CIRI | CRITICAL INFRASTRUCTURE RESILIENCE INSTITUTE

A DEPARTMENT OF HOMELAND SECURITY CENTER OF EXCELLENCE

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Welcome and CIRI Update

CIRI Symposium on Resilience of Critical Infrastructures
10 April 2019

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

The Team:

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David Nicol, PhD
Director

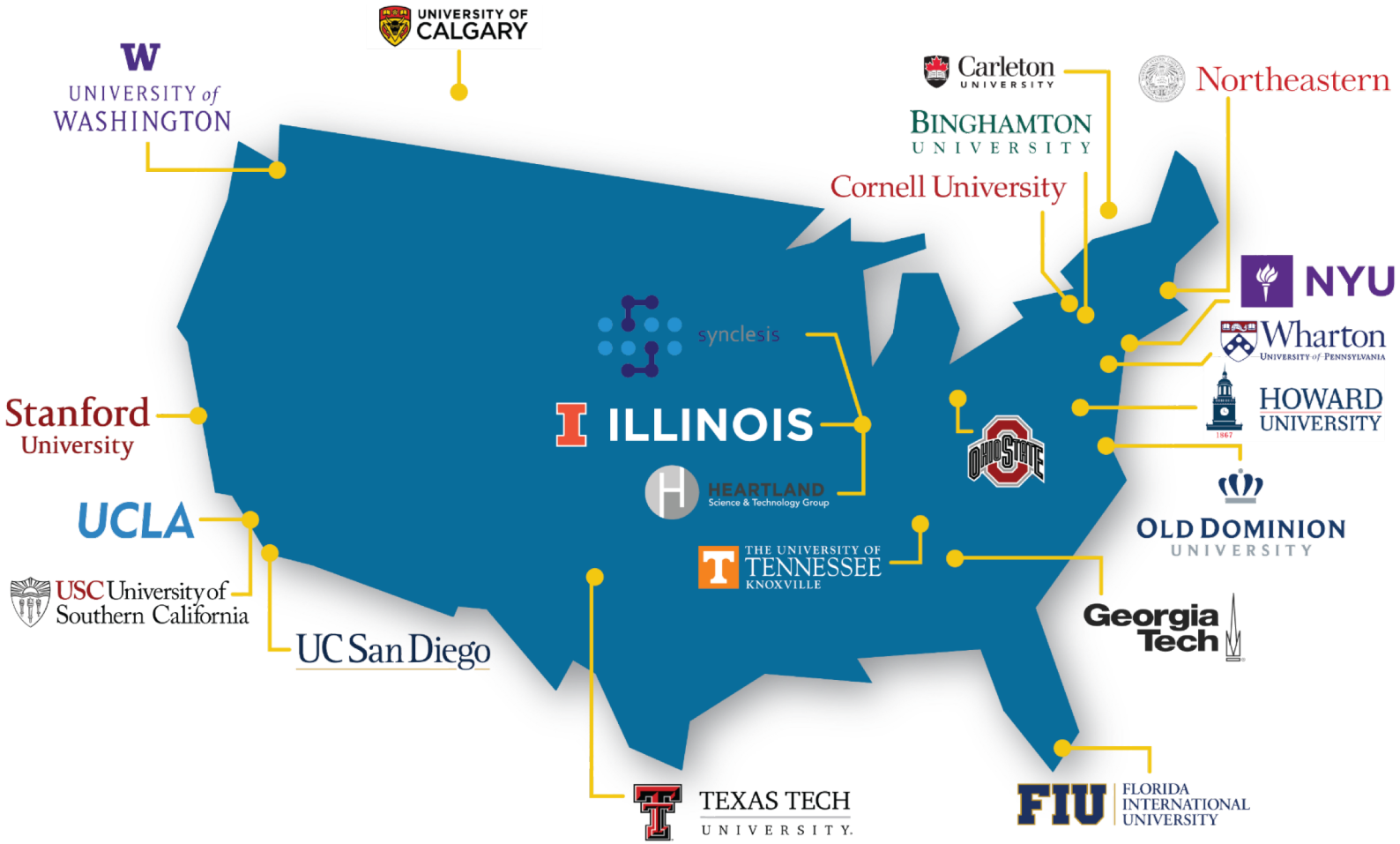
Randall Sandone
Executive Director

Andrea Whitesell
Senior Research Program Manager

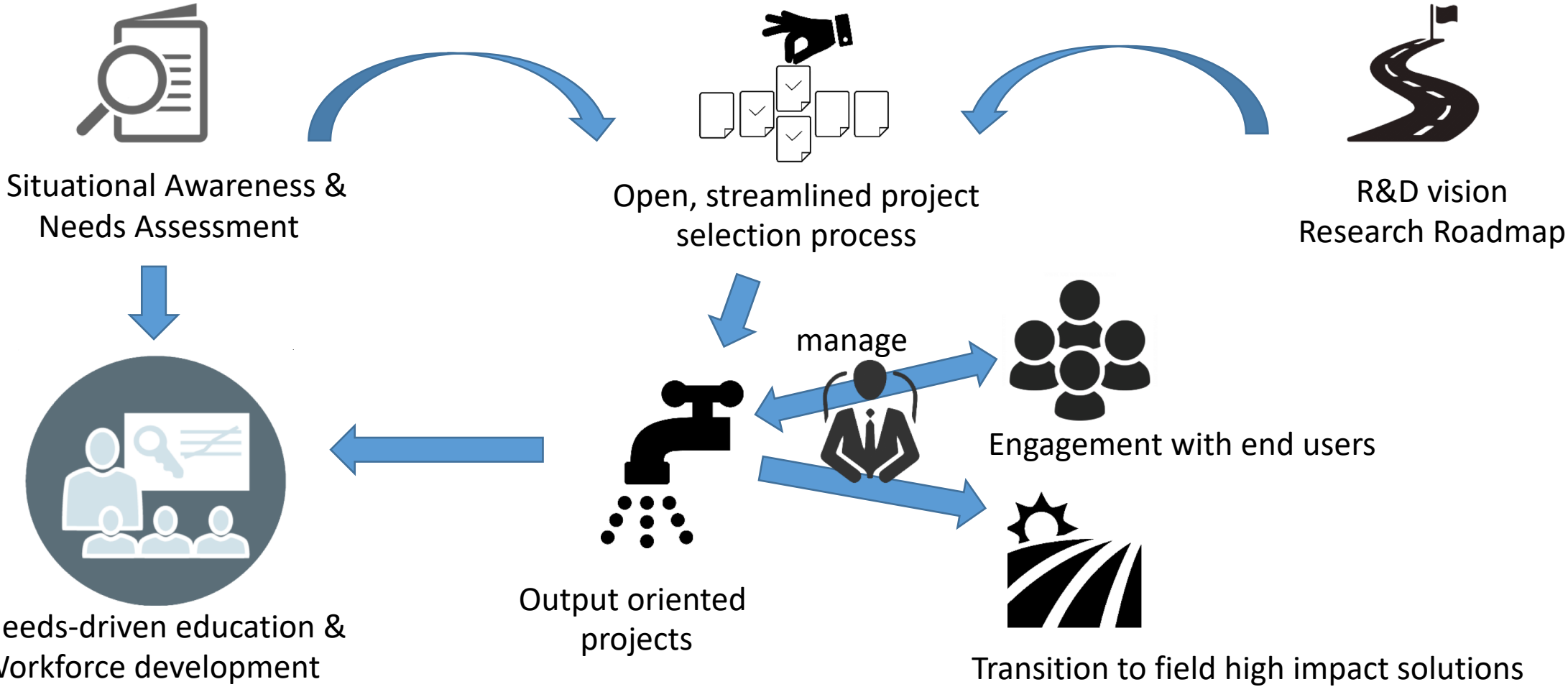
Jose A. Medina Cruz
Senior Research Program Manager

Elaina Buhs
Research Program Manager

Kim Gudeman
Communications Director


UNIVERSITY OF CALGARY
UNIVERSITY of WASHINGTON
Carleton UNIVERSITY
Northeastern
BINGHAMTON UNIVERSITY
Cornell University
NYU
Wharton University of Pennsylvania
synclesis
ILLINOIS
HOWARD UNIVERSITY
Stanford University
HEARTLAND Science & Technology Group
OHIO STATE
OLD DOMINION UNIVERSITY
UCLA
THE UNIVERSITY OF TENNESSEE KNOXVILLE
USC University of Southern California
Georgia Tech
UC San Diego
TEXAS TECH UNIVERSITY
FIU FLORIDA INTERNATIONAL UNIVERSITY

Components of CIRI Approach:



Initial Research Projects:

- Disaster & Casualty Insurance, Wharton
- Cyber Insurance, UIUC
- Business/Economic Resilience, USC
- Cybersecurity Assurance for CI, Stanford
- Resilience Governance, NEU
- Regulatory Options, Stanford/Cornell
- Climate Change and Flooding (2), Washington
- Manufacturing Digital Thread, UIUC
- Resiliency in Critical Power and IC Infrastructure*, Texas Tech

* Education & Workforce Development

First RFP Cycle:

- Logical/Physical Internet Topologies, UCSD
- Infrastructure Interdependencies and Emergency Mgmt, GaTech
- LTE Infrastructure Fuzzing Testbed, Binghamton
- Dynamic Resiliency Modeling for Interdependent CI, NYU
- Computational Methods to Enhance HADR Efforts, UIUC
- Maritime Port Disruptions, UIUC

FY18 RFP Cycle:

- Supply Chain Risk in IoT, NYU
- EMP Risk Assessment & Mitigation, Synclesis, Inc.
- Hybrid Quantum-Classical Reinforcement Learning, UT, Univ. of Calgary
- Reliable Extraction of Emergency Response Networks, UIUC
- Leveraging AI for Disaster Response, USC

Supplemental and BOA Projects:

Supplemental:

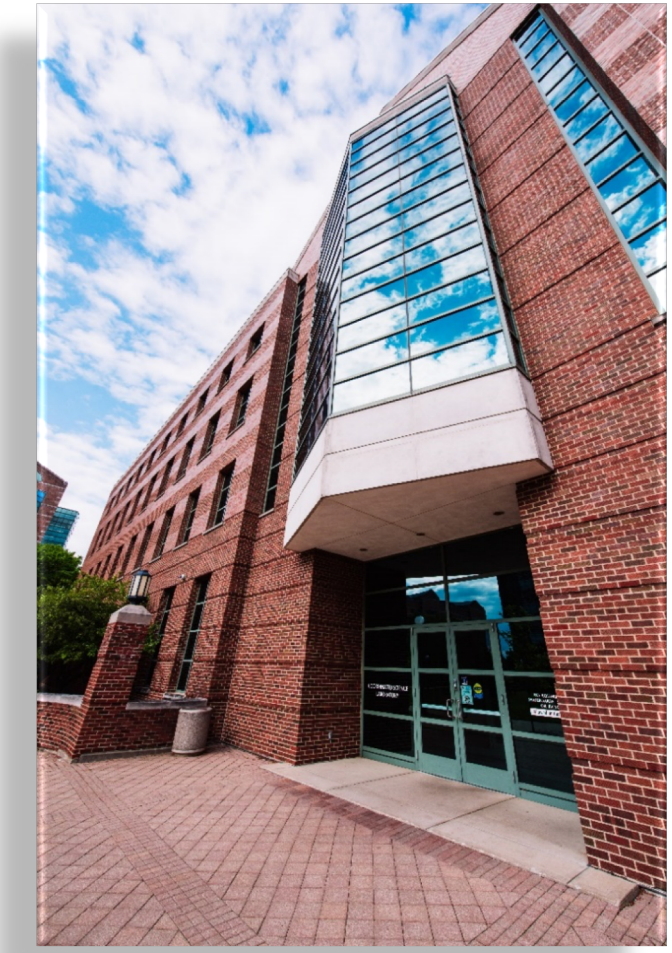
- Manufacturing Cybersecurity
- Artificial Intelligence & Quantum Information Workshop

BOA:

- Cyber Risk Ethics Decision Support Tool for IMPACT
- Pre-Positioned Threats in Mobile Devices
- FEMA Region X Power Grid Risk Profile

Summary Stats:

- Research projects to date: 20
- Projects concluded: 10
- Projects ongoing: 11
- Outputs:
  - Academic Reports : 251
  - Tech Transition Products: 6
  - Patent filings: 3
  - Summer Research Teams: 2 + 2*
  - Student Interns: 8



* coming this summer

Key Challenges Ahead:

- Improve cybersecurity fluency, preparedness, and workforce nationwide
- Extend maritime resilience capability both vertically & horizontally
- Address resilience at the nexus of Government mission and commercial critical infrastructure
- “Mind the gaps!”…More focus on CI cyber-physical interdependencies
- Develop data-centric methods for disaster response & recovery
- Extend mobile security to evolving technologies, i.e., 5G and IoT

Key Near-term Objectives:

- Launch new projects from FY18 RFP Cycle
- Transition to “Rolling RFP” and “Rapid Response Research” model
- Expand BOA portfolio and engagement with components
- Establish extended tech transition services capability
- Launch and nurture nationwide cybersecurity workforce development program
- Broaden impact to other Federal and private sector markets