

NAVIGATE YOUR NEXT - THE GRID OF THE FUTURE

The utilities industry is undergoing a radical transformation toward a greener and cleaner energy future, with more digitally connected assets, consumers, and workforce. Utilities companies need to make significant capital investments to replace their aging grid infrastructure and explore advanced capabilities such as smart grid and self-healing grid to address market dynamics.

With more industrial and residential customers moving toward solar and other renewable and distributed energy resources (DER), utilities companies' grid infrastructure will have to become more adaptive to handle the bi-directional power flow, safety and reliability factors, the impact of DER penetration, and to sustain the improvement of energy efficiency in their grid network operations.

This is where Infosys can step in as a partner to jointly understand and manage cyber security, build smart and intelligent solution enablers to integrate DERs, enable information technology / operational technology (IT / OT) convergence at the core of grid operations, help in collaborating with regulators in assessing the grid ecosystem and eventually shaping the grid of the future.



Agile digital approach to data and AI-driven operations

Infosys' agile digital approach for the utilities grid of the future is built on these key focus areas:

- 1. Grid modernization** – Enabling grid intelligence to accommodate versatile assets' and consumers' participation from distributed generation to DERs into the grid.
- 2. Energy Internet** - Distributed generation, energy storage, aggregated microgrids.
- 3. Operational efficiency** – Predictive asset modeling combined with the power of a

modernized and knowledgeable workforce to reduce costs and improve productivity.

4. Cyber security – Using the data security, information security, utility on cloud, blockchain approach to handle the utilities market data, and the ways of enabling them with IT.

Grid modernization – As the utilities consumer becomes a prosumer in the grid, the grid infrastructure has to be strengthened for bi-directional power flow transactions. Essential improvements are required to build intelligence into the grid,

by way of its operations and performing analytics to bring in improvements.

Operational efficiency – This can be achieved by:

- Exploiting the existing resources of reactive power capacity in the network and ensuring the operation of the voltage at its limits.
- Predictive analysis building to mobilize the auto-healing of network emergencies proactively, moving towards self-healing across the network.

- Automation of the electrical system, IT, network, data, enabling their accuracy.
- Using drones to diagnose remote areas.
- Substation automation, distribution automation.
- Adopting a smarter system by way of an integrated outage system, restoration approaches, integration with geographic information system (GIS) and asset

management system, workforce management system to manage the workforce effectively.

Energy Internet - Building self-sufficiency by enabling community independency, microgrid, microcontrollers, enabling on-grid / off-grid dynamic switchovers; IT / OT convergence and the merger of technology with power for building the 'smart ecosystem'.

Cyber security - With growing demand, utility grids are expected to become more connected and intelligent, driven by data. There is going to be an increasing dependency on the Internet for grid operations, which means that there will be tremendous amount of data sharing across the different facets of the grid with multiple parties, external and internal. So cyber security is vital for the success of grid modernization initiatives.

How can Infosys help?

- **Industry 4.0 maturity framework and Infosys IoT platform** help to define a road map for sensorizing business operations with the right standards, partners, and integrated solutions. Point solutions addressing critical business problems like enhancing operation efficiency through augmented reality-enabled asset inspections not only help to improve the knowledge of the workforce but also increase safety, specifically during power outages. Interconnected assets (substations, transformers) through IoT sensors help in early recognition of potential outages leading to improvement in power reliability parameters and customer satisfaction
- **AI-powered core energized by Infosys Nia**, our next-generation intelligent automation platform solution, brings machine learning together with deep knowledge to unearth critical insights and industrialize the core process landscape. Infosys' AI platform provides workflow-based insights to monitor and optimize critical assets through predictive intelligence for proactive maintenance. Data-driven insights

lead to predictive modeling of power disruptions that can help in restoration activities and also build capabilities for a self-healing grid

- **Infosys Digital and Spatial Data Management** framework for integrated data management redefines data management governance, data quality, data catalog, and master data needs across the ecosystem of partners. For example, spatial data will be a key component for utilities to successfully deliver capabilities centered around the grid and its modernization. Infosys brings in tools and accelerators that help in standardization and migration of spatial data toward a more uniform utility network data model
- **Infosys IT as a Service** amplifies the capabilities of utilities companies' service units in managing their IT assets with service catalogs, self-service tied together with a simple, transparent, financial and commercial model
- **Infosys Modernization Services and Solutions** enable energy companies to move their legacy system to the cloud infrastructure such as GIS in the cloud for asset maintenance, mobile workforce management on the cloud,

API, mobile-based architectures executed in agile approach. New market disruptions such as DER integration to the conventional grid lead to transparent contract set up through blockchain technologies

- **Infosys Cyber Security Platform** provides an integrated, unified view of your security posture, leveraging predictive analytics and AI. Cyber security solutions leverage the Infosys Cyber Security Platform, providing key features such as predictive threat analytics, automated cyber defense center, managed security services portal, and pre-built security dashboard



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