MILES

Combining advanced analytics and grid monitoring to detect, locate and identify the root cause of power outages before they occur

Distribution utilities have the critical task of ensuring the safe and reliable supply of electricity to customers. This job is made more challenging with the constant pressure to "do more with less," maintain aging infrastructures and manage rapidly evolving customer expectations.

A key challenge of network reliability is locating and resolving intermittent issues, or faults, as quickly as possible to reduce overall customer interruptions (CI) and customer minutes lost (CML). Faults can be momentary or permanent, and sometimes hard to detect and locate. With miles of distribution power lines to consider, utilities require actionable insights to get to the root cause of interruptions and outages and plan the right investments to maximize network performance and customer satisfaction.

Actionable insights to improve network reliability and customer satisfaction

MILES is an innovative advanced data analytics solution for fault detection, localization and diagnosis. It is designed to generate clear and timely insight on distribution system faults that are the source of outages and customer complaints.

MILES' predictive maintenance, fault-location algorithms and advanced data analytics features enable the detection and diagnosis of both permanent and momentary faults, including recurring, hard-to-identify network issues that are the root cause of many outages.

Through a combination of sensors and advanced algorithms, MILES can pinpoint the fault to typically within a few hundred meters, putting all relevant information on one dashboard. Crews can then quickly find faults and prevent or restore outages before they occur by targeting the right intervention at the right location and at the right time.

MILES allows utilities to improve reliability performance by targeting the minority of feeders responsible for the majority of outages.
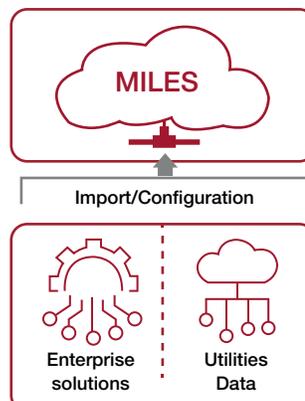
MILES uses a combination of sensors and algorithms to proide actionable insights on the root cause of outages

It is a simple system to deploy and operate. First, power quality sensors are installed at strategic locations on a feeder if existing sensors do not already exist. When a fault occurs, it creates a disturbance in the power quality signal, which is picked up by the sensors and sent to the cloud-hosted MILES application. The application, which is configured using existing network topology data, uses these measurements to determine the location of the fault and the most likely cause (e.g. vegetation contact, faulty insulator, etc.).

Two main stakeholders within the organization can use this information:

1. Operators, who gain real-time situational awareness about the fault and can dispatch crews to address recurring intermittent faults before they generate an outage, or to minimize outage restoration time

2. Reliability engineers, who analyze the root cause of network reliability problems and plan investments (e.g. vegetation control operations or equipment replacements) to maximize reliability performance and customer satisfaction

Improving decision making with grid monitoring and advanced analytics

From minimizing outage restoration time to improving condition-based maintenance planning to helping quickly and

efficiently address customer complaints, MILES offers a host of benefits.

Improves safety and reliability
- Increases situational awareness
- Ensures a safe working environment
- Minimizes outage frequency and reduces restoration time
- Supports regulatory compliance (e.g. CAIDI)
- Improves overall customer satisfaction by reducing customer complaints

Reduces costs
- Minimizes "truck rolls" and patrol time
- Avoids inefficient intervention and repeat jobs
- Improves operational efficiency
- Leverages condition-based maintenance
- Reduces OPEX

Optimizes Investments
- Targets the right interventions at the right time to maximize reliability performance
- Avoids inefficient equipment replacement investments
- Enables condition-based asset investment planning

About CGI

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world. Operating in hundreds of locations across the globe, CGI delivers an end-to-end portfolio of capabilities, from IT and business consulting to systems integration, outsourcing services and intellectual property solutions.

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CGI works with clients through a local relationship model complemented by a global delivery network to help clients achieve their goals, including becoming customer-centric digital enterprises.

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