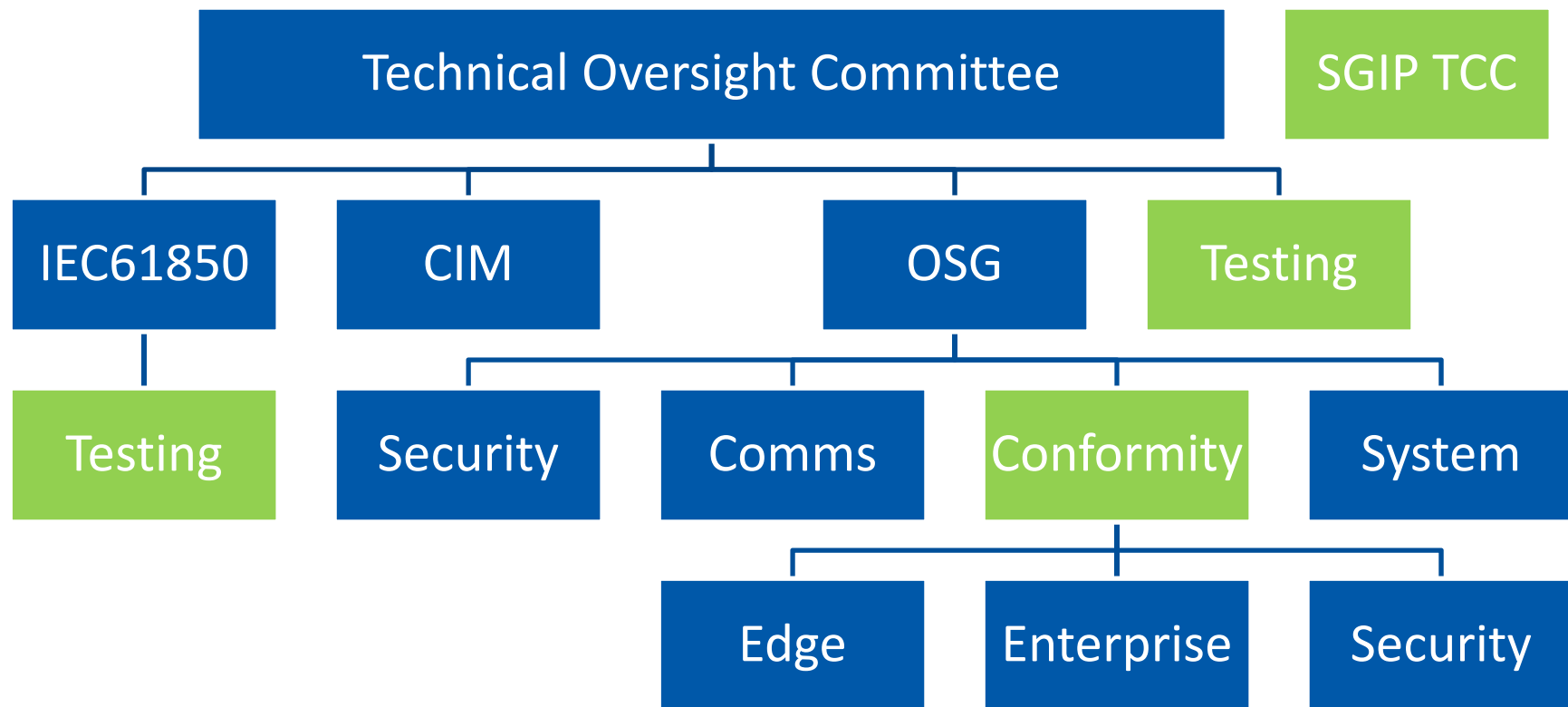# Boot Camp - Conformity

February 27, 2012

Knoxville, Tn, USA

Boot Camp - Conformity

- Overview
  - Org Chart
  - What does this Working Group do?
  - Previous meetings – Knoxville, San Fran, DC, Detroit
  - Guiding principles
  - Terms we use
  - NIST Activities -
  - Our Activities

Bruce Muschlitz, EnerNex

UCAIug Org Chart (simplified)

```
                    Technical Oversight Committee              SGIP TCC

        IEC61850          CIM                    OSG           Testing

        Testing       Security      Comms      Conformity      System

                                              Edge   Enterprise   Security
```

Boot Camp – Conformity
Goals of the working group

- Coordinate Task Forces
  - Edge Conformity
  - Enterprise Conformity
  - Security Conformity
- Provide overall guidance
- Propose/Review task force deliverables

Bruce Muschlitz, EnerNex

Boot Camp – Conformity
Previous Meeting (Knoxville)

- Organized Group

- Introduced 61850-10 as one models

- Stressed conformance != interoperabilty

- Explained abstract vs. detailed tests

- Introduced "virtual" test environments

Bruce Muschlitz, EnerNex

Boot Camp – Conformity
Previous Meeting (San Francisco)

- Continued Group Organization

- Discussed "plug-fest" – won't do this

- Discussed how other do this:
  - ISO Guide 65
  - IEC 17011 and 17025
  - http://www.rabnet.com

- Discussed Product Mark (logo)

- Recognized: 61850 Testing, SGIP TCC

Bruce Muschlitz, EnerNex

Boot Camp – Conformity
Previous Meeting (McLean)

- Organized Security Conformity
- Re-organized by Horizontal teams
- Discussed interaction with SGIP TCC
- Recognized Edge/ENT might work better as (Physical) Device/ (Middleware) Interface

Bruce Muschlitz, EnerNex

Boot Camp – Conformity
Previous Meeting (Detroit)

- Attended only by Task Force chair
- NIST TCC IPRM and CPRM coordination
- Abstract Test Case (ATC) template defined

Bruce Muschlitz, EnerNex

Boot Camp – Conformity
Guiding Principles

- Detailed Tests are not defined by UCAIug
- Testers shall adhere to the defined tests
- Equivalence of testers (no easy testers)
- Tester shall produce "full" test results
- Testers are free to script the tests

Bruce Muschlitz, EnerNex

Boot Camp – Conformity
Common Terms

- Conformance – meets spec?

- Interop – plays well with others?

- Positive tests – does it work right?

- Negative tests – recovers gracefully?

- Black Box tests – no inside knowledge

- White Box tests – view algorithms

Bruce Muschlitz, EnerNex

Boot Camp – Conformity
NIST Priority Action Plans

#	Priority Action Plan	#	Priority Action Plan
0	Meter Upgradeability Standard	1	Role of IP in the Smart Grid
2	Wireless Communications for the Smart Grid	3	Common Price Communication Model
4	Common Scheduling Mechanism	5	Standard Meter Data Profiles
6	Common Semantic Model for Meter Data Tables	7	Electric Storage Interconnection Guidelines
8	CIM for Distribution Grid Management	9	Standard DR and DER Signals
10	Standard Energy Usage Information	11	Common Object Models for Electric Transportation
12	IEC 61850 Objects/DNP3 Mapping	13	Time Synchronization, IEC 61850 Objects/IEEE C37.118 Harmonization
14	Transmission and Distribution Power Systems Model Mapping	15	Harmonize Power Line Carrier Standards for Appliance Communications in the Home
16	PAP16: Wind Plant Communications		

Phil Beecher, PG&E

Conformity Activities

- Common Glossary

- Product Mark presentation

- Templates – test cases, use cases

- TISSUEs (Technical Issues)

- "Conformity Requirements Document"

Boot Camp – Conformity Background Material

- http://osgug.ucaiug.org

- http://www.ucaiug.org

- http://www.rabnete.com

- http://www.iec.ch/helpline/sitetree/conformity

- http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/WebHome

Bruce Muschlitz, EnerNex

Boot Camp – Conformity Questions?

Phil Beecher, PG&E

Edge / Enterprise Conformity

Boot Camp

Edge Conformity

Boot Camp

Enterprise Conformity

Boot Camp

Security Conformity

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Edge / Enterprise Conformity

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Edge / Enterprise Conformity Activity

- Certification Process Reference Manual
- Test Methodology and Abstract Test Cases

What is the CPRM?

- Overview of device and system requirements
- Identifies best practice for product (device and system) protocol design
- Describes the process used to define and maintain the quality of a Certification Program

CPRM Guiding Principles

- Open standards based
- Clean, layered architecture
- Robust certification program
- Focussed on application programming interface, not specific applications
- Layered conformance testing
- Performance testing considerations
- Economically viable

CPRM
Organisational Requirements

- Identifies organisational structure to support a robust certification and interoperability testing program for products
  - Addresses "devices" (incorporating hardware) and "system applications" (software only)
  - Considerations:
    - Program management
    - Test laboratory qualification
    - Logo management
    - Change control
    - Dispute resolution

Conformity Boot Camp

Conformity Boot Camp
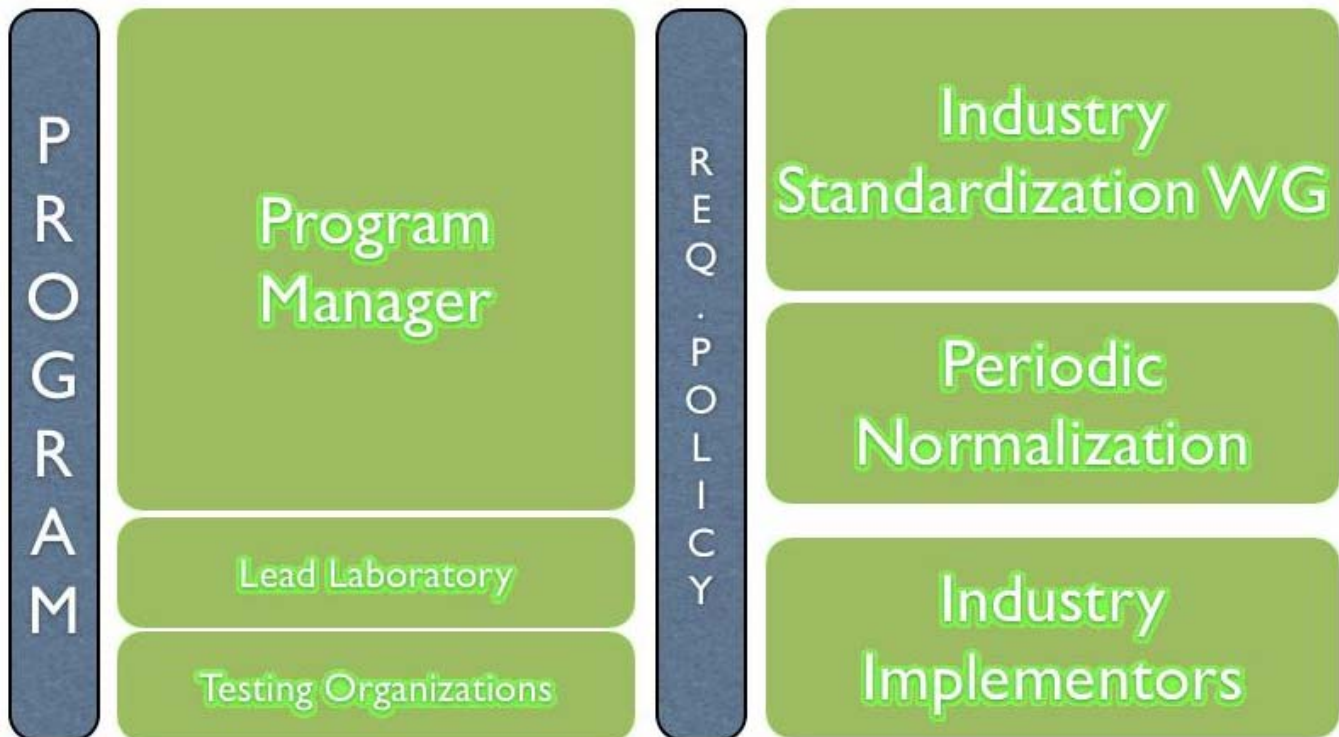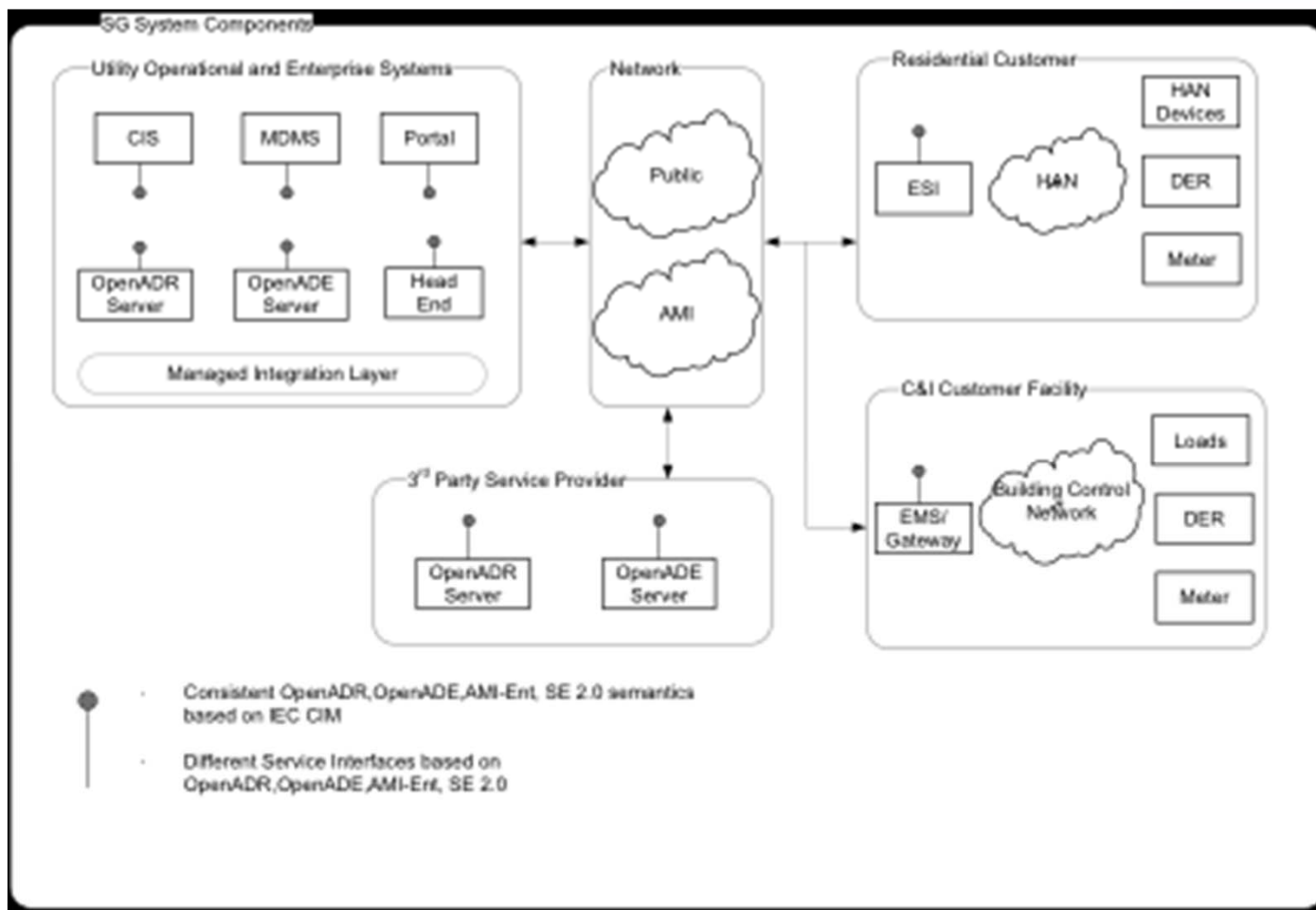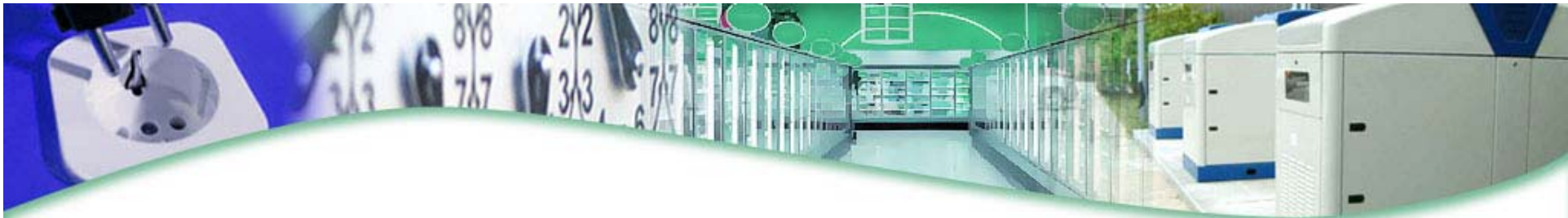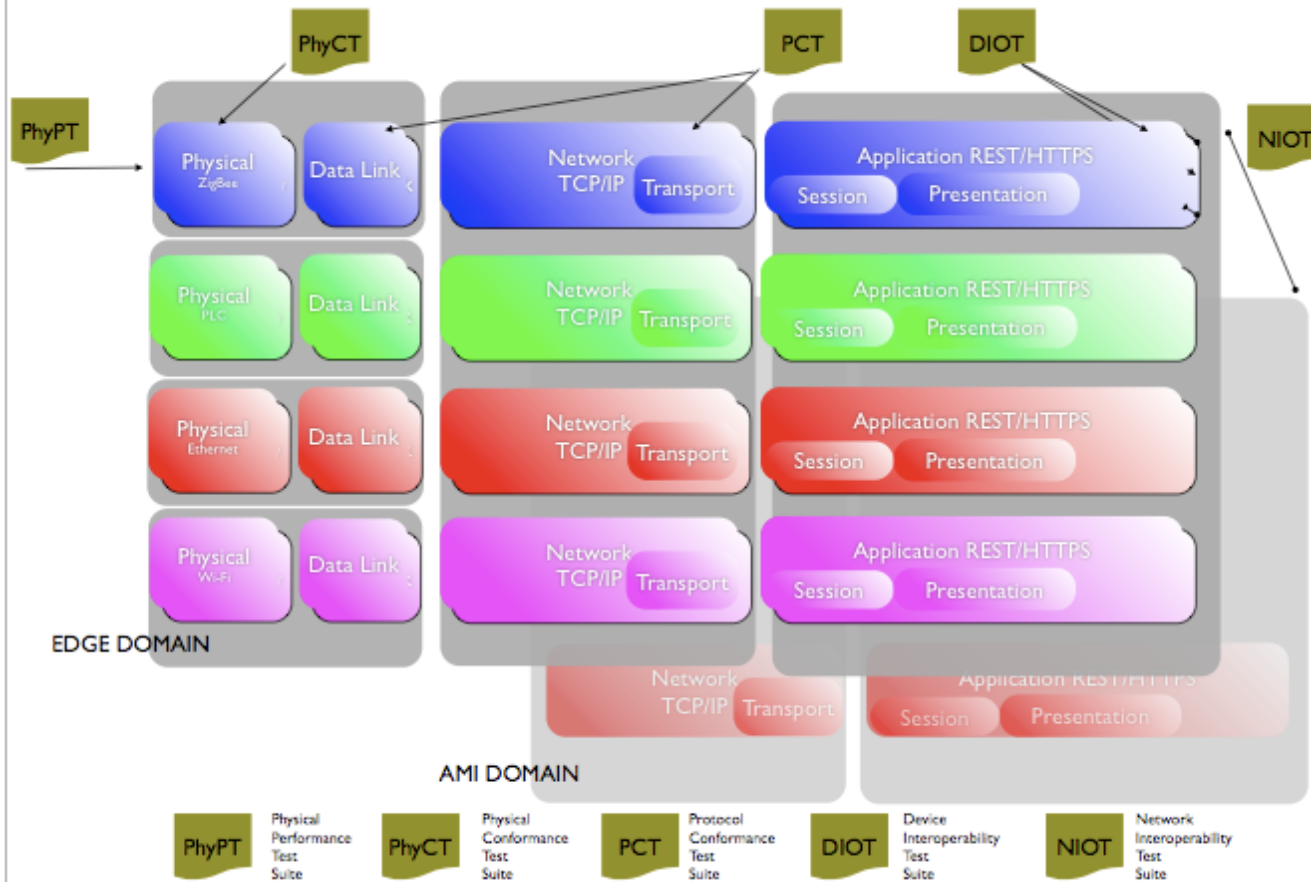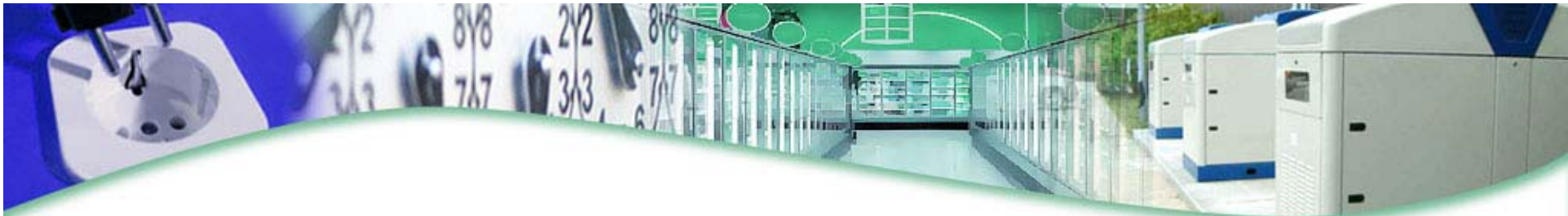
Suites

PhyCT- Physical Conformance Testing

PCT-Protocol Conformance Testing

DIOT-Device Interoperability Testing

NIOT-Network InteroperabilityTesting

PhyPT-Physical Device Performance Testing

Abstract Test Documents

- Contents / methods based on
  - X291 OSI Conformance Testing Methodology and Framework for Protocol Recommendations for ITU-T Applications – Abstract Test Suite Specification
- Each document summarises requirements for:
  - Test Methodology or Methodologies
  - PICS proformas
  - Test suites
  - Abstract Test Cases
  - Other information?

Current Status

- CPRM
  - at rev9, on hold pending SGTCC IPRM
  - Next step is to coordinate CPRM with IPRM to ensure consistency

- Abstract Test Case Documents:
  - OpenHAN started
  - Need to finalise content and scope.
  - Then start OpenADE and OpenADR

Security Conformity

Boot Camp

Enterprise Conformity

Boot Camp

Agenda
Thursday, Nov 4th

- Overview Security Conformance & Charter

- Review Work Plan

- Align with Conformity WG
  - Use Cases OpenHAN, OpenADE, OpenADR
  - Identify Security Functions/Services

- Identify Requirements and Standards

- Discuss Development of Abstract Security Test Cases

- Support TCC and CSWG Testing & Certification Subgroup

Review Security Conformity TF Charter

- **Establish security conformance requirements for laboratories desiring to certify smart grid components and systems and;**
- **Establish clear scoping boundaries, perform research to identify existing models, and propose a high-level philosophy of approach.**

- **Chair: Bobby Brown, EnerNex**
- **Vice-Chair: *needed***

Conformity Domains

- Work closely with Conformity Groups
  - OpenHAN
  - OpenADR
  - OpenADE

Requirements & Standards

- OpenSG – OpenHAN, OpenADE, OpenADR

- OpenSG – SG Security: Security Profiles

- Testing & Certification Committee
  List of Standards-
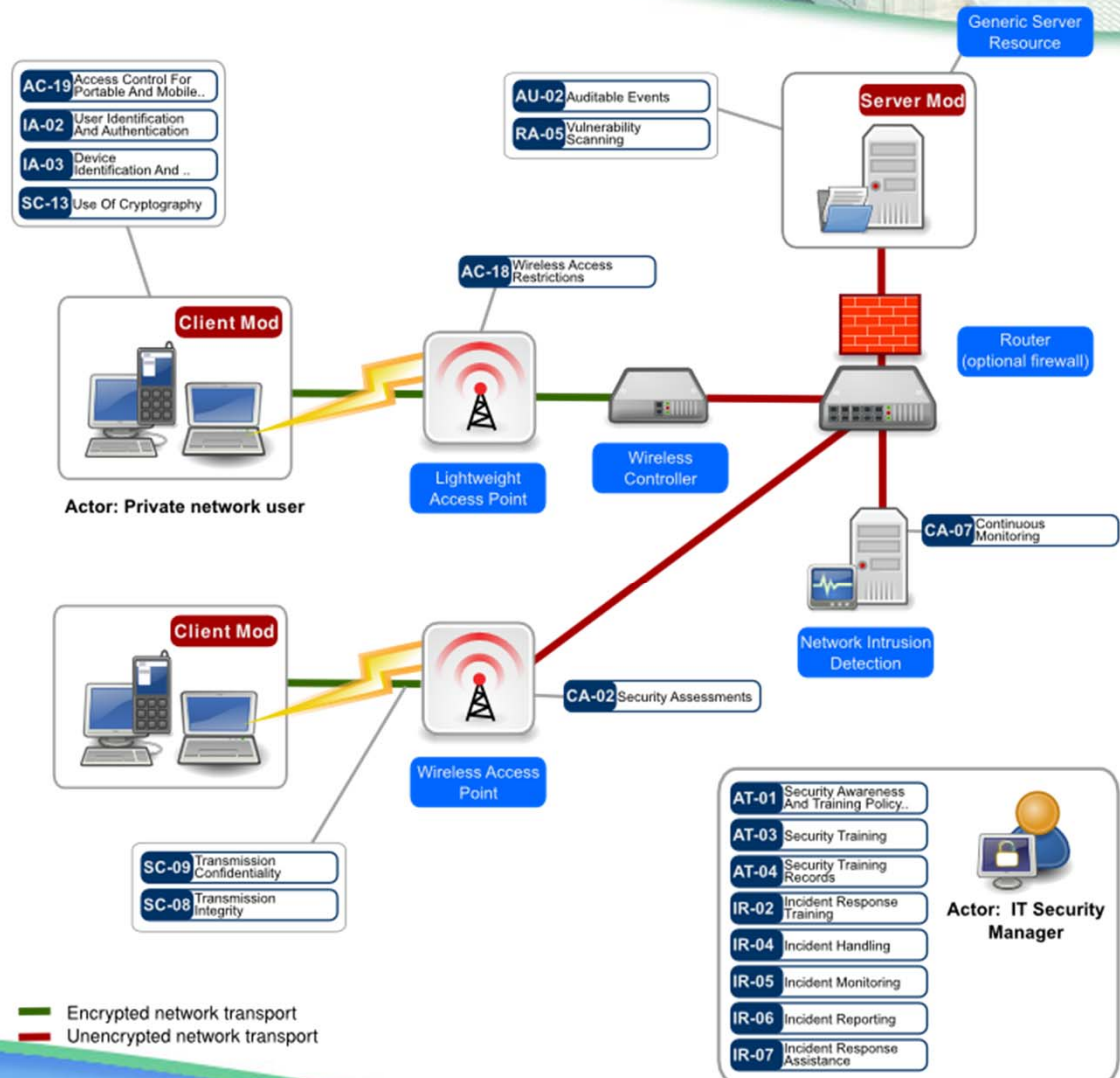 SGIP_TCC_Interoperability_Issue_Assessment
   _Process_V02.pdf

Identify Generic Security Functions/Services

- Authentication
- Logging/Auditing
- Alerting
- Secure Data Transfer
- Authorization

Example Pattern of
Secure Wireless Access on Private Network

AC-19 Access Control For Portable And Mobile..
IA-02 User Identification And Authentication
IA-03 Device Identification And ..
SC-13 Use Of Cryptography

AU-02 Auditable Events
RA-05 Vulnerability Scanning

Server Mod
Generic Server Resource

Client Mod
AC-18 Wireless Access Restrictions
Actor: Private network user
Lightweight Access Point
Wireless Controller
Router (optional firewall)

CA-07 Continuous Monitoring
Network Intrusion Detection

Client Mod
CA-02 Security Assessments
Wireless Access Point

SC-09 Transmission Confidentiality
SC-08 Transmission Integrity

AT-01 Security Awareness And Training Policy..
AT-03 Security Training
AT-04 Security Training Records
IR-02 Incident Response Training
IR-04 Incident Handling
IR-05 Incident Monitoring
IR-06 Incident Reporting
IR-07 Incident Response Assistance
Actor: IT Security Manager

— Encrypted network transport
— Unencrypted network transport

08_02_Pattern_006_02_Wireless_Private_Network.svg
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Develop Abstract Test Cases: Template

- **Test ID:** name, test#, description, standard referenced
- **Test Info:** tester, comments, date
- **Setup Info:** setup prep, pre-conditions
- **Test Steps:** step #, expected result, pass/fail/na, comments, references
- **Shutdown Info:** post conditions, follow-thru

Outward Support

- SGIP Testing & Certification Committee
- CSWG Testing & Certification Sub-group
- SG Security CyberSec-Interop