COGNITE

CASE STUDY

How Aarbakke is Leapfrogging the Industry and Taking Control of Its Digital Future

Partnering with Cognite, Aarbakke created an industrial data foundation that:

- Delivered 6% of annual revenue in recognized value after 11 months
- Reduced time to deliver new use cases from 6 months to 1 month
- Scaled to address 15 use cases (and counting) across their operations

SECTION ONE

An Operational Data Foundation Built for Scale

Aarbakke's journey began with an ambitious two-person digital team with the objective of becoming a digital leader capable of delivering many use cases across their value chain.

To achieve this objective, they needed an operational data foundation with a reusable data model to build solutions across asset management, quality, sustainability, and robotics. Because the digital team was small, another important requirement was to limit the effort to maintain their data foundation. Previous attempts to create this foundation had proven challenging. It took an entire year just to connect all the equipment on the shop floor, with minimal value delivered to operations.

Aarbakke chose to partner with Cognite for the second attempt to develop an operational data foundation that met the company's needs.

Cognite Data Fusion, an Industrial DataOps SaaS offering, was able to integrate and contextualize all of Aarbakke's machine data in weeks instead of months. In addition, Cognite Data Fusion integrated data from Aarbakke's MES, ERP, quality system, and tooling database. The end result was a rich data foundation with a reusable data model.

Combining this data model with Cognite's open, API-first approach made data meaningful and accessible for Aarbakke's digital team to deliver use cases. To reduce the effort to maintain solutions, Cognite Data Fusion also provided the data governance and quality monitoring required to minimize the data management burden on Aarbakke's digital team.

The efficiency gains in creating Aarbakke's industrial data foundation can be seen at each step of the process:

COLLECT, INTEGRATE, ACCESS

Without Cognite Data Fusion

Set up infrastructure:

- Previous tools required server infrastructure to host the databases—did not scale well with new machines and routinely overloaded CPUs resulting in downtime
- 1 solution architect (SA) for 1 week + perpetual solution architecture needed for at least 1 day per month

With Cognite Data Fusion

Set up infrastructure:

- Zero effort needed from customer in order to host raw and clean data
- Everything provided as SaaS

Minor cost savings in 1st setup, but major cost savings in scalability

COLLECT, INTEGRATE, ACCESS

Without Cognite Data Fusion

Access:

- Previous systems did not support Azure AD integration, so continuous updating of users/logins required
- Perpetual IT admin need for 1 day per month
- Possible data breaches

Ingest:

- Out-of-the-box; but does not support the entirety of data sent from machines
- Only supported a very small subset of additional data sources
- 1 Solution Architect for 1 week to deliver

With Cognite Data Fusion

Access:

- Out-of-the-box integration with Azure AD
- Granular data access to underlying data supports better collaboration/data sharing with customers and suppliers
- 1 Solution Architect for 1 day

Ingest:

- Custom extractor utilizing Python toolkits and open APIs (significantly more data than previous tool 10X increase in available data from 15 time series per machine to 150 time series per machine
- Fully scalable and automatically onboards new machines
- Out-of-the-box extractors for database setup in days
- Time: 2 Solution Architects for 2 weeks

CONTEXTUALIZE AND UNDERSTAND

Without Cognite Data Fusion

Contextualize:

- Significant manual effort to set up static dashboards for each machine
- Information models exist per solution
- 1 subject matter expert (SME) for 4–5 months

Visualize:

- Custom solution from software vendor; low-code tool, but outdated very quickly
- Did not allow for best-in-breed visualization
- Resources included in Contextualize phase (above)

With Cognite Data Fusion

Contextualize:

- Flexibly-adopted protocol standards automatically for all machines
- See Ingest (above) First machine = 2 weeks
- Next 50 machines = 2 hours

Visualize:

- Connector to Qlik Sense (BI tool) developed with open Cognite API
- 1 Solution Architect for 2 weeks Out-of-the-box use of Grafana
- Use of open-source tools like Plotly Dash with Python SDK for fully custom front ends
- Choose best application for each use case

DEVELOP AND DEPLOY

Without Cognite Data Fusion

Evaluate /data exploration:

- There was no good place to store the contextualization; all of it was done in configurations specific to the use case (similar to a large Excel spreadsheet with mappings)
- Average new solution would require 1 data engineer plus 1 data scientist or SME 4 weeks to find and prepare data

With Cognite Data Fusion

Evaluate /data exploration:

- Supporting both data scientists and the SME to find the required data for the use case using fusion UI and the Python SDK
- Average new solution would require 1 Data scientist or SME 1 week to find and prepare data

DEVELOP AND DEPLOY

Without Cognite Data Fusion

Deploy:

- Running Docker or Python jobs on dedicated servers
- Would always require data engineers for deployment
- Depending on server load, would occasionally require increasing server capacity (not a significant cost, but efforts to acquire more capacity slows project delivery)

With Cognite Data Fusion

Deploy:

- Cognite functions
- No need for solution architects to be involved in cloud hosting
- SME is able to deploy independently
- Time saved: 2 data engineers (IT specialist) for 1 week

MONITOR AND GOVERN

Without Cognite Data Fusion

Monitoring the solution:

- Only alerted reactively by users if the solution went down
- Limited ability to troubleshoot or investigate

Data governance:

- Laborious to selectively share data with partners or other externals (impossible for some data)

With Cognite Data Fusion

Monitoring the solution:

- Active monitoring on all deployed solutions
- "Data Lineage" makes troubleshooting easier
- Estimated reduced time to RCA (root cause analysis) for a data engineer is 4 hours

Data governance:

- All Cognite data sets connected/governed in Azure AD—automatic permissioning for externals/partners
- Time saved: 1 IT consultant for 2 days for every batch of data shared externally

MONITOR AND GOVERN

Without Cognite Data Fusion

Data lineage:

- No or very limited documentation of data lineage

With Cognite Data Fusion

Data lineage:

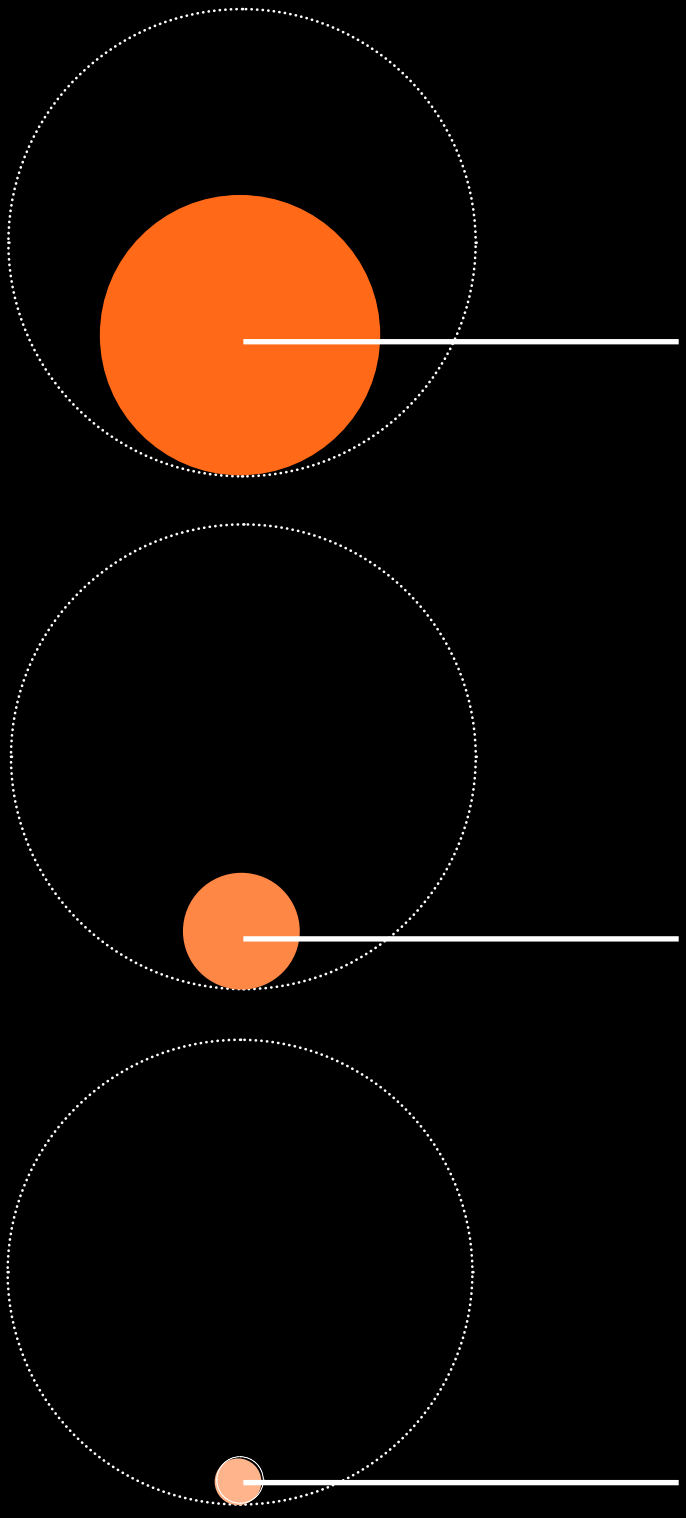
- Easy to store and manage data lineage through data sets, transformations etc.
- Aarbakke's IT consultant is now building in Cognite Data Fusion (e.g. Transformations) to maintain transparency and make it easier to modify in future

SECTION TWO

Application and Solution Development

Delivering value with an operational data foundation is determined by the speed, scale, and impact of the use cases created.

Aarbakke and Cognite began delivering use cases within the first 8–12 weeks of their partnership, enabling Aarbakke to increase their machine utilization by 10%, reduce machine service costs by 25%, and optimize their tooling to reduce excess inventory by 60%.



60%

reduction in excess inventory

25%

reduction in machine service costs

10%

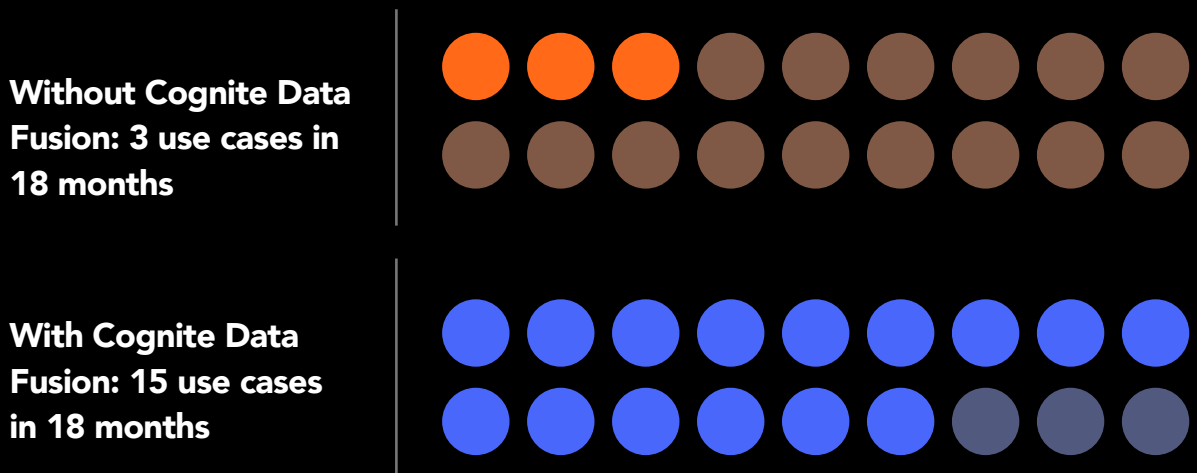
increase in machine utilization

More importantly, because the data model is built to be reused across use cases, the time and effort to deliver these continually decreased. Ultimately, Aarbakke's team saw a fivefold increase in solutions delivered: they delivered 15 over the next 18 months, compared with only three every 18 months previously.

Additional use cases included an energy monitoring solution to reduce energy consumption and real-time quality reporting that reduced the number of quality incidents by 10%. In just under a year, the two-person digital team at Aarbakke was able to deliver 6% of annual revenue in recognized value.

Aarbakke's digital team has continued to build out their industrial data foundation and is currently developing a solution to cut CO_2 emissions, with the ambition of becoming one of the world's greenest suppliers in the energy sector.

Aarbakke's team saw a fivefold increase in solutions delivered: they achieved



SECTION THREE

Cognite's Role Beyond Technology

Owning, developing, and maintaining digital solutions is an important initiative for Aarbakke.

Growing their digital maturity to deliver solutions in weeks instead of months required the right technology and the right partner. While those steps shortened Aarbakke's initial time to value, the path to becoming digitally mature requires an environment that fosters continuous learning. This is why Cognite provides education, training, and support to enable Aarbakke to expand the users of the data foundation to all of its data consumers.

The democratization of data, combined with the right support, has continued the acceleration of use cases and allows subject matter experts to answer questions in minutes instead of weeks.

With access to educational courses through Cognite Academy, as well as to the Cognite Data Fusion user community through Cognite Hub, Aarbakke's digital team is truly empowered to take control of their digital future.

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