Roadmap to Secure Control Systems in the Energy Sector

Energy Sector Control Systems Working Group

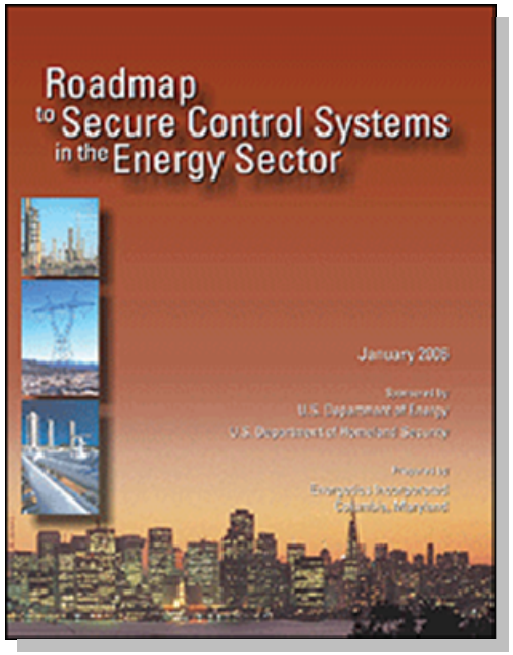
ieRoadmap Workshop

Chicago, IL ♦ May 28-29, 2008

Hank Kenchington

U.S. Department of Energy
Office of Electricity Delivery and Energy Reliability

Roadmap – Framework for Public-Private Collaboration



- Published in January 2006
- *Energy Sector's* synthesis of critical control system security challenges, R&D needs, and implementation milestones
- Provides strategic framework to
  - align activities to sector needs
  - coordinate public and private programs
  - stimulate investments in control systems security

Roadmap Vision

In 10 years, control systems for critical applications will be designed, installed, operated, and maintained to ***survive*** an intentional cyber assault with no loss of critical function.

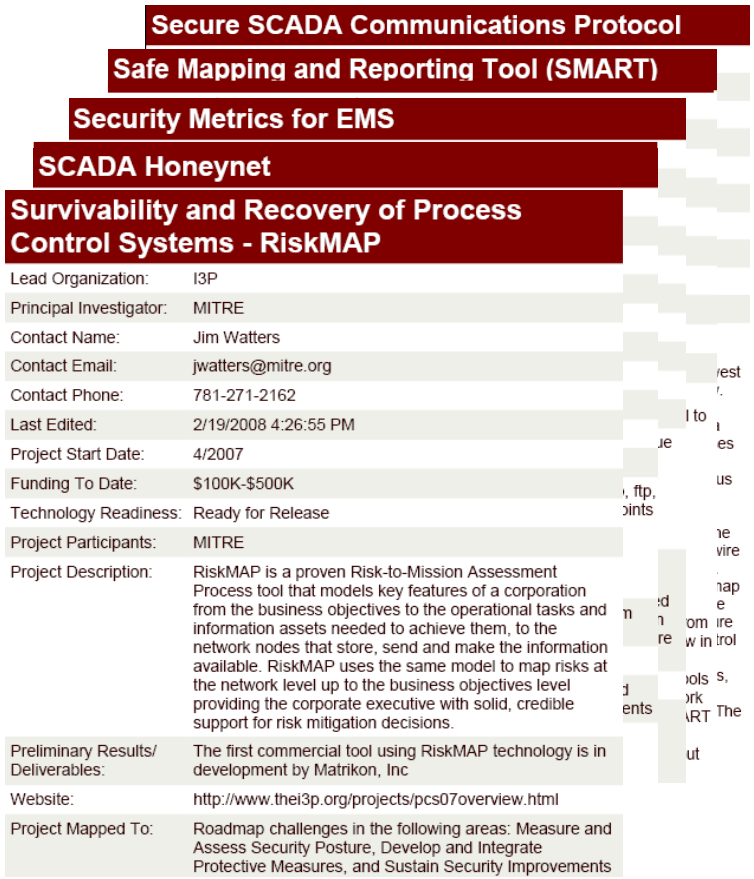
Key Strategies and Selected Milestones

Measure and Assess Security Posture	Develop and Integrate Protective Measures	Detect Intrusion & Implement Response Strategies	Sustain Security Improvements
Milestones	Milestones	Milestones	Milestones
50% of asset owners & operators performing self-assessments of their control systems using consistent criteria (2008) Fully automated security state and common response of control system networks (2015)	Secure connectivity between business systems and control systems within corporate network (2009) Secure control system architectures produced with built-in, end-to-end security (2015)	Cyber incident response is part of emergency operating plans at 30% of control systems (2008) Self-configuring control system network architectures are in production (2015)	Compelling, evidence-based business case to increase private investment in control system security (2007) Cyber security awareness, outreach, and education programs integrated into energy sector operations (2015)

ieRoadmap – "weapon of mass collaboration"[1]

ie Roadmap
interactive energy Roadmap to secure control systems

Web-based Tool Tracks R&D Projects

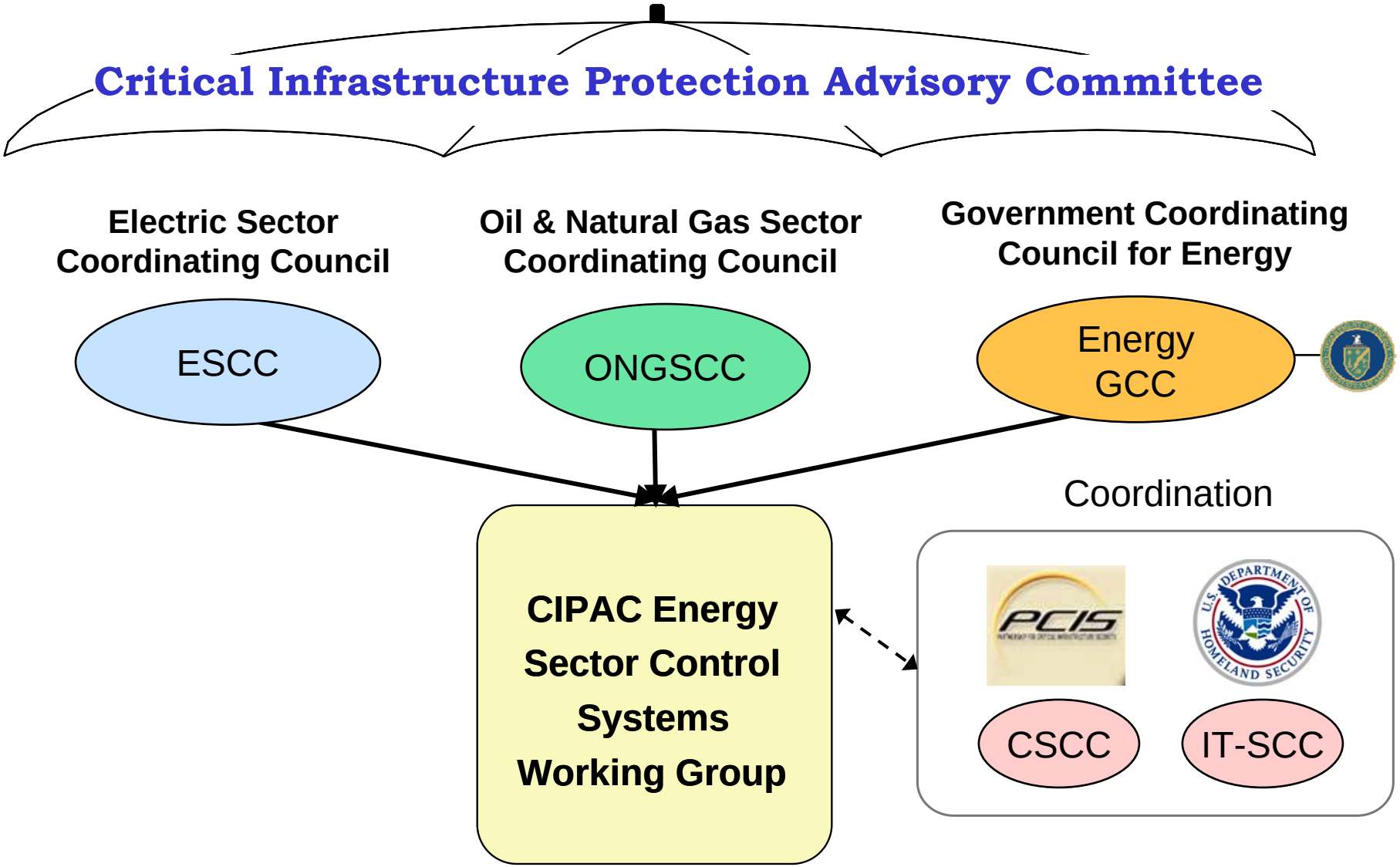


- Over 90 control systems R&D projects mapped to the Roadmap by 18 organizations
- Helps identify active areas and exposes gaps in R&D
- Helps R&D partners collaborate and leverage resources
- Informs owners and operators of emerging technologies

www.pcsforum.org/roadmap

[1]"Wikinomics, How Mass Collaboration Changes Everything", Tapscott and Williams

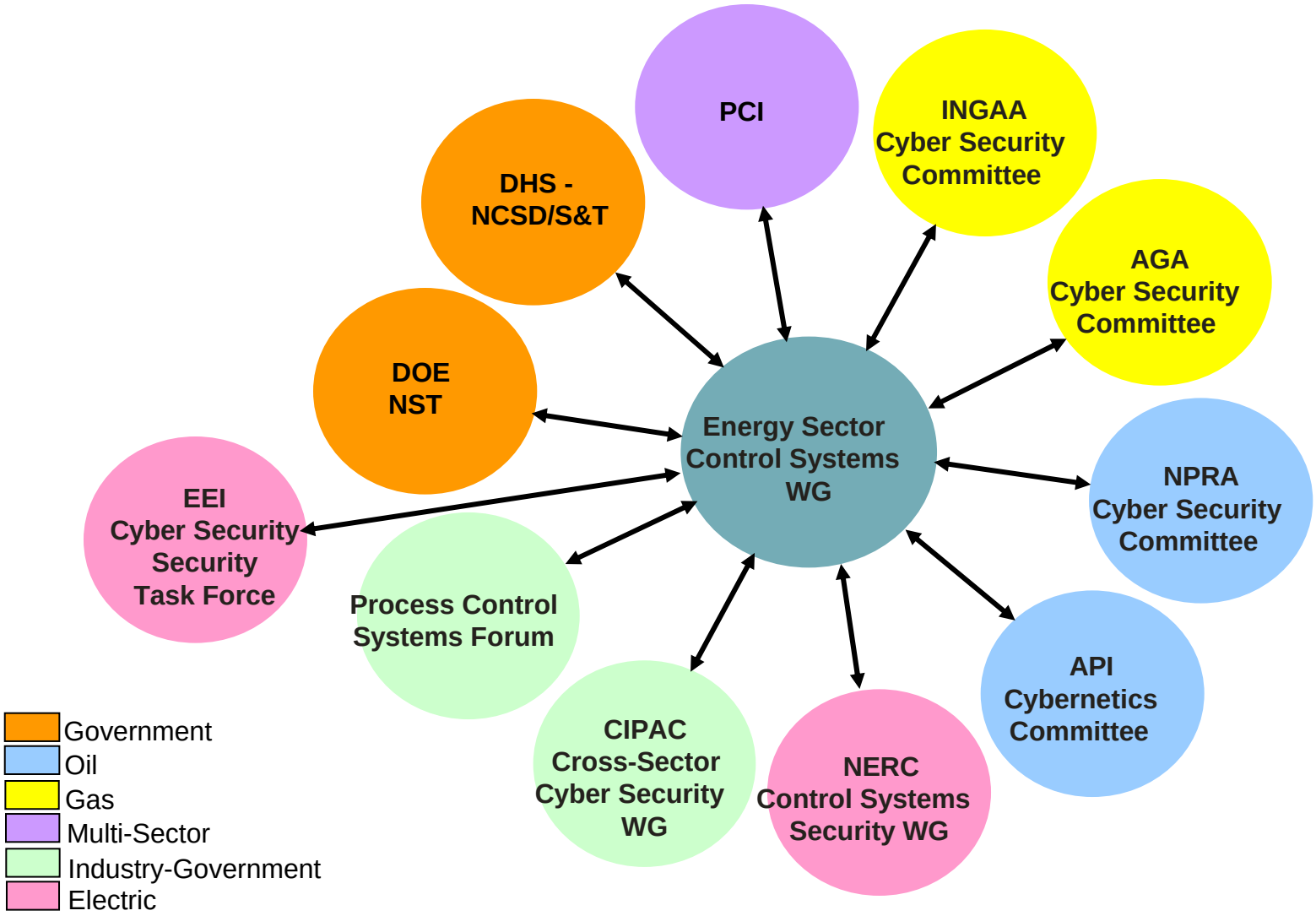
Energy Roadmap Working Group Structure



Energy Working Group Members

- Dave Batz, Alliant Energy (NERC, AGA)
- Stuart Brindley, IESO Ontario (NERC, PCIS, CSCSWG)
- Page Clark, El Paso Corporation (INGAA)
- Steve Elwart, Ergon Refining Company (NPRA,I3P,CI/KR RAMP)
- Eric Fletcher, NiSource
- Tom Flowers, CenterPoint Energy, Inc. (NERC)
- Ed Goff, Progressive Energy (NERC, EEI)
- Morgan Henrie, Alyeska Pipeline (API)
- Hank Kenchington, DOE (PCSF, CSCSWG)
- Doug Maughan, DHS S&T
- Seán McGurk, DHS NCSD (PCSF, CSCSWG)
- Dave Norton, Entergy Corporation (NERC, PCSF,IEEI, InfraGard)
- Dave Scheulen, BP (API)

Energy Working Group – leveraging connections



Working Group Objectives

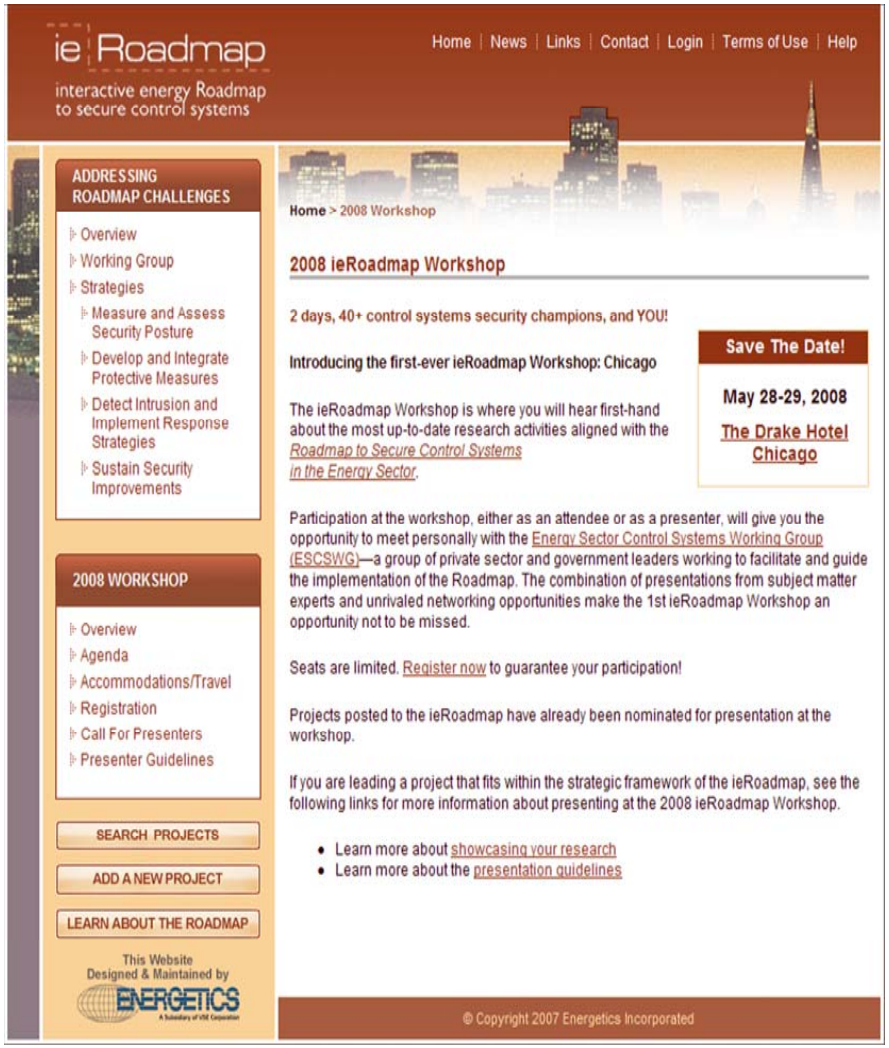
1. Help identify and implement practical, near-term activities that are high priority for the industry

2. Promote the value to the industry of achieving the goals of the Roadmap

3. Recommend critical areas for public and private investment

4. Measure progress toward Roadmap goals and milestones

First-ever ieRoadmap Workshop
May 28-29, Chicago, IL



- Opportunity for ieRoadmap “supporters” to talk directly with key industry decision makers
- Feedback on how each project aligns with Roadmap goals and potential ways to improve the relevance
- Learn firsthand about the most up-to-date energy control system security activities
- Raise awareness, foster an exchange of technical information and ideas, and identify collaborative opportunities
- Open to all energy sector stakeholders

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www.oe.energy.gov/controlsecurity.htm

NSTB

Enhancing control systems security in the energy sector

Many control system activities, not enough coordination