Location Awareness

Distributed Intelligence

Effectively using your smart meters to support monitoring and control of your secondary distribution requires knowing exactly where they are in your distribution network.

One of the greatest obstacles to the evolution of the electric distribution grid is the inability of smart meters and other equipment to know precisely how they are connected to the distribution grid. This lack of operational information impacts all aspects of grid operations from load control of distributed energy resources and intelligent switching to phase balancing and system reliability.

Now, for the first time, smart meters using Itron distributed intelligence can be continuously aware of their electrical connectivity in relation to other grid assets. This awareness does not require a GIS component nor is it dependent on the topology of the communications network. Rather it's enabled by continuous monitoring and analysis of electrical characteristics relative to other devices on the network.

This capability, called Location Awareness, is a fundamental breakthrough in the Itron network and distributed intelligence platforms, which enable an entirely new frontier of smart grid use cases and applications not achievable without timely and reliable connectivity data.

The Value of Location Awareness

- Sub-second data resolution provides higher accuracy than previously possible
- Requires significantly less back office infrastructure and data science expertise
- Device self-awareness of electrical location greatly improves many outcomes such as outage and theft detection, and network connectivity
- PLC connectivity delivers accurate and rapid phase detection and transformer connectivity
- Typically, can realize more than $2M per year in added business case value for utilities with >1 million customers

Based on Itron research with utility customers, the accuracy of connectivity data can vary greatly, with many lacking accurate and updated connectivity data for 10, 20 or even 50 percent of their delivery points. Many rely solely on outdated, as-built engineering drawings from decades ago or imprecise GIS data to make educated guesses on connectivity.

Itron's patented Location Awareness analysis, available with the Itron network and distributed intelligence solution, identifies the electrical connectivity of each meter on the distribution network. The algorithms determine the connected transformer, circuit phase and feeder of each service point and continually update operators with a highly accurate connectivity model.

This unprecedented visibility into connectivity enables Itron to unlock tremendous new value in distribution operations. This information greatly increases the effectiveness of existing processes such as outage and theft detection, transformer load management and demand response, while also enabling entirely new applications like the detection of potentially unsafe grid conditions such as high-impedance connections (HIC) and downed conductors. Location Awareness enables operators to execute localized grid operation use cases with much more confidence and precision than ever before possible.

BUSINESS VALUE

A highly accurate connectivity model delivers precision and accuracy when executing operations anywhere on the distribution grid. Phase balancing, transformer load management, demand response, outage detection and energy diversion detection are just some of the use cases that take on a whole new level of precision and effectiveness when devices know their location in the context of the distribution network.

For transformer load management or demand response, specific loads and distributed generation assets can be controlled to flatten peak loads and manage the grid in a targeted and coordinated manner. The accuracy and timeliness of outage and high impedance detection is greatly increased.

Location Awareness is a fundamental capability of the Itron network and distributed intelligence platforms where intelligent devices continuously analyze data at the edge, communicate and collaborate with each other, and ultimately make decisions in near real-time. When meters and other edge devices are aware of their exact location on the grid, and other devices they are connected to, grid operators are able to solve problems, manage rapidly changing conditions and create new opportunities never before possible.

Join us in creating a more **resourceful world**.
To learn more visit **itron.com**

CORPORATE HQ
2111 North Molter Road
Liberty Lake, WA 99019 USA
Phone: 1.800.635.5461
Fax: 1.509.891.3355