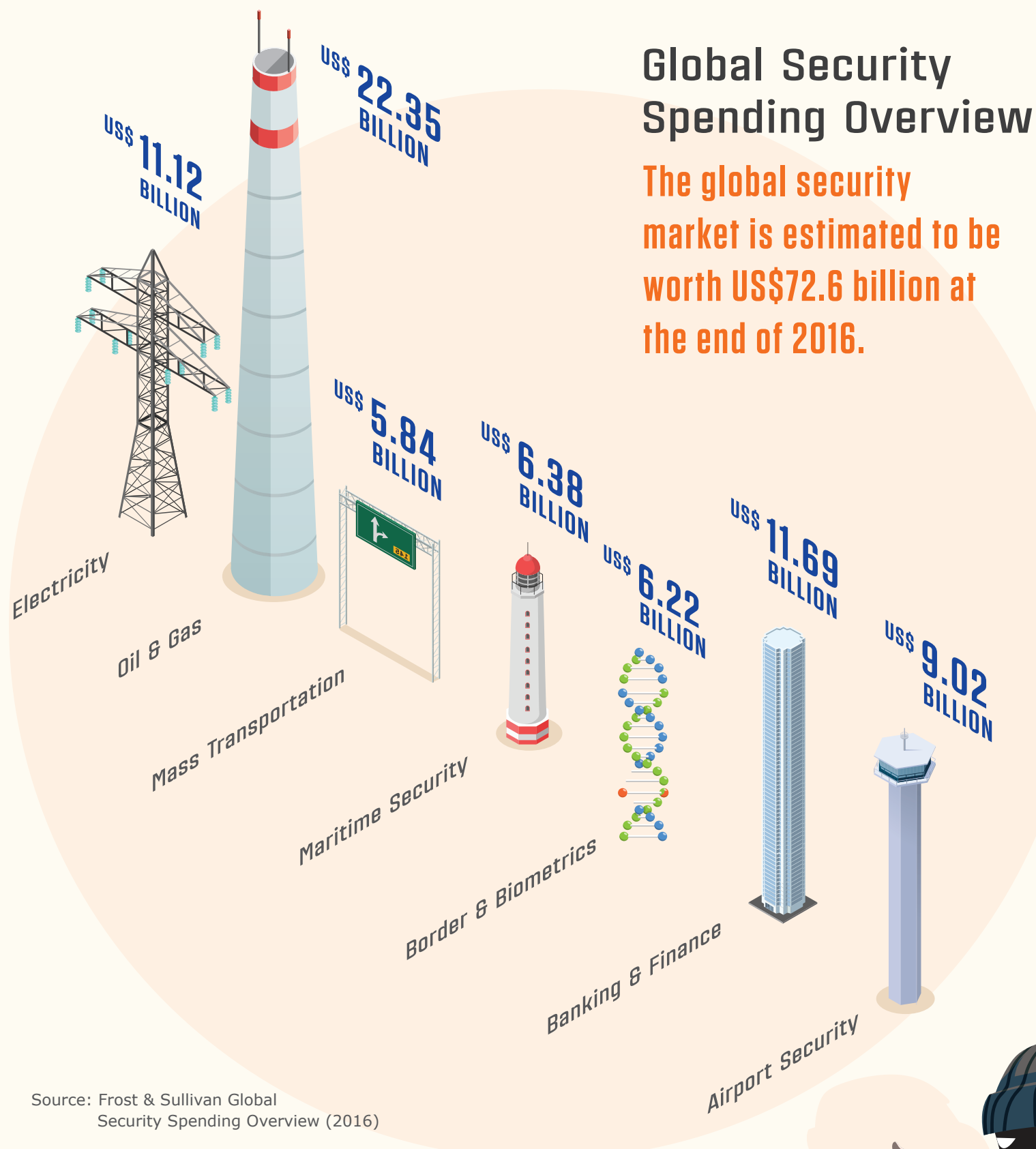# INTEGRATING CYBER-PHYSICAL SECURITY FOR A SAFER CITY

Addressing the Emerging Risks to Critical Infrastructure with Cyber-Physical Solutions

Global Security Spending Overview

The global security market is estimated to be worth US$72.6 billion at the end of 2016.

US$ **11.12 BILLION** — Electricity

US$ **22.35 BILLION** — Oil & Gas

US$ **5.84 BILLION** — Mass Transportation

US$ **6.38 BILLION** — Maritime Security

US$ **6.22 BILLION** — Border & Biometrics

US$ **11.69 BILLION** — Banking & Finance

US$ **9.02 BILLION** — Airport Security

Source: Frost & Sullivan Global Security Spending Overview (2016)

Why Security is a Key Priority for Smart Cities

- Connected infrastructure
- Convergence of operational technology and information technology
- Disconnect between physical security and cyber security
- Cyber-attacks potentially disrupting critical services

DDoS* Attacks: A Growing Threat

240% increase in botnet activity, traced mostly to 900 compromised CCTV cameras

25,513 IP cameras compromised in a DDoS attack, including 24% from Taiwan, 9% from Indonesia, and 6% from Malaysia (2016)

152,000 IoT devices (e.g., CCTV cameras and personal video recorders) compromised in a 1Tbps DDoS attack
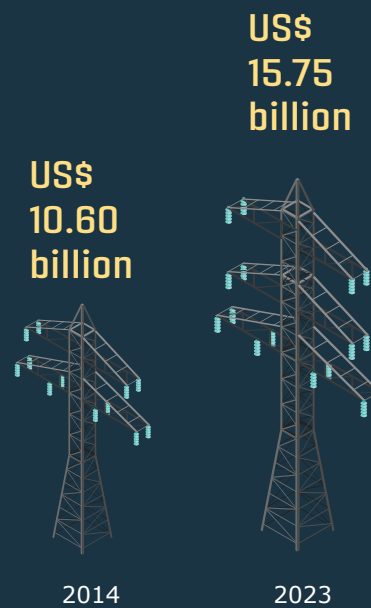
*Note: Distributed denial-of-services

Security Technology Forecast: Key Areas To Watch

AIRPORTS
- US$ 8.22 billion — 2014
- US$ 12.67 billion — 2023

ELECTRICITY
- US$ 10.60 billion — 2014
- US$ 15.75 billion — 2023

OIL & GAS
- US$ 18.26 billion — 2014
- US$ 44.04 billion — 2023

Source: Frost & Sullivan

CRITICAL INFRASTRUCTURE OPERATIONS: TOP 6 AREAS OF VULNERABILITY

NATURAL DISASTER MANAGEMENT

Physical — Lack of disaster planning and recovery practices

Cyber — Remote attacks on critical infrastructure

KEY TECHNOLOGIES
- Environmental sensors in risk-prone areas
- Advanced predictive analytics
- Emergency Incident Response
- Vulnerability identification, mitigation and management system

CITIZEN SAFETY

Physical — Physical threats in densely-populated areas

Cyber — Data breaches in public domain

KEY TECHNOLOGIES
- Behavior Analysis
- Video Data Analytics
- Incidence Reporting
- Cyber security forensics

AIRPORTS

Physical — Long screening queues at security checkpoints

Cyber — Automated check-ins, baggage drops, and ID scans

KEY TECHNOLOGIES
- Multimodal biometrics
- Facial recognition algorithms
- Network-wide multilayer defenses
- Advanced protection gateways for SCADA networks

GOVT SERVICES

Physical — Vandalism, theft, and/or disruption of services

Cyber — Cyber-attacks motivated by political dissent

KEY TECHNOLOGIES
- Multimodal biometrics for access control
- Behavior Analysis
- Detection of cyber threats and data leaks, and identification of cyber-attack patterns
- Intrusion Detection

Stadium/ Big Events

Physical — Hostile-aggressive individuals/crowds

Cyber — Attacks on networks to cripple operations and cut power

KEY TECHNOLOGIES
- High-resolution cameras
- Behavioral analytics
- Real-time networking monitoring
- Next-generation firewalls

ELECTRICITY

Physical — Vandalism/ terrorism of plants/critical facilities

Cyber — Connected devices as new grid invasion access points

KEY TECHNOLOGIES
- Multi-layered defence for SCADA
- Intrusion Detection
- High-resolution cameras
- Behavioral & Video Data Analytics

Capture key insights on securing cities in an increasingly connected world

SCAN HERE TO READ THE WHITE PAPER OR VISIT nec.com/safecity

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