



DATA SHEET

Improving grid planning, outage management, and business performance with data insight

OMNETRIC Planning and Outage Intelligence application on Mindsphere

OMNETRIC Planning and Outage Intelligence (PnOI) application – now ported to Siemens’ open, cloud-based Internet of Things (IoT) operating system, MindSphere – helps energy providers to quickly and cost-efficiently take advantage of data intelligence to predict outages. Armed with this information, they are better equipped to optimize their assets, their operations and their workforces.

Physical assets are core to grid operations, maintenance and outage management and so critical to business success. Problems with assets impact grid reliability and service to the customer. OMNETRIC PnOI is an application that combines historic and real-time data, and uses advanced analytics to deliver the predictive insights needed by grid operators to prevent outages, plan maintenance and use available resources most effectively.

- Where and when is the grid likely to fail?
- Which assets are most “at risk”?
- What will be the impact on customers?
- How can I resolve this outage fastest?
- How can I best use my resources to avoid outage?
- How can I optimize spend on maintenance?

OMNETRIC PnOI application is deployed in the Siemens open IoT operating system, MindSphere





What is MindSphere?

MindSphere is Siemens' cloud-based, open IoT operating system, which connects machines and physical infrastructure to the digital world, and enables powerful industry applications and digital services to drive business success.

MindSphere's open Platform as a Service (PaaS) enables a rich partner ecosystem, managed by Siemens, to develop and deliver new applications. OMNETRIC is a Siemens company dedicated to helping energy providers reap the benefits of the digital energy system by integrating their energy operations with IT to support their business goals. MindSphere offers a foundation from which to innovate, enabling OMNETRIC to deliver an integrated view of data, systems and operations, real time. Energy providers benefit from an IoT operating system from Siemens, which offers open interfaces and secure communications, as well as a clear roadmap for success in an increasingly connected world, without the complexity of building own infrastructure or managing complex software stacks.

OMNETRIC Planning and Outage Intelligence in action

The OMNETRIC PnOI for MindSphere combines historic data from internal systems with data from external sources and applies our value-verified approach to analytics. It includes:

- Complex data integration: multi-dimensional data enrichment (assets, maintenance, weather, GIS, elevation, SCADA, customer, etc.), combining all relevant internal and external data
- Large-scale data processing: Hadoop environment
- Sophisticated statistical modelling: two-stage logistic regression model for fully automated outage-risk prediction

Outputs:

- Detailed reports of critical assets for maintenance prioritization
- "What-if" simulation
- Investment scenarios
- Outage prediction and restoration, including optimized staging of crews

The OMNETRIC Energy Insight team performs an initial workshop to understand customer pain points and determines a business case based on the data available and the energy providers needs. OMNETRIC works with the energy provider through a multi-step process (see section, Analytics in the real world) to achieve the highest accuracy possible. Based on testing, using extensive data integration for in-depth analysis, the OMNETRIC PnOI application runs with >80% prediction accuracy.

Analytics in the real world

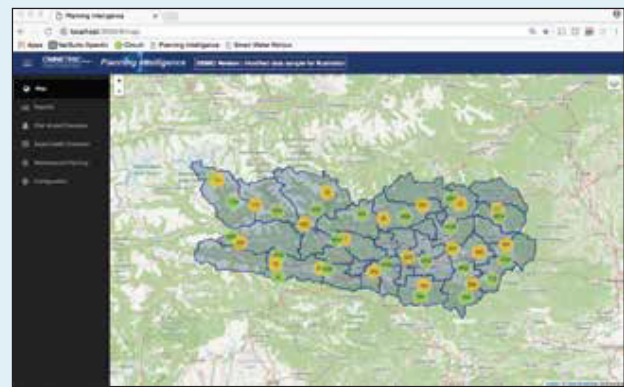
Unfortunately, some of energy providers' doubts about the value delivered with analytics have been fuelled by promises of insights delivered on the basis of analytics results alone. At OMNETRIC we propose an incremental, start small, scale fast approach to analytics, which enables organizations to discover, step-by-step, what's valuable in their data. We bring together teams comprising data scientists, engineers and IT experts to uncover, interpret and act on correlations. There are three phases to the process:

- generating the analytics results
- running the false positive analysis
- verifying the value of the analytics again

The value verification stage is critical to delivering value with analytics. While data scientists and/or an automated application can calculate and provide predictions, the world does not stand still. Consider predicting no failure for certain assets, for example, and there being no failure. While the prediction was correct, possibly it was a maintenance action that "rescued" the asset, and without this, the asset would have failed. In fact, the prediction was wrong, although by saving the asset, the repair crew also proved the statistical model's prediction. Analytics need to be grounded in the real world, where the value of predictions is verified.

Value-verified analytics in action

OMNETRIC partnered with KELAG, a leading energy service provider in Austria and its distribution grid operator, KNG, which serves around 300,000 customers via a grid network covering over 7,000 transformers, 18,000km of power lines and 65,000 poles. The partnership, which commenced in 2016, required a joint team to analyze grid data from KNG and combine it with publically available environmental data. Using the data intelligence generated, OMNETRIC developed different outage prediction statistical models for KELAG with a 90 percent accuracy rate. These statistical models are integral to the OMNETRIC Planning and Outage Intelligence application.



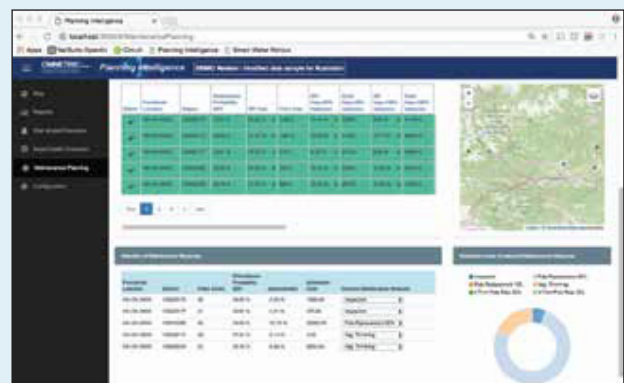
Geographical distribution of poles and power line segments



Asset characteristics e.g. age, type, maintenance activity



Risk modeling evaluation



Annual planning simulates probability of cost/cost reduction of outage

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About OMNETRIC

OMNETRIC is dedicated to helping energy providers reap the benefits of the digital energy system by integrating their energy operations with IT to support their business goals.

Our global team of engineering, IT, security and data experts brings extensive industry experience to help customers discover and exploit data intelligence to capitalize on industry change, and realize new business models.

Helping customers since 2014, we are an inventive, technology services company. For more, visit www.omnetric.com.

OMNETRIC is a Siemens company.