



**OMNETRIC**

A Siemens Company

Energy Insight from OMNETRIC

Achieving quality and  
speed in analytics  
with data discovery



# Data discovery – an easier, faster start to analytics

In a context where traditional utility models are no longer sustainable, analytics is increasingly recognized for its enormous potential to drive innovation and transformation. Offering more intelligence for better decision making, analytics can help executives improve reliability and efficiency in grid operations, asset management, outage management, system planning, demand response, distributed generation, customer engagement, and more.

Data discovery can accelerate those wins.

## Why not quality and speed?

Big, enterprise-wide data integration projects have become part of how organizations are gearing themselves to use data more effectively. However, these projects usually require utilities to make significant investments in effort, time and financial resources.

Data discovery offers a way to identify where data integration will deliver most value – often in areas never even considered – so that efforts can be focussed there.

Data discovery can make subsequent data integration projects easier, cheaper, faster and more effective. With data discovery, we can breakthrough the persistent “quality versus speed” impasse.

Through the effective combination of advanced analytics, industry knowledge, and engineering expertise, OMNETRIC uses data discovery to help organizations identify quick wins, validate opportunities, surface new possibilities, and create business cases for future investments.

This helps steer utilities’ analytics strategies and direct data cleansing and integration efforts, enabling swift, targeted value delivery.

Imagine... your data discovery project takes three days and delivers a return of ten or even 100 times the investment.

# How does data discovery work?

Unlike traditional analytics, which queries cleansed data from trusted sources residing in relational databases, data discovery requires no upfront investment in infrastructure or integration work. It lets utilities interrogate and explore unknowns, delivering insight faster.

Data discovery can make use of almost any available data to find correlations, provide quick answers, indicate trends and probabilities, uncover dormant potential, and enable utilities to ask new questions – questions they didn't know to ask.

## Use any data, without conversion

Almost any format of data can be used without conversion. This includes text files, csv/xls files, database exports, structured or unstructured data, jpeg or any picture format, Word files, mail text, postings or tweets, and even voice recordings. No common identifiers are needed to join data across sources, and no consistent or equidistant data is required. Only a time stamp is needed to visualize patterns and first insights. Eliminating the effort-intensive activity of preparing and providing data is a major differentiator of OMNETRIC's Smart Grid Data Discovery approach.

## It's a science and an art – OMNETRIC has an edge

OMNETRIC brings together three essential components to deliver on data discovery:

- Industry specific operations and engineering expertise
- Highly skilled data scientists
- Advanced data technologies.

By bringing these competencies together into one team, OMNETRIC combines operations and information technology to deliver high value insights and outputs.

## WHY OMNETRIC ?

We supply the software, the data scientists, the engineering excellence, and utility domain experts to translate data discovery insights into business value.

## MARKET MIGHT, AGILITY, VITALITY

OMNETRIC is a Siemens company. It combines the market might of its parent company – deep engineering, technology, and analytics competencies – with the agility and vitality of a start-up.

The capabilities of our highly skilled resource base reach across the functional areas of grid operations and smart markets (including smart metering, data hubs and demand response) and the technology areas of enterprise integration and analytics.

We bring fresh thinking and innovation to the sector, combining proven solutions and emerging concepts and technologies to assist utilities as they adopt new business models and exploit the resulting opportunities.

Our deep experience in this sector sets us apart, facilitating smart integration of information technology (IT) and operations technology (OT) – the single most effective way for utilities to leverage the emerging benefits of a smarter grid.

## FUSING IT/OT PROCESSES AND CULTURES

Effective integration of IT and OT means more than just bringing together two systems; it requires melding engineering and information management processes and cultures. OMNETRIC is able to bridge the gap – its technology-led approach to data discovery is informed by its deep analytics, engineering, and domain experience.

# OMNETRIC Smart Grid Data Discovery approach

The OMNETRIC Smart Grid Data Discovery approach is designed to:

- Make it easy to start with analytics
- Validate investments in IT/OT integration
- Steer analytics strategies for swift, targeted value delivery
- Help utilities quickly address specific challenges.

## Simplicity and flexibility

Based on Teradata's ASTER Discovery Platform and SNAP Framework, our Smart Grid Data Discovery approach is simple and flexible.

It comes in four pre-defined exploration packages: S, M, L and XL and has three platform variants:

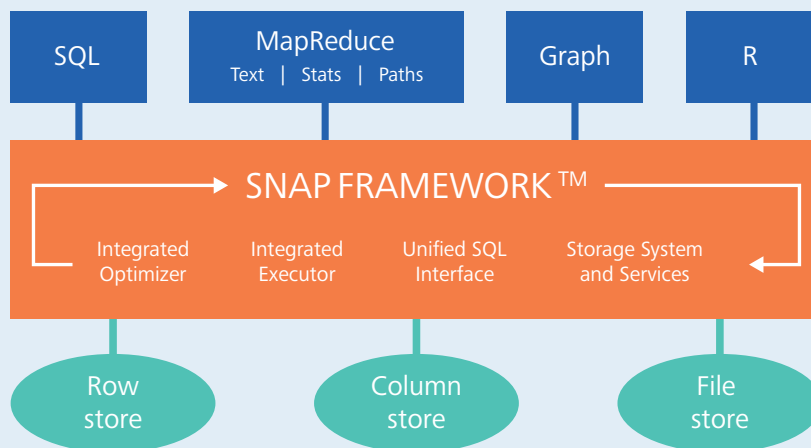
- Cloud: Bring your data to us
- Mobile: We bring our mobile exploration box to you
- Build-your own: Use your own hardware, we bring the software.

We supply the software, the data scientists, the engineering excellence, and utility domain experts to translate insights into value.

## PARTNERING WITH TECHNOLOGY LEADERS

OMNETRIC's partnership with Teradata gives it access to the leading edge Teradata Aster Discovery Platform, which incorporates the Aster Seamless Network Analytical Processing (SNAP) Framework.

The SNAP Framework uses multiple analytics capabilities, like graph, MapReduce, text, statistical, time series, and SQL-based analytics. This enables multiple analytic engines and file stores to be seamlessly snapped together to meet specific discovery needs.



<https://www.youtube.com/watch?v=imTvLFQlbqA>

# The power of data discovery: a case study

## Business challenge

A large European train operator wanted to advance from reactive maintenance to preventative, condition-based, and finally to predictive maintenance.

## How data discovery helped

OMNETRIC's parent company, Siemens, partnered with Teradata to conduct a data discovery project. Using Teradata's Aster-powered data discovery analytics, Siemens was able to correlate sensor and engineering data, classify sensor readings, "sessionize" the data into relevant intervals, and model the target variable (engine problem Y/N).

Engine sensor data was analyzed to predict train failure, starting with a small training set of roughly one million sensor log observations and several thousand engineer reports describing the failure and the fix.

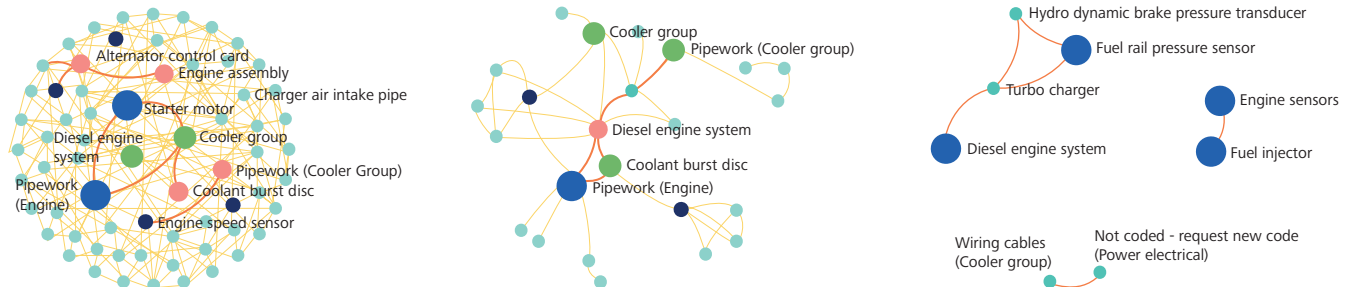
Aster Affinity functionality (see below) supported the identification of components that failed in combination, and variables that were likely to be useful in predicting the target variable.

Aster nPath functionality (see below) "pathed" the predictive variables identified in the affinity analysis to deliver further insight.

## Result

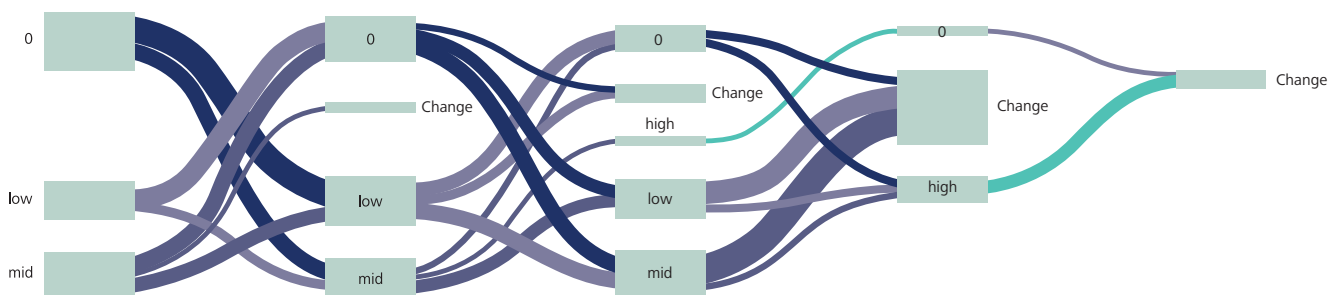
This solution has increased the uptime of the operator's trains, improved planning and streamlined supply chain management, reduced costs and increased revenue opportunities. Now able to confidently deliver on reliability and performance guarantees, the operator can begin to develop new business models.

## Teradata's Aster Affinity functionality



Nodes represent single repair codes. A line between nodes means that the two connected repair codes have appeared in the same train at least once (thicker lines mean more occurrences).

## Teradata's Aster nPath functionality



Results show a daily pattern of "mid-low-mid" engine temperature readings often appearing three days ahead of engine failure.

# Ready to get started?

OMNETRIC can help you get started with analytics quickly and easily

1. We start with comprehensive data scientist engagement
2. You select the discovery infrastructure:
  - Mobile: running in your data center on commodity hardware
  - Cloud: out of a data center in the European Union
  - Build your own: using your own hardware, we bring the software
3. We deliver. You benefit.

## 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](http://www.omnetric.com).

OMNETRIC is a Siemens company.

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## About OMNETRIC Energy Insight

Our Smart Grid Data Discovery approach is an integral part of our Energy Insight service offering. It helps utilities uncover the value within available data quickly and affordably, and to steer their analytics strategies to achieve swift, targeted value delivery. OMNETRIC's Energy Insight is all about smart grid analytics. We help utilities to explore and integrate data, and implement and operate analytics solutions to help them better plan, design, construct, extend, operate, and maintain transmission and distribution (T&D) assets and networks.

Our solution architecture includes a utilities logical data model that leverages IT/OT outputs, integrates and applies them to deliver benefits in areas such as revenue protection, transformer maintenance and load management, substation equipment management, T&D asset management, outage management, system modeling, power quality optimization, advanced distribution management, demand response and management, security management, micro grids, and real-time network operations.

In conjunction with OMNETRIC's other four service offerings – Smart Markets, Grid Operations, Strategic Advisory and Business Transformation, Architecture, Integration and Technology – Energy Insight presents a comprehensive, integrated offering to support clients in the energy sector with innovative solutions for a smarter grid.