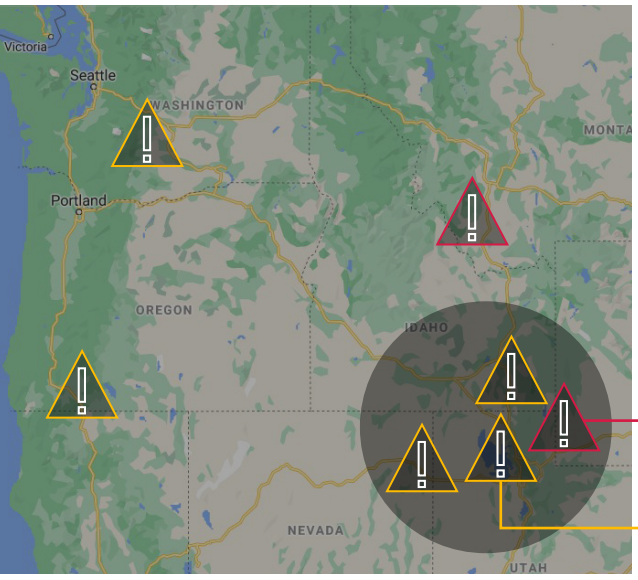
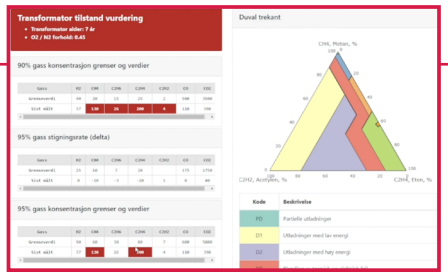
ENABLING SMARTER SUBSTATION OPERATIONS WITH COGNITE DATA FUSION

Improve Reliability • Maximize Asset Life Cycles • Optimize Work Order Management

Reliable substation operations present unique OPEX challenges from an ongoing asset management and planning perspective. With much of the current substation infrastructure (breakers, transformers, etc.) in advanced stages of their life cycles, operators must keep a close eye on asset health across a vast network of remote facilities. Maintenance and replacement planning already depend on a variety of data and analyses, including control system data, dissolved gas, and inspections, but there is a clear opportunity to leverage these programs even more effectively through digital means to improve the confidence of maintenance decisions and further reduce costs.

The Power of a Secure, Unified, Contextualized Data Model





Substation XYZ: Overheated Windings

- Alert Tagged With Probable Cause
- SME Equipped for Triage & Validation
- Decision Integrates with Work Order
- Field Team Equipped with Data

- Alert to routine maintenance needs at nearby substation
- Consolidate with high-priority workflow above

A major technical challenge today in achieving optimal operations and maintenance (O&M) centers around the disparity of data from different source systems that is inherently difficult to access, must be contextualized or given meaning manually, relies on advanced analytics to process effectively, and lacks proper governance and the means to operationalize at scale. Solving this successfully — and applying it to an expanding portfolio of digital use cases — depends on creating a scalable data model that integrates data effectively and makes it available to all consumers and applications as a "single source of truth." This is how the industry will be able to realize the vision of a true risk-based means of managing assets across the substation network.

Apply Substation Data to Ensure Reliability and Decrease Operating Expenses

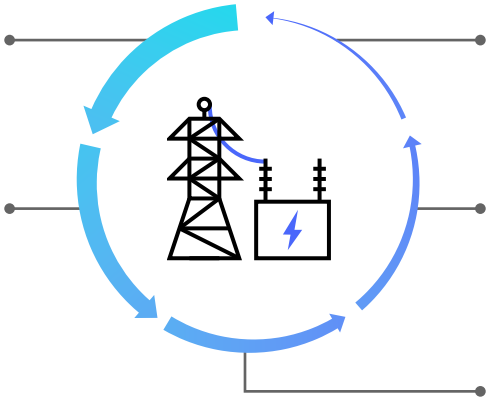
Cognite Data Fusion is the leading industrial data foundation that makes traditionally siloed substation data available, usable, and contextualized so that users around the organization can improve decision-making and automate complex parts of the reporting process. CDF:

- Aggregates and contextualizes big data from all available IT and OT data sources
- Empowers data scientists, engineering, domain experts, and analyst workflows
- Enables operationalization and scaling of digital applications with open integrations (APIs/SDKs)
- Ensures data quality and lineage throughout the development pipeline and into the end application

Scaling Distributed Substation Data and Analytics With a Common Data Model

Improve Operational Visibility
On-demand health index & analysis across fleet

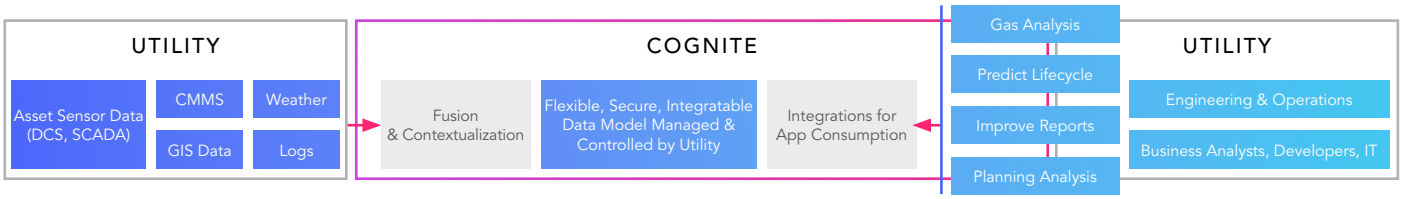
Augment Existing Analytics
Incorporate predictive hybrid models (Physics & ML)



Optimize Truck Rolls
Group work orders to maximize wrench time

Reduce False Positives
Realize cost savings from non-essential RCA

Increase Decision Confidence
Leverage more data & insights with less effort



Case Study: Cognite worked with a major grid operator to improve the monitoring and maintenance programs for their entire fleet of transformers by aggregating and contextualizing the data from across the network and integrating advanced analytics into user-friendly dashboards for consumption by their subject-matter experts. The operator expects to save more $2 million a year by preventing unexpected failures and moving to a more on-demand maintenance model, and is already strategizing other key use cases that can be solved from this functional data model.