EMPOWERING
Oil and gas

October 30, 2018

Microsoft


Oil and gas companies have become incredibly successful because they have solved complex challenges. However, if they want to remain successful, they should reinvent themselves and expand their innovation focus beyond product innovation. Delloite
Microsoft

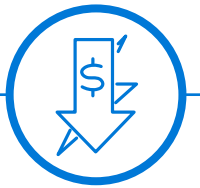
Energy is reshaping the oil and gas industry

New energy paradigm

Fuels are being carbonized to electricity that powers the economy

Shifting competitor landscape

New competitors are emerging to challenge traditional energy and utility companies



Price volatility

Demand is increasing while prices are dropping

Broader ecosystem

New service models and business disruptors are changing the ecosystem

Customer connection

Investments are shifting from upstream to retail to prioritize customer engagement

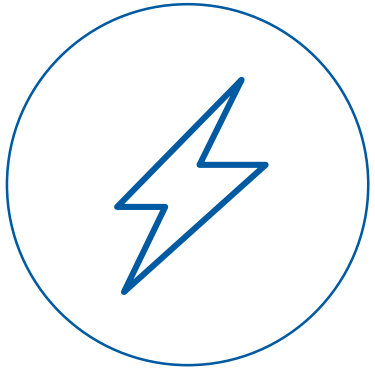
Technology availability

Digital technology is becoming more readily available

But innovation comes with challenges

DOWNWARD TRENDING ENERGY PRICES

RENEWABLE AND SUSTAINABLE ENERGY



INCREASED DISTRIBUTED ENERGY RESOURCES

HEIGHTENED REGULATIONS

FUNDAMENTAL CHANGES

Transition from oil and gas operator to sustainable energy operator

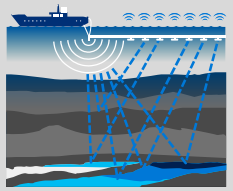
Ramp up of shale development

Requiring you to reinvent your upstream processes

1 EXPLORATION

Intelligent reservoirs

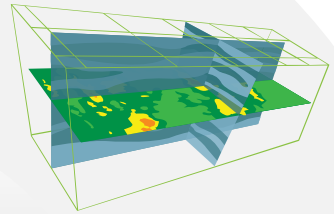
- Energy and petroleum data lake
- Predictive lease management
- Downhole intelligence
- Virtual geophysics
- Realtime reservoir models

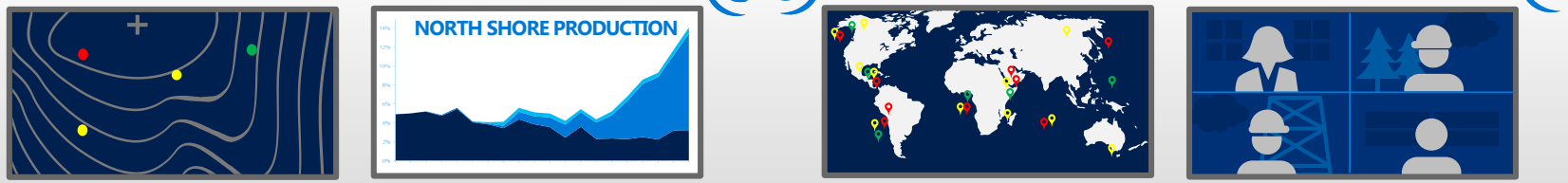


2 DEVELOPMENT

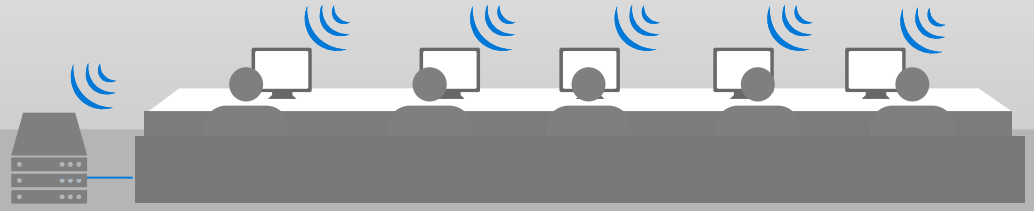
Well planning

- Digitization platform
- Deep learning for seismic
- Cognitive search
- Collaborative decision making





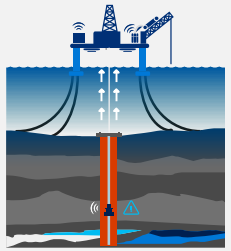
Intelligent remote operations



4 PRODUCTION

Digital asset integrity

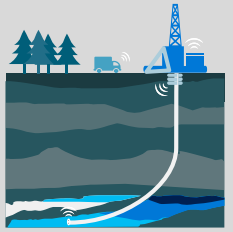
- Real-time hydrocarbon production management
- Integrated production operations
- Automated field tickets
- Asset performance



3 DRILLING AND COMPLETION

Drilling optimization

- Drilling optimization
- AI driven geo-steering
- Real-time drilling optimization
- Predictive drill rig maintenance

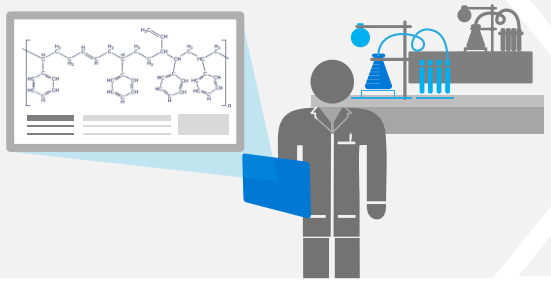


And downstream processes

1 Innovate

Accelerate chemical development

- Expand high performance computing capabilities
- Generate real-time insights with big data analytics
- Collaborate across design teams with knowledge-sharing software



2 Operate

Elevate operational excellence

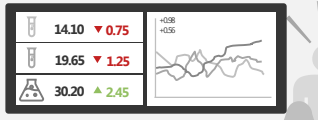
- Monitor equipment in real time with predictive maintenance
- Maximize equipment utilization to ensure worker safety and environmental stewardship
- Increase asset utilization with low variability in products

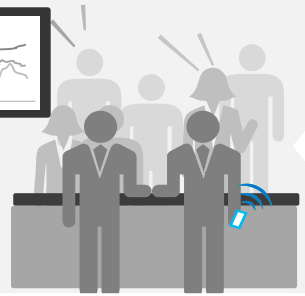
Intelligent remote operations

4 Transact

Optimize risk management and B2B business

- Track transactions across processes to maximize profit
- Ensure contracts are delivered with Microsoft CRM and productivity software
- Predict product quality and performance issues



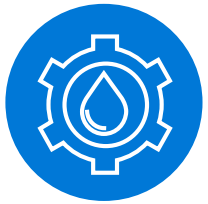


3 Distribute

Enable visibility and traceability

- Manage and monitor transport vectors to increase on-time deliveries and ensure safety
- Reduce environmental impact by monitoring asset integrity
- Provide traceability for products across the value chain
- Mitigate supply chain risks proactively

Powerful solutions support oil and gas

Upstream	Midstream	Downstream	Retail
SAP on Azure			
Big compute			
Connected field service			
Health and safety			
Modern workplace			
Oil and Gas connected data platform			
Artificial intelligence in Oil and Gas			

Partners

SAP on Azure for oil and gas

Quickly deploy SAP solutions across dev-test and production scenarios on the most comprehensive cloud platform, providing unparalleled performance for even the largest SAP and SAP HANA workloads. Utilize joint-engineered solutions to streamline operations and improve customer relationships throughout the supply chain.

Benefits

Reduce risk with a proven architecture
Run the largest SAP HANA workloads of any global scale cloud provider while working on a best-in-class infrastructure. Take advantage of SAP's application management and product expertise and Microsoft's trusted global cloud services

Utilize cloud scale and flexibility
Operate SAP applications in Azure that assist manufacturers in efficiently modeling processes and offer flexibility to adapt to changes in technology while scaling across the value chain

Unlock industry-leading support services
Take advantage of integrated productivity applications, bolstered by innovative technologies like cognitive services and digital twin, to increase visibility and agility across the supply chain

By 2021, more than 35% of total supply chain management spending will be towards SaaS

"Since moving to Azure, we've reduced our SAP hosting costs by 40 percent.... Lower IT costs help us compete in a price-sensitive market."

— Markus Peier
IT and Business Process Manager, GRISARD-Gruppe

Big compute

In today's modern marketplace, the rise of digital technology and smart products have changed the product lifecycle. Products must not only get to market faster and at the right time, they must also evolve and improve to sustain value for both the designer/manufacturer and owner/operator.

As a consequence, many manufacturers are challenged to keep pace. Digital innovation has become an imperative to accelerate innovation and improve speed-to-market.

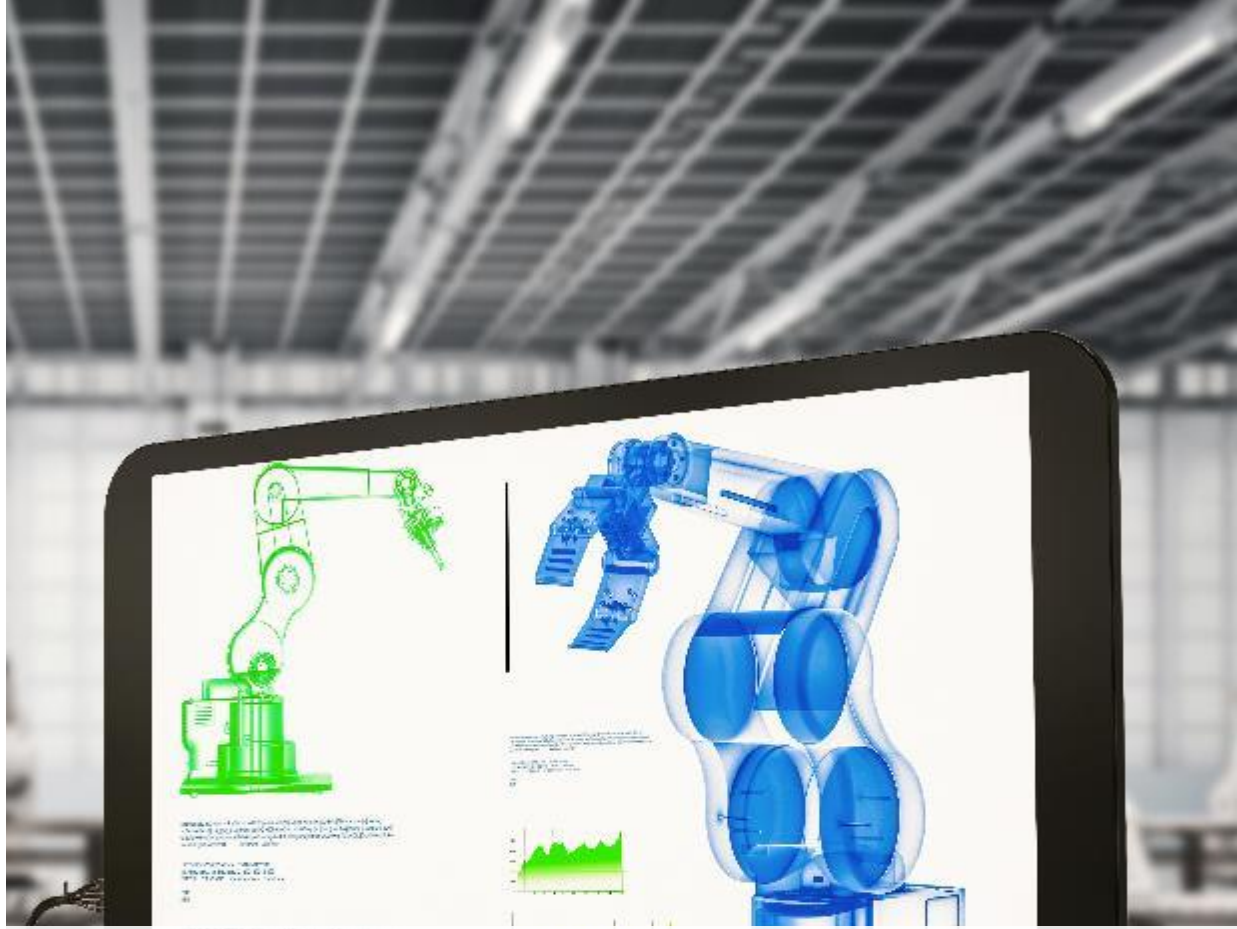
Benefits

Empower **collaboration** by enabling distributed teams to work from anywhere, on any device, across multiple sites with cloud workstation

Optimize the **design concept** and **validation process** by creating digital prototypes with cloud rendering

Enhance **product design iteration** and optimization by leveraging digital twin with HPC simulation and analysis

Break free from the overhead and limitations of your on-premises infrastructure. Tap into unlimited resources to scale your high performance computing (HPC) jobs



> By using Azure, we are making HPC mainstream so that every engineer and scientist on the planet can take advantage of supercomputing capabilities on demand to solve complex engineering problems.
>
> — **Sam Mahalingman,** Chief Technical Officer
> Cloud computing and high-performance computing strategy
> Altair Engineering

Connected field service

Oil and gas operators face numerous challenges such as unforeseen breakdowns that disrupt a customer's business, increased maintenance costs due to repeat visits, lack of global view of service issues, and lack of insights into potential product deficiencies.

Connected field service helps companies move from a costly break-fix model to a proactive and predictive service model by combining monitoring and predictive maintenance with IoT and artificial intelligence to transform service organizations.

Benefits

Generate **customer insights** on product use and performance from deployed field assets and install base by leveraging the power of IoT and connecting them to the cloud

Improve **customer satisfaction** and simultaneously improve productivity of field service technicians while creating opportunities for further **upsell and cross sell**

Create **new business models** by offering the product as a service, thereby reducing the capital barriers for engagement

The secret to a successful businesses is happy customers and the secret to that is outstanding customer service

"With IoT-enabled Dynamics 365, we learn about—and fix—potential problems before the building maintenance manager or owner even knows they exist."

— Bradd Busick
Chief Information Officer, MacDonald-Miller Facility Solutions

Health and safety

Our industrial safety and security solution allows you to increase workforce productivity, safety and wellbeing to protect yield and identify physical security breaches to prevent financial loss

Benefits

Identify **unsafe conditions** and act by generate alerts and actions which ensure safe machine control

Monitor **high value assets** and transactions allowing you to perform root cause analysis and evidence creation

Improve **regulation enforcement**, **compliance**, and **authorized access management** and enable global real-time reporting

By combining Microsoft technology with operational knowledge, the Microsoft solution empowers you to proactively detect and respond to real-time hazards.

"With Azure, we not only get an intelligent cloud, we get an intelligent edge, which helps us automatically identify and respond to safety hazards in near real time."

— Daniel Jeavons
General Manager, Data Science, Shell

Modern workplace for oil and gas

Digital technology is transforming the oil and gas industry by achieving new levels of operational efficiency and new innovative business models. Traditional work is changing from routine task-oriented execution to creative problem solving as more millennials enter the workforce. Supporting the workforce with smart devices and productivity tools enables them to more effectively manage manufacturing complexity.

Benefits

Empower employees for success
Provide a personalized experience for design engineers, manufacturing operators, production line workers and field service technicians that flows across devices and across mobile and globally-distributed teams

Establish a new paradigm for collaboration
Apply mixed reality interfaces that help workers act upon data from intelligent devices and connect remotely to enable design collaboration, remote service and maintenance, and training

Protect assets with intelligent security
Use big data and machine learning to maintain regulatory compliance and security as employees become more connected using enriched incident data and automated incident prioritization and classification

Businesses that rank in the top quartile for employee engagement perform better than those in the bottom quartile

"If you make security hard, people may work around it. With Microsoft 365, we get native capabilities, visibility into our operational environment, and simplicity for all employees."

— Simon Hodgkinson
Group Chief Information Security Officer, BP

Oil and gas connected data platform

The oil and gas connected data platform is a complex ecosystem of self-regulating machines and sites, able to customize output, optimally allocate resources, offer a seamless interface between the physical and virtual worlds of construction, assembly, and production. The connected data platform allows you to have visibility across your enterprise to gain new operational insights.

Benefits

Achieve end to end visibility
The connected data platform's global summary dashboard aggregates data from across your sites to provide you with an overall picture of your oil and gas business

Transform when you're ready
Build out your transformation with predictive maintenance and in-process quality scenarios. The data you collect with the connected data platform enables you to take intelligent action towards transforming your operations

Securely connect to the assets you already have
The connected data platform enables you to connect data related to individual pieces of equipment at your own pace, with no need to connect everything at once or disrupt production. You have the flexibility to connect quickly and start getting insights immediately

Capitalize on the promise of Industries 4.0 to improve visibility of your operations, reduce costs, and transform your business

"This digital transformation will allow us to spend more of our time on the complex problems and let the computers take care of the easy problems. It's making us smarter, faster, more collaborative, and connected."

— Jerry Knoben
CVP Manufacturing, Microsoft

Artificial Intelligence in oil and gas

Harness the explosion of digital data, computational power, and mixed reality to gain insight into your environment and accelerate the pace of innovation. Infuse your apps and bots with artificial intelligence to see, hear, speak, and understand through natural communication–enabling people and machines to collaborate seamlessly while amplifying human ingenuity.

Benefits

Implement AI across the oil and gas value chain
AI and machine learning are embedded across Microsoft's platform, giving you affordable access to powerful tools that provide the comprehensive insights you need to optimize operations

Achieve unparalleled productivity with HPC
Leverage the massive compute power and scale provided by high performance computing to revolutionize product design, improve customer experience, and accelerate innovation

Ensure worker safety
Make workplaces safer by infusing AI in robots, machinery, and equipment with the ability to reason, communicate, and perform alongside humans

*According to IDC, by 2020, **60%** of plant floor workers at G2000 manufacturers will work alongside assistance technologies that enable automation, such as robotics, 3D printing, AI, and AR/VR.*

"AI will augment our humanity—it will give each of us 'superpowers' to meet challenges of all kinds—including some of our biggest ones."

— Harry Shum
Executive Vice President, AI and Research, Microsoft

Powerful solutions support oil and gas




Upstream | **Midstream** | **Downstream** | **Retail**

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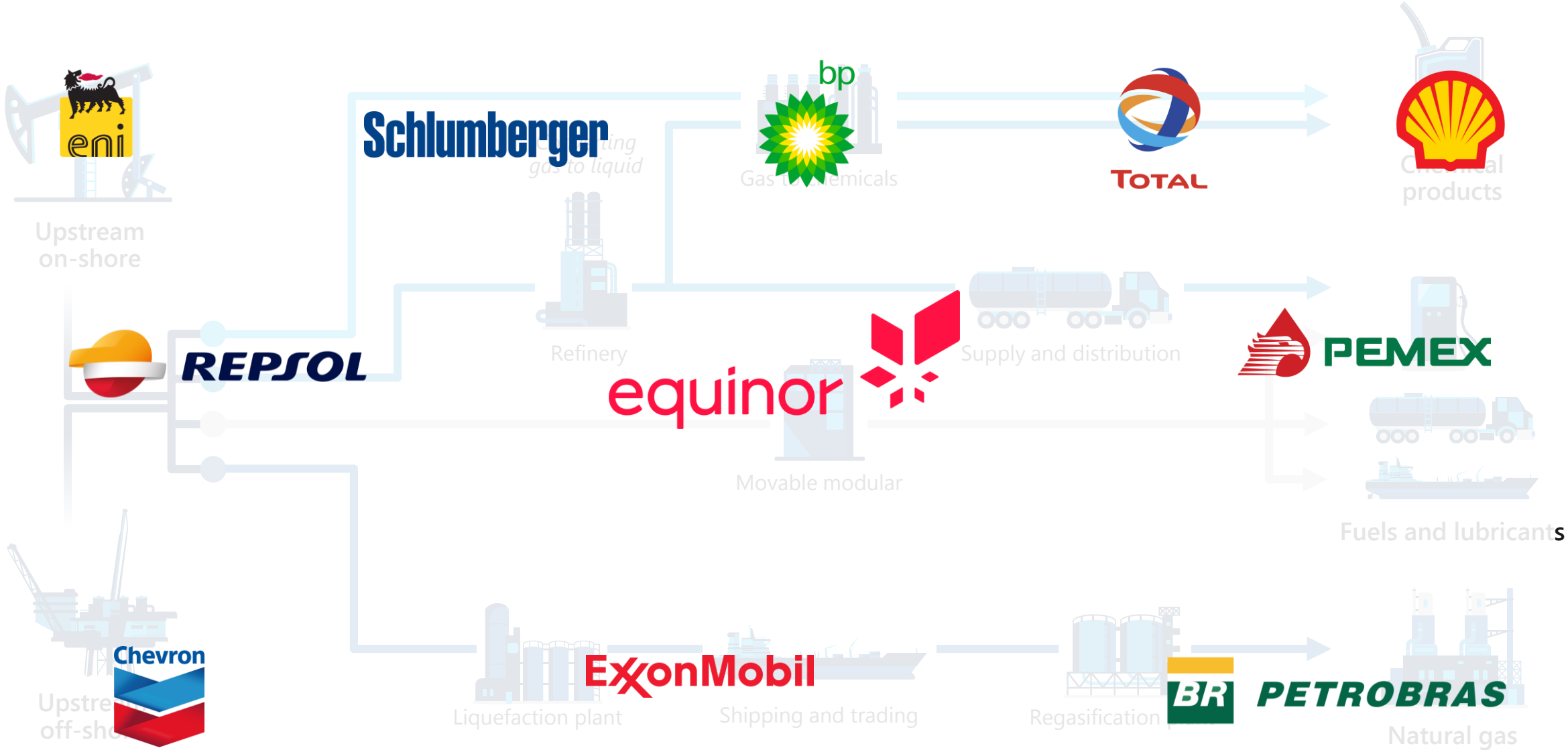
Partners

Working with priority partners

And customers



ENOC and Microsoft team up to pilot AI-powered Service Station of the Future

"

Our collaboration with Microsoft will enable us to transform motorists' and customers' experiences well before they roll onto the forecourt.

"

— **His Excellency Saif Humaid Al Falasi,** Group CEO
ENOC

Shell energizes internal communication with Office 365

"

The more we use tools like Microsoft Stream, Yammer, and SharePoint Online, the better we can harness the collective power of our global talent. These communication channels help to drive engagement and productivity to improve customer service.

"

— **David Harrington,** Vice President
Corporate Internal Communications, Shell International B.V,

BP deploys Microsoft 365 to improve user experience and security

"

If you make security hard, people may work around it. With Microsoft 365, we get native capabilities, visibility into our operational environment, and simplicity for all employees.

"

— **Simon Hodgkinson,** Group Chief Information Security Officer
BP

Shell invests in safety to better protect customers and service champions

"With Azure, we not only get an intelligent cloud, we get an intelligent edge, which helps us automatically identify and respond to safety hazards in near real time."

— **Daniel Jeavons,** General Manager
Data Science Shell

Wood

Leverage machine learning to boost calibration speed of its virtual metering solution

Challenge Wood wanted to improve the accuracy of calibration of its Virtual Metering System (VMS), a solution for metering the flow rate of multiphase oil and gas wells. Its goal was to make the solution's results more closely match physical metering devices

Solution Microsoft recommended IT partner Neal Analytics to accomplish the task. The partner developed machine learning and other algorithms running in Microsoft Azure that simplify tasks to calibrate VMS mathematical models

Benefits Now, these tasks take about 80 percent less time, with accuracy comparable to or better than what subject matter experts achieve

wood.

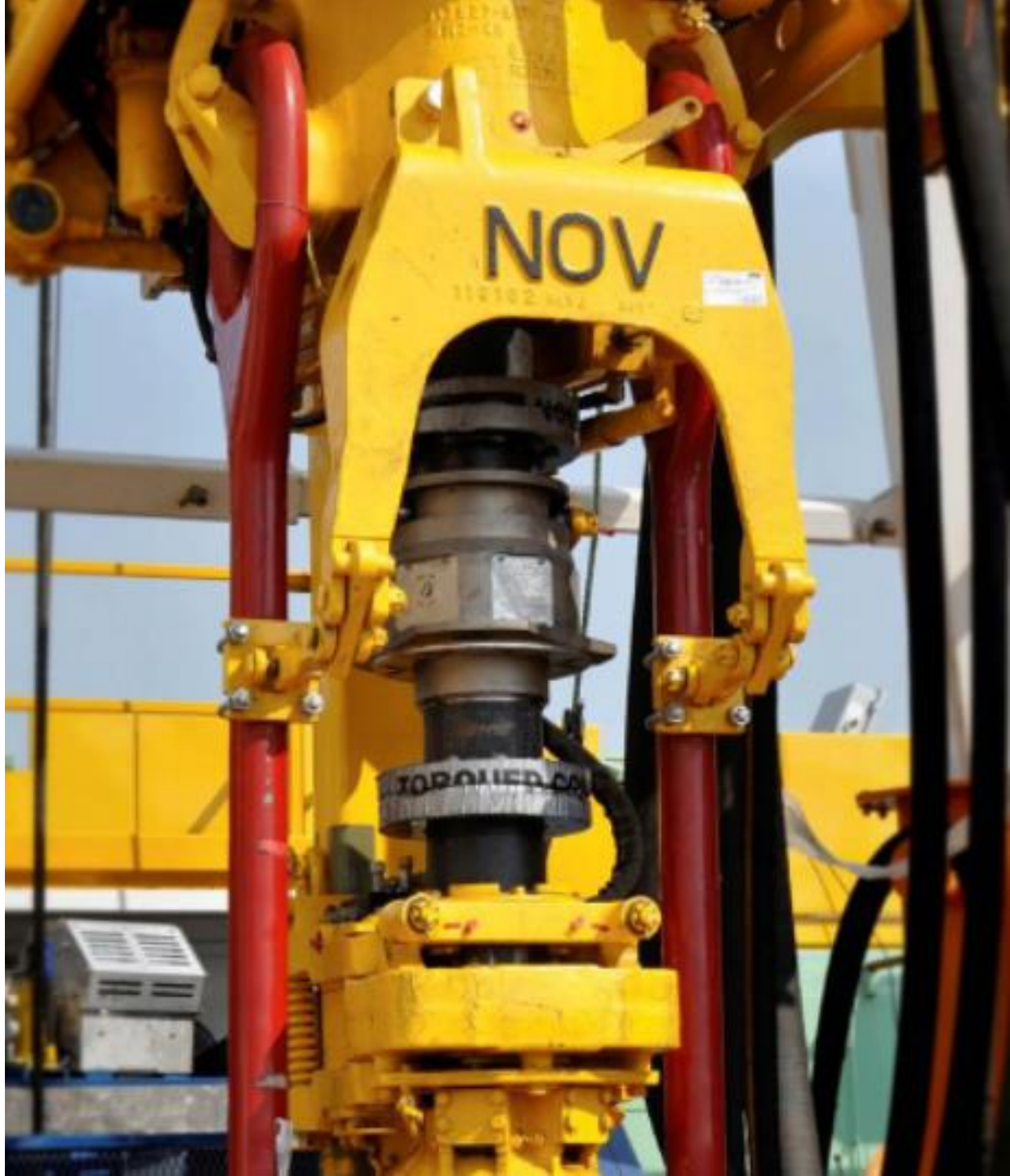
National Oilwell Varco enhances sales and service operations

"

Field service is the link between our customers and manufacturing, and with Microsoft Dynamics 365 and Power BI, we're able to better understand our customers' needs, identify the appropriate resources for each task, and effectively address the issue, creating a seamless experience.

"

— **Clay Williams,** Chairman, President, and CEO
National Oilwell Varco



BP and Microsoft

BP selects Microsoft Azure for company-wide platform as part of its modernization program

This partnership will move advanced workloads to Azure data centers that deliver a sustainable step change in the company's long-term performance.

By moving its proprietary data lake to Microsoft's cloud platform, and utilizing Azure services, BP will enable rapid data analysis, with faster insights and decision-making.

Microsoft

bp

Chevron and Microsoft

Chevron fuels digital transformation with new Microsoft partnership

This partnership will infuse Chevron with even more computing power to accelerate its work in data analytics and the IoT.

Establishing Azure as Chevron's primary cloud will support Chevron's efforts to digitize its oil fields and accelerate deployment of new technologies that can increase revenues, reduce costs and improve the safety and reliability of operations.

Microsoft

Chevron

> "This partnership will allow us to digitally transform and leverage the scale and capabilities of Microsoft to ensure we harness the value of our data"
>
> **— Bill Braun**
> Chief Information Officer, Chevron

Shell and Microsoft

Shell appoints C3 IoT and Microsoft Azure as its AI platform

Through this collaboration, Shell will drive efficiencies across the company from drilling and extraction to employee empowerment and collaboration, as well as safety for its retail customers and employees.

Shell has selected C3 IoT with Microsoft Azure as its artificial intelligence (AI) platform to enable and accelerate digital transformation on a global scale. Shell expects to realize substantial economic value by rapidly scaling and replicating AI and machine learning applications across its upstream and downstream businesses.

Together with Microsoft, Shell is creating a secure, reliable foundation upon which to build these digital solutions.

Microsoft

C3 IoT

> "Digital technologies are core to our strategy to strengthen our position as a leading energy company. Our collaboration with Microsoft gives us a solid digital platform to make our core business more effective and efficient and supports our ambition to provide more and cleaner energy solutions through technology."

— Yuri Sebregts
Executive Vice President for Technology and CTO, Shell

Repsol and Microsoft

Repsol signs an agreement with Microsoft as part of its digitalization strategy

Repsol and Microsoft have signed a strategic agreement to advance in its digitization process and enable scalability and ubiquity in both data storage and in processes.

The agreement will involve joint work between both companies in identifying innovative solutions for the energy industry based on cloud computing, artificial intelligence, IoT, big data, mixed reality, and other technologies.

Microsoft REPSOL

Equinor and Microsoft

Equinor partners with Microsoft for cloud services delivered from new cloud data centers in Norway

Equinor and Microsoft have entered into a strategic partnership agreement. As part of the agreement, Equinor will provide industry knowledge and business needs to support Microsoft in developing new solutions for our industry. Microsoft will provide expertise to accelerate Equinor's IT development and establish new data center regions in Stavanger and in Oslo.

Microsoft

equinor

Seadrill

Chevron

Equinor

While delivering on our commitment to…

SECURITY – We'll help you keep your data secure

PRIVACY and CONTROL – Your data is private and under your control

TRANSPARENCY – You know what we are doing with your data

COMPLIANCE – We manage your data in accordance with the law

RELIABILITY – We provide enterprise grade uptime for cloud services

Building a trusted, responsible, inclusive cloud

AccountGuard | Cloud for Global Good | The Future Computed | Microsoft AI Principles | AI for Earth | Cybersecurity Tech Accord

Empowering you to fuel the future