DEFINING THE NEXT FRONTIER: DISTRIBUTED INTELLIGENCE

The utility industry is facing new challenges every day; while these are frequently considered troublesome, this trend continues to drive innovation, opening up new avenues and opportunities from which utilities can grow. For example, electric utilities have multi-directional power flows in the Low-Voltage network created by PV/EV; storage penetration, and consumer service expectations are pushing this value, driven by the digital economy revolution that is being led by players such as Google, Amazon, and Apple.

These new opportunities are a catalyst for the creation of new business models based on energy balancing, reactivity, and customer-centricity. As a result, utilities need new tools to retain their positions as providers and enablers for energy consumers.

Meter-based Distributed Intelligence (DI) applications, delivered in conjunction with a multi-application, industrial IoT network, enable new and innovative approaches to solving critical challenges facing the world's power grids and transforming utility consumer engagement.

Distributed intelligence applications provide significant improvements to outage detection and analysis, distribution connectivity modeling, fault detection, theft detection, transformer load management, renewables integration, EV integration, and multiple innovative consumer services.

Notably progressive utilities, such as Tampa Electric Company, Vectren, Xcel Energy, among others, have deployed or are beginning to deploy meter-based Distributed Intelligence. Utility testing shows that Distributed Intelligence, based within the meter, is significantly more accurate and timelier as opposed to back-office analysis. Finding high impedance situations using back-office software is not viable using a 2S meter form whereas using waveform snapshots and streaming meter data allows 100% detection capability for an app within the meter. Location awareness, where a meter can identify other electrical connectivity points, is invaluable to utilities after storm restoration, load balancing, and grid reconfigurations. The capability to disaggregate loads at the meter and identify load signatures provides utilities essential information about customer use patterns and load types. Using this information, utilities can reach out to their customers to assist them with enhancing their energy lifestyle.

Actionable intelligence can empower utilities to evolve new business models using Distributed Intelligence applications. Distributed Intelligence, delivered in conjunction with intelligent connectivity on an industry-leading IoT-based network and a vibrant ecosystem of multi-service use cases, can create insight, innovation, and enablement. This facilitates utilities

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evolving to match their customers' needs and the changing market. Delivering key information to the right place and at the right time improves grid efficiency, reliability, and safety to transform a utility's customer service and decrease its operational costs.

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Mr. Kessler is a Senior Product Line Manager for Itron and past Director of Smart Grid Technology for Public Service New Mexico Resources (PNMR), responsible for the Smart Grid and Advanced Metering Technology.

Mr. Kessler has more than a decade of technical project management experience working for companies such as Boeing Aerospace, Hewlett-Packard, Microsoft, AT&T Wireless and Public Service New Mexico. His work has covered a broad range of products and technologies, from cellular telephony to robotic boiler inspection and power line phasing techniques. His technology experience includes such activities as building robotic wall crawlers for boilers, power line phasing devices and intelligent electronic devices for substation and grid monitoring.

Mr. Kessler is co-inventor on several patents of innovative technology for the cellular and power industries. He holds a B.S. in Electrical Engineering from the University of Washington, earned a PMI project management certification while at HP, is Six-Sigma Black-Belt trained and holds a Six-Sigma Quality certification from the Galvin Institute.