COGNITE

Data-Driven Production Optimization:

Maximize production
with Industrial DataOps and AI

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About Cognite

Cognite is a globally recognized leader in industrial software with a clear vision: to rapidly empower industrial companies with accessible, trustworthy, and contextualized data and drive the full-scale digital transformation of asset-heavy industries.

With its market-leading Industrial DataOps platform, Cognite Data Fusion®, and a comprehensive suite of Industrial generative AI capabilities, Cognite AI, Cognite makes it easy for decision-makers to access and understand complex industrial data. Cognite Data Fusion® is a user-friendly, secure, and scalable platform that enables industrial data and domain users to collaborate quickly and safely to develop, deploy, and scale industrial generative AI solutions that deliver both profitability and sustainability.

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Why Production Optimization has a data problem

The promise of data-driven production optimization holds the potential to revolutionize operations, increase workforce efficiency with AI tools, reduce operations costs, and lead more sustainable operations. However, heavy-asset industries, including energy, manufacturing, and power and renewables, continue to experience a recurring challenge - no simple access to complex industrial data.

The mix of modern and legacy systems with data locked in different formats forces data users to spend most of their time searching and cleaning data rather than having it readily available and usable to help solve production challenges. This results in production delays, reactive operations, and slower decision-making processes (Fig 1.).
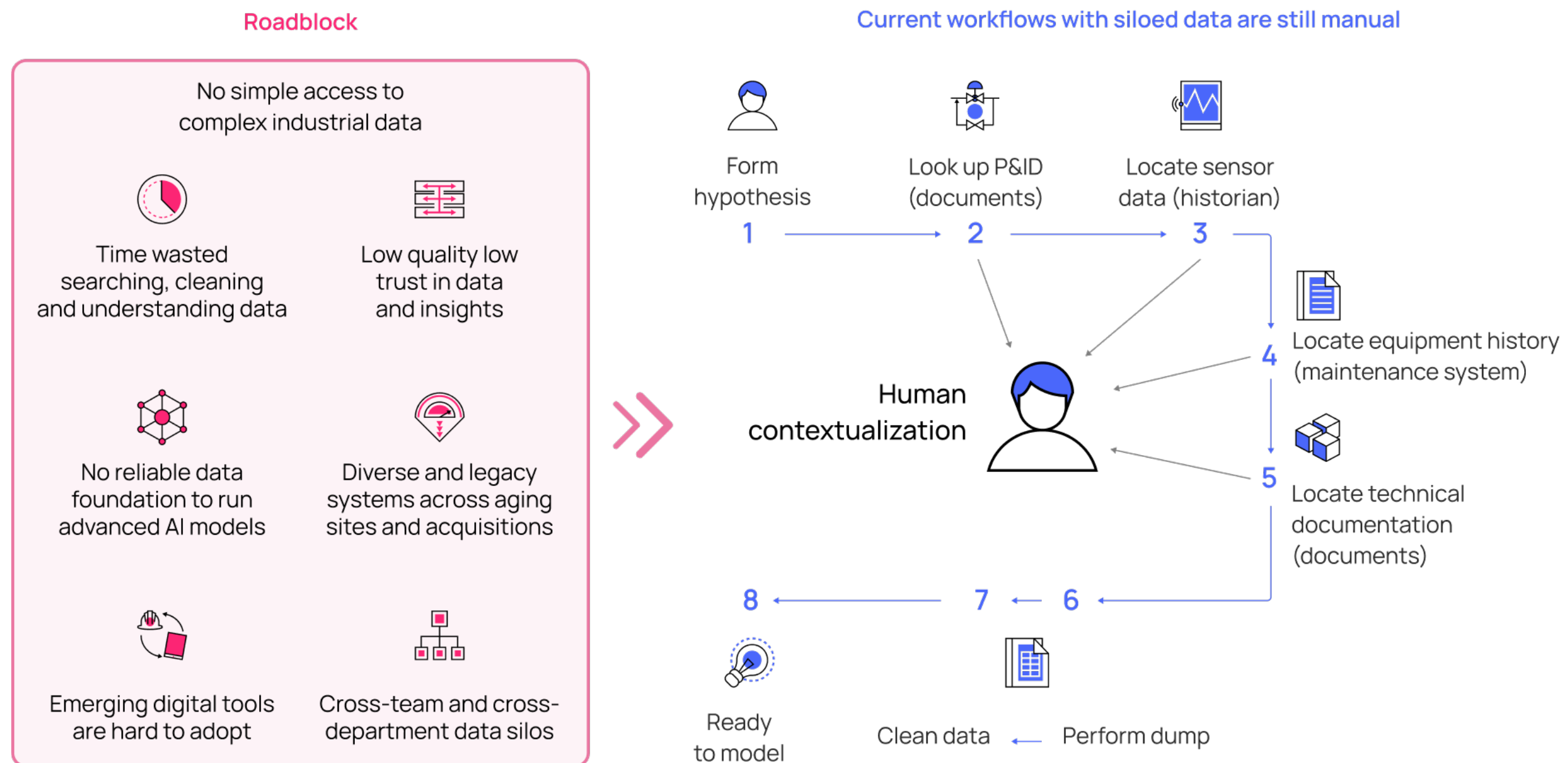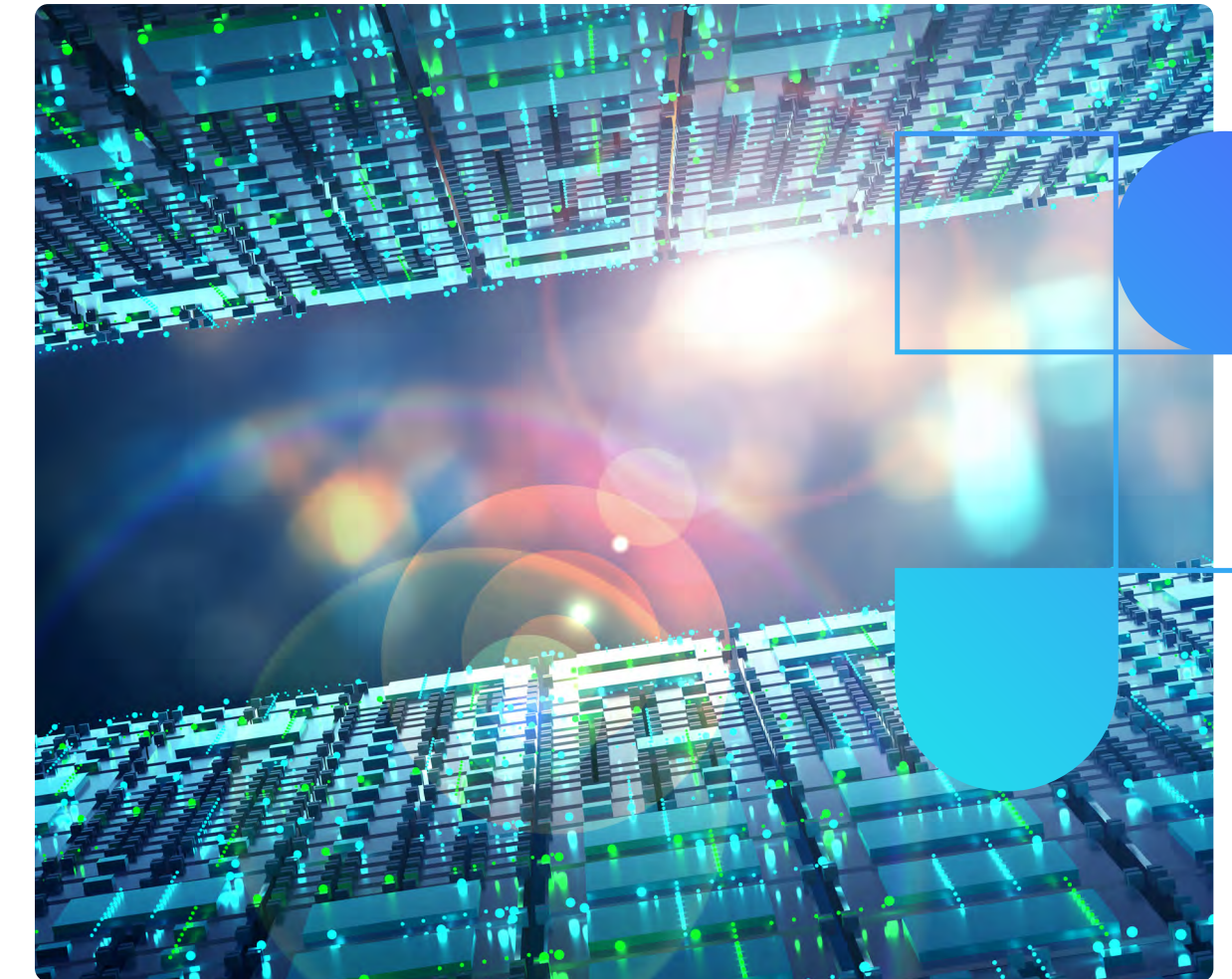

Roadblock

No simple access to complex industrial data

Time wasted searching, cleaning and understanding data

Low quality low trust in data and insights

No reliable data foundation to run advanced AI models

Diverse and legacy systems across aging sites and acquisitions

Emerging digital tools are hard to adopt

Cross-team and cross-department data silos

Current workflows with siloed data are still manual

1 Form hypothesis
2 Look up P&ID (documents)
3 Locate sensor data (historian)
4 Locate equipment history (maintenance system)
5 Locate technical documentation (documents)

Human contextualization

8 Ready to model
7 Clean data ← 6 Perform dump

◀ Figure 1: Example of a manual and siloed work-flow caused by inability to access industrial data efficiently.

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What do we need to enable data-driven production optimization?

Industrial Data Operations (DataOps)→ can help industrial companies break down their data silos and provide simple access to complex industrial data, making data readily available to power generative AI models to build and deploy solutions at scale.

When operators have simple, intuitive access to complex industrial data and insights, they can spend more time solving day-to-day challenges and transform their operations to be more efficient, safe, profitable, and resilient.

Data-driven production optimization requires breaking down data silos, putting that data in context, and an interactive user-experience to **enhance asset efficiency and daily production, mitigate production deferrals**, and **reduce energy consumption and emissions** to meet sustainability goals.

Enabling data-driven production across the enterprise involves:

-→ **Data availability and scalability.** Using Industrial DataOps and AI models for intuitive data discovery and analysis, eliminating manual data search and preparation time.

-→ **Openness and security.** Creating an open ecosystem for easy integration with industry applications backed by robust security practices.

-→ **Data quality assurance.** Implementing robust data validation and cleansing processes to ensure data accuracy.

-→ **Scalable data models.** Leveraging contextualized industrial knowledge graphs and data model templates for faster solution development and deployment at scale.

-→ **Hybrid AI Integration.** Combining live operational data with other sources to develop hybrid AI models for specific production optimization scenarios.

-→ **Enhanced user experience.** Ability to collaborate on data in a single user-friendly interface, leverage generative AI recommendations for streamlined interaction with industrial data, and utilize copilot capabilities to improve productivity and efficiency.
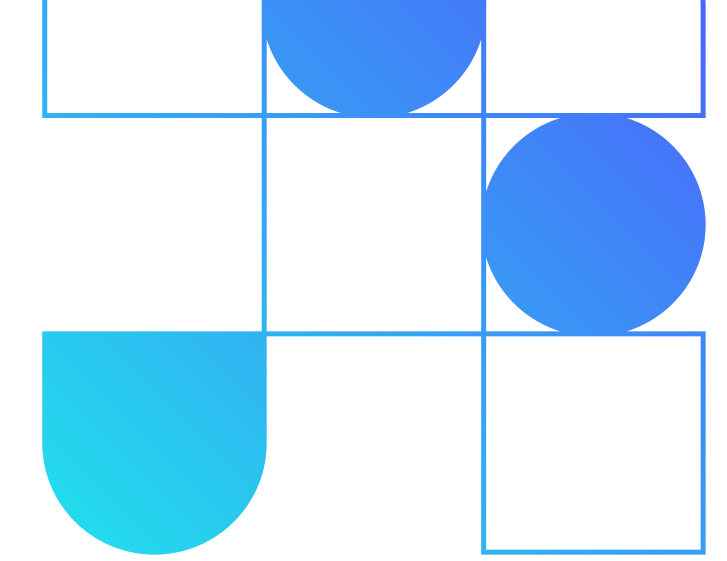
↘ Cognite Data Fusion® use cases for Production Optimization

Cognite Data Fusion® addresses the most pressing production challenges→ energy operators are facing.

By providing real-time organizational visibility on all critical aspects of production, operators can both maximize their production and increase asset utilization, uptime, and throughput.

Here are a few specific examples of challenges being solved with Cognite Data Fusion®. ▶

10-30%
throughput increase

Maximizing Production Efficiency

15-30%
labor productivity increase

AI-Assisted Business Decisions

30-50%
reduction in emissions

Ensuring Safe and Sustainable Operations

Cognite Data Fusion® targets key production performance management processes, helping companies:

Maximize production performance

Improve well performance and reduce the risk of undesired well events

Build, populate, and contextualize a monitoring model to create a detailed, live overview of the health of the well to optimize operating settings. Perform root-cause analyses across the portfolio of wells for early identification and prevention of undesired well events, such as slugging, hydrates, solids, influx, etc.

Increase accuracy in flow rate estimation

Estimate accurate and reliable real-time multi-phase flow rate at the wells or downstream locations with data- and physics-driven Virtual Flow Meter for steady-state conditions.

Increase asset utilization, uptime, and throughput

Automate capacity estimation for dynamic capacity utilization

Model equipment or processes with physics-driven simulators and hybrid AI workflows. Identify operational bottlenecks and optimize facility utilization with dynamic and evergreen capacity estimations of your asset(s).

Optimize gas lift distribution

Automatically run and integrate existing topside, well, and network simulators to perform health monitoring, scenario testing, and optimization of gas lift distribution based on the current capacity.

Detect and mitigate deviations

Leverage AI models to enable deviation detection and provide a real-time view of the most critical tasks to identify and reduce the duration and impact of dynamic deviations and gather the data needed to analyze patterns in performance over time. This provides continuous improvements across planning and execution, fosters enhanced collaboration and lets experts make timely decisions and targeted improvement actions in areas with the highest estimated return on investment.

"OMV uses new digital tools to extract value at brownfield sites with the existing field infrastructure. Rolling out the application in fields with a production history ensures that we can actually back calculate the performance increases. Since we already have all our assets integrated in Cognite Data Fusion®, the marginal cost of scaling is negligible."

Philipp Tippel
VP Production & Engineering, OMV.

OMV

Reduce emissions and optimize energy use

Establish facility emission monitoring, reporting, and optimization

Use a library of sustainability formulas, precon-figured templates, and data models to create transparent and traceable insights quickly. Iden-tify assets' largest emissions sources and receive actionable recommendations to reduce emissions.

Optimize energy use

Model total energy consumption, benchmark energy efficiency, and prioritize targeted optimi-zation actions to achieve energy-saving targets and reduce scope 1 and 2 emissions following GHG protocol.
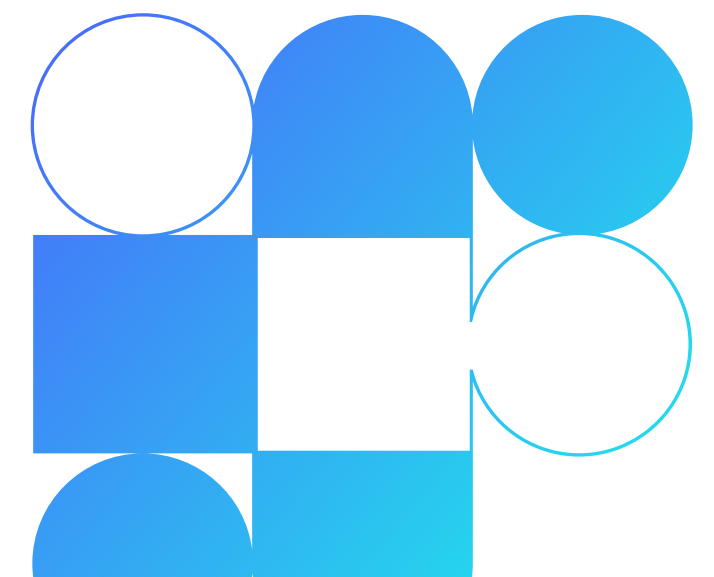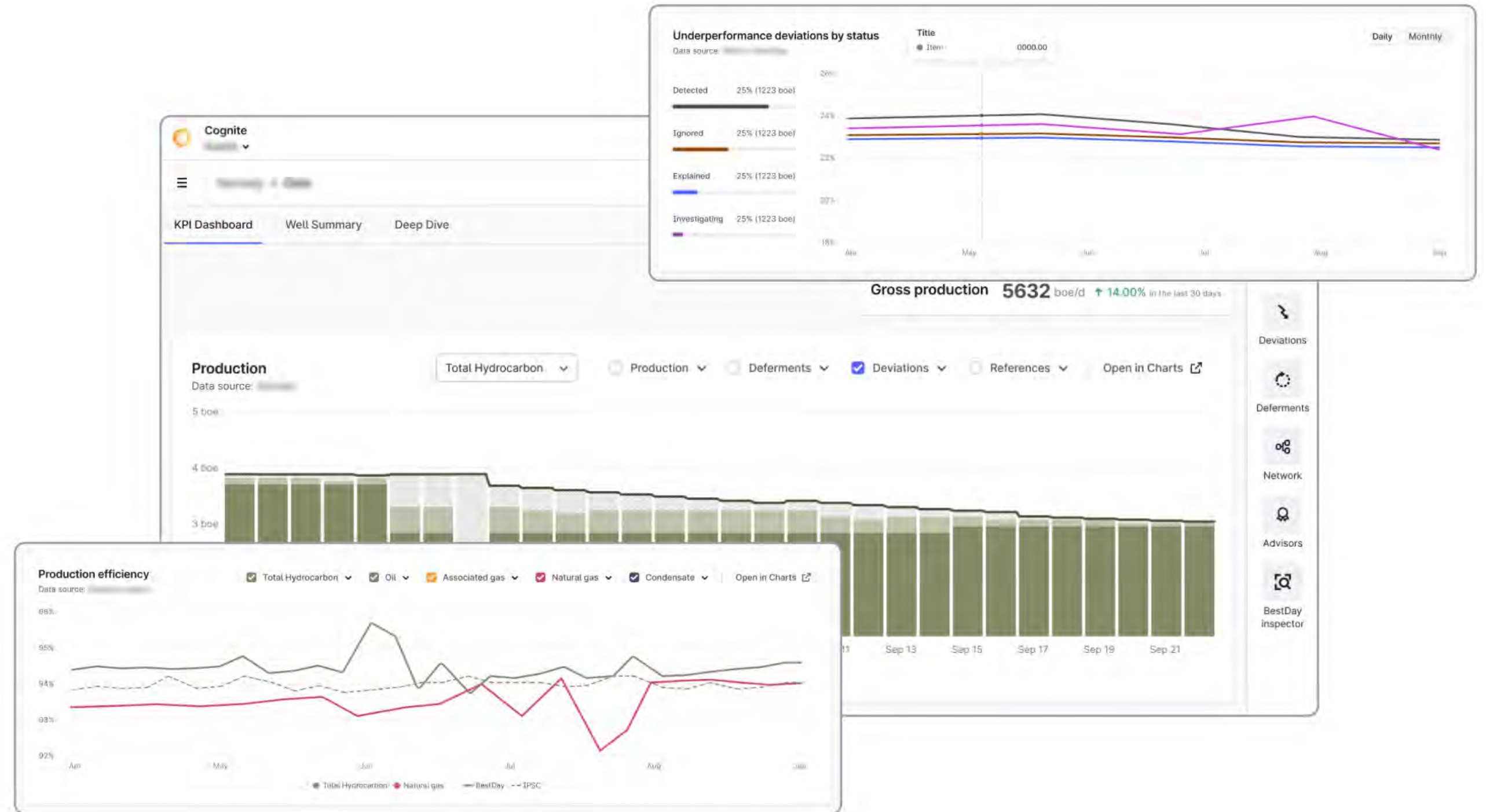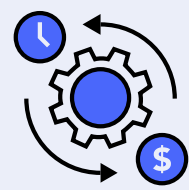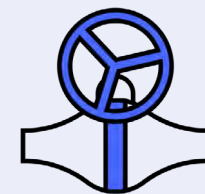
How Cognite Data Fusion® helped OMV automate multiphase flow allocation

OMV used Cognite Data Fusion® to combine data from four different sources to automate the process of calculating condensate-gas and water-gas ratios.

Key outcomes:

$1.25 M
in estimated annual value

Reduced production losses

Challenge: OMV, an Austrian integrated oil and gas producer that operates several fields worldwide, aims to maximize gas condensate production while producing enough gas to meet demand.

Gas production in OMV-operated fields is constrained by market demand. However, gas condensate can easily be stored so that it can be sold later.

All well production streams are co-mingled into a common separator at the onshore processing plant with no individual well liquid metering. Only wellhead wet gas meters (differential pressure, V-cone) are available to measure the individual well gas rates. Hence, there are no facilities installed (onshore or offshore) to enable well testing using dedicated equipment.

Historically, excess field gas deliverability enabled the use of Deliberately Disturbed Well Testing (DDWT) techniques to record the change in total field liquid rates by beaning up or down individual wells to test the wells by difference. Production engineers in the field will analyze well perturbation data once a month and manually calculate new condensate-gas ratios (CGR) and water-gas ratios (WGR) in a spreadsheet.

As the data is often noisy and hard to interpret, the allocations are sometimes difficult to calculate. The field production is also declining (depletion) and no longer has surplus deliverability under normal offtake conditions; therefore, well testing by the same techniques will cause additional production deferment.

More accurate CGR and WGR allocations would provide OMV with a more precise understanding of the composition of the fluids that each well produces at any given time, enabling the company to maximize condensate production by simply ranking high CGR wells during low gas demand and optimizing its operations at the field.

Solution: OMV and Cognite worked together to ingest data from four different sources, including OSIsoft PI and Aspen HYSYS, into Cognite Data Fusion®.

Once all the relevant data about condensate-gas and water-gas ratio allocations was stored in one place, the development team created a system that automatically analyzes well perturbations.

The system consists of a mathematical model continuously identifying periods with well perturbations and back-allocating field CGRs and WGRs to wells. The model output is visualized in a dashboard that lets production engineers easily track and verify results and adjust other models and systems.

Impact: OMV estimates that automating the process for calculating CGRs and WGRs at the OMV field generates about **$1,250,000 a year in value** by increasing gas condensate production and eliminating the need to run manual calculations.

How to build a Hybrid Physics-Data Virtual Flow Metering Solution for Production Monitoring

A global energy company wanted to improve production allocation across six producing wells. As their wells are not equipped with multiphase flow meters, the company chose Cognite Data Fusion® to create an indication of production through a virtual flow meter (VFM). The results are a near real-time, cloud-based VFM solution that provides operators with a quantitative tool to justify a new well test or change injection strategy. The VFM can be used to improve backallocation or monitor and alert for water breakthrough.

Challenge: Difficulty developing accurate VFM.
Current industry practice for VFMs is to tune the model using the latest well test and use correction factors to calibrate frictional and gravity terms, which leads to predictions biased toward the latest well test. Additionally, well tests are performed infrequently and semi-annually for this particular field; therefore, developing an accurate VFM is difficult.

### Solution: A near real-time, cloud-based VFM solution.
Using Cognite Data Fusion®, the company combined well measurements with fundamental flow equations through the tubing and choke. Well test data calibrated these equations by tuning parameters like the friction factor and choke flow coefficient. The models were automatically adjusted based on incoming and past well test data.

Improved asset performance and operational efficiency

Real-time calculations using sensor data, minimizing on-site modifications
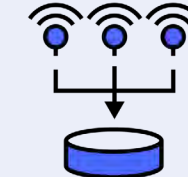
Quantitative tool empowers operators to optimize operations and detect issues

Additionally, fluid properties tables and wellbore deviation surveys were required for the models. Typical real-time measurements, such as downhole and wellhead pressure/temperature and choke position, were utilized during predictions.

The approach was tested on a well in a nearby field, which had more frequent well tests, and then extended to the considered field, which had very few calibration data points (~2 well tests/year). The results were validated using left-out well tests and consistently demonstrated mean absolute percentage (MAPE) errors within a 10% range.

The energy company templatized the calculations to deploy VFM to the first well in the next 3-4 weeks and then used the template to scale it to all six wells in less than two weeks.

The solution can:

- Run calculations in near real-time, using relevant sensor and production data for the asset.

- Efficiently scale solution to new wells through the use of templatized calculations.

- Provide full access control to the solution owner.

- Minimize the need for on-premise modifications to the asset.

Impact: The solution offers the capability to perform calculations in near real-time using relevant sensor and production data for the asset and minimizing on-premise modifications to the asset. **Operators now have a quantitative tool to justify a new well test, change injection strategy, improve backallocation, or monitor and alert for water breakthrough.**

How Aarbakke and Cognite are extending the lifetime of CNC machines

Challenge: Aarbakke has dozens of computer numerical control (CNC) machines at its factory in Bryne, Norway. The machines complete complex operations on sometimes rare materials to achieve the highly precise product requirements that Aarbakke's customers in the oil and gas industry demand.

Historically, CNC machines have sometimes been unknowingly operated in a suboptimal way, and there have been no alerts or warnings before they broke down. Issues include high temperatures in coolants or oils, which lead to wear and tear; wrong pH and salinity in the coolant, which can cause corrosion or bacterial or fungal growth; incorrect lube oil consumption; and missed maintenance on the machines.

Aarbakke lacked a master log of these machine alarms, and a system to filter out less critical ones. Service managers previously depended on operators to send them a note every time a critical issue occurred. Otherwise, the service managers needed to physically go to each machine and manually pull a local log to view the alarms.

Solution: Aarbakke and Cognite first liberated data about machine alarms from its source system, ingesting it into Cognite Data Fusion®.
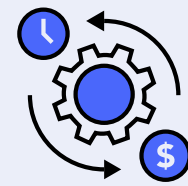
20-30%
Reduced service costs
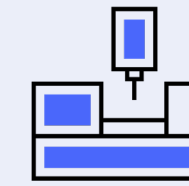
Reduced downtime and unplanned stops

Timely alerts ordered by priority

With all data streaming from one place, the developers created a dashboard that shows an overview of all alarms but also groups alarms by machine and issue. **This helps service engineers pinpoint specific issues and machines and take targeted maintenance actions to address them.**

Aarbakke and Cognite plan to add more functionality to the dashboard in the future, including a feature that lets service managers assign levels of criticality to alarms, ensuring that the most critical alarms will always be featured at the top of the list.

Impact: Improved monitoring of operational parameters and the ability to look at records of alarms and warnings centrally will reduce the number of breakdowns and extend the lifetime of the machines. Beyond that, collecting cleaned, contextualized data about alarms will help drive Aarbakke toward a future in which the company can predict potential failures before they happen.

Aarbakke estimates that the dashboard will cut service costs by 20-30%, reduce downtime, and avoid unplanned stops due to mechanical reasons, resulting in an estimated annual value generation of $6 million.

How Cognite Data Fusion® speeds up the power grid connection process

Challenge: To meet the needs of an increasingly electrified society and accelerate the shift toward renewable energy, grid operators need to be able to connect new power generation systems and consumers to the grid in a safe and efficient manner.

To process grid connection applications, grid operators conduct feasibility and impact studies to determine whether or not the grid, as currently constructed, can handle the additional load. If not, the network will need to be upgraded.

These studies are time-consuming analytical tasks. Grid operators often need to examine several years of historical data to review how the grid has changed over time. They also need to be able to look into the future to see how one application connected to the grid may affect other applications that are being processed and how it might interfere with other planned work on the grid.

Much of this process involves gathering information from different systems. That may include customer information, sensor data from the power grid, information about how other grid connection applications are progressing, and more.
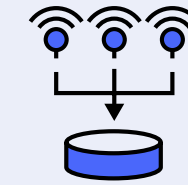
Some grid operators have found that up to half of the time spent processing a grid connection application is dedicated to gathering and cleaning data. This, combined with the increasing number of

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$1.2M
Estimated annual value
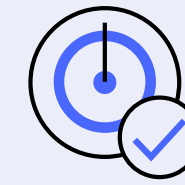
Less time spent collecting & cleaning data

Assets connect to the grid faster

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renewable energy companies seeking to connect their assets to the grid, results in a common challenge for grid operators: a backlog of applications.

Solution: Statnett used Cognite Data Fusion® to consolidate and contextualize information from myriad source systems, including operational statuses, disconnections, generation capacities, and sensor data.

Once structured and contextualized within Cognite Data Fusion®, this data can power Statnett's company-wide data platform to create a user-friendly application for Statnett's analysts to discover and explore all relevant data related to a grid connection application. The digital solution enables users to quickly navigate through different assets on the grid and easily look up information on load, capacities, and disconnections, which can then be visualized or prepared for further analysis.

Impact: With all the relevant information needed to process grid connection applications accessible in Cognite Data Fusion®, Statnett can efficiently add new power sources and consumers to the grid, resulting in:
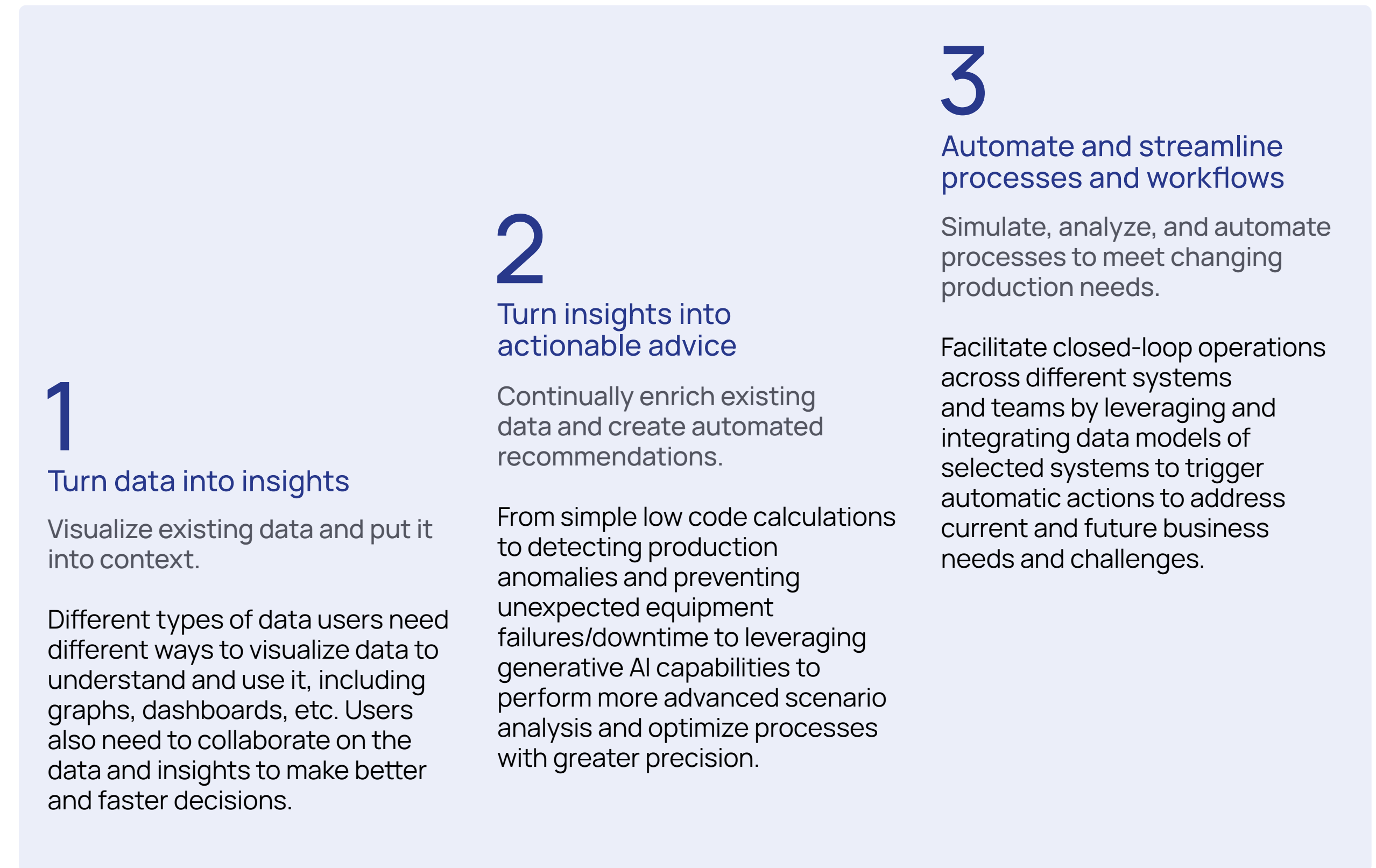
- **$1.2 million in estimated annual value:** Statnett estimates that improving how it processes applications will improve the value of its operations and services.

- **Improved efficiency:** Half of the above figure is related to the grid operator's own efficiency gains, as its analysts no longer have to manually collect and clean data from different systems. With all relevant information in one location, Statnett's grid operators can perform connection **analysis 60% faster**, enabling efficient integration of new power generating assets into the grid.

- **Faster delivery time:** The other half represents the societal benefits created by reducing the time it takes to connect to the grid. In cases of heavy industry or large power generation facilities experiencing delays in grid connection, the value can easily be many times higher.

↘ Cognite's approach to production optimization

Enabling simple access to complex industrial data can empower operators to rapidly scale the solution across the enterprise and establish more efficient processes and workflows:

- Increase throughput and reduce costs → establish more effective workflows

- Increase asset uptime → prevent production disruption, lead proactive operations, and equipment troubleshooting

- Meet sustainability goals → monitor and optimize GHG emissions

- Improve productivity and collaboration → build repeatable solutions and scale them across the enterprise

Data-driven production optimization use cases tend to fall into three categories (Fig. 2).

1
Turn data into insights

Visualize existing data and put it into context.

Different types of data users need different ways to visualize data to understand and use it, including graphs, dashboards, etc. Users also need to collaborate on the data and insights to make better and faster decisions.

2
Turn insights into actionable advice

Continually enrich existing data and create automated recommendations.

From simple low code calculations to detecting production anomalies and preventing unexpected equipment failures/downtime to leveraging generative AI capabilities to perform more advanced scenario analysis and optimize processes with greater precision.

3
Automate and streamline processes and workflows

Simulate, analyze, and automate processes to meet changing production needs.

Facilitate closed-loop operations across different systems and teams by leveraging and integrating data models of selected systems to trigger automatic actions to address current and future business needs and challenges.

▲ Figure 2: Data-driven production optimization complexity ladder.

Turn data into insights

Organizations can achieve instant value by giving data users quick access to the data they need and providing low-code solutions to perform the necessary analysis.

Cognite Data Fusion®→ brings all industrial data together in one place, contextualizing operational data and connecting it to represent operational reality in a way that is easy to understand and use (Fig. 3). This is important as you can't optimize production processes if you're not monitoring them properly and don't have the data you need available.

Data users can plug their preferred visualization applications, such as Grafana, Plotly, and Microsoft Power BI, into Cognite Data Fusion® and immediately begin to explore and interpret the information via automated dashboards. Users can also leverage Cognite Data Fusion's Industrial Canvas→, which provides a new way of interacting with industrial data within a free-from workspace to derive cross-data source insights and drive high-quality decisions.

Whether users choose to leverage the dashboard or Industrial Canvas, they can share it with colleagues, allowing everyone to understand operational challenges (monitor well health, identify operational bottlenecks, scenario testing of gas lift distribution, etc.) better and make more qualified decisions based on the same data and insights.

▼ Figure 3: Cognite Data Fusion's Industrial Canvas capabilities.
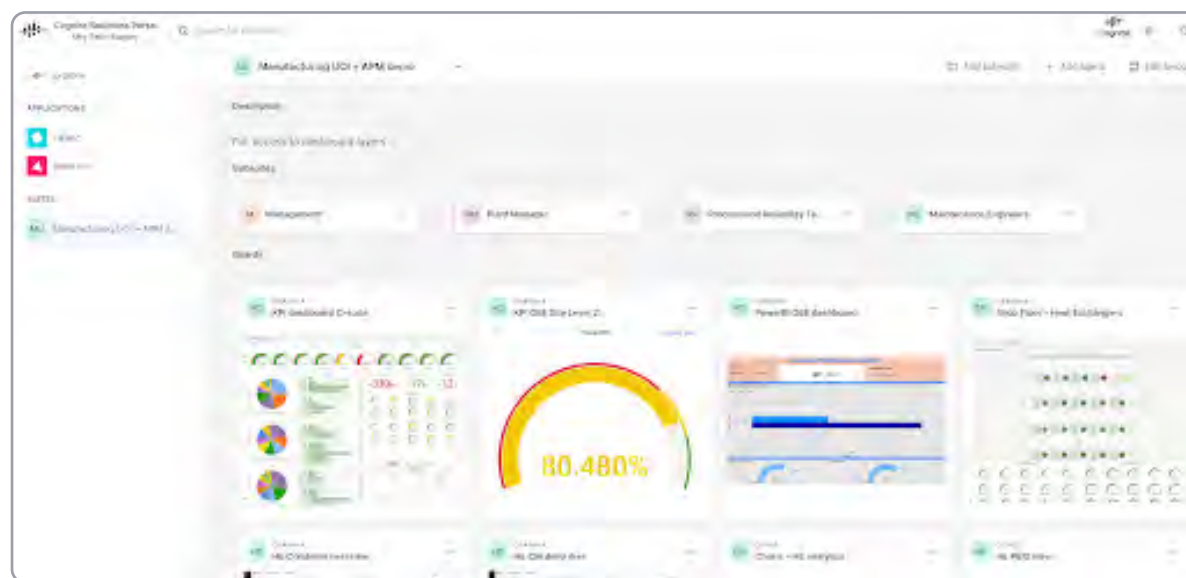
Turn insights into actionable advice

Access to low-code analytics and solution-building tools offers an easy entry point for data science development. Engineers can use visualization and analytics tools to perform no-code calculations on time series data and conduct troubleshooting and root cause analysis of equipment with the guidance of a Copilot (available in Cognite Data Fusion's Industrial Canvas). In addition, users can leverage generative AI to design custom applications and interactive tools for specialized visualizations and integrate them with 3rd party applications.

These capabilities enable users to get the most accurate and updated understanding of the status of their operations, equipment, and processes, and suggest actions to optimize workflows, mitigate risks, and more. Plus, subject matter experts can further enrich available data and insights with their domain knowledge for machine learning and AI models to enhance the data quality and insights, resulting in better decision-making and improved operational processes.

Streamline or automate processes and workflows

The possibility of fully automated control will only expand as technology advances.

Automated workflows play a pivotal role in optimizing production processes and maximizing operational efficiency. When deviations or anomalies are detected, automated systems can trigger responses, such as adjusting production parameters, activating safety protocols, or scheduling maintenance, thus reducing downtime and enhancing safety.

To achieve that, Cognite Data Fusion® combines the best of data-driven machine learning and physics-based modeling to create hybrid AI workflows (Fig. 4) and deploy advanced digital solutions at scale, including solutions for sensitive production use cases that can reduce costs and increase proactive decision-making that can optimize production. With Cognite Data Fusion®, industrial organizations can automate routine simulator studies or monitor problem cases by automatically running a simulator with live data, collecting the results, triggering actions, and visualizing output.

This is available in a user-friendly, secure, and scalable approach that lets domain users collaborate quickly and safely to develop, deploy, and scale industrial generative AI solutions that deliver profitability and sustainability. In addition, Cognite Data Fusion® is vendor-agnostic and can integrate with industry-leading simulations such as Unisim, Olga, Turbulent Flux, Multiflash, and Hysys.

▼ Figure 4: Cognite Data Fusion® lets you take a hybrid approach to artificial intelligence, combining the best of data-driven machine learning and physics-based modeling.

Physics-driven modeling and simulations

Hybrid AI

Unique to industrial reality

Data-driven machine learning
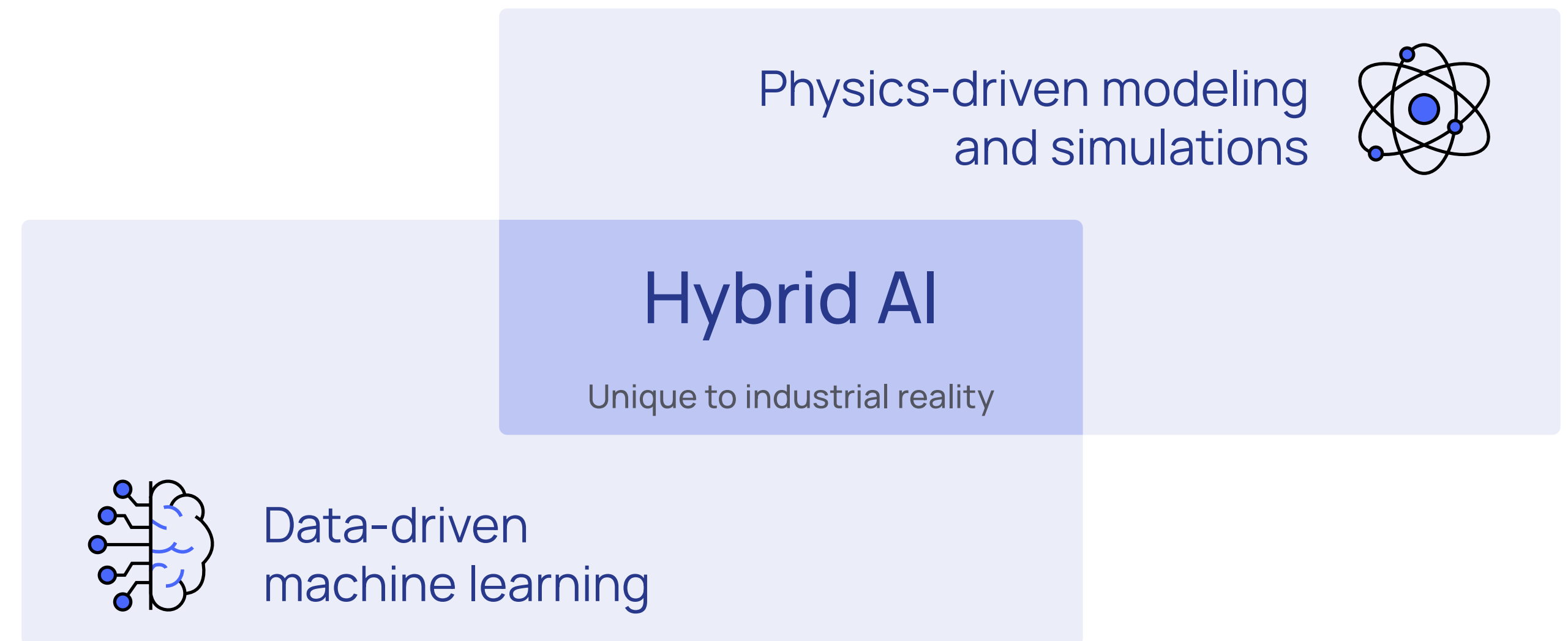
↘ Cognite Data Fusion® enables data-driven production optimization

Cognite Data Fusion® provides simple access to complex industrial data

Cognite Data Fusion®→ provides simple access to industrial data by breaking down the data silos by connecting IT, OT, and engineering data from your ERP, LIMS, MES, SCADA, SCM, IoT, and more (depending on the industry you in) to build an industrial knowledge graph→, giving you instant access to historical, real-time, and simulated data and scenarios.

The industrial knowledge graph provides the foundation for user-friendly data modeling and makes it easy to understand each data point and how it relates to other data. A data model in Cognite Data Fusion® is contextualized by establishing associations between related resources. These relationships are identified as resource types used to model associations between any two other resource types. Graph-based data models can be represented through the notion of Relationships in Cognite Data Fusion® (Fig 5).

Just like the principle of compounding interest, data in the Cognite Data Fusion®, industrial knowledge graph becomes increasingly more reliable the more people use, leverage, and enrich that data. More valuable and high-quality data leads to more trusted insights. More trusted insights lead to higher levels of adoption by your teams across
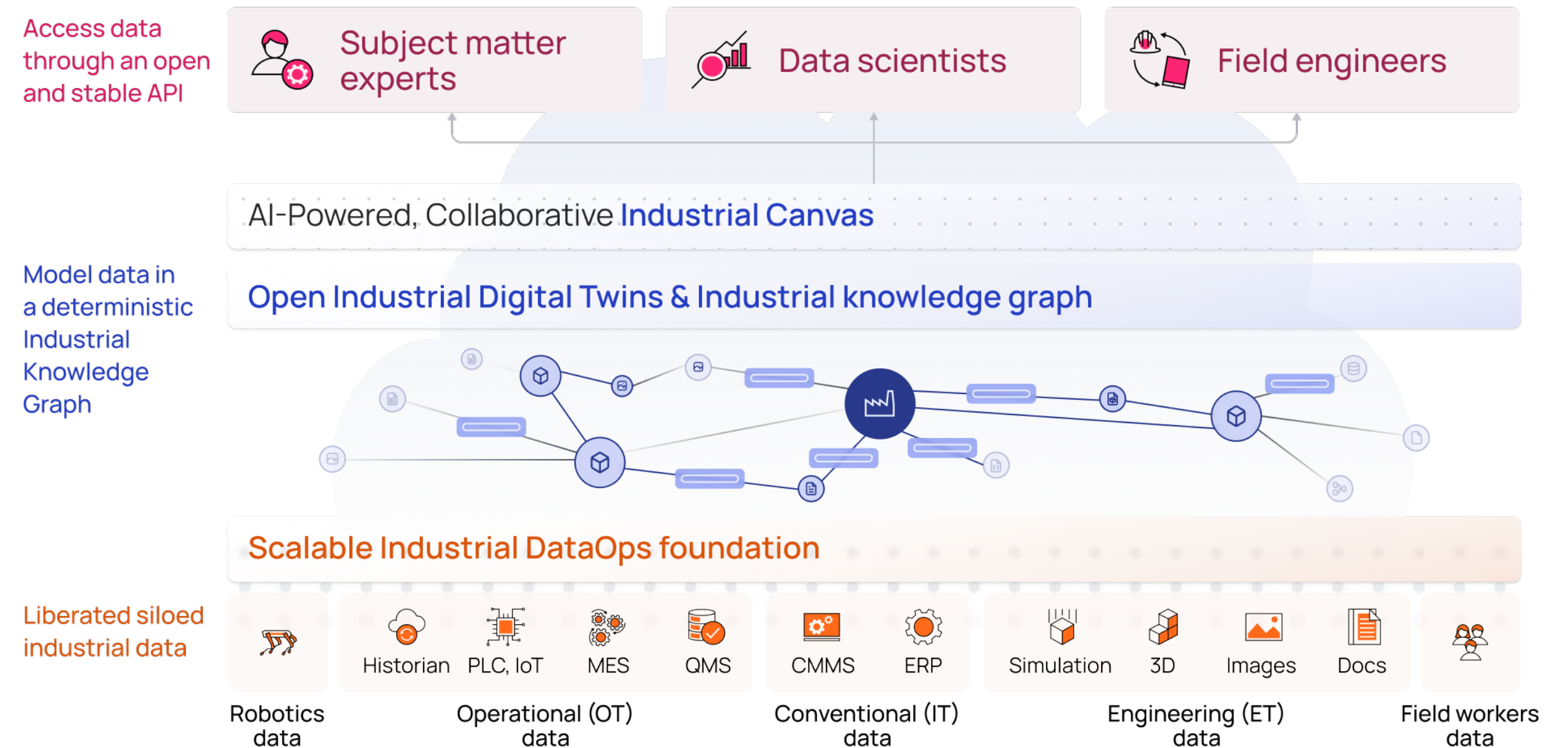
the enterprise. A user-friendly, AI-powered experience also ensures user growth and adoption, and this cycle repeats exponentially.

That said, **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.

▲ Figure 5: This is how Cognite Data Fusion® provides simple access to complex industrial data to subject matter experts and continuously enriches this data via an industrial knowledge graph, which is available to everyone across the domains.
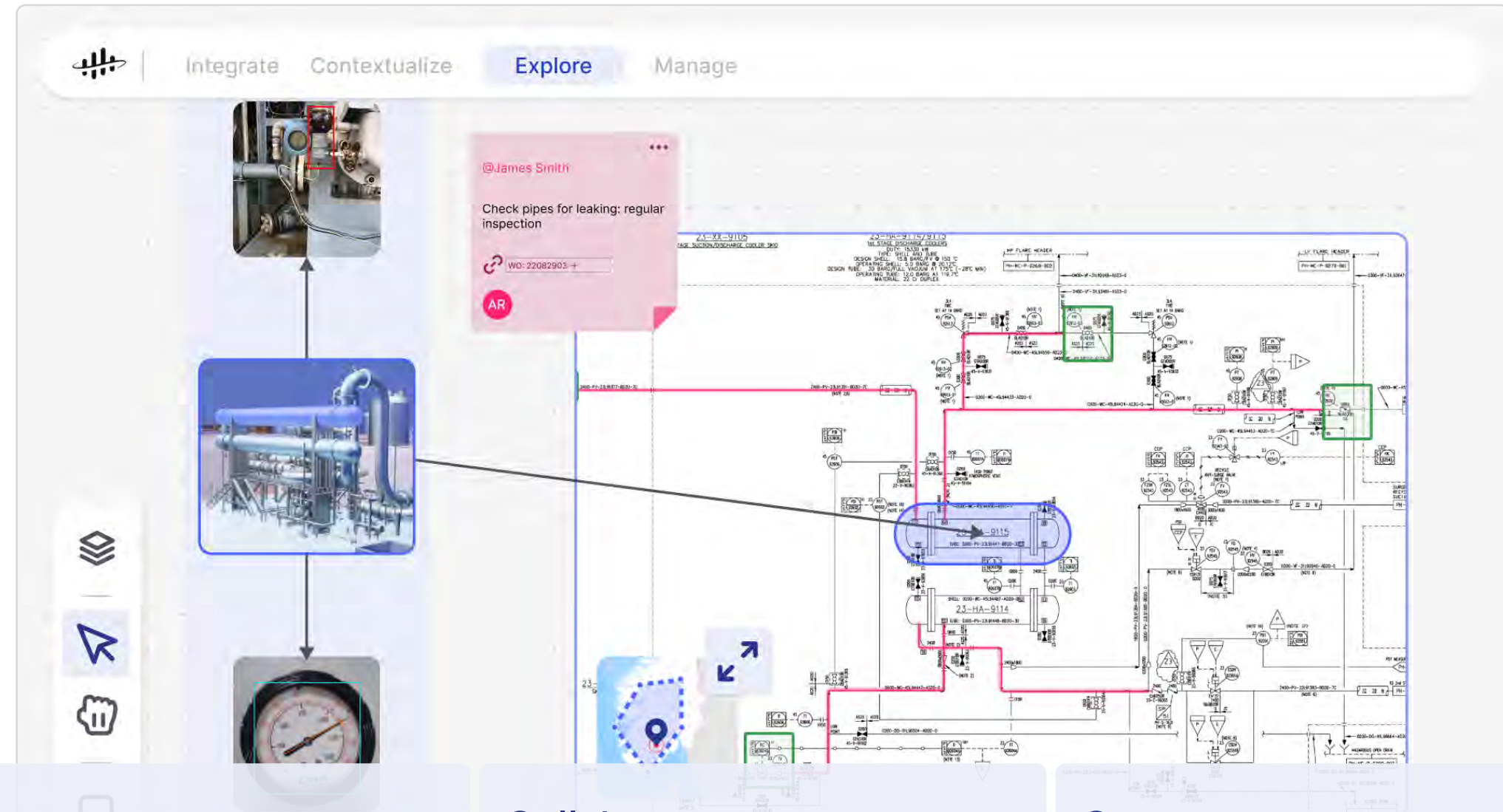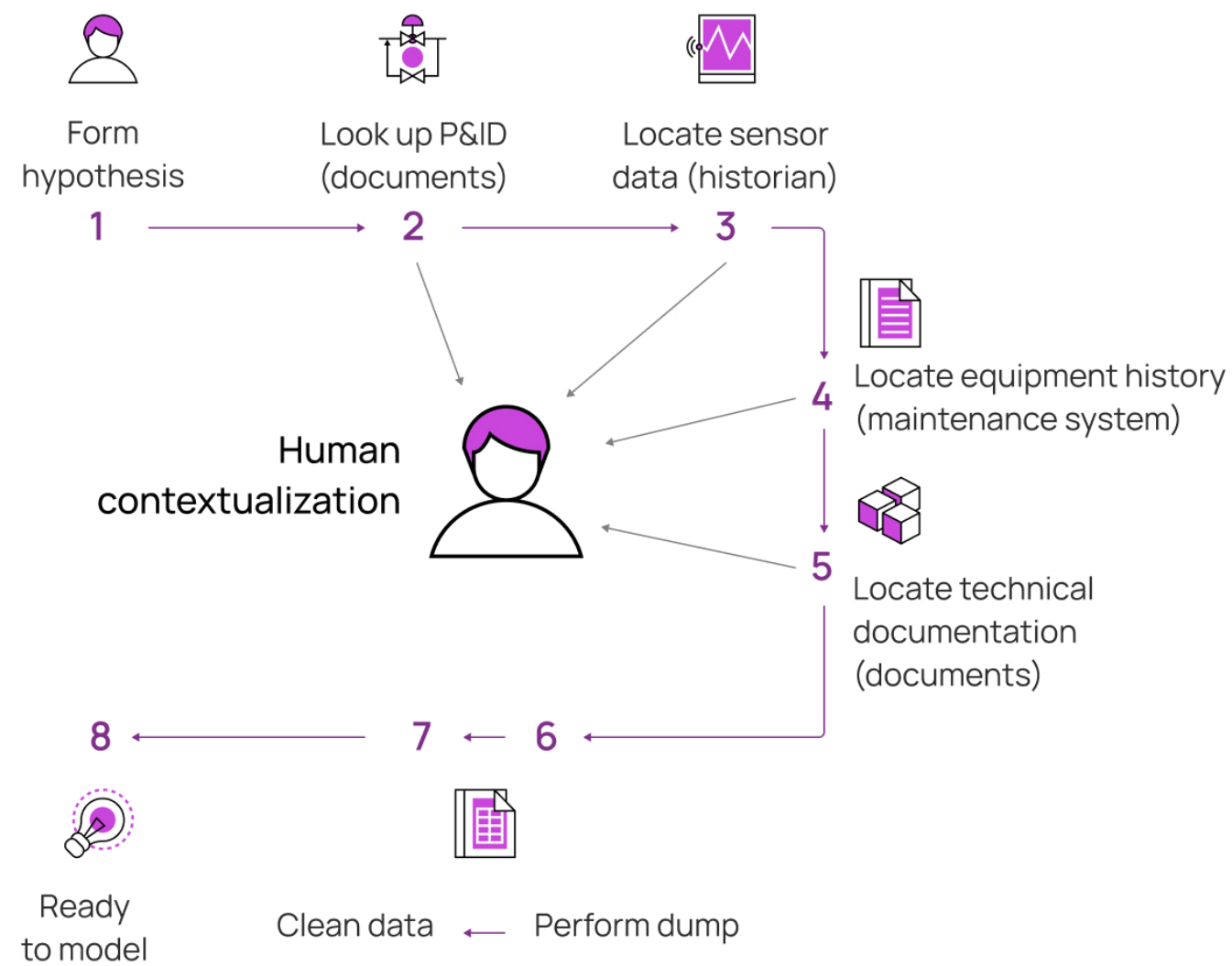
So you can go **from this...**

...to THIS.

No simple access to complex industrial data and insights

Form hypothesis **1**

Look up P&ID (documents) **2**

Locate sensor data (historian) **3**

4 Locate equipment history (maintenance system)

Human contextualization

5 Locate technical documentation (documents)

8 **7** ← **6**

Ready to model

Clean data ← Perform dump

Explore
Access and add any type of data in one compostable environment + Copilot powered research.

Collaborate
Annotate, tag users, share insights with seamless integration into no-code analytics.

Create
Summarize documents and write complex queries using natural language.

With **contextualized data→** at fingerprints, users can generate immediate business value and significant time-savings in many industrial performance optimization applications and across advanced analytics workstreams. Plus, access to contextual-ized data allows subject matter experts to become more confident and independent when making operational decisions or when working on the use cases with data scientists and data engineers.

↘ Accelerate time to value

Cognite Data Fusion® enables you to shift from a retrospective view of outcomes to a proactive approach to optimize products, processes, and production based on real-time data. With solutions that integrate R&D, process, and plant engineering and operations, you can anticipate, identify, and correct critical-to-quality (CTQ) parameters before they affect the bottom line.
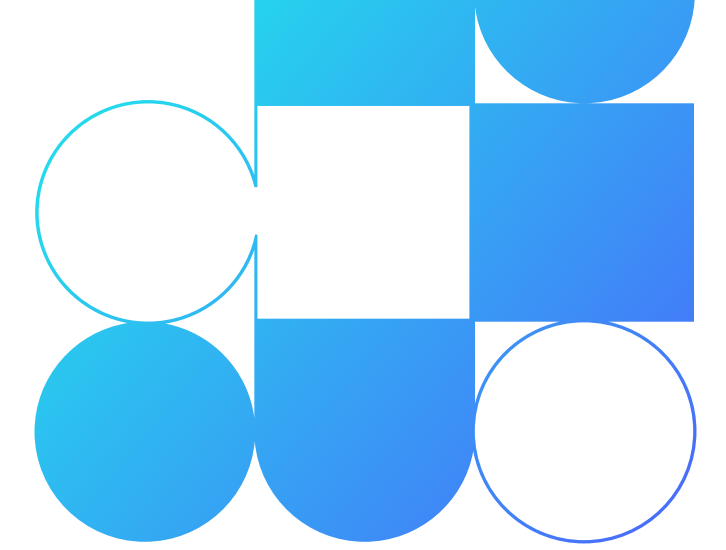
Cognite Data Fusion® key differentiators

Collect, integrate, access
Contextualize and understand
Develop and deploy
Monitor and govern
Scale

IT/OT/ET data contextualization
Data governance and lineage
Data security and compliance
3D and unstructured data
Open framework and toolboxes
Hybrid AI
Real-time data access
Performance and scale

Shift left, get it right the first time

Use both data-driven and hybrid AI models to predict the outcomes of processes and get your products to market faster with high quality and low costs. A digital twin of the system supports the identification of control parameters to optimize the bill of process and reach target KPIs for quality, sustainability, and waste reduction.


Sustainability by design

Design your products and processes by taking emissions, energy, and resource consumption into account from the start. For example, collect descriptive information to understand how your organization is using energy, and then use this information to modify your production schedules and optimize energy consumption.

Traceability

Create a digital representation of the production optimization processes leveraging a fully contextualized knowledge graph to track performance through your value chain and eliminate inefficiencies. The holistic view of operations allows for timely decision-making and proactive actions, leading to increased efficiency and reduced downtime. Integration of AI and machine learning helps optimize processes with greater precision.
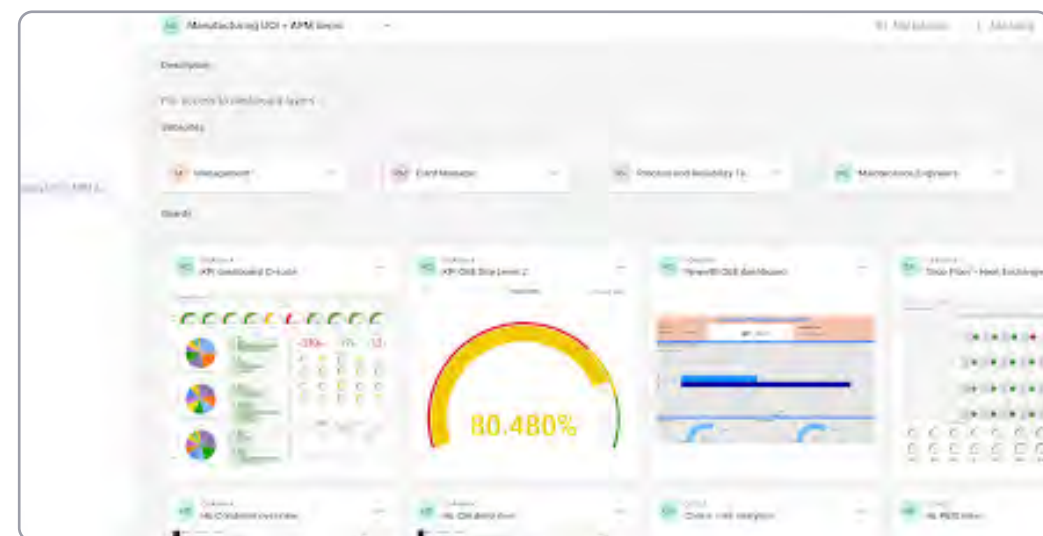
Deploy advanced solutions at scale

The integration of native simulators and the deployment of Hybrid AI workflow capabilities enable the implementation of sophisticated digital solutions on a large scale. This includes solutions tailored for sensitive production use cases, resulting in cost reduction and enhanced proactive decision-making to optimize production. Automate routine simulator studies or monitor problem cases by automatically running a simulator with live data, collecting the results, triggering actions, and visualizing output.
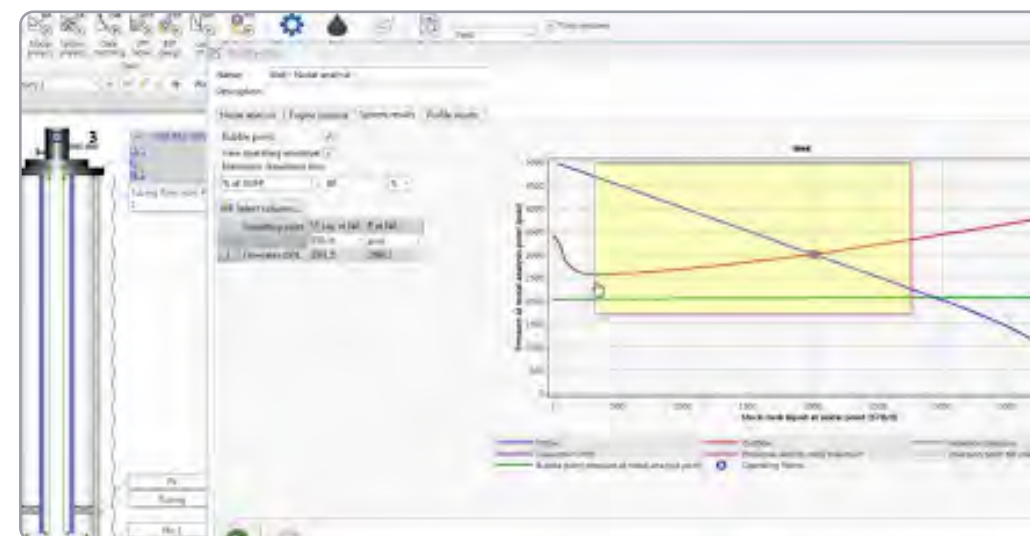
"Cognite Data Fusion® provides our engineers with a wealth of efficiencies by delivering mined, contextualized, modeled, and visualized data for them to act on. Now, they can dedicate more time to interpreting the results and making collaborative, data-driven decisions," said Alan Bibb, Global IT Business Partner Manager at Neptune Energy. "With the Hybrid AI workflows in Cognite Data Fusion, we're able to focus on more holistic engineering optimization and improve time to value."

Alan Bibb
IT Business Partner Manager
Neptune Energy

NEPTUNE
ENERGY

Cognite Data Fusion®
and Industrial generative AI

Cognite Data Fusion® and a comprehensive suite of Industrial generative AI capabilities, Cognite AI, makes it easy for decision-makers to access and understand complex industrial data. The Industrial DataOps foundation provided by Cognite Data Fusion®, coupled with the power of generative AI and data modeling, derives hidden relationships for cross-data source insights. It takes away the coding and scripting and creates an intuitive end-user experience to generate operational improvements (Fig. 6).

Cognite uses generative AI to enhance data onboarding, complete with lineage, quality assurance, and governance, while a unique generative AI architecture enables deterministic responses from a native AI copilot.

Our comprehensive suite of generative AI capabilities from industrial data management to autonomous operations, unlocks simple access to complex industrial data, increasing the efficiency of industrial workflows.
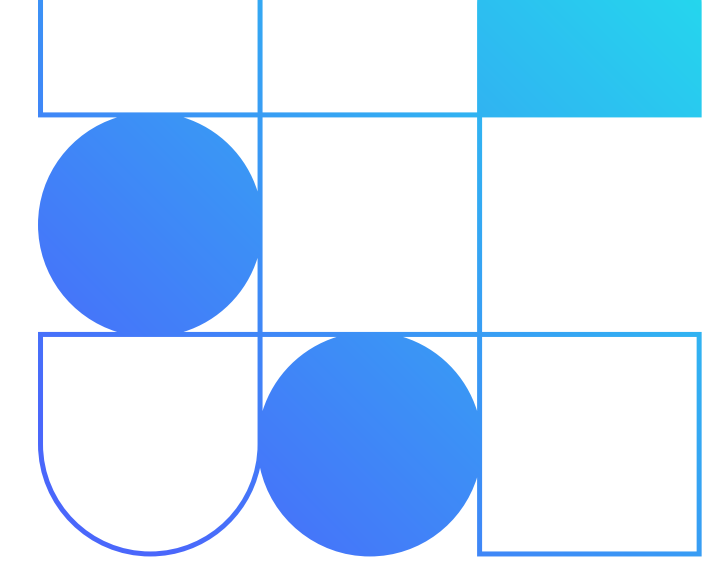
▼ Figure 6: Cognite Data Fusion's simplified service architecture/offering
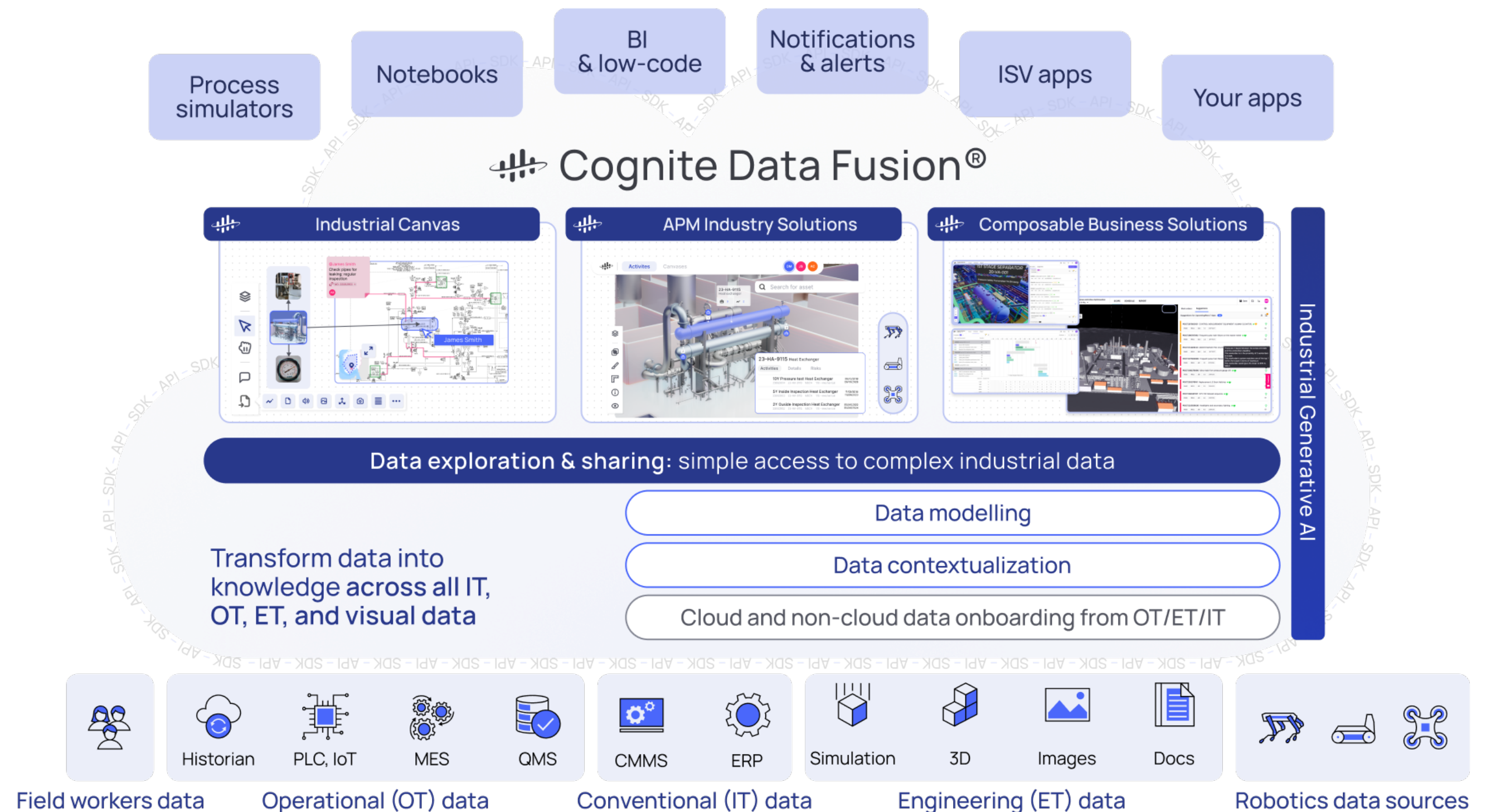
For example, Cognite Data Fusion's Industrial Canvas (Fig. 7) delivers the ultimate no-code experience within a free-form workspace to derive cross-data-source insights and drive high-quality production optimization, maintenance, safety, and sustainability decisions. Industrial Canvas is an intuitive, user-centric tool revolutionizing data exploration and visualization. It makes cross-data source insights available without relying on data scientists, data engineers, and software engineers to build specific use case solutions, enabling everyone, at every level of the organization, to spend less time searching for and aggregating data and more time driving high-quality business decisions.

Creating this experience is predicated on Cognite Data Fusion's ability to contextualize data rapidly at scale with AI-powered services that eliminate tedious manual contextualization. The industrial knowledge graph is created through contextualization that serves as the connecting fabric between data modeling, digital twins, and all components within Industrial Canvas. Combining Cognite Data Fusion's industrial knowledge graph with a unique generative AI architecture, Cognite Data Fusion® delivers simple access to complex industrial data for all users. In their language. On their terms.

Learn more about Cognite Data Fusion's Industrial Canvas here→
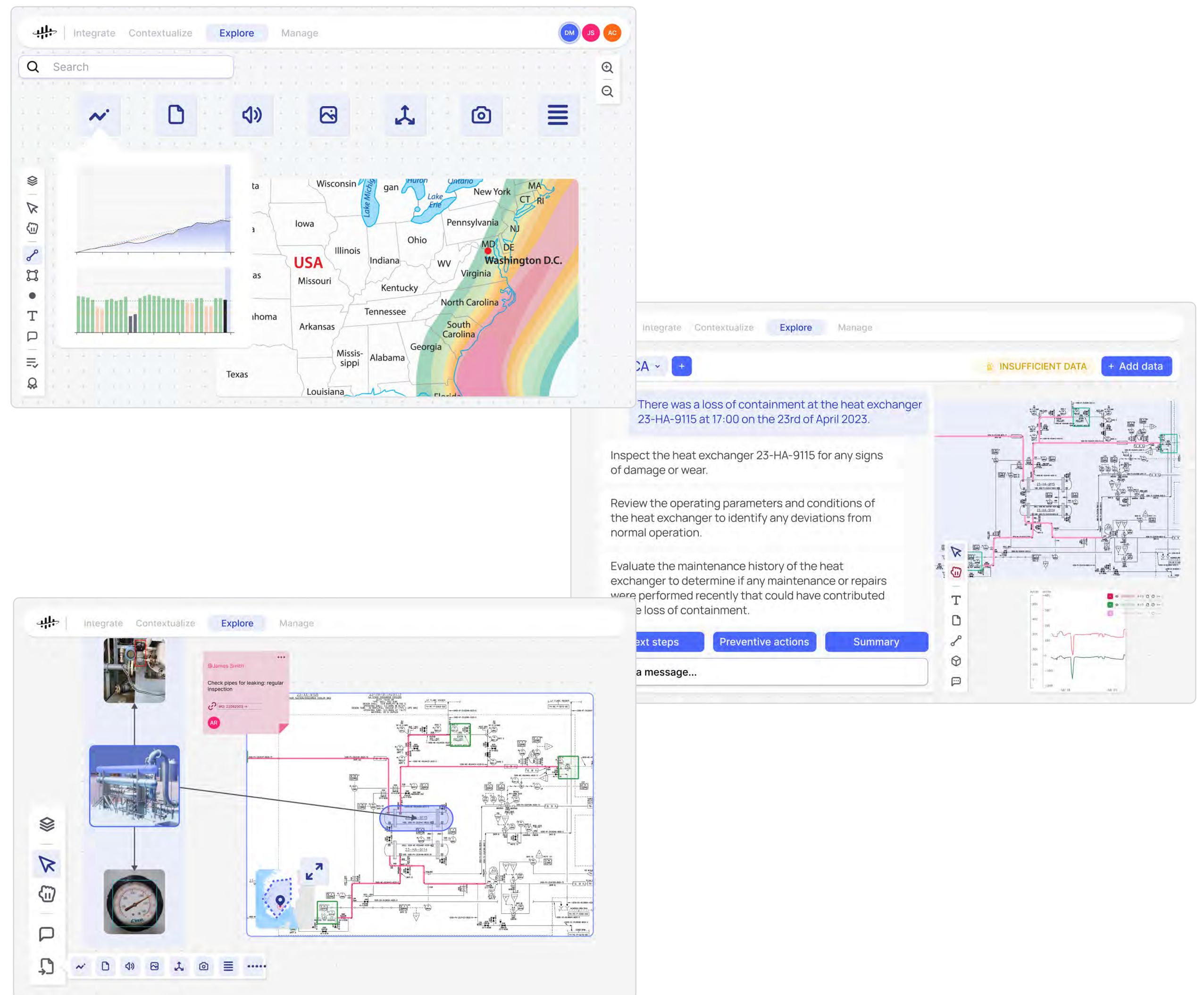
▲ Figure 7: Example of data exploration and visualization workflow in Cognite Data Fusion's Industrial Canvas.

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⬊ Conclusion

Enabling data-driven production optimization is necessary for enhancing operational efficiency, assets' resiliency, reducing costs and downtime, and meeting sustainability goals. To achieve these business goals, the heavy-asset industry needs to provide simple access to complex industrial data to various data users.

Industrial DataOps and AI can help companies get the right data with the right context to the right users at the right time so the users can **take control of their operational data.** This approach allows every member of the production team to access, use, and collaborate on data in the most intuitive format and achieve:

- Efficiency and efficacy of the engineers' daily tasks, resulting in maximized throughput.

- It supports the ongoing organizational transition to more dynamic, data-driven, and sustainable working and operating methods.

- It inspires experts to find new ways to use data, algorithms, and software to solve problems, including leaving more proactive operations, reducing energy consumption, automating processes, and more.

See how Cognite Data Fusion® can help your company to have simple access to your complex industrial data and enable data-driven production optimization. →
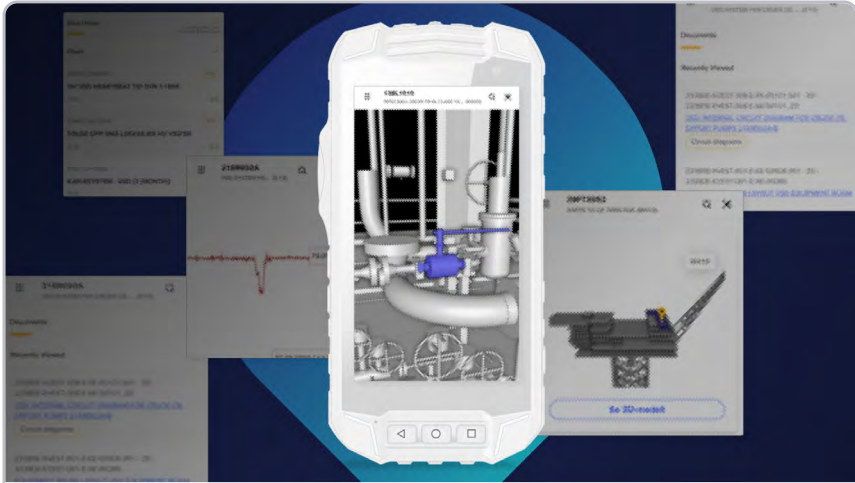
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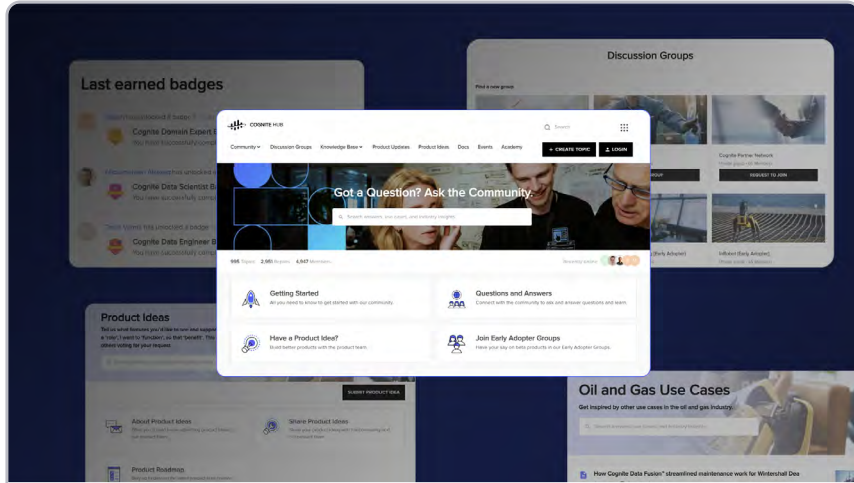
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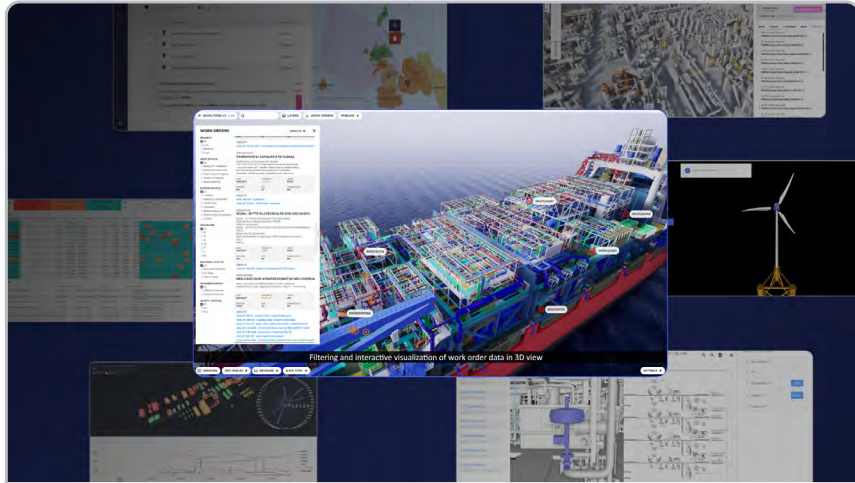
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Customer interviews and financial analysis reveal an ROI of 400% and total benefits of $21.56M over three years for the Cognite Data Fusion® platform.
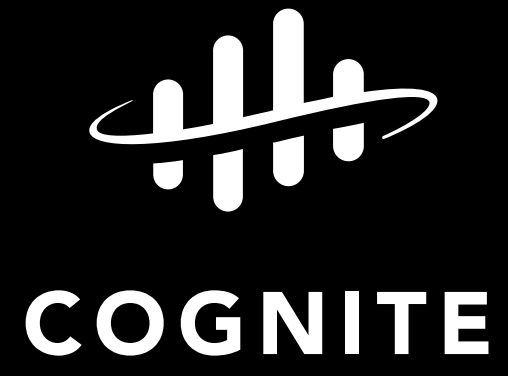
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