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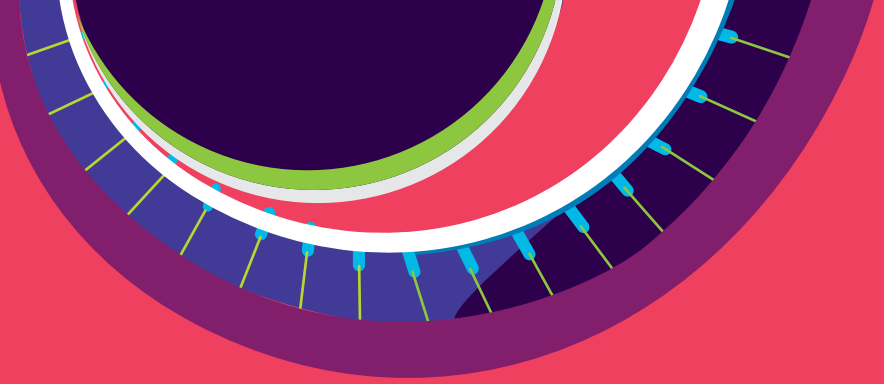
Digital Leadership

Equinor: scaling digital initiatives to build sustainable solutions in the energy sector

An interview with

Torbjørn Folgerø
Equinor



Torbjørn Folgerø, Equinor

As senior vice president and chief digital officer at Equinor, Torbjørn Folgerø is responsible for shaping and executing a company-wide digital roadmap, defining Equinor's enterprise data strategy, scouting for emerging technologies, and developing data science solutions.

Equinor, formerly Statoil, is a Norwegian-based international energy company with a presence in more than 30 countries, revenues of $61 billion, and 20,000 employees.

The Capgemini Research Institute spoke with Torbjørn to understand more about Equinor's digital transformation and the important role played by digital technologies and processes.

Digital transformation at Equinor

What is your digital transformation strategy?

Our digital roadmap is centered around six digital programs cutting across the company and three key enablers: developing digital capabilities and leadership, utilizing the external ecosystem, and developing our unified data platform.

For example, on this third objective, we recently built a cloud-based data platform called "Omnia." Here, relevant data is made available, irrespective of its source or its point of creation in the value chain. The idea behind this platform is to move from silos of data across our value chain – such as development and production, transportation, marketing and trading – to one common data platform that orchestrates all our data. Our onshore, integrated remote operations center in the US is already using this platform to develop machine learning and data analytics that help with operational improvements and making better data-driven decisions.

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We are driving digital opportunity via three technology enablers: process digitalization, data science, and robotics and remote control. We will continue to work in these areas and focus on expanding our scale of digital operations. By 2020, Equinor plans to invest around a quarter billion dollars in digital technology to create more value and improve operations.

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What are the most pressing challenges you face in delivering against your strategy?

While we are progressing along expected lines, there are two key challenges that we are currently addressing. First, when moving our data to the cloud-based Omnia platform, cybersecurity is a key concern for us and we are investing time and resources into mitigating risks. The second challenge is delivery time. We are used to long lead times in our traditional development projects, often several years from a discovery to we start producing. Now, we are delivering value from digital initiatives in matter of months, and sometime weeks, by working incrementally and with minimum viable products. This is a big change for us as a company.

Transforming operations

What are some of the most notable recent digital initiatives you have launched?

This year, we established an integrated operations center (IOC) with the aim of improving safety, increasing value creation, and reducing emissions from our installations on the Norwegian continental shelf. Over time, all our 30 operated, offshore assets on the Norwegian continental shelf will be connected to the center. So far, three assets are live, with two more coming on stream before Christmas. Here too, we are streaming industrial data from these offshore assets into one physical center. In this center, we have a 90-member team that includes engineers, data scientists, and software developers. Their role is to use the data and continuously develop new solutions on production optimization and predictive maintenance using machine learning and other techniques. Our ambition is to create value from our operated fields in Norway by more than $2 billion from 2020 to 2025.

We also built digital twins for four of our oil field projects. The digital twins allow for a virtual, real-time representation of the physical installations. If we take the example of the Johan Sverdrup oil field, there is a lot of data collected during the planning and operation phase. The digital twin, which we have built by embedding gaming visualization into our 3D models, will help us maximize the value of this data to run analytics and provide relevant technical information. We will continuously develop this and scale to other projects.

We recently launched an operational planning tool, which we piloted in one of our assets in Norway, to improve offshore risk management and safety, using cognitive techniques. We created a minimal viable product that the asset team is now using. It integrates data from five different sources into one new visualization, consisting of incident data, technical integrity data, and planning data. We are also using natural language processing to tap into previous security incidents in the company so that operators and engineers learn from what happened previously before they execute the work. The system is able to find valuable insight by screening our history of incident records, often written text and pdfs in Norwegian dialects! The solution is now being scaled to all our assets in Norway.

We have also launched a reservoir-experience platform, making subsurface data available in Omnia, which is more than half of our data volumes in the company. This is used to explore new oil and gas reservoirs and to improve the recovery rates and lifetime of existing reservoirs.

Lastly, we created a team focused on robotic process automation. The team has already freed up a significant amount of time; time that is now spent on value creating activities instead of manually

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moving information from one system to another. Our new virtual employees, called Rob and Roberta, are now responsible for executing many routine tasks, thus improving efficiency as well as reducing human-driven errors.

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Which digital technologies have improved operations at Equinor the most?

Omnia, our cloud-based data platform – along with data science and augmented and virtual reality – are the three technologies that have helped us the most so far. We built Omnia to give our employees access to integrated data across systems and organizational boundaries and to connect the broader ecosystem to the same platform. We are already building internal data science capabilities and using AR/VR on the digital twins to increase our workforce's efficiency, which is also an important focus area for us. Now we are looking into more nascent technologies, such as blockchain and 3D printing.

Encouraging collaboration

What key roles do vendors, partners, and start-ups play in your digital transformation journey?

Firstly, we see that we must collaborate in new ways with our current suppliers – such as the big oil and gas service providers – by integrating data more seamless between companies. For example, by connecting them to Omnia through APIs. We also believe that many of the best solutions may not come from Equinor or the big suppliers but from start-ups across the world, including those in Silicon Valley, Boston, Tel Aviv, and Oslo. We are working with a range of start-ups to test early-stage technologies. We recently partnered with Techstars, a start-up accelerator program, which has selected 10 global start-ups to work with us for three months. These start-ups have access to our experts and data so that they can work on and create new solutions. The selected companies are representative of some of our focus areas, including solutions within the energy sector, new business models, digitalization, and renewables. For example, one of the start-ups, DeepStream in the UK, is a tech-enabled tendering and supplier pre-qualification platform for oil and gas businesses. Another start-up, Voyager in the US,

is a cloud-based data hub assisting the commodity shipping industry to improve decision making, automate processes, and connect systems.

Are you benchmarking against or getting inspiration from companies outside the energy industry?

There is a lot for us to learn from industries such as mining and finance. Mining, as an example, face challenges that are very similar to ours. Therefore, we are closely mapping them to gather insights from their challenges, successes, and failures. Looking at the finance industry, they have done a lot of interesting work on agile delivery methods, which we are now applying in Equinor. So, I have spent time interacting with CXOs of many organizations, within and outside the energy industry, to share learning and ideas.

Fostering innovation

How are you encouraging your employees to experiment and to accept an iterative process?

Our belief is that if you witness immediate success in every project that you initiate, then you are playing safe. It is critical for some projects to fail to be able to test new solutions and technologies. However, these projects need to be carried out in a structured and safe manner so that one can stop them when required and continue learning. We also need the infrastructure to test everything, from how we create sandboxes to allowing start-ups to work on our datasets. To increase engagement across the company – and encourage the promotion of new ideas – we have an internal entrepreneurship program. We receive a great response and a lot of people are investing time and funds to work on new ideas. These ideas are further presented to a group of senior executives and, if given a go-ahead, the possibility of funding a permanent project can be explored.

While fostering innovation, we need to stay focused on providing a safe environment to our employees. For example, we do not test our solutions in our operations that are dangerous, such as our complex operations on hydrocarbons. It is critical for us to have a clear understanding about how and where solutions can be tested, where we can experiment, and what are the requirements for implementation.

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Change management

How did you prepare the organization for your digital transformation?

We took both a top-down and bottom-up approach. Equinor's leadership has three challenging yet simple tasks – shaping the future, empowering people, and delivering results. These three also fit very well in our digital vision. We are working toward enabling our leaders to achieve these goals. For example, "Taking Equinor beyond 2025 Digital," was launched a few years back involving 11 senior vice presidents. Today, our CEO and executive committee spends lot of time understanding and working on the overall digital roadmap.

We are also investing in developing the digital skillset among all our employees. We have many smart minds working at Equinor and it is our current workforce that knows our business and the problems to be solved by applying new digital technology. Therefore, we have established our "Digital Academy," where all employees can learn about digital, from machine learning to programming to cybersecurity to Office 365. We also launched a Digital Center of Excellence in 2017 that is responsible for managing digitalization efforts across the company through six digital programs. The center of excellence has employees both from the business side as well as world-leading talents within areas such as machine learning and artificial intelligence.

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How are you addressing the challenge of hiring and sourcing digital talent?

We are addressing this challenge in four ways. Firstly, a lot of our employees have strong quantitative aptitude, and many are already working alongside analytics teams. We try to upskill and re-skill these employees and engage them with data science projects. Secondly, we target external recruiting, particularly new software developers, IT security professionals, and data scientists. In the new Digital Center of Excellence, the ratio of internal versus external recruitment is almost equal. We want to attract digital talent in the fields of data analysis, machine learning, artificial intelligence, and software development. The fact that we are addressing some of the biggest energy problems in the world provides a unique value proposition to digital minds. Thirdly, we have built digital labs at multiple offices and are encouraging all our data scientists and software developers to spend up to 20% of their time on education. Finally, we also nurture good relations with universities.

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Are employees resistant to this new way of working?

My role requires that I gather a clear understanding of varying perspectives and ensure a seamless integration across different parts of the organization. At large, we have witnessed high levels of curiosity and engagement from our employees. Whenever we host large-scale digital events, we see high employee participation. Overall, we are off to a good start. Now we must prove to everyone that these new methods, processes, and ways of working will drive value before people fully buy into it. Once that is achieved, we need to ensure we deliver those solutions with sufficient speed and accuracy.

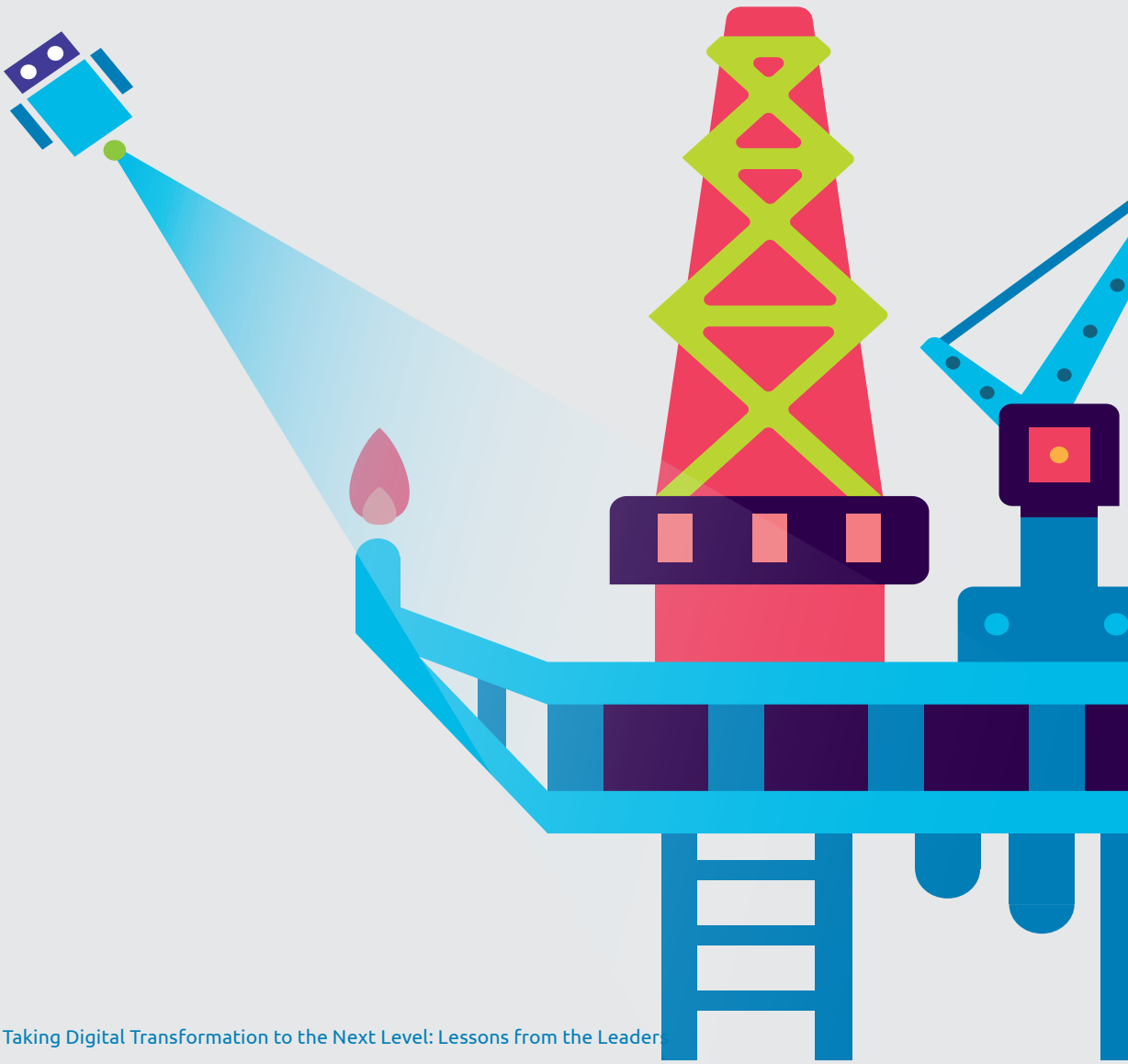
The future of digital transformation at Equinor

Which are your key upcoming milestones and what would success on those mean?

At Equinor, our first and foremost priority is the safety of our employees. We ensure that every employee in our organization is provided a safe and secure environment at work. We strongly believe that digital is going to be a key enabler to continuously improve the safety performance at Equinor. We are also focused on value creation. We have an ambition to increase the value of our existing assets by $2 billion by 2025. We also have efficiency targets of reducing drilling cost by 15% and investments in future field developments by 30%. Lastly, we can increase employee engagement and upskill our workforce by teaching them new digital tools and engaging them continuously in our digital journey. This will have a high impact on their everyday productivity.

How do you see Equinor evolving in the next 10 years with respect to its digital transformation roadmap?

Digital transformation is an ongoing process and there are benchmarks that every company needs to set for itself. One can't evolve overnight and to transform at scale requires significant investment. While we have a long way ahead of us, I believe we are on the right track. We endeavor to achieve higher levels of safety, carbon-efficiency, and profitability in a more seamless manner using data and digital solutions. And, we want to ensure that we collaborate closely with both internal and external stakeholders throughout our digital journey. Our digital evolution has the potential to significantly impact the way the energy industry functions in the years ahead.



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