



# FROM CRUDE TO CONTEXTUALIZED DATA

Extracting value from  
contextualized big data in  
the Oil & Gas industry


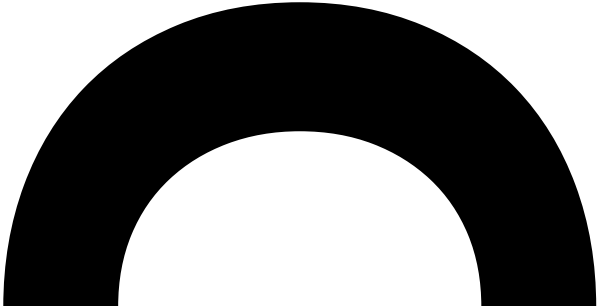


# Oil & Gas Value Proposition



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# MEET COGNITE

**Cognite is redefining the standard for the industrial data platform.**

We believe data has the potential to be industry's most valuable asset. Oil & Gas companies already have the data. Now you need a platform powerful enough to collect, clean, and contextualize that data to maximize its value. The Cognite Data Platform presents a digital representation of your industrial reality, so you can redefine the industrial future.

We are a fast-growing SaaS technology company with a proven team, blending experience in business, industry, and tech. The name Cognite comes from our initial ambition: to build the world's best industrial brain.

Our product, The Cognite Data Platform, aggregates and structures an increasing variety and volume of data, ranging from real-time-sensor information to maintenance logs, from process diagrams to 3D models. But a brain does more than gather data. It learns from it and responds to it.

Historically, industrial data has been trapped in disparate silos, isolated in a way that restricted access and limited insight. The Cognite Data Platform liberates the data and organizes it in context, connecting each data point back to something in the real world. The revelation of industrial reality empowers technicians and experts to deploy advanced analytics, machine learning algorithms, and other applications. To visualize data in new ways. To solve real-world problems within the Oil & Gas industry.

## Cognite's Foundations



Our mission: To present a digital representation of industrial reality to make it accessible and meaningful for humans and machines



Young, fast-growing tech company. More than 100 strong. Industrial and technological expertise



One industrial data platform. All your data. Collected. Cleaned. Contextualized



Backed by Aker, the largest industrial group in Norway. Long-term financial foundation and legacy of experience.

# DIGITALIZATION IN O&G INDUSTRY

Digitalization is the transformation of business models and activities through the strategic use of digital technologies

In less than 15 years, there will be more than 50 billion physical assets and machines connected to the internet. More than 7 billion internet users. The exponential growth of data resulting from this increase, combined with technologies like machine learning (ML) and artificial intelligence (AI), will challenge the Oil & Gas industry's status quo.

McKinsey\* estimates that by embracing digitalization (e.g., using big data to analyze the performance of various production platforms) Oil & Gas companies can improve:

**2025 Profits**



**\$11/barrel**



**\$300 Billion/yr**

Despite these technological advancements, however, there remains a low maturity of digitalization across the Oil & Gas industry. To date, digitalization efforts have been limited to Pilot projects, Proof of Concepts and Case studies, with no large scale operationalized projects.

This is not because the Oil & Gas industry lacks data. The industry had big data before companies like Google and Facebook were founded, even before the term big data existed.

\*McKinsey & Company, Creating a successful Internet of Things data marketplace, October 2016

We believe that dynamic data handling will become a competitive advantage across the value chain.

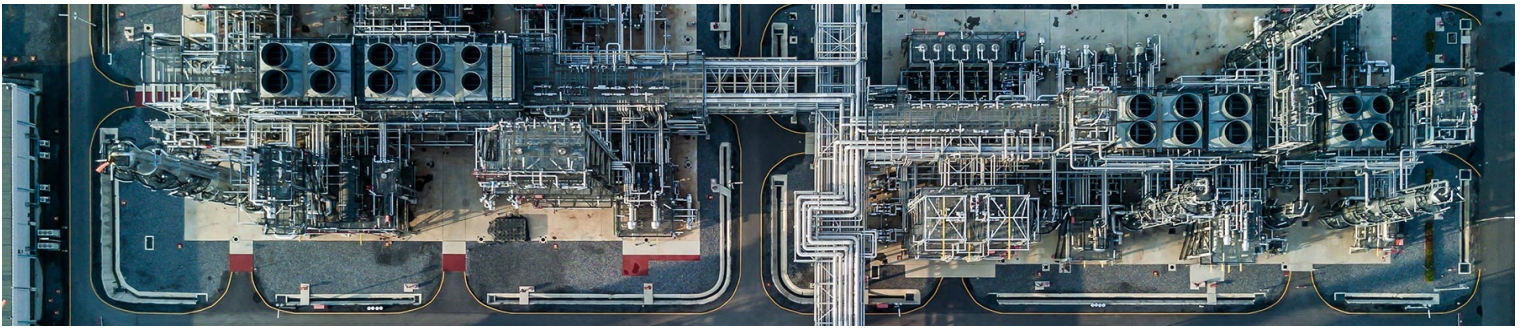
Potential benefits range from improved production efficiency using ML to reduced maintenance costs with predictive maintenance. Innovations in this field will impact everyone from Operators to Oilfield Services to Original Equipment Manufacturers (OEMs).

To realize the promise of digitalization, unlocking the value of data must be made a priority within the Oil & Gas industry.

The digital technologies required to make this a reality already exist. Some are already operational within the Oil & Gas industry. These include:

- Pervasive and low cost sensors that capture
- spatial and environmental information,
- Cloud computing that facilitates highly scalable, variable cost storage and processing on-demand,
- 3D scanning that analyzes real-world objects or environments to collect data based on shape and appearance,
- Unmanned Aerial Vehicles that enable
- autonomous, low-cost vehicles to perform complex tasks and remove the need for human presence.

The advanced algorithms and models required to control these technologies are also easily accessible and sharable in the form of white papers and open source code.



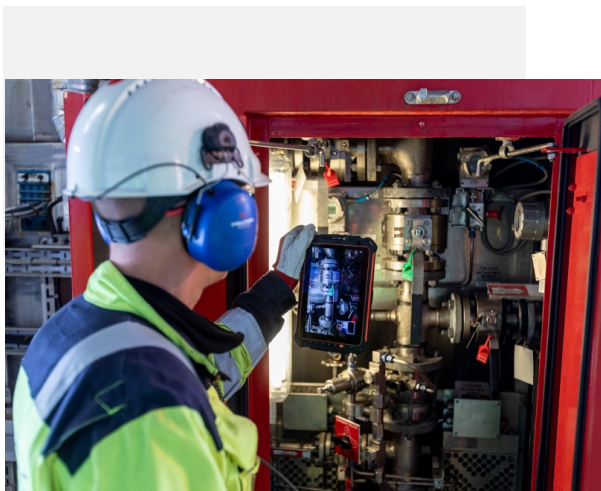
## Data and the O&G Industry

Oil & Gas data currently exists within a world of data silos.

Lack of data is not the challenge. A wide variety of data is collected, including sensor values, P&IDs, ERP and depth-based trajectories.

Rather, the challenge pertains to data usefulness. According to a recent McKinsey & Company\* study, decision makers on a single oil platform had access to less than 1% of the data gathered from 30,000 separate data points.

This lack of access makes it impossible to use data as a strategic asset. This is an issue shared by many across the Oil & Gas sector.



## Oil Services Provider



- 100 operational data systems
- 4,800 active integrations
- **500 connections** rebuilt every year

## Large O&G Operator



- **Less than 60% of 4M sensor IDs** can be mapped to equipment
- Backfilling of historical data impossible at scale

Naturally, the root of the problem is a combination of factors: poor data infrastructure, incompatible operational data systems, restricted data access, and poor system integration.

Estimates by Forbes and the New York Times suggest that approximately 80% of time spent on data science projects is devoted to the cumbersome, manual gathering and cleaning of data, not building models.\*\*

Subsequently, scalability across assets or equipment is low and comes with an increased risk of errors, and deployment requires a lengthy and costly process.

\*\*New York Times, For Big-Data Scientists, 'Janitor Work' Is Key Hurdle to Insights, Aug 2014 and Forbes, Cleaning Big Data: Most Time-Consuming, Least Enjoyable Data Science Task, Survey Says, March 2016

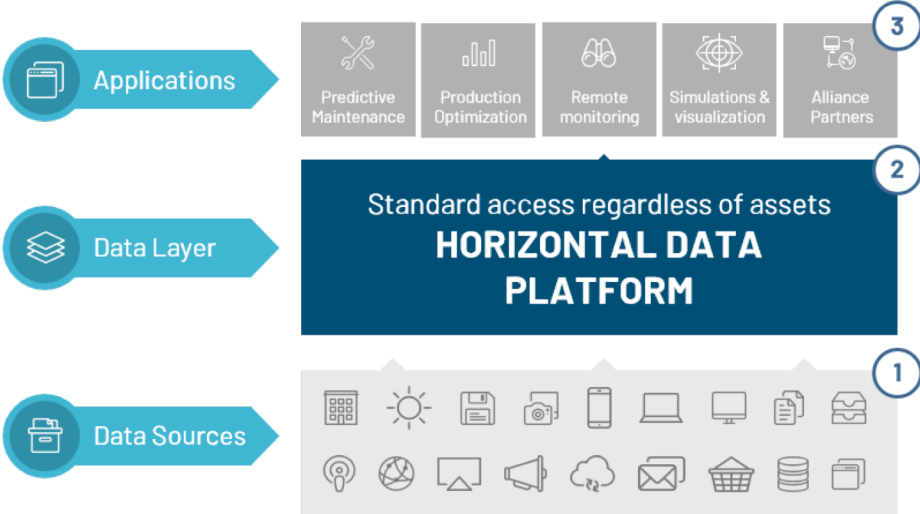
# THE COGNITE DATA PLATFORM

Cognite’s goal is simple: liberate, contextualize and extract value from data. We partner with our Oil & Gas customers to maximize the value of their data, equipping them for the digitalized future with our revolutionary industrial data platform.

The Cognite Data Platform (CDP) is a horizontal platform for all of our customers’ production and operations data. It breaks down existing data silos to liberate data across the Oil & Gas value chain. This dramatically reduces the cost of integration and maintenance while enabling scalability, speed of development, and data openness throughout the organization. Internal and external experts are able to apply state-of-the-art algorithms to visualize and solve critical business problems.

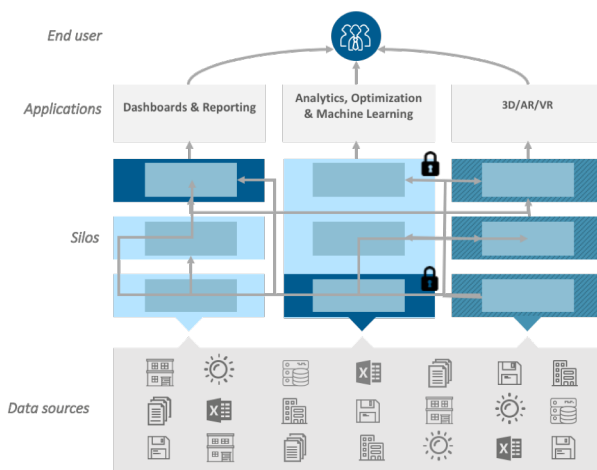
The CDP is currently deployed across all five operational assets of Aker BP, a leading independent European oil and gas company. Here, the CDP handles live and historical data for close to 200,000 sensors, with a peak transfer of 800,000 data points per second. A range of third party applications and data scientists use the 1+ trillion data points in the platform to create value and support Aker BP’s strategy for day-to-day operations.

Our initial focus has been to aggregate and process data from sensors and contextualize it, structuring it in relation to process diagrams, production information, 3D-models, and event data (maintenance, incidents). Everything linked in the real world is also linked in the platform. This enables machine learning applications for optimization and automatization, as well as human-facing applications, such as advanced visualizations and apps for the digital field worker.



## Liberate Data

Data is only as valuable as it is accessible, readable, and open for connections to other relevant data

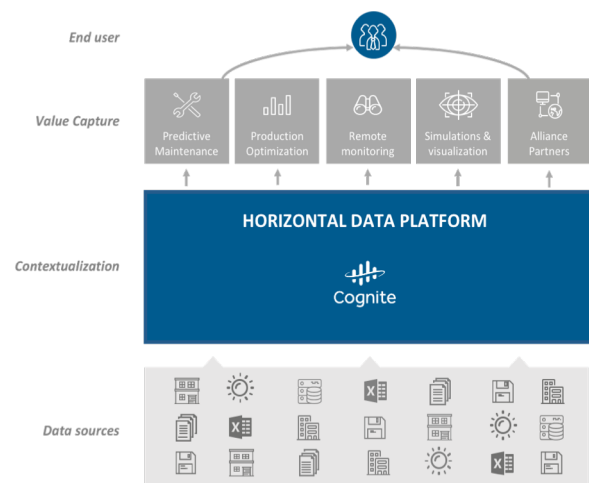


### Transition from data silos...

As long as data remains trapped in its silos, O&G companies will be unable to develop a thorough understanding of their assets and leverage their available data.

Today, data science efforts with available O&G data are restricted to static, one-off projects that are tedious, risky, and expensive to perform. We have seen that data collection alone may require a data scientist to connect to up to seven different systems. Sometimes this includes jumping through hoops to get access to specific systems onshore.

Like oil, data requires a step-by-step process of refinement in order to maximize its value. Picture hundreds of thousands of continuous data streams, each pouring from its own strategically placed sensor. They run down to a set of siloed collection points; or maybe they all run to a single, impressive data lake. Then nothing. Dormant due to a lack of access, this dataset remains isolated. Crude.



### ...to liberated, contextualized data

The Cognite Data Platform liberates data from existing systems using automated data extractors. Rather than collating all master data and transactional capabilities within a central system, the CDP removes the silos between differing data sources. This makes all data universally accessible across your organization and dramatically reduces the cost of integration and maintenance. It also enables scalability and speed of development, without the risk of turning in to a multi-year IT development project.

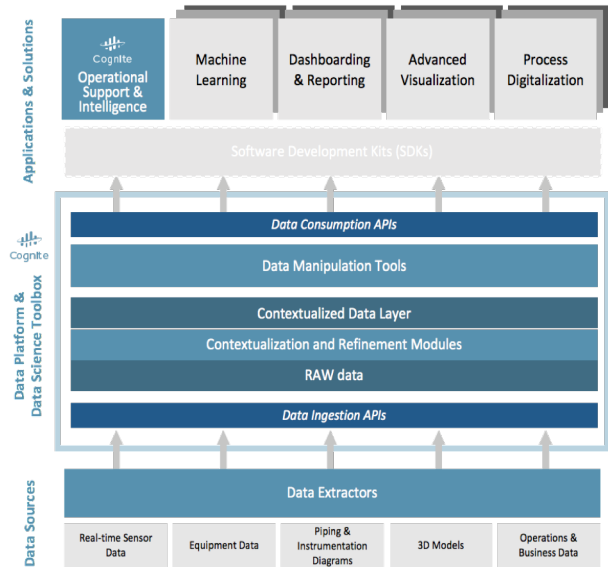
## Contextualize Data

Liberated data is contextualized to make it meaningful for humans and machines

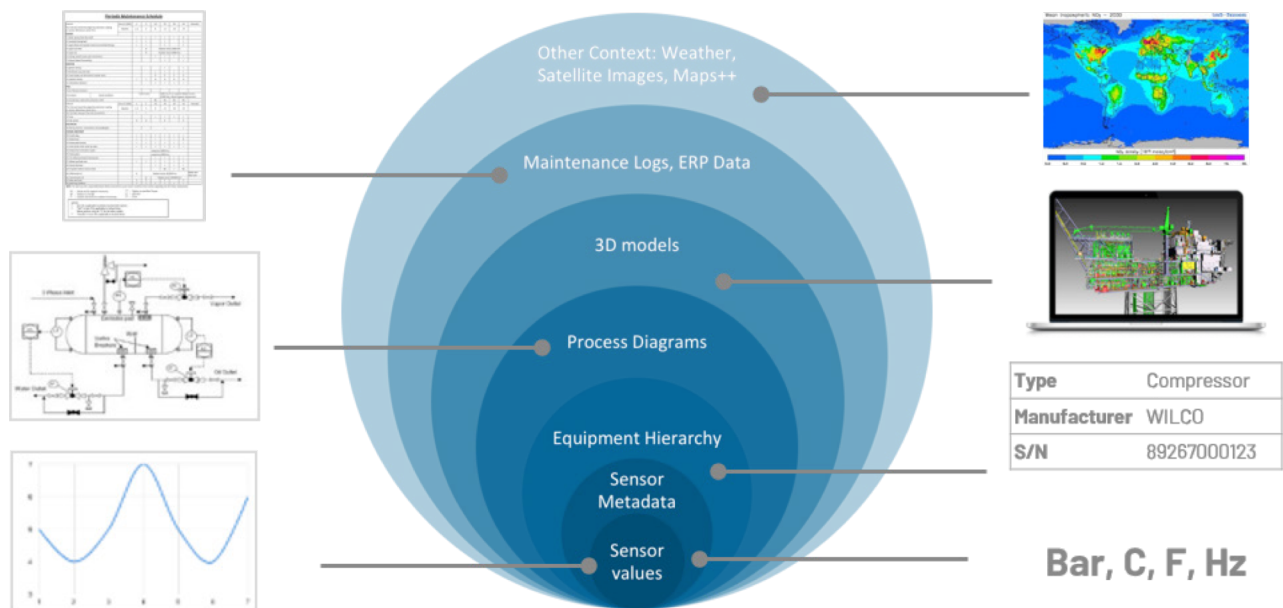
Now consider the liberated data. Accessible but unconnected to the real world and unrelated by the relevant data around it. The value is limited. Time to refine it even further.

The Cognite Data Platform puts liberated data through a revolutionary next step: contextualization. By structuring the data in a meaningful way alongside other relevant data sources, the CDP reveals a dataset that actually represents the underlying industrial reality.

The Cognite Data Platform achieves this through a combination of Data Ingestion APIs, contextualization and refinement modules, and data manipulation tools. The process is accurate, scalable, and empowers O&G companies to leverage their data as a strategic asset.



## Data Source Contextualization





Contextualized data generates significant insights for Operators, increasing understanding and improving operations

With contextualized data, Oil & Gas companies find it easier to examine their assets across multiple levels, from individual sensors to complex models. Armed with virtual representations of real world assets

reflecting real-time data, operators can identify and prevent problems that have been present but invisible for decades.

### Real Time Replica of Sensor Values



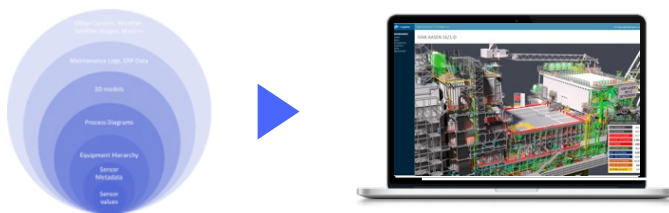
- Real-time and historical view of sensor values
- Ability to rapidly zoom in and out at individual points in time

### Physical Process Digital Twin



- Interactive digital twin of equipment & physical processes
- Sensor values and meta-data built into equipment hierarchies and process diagrams

### 3D Digital Twin



- Ability to build an interactive digital twin of an entire asset
- Incorporates data from individual sensor values into 3D models

### Complex Models

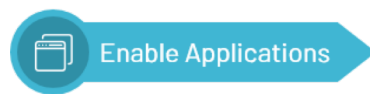


- Develop a comprehensive digital representation of entire asset
- Ability to disrupt business models, such as enabling a shift from periodic to predictive maintenance

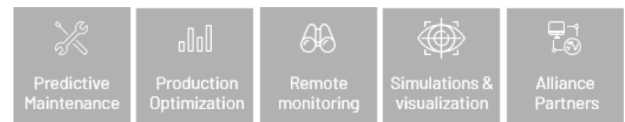
## Enable applications and develop a thriving operational ecosystem for our customers

Data sharing amplifies the value of data insights by inspiring partners and vendors to improve and innovate

Once data has been liberated and contextualized within the Cognite Data Platform, we can make it openly and securely accessible to approved third parties.



Our customers can grant this permission to strategic partners and vendors via user-friendly Application Program Interfaces (APIs). Cognite's philosophy centers on the importance of data sharing to successful digitalization. By sharing their data within their own ecosystems, our customers can inspire their partners to innovate and improve. With more clean, contextualized data, third party companies can quickly build applications and develop services to meet real world needs. Fields ripe for this kind of innovation include Remote Monitoring and Predictive Maintenance, but really, the possibilities are endless. And the value is exponential.



### Illustrative External Partners

Cognite works with an increasing number of partners from a range of different industries and specialties. This diversity aids our customers in realizing the value of the Cognite Data Platform.

Asset Condition Monitoring

3D & Advanced Visualization

Machine Learning & Advanced Analytics

Dashboard & Reporting

## Cognite Data Platform & Security

Cognite commits to being a Trusted Custodian for our customers and their data. Security is a feature of everything we do.

At Cognite, we understand that security is a priority for our customers. That's why we are committed to our role as a Trusted Custodian of your data. We hold ourselves to the highest standards of operational excellence, security, integrity, and transparency.

We have developed the Cognite Security Commitment: six principles that focus on People, Processes, and Technology to inform the design of the Cognite Data Platform.

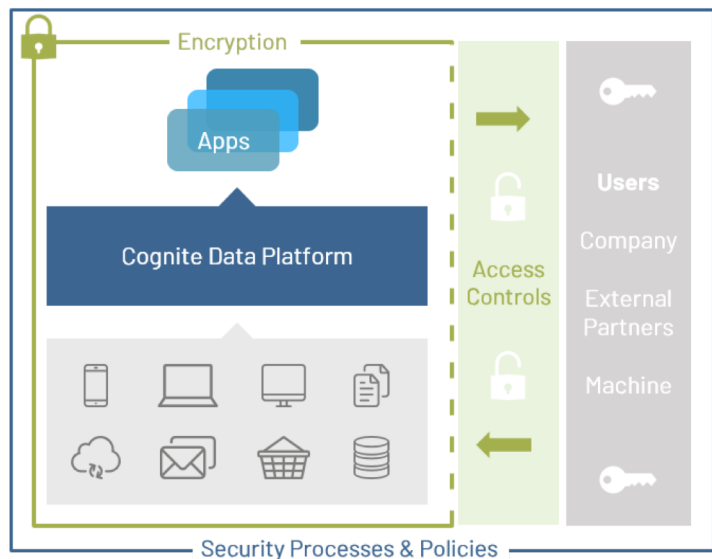
To ensure our success, the Cognite Security Commitment is supported by a variety of processes and policies that are woven into the fabric of Cognite and the CDP

These include;

- Rigorous testing and validation of source code,
- Real-time monitoring of service and security posture,
- Logging and audit trail,
- Detailed reporting against key metrics,
- Training and development.

### The Cognite Security Commitment

<b>SECURE</b>	The capacity to safeguard assets and their integrity
<b>ROBUST</b>	The capacity to remain healthy and uncompromised
<b>RESILIENT</b>	The capacity to absorb disturbances while maintaining functionality
<b>RELIABLE</b>	The capacity to maintain consistent performance
<b>RESPONSIVE</b>	The capacity to react quickly
<b>FLEXIBLE</b>	The capacity to adapt easily to new requirements



## Secure. Robust. Resilient. Reliable. Responsive. Flexible.

What does the Cognite Security Commitment mean in practice?



### Cognite will keep your data private

Maintaining the security and privacy of our customers' data is foundational to both Cognite and the Cognite Data Platform. The platform is designed and built to ensure that data is only accessible to those who have been granted access.

Data is encrypted in transit and rest, with Cognite authenticating, authorizing, and logging all transactions through the data platform.

### Cognite will keep your data integrity intact

Data contextualization and enrichment are critical aspects of any successful digitalization effort. At Cognite, we also recognize the importance of preserving the original data.

Cognite will maintain a continuously updated history of your data. The base information in the Cognite Data Platform is an exact replication of your data, regardless of the source system(s). To maintain accuracy, Cognite will verify data integrity.

### Cognite will enable controlled access to your data

Ease of access to targeted data is a primary function of the Cognite Data Platform. The data owner will retain full control over who has access to what, both internally and externally.

Cognite ensures this capability by controlling, restricting, and granting access through user/group permissions and security categories. User access is gated by a managed directory (e.g., Azure AD). Machine access is granted through managed API keys.

### Cognite will monitor and audit platform and services

Continuous monitoring and security- and health-assessments are important to our customers.

Cognite carries out a variety of audit and assessment activities. These include an immutable audit trail for any interactions with customer data and related infrastructure, as well as real-time reporting on the CDP status.

# O&G VALUE PROPOSITION PRINCIPLES

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## Openness

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**Data liberation and openness are our driving philosophies**

All data you add to the platform is yours. This means you can connect to any applications or transfer any data anywhere at no extra cost. Our platform is designed to integrate seamlessly with existing equipment and infrastructure. Our APIs are openly documented, our libraries and SDKs are open-sourced. We also strive to make data sets publicly available.

## Contextualization

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**Our vision is to aggregate and contextualize all industrial data from any system to which we receive access**

Not only time series and asset hierarchies, but also work orders, equipment information, P&IDs, CAD models, production data, control systems events, weather data, drilling data, etc. This is invaluable for analytics and essential for insightful visualizations.

## Flexibility

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**Our platform is designed to give our customers freedom and flexibility in their choice of applications and platform**

We believe that our customers should have complete flexibility throughout their digitalization journey. This includes having the freedom to change their minds about which applications and/or platform to use along the way. You should not be “locked in” or penalized for trying to do the right thing for your business. We have designed our platform to ensure the independence of the varied, often heterogeneous control systems and equipment existing for various assets. Should our ways part, your data will be returned in the format you prefer.

## Security

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**The security and privacy of our customers’ data is our priority**

Your data is always your own. But you trust Cognite to help you extract value from your data using the CDP. That’s why we are committed to our role as a Trusted Custodian of your data. As such, we hold ourselves to the highest standards of operational excellence, security, integrity, and transparency.

## Scalable

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**Our solution is constructed using modern cloud architecture based on micro-services available through APIs**

Our platform is designed with a modern services, API and Cloud Infrastructure floating on top of technology and infrastructure innovation. This means we are able to rapidly develop and scale, without compromising performance or security.



## Machine Learning At Scale

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**Our platform is built to be the driving force to scale machine learning within industry**

We offer services to train, deploy, and monitor ML models directly on the platform. We also offer additional ML services to external data scientists to make their work as easy as possible. Models can then live in the platform and receive live data for prediction. The time has come to reap the value from Machine Learning at scale!

## Api-centric Approach

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**Our API-centric approach accelerates digitalization through our ecosystem**

Our API-centric approach, both for data consumption and additional services (e.g., ML services, 3D optimization, data manipulation), has proven much faster for third-party application developers than what they have historically experienced. Read more about this in the following use cases with Arundo and Solution Seeker, for example.

# COGNITE DATA PLATFORM REFERENCES



## Operations Data Liberation

All operational data from all Aker BP operations have been made available in the Cognite Data Platform in real time. This includes almost 250,000 sensors representing 4 trillion data points, both historical and live.

Live data is made available in under 700 milliseconds; the historical data backfill was performed in weeks from a range of historians.

The Aker BP sensor data was combined and contextualized with a range of data sources including P&IDs Process Files, Maintenance Modules, ERP, D&W Logs, and Tag Mapping.

Liberating and contextualizing Aker BP's Operations Data enabled a series of illustrative industrial applications, delivered both independently by Cognite and in coordination with external partners:



1

### Operations Support

Cognite Operations support application on Ivar Aasen



2

### Operations Intelligence

Advanced data exploration and condition monitoring



3

### 3<sup>rd</sup> Party OEM Solution

Predictive maintenance and monitoring of Framo equipment



4

### 3<sup>rd</sup> Party Power BI Tool

Quick, off-the-shelf visualization enabled by Cognite Data Platform



6

### 3<sup>rd</sup> Party Data Science Solution

Slug prediction to optimize production



5

### 3<sup>rd</sup> Party Data Science Solution

Compressor Anomaly Detection



## Cognite Operations Support application targets data liberation and enables offshore field technicians to engage with data

Previous efforts to manipulate and structure the data are expensive, time-consuming and inefficient due to a number of factors:

- Technicians reliant on paper documentation in the field
- Long distances between equipment
- Challenges in locating equipment
- Poor information handover between shifts
- Maintenance information stored either manually or in silos across numerous systems
- Limited onshore expert support due to POB constraints
- Error prone radio communication between offshore and onshore



### Documentation

All documentation related to maintenance accessible (procedures, work orders, drawings, P&IDs and maintenance logs)



### Information Sharing

Share pictures and notes with crew and establish live video call when needed



### 3D Models

Interactive 3D models of installation and equipment

A typical offshore installation has significant amounts of data, approximately:

**9,000,000** work hours

**750,000** work orders

**50,000** equipment tags

Cognite ingested and contextualized all maintenance information from Ivar Aasen and made the data available for field technicians enabling...



### Live Sensor Data

Live sensor data and historic equipment performance data available on tablets with 2000 millisecond latency



### Computer Vision

Computer vision to locate equipment tags and automatically provide related information

*Having all the information necessary to get the job done on the phone or tablet that we can carry around in the field makes our work much more efficient*

**Maintenance Crew, Ivar Aasen**

## Cognite Operational Intelligence application is actively used and brings continuous value to Aker BP

Traditional approaches to data management limit the democratization and contextualization of data necessary to enable the next generation of industrial applications and analytics:

- Inaccessible and often locked-in data across multiple systems, requiring technically skilled, time-consuming and expensive maintenance
- Variable usability of vertically integrated applications as providers have limited incentive to improve due to lock-in

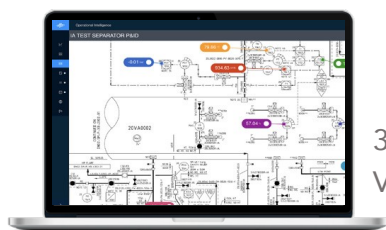
The Operational Intelligence application leverages the full power of an industrial IOT platform and provides democratized access to historical and real-time operational data to all users – in context

Operational Intelligence is an easy and intuitive application for advanced analytics. Usability, speed, and design were central to its development. It was also designed to be modular and open source, ensuring that users are not locked-in and can retain control and flexibility.

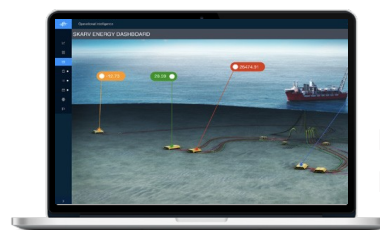
Example of existing applications include;

- Real-time condition monitoring (Rules & Machine Learning)
- Analysis of historical and real-time contextualized data
- Visualization of 3D environment with data overlays

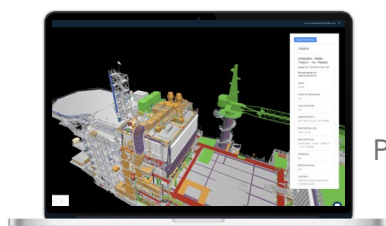
### Illustrative External Partners



3D Asset Visualization



Real-time Asset Infographic



P&ID Infographics



Time Series Graphics

## Operational Intelligence Key Features



### Analytics

Analysis of historic & real-time contextualization data



### Information Visualization

Informative infographics allowing for easy information interpretation



### Live Sensor Data

Sensor streaming into CDP and combined with visualization tools



### Machine Learning

Real-time condition monitoring



### 3D Models

Interactive 3D models of installation and equipment



*Operational Intelligence is outperforming our current applications – speed of retrieving data and the usability is simply at a different level*

*Reservoir Engineer*

**Example:** Improving the efficiency of office workers trending and investigating time series

**The Challenge:** Office workers trending and investigating time series were slowed down by cumbersome and underperforming applications

**The Solution:** The Operational Intelligence data is available with sub-second response, even for multiple time series in the same plot, ultimately improving efficiency and user satisfaction. The application is also developed with a B2C mindset, making the application intuitive and easy to use, with success evidenced by internal user-driven uptake throughout the organization.

## Enabled OEM Framo to access their operational data and transition to a new smart service contract with Operator Aker BP



Traditional industrial infrastructure has limited supplier relationships to a transactional format. The results include static reporting, uninformed maintenance schedules, and a waste of money and resources on both sides.

Pump supplier Framo used the Cognite Data Platform to access their operational data for the first time.

With API access to the Cognite Data Platform, Framo was able to inform their product development. Integrating with Aker BP's ERM system, they could set work orders and enable a feedback loop with design and engineering. From there, Framo was able to develop and launch more effective, service-based models informed by real-time data.



*With Cognite making live and contextualized data available, we at Framo are able to create our own 'apps' to predict the status of our equipment at Ivar Aasen. This allows us to efficiently plan maintenance and anticipate the lifecycle of our pumps*

**Trond Petter Abrahamsen,**  
Managing Director, Framo  
Services AS

*The more we share, the better. If we can apply this technology in all our fields our operations will improve. We are confident that this is a smart move.*

**Ivar Helge Hollen, Aker BP**

*The newly available insight of how the pumps of specific installations are functioning, results in more efficient maintenance. While our service agreements previously defined the number of hours per worker, we will now focus on the uptime of the pump. This requires that we set up a brand new set of smart contracts with Aker BP*

**Trond Petter Abrahamsen,**  
Managing Director, Framo  
Services AS

**In August 2018, this enabled a change to Aker BP's and Framo's traditional approach to maintenance, shifting from scheduled maintenance activities to smart service contracts**

## Enabled business analytics tool Power BI to deliver rapid, off-the-shelf visualization for Aker BP

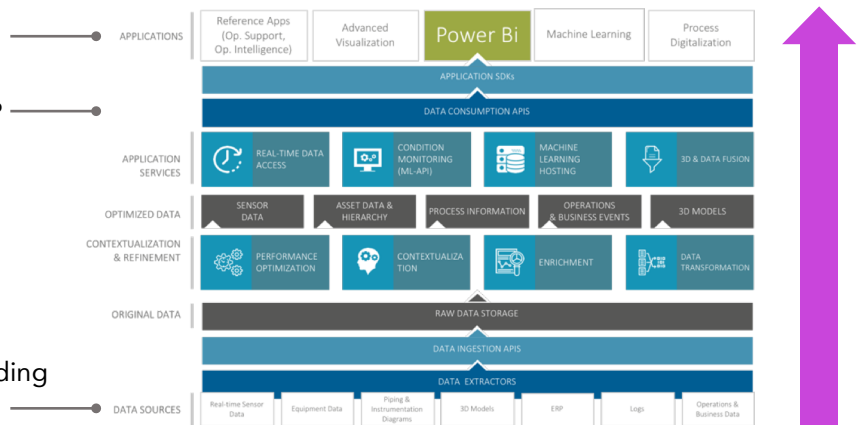
Big industry creates vast amounts of industrial data every day. The value it holds is exponential, but conventional visualization, like Microsoft Excel, typically can't handle these large-scale and complex datasets.

Over the last few years, off-the-shelf visualization from the likes of Power BI, Tableau, and TIBCO Spotfire has gained popularity. However, they are often not readily available to everyone in an organization.

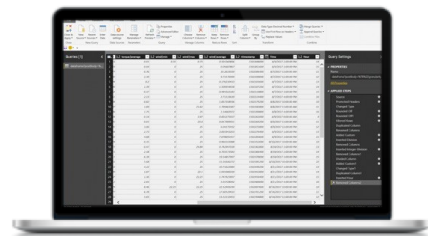
Power BI application visualized data from CDP

Power BI extracts data from CDP through self-driven extractors

Leverages a variety of data including time series and events data



Cognite developed a simple Power BI connector that allows a user to leverage the Power BI interface connected to the CDP via an authentication key. From there, the user can access the primary time series engine, as well as any other data available on the CDP.



Now large-scale data visualization is available to anyone in the organization that needs it – in a simple browser view. This enables creativity and innovation, plus instant access to easy use cases.



## Cognite Data Platform equipped partner Arundo's Machine Learning application for compressor anomaly detection

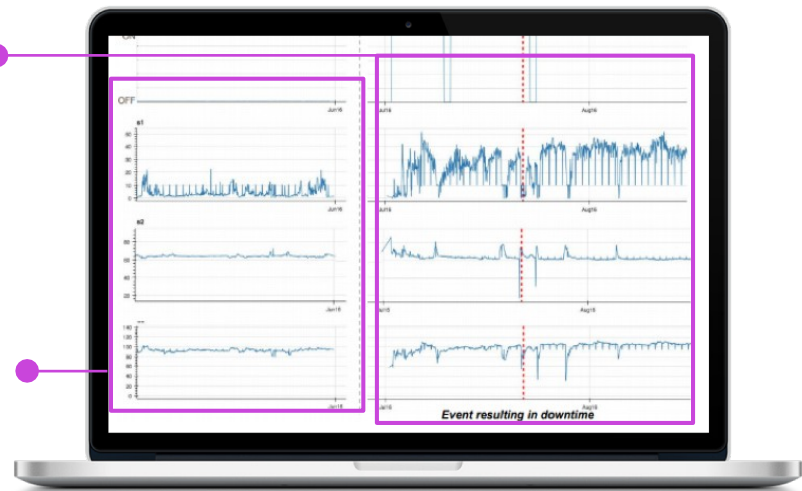


Previously, compressor failure modes were not adequately captured by existing alarms, resulting in expensive and unplanned downtime. Failures were driven by sensors monitored using static limits. This restrictive, incomplete data made it difficult to identify specific failures due to low statistics; many alarms would go unnoticed due to the high volume of alarms triggered. The consequent high volume of compressor failures resulted in significant production losses for Aker BP, dating back to 2013, due to inefficiencies and the required man-hours spent monitoring alarms and fixing breakdowns.

Arundo deployed an ML-based application to identify when a compressor is operating outside of normal mode(s), based on liberated and contextualized data from the Cognite Data Platform. They constructed a virtual sensor and employed an anomaly detector algorithm to identify the cause of the deviation, with outputs available to operators through an integrated user interface. The information generated provides specific and actionable insight into the problem.

Model highlights the sensors which are outside of normal bounds

Model will learn normal behavior and notify the operator when there are deviations



The Machine Learning application for compressor anomaly detection is in the process of being implemented. Once operational the application is expected to significantly reduce production loss.

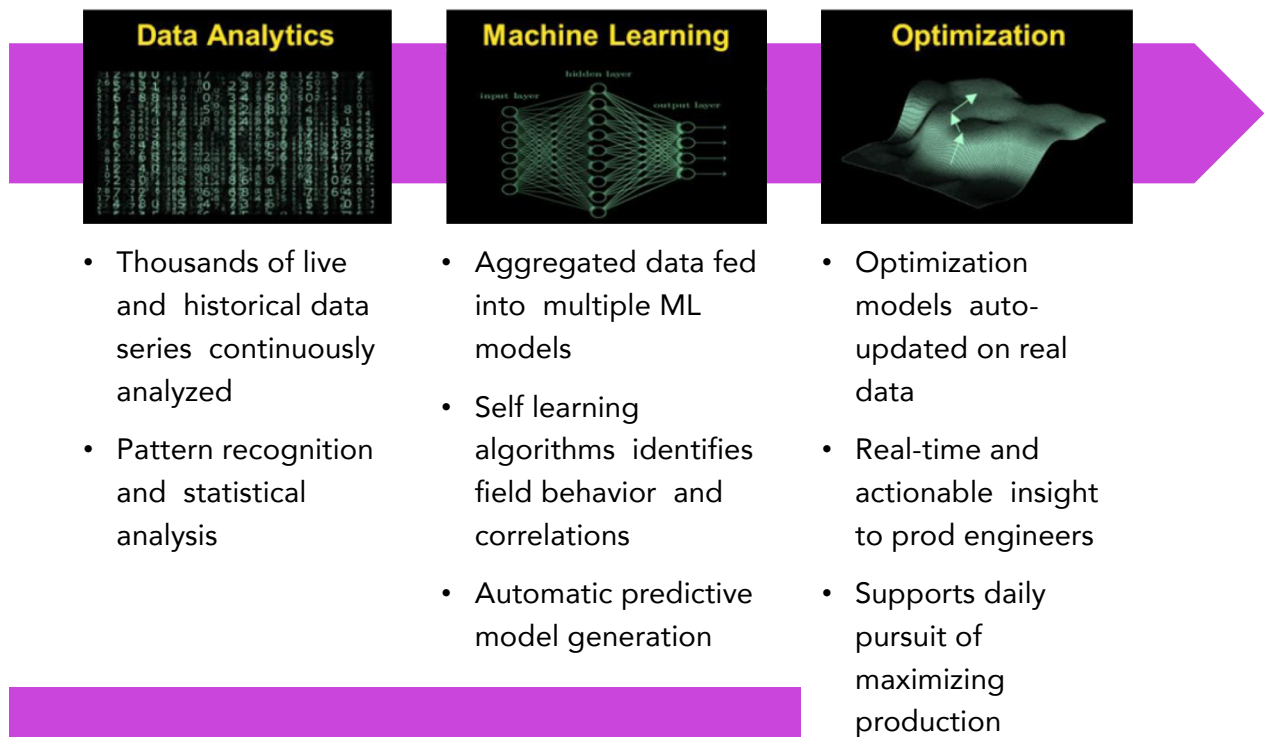


## Will enable partner Solution Seeker to use Machine Learning for better Slug handling and prediction

Slugging is a major challenge for the Oil & Gas industry. This irregular flow of liquid and gas in pipelines can be difficult to monitor.

Aker BP's oil fields, Alvheim and Volund, have experienced this typical trouble with slugging. Several factors can influence slugging and some of these are transient such as, opening wells or re-routing wells. This can lead to the restriction of production potential for third-party tie-backs.

One major challenge was to reproduce these issues with physical models in real time, as two seemingly similar conditions can result in different outcomes. Aker BP needed an effective way to monitor and prevent potential slugging.



### Will enable better Slug handling and prediction through use of the CDP...

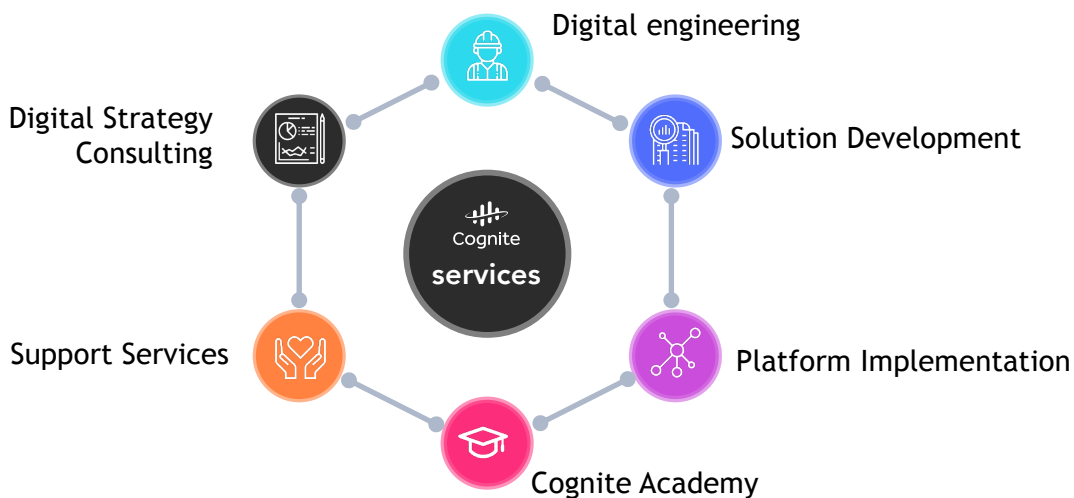
- User-friendly applications to support decision making aimed at Operators
- Applications using algorithms for early warnings of imminent slugging

**...and will result in increased Alvheim production**

# COGNITE DELIVERY MODELS

Cognite offers a range of Service Offerings, available in flexible and tailor-made programs to best meet our customers' needs

We want to meet your individual digitalization ambitions and stages of digital maturity. Our O&G customers can select from a range of service offerings. Potential digitalization programs range from limited platform implementation and support to full digital transformation.



- Digital Strategy Consulting**
- Digital Engineering**
- Solution Development**
- Platform Implementation**
- Cognite Academy**
- Support Services**

Consulting services to enable successful delivery of all aspects of program ranging from development of digital vision and value potential to use case generation and prioritization

Engineering support to enable intelligent, digitalized operations including coordination with 3rd parties for enablement of digitalized operations and identification & enablement of operational digital twins

Support to enable delivery of solutions including custom application development, data science project delivery and data visualization

Establishment of the platform including data platform tenant set-up, data ingestion, solution architecture & product configuration

Training and education surrounding digitalization and use of Cognite Data Platform including e-learning modules and site visits of inspirational digital transformation cases



Ongoing support services to ensure performance of Cognite platform including dedicated technical support engineers through SLA agreement



## Cognite's Partner Ecosystem

Cognite also collaborates with a range of external partners to ensure optimal program delivery

Engagement with partners and the development of a thriving, operational application ecosystem is critical to the success of the Cognite Data Platform. To nurture an ecosystem that will both enable optimal programme delivery and enable our customers to nurture a successful partner ecosystem Cognite will engage with external partners for the following limited aspects of delivery;

	Overview	Key Deliveries
 <p><b>Digital Strategy Consulting</b></p>	<p>Help customers envision a complete digitalization strategy</p>	<ul style="list-style-type: none"> <li>• Business model re-design</li> <li>• Strategy consultancy</li> <li>• Change Management</li> <li>• Rainmakers (digitalization business plan incl. Cognite)</li> </ul>
 <p><b>Application Partners</b></p>	<p>Build value on top of the platform by leveraging data from the CDP</p>	<ul style="list-style-type: none"> <li>• Build off-the-shelf products for Advanced Analytics, 3D Visualization and Process Optimization, etc.</li> </ul>
 <p><b>Solution Development</b></p>	<p>Analyze complex work processes and devise solutions that drive real business value</p>	<ul style="list-style-type: none"> <li>• Create use cases</li> <li>• Data Visualization</li> <li>• Data Science projects</li> <li>• Requirement Analysis Mapping &amp; Data Mapping</li> </ul>
 <p><b>Technology Partners</b></p>	<p>Develop the underlying infrastructure required to access and utilize data through the Cognite Data Platform</p>	<ul style="list-style-type: none"> <li>• Immersive technology &amp; drones, 3D Scanners etc.</li> <li>• Develop technology required for CDP</li> </ul>
 <p><b>Platform Implementation</b></p>	<p>Provide technical integrations and ingestion of data into the Cognite Data Platform</p>	<ul style="list-style-type: none"> <li>• Project Implementation</li> <li>• Solution Architecture</li> <li>• Data Ingestion</li> <li>• Data Integration</li> </ul>

# COGNITE O&G TEAM

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## **Petter Jacob Jacobsen** Head of the O&G Vertical

Petter has prior experience from Oil & Gas as a Senior Field Engineer at Schlumberger and from developing machine learning models in his own startup. Petter got his degree from NTNU, Master of Science and Technology in electronics and later NTNU school of entrepreneurship.

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## **Paula Doyle** Vice President of Industrial Solutions

Paula holds a PhD in Industrial Engineering and has worked the last 15 years in industry in Norway and the Middle East. Paula has participated in many international standardization committees and is a firm believer in the power and value of usable information.

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## **Per Arild Andresen** Vice President of Drilling & Subsurface Solutions

Per has over 15 years of software development, product development, analytics and management experience in the O&G industry. Per holds a Master degree in Industrial Chemistry from NTH in Trondheim, and a PhD in Petroleum Technology from University of Bergen.

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## **Kari Ranes** Vice President of Operations

Kari has worked in developing digital services and digital transformation for several years and has over 20 years experience in product and software development from the telco industry. She has a Master of Business & Economics and a Master of Management from BI Norwegian Business School

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## **Anders Frostrud** Director of Customer Success

Anders has several years of experience from consulting companies, mainly from PwC, where he has worked with strategy, operational effectiveness and digitalization topics across different industries. He holds a Master degree in Finance from Norwegian School of Economics in Bergen.

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## **Kevin Gaze** Director of Customer Success

Kevin holds an MSc in Applied Mathematics from the Norwegian University of Science and Technology. He has 5 years experience as a Technology and Management consultant working for BearingPoint in Oslo, Norway and Frankfurt, Germany.

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