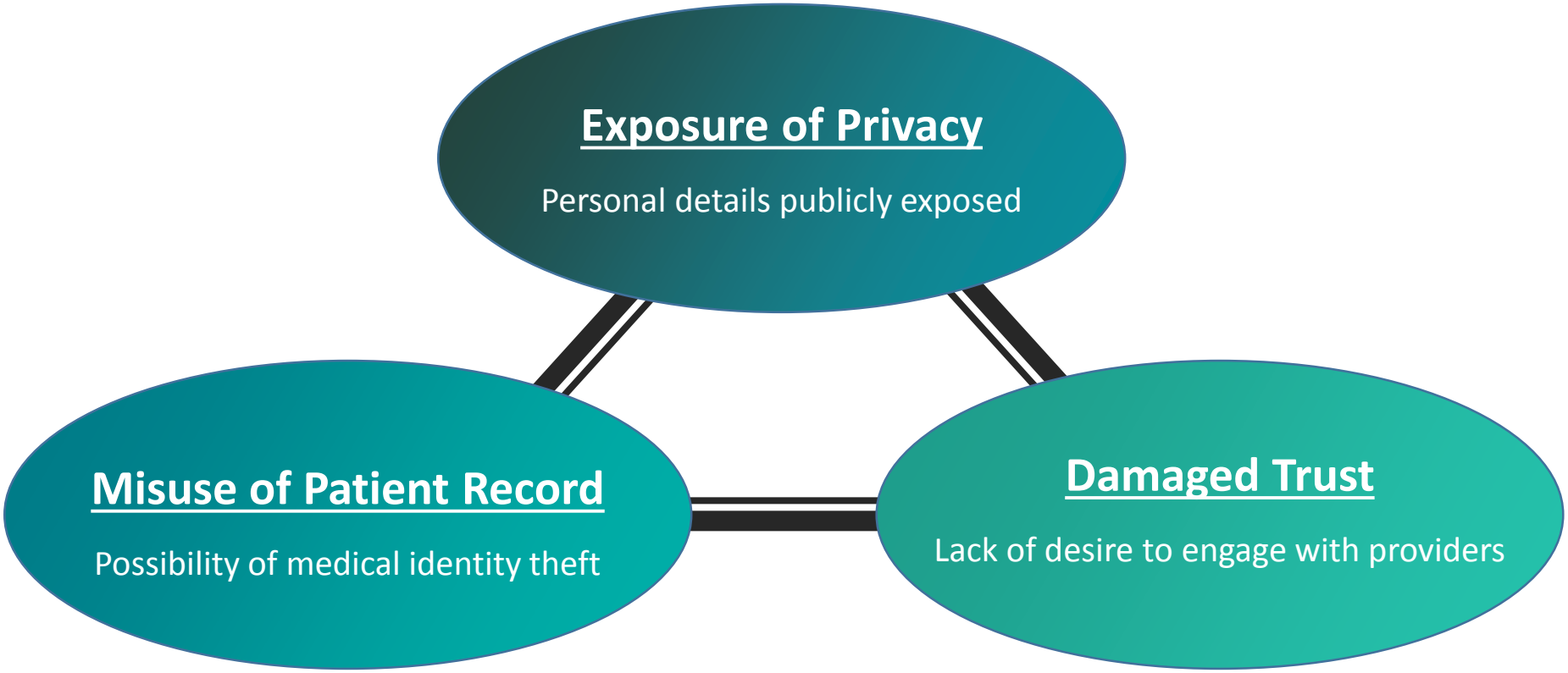
Patient Consequences of Privacy Breaches



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Why Does it Matter to Me?

Common Misconception #1

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#1 Security Principle:

"The asset of greatest security risk in the organization is _____."

Common Misconception #1

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#1 Security Principle:

"The asset of greatest security risk in the organization is its own employees."

Common Misconception #1

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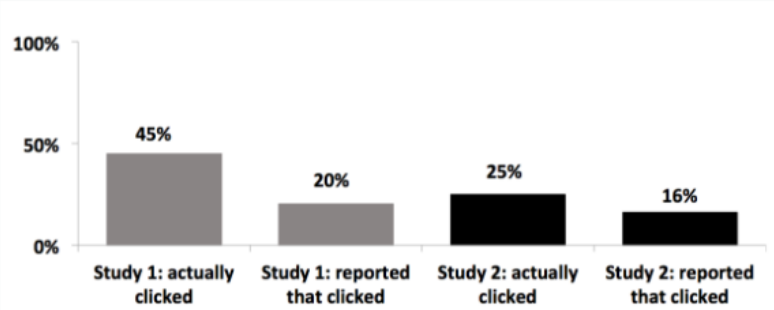
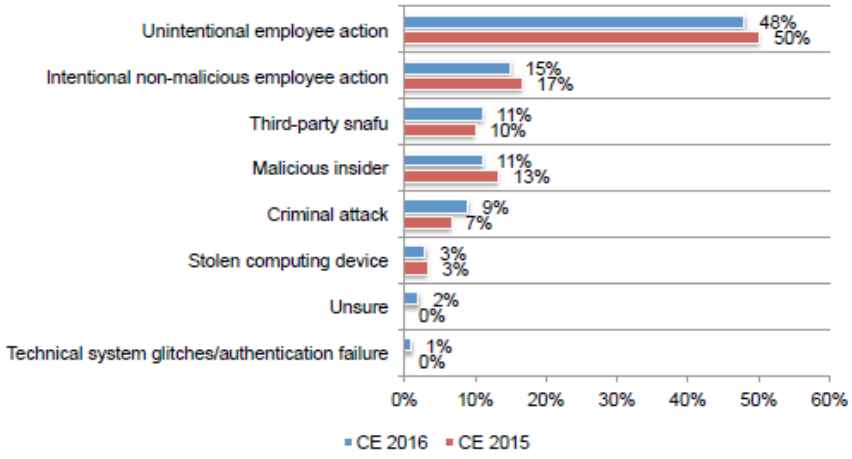
78% of people claim to be aware of the risks of unknown links in emails. And yet they click anyway.



Friedrich-Alexander University (FAU)

According to healthcare organizations, most medical identity theft is preventable through employee training. Sixty-two percent of respondents say they are not aware or are unsure of any medical identity theft affecting their patients. As shown in Figure 23, of the 38 percent who say they know about medical identity theft, the root cause most often was unintentional employee action (48 percent of respondents) followed by intentional but non-malicious employee action (15 percent of respondents).

Figure 23. What was the root cause of the medical identity theft?



Common Misconception #2

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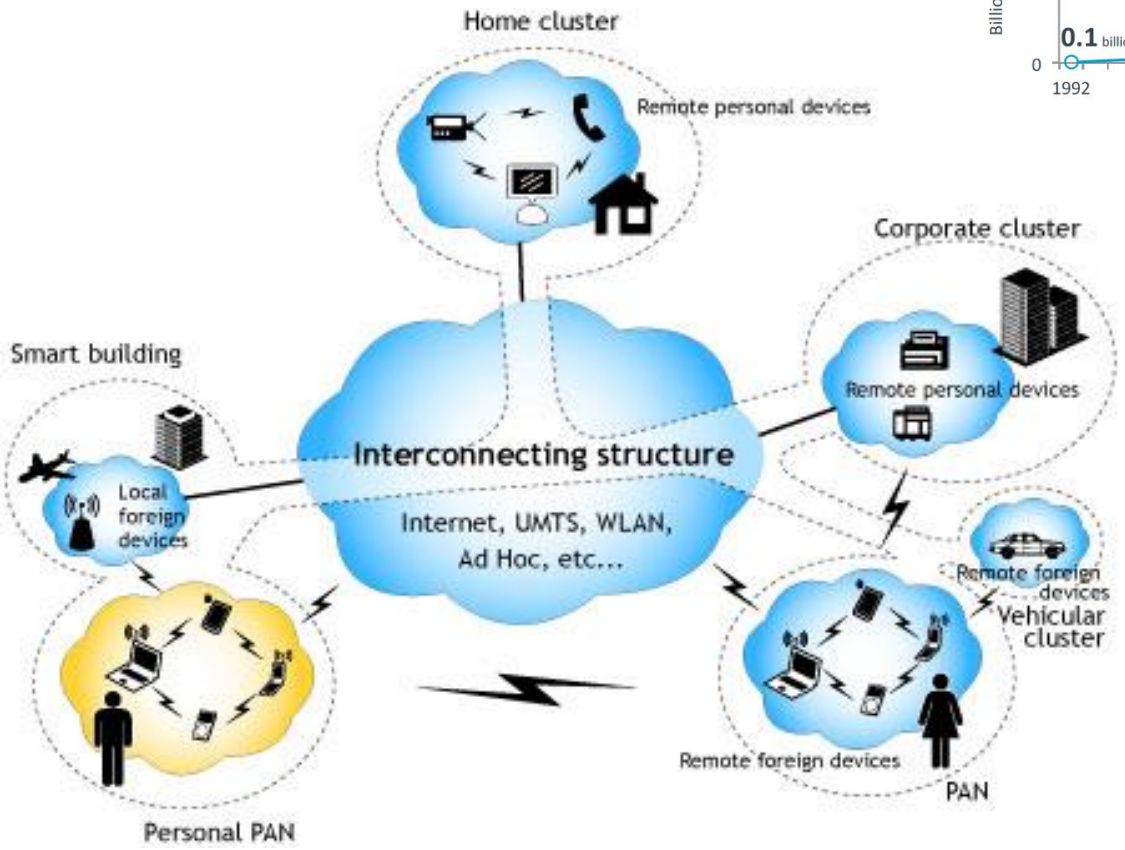
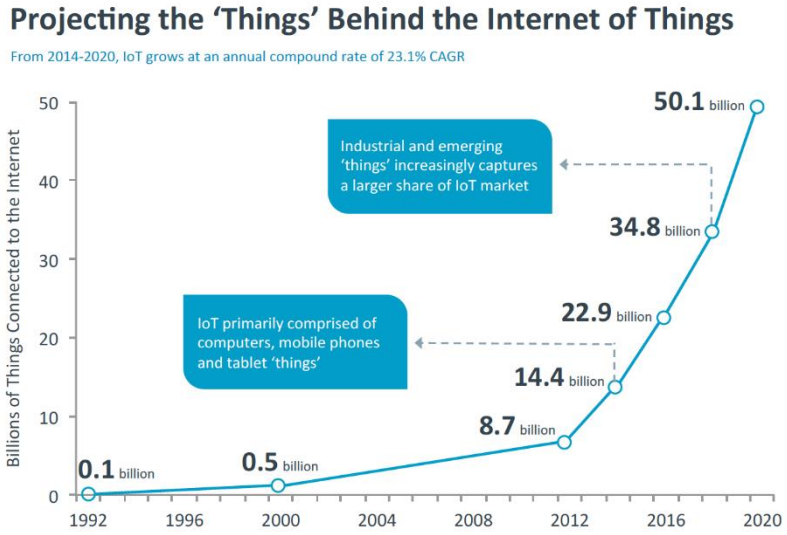
“Security is ‘someone else’s’ job.”

A View from **Vivek Wadhwa**

Laws and Ethics Can't Keep Pace with Technology

Codes we live by, laws we follow, and computers that move too fast to care.





Security and the Technological-Cultural Shift:

- Change in understanding the role of information in law & ethics
- Interconnection of the individual to critical infrastructure
- Adoption of responsibility for user awareness at all levels

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What Can We Do?

What Can We Do?

Making Changes as an Industry: Proactive vs. Reactive

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Executives

Championing and funding security programs

Directors & Managers

Ensuring security design and testing before product deployment

IT Professionals

Securely implementing application and system features

Users

I.e., everyone

Executives

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Championing Information Security & Privacy

- Presenting security to the board
- Financial investment
- Inspiring pro-security culture
- Going beyond compliance

Security as a Risk-Based Strategy:

Understanding your organization's unique risks

Risk Avoidance vs. Return of Investment:

Investing now instead of when it's too late

Security Governance

Security Strategy

Security Controls

Directors & Managers

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Starting the conversation with executives

Security as a "people" problem

Technical security controls for business solutions

IT Professionals

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Implementing Secure Controls

- Authentication
- Encryption & Secure key storage
- Secure coding practices
- Disablement of debugging modes, backdoors
- Known vulnerabilities

Utilizing the Security Development Lifecycle

Requirement Analysis • Design • Implementation • Testing • Deployment • Lessons Learned

Critically Assessing Challenges in Less Mature Technologies

IoT • Mobile • Bluetooth • Wi-fi • Cloud • BYOD

Users
(i.e., everyone)

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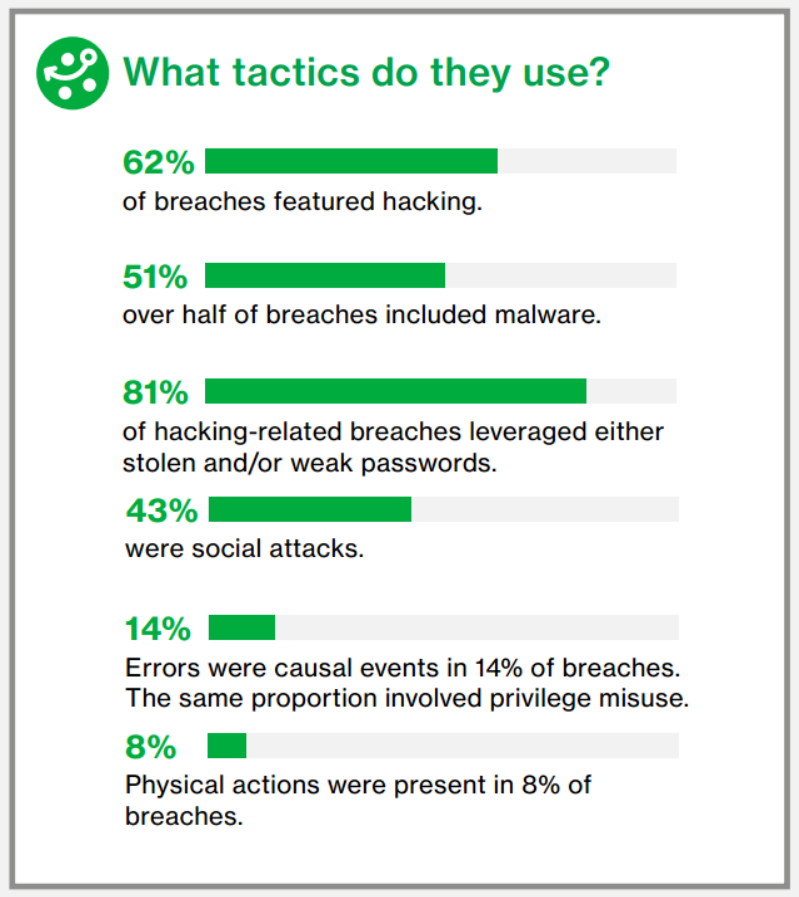
Even if your device doesn't contain sensitive information, it connects to devices that do



Simple Steps to Security

- Use complex passwords or long passphrases
- Physically lock devices and sensitive information
- Lock device screens when not in use
- Be wary of suspicious emails, web/VOIP/phone calls, and their links and attachments
- Refrain from using public networks whenever possible (e.g. in coffee shops, libraries, etc.)

Take-away

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Prevention instead of reaction

Taking action before the consequences

Start the conversation with executives

Acquiring support for privacy and security programs

Security as a "people" problem

It's not all about the technology

Even the small things help

Security affects everyone – even you!


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