Large Utility Gets On Track with Smart Asset Management

When a major North American utility began tracking its smart assets through their lifecycle, it was able to minimize costs, prevent failures, improve its warranty claims process and enhance the customer experience.

Business Situation

For utilities, it’s become essential to track and manage their investments in Internet-enabled smart utilities assets, as well as the network infrastructure that links consumers to the power grid. Doing so can enable utilities to optimize their cost of operations and enhance the customer experience. These smart assets help utilities improve their operational efficiency, deliver reliable service and reduce energy costs to end customers.

The third-largest electric utility in the U.S., a Fortune 200 company with more than $17 billion in revenue and $74.9 billion in assets under management, wanted to optimize its business processes and asset tracking capabilities to improve the visibility and status of its smart assets. Doing so would enable the utility – which serves approximately 4.7 million customers with total installed capacity of 41,000-plus megawatts from natural gas, thermal, nuclear and wind turbine – to minimize inventory costs, prevent theft, effectively process warranty claims and more accurately plan spending. All of these capabilities needed to be embedded throughout the smart asset lifecycle, from receipt to deployment, ongoing operations and billing, through maintenance and the eventual retirement of the devices.

Challenges

The utility’s lack of efficient and effective processes and technologies led to increased costs due to manual asset tracking, inaccurate inventory management and the failure to file claims before equipment warranties expired.

The existing system supported more than 4.5 million smart assets, with continuous tracking and monitoring of attributes such as wireless radio status, firmware version and remote disconnect switches. In addition to sensors such as customer electric meters and monitors throughout the distribution network, the utility wanted to monitor the radios in the access points that serve as data collectors and transmitters, as well as relays in rural areas that are used to amplify the signals before they are transmitted to access points.

Solution

In this business consulting engagement, we drew on our utilities and asset management industry
knowledge to define and develop new smart asset management business processes, as well as evaluate industry-leading solutions to support those processes.

We began by preparing blueprints of the utility’s existing processes for managing smart assets throughout their lifecycle, and identified gaps between those processes and industry best practices. We then designed the desired process flows based on industry-standard enterprise asset management (EAM) frameworks. We evaluated industry-leading EAM products, such as IBM Maximo and SAP EAM, before recommending a new smart asset tracking solution for the utility.

As part of the event-based condition monitoring of smart assets, we developed a configurable dynamic business rule engine to flag suspicious smart asset events.

This solution includes core modules, such as asset management, inventory management, work management, condition monitoring and calibration management. It also includes an administration module that is configurable and scalable to meet the utility’s evolving business needs.

Among other steps to increase efficiency, we optimized user interfaces to minimize the number of screens required to navigate work processes. We developed a data architecture that integrates data to provide a 360-degree view of smart assets, including the head-end system that gathers data from the sensors and transmits it to the systems that manage customer information, network operations and outage restorations. The smart asset management system was also integrated with a cloud-based system for managing the specialized workforce responsible for managing smart assets.

As part of the event-based condition monitoring of smart assets, we developed a configurable dynamic business rule engine to flag suspicious smart asset events. We also developed a dedicated document management system that helps business users meet regulatory documentation requirements.

Easy-to-use Microsoft Business Intelligence (MSBI) dashboards allow senior management to monitor key performance indicators related to the business units responsible for managing these assets. We also designed and developed a mobile app that enables field workers to track the movement of smart meters and network devices in the field. This solution, deployed in all parts of the utility’s far-flung operational areas, allows users to determine the location of smart assets at any point in the supply chain.

Benefits and Results
Because of the improved processes and technology, the following capabilities and benefits are now possible:

• The utility can process seven times as many warranty claims without any added staff, reducing repair and operational costs.

• The utility can also proactively identify impending failures, thanks to the improved analysis of the state of its smart assets. This results in prevention of failures, reduced costs and fewer service interruptions.

• Failing sensors are returned to the manufacturer during their warranty period, reducing the cost of repair or replacement.

• The utility can ensure that the right smart assets are in the right locations when needed, reducing costly downtime while staff waits for or searches for meters or other sensors.

The workflows and asset management software we produced to help the utility manage its smart assets are now being extended for use across other parts of the company, such as distribution, load management and network operations, as well as in the deployment of smart lights to consumers.
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