Cybersecurity: Managing Risk

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Chief Information Officer

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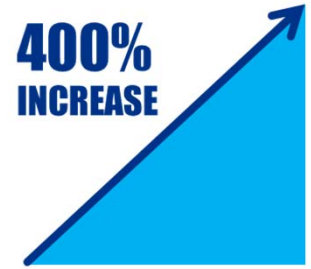
Challenges

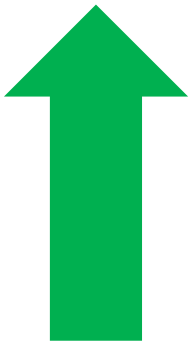
INSTANCES OF MALWARE CODE

400% INCREASE



CYBERSECURITY MARKET WILL REACH

$120 BILLION in 2017

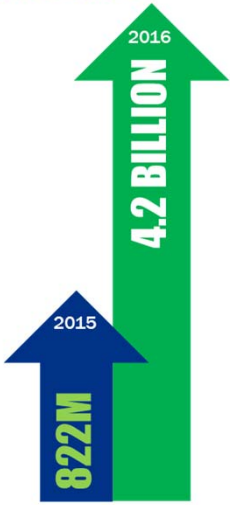


35x

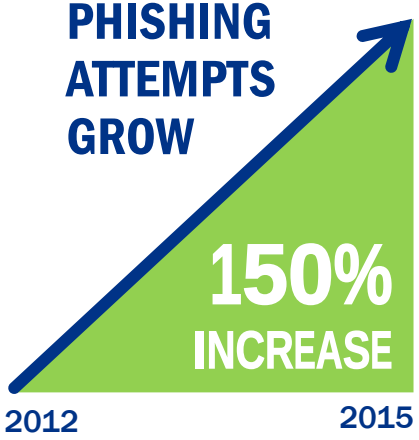
GROWTH OVER 13 YEARS

Cyber Talent Shortfall of 1.5 Million Positions by 2019

EXPOSED RECORDS



PHISHING ATTEMPTS GROW



MOST BREACHES START WITH HUMANS

30%

PHISHING EMAILS ARE OPENED

Sources: Risk Based Security, 2016 Data Breach Trends;
Cybersecurity Market Report, Cybersecurity Ventures Q1 2017;
Verizon 2016 Data Breach Investigations Report; ISC(2) Workforce Study

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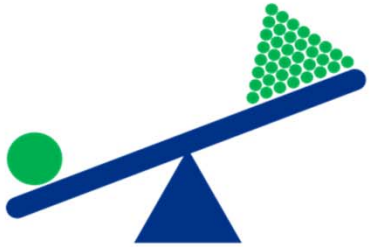
Challenges

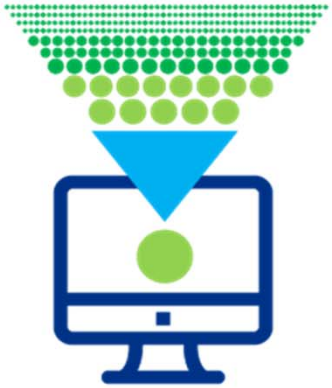
ATTACK SURFACE

POWER IMBALANCE



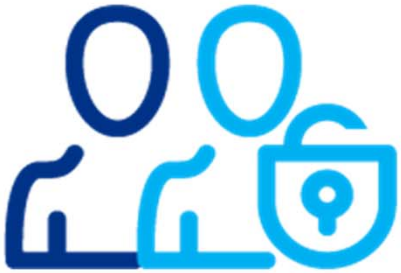
Attackers need one point of entry

ACTIONABLE INTELLIGENCE



Increasingly a big data problem

HUMAN ELEMENT



Most breaches start with humans

And are detected by humans

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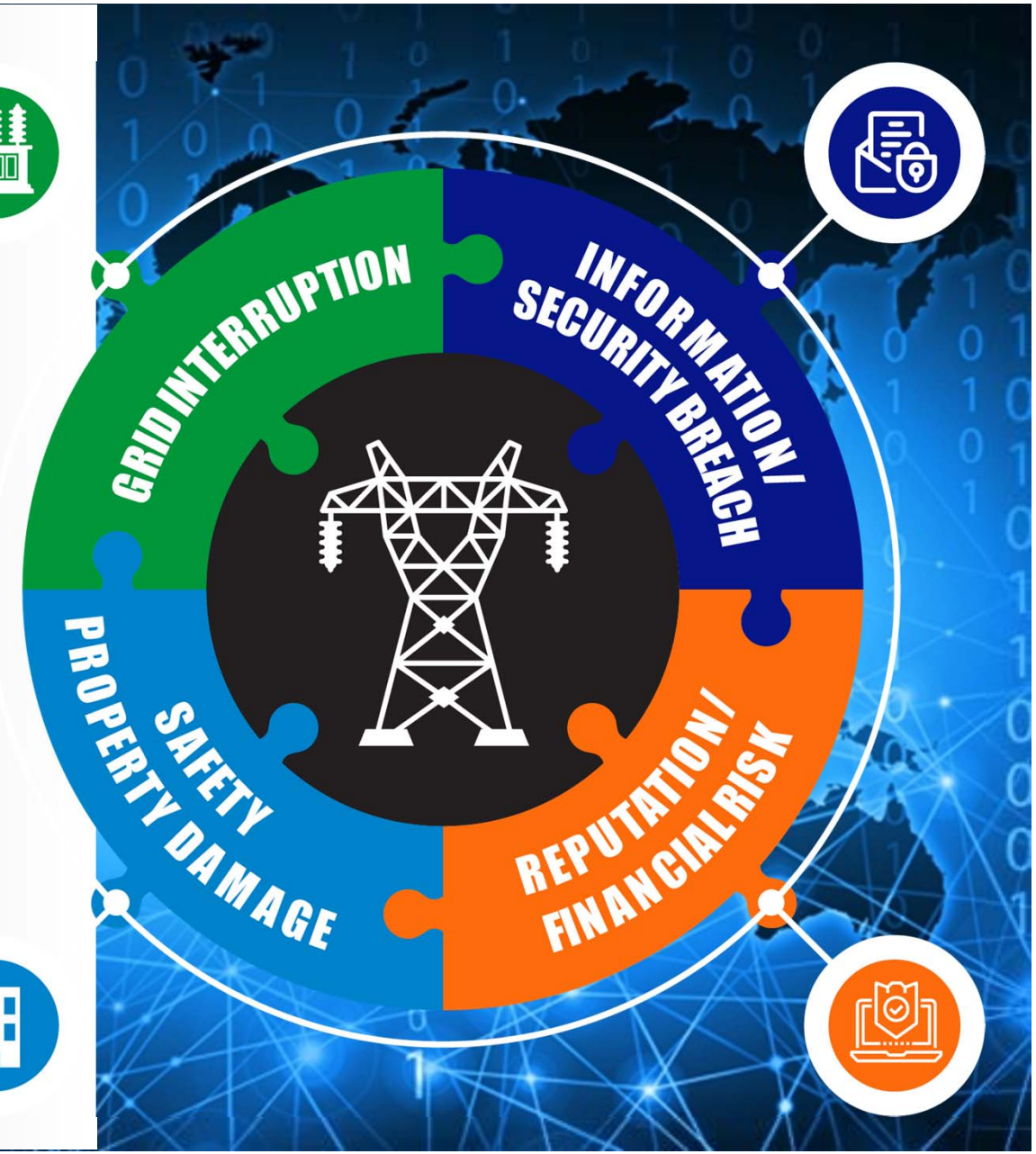
What's at risk for the Energy Industry?



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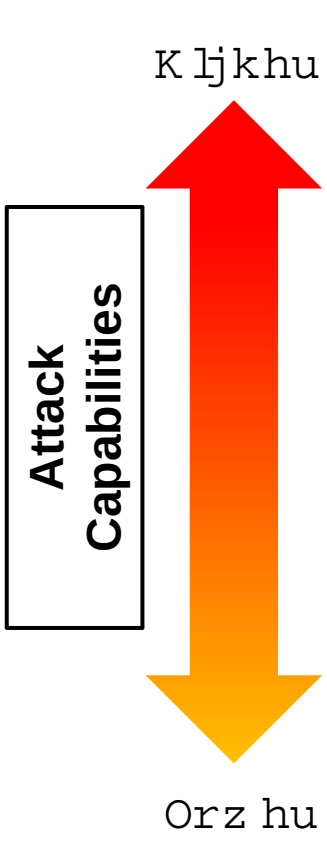
Who are the adversaries?



Who are they?	What do they seek?
State-Sponsored	Power, influence, security and gaining advantage over other nations (Economical, Political or Military)
Rogue Nations	Foster an ideological agenda (political or religious)
Criminals	Economic gain
Hactivists	Push a political or personal agenda
Terrorists	Inflict damage or injury to nations or to drive an ideological agenda

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Industry's Response

In 2016, electric companies were projected to invest

$52.8 Billion

to enhance the energy grid and to further support our grid security efforts.

Sources: Edison Electric Institute

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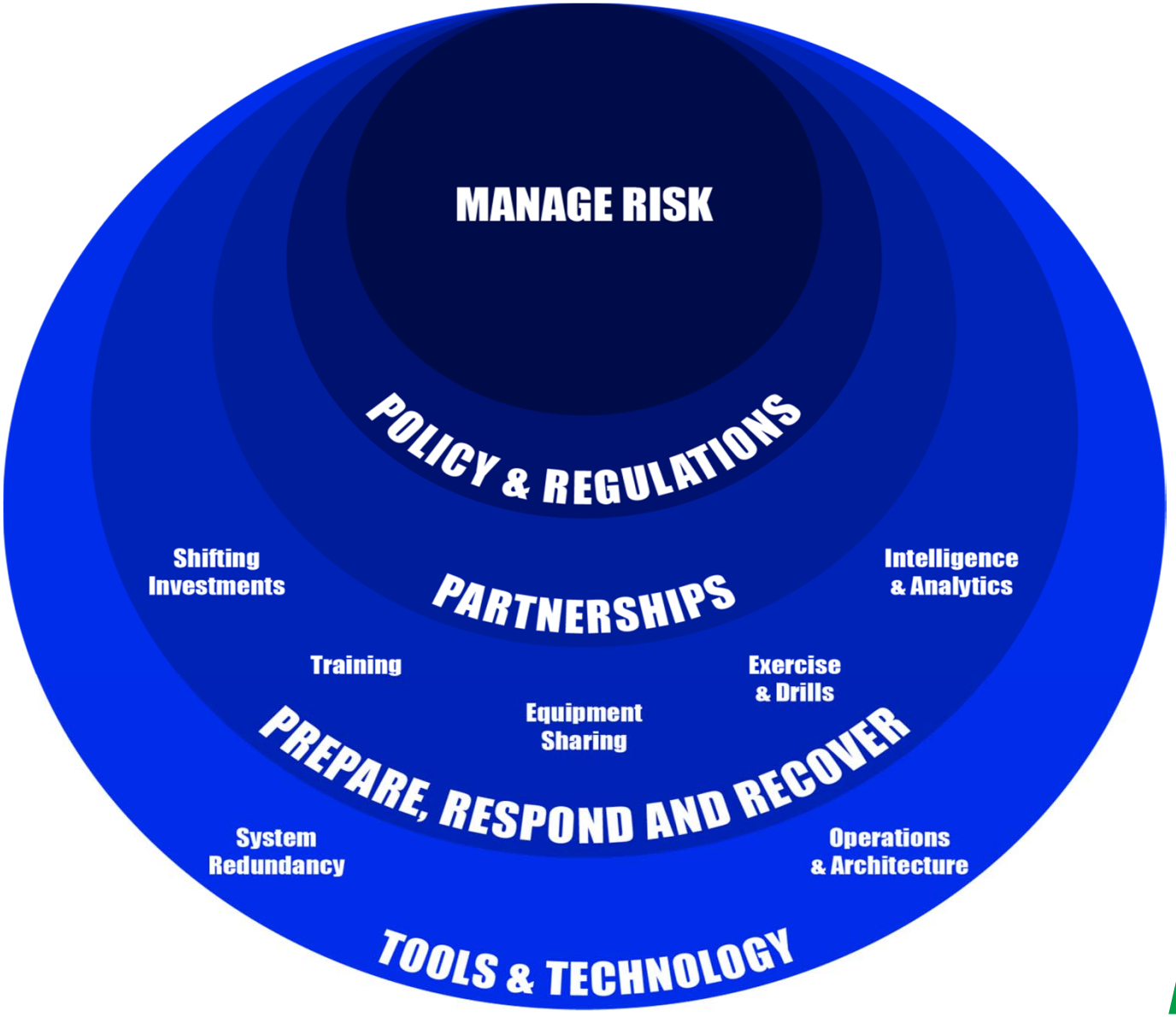
Our Industry's Response



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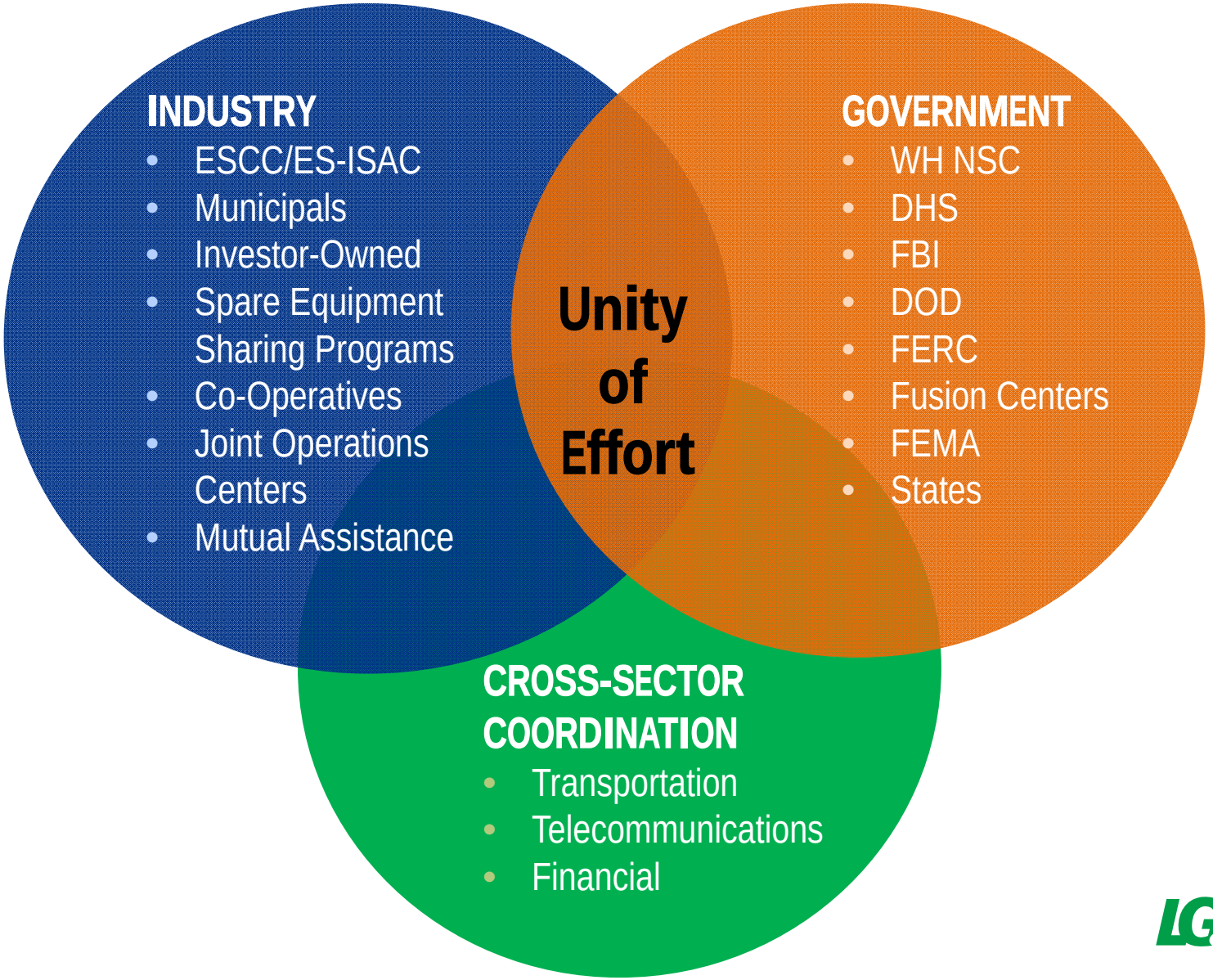
A Shared Responsibility



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Policy and Regulations

Policy & Regulations

- Mandatory & Enforceable standards
- NERC CIP - North American Electric Reliability Corporation Critical Infrastructure Protection Mandated Regulations

Voluntary Guidance:

- NIST - National Institute of Standards and Technology Cybersecurity Framework
- C2M2 - Department of Energy's (DOE's) Cybersecurity Capability Maturity Model.
- ISO2700X –Information Security Management Systems (ISMS) standard

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LG&E KU Partnerships & Collaborations

Federal and State

- Department of Homeland Security
- Department of Energy FAST act
- Law Enforcement Agencies (InfraGard)
- Government and Industry Standards Development

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LG&E KU Partnerships & Collaborations

Industry

- ESCC - Electric Sector Coordinating Council
- EPRI – Electric Power Research Institute
- E-ISAC – Electricity Information Sharing and Analysis Center
- CRISP - Cybersecurity Risk Information Sharing Program
  - More than 100 million customers are served by participating electric companies
- Cybersecurity Mutual Assistance Program

Cross-Sector

- KnowledgeConnect – Cross-industry cybersecurity best practice forum
- Numerous Security Industry forums (e.g. ISSA, Gartner)

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Prepare, Respond and Recover

Exercises

- Periodic exercises to test Incident Response Management Capabilities from technical staff level to CEO level
- NERC GridEx IV (November 2017)
  - Simulation of physical and cyber attack on the Grid
  - Largest grid security exercise of its kind (450 North American organizations and 6,500 participants)
  - Over 100 LG&E KU participants plus industry and government representatives

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