



# Building Control System Cyber Defense Forum

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## INTELLIGENT BUILDINGS AND CYBERSECURITY

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# CABA Board of Directors



National Research Council Canada Conseil national de recherches Canada



## CABA Vision Statement

“CABA accelerates growth in the connected home and intelligent buildings sectors.”



- The Continental Automated Buildings Association (CABA) is an international not-for-profit industry association, founded in 1988, dedicated to the advancement of connected home and building technologies.
- The organization is supported by an international membership of over 325 organizations involved in the design, manufacture, installation and retailing of products relating to home and building automation.
- Public organizations, including utilities and government are also members. CABA's mandate includes providing its members with research, services and networking opportunities.
- CABA also encourages the development of industry standards and protocols, and leads cross-industry initiatives.
- CABA maintains the largest “connected home and intelligent buildings” research library in the world.



**AcuityBrands®**



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**CF** Cadillac Fairview



**Honeywell**



**Ingersoll Rand**  
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*John Hancock*



**Manulife**

**PHILIPS**

**ROGERS™**

**Schneider Electric**

**SIEMENS**

**TRIDIUM®**

**United Technologies**  
Building & Industrial Systems

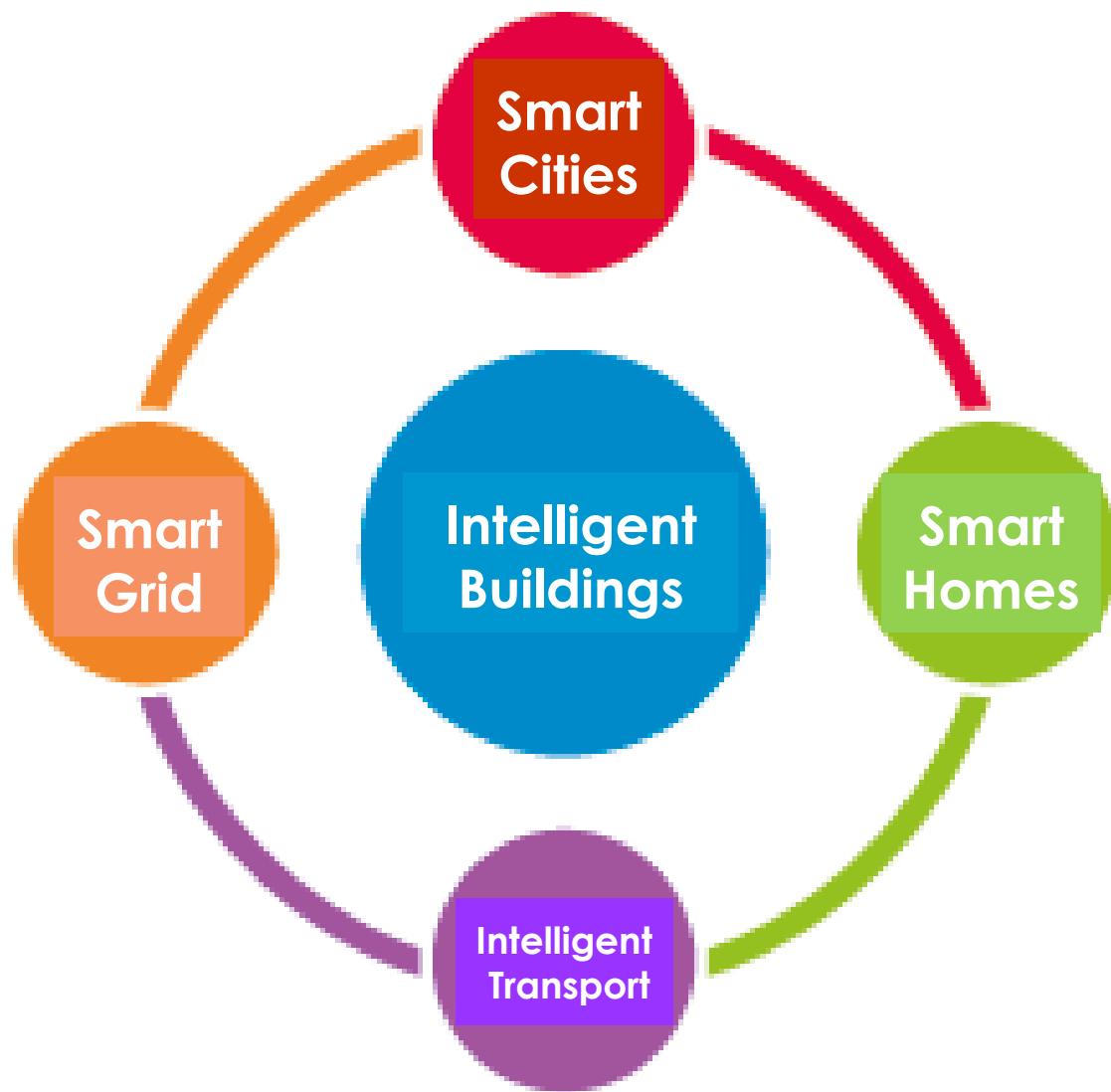
**WATERFALL®**  
Stronger Than Firewalls

**For more information on this research project, go to:**

<http://www.caba.org/CABA/Research/Intelligent-Buildings-Cybersecurity.aspx>

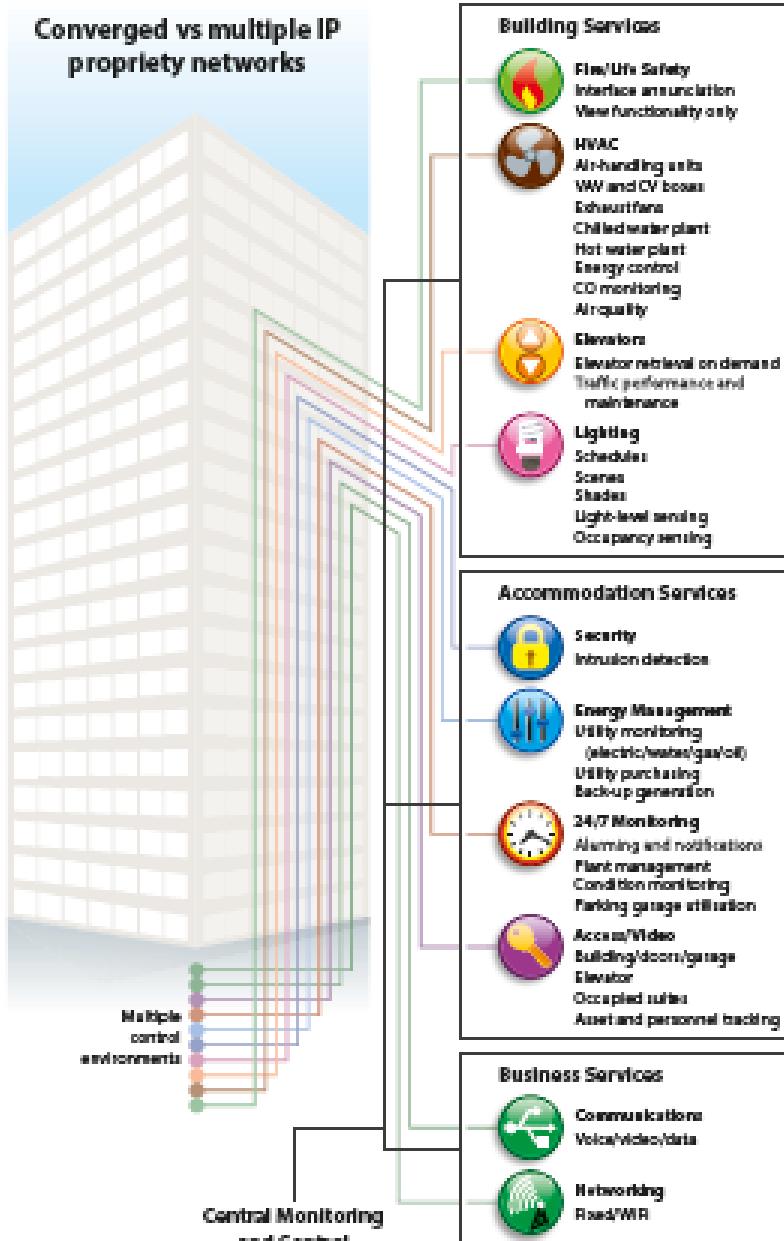
# What is an Intelligent Building?





**“Intelligent  
Buildings are  
part of an  
increasingly  
integrated build  
environment.”**

# Convergence of IP-Based Infrastructure



- **Building Services**

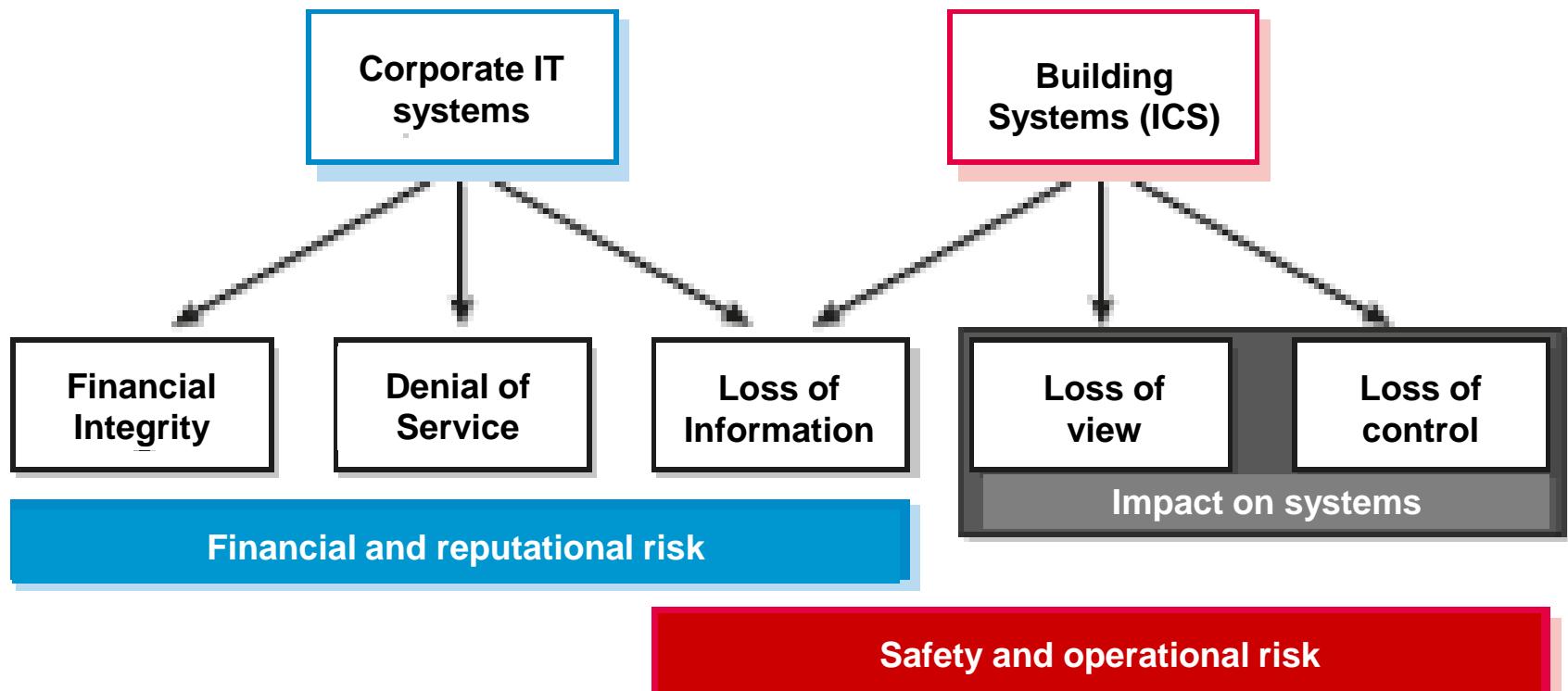
- **Accommodation Services**

- **Business Services**

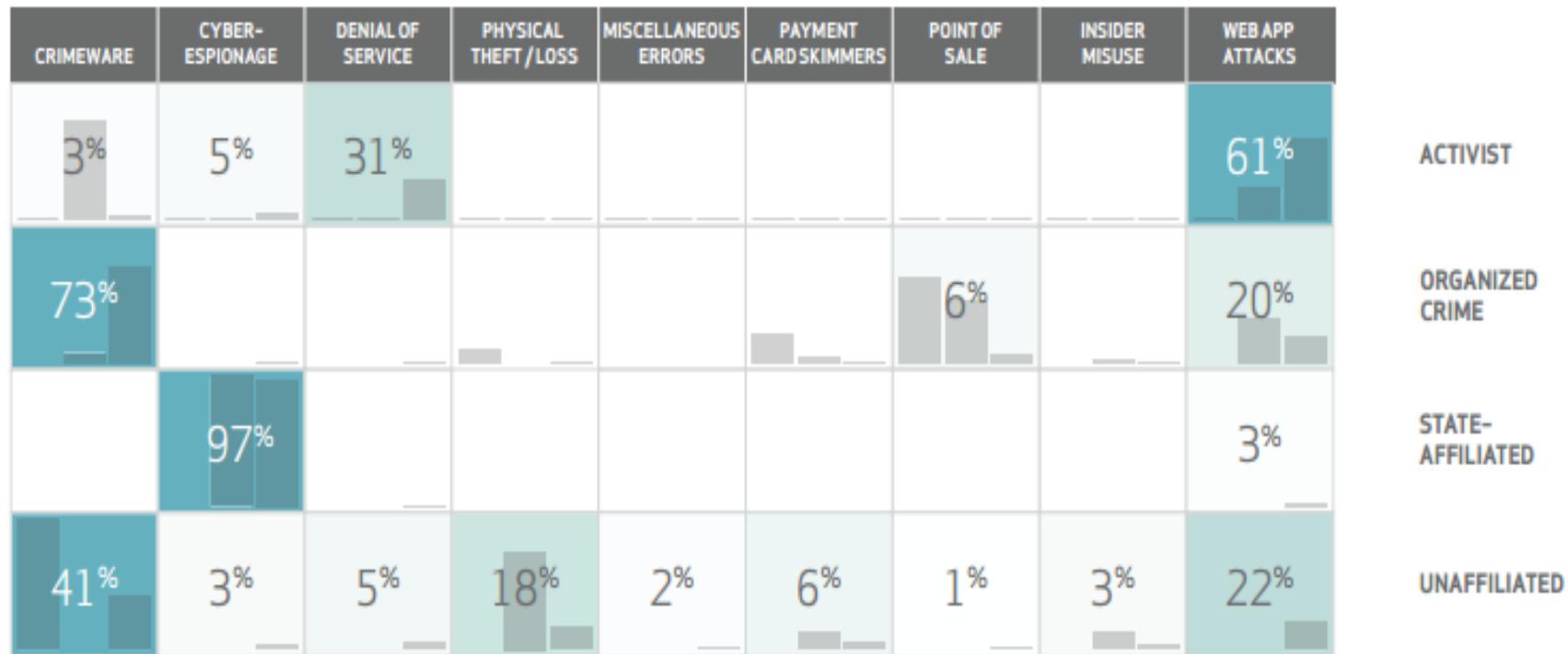
# Case Study – IP Based Systems – Sports Stadium

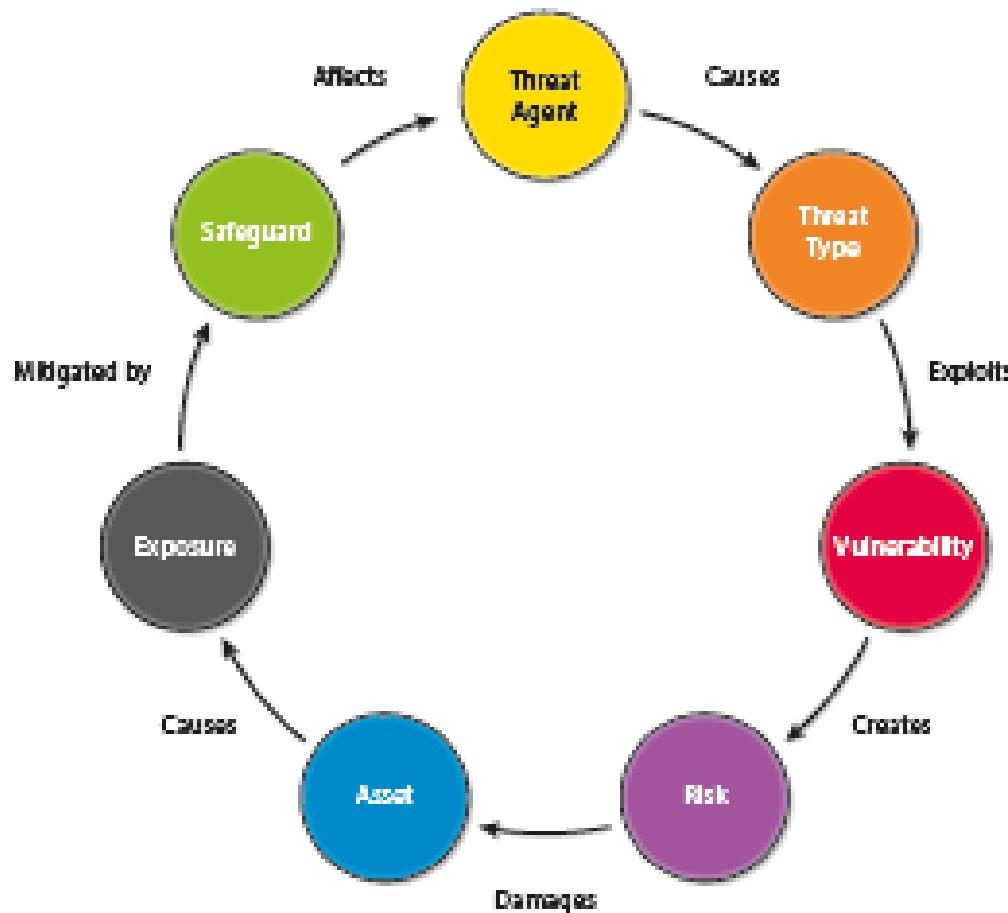


# Risks Arising from Compromised Systems



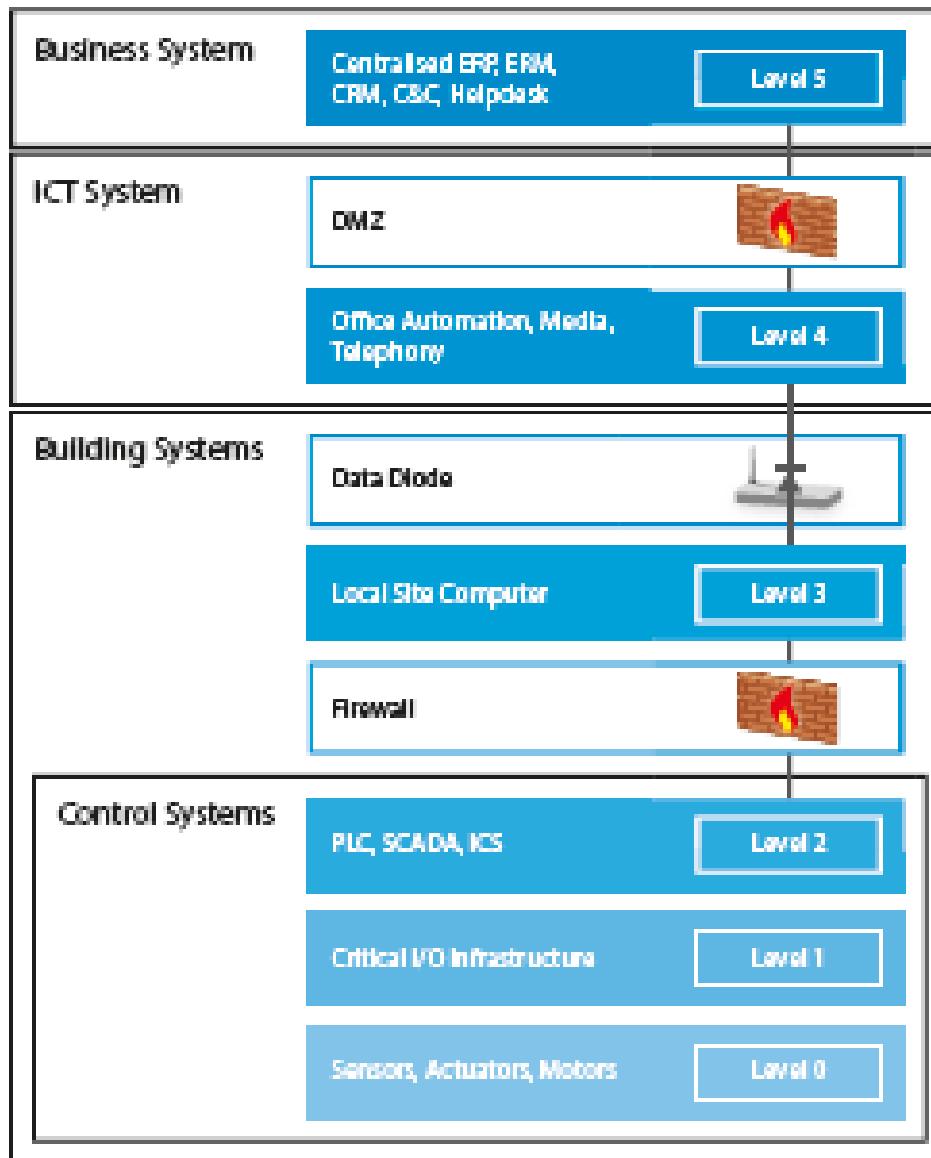
# North America Threat Profile for Intelligent Building and Market (2015)





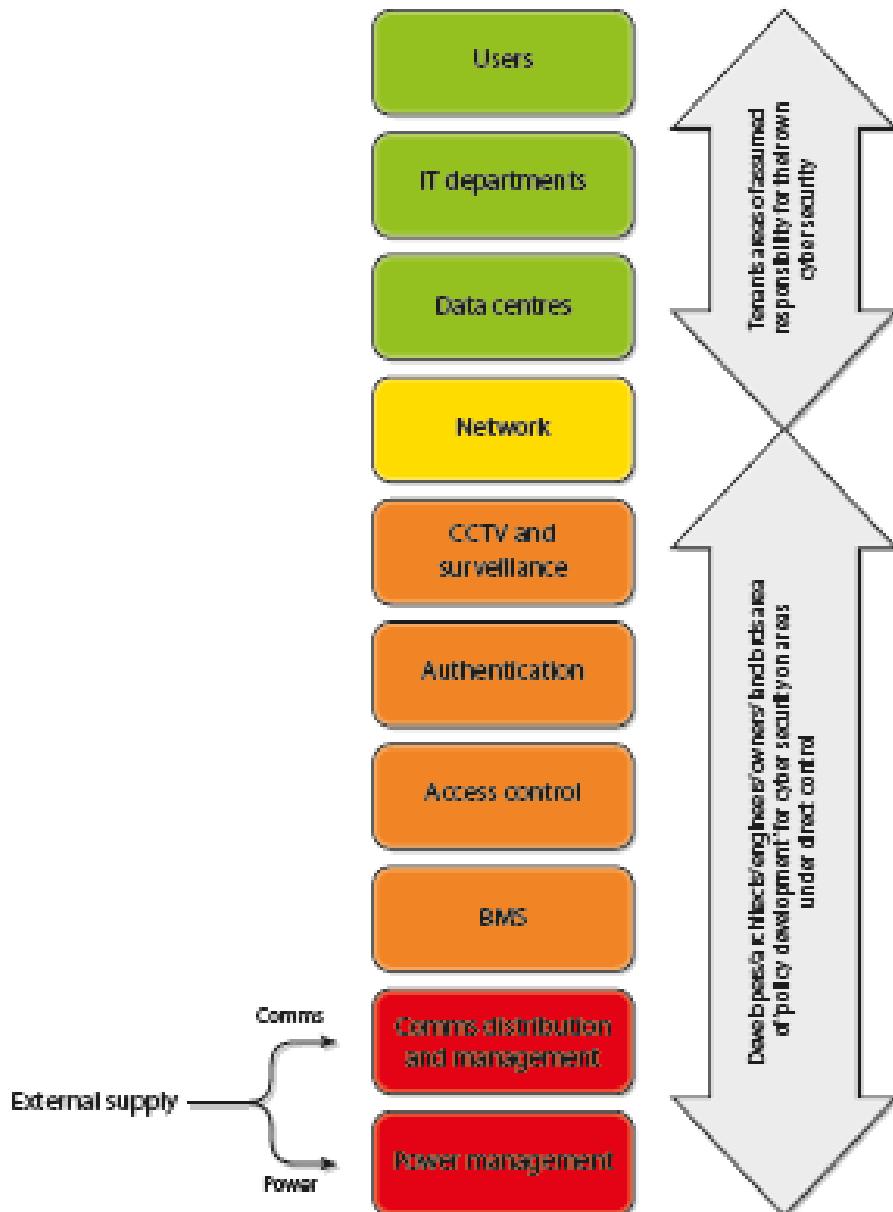
## Four Options:

1. **Avoidance**
2. **Reduction**
3. **Sharing the Risks**
4. **Retention and Manage Consequences**



- **Solutions developed during the design phase.**
- **Proposed design should be assessed for new ideas.**
- **BMS application needs networked segregation (firewall).**
- **Secure gateway protection (data diode secures BMS).**

# Cybersecurity Responsibility Paradigm



- **Manage interaction between infrastructure and business systems.**
- **Need clear operating procedures and agreed “best practices”.**
- **Need to be based on recognized standards (eg., ISO 27001).**
- **Legal issues – lease/tenancy agreements covering data protection, human rights, etc.**
- **Insurance policies need to be revised and possibly updated.**

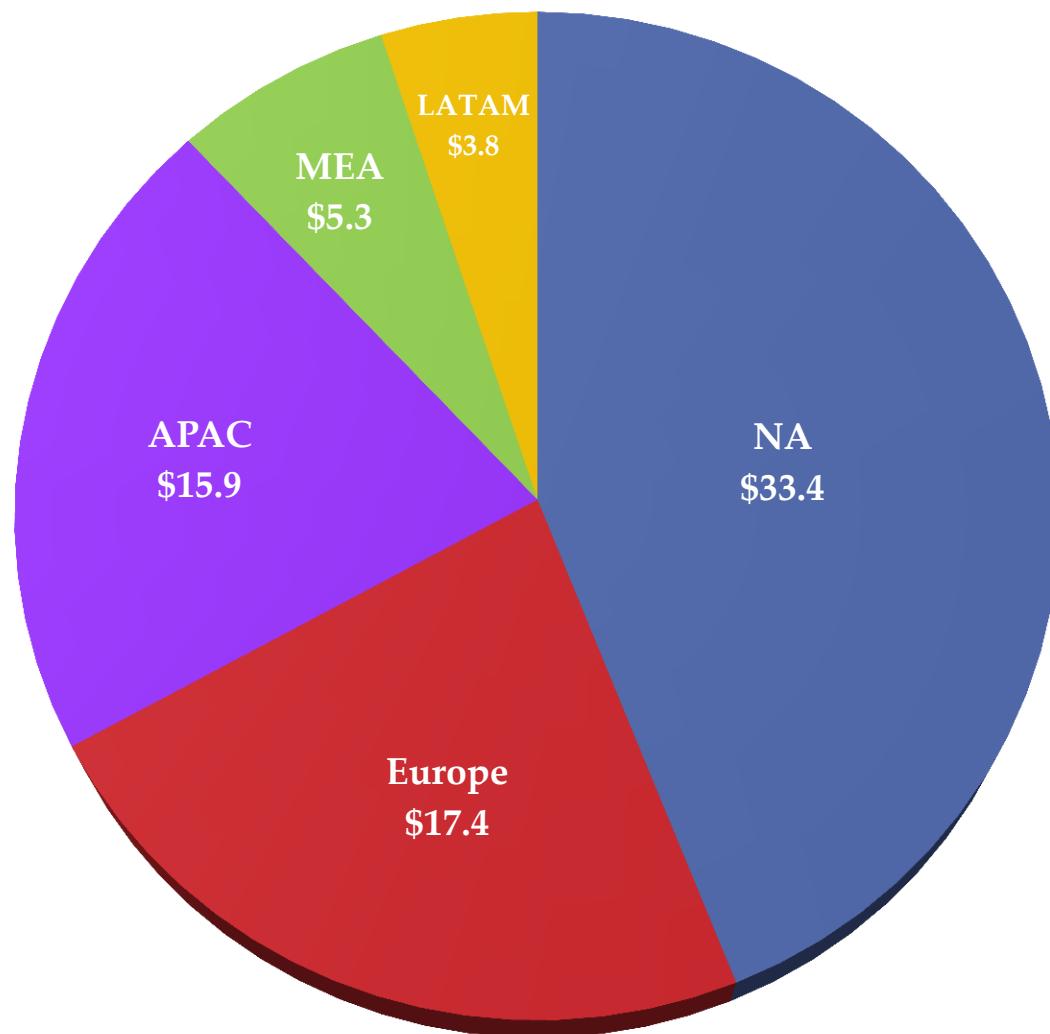
## Global Cybersecurity Expenditures, 2015-2022

\$75.8B - \$160.6B



Source: Compass Intelligence, 2015

# Percent of Revenues by Region for the Global Cybersecurity Market, 2015



Region	Revenues (B)
NA	\$33.4
Europe	\$17.4
APAC	\$15.9
MEA	\$5.3
LATAM	\$3.8

Source: Compass Intelligence, 2015

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