URBAN ELECTRIC GRIDS OF THE FUTURE

> "BY DEVELOPING INNOVATIVE PLATFORMS THAT INTEGRATE IT, PHYSICAL INFRASTRUCTURE, AND STANDARDIZED BUSINESS PROCESSES IN AN OPEN SOURCE ENVIRONMENT, UTILITIES HAVE AN OPPORTUNITY TO RESPOND TO THE CHANGING DEMANDS.."

Electric utilities are at a crossroads – the past few years have witnessed a significant increase in renewable and remote energy generation, an aging AC transmission infrastructure, a changing generation landscape, and a rise in global demand for electricity. These trends are especially true in urban areas and the utility industry is grappling with a host of questions.

How should they collaborate to optimize asset utilization, reduce stress, and improve the reliability of the grid? How should the grid be envisioned to support EV growth in the next 5 years? How should the industry prepare for changing customer behavior, prevent generation/ demand mismatch, and avoid negative pricing situations?

By developing innovative platforms that integrate IT, physical infrastructure, and standardized business processes in an open source environment, utilities have an opportunity to respond to the changing demands of stakeholders like a sentient being – always learning, responding, and adapting to change.

SOME KEY FEATURES OF THE URBAN ELECTRIC GRID THAT MAKE FOR A LIVE ENTERPRISE

- **Increased 'Grid Observability' –** access to real-time insights into the grid to forecast generation demand, including DER, and arriving at optimal electricity prices based on the forecast.

- **Simplified Heterogeneity of the asset data (millions of edge devices) –** to offer a bird's eye view with drill-down capabilities to a specific edge device.

- **'Symbiotic' co-existence –** with existing systems, moving from siloed to connected systems. This will create a paradigm shift in the Utility customer experience.

- **'Sentient by Design' –** using AI to recognize and learn consumer patterns.

THE PROOF IS IN THE PUDDING AND HERE ARE A FEW USE CASES THAT CAN EMPOWER THE UTILITY INDUSTRY TO BE 'LIVE'

• Grid Modelling (GMOD) – Demand forecasting, microgrid solution, nano-grid solution, overhead/underground solution, scenario optimization, managing thermal constraints on the network through load shifting (EV, Storage), and asset maturity risk assessment.

• Grid Resilience (GRES) – Storm impact prediction, assets for risk prediction, damage assessment, storm readiness assessment, emergency preparedness assessment, cybersecurity assessment, vegetation management, wildfire monitoring, and customer awareness & communication.

• Grid Management (GMGT) – Distribution energy forecasting, Volt VAR control, optimal power flow, switching order management, optimal network reconfiguration, and distribution energy optimization.

• Grid Optimization (GOPT) – Asset health analytics, reliability analytics, VVO analytics, grid monitoring analytics, storage optimization, vegetation management analytics, switching routine analytics, transformer & feeder sizing, demand response analytics, and customer analytics.

Infosys is fortunate to have the opportunity to partner with several highly recognized enterprises in the utility industry. Our investments and expertise are helping our clients become Live Enterprises in this evolving 'new normal'. Powered by a platform ecosystem – to sense, respond, learn, and evolve – we reengineer the future of energy and drive strategy so that utilities can navigate the world's disruption surrounding de-carbonization, digitalization, and decentralization.

Ram Ramachandran, Senior Director, Utilities, Infosys

Responsible for expanding new client relationships, growth of new service lines, large transformation initiatives, sales operations and sponsorship of top global alliance partnerships for Infosys's Utilities & Natural Resources Verticals. 25+ years of work experience with 10 years in the core Energy sector. Involved in helping Utilities clients with key business and IT strategy with deep understanding of the industry value chain and technology trends.

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