

NIEEE ICEPT 2020 PRE-CONFERENCE WEBINAR (DAY-1)

TITLED

**BENEFITS OF STANDARDS IN POWER &
TELECOMS INDUSTRIES**

IN COMMEMORATION OF

2020 WORLD STANDARDS DAY

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October 12 2020.



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NIEEE At A Glance

- Established in 1984 as Electrical Division of The Nigerian Society of Engineers (NSE) as group of professional electrical engineers.
- Each member was licensed to practice by the then Council of Registered Engineers of Nigeria (COREN).
- As the association grows, it was later christened The Nigerian Institute of Electrical and Electronic Engineers (NIEEE)..
- Today, NIEEE has 28 Chapters across the country with 1,000s members within and outside the country.
- NIEEE housed all the specialties of Electrical Engineering.
- NIEEE is constitutionally structured into 3 broad sub-divisions of Electrical Engineering discipline, namely:
 - Power Engineering Section,
 - Telecoms & ICT Section and
 - Instrumentation & Control Section.

Introduction

- New technologies are increasingly available, causing a shift in the processes for deployment and operation of electric power and telecoms system assets.
- The availability and adoption of industry standards play an important role in permitting the electricity and telecoms industries to be nimble enough to meet these challenges.
- Industry standards provide:
 - efficiency improvements,
 - drive down costs, and
 - expedite transformations.

What is a Standard?

There are many definitions of standards And

- Standards are an approved set of rules intended for repeated use that aim to ensure industry or company operational consistency.
- Industry standards are approved by recognized standardization bodies to ensure consensus by subject matter experts.

Standards in Utilities Industry

- The electric power and telecoms system are part of the few most critical infrastructures in our nation, thereby forming an essential component of today's digital society and quality of life.
- Both daily life and the economy depend on the reliable operation of the telecoms and electric power system.

Benefits of Standards

Standards are crucial and more valuable today, despite the advent of communications technology, the computerization of traditional electro-mechanic devices, and the introduction of disruptive technologies.

- The use of standards contributes to economic growth and valuable to the society.
- Standards development are able to positively influence market development.
- Standards of products & services can accelerate the acceptance and implementation of new technology, promote competition, reduce trade barriers, expand current markets, and help develop new markets.

Benefits of Standards

- Standards may be referenced in Regulations or other documents, e.g. as tenders and purchase contracts, etc.
- Standards make products economical for wide-scale use less hazardous to operate.
- Engineers use established standards to support their decisions.
- When well applied, engineers can derive maximum benefits from their designs.
- Standards allow utilities to mitigate risk when adopting new technologies, as well as navigate the transition from outdated technologies.

Benefits of Standards

- Standards simplify the work of engineers by:
 - Decreasing the amount of time spent on each application;
 - Reducing the number of design variants;
 - Providing consistent design approaches;
 - Providing compatibility among various technical solutions; and
 - Reducing the learning curve.
- The use of standards results in a set of replicable and consistent designs, which in turn improve product and save cost.

Standards Improve Quality of Service (QoS) in Electricity System

- Electric utility machinery operates in very severe environments with high levels of electrical and electromagnetic interference.
- The power system also faces many other **sources of interference** which can compromise QoS. The most common sources include:
 - **Switching operations,**
 - **System faults,**
 - **Operation of nearby telecommunication equipment, and**
 - **Lightning strikes.**
- Standards are developed to address all these.

Standards Improve Quality of Service (QoS) in Electricity System

- To ensure that equipment connected to the electrical grid is suitable, all components manufactured and marketed equipment should undergo **Quality Assessments (QAs)**.
- These will reduce the number of failures and malfunctions in the system and consequently increased the reliability of the electricity service delivery.

Equipment Standardization

- Most telecoms and electric utilities sets of equipment are used in wide-scale deployment.
- Selection of equipment or systems should meet industry standard specifications.
- This should be applied in procurement process.
- This will reduce the number of equipment variances, promotes negotiated advantages, and results in cost-savings for engineering, operations, and maintenance (EOM).

Role of Standards in Utility Operations

Viewing from three (3) perspectives:

- Occupational Health and Safety Environment,
- Operations, and
- Asset Management

Role of Standards in Utility Operations (HSE)

- **Safety First.**
- Safety standards in the electrical engineering provide guidance on common practices.
- These standards are enforced to ensure the well-being of employees and the general public.

Role of Standards in Utility Operations (Maintenance)

- Standards and related protocol are used to train staff and to provide guidelines for commissioning and maintaining electricity systems.
- Standardization facilitates the development of maintenance procedures and greatly reduces the number of different types of devices deployed, thereby reducing the number of procedures that would be required with a greater diversity of technologies.

Role of Standards in Utility Operations (Asset Management)

- Standards allow for more efficient asset management. Standards reduce the number of variations in equipment and designs, and provide for a longer asset life-cycle.
- Standards and their associated documentation become records for utilities, easily referenced and retained for the life of the asset.

Standards Promote Int'l Trade

- Harmonization and adoption of major industry standards have greatly influenced successes in International electricity and telecoms trades.
- For example, the standardization of the basic principles of electricity measurement, such as voltage and frequency, has permitted the trade of electricity across national borders.
- The use of reliability standards and product standard compliance allows for the continuation of efficient power transfer and the establishment of a power trade market.

Aiding Infrastructures and Development and Replacement

- Many of the older utility standards were written during periods of industry growth. As a result, the standards focus on requirements for new projects.
- The present challenges, related to infrastructure refurbishment and upgrades, could not have been envisioned at the time these standards were developed.
- Consequently, many standards require updating and amendment to sustain their relevance in today's industry environment where more values are expected to be derived from committed resources.
- Electric utilities in the 21st century are faced with more large capital programs to replace aging and failing equipment than ever before. Standards can help the sector to develop these programs in a way that maximizes opportunities and mitigates challenges.

Challenges in Implementation of Standards in Electricity Industry

- Loss of technical expertise, which is causing an increase in the number of outdated standards and slowing the development of new standards;
- Outdated standards are impeding the training of new staff;
- The evolution of digital and smart grid technologies is outpacing the development of standards.
- Digital communication devices are introducing new security challenges which standards have not yet captured;

Challenges in Implementation of Standards in Electricity Industry

- Increasing interconnectivity between different power grids.
- Due to rapid change in utility sector globally, decision makers in government need to understand and appreciate the value of standardization and support standards development.

Opportunities Provided by Standards in Electricity Industry

Standards provide opportunities for the electricity industry, for example:

1. Standards development is driving industry technological advancement, and, in some cases, defining utility business practices.
2. Participants in standards creation are able to positively influence market development. Standards related to products and services for the electricity industry can quicken the acceptance and implementation of new technology, promote competition, reduce trade barriers, expand current markets, and help develop new markets.
3. Standards may be referenced in Regulations or other documents, such as tenders and purchase contracts, by utilities and their customers;
4. The ongoing wave of retirement of many industry experts provides career opportunities for new contributors.

Opportunities Provided by Standards in Electricity Industry

5. The adoption of new technologies is enabling utilities to meet and provide their customers with value added services. These technologies may become the defacto standard or create the opportunity for a new standard to be developed;
6. Standards by utilities are expediting the interoperability of tools and equipment;
7. The standardization of new technologies and processes can increase operational efficiency;

Opportunities Provided by Standards in Electricity Industry

8. Standards can provide decision-makers with limits, alternatives, and general guidelines, empowering choices that are both cost-effective and consistent with accepted industry practices;
9. Standards are instrumental in ensuring safety.
10. Standards allow the industry to share knowledge, technical solutions, and best practices leading to sector-wide improvements.

Drivers of Standards in Emerging Technologies' Era

- **Consumers demands** are changing, thereby creating a dynamic industry and remodeling of business plan become inevitable,
- Growing competitive pressures, capacity constraints, changing customer and environmental expectations, aging infrastructure, and rapid technological changes have all become key considerations of operational strategies.
- Increasing **regulatory requirements** are accelerating the need for standards development and compliance to industry standards;
- **Technological advancements** are requiring service providers to reach 'beyond the billing,' resulting in more interactions with customers, who now expect to provide input in the process of standards creation.

Emerging Technologies: The Future Pathway

- In the past, most standards were developed either to:
 - provide interoperability between two existing technologies, or
 - as a response to a well-established technology becoming the industry norm.
- Now standards are increasingly driving the technologies themselves, and, in some cases, defining business practices.

Way Forward

Participation in standards development is essential to ensure that our industries continue to remain reliable and respond to sector challenges.

Reasons for the need for New and updated Standards:

- To meet industry challenges,
- New industry standards will facilitate and expedite the transfer of knowledge as experienced engineers are fast retiring.
- New microprocessors, digital and communications technologies are fast revolutionizing the industry.
- Standards development has not kept pace with the largescale sector changes.

Thank you

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