

COGNITE

# Digital Worker:

Improve industrial field work execution with accessible data



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## About Cognite

Cognite is a global industrial SaaS company that supports the full-scale digital transformation of asset-heavy industries around the world. Our core Industrial DataOps platform, **Cognite Data Fusion**<sup>®</sup>, enables data and domain users to collaborate to quickly and safely develop, operationalize, and scale industrial AI solutions and applications.

**Cognite Data Fusion**<sup>®</sup> codifies industrial domain knowledge into software that fits into your existing ecosystem and enables scale from proofs of concepts to truly data-driven operations to deliver both profitability and sustainability.

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## Introduction

Asset-heavy industries such as oil and gas, power and utilities, and manufacturing are facing one of the most radical transformations in our lifetimes. But for all the talk about how technologies such as automation and artificial intelligence will change the way we work, it's industrial workers who will do the heavy lifting in the push to transform our industries. **To succeed, they need access to the best tools and the best data.**

Yet in many industries today, field workers need to access several unconnected systems to get the data required to do their jobs. They rely on printing out information, taking notes on pieces of paper, and traveling back and forth between the office and the factory floor or the field.

**Inaccessible data contributes to overall inefficiency.** This roadblock limits the potential of industrial companies to understand their own past,

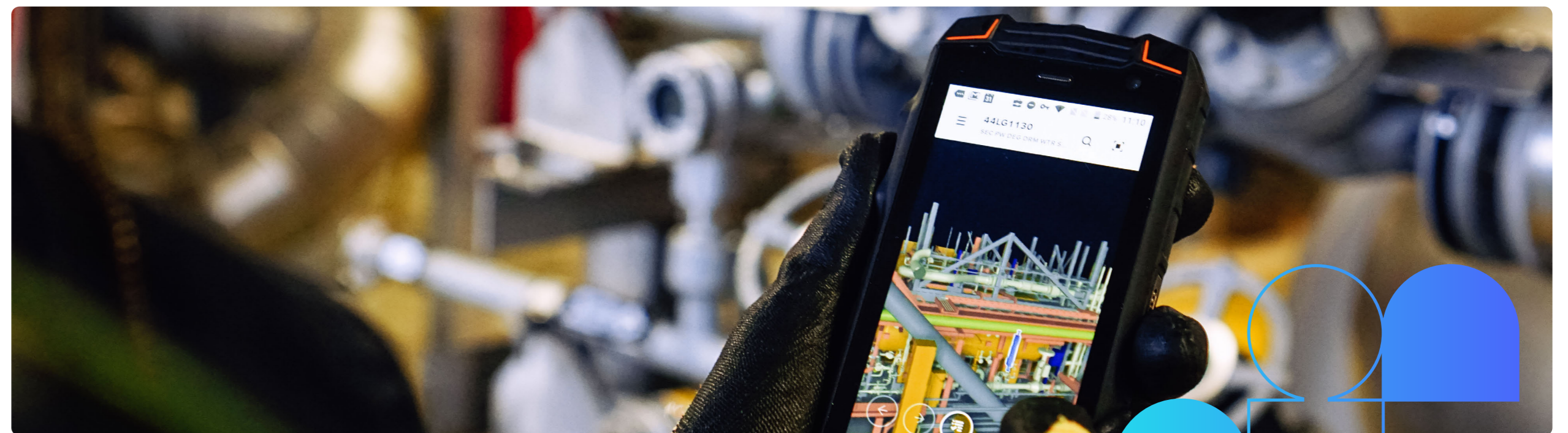
present, and future, hampers the development and scaling of digital solutions, and prevents companies from realizing the trillion-dollar potential in digital transformation.

Industrial data operations (DataOps) can help industrial companies break down their data silos and make their data broadly available and usable, and ready to power applications and solutions that—in the hands of field workers and other experts—make industrial operations safer, more efficient, and more sustainable.

**Boost the efficiency of your field workers with Cognite Data Fusion®, the leading Industrial Data-Ops platform.**

### What is a digital worker?

A field worker who is empowered by technology that makes relevant information available everywhere, connects work orders to related data, and supports key workflows by complementing existing tools.



## ↘ Cognite Data Fusion®

The value of industrial data, liberated and contextualized by a new generation of software solutions, is widely recognized. The willingness to share, open, and digest data is catching on across asset-heavy industries. And adopting industrial software, digital tools, robotics, and new, agile ways of work is gaining ground.

The foundation for the necessary, sustainable reinvention of industry is here. Required now, and at scale, are the know-how, the technology, and the tools to transform.

The software to do this transformational work for asset-heavy industries is Cognite Data Fusion®.

Cognite Data Fusion® is an Industrial DataOps platform that facilitates data and AI workflows, giving organizations trusted data to build solutions and applications with speed at scale.



90%

Less time spent finding data

50%

Less time spent making sense of data

10–25x

Faster solution deployment

[WATCH A WALKTHROUGH OF THE COGNITE DATA FUSION® ARCHITECTURE →](#)

### What is Industrial DataOps?

“DataOps is a collaborative data management practice focused on improving the communication, integration, and automation of data flows between data managers and data consumers across an organization.”

**Gartner**

“DataOps is the ability to enable solutions, develop data products, and activate data for business value across all technology tiers from infrastructure to experience.”

**FORRESTER®**

Cognite Data Fusion®:

-> **Makes industrial data available.** The fastest path to tapping into the value potential of digitalization in industry starts with getting the right data with the right context to the right users at the right time for the right problem.

Cognite Data Fusion® eliminates the time spent on manual data contextualization, offline data discovery, data ingestion, developing a hosting environment, and preparing application data for application consumption.

-> **Makes industrial data usable.** Industrial data becomes truly useful when it is integrated, contextualized, and made securely available, explorable, and actionable to all data consumers—human and machine—within and outside the industrial enterprise. This should encompass all the various sources and formats, including sensor data, process diagrams, 3D models, event histories, asset models, and unstructured documents.

Cognite Data Fusion® enables data and domain users to collaborate to quickly and safely develop, operationalize, and scale industrial AI solutions and applications to production.

-> **Makes industrial data valuable.** Extracting maximum value from data relies on being able to apply advanced models to produce insights that inform

optimal decision-making, empowering operators to take action with confidence. This, in a nutshell, is what is meant by operationalizing data into production for value.

Cognite Data Fusion® codifies industrial domain knowledge into Industrial DataOps software that helps industrial operations draw insights from their data, unlock opportunities in real time, and scale solutions effortlessly.

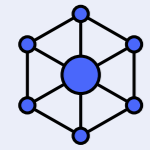
### Cognite Data Fusion® at a glance

Asset-heavy industries need to optimize production, improve product quality, and reduce unplanned downtime by generating more value from their data. Cognite Data Fusion® tackles the most difficult industrial data challenges to provide open, contextualized data for organizations.

### Industrial data challenges

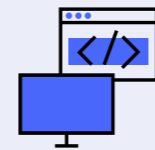
Cognite Data Fusion® provides DataOps at scale for industry, making industrial data accessible, understandable, and useful for data scientists and developers. Cognite Data Fusion® unlocks use cases for industrial data by providing:





## Data in context

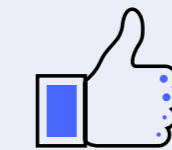
The machine learning contextualization services in Cognite Data Fusion® create relationships between siloed data such as time series, ERP and work orders, tabular data, IoT logs, events, 3D, and photogrammetry.



## Open application architecture

Open standards enable easy integration with widely adopted applications and developer tools.

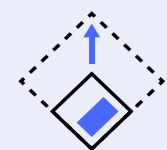
Developer-friendly SDKs and APIs further enhance connectivity.



## Known data quality

Manage data quality on a use case basis to ensure recommended actions are valid and trustworthy.

Use prebuilt rules and create new rules with an available logic engine as needed.



## Scalable data model

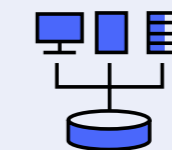
Use templates to scale successful proofs of concept across an entire class of equipment or assets.

Reuse the contextualized data model to solve many use cases from the same model.



## Live data access

Combine live operational (OT) data with simulation or historical data to create hybrid AI models that can address use cases in production optimization or quality.



## Complete data spectrum

Integrate and contextualize unstructured data to enhance asset and process visibility:

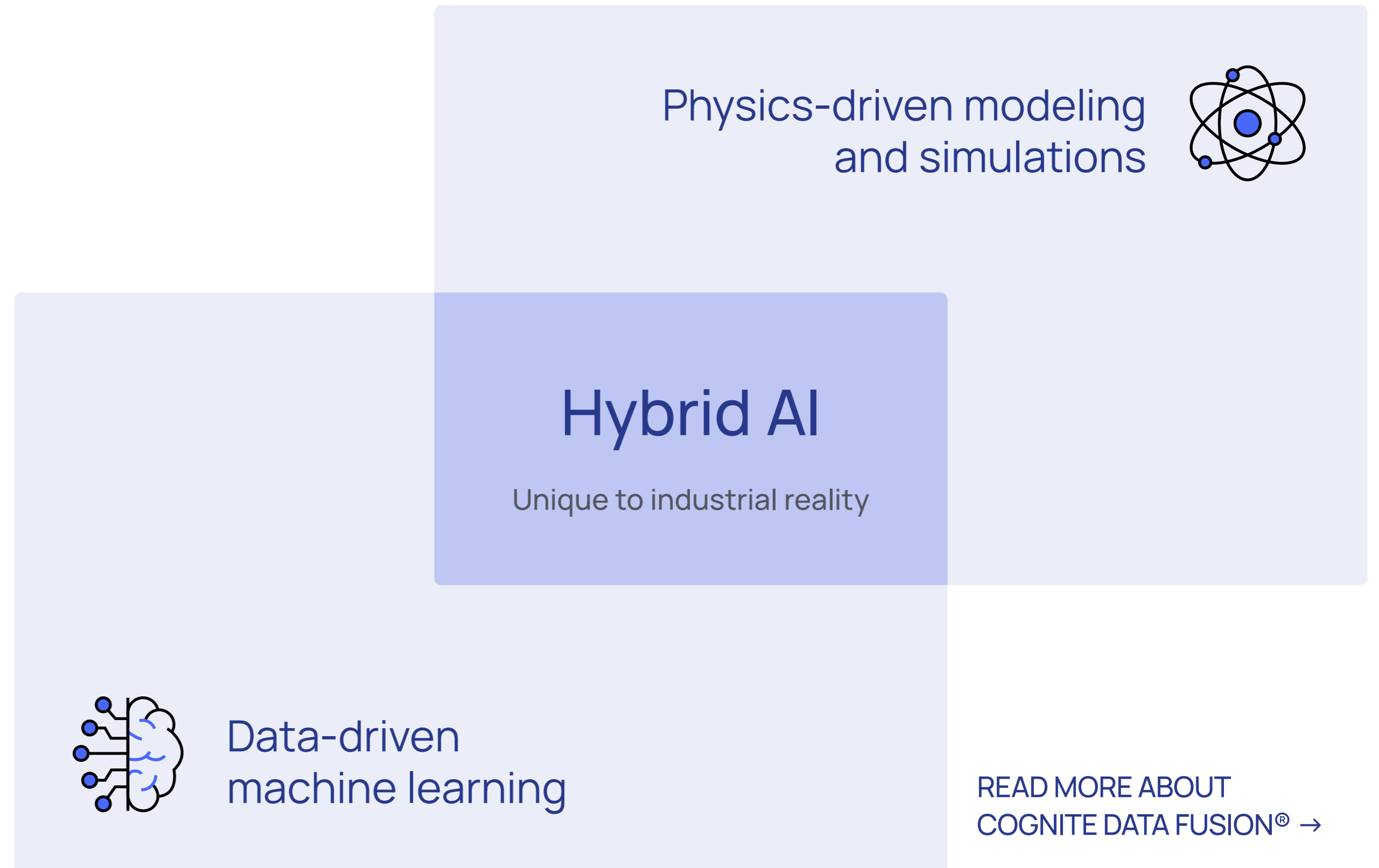
- Robotics to support monitoring and inspection
- Computer vision managing environmental conditions
- Digitize analog signals to support data models

Cognite Data Fusion® benefits:

- Expand the breadth of applications and accelerate development time with a robust data model
- Empower internal development teams with self-service open APIs and SDKs
- Combine your organization's knowledge with Cognite's domain talent and proven partner network
- Democratize embedded subject-matter expertise with data access and contextualization

Cognite Data Fusion® enables hybrid AI

Hybrid AI combines physics-based models and simulations with artificial intelligence to create robust solutions with a high degree of confidence.



## ↘ Cognite's approach to application development

### 01. Human-centered design

Involve users from the start

### 02. Human factors research

Keep users in the loop

### 03. Context- and task-aware design

Consider the environment

### 04. User journey mapping

Visualize existing workflows

### 05. Obsessing over value

Test early, test often



Data that is available, usable, and valuable is only one part of the equation. To be transformative, the data must be able to power applications and solutions that make industrial business faster, safer, and more sustainable.

Impactful solution development is particularly important in the industrial world. In the consumer market, users can in most cases choose from a wealth of products that perform the same task. If one application fails to provide the necessary functionality, then there likely exists an alternative. Users in asset-heavy industries, however, rarely have that luxury.

The solution to this issue is to involve users throughout the entire design and development process.

This idea is at the core of the Cognite design philosophy, which combines academic and practical insights, an emphasis on continually testing products in development, and an overall goal of creating value. This design philosophy can be summarized by five guiding principles:

**01. Human-centered design.** We focus on user needs, designing with workers, not for them. By shadowing field workers and identifying the challenges they encounter in their day-to-day activities, we develop solutions that actually address your field workers' needs.

**02. Human factors research.** We tap into the wealth of best practices, human factors research, and industry standards relevant to asset-heavy companies to make sure that we present information in the best possible way for users to comprehend and engage with it.

**03. Context- and task-aware design.** We test our solutions on field workers' own devices and in the spaces where the solutions will be used to ensure that they will fit into, improve, and even transform workflows. This approach helps tailor solutions to work in environments where field workers normally wear gloves, locations with bad lighting conditions or network coverage, and more.

**04. User journey mapping.** Before we develop a new solution, we visualize workflows to see how activities are connected, who performs what tasks, where dependencies, pain points, and wait times exist, and which solutions your field workers already use. This helps us focus our development resources on solutions that complement existing options and offer new functionality.

**05. Obsessing over value.** We test early and often, collecting experiences from the field that tell us whether or not a solution is on track to generate value for you.



# ↳ Cognite InField

Cognite has developed a suite of software as a service (SaaS) applications that showcase the power of contextualized data in Cognite Data Fusion®. For field workers in asset-heavy industries, Cognite offers InField, which enables field workers to be as efficient as possible by making relevant information available everywhere and by supporting key, routine work processes.

Available on computers and smart devices, InField reduces waste, improves efficiency, and increases safety by optimizing the preparation and execution of day-to-day operations and maintenance activities.

With InField, field workers such as instrument technicians, process operators, mechanics, electricians, and others can:

**30-80%**  
Time saved on maintenance execution

The screenshot displays the Cognite InField interface for user Ivar Aasen. The main view is titled 'Routine Rounds 34\_2021'. It features three large circular progress indicators: '25 Total', '48 %' (with a blue progress ring), and '12 Done'. Below these are several checklist items, each with a status indicator (e.g., 'Done', '12/25', '10/44', '14/32', '3/28', '4/21', '7/70') and a 'Shared with 1' tag. The interface also shows a list of tasks for different shifts, such as 'Monday day shift', 'Monday night shift', 'Tuesday day shift', etc., with their respective completion statuses (e.g., 'Done', '1 comment', '1/2', '2 pictures', '2 comments', '3 pictures', '1 comment', '1 photo', '0/2').

[WATCH A DEMO OF COGNITE INFIELD IN ACTION →](#)

→ Create collaborative checklists. InField integrates with computerized maintenance management systems and supports "one-click" checklist creation based on a work order's object list, eliminating the need for paper checklists. Connected by smart devices, workers can collaborate, view, and check tasks off the lists once completed, improving communication and saving time.

→ Scan tags and access data. With InField, workers can scan equipment tags to access all the contextualized data contained in Cognite Data Fusion®. This includes 3D models, piping and instrumentation diagrams (P&IDs), technical documents, time series, work orders, and more. Easy access to data reduces the need to walk back and forth between the office and the field.

→ Find and navigate to equipment. In addition to scanning tags, InField lets workers search by name to see where equipment is located on 3D CAD models of the industrial installation. This pinpoints the exact location of the equipment and helps workers digitally navigate the surrounding area to see what's connected and marked as areas of interest.

→ Capture and share images in the field. InField's smart reporting capabilities add data and context to field work. Field workers can capture and share images and video in the field for efficient collaboration with colleagues, partners, and third-party suppliers.

→ Troubleshoot in the field. Using InField, field workers can compare real-time data across equipment. Control room operators can also use the app to see the same data and documents that field workers are seeing, which simplifies collaboration.

[LEARN MORE ABOUT COGNITE INFIELD →](#)

## Cognite InField wins 2020 Red Dot Award for Interface Design

In 2020, Cognite InField was recognized for its innovation and user-friendliness with the 2020 Red Dot Award for Interface Design.

The prestigious international award provides a platform for designers, agencies, and companies from all over the world for the evaluation of design. In line with the award's motto, "In search of good design and creativity," 24 international jurors assessed the entries, examining each piece of work and each brand individually and extensively. They paid special attention to the form, the idea, and the impact. Ultimately, only those projects that convinced the experts in terms of their high design quality and creative achievement received a distinction.

InField stood out among nearly 7,000 creative projects from 50 countries in the Brands and Communication Design category.

"I want to congratulate Cognite as a winner of the Red Dot Award on their success. By winning this distinction, they have proved that their work stands for high design quality. They have come out on top in a strong field of international participants thanks to their convincing performance and deserve to be proud of themselves and of their accomplishment."

Peter Zec, Founder and CEO, Red Dot

## ↘ Cognite Data Fusion® in action

### How Cognite InField simplified visual inspection for Aker BP

**Challenge:** When field workers on an offshore installation conduct visual inspection and function tests of equipment, the structure of their day is often determined by the order in which the equipment is listed on a printout from the operator's work management system. The ordering of that object list is rarely optimized, however, which means that workers often crisscross the installation, revisiting the same locations over and over again.

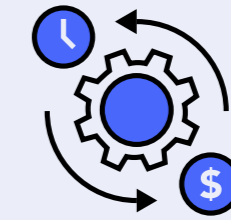
It is not uncommon for some field workers to walk tens of thousands of steps in an average day, navigating installations that in some cases stretch more than a mile end-to-end. By ordering the object list in a more logical way, field workers would be able to conduct visual inspection and function tests more efficiently.

**Solution:** Cognite made 3D models and equipment tags available to field workers in InField to help the independent European oil and gas company Aker BP speed up visual inspection and testing of valves on the floating production, storage, and offloading (FPSO) unit serving the Skarv field in the Norwegian Sea.

InField offers three features in particular that enable field workers to conduct visual inspection and function tests more efficiently:

- Grouping equipment tags by area, which reduces unnecessary trips back and forth between different areas of an installation.
- Displaying equipment tags in 3D, which lets workers quickly locate the tags on their object lists in the field.
- High-level 3D views, which lets workers see the areas containing equipment tags in the larger context of the installation.

**Impact:** By giving field workers the ability to see equipment tags in context with other information—specifically, 3D models of the Skarv FPSO—Aker BP was able to slash the time it takes to inspect one valve from 10 minutes to five. Aker BP estimates that these efficiency gains will reduce the time field workers on the Skarv FPSO spend on visual inspection of valves from 279 hours to between 149-130 hours a year.



# 50%

Less time spent on visual inspection  
of valves



## How Cognite's products helped Aker BP set CO<sub>2</sub> reduction goals

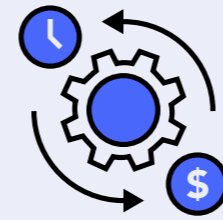
**Challenge:** Aker BP emitted 910,000 metric tons of carbon dioxide in 2017. The company has set an ambitious goal of reducing its CO<sub>2</sub> emissions from 7.6-8.1 kg kilograms per barrel of oil equivalent to less than 5 kg starting in 2020.

As part of reaching that goal, Aker BP is aiming to cut CO<sub>2</sub> emissions at the Skarv field in the Norwegian Sea. The floating production, storage, and offloading (FPSO) unit at Skarv has four gas turbines, of which three need to run to power operations. By installing a steam turbine, Aker BP could power the FPSO with only two turbines, thereby significantly reducing emissions from burning gas.

**Solution:** Aker BP's engineers accessed data stored in Cognite Data Fusion® to run initial time-to-completion and cost calculations on the steam turbine project. These calculations formed the basis for a larger study on how to reduce emissions at the Skarv field.

The engineers also used InField to review 3D models of the Skarv FPSO enriched with point cloud data to verify the placement of the steam turbine.

Together, data in Cognite Data Fusion® and InField helped create a common understanding across different groups within and outside Aker BP about the challenges and opportunities related to the



Reduced CO<sub>2</sub> emissions



Improved planning processes



Reduced maintenance costs

project. The data-driven way of working also reduced the need for offshore planning trips and improved communication between different teams within Aker BP, as all stakeholders could easily access and review the data and 3D models.

**Impact:** The data-driven study determined that the steam turbine project will enable Aker BP to cut CO<sub>2</sub> emissions from the Skarv field by 100,000 metric tons a year by 2025—a major reduction that will help the company meet its sustainability goals.

Cognite Data Fusion® and InField helped Aker BP conduct the study more efficiently. Other than a weeklong trip to take photogrammetry images and collect point cloud data, the entire study was conducted without any offshore verification. This reduced the number of days spent offshore by about 60.

Additionally, the steam turbine project will benefit Aker BP in a number of different ways:

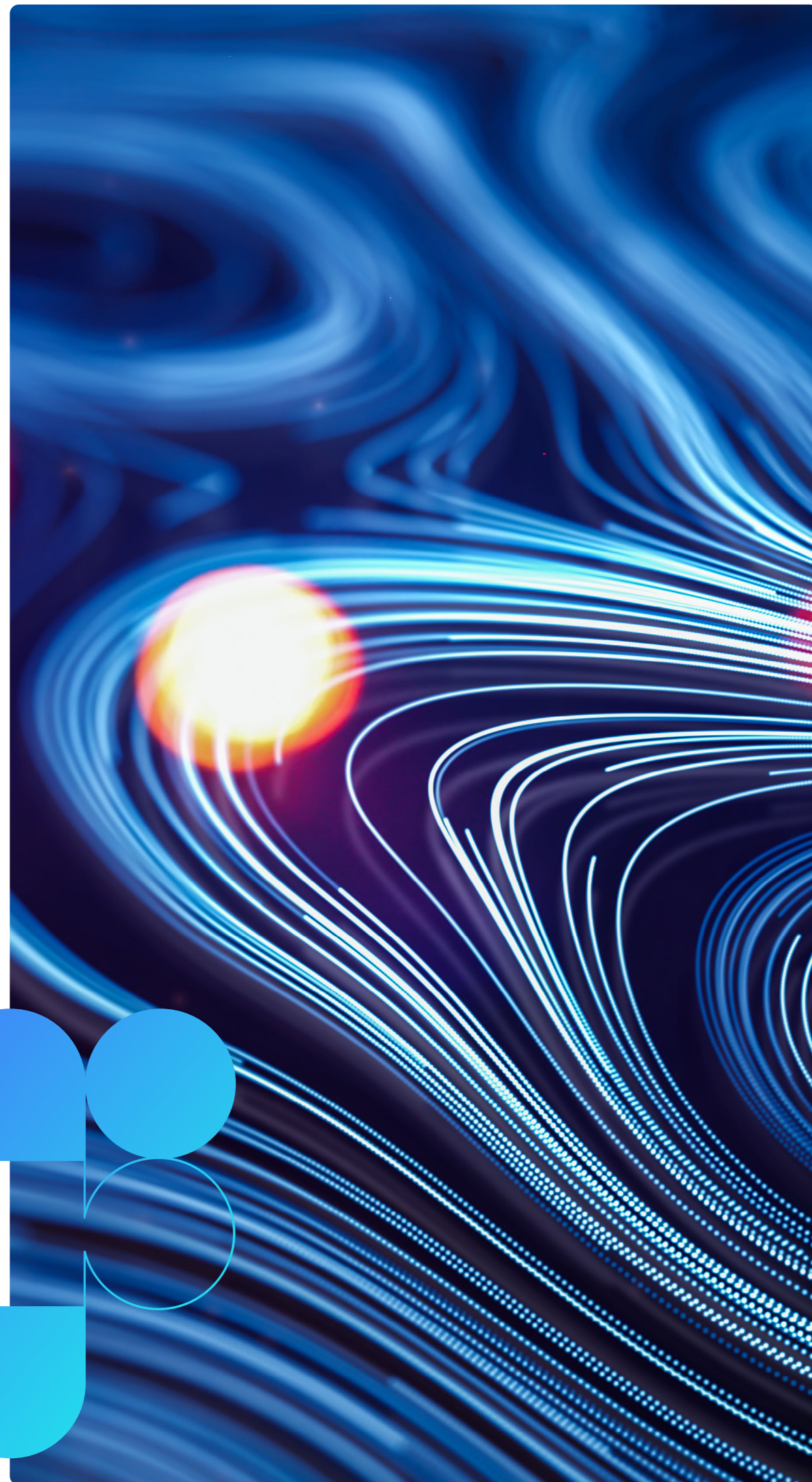
- The new steam turbine will be significantly more

efficient, reducing maintenance costs by an estimated 30%.

- By reducing the number of gas turbines needed to power the Skarv FPSO from three to two, Aker BP can sell the gas that otherwise would have been burned to generate electricity.
- Finally, the photogrammetry images captured to enrich the 3D models of the Skarv FPSO will be reused for other projects and initiatives.



## Conclusion



Industrial transformation will require bold moves and different ways of working. To succeed in the future, asset-heavy industries need to create a culture that is fluent in technology and committed to sustainable transformation.

Industry can attract and retain the best talent by inviting them to solve some of the most important challenges facing our planet, and by proving the scope of industrial workers' impacts, individually and collectively. This work requires getting the right data with the right context to the right users at the right time for the right problem.

Industrial DataOps can help companies make their data available, usable, and valuable. This new discipline provides a new, more contextualized way for industry to consume data, scale faster, and get data to consumers in a form they understand.

Giving field workers easy access to contextualized data in the field achieves three things:

- It empowers field workers to be more efficient in their day-to-day work by having relevant information available when they need it.
- It enables data-driven decision-making in the field, boosting the quality of field work.

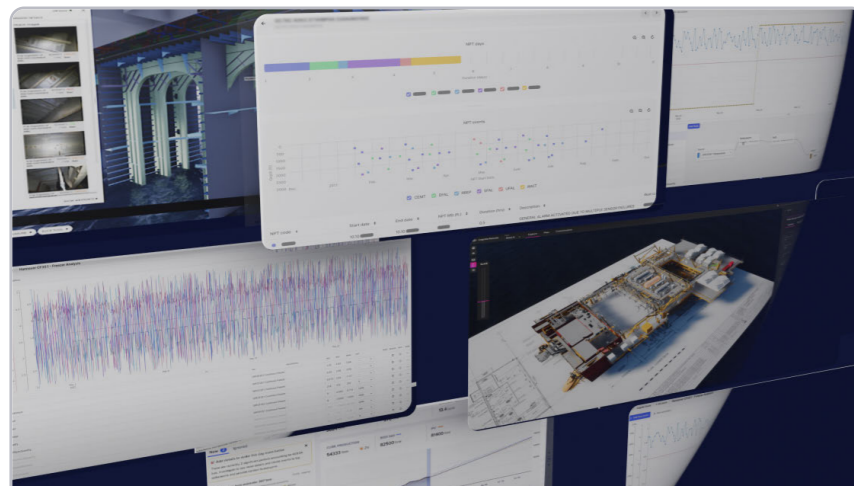
- It supports key workflows and reduces the risk of critical mistakes made due to human error.

Your field workers are your experts. With Industrial DataOps, data becomes another tool in their toolbox.

Boost the efficiency of your field workers with Cognite Data Fusion®, the leading Industrial DataOps platform.

Want to know more about our product?

# Explore more insights from Cognite



## PRODUCT TOUR

Learn from Cognite customers and product managers how Cognite Data Fusion® simplifies and streamlines the data experience of a subject matter expert.

[WATCH NOW →](#)



## CUSTOMER STORIES

Discover how Cognite Data Fusion® makes data more accessible and meaningful, driving insights that unlock opportunities in real-time, reduce costs, and improve the integrity and sustainability of your operations.

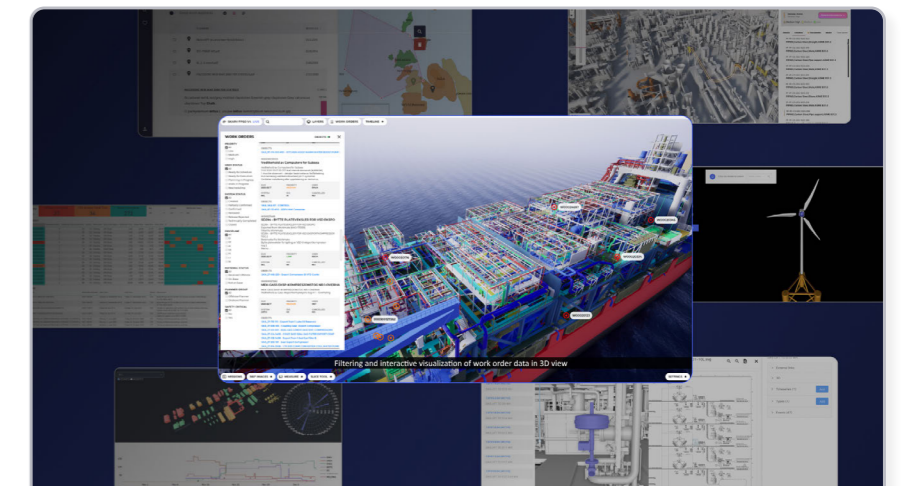
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## ANALYST REPORT

Customer interviews and financial analysis reveal an ROI of 400% and total benefits of \$21.56M over three years for the Cognite Data Fusion® platform.

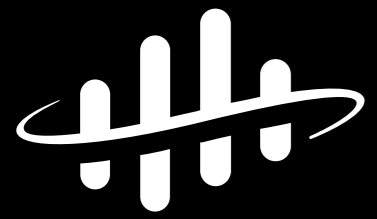
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