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India Smart Grid Forum

India SMART UTILITY Week 2024

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Session : DIGITALIZATION OF UTILITIES, DIGITALIZATION ROADMAPS; DIGITAL TWINS

Overview Intro

Presented By

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INTRODUCTION

- The utility sector is undergoing a significant transformation through digitalization of its operations. This entails the integration of digital technologies like smart metering, sensors, edge computing, and networks to enhance resiliency, reliability, efficiency, and customer service.
- The adoption of these technologies is guided by strategic roadmaps guiding the transformation, suitable technologies, timelines, investments, and expected outcomes.
- A digital twin platform is a critical aspect of this digital shift, offering virtual replicas of all assets allowing for real-time monitoring, simulation, and predictive analysis.

Why Utilities Must Embrace It?

- Embracing the digitalization of the power grid offers electric utilities numerous benefits, including enhanced efficiency, resilience, asset management, grid modernization, customer engagement, and data-driven decision-making.
- By leveraging digitalization roadmaps and digital twins platforms, utilities can develop strategic plans, deploy innovative technologies, and optimize grid operations to meet the evolving needs of customers, regulators, and stakeholders in an increasingly digital and interconnected world.

Start With A Roadmap

- Digitalization roadmaps provide utilities with a strategic framework for optimizing asset management practices, selecting the best technologies, and improving flexibility and scalability of the power grid network.
- Digitalization generates vast amounts of data from sensors, meters, and many other grid devices. By leveraging data analytics tools and techniques, utilities can extract valuable insights to support data-driven decision-making processes. Digitalization roadmaps help utilities define data governance policies, establish data analytics capabilities, and develop predictive models to optimize grid operations, improve energy efficiency, and enhance grid reliability.

Digital Twin Platforms To Map All Assets

- By leveraging digital twin platforms, utilities can create virtual replicas of physical assets, such as substations, feeders, reclosures, transformers, distribution lines, transmission lines, sensors, network gear and much more.

- These digital twin platforms enable utilities to simulate different operating conditions, assess performance, and optimize asset utilization, leading to cost savings and improved asset longevity.

Key Challenges

- Utility Culture
- Physical and Cyber Security
- Investment and Sustainability
- Regulatory Change
- Better Customer Engagement

  Digitalization allows utilities to engage with customers in new and innovative ways, empowering them to make informed decisions about their energy usage and participate in demand-side management programs. Digital platforms enable utilities to provide personalized energy usage insights, offer energy efficiency tips, and facilitate billing and payment processes through user-friendly interfaces, enhancing customer satisfaction and loyalty.

Trends Impacting Journey

- Renewable Energy Integration
- Decentralization and Distributed Energy Resources
- Digitalization and Asset Analytics
- Electrification of Transportation
- Energy Storage
- Resiliency and Grid Security
- Regulatory Changes and Policy Initiatives
- Customer Expectations and Engagement
- Climate Change and Sustainability

KEY TAKEAWAYS / RECOMMENDATIONS

- At Austin Energy from 2003 to 2010, we started the first journey of Grid Modernization driven by a self-created smart grid framework and roadmap, executed with a world class integration of powerful technologies from ABB, GE, IBM, Oracle, Cisco, Dell, and L+G, that delivered that very first smart grid at Austin TX.
- Since them I have had the pleasure to help Dubai, Turkey, Brazil, Australia, and 17 US utilities to build their own version of a smart grid.
- The missing key today across all is Broadband Wireless for Real-Time Monitoring and Control. Private 4G/5G is the answer.

THANK YOU

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