EPRI DATA ANALYTICS CASE

Identifying Load Abnormalities

The Data Challenge

Utilities with advanced metering infrastructure (AMI) and other advanced revenue meters will typically leverage event flags, alarms, and data snapshots to identify immediate service-related issues or to verify conditions that may require attention. This activity is traditionally reactionary, contributing little to a proactive program that is designed to surface trends and patterns that could be precursors to developing issues. This data analytics case will present an exemplary opportunity faced by the industry of the many that exist. It illustrates how data analytics can identify problems with customer equipment using data from AMI meters.

Solution Overview

By applying predictive analytics and pattern-recognition algorithms, the data from AMI and other advanced meter types is leveraged to provide insights to important patterns and to forecast future outcomes at the load or on the distribution network. By aggregating secondary data sets from other sources, the certainty of patterns and trends may be more precisely identified thereby increasing the effectiveness of any corrective actions.
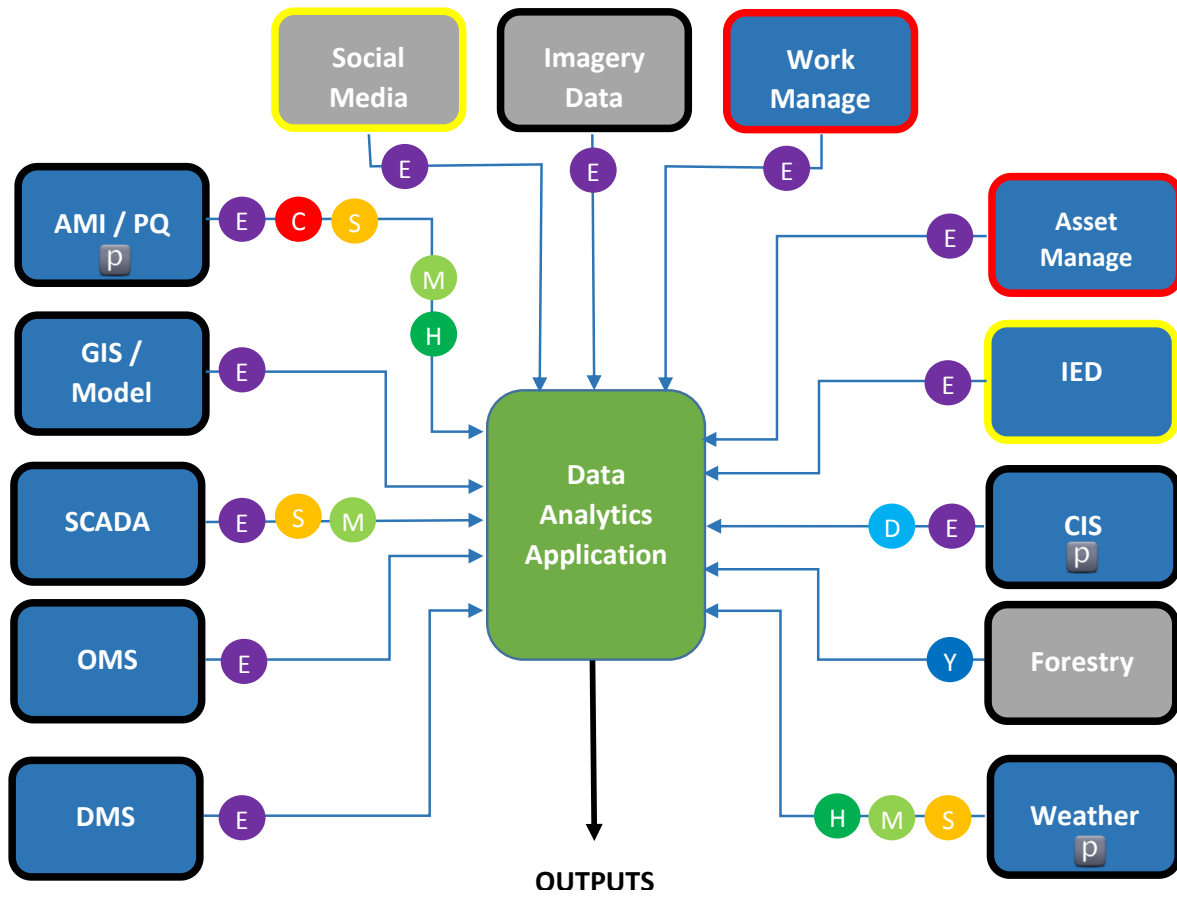
A specific opportunity that will serve as the focus of this data analytics case is that of a customer air-conditioning unit that has failed and is running outside of its expected pattern as previously observed by the analytics engine.

Potential Methods for Solving the Problem

By leveraging "cooling degree days," a predictive analytics engine is developed and interfaced to the utility's customer information system (CIS), whereby the projected AC load will be determined for a particular premises on a particular day. If the load is outside a predetermined load window for that premises, a flag is raised in the utility's system, whereby the customer may be informed via social media or other communication medium, such as email or text, warning them of the potential failure of their AC equipment.

Available Data Sets

The data sets highlighted in the following figure are available in the EPRI Data Repository to solve this data analytics case.

Classifications of Data:

■ (blue)	Traditional Data Set
■ (gray)	New Data Set
▭ (black border)	Structured Data
▭ (yellow border)	Un-structured Data
▭ (red border)	Format of Data Varies

p Denotes a primary data set used to solve this data analytics case.

Frequency of Measurement

C	Cycles
S	Seconds
M	Minutes
H	Hours
D	Days
Y	Months to Years
E	Event Driven