INTRODUCTION TO CONFORMITY ASSESSMENT
What is Conformity Assessment?

Conformity Assessment is the process or processes that are used to demonstrate that a product or service meets specified requirements (set forth in Standards, Test Plans, etc.).

Conformity Assessment Benefits

- Provides manufacturers a proven method of demonstrating compliance to the standard
- Empowers the end-user to make better purchasing decisions
- Benefits the supplier as products can quickly gain market acceptance
- Increases the likelihood of a stable technology in the market with robust products

Conformity Assessment Activities Include:

- Conformance, Commissioning, Interoperability, Inspection, Accreditation
- Test Suite Specification development
- “Catch-all” term to address range of test-related activities
WHY CONFORMITY ASSESSMENT IS IMPORTANT?

- Testing and Certification helps differentiate between compliant and non-compliant Products
- Through ARRA US$357 million was invested to deploy synchrophasor technology
- NIST.IR.8106 indicated 8 out of 10 Phasor Measurement Units (PMUs) tested were not compliant to IEEE Synchrophasor Measurement TSS (based on IEEE C37.118).
  - Test Program allowed for vendors to improve products and resubmit for testing – results are reflective of improvements
- ICAP uses a steering committee format to holistically develop conformity assessment programs around specific standards
- TRUST BUT VERIFY
PILLARS TO A SUCCESSFUL PROGRAM
SEC. 1254. INTERCONNECTION.

(a) ADOPTION OF STANDARDS.—Section 111(d) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2621(d)) is amended by adding at the end the following:

“(15) INTERCONNECTION.—Each electric utility shall make available, upon request, interconnection service to any electric consumer that the electric utility serves. For purposes of this paragraph, the term ‘interconnection service’ means service to an electric consumer under which an on-site generating facility on the consumer’s premises shall be connected to the local distribution facilities. Interconnection services shall be offered based upon the standards developed by the Institute of Electrical and Electronics Engineers: IEEE Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems, as they may be amended from time to time. In addition, agreements and procedures shall be established whereby the services are offered shall promote current best practices of interconnection for distributed generation, including but not limited to practices stipulated in model codes adopted by
End-User Mandate

Verizon Independent Testing Laboratories NEBS Testing Certification Program (NEBS-TCP)

Verizon has named the following Independent Testing Laboratories (ITL) under its certification program. This program helps expedite product-to-market cycles for Verizon's telecommunications equipment vendors and creates more economical compliance testing processes. Under the Verizon ITL NEBS Testing Certification Program (NEBS-TCP) Verizon will accept NEBS testing reports only from laboratories that have qualified under Verizon's certification standards. The laboratories that are certified thus far are listed below. Verizon will no longer accept results from other testing laboratories when such tests are performed after January 1, 2003. Reports for testing performed prior to January 1, 2003, by any laboratory, will continue to be accepted for review. Verizon selected ITLs based on their interest in participating in the program, their demonstrated competence in performing such testing, their ongoing training programs and their certification in nationally recognized quality programs for laboratories. Each lab undergoes an initial quality audit and subsequent periodic audits to assure ongoing quality.
BENEFITS OF CONFORMITY ASSESSMENT

- Provide manufacturers a proven method of demonstrating compliance
- Shared resource of testing laboratories and test tools
- Enhance interoperability
- Empower end-user to make better purchasing decisions
- Encourages quicker and wider market acceptance of products
- Facilitates a stable technology in the market with robust products
IS YOUR WORKING GROUP INTERESTED IN CONFORMITY ASSESSMENT?

- IEEE offers in-house capabilities & expertise to all IEEE WGs
- Immediate approval of conformity assessment initiatives/committees
- Access to test plan, legal agreement and certification scheme templates
- Access to global testing laboratories
- Use the IEEE Certified Logo and branding
WHY ICAP?

- Diverse portfolio of programs
- 80+ ICAP Voting Members
- 100+ Global Organizations represented within ICAP Committees
- 1000+ participants in ICAP related certification programs and events (Workshops, Panel Sessions, Round Tables)

standards.ieee.org/icap
VALUE OF IEEE CERTIFICATION

Convenience
- Intrinsic connection with IEEE-SA working groups and supporting staff
- Enable certification programs based on converging technologies that covers multiple technologies IEEE-SA works on

Credibility
- Only ICAP certifications come with the IEEE Certification mark
- IEEE maintained Certified Product Registry

Full-Spectrum Service
- Turnkey Certification Management program, including Conformance, Interoperability, Inspection, Accreditation
- ICAP strategically aligns with global expert test labs to provide the best level of testing and field evaluation support
- Legal and operational umbrella for testing & conformity assessment programs
- Test Suite & Specification Development
- Self-Validation Suite Development
- Inspection and Verification
Certification Program Development Timeline

Standard → Test Specs → Program Launch

- Standard Develops
- Test Specifications Developed
- Product Availability and Readiness
- Conformity Assessment Program Launch

<table>
<thead>
<tr>
<th>Duration</th>
<th>Milestones</th>
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<tbody>
<tr>
<td>9 months – 2 Years</td>
<td>Standard Approved</td>
</tr>
<tr>
<td>6 months – 1 Year</td>
<td>Test Specifications Developed</td>
</tr>
<tr>
<td>6 months+</td>
<td>Conformity Assessment Program Launch</td>
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IEEE CERTIFICATION MARK

• Use of the IEEE Certification mark is only through ICAP managed certification programs

• Customizable for individuals programs by standard number and/or a short program description, i.e. Telecom, EV Charging, Synchrophasor, IEEE 193X, 2558 etc.
IEEE CERTIFIED PRODUCTS REGISTRY
IEEE CERTIFIED PRODUCTS REGISTRY

- A public registry:
- Administered by the certification body/authority
- A venue for manufacturers to publicize their certified products
- A resource for end-users to verify product models that are compliant
- May address derivative products and software/firmware modifications
- May differentiate conformance to various versions of standards and/or test plans
VALUE-ADD OR BY-PRODUCTS OF CONFORMITY ASSESSMENT

Alliance or Committee formation
• Participate in conformity assessment program development (voting rights)
• Package services for program development

Technical Documents
• Test Suite Specifications, Test Plans, White Papers, Implementation Guides, etc

Smart Registries
• Interactive and searchable content of products
• Metadata Dictionary

Software-as-a-Service (SaaS)
• Management of test, certification and reports during life of deployment of products

Workshops & Training
• Educational (professional development)
• Personnel credentialing (e.g. PMP)

Interoperability Plugfests/Events
• Opportunity to demonstrate functioning of products as part of a larger system
### CERTIFICATION PROGRAM ROLES AND RESPONSIBILITIES

<table>
<thead>
<tr>
<th>IEEE XXXX WG</th>
<th>IEEE XXXX Certification Committee</th>
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| • Develop Technical standard and requirements  
  • Will go through SA defined process  
  • Define any additional metrics |  
  • **Create Test/Commissioning/DE Plan** (if required)  
    • To be published by IEEE  
    • Will be approved by Cert Committee  
    • PAR not required  
  • Develop Certification process (based on industry input)  
  • Develop test lab recognition process  
  • Structure Certification registry, design certification mark  
  • Create and deploy marketing and brand awareness  
  • Advocate for Certification |

Feedback loop to WG
SAMPLE PROCESS FOR CA PROGRAM DEVELOPMENT

Approval by ICAP MGT
- Complete ICAP New Program Form
- Determine high level funding structure
- Submit to ICAP for Review
- ICAP Director will present to MGT for approval

Formation of IEEE Conformity Assessment Committee (CAC)
- ICAP to send invitation to companies to join the IEEE CAC
- Select Officers (Chair/V-Chair)
- Create Policies and Procedures
- Develop membership fee structure for ICAP support
- Plan budget for marketing initiatives and develop plan
- Recruit companies to join

IEEE CAC Deliverables
- Develop Draft Test Plans
- Develop Certification Program Scheme (IEEE Approved Template is Available)
- Lab Approval Process
- Product certification process
- Rules for recertification
- Develop certification logo and registry
- Execute marketing plan
- Legal agreements (for labs and applicants for certification)

Launch Certification Program (IEEE BOG Approval Required)
- Laboratory Approval
- Recruit Testing laboratories
- Sign agreements with testing laboratories (IEEE Approved Template is Available)
- Conduct Laboratory audit
- Pilot Testing
- Recruit Vendors to submit products
- Vendors to sign certification agreement with IEEE (IEEE Approved Template is Available)
- ICAP will develop Certification and Lab approval fees
- Launch Program Website
THANK YOU

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CONFORMITY ASSESSMENT CERTIFICATION SCHEME – SINGLE SCHEME

ISO/IEC 17025 + competency requirements

ISO/IEC 17065 + competency requirements

ISO/IEC 17011 + Competency requirements

Certification Body(ies)

Laboratory(ies)

Accreditor(s)

Products

Scheme Owner

Oversight & Communication

Agreement

ISO/IEC 17011

ISO/IEC 17025

Performance/Design Requirements

Scheme Owner harmonizes technical requirements

Courtesy of G.Gillerman @ NIST
1st Party / Suppliers Declaration of Conformity (SDOC)
- Self Declaration; Companies conduct their own testing

2nd Party Conformity Assessment
- Conformity assessment conducted by the end purchaser of products (e.g., Service Providers) to ensure purchased products are deemed compliant or interoperable

3rd Party Conformity Assessment
- Conformity assessment being determined by an independent body.

Related International Standards
- Accreditation Bodies – ISO/IEC 17011
- Certification Bodies - ISO/IEC 17065
- Test Labs – ISO/IEC 17025