

# Cognite Offers A Platform To Springboard Digital Twin Creation For Asset Heavy Industries

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# Cognite Offers A Platform To Springboard Digital Twin Creation For Asset Heavy Industries

This report is one in a series providing managers in operations, maintenance and engineering roles with comprehensive coverage of vendors and new value propositions for digital twins of industrial facilities. Cognite, an Oslo-headquartered firm, offers industrial DataOps and contextualisation capabilities through its Cognite Data Fusion platform, along with a suite of capabilities for asset health monitoring and improving the effectiveness of frontline workers. Four categories of buyers should work with Cognite: 1) oil and gas maintenance managers looking to boost reliability and uptime; 2) production engineers looking to optimize output, reduce losses and save time; 3) operations managers with a digital field workforce enablement agenda; and 4) IT managers in firms with a digital twin strategy.

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## ORGANIZATIONS MENTIONED

Aarbakke, Aker BP, Aspen Technology, BP, Dynamics EAM, Epic Games, ExxonMobil, Fortnite, Hafslund Eco, OMV, OSIsoft, SAP, ServiceMax, AVEVA, Yokogawa Electric.

# Cognite Offers A Suite Of Data Integration And Digital Twin Offerings For Asset-Intensive Firms

This report is one in a series providing managers in operations, maintenance and engineering roles with comprehensive coverage of vendors and new value propositions for digital twins of industrial facilities. Verdantix spoke with Kiran Midha, Product Marketing Director, to learn more about Cognite's approach to digital twin success. We heard that Cognite's business consists of:

- **A large team of technical experts located in three countries.**  
Cognite is headquartered in Oslo, with offices in US and Japan. Cognite was founded in 2016 by Dr John Lervik, CEO, and Geir Engdahl, CTO. In 2020, the firm has 400 employees, consisting of professionals with experience in DevOps and individuals with in-depth industry experience.
- **\$50 million revenue in 2019 from blue-chip customers across four verticals.**  
In 2019, Cognite received \$50 million in revenue from both software and services offerings. Customers include blue chip firms in oil and gas, industrial manufacturing, power utilities and shipping. Named customers include Aker BP, BP, ExxonMobil, Aarbakke and Hafslund Eco.
- **Cognite Data Fusion platform as the core value proposition.**  
Cognite's flagship solution, Cognite Data Fusion (CDF), offers capabilities to break IT/OT data siloes, and to centralize and contextualize operational asset data with IT and engineering technology data. This increases the ease as well as thoroughness of data analysis along with enabling visualization and simulation of assets and equipment.

## Cognite Data Fusion Provides A Platform For Contextualization And Visualization Of Assets

Headquartered in Oslo, with \$50 million in revenues in 2019, Cognite offers data aggregation and contextualization solutions to customers across oil and gas, industrial manufacturing, power utilities and shipping. Cognite Data Fusion, a data management platform, provides:

- **Data integration to break IT/OT siloes.**  
CDF enables clients to extract operational data directly from source systems such as sensors, historians and other asset management platforms, and integrate it with data in data warehouses and lakes, creating a single cloud-based storage and access location. This includes the automation of statistical analysis of data coming into the platform, and users can set the level of granularity for the analysis. This means that operations and engineering teams can explore the data with greater ease. The tool also enables data management and configuration.
- **Contextualization of operational asset data to increase ease of data analysis.**  
CDF uses a combination of machine learning, rules engines, and subject-matter expertise to create a pipeline of data tagging and labelling so that CDF knowledge graphs are automatically populated. This can liberate information from documents, diagrams, images, and videos to increase the ease of data analysis.
- **Visualization of assets leveraging multiple data sources.**  
Cognite's web viewer SDK, REVEAL, can integrate computer-aided design (CAD) visualizations saved in CDF, and then support in-browser rendering based on geometry optimizations. Users can ingest files from terrestrial laser scanners, scans from drones, and subsea sonar scans into the system to enable

rendering of point cloud data, either in tandem with a CAD model or as a standalone. The rendered 3D models can then connect with asset tags and live sensor data, providing a granular view of the whole asset.

- **High-fidelity 3D models created through visualisation capabilities with third-party partnerships.** Cognite leverages asset level visualisation capabilities along with a partnership with Epic Games, makers of computer game Fortnite, to use the latter's Unreal Engine simulation software to deliver a dynamic and holistic high-fidelity 3D simulation of a whole asset. Data inputs from sensors and drones enable the updating of the twin to ensure that the virtual replica maps to changes made in the physical asset.

## Cognite Offers A Range Of Solutions For Diverse Use Cases

Cognite Data Fusion, Cognite's data management platform, enables clients to aggregate siloed data, contextualize it, and then create a 3D visualization. Cognite also has a suite of business applications, which include:

- **Enhanced remote operations through integrations with robotic sensing.** Cognite Remote, the firm's asset integrity solution for remote operations offers integrations with remote sensing hardware, including UAVs and robotics. These integrations enable users to leverage visual and ultrasound data to update virtual replicas of an asset. Cognite then also offers analytics that interpret the data and incorporate it within digital twin models. This solution also enables the completion of work without requiring employees to operate close to one another. In 2020, Aker BP worked with Cognite to deploy Spot, a robot offered by Boston Dynamics, along with other drone technologies, at its Skarv installation in Norwegian sea. This was a pilot project to gauge the performance of autonomous inspections.
- **Automated identification and reporting to reduce unplanned downtime and improve maintenance planning.** Cognite Maintain, the firm's smart maintenance solution, offers capabilities to set equipment and asset level KPIs, and automate reports when performance deviates and anomalies are detected. Users can then see a dashboard view of KPIs and benchmark data. Cognite Maintain also offers analytics to optimize maintenance workflows, leveraging both maintenance and operations workforce data insights to improve planning and scheduling, as well as to reduce deferrals, minimize operational costs, and decrease backlogs.
- **InField maintenance and operations application that enables efficient execution of field activities.** Cognite InField, the firm's remote workforce management solution, provides personnel on the ground with access to contextualized asset-level data, to locate equipment and increase ease of maintenance tasks, through a mobile or tablet-based application. The app enables generation and optimization of tasks, schedules, and inspection round plans, that sync with EAM systems offered by AVEVA, Dynamics EAM, SAP, and ServiceMax. The app supports administrative processes such as the creation of smart reports and integration with work permitting tools. The system also integrates with CDF and Cognite Maintain to leverage additional data insights.
- **BestDay production targets to boost potential outputs of facilities.** Cognite BestDay, the firm's production optimization solution, enables users to monitor real-time production versus production targets and identify any deviations. Monitoring includes a view of bottlenecks through a choke model. A client's statistical 'best day' is calculated based on production data as a means to provide a site-level baseline. The system can also capture and log deferrals, as well as provide console access to hybrid AI advisors that provide notifications and advice on production.

## Cognite Solves Business Challenges For Four Different Functions Within Asset-Intensive Industries

Cognite's offering enables users to break IT/OT data siloes, gain access and insights into their industrial as well as operational data to achieve reductions in unplanned downtime, view 3D simulations of their assets, improve work scheduling, and create data exploration and analysis tools. Prospective customers who can benefit from working with Cognite are:

- **Oil and gas maintenance managers looking to boost reliability and uptime.**  
Maintenance managers in oil and gas firms can leverage Cognite Smart Maintenance to prevent failures, streamline work processes, provide overviews of critical equipment, and save time and costs through automation. Aker BP at its Valhall field implemented Cognite Data Fusion to optimize the shutdown valve maintenance process, achieving 50% time reduction for an average maintenance session and 80% reduction in hours engineers spend on testing (see [Verdantix Aker BP Lowers Operating Costs And Increases Productivity With Its Digital Transformation Initiatives](#)).
- **Production engineers looking to optimize output, reduce losses and save time.**  
Production engineers at oil and gas, and manufacturing firms can leverage Cognite Data Fusion platform to centralize as well as contextualize data from multiple systems and gain insights into asset and operational activity that impact production levels. OMV, an Austria-headquartered upstream and downstream oil and gas firm, worked with Cognite to aggregate data from six different systems to improve the ease of monitoring well operating envelopes, saving five hours of work time per week and reducing production losses. OMV also worked with Cognite to improve the process for calculating condensate-gas ratios and water-gas ratios, through accessing data from four different sources, including OSIsoft PI and AspenTech's Aspen HYSYS. This created an estimated \$1.25 million in annual value for OMV.
- **Operations managers with a digital field workforce enablement agenda.**  
Operations managers can implement Cognite InField to derive data insights to reduce wasted time, resources, and labour. Aker BP implemented Cognite's InField at the Ivar Aasen site. The site's data was ingested and analysed within the CDF platform and then made available to field technicians on mobile devices, allowing an immediate view of sensor data and historic equipment performance. This increased the number of maintenance jobs performed each month by 10% and achieved a 50% reduction in time spent on routine inspections.
- **IT managers in firms with a digital twin strategy.**  
Firms undertaking a digital twin strategy face the significant challenge of connecting or aggregating data between multiple systems. In the Verdantix survey of 284 managers across asset-intensive industries, 85% responded that they either agreed or strongly agreed that the fragmentation of IT systems at their firm means that implementing a single platform for asset performance management is not achievable (see [Verdantix Operational Excellence Survey 2019: Budgets, Priorities & Tech Preferences](#)). For a firm to achieve its digital twin strategy, IT managers are tasked with breaking down data siloes and integrating systems. These teams should work with Cognite to implement CDF to make their disparate systems data available to digital twin systems. Yokogawa, a Japan-headquartered integrated manufacturing and industrial solution provider, worked with Cognite to use CDF to access and aggregate data from multiple manufacturing systems in its Kofu plant. This data was then provided to maintenance workers.



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## WHY VERDANTIX?

Verdantix is an independent research and consulting firm with a focus on innovative technologies that optimize business operations. We have expertise in environment, health, safety, quality, operational risk, as well as smart building technologies.

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