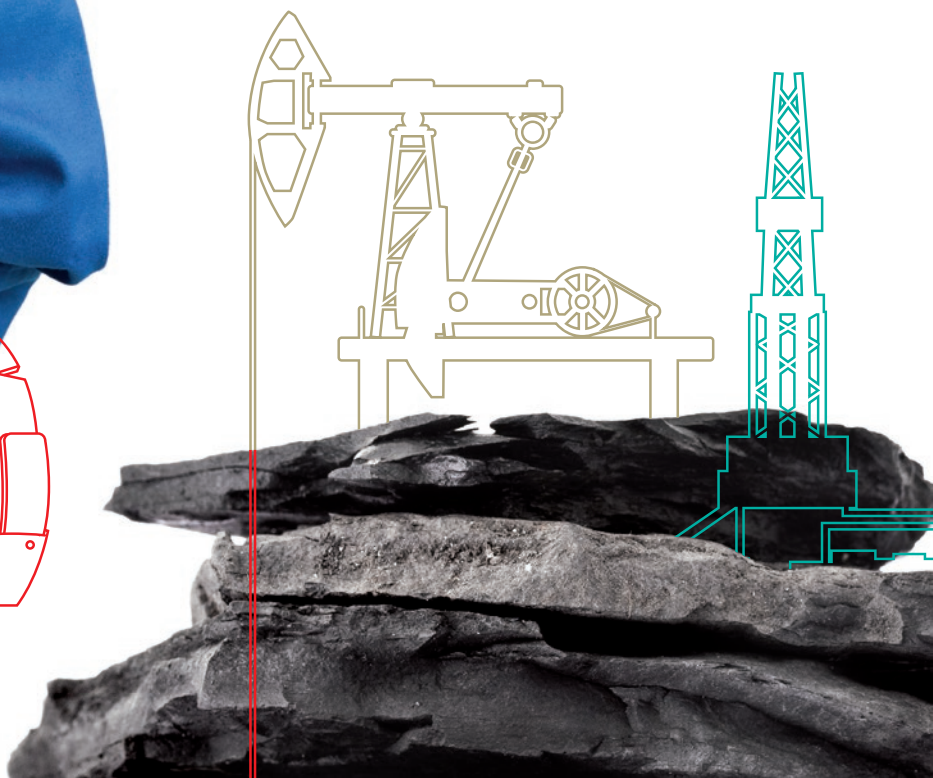


Digitizing Energy

The Future of Work in
the Oil and Gas Industry



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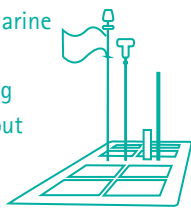
How Digital is Transforming Talent

In the oil and gas industry, digital is radically transforming work as we know it. Digital technologies are not only rapidly changing the practice of work, but they are also reshaping the very nature of the workforce and its work experiences in everything from hiring experiences to jobs to careers.

Technology-enabled talent transforms work practices

New advances in digital technologies are accelerating the amplification of both brawn and brain, thereby enabling altogether new ways of performing work. Remote sensors and drones, for example, are rapidly helping replace the need for people to physically monitor equipment. Autonomous robotic drilling, for example, is now able to completely remove people from the drill floor,¹ robotic moving platforms are now being developed for shale wells, and remote-controlled trucks are being developed to transport oil or gas.

Schlumberger is now even monitoring subsea conditions using 'wave gliders,' or unmanned marine vehicles, which can travel across the oceans collecting data for up to a year without fuel or crew, as they are powered by solar panels and wave energy.²



Remote sensors and drones are improving safety and increasing the frequency of information about assets; analytics performed on this data can then help increase the productivity of assets through predictive maintenance. The recent convergence of data, machines and people – and analytics powered in part by the emergence of the cloud – can

enable smarter decision making by people on the edges of the organization. Instead of a continuous stream of data from sensors being analyzed by a central onshore command center that then provides assistance to all, in the future, intelligent data will also be fed back to the wells and field personnel who can then make wiser decisions based on local conditions. People might even get this information – or instant information regarding a specific pump and its maintenance history – on a wearable computer like Google Glass that recognizes the equipment all on its own.

Wells may also be armed with smart technology that enables them to initiate and participate in conversations to increase their performance by using social tools like Chatter. Wells can, for example, start a discussion thread about a possible problem like a high temperature reading or an abnormal vibration. The dialogue would be initiated by the well itself – similar to the way a patient calls a doctor – and smart analytic technologies could then pull the specific people with the right expertise into a discussion forum to solve the problem collaboratively.

Digital demands – and enables – a fundamentally different workforce

As oil and gas companies continue to digitize work and start to compete more on data management and analytic proficiency, it will transform the very nature of the industry's workforce. For one, companies will start to rely less on the personal experience of specific people, and more on science that can be understood and shared by all.

Digital literacy skills are becoming increasingly important – including analytic capabilities, the development of new software and intelligent hardware, and the ability to effectively use new tools such as live collaboration technologies.

Although some jobs like equipment inspectors may indeed be replaced –



researchers at Oxford University believe that **47 percent of jobs** across industries could be automated over the next two decades³ –

other, more digitally-oriented jobs will be created to take their place.



According to one benchmark study, for example, the oil and gas industry needs to hire **11,900 new data analysts** to meet increased demand.⁴

Other new roles created by digital advances include people who use social listening tools to monitor social media to determine the perception of a company drilling in a particular country, or people responsible for seamless interactions with customers across product lines. Certainly there will be an increasing need for people to work on providing only the right data to the right people at the right time in an easily digestible format – thereby avoiding the need for people to wade through mounds of data or multiple screens to turn data into insight. Evolving roles and new skill sets will put ever-increasing demands on organizations to speed time to competency and require employees to develop just-in-time skills.

Also, as digital drives increased global collaboration and greater decision making on the edges of the organization by front-line employees, it requires a new global mindset, as well as demands that employees develop the ability to lead at all levels and rapidly experiment based on data in real time. To develop global management skills, Schlumberger partnered with Management Center Europe (MCE) to develop global consistency in the skills and behaviors of potential managers.⁵

A global mindset is important for another reason, too: the global talent map is quickly losing its borders. Confronted with an experienced workforce and a chronic skills

shortage of engineers, oil and gas companies are increasingly sourcing scarce skills wherever those skills reside. More and more, these skills can be found in emerging markets such as India and elsewhere in Asia whose universities outpace Western countries in producing needed technical skills.⁶ In addition, as multinationals expand into new markets, they are also seeking to hire and develop local workers in altogether new geographic areas. Often, however, talent needs to be quickly developed in these new areas due to a shortage or complete lack of skills in the region; even graduates from technical programs in emerging markets often still need substantial development in areas beyond technical skills until they are ready to make a significant contribution to an organization.

As work becomes increasingly virtualized and analytics-based, digital also enables organizations to tap into new pools of workers such as experienced and aging professionals either working part time or retired, experts living in different geographic locations throughout the world, or those seeking greater work life balance – all of whom might not want to be physically tied to a specific location. These workers may be permanent employees, or they may be part of a new global, digitally-connected workforce of experts available on demand who are paid to advise the organization on specific problems like a drilling challenge. Energy companies are turning to companies like Kaggle—a global network of computer

scientists, mathematicians, and data scientists who compete to solve a range of problems including retail-store location optimization.

Increasingly, the oil and gas industry may rely on an open innovation model, drawing on the crowd to solve problems or get innovative ideas. Speaking at the 2012 Society of Petroleum Engineers Intelligent Energy conference, John B. Rogers, president and CEO of Local Motors, challenged the oil and gas industry to see if it could come up with a digital platform for information sharing to develop new equipment. The platform would need to be similar to the platform he developed for the automotive industry, where people use it to design and build their own cars based on designs put together by



30,000 contributors
over the Internet.⁷

Digital drives democratized, customized and seamless work experiences

In order to attract and retain scarce talent and a new generation of workers in an industry with a reputation for being environmentally unfriendly, dangerous and prone to cyclical layoffs – as well as to improve the performance of that talent in increasingly knowledge-intensive roles – oil and gas companies in the future will have to adopt an entirely new approach to managing

their people. New advances in digital technologies now enable organizations to provide workers with more democratized and customized work experiences, including tailored learning experiences, performance appraisals, benefits packages, careers and jobs. Technology can now analyze transfer and promotion histories, for example, to determine common (or uncommon) career paths taken by employees. Instead of following one standard and linear career path, employees can view the actual career paths others have taken who have similar skills, preferences and roles to help them create their own custom career paths, and then network with these people to learn more through social networking technology.

In addition, emerging digital talent exchanges are transforming the hiring experience by offering companies a rich set of new data on potential or current workers who reside all around the world. For example, data may include: verified assessments of skills, cultural fit or competencies; judged performance on work competitions; samples of previous work; geographies desired; languages spoken; or detailed training transcripts and credentials. Such digital platforms will help democratize the workforce by enabling organizations to better hire raw talent who may not have gilt-edged resumes, as well as make sure they get the right expertise in the right location at the right time.

Conclusion

To effectively compete in the future, oil and gas companies will need to fully transform themselves into digital companies that increasingly compete on talent. This requires not only radically extending both brain and brawn through new digital work practices, but also just as importantly, it demands a very different workforce, as well as a complete rethink of the work experience itself.

¹ Robotic Drilling Systems AS, www.rds.no/home.

² "Catch a Wave: Unmanned Marine Fleet in Works for Energy Industry," 25 Jun 2012, NGI's Daily Gas Price Index, Factiva, Inc. All Rights Reserved.

³ "Technology and jobs: Coming to an office near you," 18 Jan 2014, The Economist, Factiva, Inc. All Rights Reserved.

⁴ Thomas, Robert; Hou, Charlene; Craig, Elizabeth, Arnott, James, Adams, Julie, "The Looming Global Analytics Talent Mismatch in Oil and Gas," Accenture, Oct 2012, www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Looming-Global-Analytics-Talent-Mismatch-Oil-Gas.pdf.

⁵ "Schlumberger: Managing People Globally in a Consistent Way," Management Centre Europe, <http://www.mce-ama.com/case-study/schlumberger/>.

⁶ Craig, Elizabeth; Thomas, Robert J.; Hou, Charlene; Mather, Smriti, "Where Will All the STEM Talent Come From?," Accenture Institute for High Performance, May 2012, www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Where-Will-All-the-STEM-Talent-Come-From-FINAL.pdf#zoom=50.

⁷ "Local Motors: A Model for Oil and Gas?," Digital Oil and Gas Journal, 3 Aug 2012, www.digitalenergyjournal.com/n/Local_Motors_a_model_for_oil_and_gas/e521b405.aspx#ixzz2sNv1Gg7r

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