TCIPG

ANNUAL INDUSTRY WORKSHOP
NOVEMBER 6-7, 2013

CLUSTER: TRUSTWORTHY TECHNOLOGIES FOR WIDE-AREA MONITORING AND CONTROL

NOVEMBER 2013

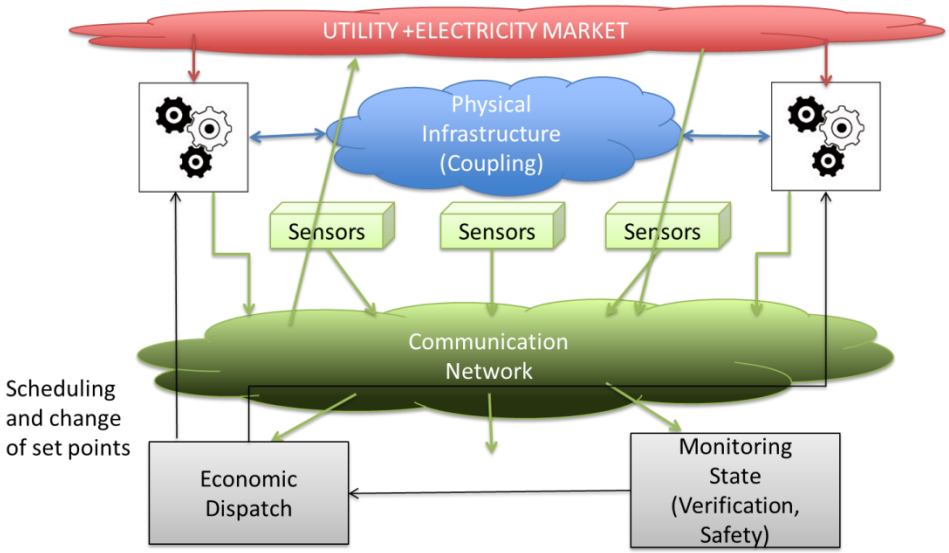
CARL HAUSER

WASHINGTON STATE UNIVERSITY

FUNDING SUPPORT PROVIDED BY DOE-OE AND DHS S&T

DEFINING CLUSTER THEMES

- Applications of wide-area data, primarily in the transmission system
- Cyber infrastructure architecture to support those applications
- Securing data in transit
- Security and resilience of subsystems that collect, communicate and process data



SMART GRID CHALLENGES FOR THE CLUSTER

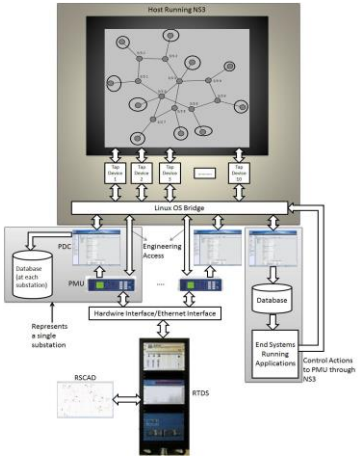
- Physical consequences of cyber events in existing and evolving applications
- Scale
  - Number of devices
  - Number of business entities
  - Distance/area/fraction of grid encompassed
  - Large attack surface
- Real-time
  - Someday, wide-area controls expected to stabilize the grid after cyber or physical contingencies
- Achieving resilience through redundancy
- Analyzing *risks*, not just vulnerabilities

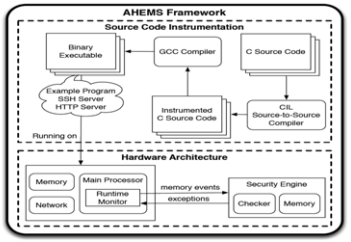
EXPERTISE AND COMPETENCE OF THE RESEARCH TEAM

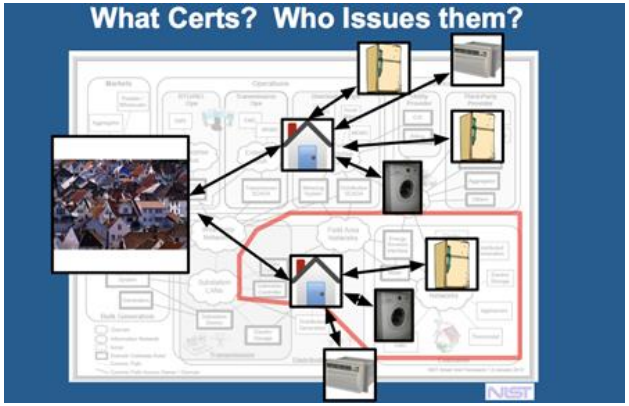
- Power systems: software, sensing, operations, training
- Distributed computer systems and middleware
- Security systems engineering
- Computer architecture and device engineering

CLUSTER ACTIVITIES

1. GridStat MW Framework: Application Requirements
2. PMU Enhanced Power System Operations
3. Cryptographic Scalability in the Smart Grid
4. GridStat MW Framework: Management Security and Trust
5. GridStat MW Framework: Systematic Adaptation
6. State-aware Decentralized Database Systems for Smart Grid
7. Functional Security Enhancements for Existing SCADA Systems
8. Real-time Streaming Data Processing Engine for Embedded Systems
9. Trustworthy Time Synchronous Measurement Systems







DISCUSSION TOPICS & QUESTIONS

- Are there fundamental theoretical and technological gaps?
- Or is the need primarily one of economics and policy?
- How should threats (attacker motivations and capabilities) be modeled in a risk-oriented security analysis?
- How can the cluster overall connect better with the needs of the industry?