CIRI | CRITICAL INFRASTRUCTURE RESILIENCE INSTITUTE

A DEPARTMENT OF HOMELAND SECURITY CENTER OF EXCELLENCE

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One Goal – Three Missions

CIRI Symposium on Resilience of Critical Infrastructures
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Overview:

- Primary missions:
  - Conduct outputs-oriented research
  - Transition products/technologies to market
  - Educate and develop tomorrow's workforce
- Two contract vehicles:
  - Cooperative Agreement – core research
  - Basic Ordering Agreement – component specific research

Goal: To deliver impact…

How?
…raise the tide

…private sector focus

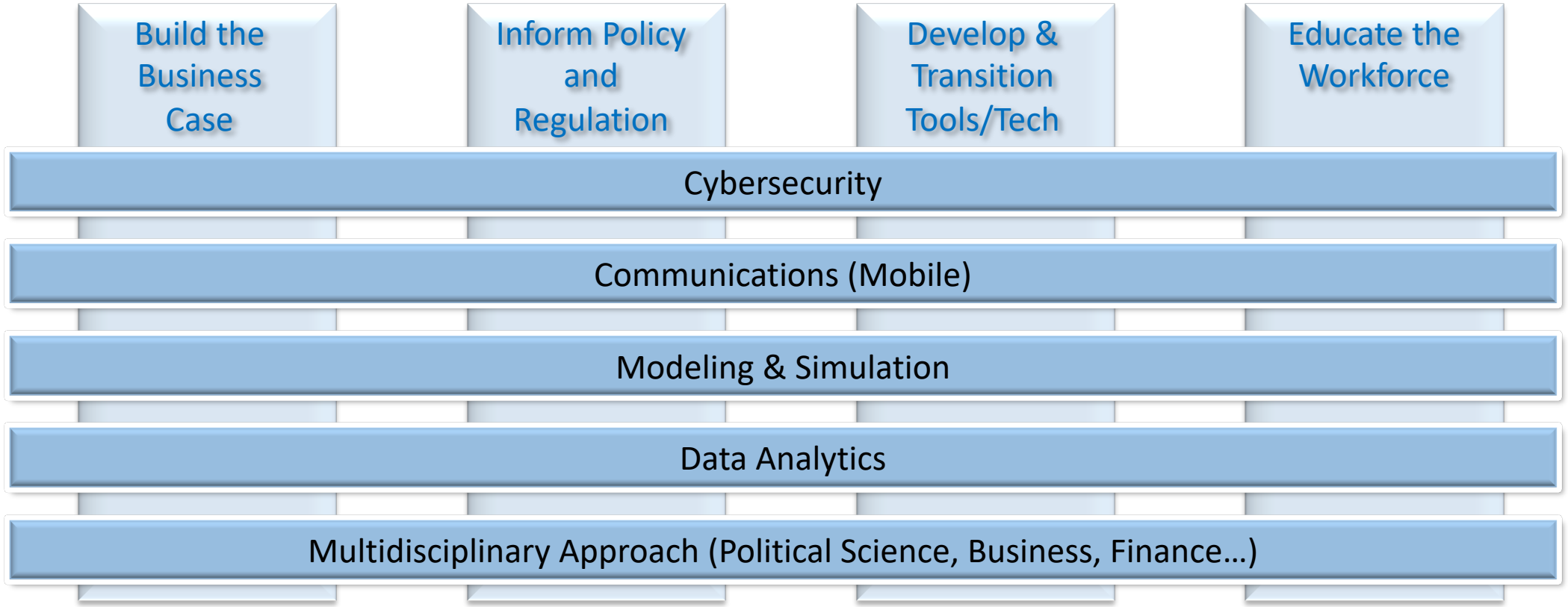
Help build the business case for resiliency investments…

Inform policy, standards, and best practices developed by government and industry

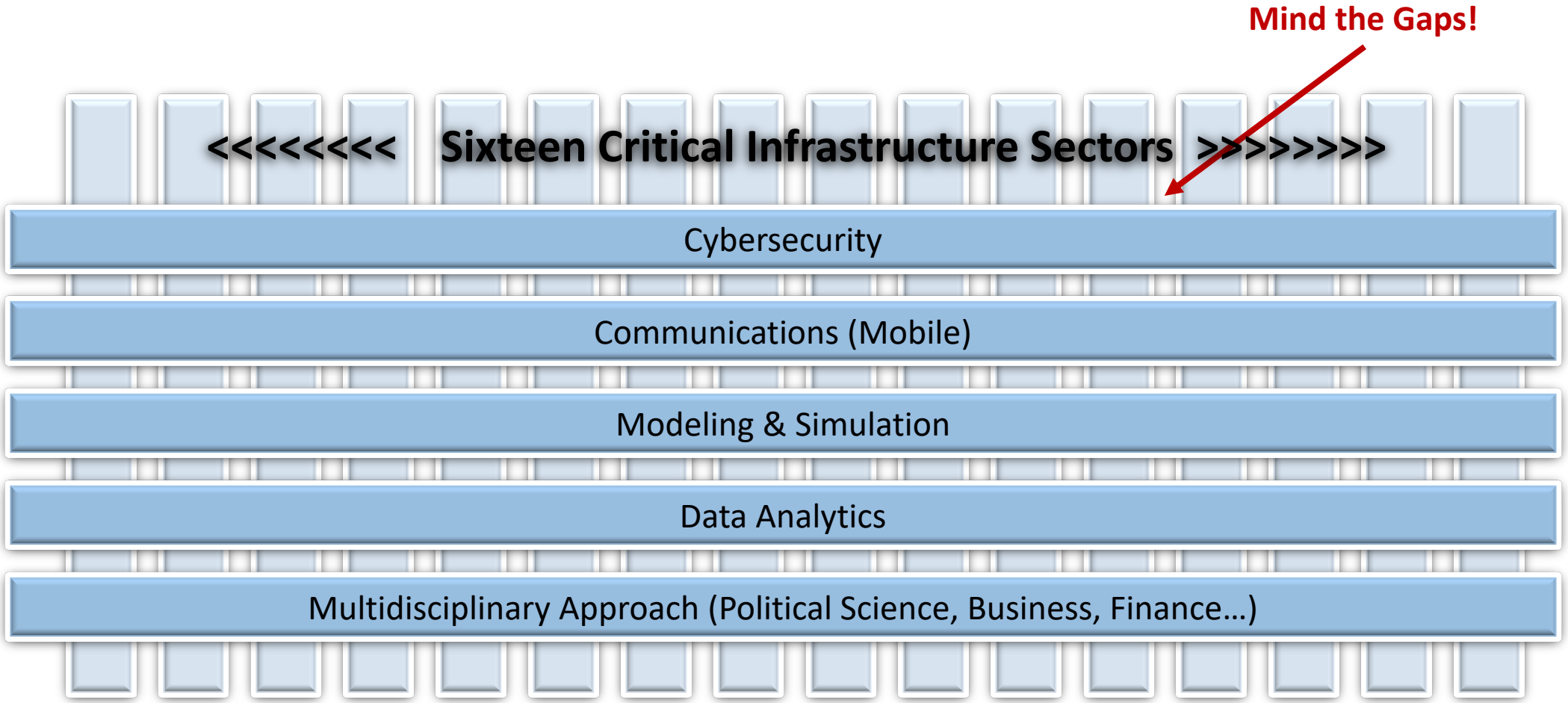
Deliver tools & technologies to DHS components and the general marketplace

Educate tomorrow's workforce…

Cross-cutting technologies/disciplines…



Cross-cutting technologies/disciplines…



Targeted outcome:

- Impact!
  - Unleash the power of market forces
  - Leverage the financial and intellectual capital of the private sector
  - Facilitate a paradigm shift from “bolt-on” to “built-in”
  - A more secure, more resilient critical infrastructure
  - A more secure, resilient nation

Current research projects:

- **Cybersecurity in Manufacturing** – UIUC
- **Cybersecurity Assurance for Critical Infrastructure** – Carleton University
- **LEFT: An LTE-Oriented Emulation-Instrumented Fuzzing Testbed** – Binghamton University, SUNY
- **Dynamic Resiliency Modeling and Planning for Interdependent Critical Infrastructure** – New York University
- **Assessment and Measurement of Port Disruptions** – UIUC
- **Mapping Infrastructure Interdependencies for Improved Emergency Management** – Georgia Tech

New research projects:

- **Multi-Layer Cyber-Physical Supply Chain Risk Analysis for Improving the Resilience of IoT-enabled Critical Infrastructures** – NYU
- **EMP Risk Assessment & Mitigation Prioritization** – Synclesis, Inc.
- **Hybrid Quantum-Classical Reinforcement Learning in Controlled Quantum Networks** – University of Tennessee, University of Calgary
- **Reliable Extraction of Emergency Response Networks from Text Data & Bench Marking with National Emergency Response Guidelines** – UIUC
- **Leveraging AI for Disaster Response: Scalable & Effective Algorithms for Strategic Planning & Tactical Response** – USC

Tech Transition Snapshot:

- **Cyber Secure Dashboard*** – operationalizes the NIST Cyber Security Framework
- **Cyber Risk Scoring and Mitigation (CRISM)*** – assesses cyber security vulnerabilities and provides mitigation plan
- **Cyber Insurance Portfolio Assessment of Risk (CIPAR)** – helps firms estimate their exposure to cyber risk and helps insurance companies manage portfolio risk
- **LEFT: An LTE-Oriented Emulation-Instrumented Fuzzing Testbed** – stress test LTE backbone systems against multiple misbehaving handsets
- **Assessment and Measurement of Port Disruptions*** – model ports (and other facilities), simulate disruptions, estimate economic cost

* subject of USTRANSCOM CRADA