U.S. Department of Energy

Office of Electricity Delivery and Energy Reliability

Cybersecurity for Energy Delivery Systems

2010 Peer Review

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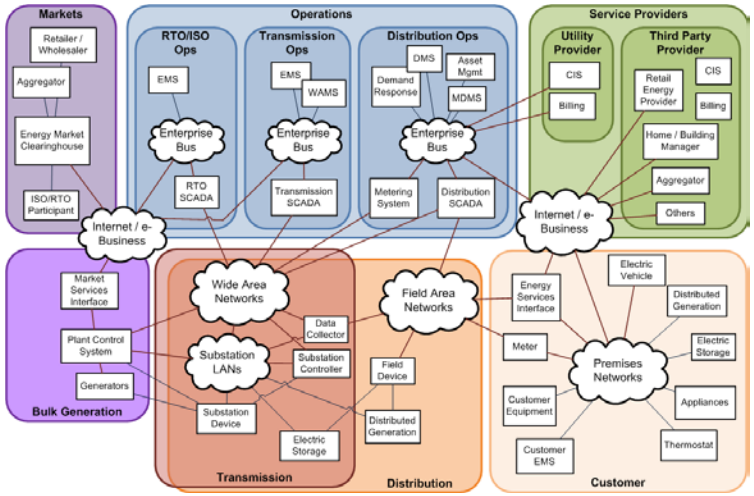
Advanced Security Acceleration Project for the Smart Grid (ASAP SG)

ASAP SG

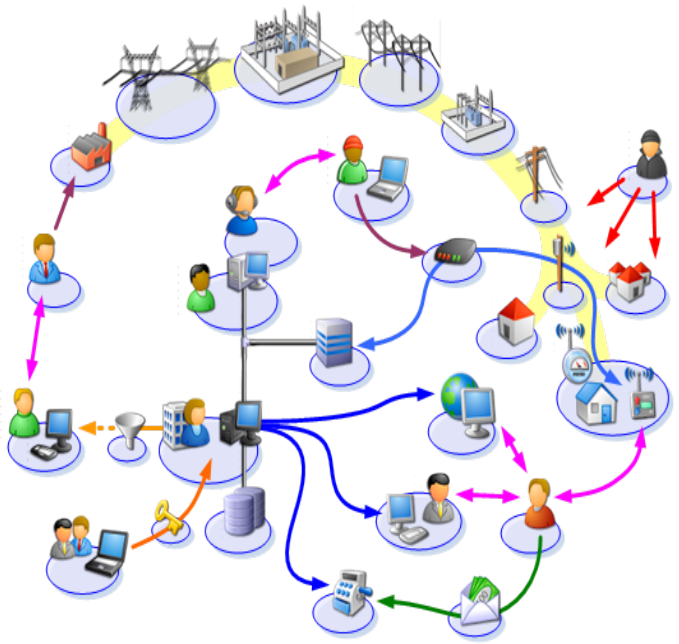
- **Outcomes:** Security profiles that provide guidelines for the secure deployment, design, and operation of smart electrical systems.
- **Roadmap Challenge:** Strengthen industry-government cooperation on issues of cyber-security in the energy sector and helps industry leaders to sharpen their business case for cyber-security investment by providing industry-approved guidelines for securing cyber-assets in a smart electric grid.
- **Major Successes:**
  - Security profile for AMI approved for official release by the Open SG Technical Committee.
  - Security profile for Third Party Data Access under review by the Open SG Technical Committee.



- **Schedule:** June 2009 – May 2011
- **2010 Level of Effort:** $400,000
- **2010 Funds Remaining:** $40,000
- **Performers:** Utilities, EnerNex, Inguardians, SEI, ORNL
- **Partners:** Open SG, industry funders and reviewers

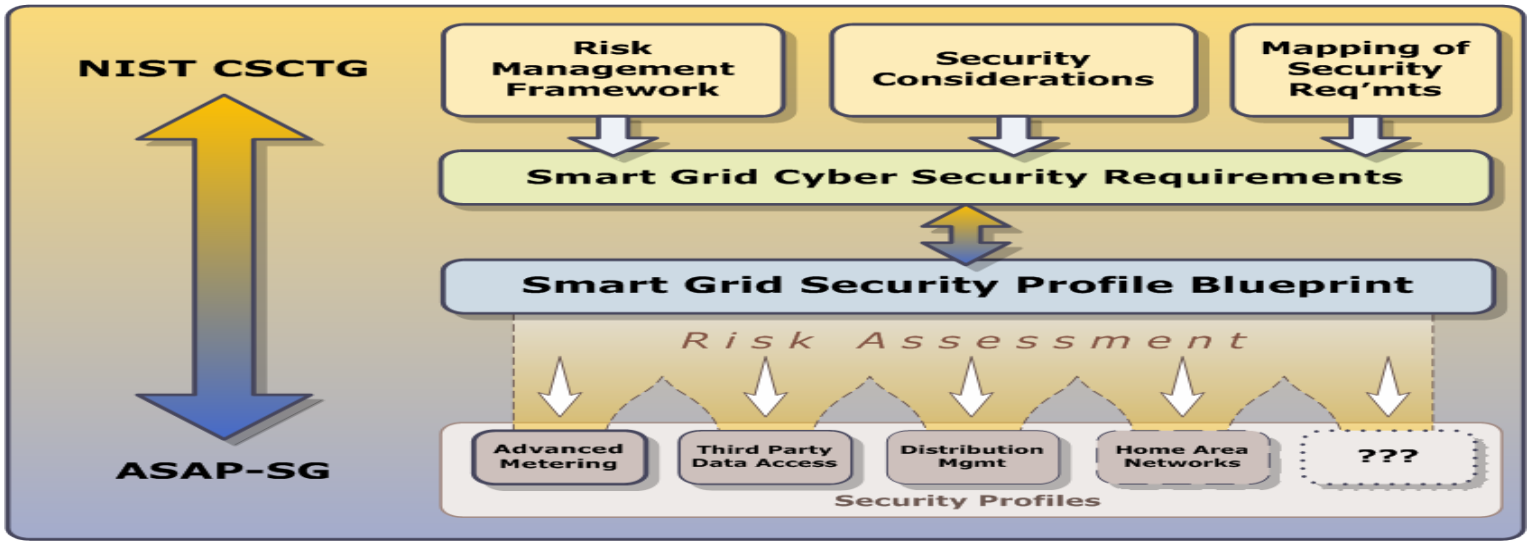
Technical approach

- **Project Description:**
  - Utility-driven, public-private collaborative project to develop system-level security requirements for smart grid technology
- **Needs Addressed:**
  - **Utilities:** specification in RFP
  - **Vendors:** reference in build process
  - **Government:** assurance of infrastructure security
  - **Commissions:** protection of public interests
- **Approach:**
  - Architectural team → produce material
  - Usability Analysis team → assess effectiveness
  - NIST, SG Security → review, approve
- **Deliverables:**
  - Strategy & Guiding Principles white paper
  - Security Profile Blueprint
  - 6 Security Profiles
  - Usability Analysis



Technical feasibility

- **Mission:** detailed requirements and best practices guidance for utilities procuring, implementing, and deploying smart grid technology
  - Technology-specific, but vendor-agnostic
  - Feed and accelerate SDO work (IEC, IEEE, NERC, etc.)
- **Participation**
  - 400+ Subscribers to various Listservs across 8 countries and 4 continents
  - Broad mix of utilities, vendors, government, and academia
  - SG Security Working Group and coordination with NIST



Collaboration: organizations funding this effort

- DOE
  - Matches utility contributions dollar for dollar
- EPRI
  - Funding through Tailored Collaboration (P161e Project)

- North American Utilities
- Funding directly and through EPRI

  P161e/tailored collaboration
- Funding utilities to date include

  American Electric Power; BC Hydro; ConEdison; Consumers Energy; Florida Power & Light; National Grid; Oncor; Southern California Edison

Technology transfer: organizations using the ASAP SG products…

Next Steps

- Security profiles for
  - Advanced Metering Infrastructure — COMPLETE
  - Automated Data Exchange — COMPLETE
  - Distribution Management — UNDERWAY
  - Home Area Networks — PROPOSED
  - Wide Area Situational Awareness (Synchrophasors) — PROPOSED
  - Substation Automation — PROPOSED

Challenges ahead

- Compliance vs. engagement; risk vs. cost
  - "Standard must be auditable."
  - "Security measures must be cost effective."
    - Meeting regulatory requirements is a – maybe the - major concern of utilities
    - $$$s spent to implement a security measure are easily measured
    - $$$s saved by mitigating a security risk are almost impossible to measure
- Major issues raised by this challenge
  - The rate case
    - How much should energy consumers pay for a secure grid?
  - National security
    - How much should the federal government pay for secure grid?
  - Liability
    - How much should the utility pay for a secure grid?
- It is essential to have a secure energy system; how do we share the responsibility?