Pacific NorthWest Economic Region

The Pacific Northwest Economic Region Presents:

INFRASTRUCTURE TODAY AND TOMORROW

Wednesday, August 18th | 8am-9:15am

Photo Courtesy of Montana Office of Tourism & Business Development

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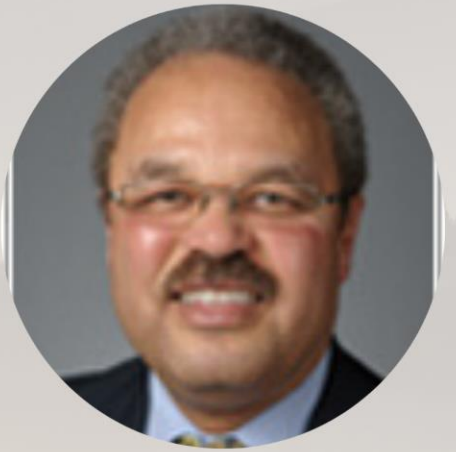
Moderated by:

Pacific NorthWest Economic Region

Bruce Agnew
Director
ACES Northwest Network

Dr. Ron Fisher
Director of Infrastructure Assurance & Analysis
Idaho National Labs



Sen. Lew Frederick
Oregon State Legislature

Sen. Diane Sands
Montana State Legislature

Sen. Chuck Winder
Idaho State Legislature

Hon. Rob Fleming
Minister of Transportation & Infrastructure, B.C.

Rep. Jake Fey
Washington State Legislature

Photo Courtesy of Montana Office of Tourism & Business Development

Ron Fisher, Ph.D.

Director, Infrastructure Assurance and Analysis Division

Director, INL Resilience Optimization Center

August 18, 2021

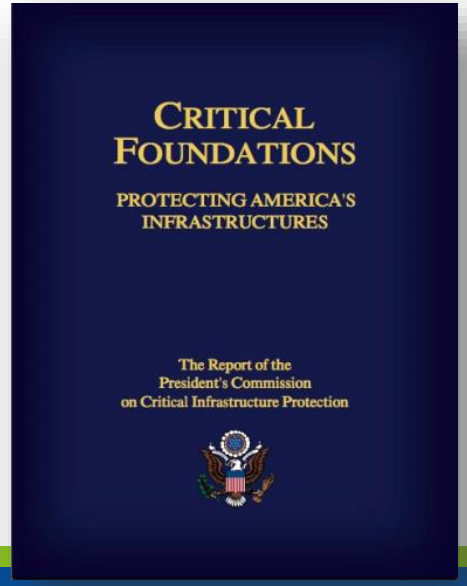
Idaho National Laboratory (INL): Infrastructure Today and Tomorrow, Transportation and Infrastructure Overview

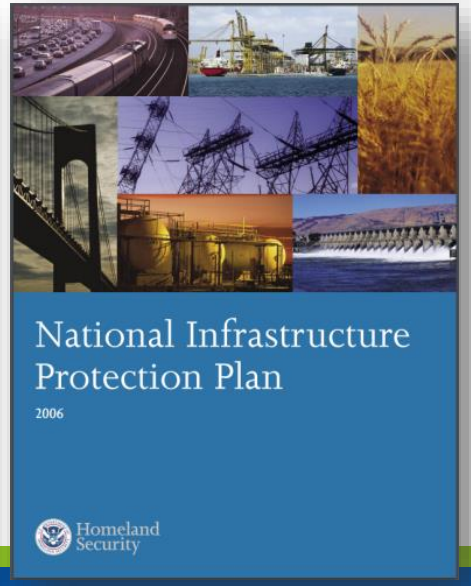
Idaho National Laboratory

Critical Infrastructure Protection Evolution and Timeline

Infrastructure Interdependencies

Physical Security	Cyber Threat	Terrorism	All Hazards	Holistic Resilience
1989	1996	2001	2005	Future





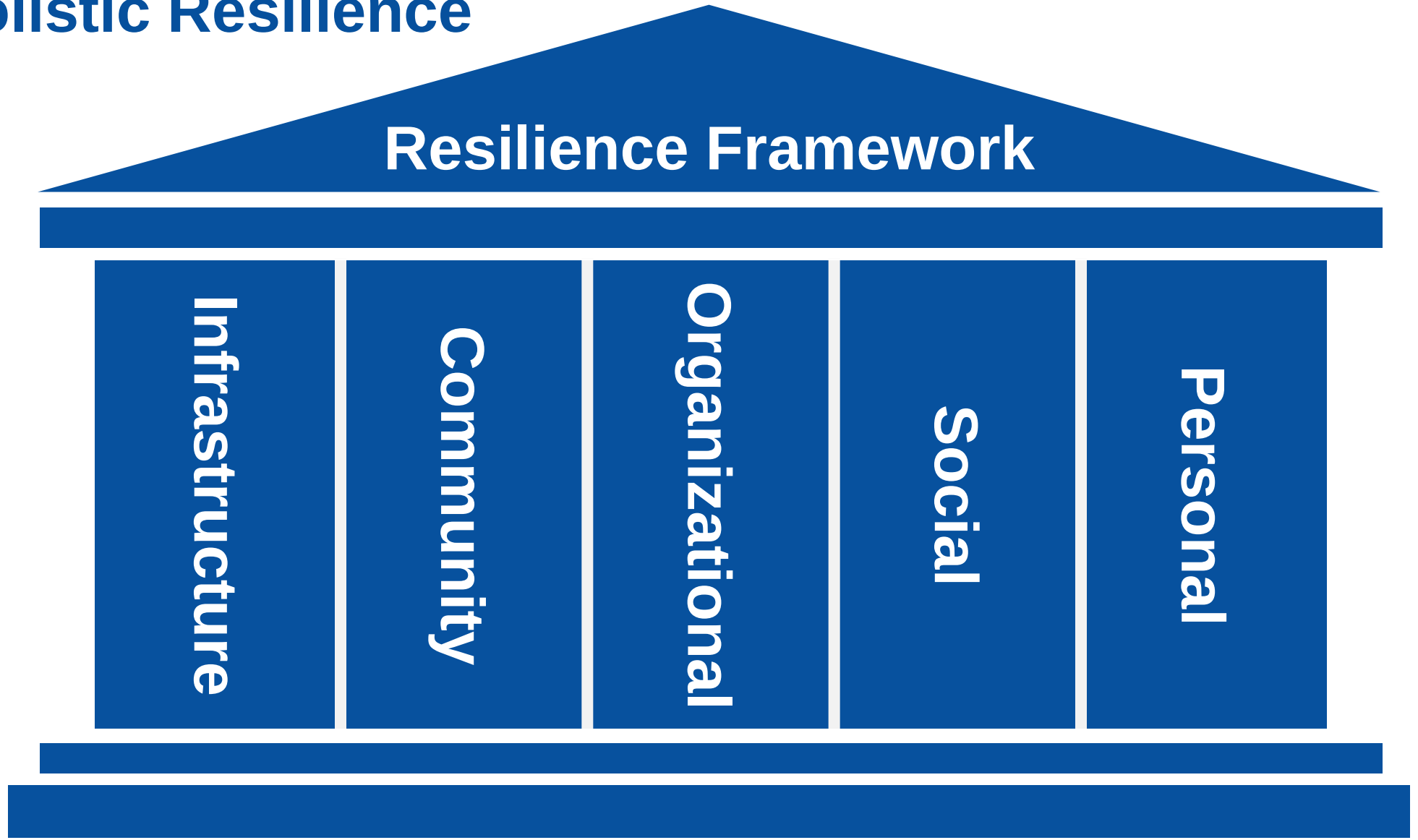
2013: PPD-21, Critical Infrastructure Security and Resilience

2014: Quadrennial Homeland Security Review

2017: National Security Strategy

2021: Presidential Support for Bipartisan Infrastructure Framework

Holistic Resilience



Cyber Threat 25 Year Perspective

The Commission has not discovered an immediate threat sufficient to warrant a fear of imminent national crisis. We should attend to our critical foundations before we are confronted with a crisis, not after. Waiting for a disaster would prove as expensive as it would be irresponsible.

~Critical Foundations, 1997

Water Treatment Plant

'Dangerous Stuff': Hackers Tried to Poison Water Supply of Florida Town

For years, cybersecurity experts have warned of attacks on small municipal systems. In Oldsmar, Fla., the levels of lye were changed and could have sickened residents.

"This is dangerous stuff," Sheriff Bob Gualtieri of Pinellas County said at a news conference Monday of hackers who remotely accessed the City of Oldsmar's water supply system and changed the levels of lye. Pinellas County Sheriff's Office

Pipeline

Cyberattack Forces a Shutdown of a Top U.S. Pipeline

The operator, Colonial Pipeline, said it had halted systems for its 5,500 miles of pipeline after being hit by a ransomware attack.

A Colonial Pipeline facility in Pelham, Ala. The company said it had learned on Friday that it was the victim of a cyberattack. Jay Reeves/Associated Press

Meat Packing Plant

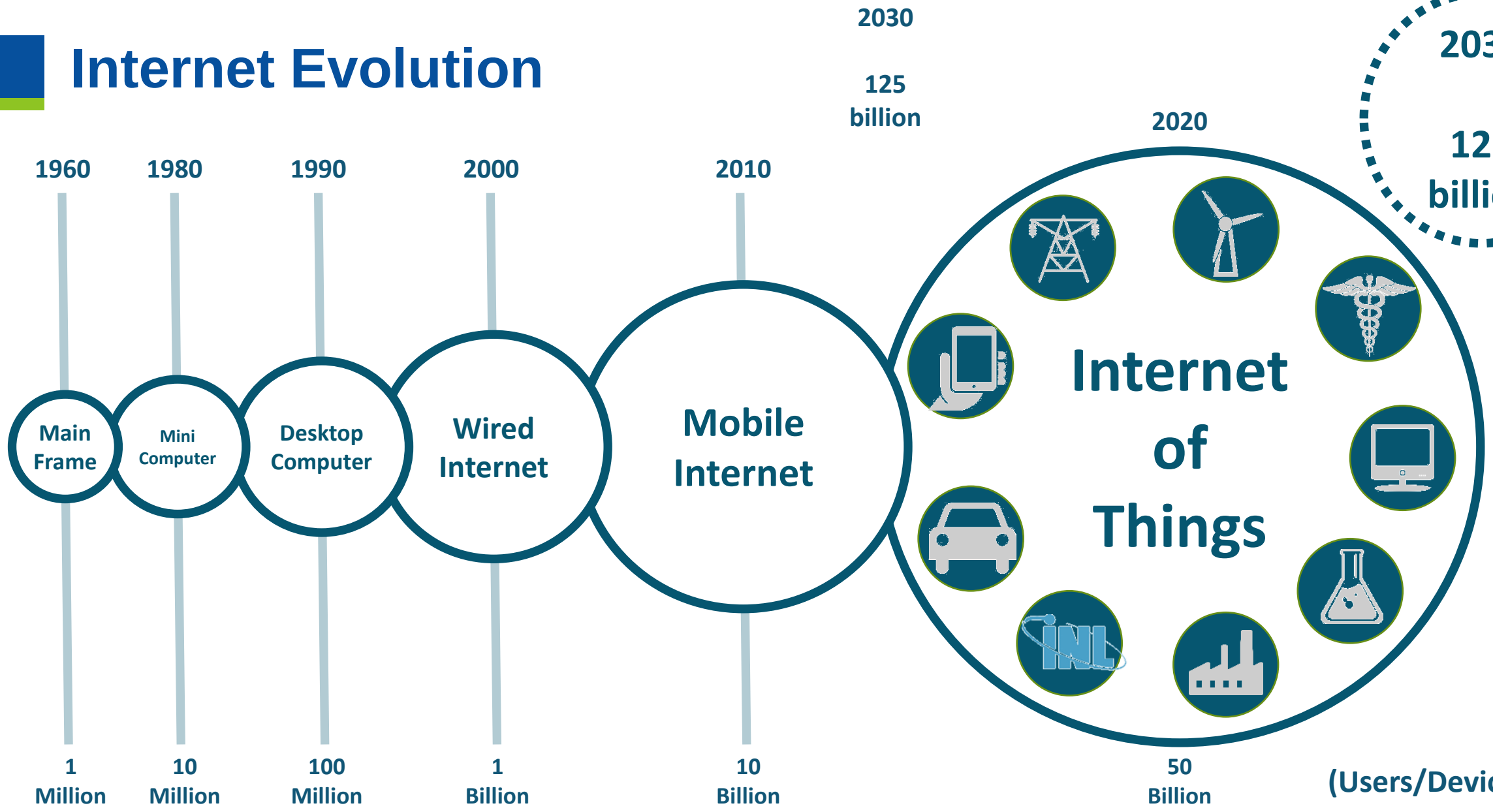
Ransomware Disrupts Meat Plants in Latest Attack on Critical U.S. Business

All of JBS's beef plants in the U.S. were shuttered on Tuesday, and many of its pork and poultry plants were affected, according to a union and Facebook posts meant for employees.

A JBS plant in Minnesota. Nine JBS beef plants in the United States were shut down after a cyberattack, a union said. The company's pork and poultry operations were also affected. Bing Guan/Reuters

Image Sources: New York Times, (1) https://www.nytimes.com/2021/02/08/us/oldsmar-florida-water-supply-hack.html; (2) https://www.nytimes.com/2021/05/08/us/politics/cyberattack-colonial-pipeline.html; (3) https://www.nytimes.com/2021/06/01/business/meat-plant-cyberattack-jbs.html

Internet Evolution

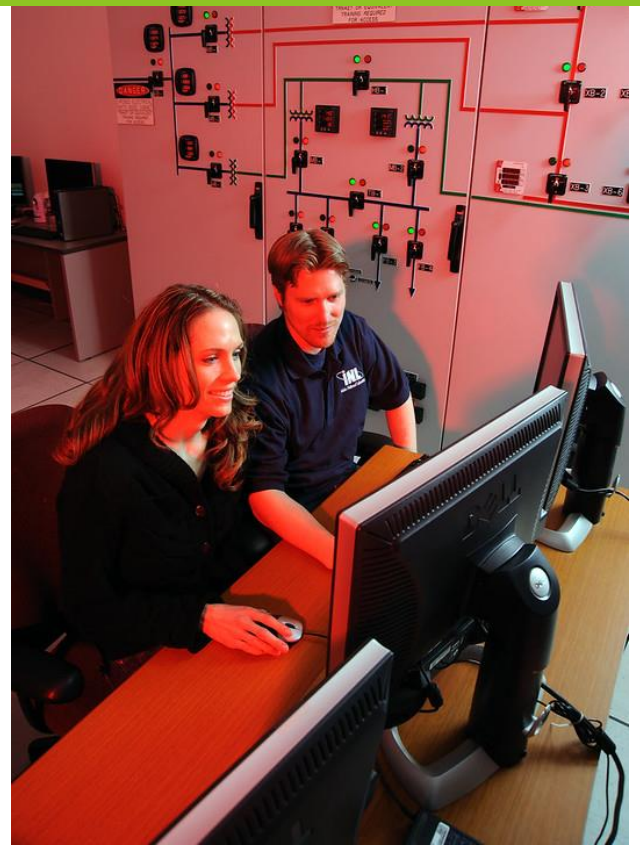


2030
125
billion

Source: Embracing the Internet of Everything To Capture Your Share of $14.4 Trillion, CISCO 2013

Cyber-Physical Dependency Example

ACCESS HERE → **means** → **ACCESS THERE**



Transportation Systems Sector Dependencies

Subsectors

- Aviation
- Highway and Motor Carrier
- Maritime Transportation System
- Mass Transit and Passenger Rail
- Pipeline Systems
- Freight Rail
- Postal and Shipping

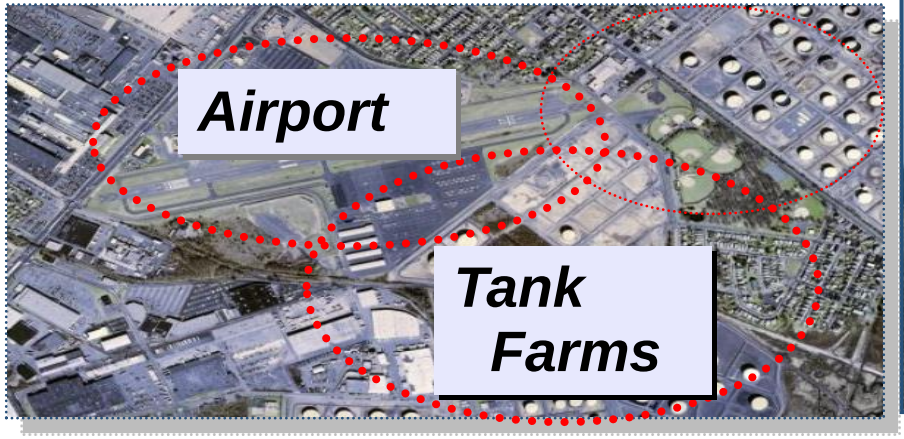
Cross-Sector Issues

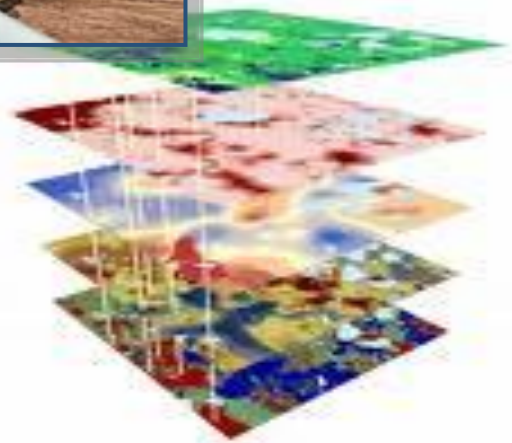
- Information Sharing
- Cybersecurity
- Research and Development

Source: DHS, DOT, 2015, Transportation Systems Sector-Specific Plan, https://www.cisa.gov/sites/default/files/publications/nipp-ssp-transportation-systems-2015-508.pdf

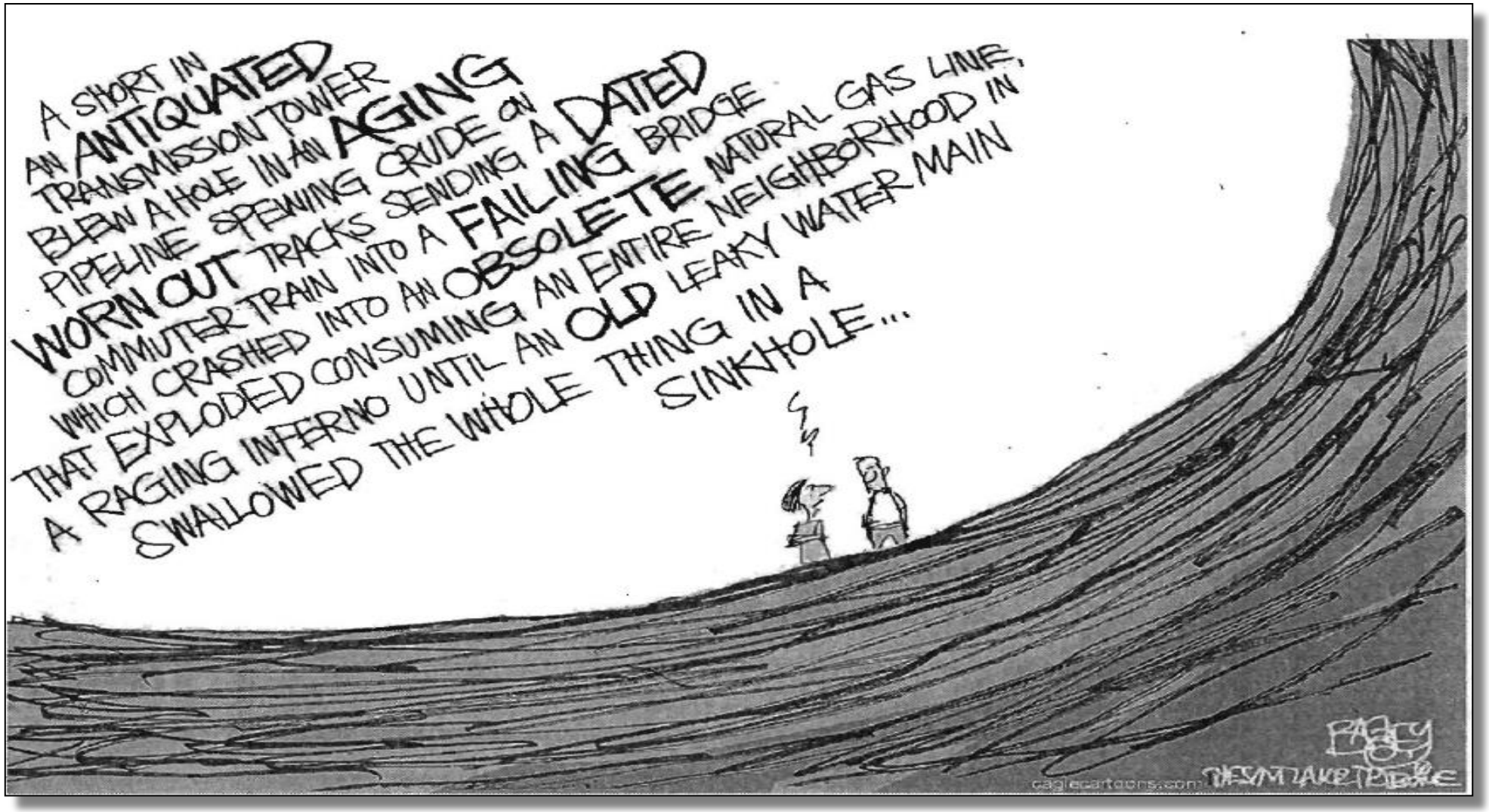
Geographic Interdependency (Common Corridor)

Close spatial proximity



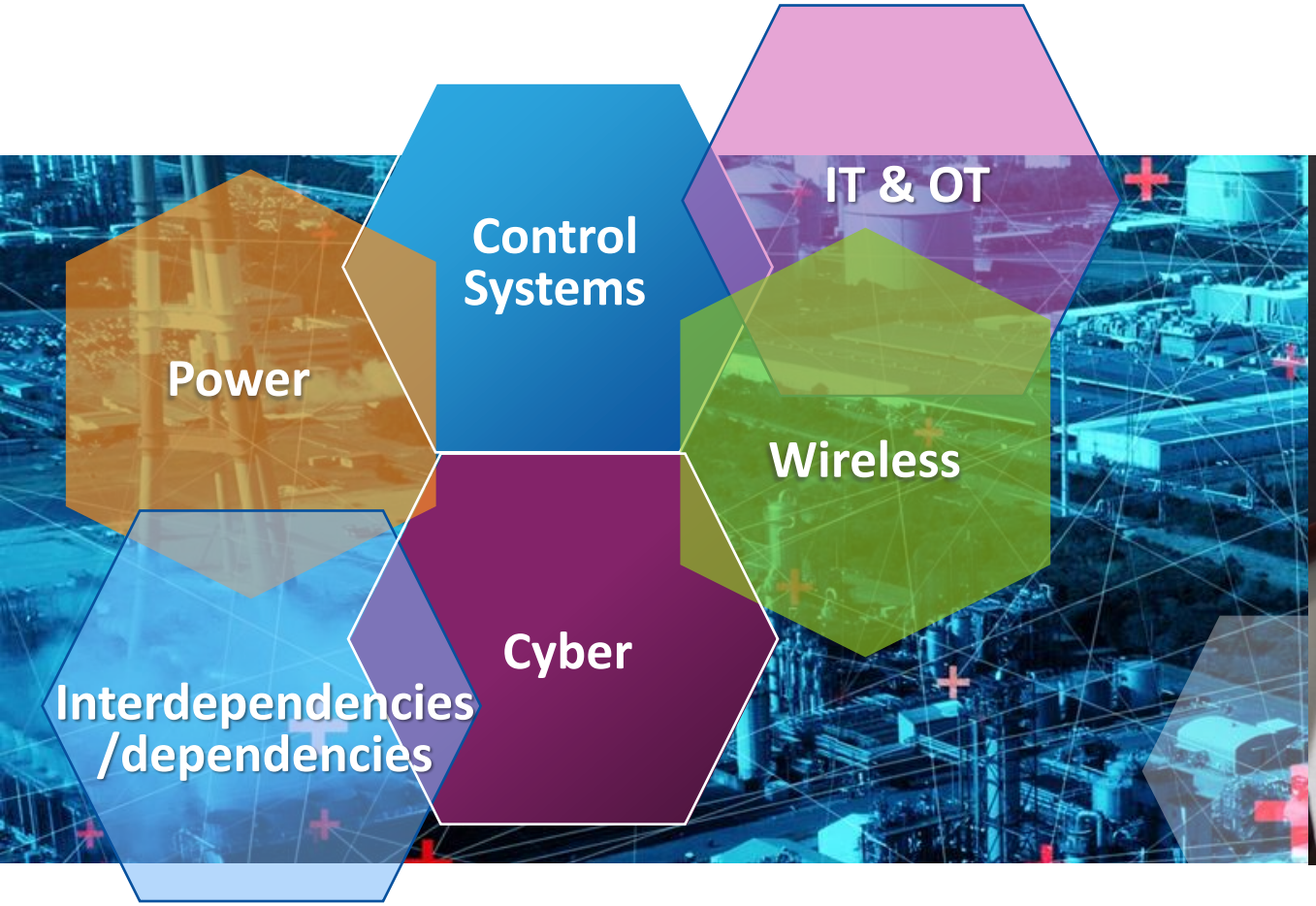


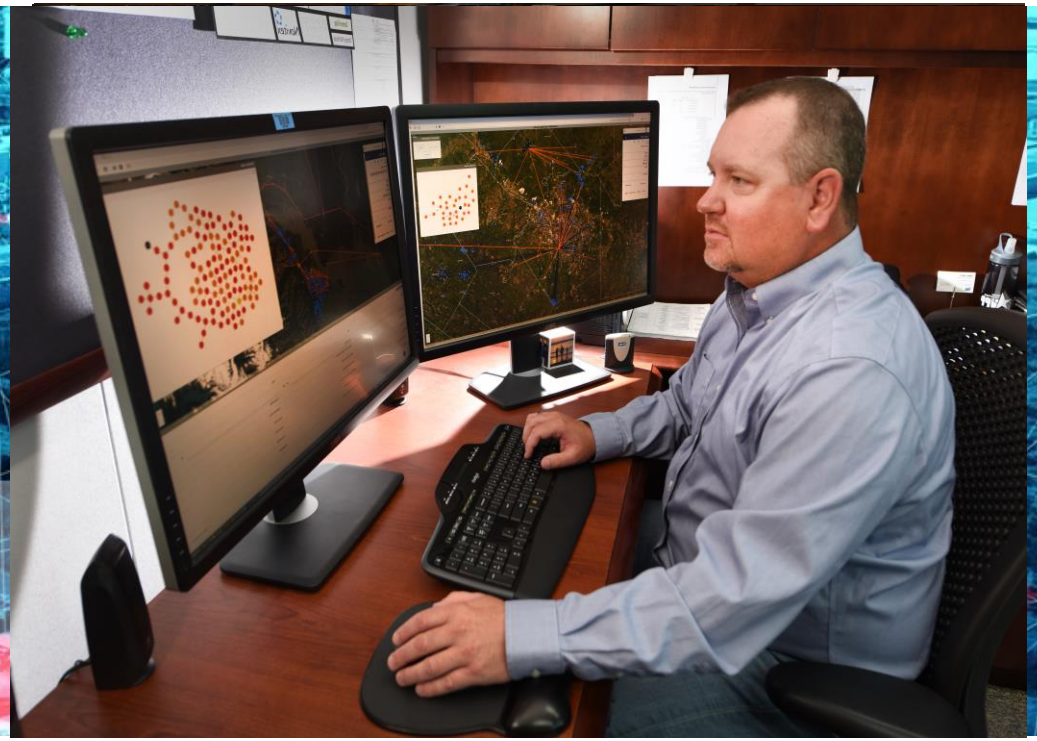
A Glimpse at the Problem



Daily Harold, September 20, 2010

Mission: Critical Infrastructure Protection and Resilience

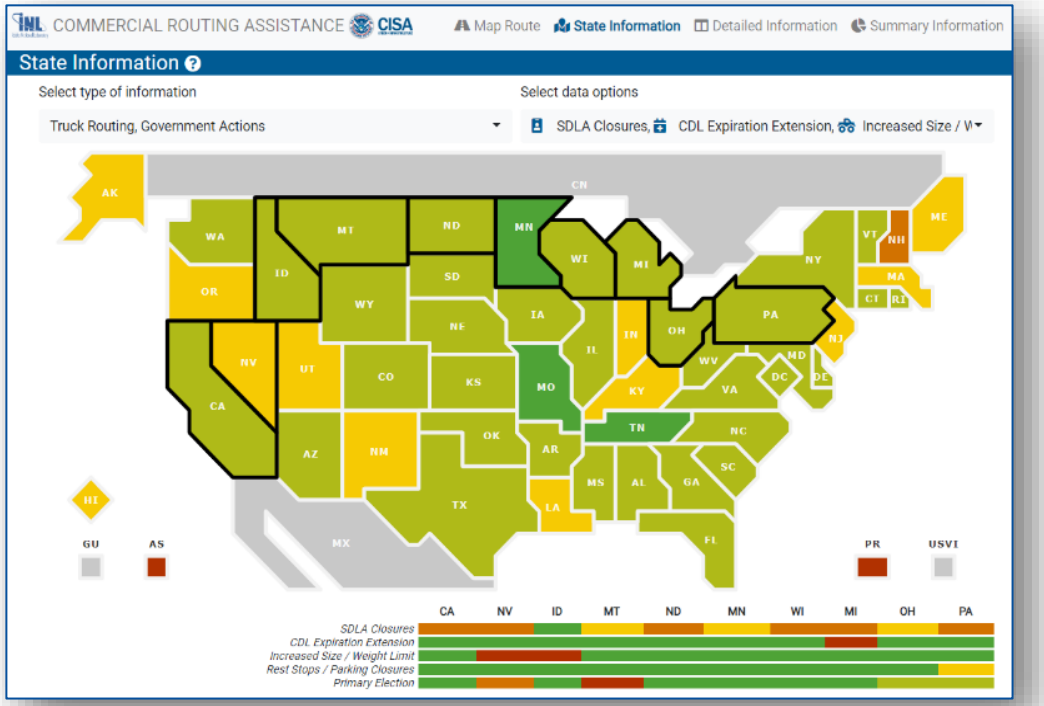




Developing solutions to the nation's complex critical infrastructure challenges.

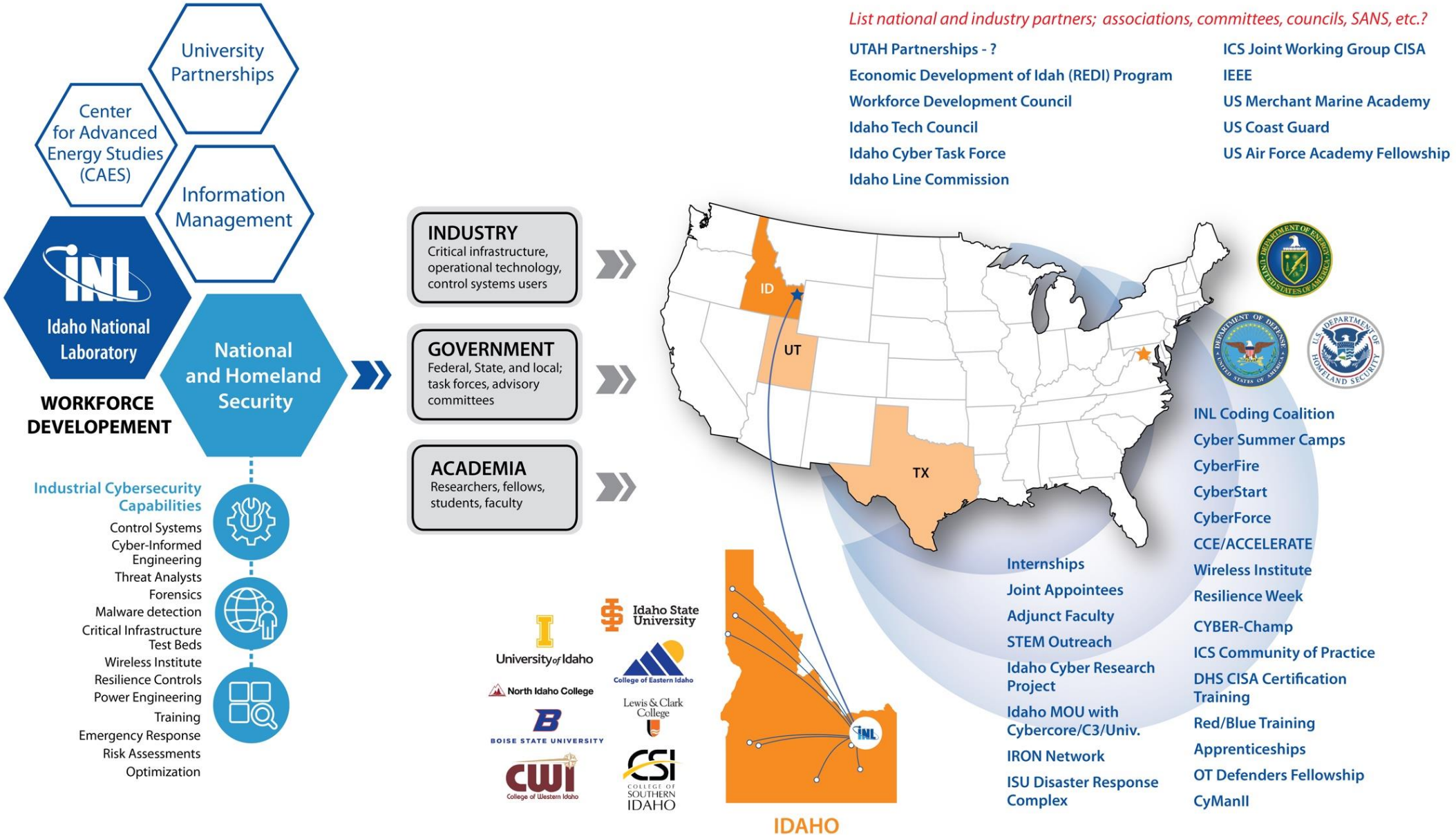
Commercial Routing Assistance (CRA) Tool

INL designed, developed, and deployed a capability for truckers and other commercial drivers in the U.S. to understand restrictions that they might encounter as they travel across the country

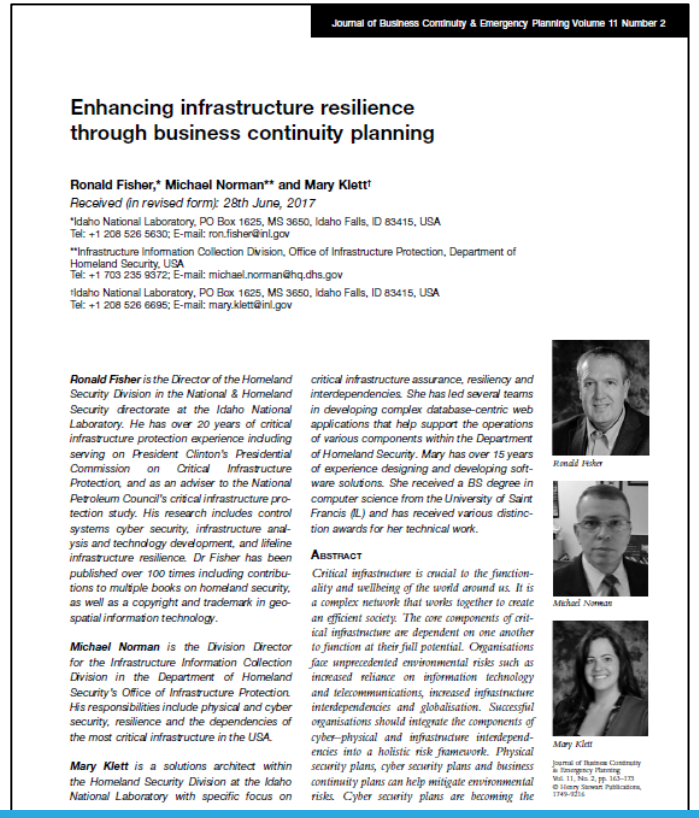


- **Collaboration:**
  - Department of Homeland Security (DHS) Cybersecurity and Infrastructure Security Agency (CISA) (National Mission)
  - All Hazards Consortium (Data)
  - INL (Technical Solution)
- **Recognition:**
  - DHS and INL including Lab Director's Award
  - Submitted for R&D 100 Award

INL and Idaho Making A National ICS Workforce Impact



Enhancing Resilience through Business Continuity Planning



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Enhancing infrastructure resilience through business continuity planning

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Ronald Fisher *is the Director of the Homeland Security Division in the National & Homeland Security directorate at the Idaho National Laboratory. He has over 20 years of critical infrastructure protection experience including serving on President Clinton's Presidential Commission on Critical Infrastructure Protection, and as an adviser to the National Petroleum Council's critical infrastructure protection study. His research includes control systems cyber security, infrastructure analysis and technology development, and lifeline infrastructure resilience. Dr Fisher has been published over 100 times including contributions to multiple books on homeland security, as well as a copyright and trademark in geospatial information technology.*

Michael Norman *is the Division Director for the Infrastructure Information Collection Division in the Department of Homeland Security's Office of Infrastructure Protection. His responsibilities include physical and cyber security, resilience and the dependencies of the most critical infrastructure in the USA.*

Mary Klett *is a solutions architect within the Homeland Security Division at the Idaho National Laboratory with specific focus on critical infrastructure assurance, resiliency and interdependencies. She has led several teams in developing complex database-centric web applications that help support the operations of various components within the Department of Homeland Security. Mary has over 15 years of experience designing and developing software solutions. She received a BS degree in computer science from the University of Saint Francis (IL) and has received various distinction awards for her technical work.*

Abstract

Critical infrastructure is crucial to the functionality and wellbeing of the world around us. It is a complex network that works together to create an efficient society. The core components of critical infrastructure are dependent on one another to function at their full potential. Organisations face unprecedented environmental risks such as increased reliance on information technology and telecommunications, increased infrastructure interdependencies and globalisation. Successful organisations should integrate the components of cyber–physical and infrastructure interdependencies into a holistic risk framework. Physical security plans, cyber security plans and business continuity plans can help mitigate environmental risks. Cyber security plans are becoming the

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Michael Norman

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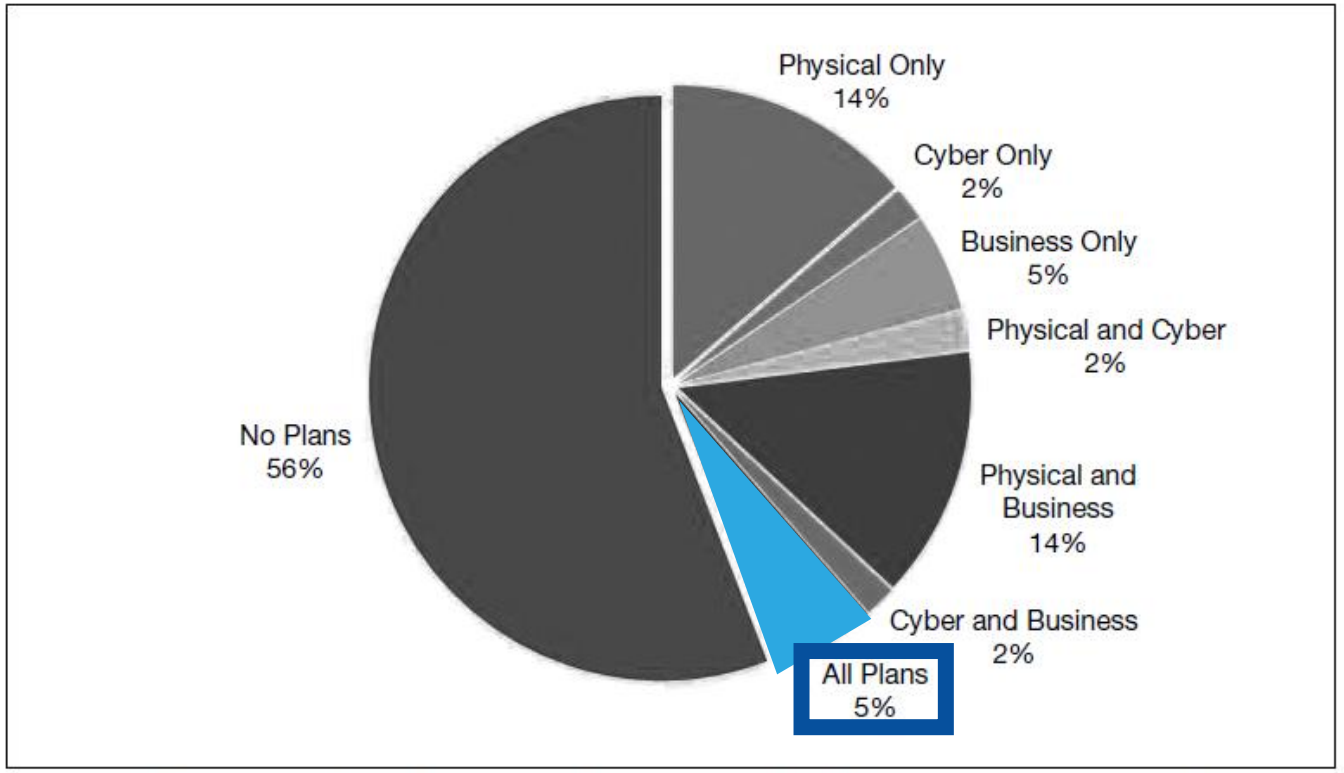

Figure 4 Aggregated physical security, cyber security and business continuity plans results

"Only 5 per cent of critical infrastructure facilities reported having all three plans — and training on and exercising them annually."

(Fisher, Norman, Klett, 2017, p. 170)

Idaho National Laboratory