



Improving oil and gas efficiency through digital

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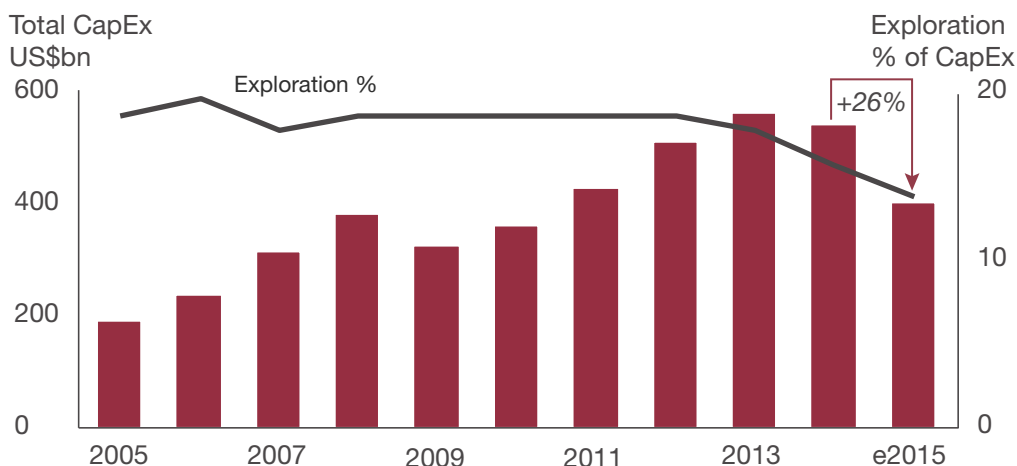
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Oil and Gas industry is facing intense pressure to improve operational efficiencies as lower oil prices continue to crimp margins. Additionally, capital expenditures on Exploration has dropped 26% since 2014, which shifts the focus to maximizing production and throughput by “sweating” existing assets (*Exhibit 1*). While the industry continues to swing between highs and lows, the operational nature of the business has remained relatively constant. Achieving a breakthrough on production performance demands a fresh perspective on field operations.

Exhibit 1
Global E&P CapEx spend



A critical capability to accelerate operational efficiency and drive margins is Digital. The term Digital addresses the confluence of data, machines and people that form the basis of Internet of Things (IoT) which can ultimately create several opportunities: **improve asset reliability, boost throughput** and **optimize field recovery**.

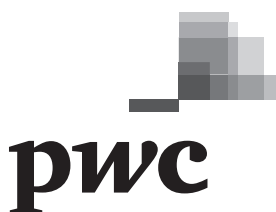


Exhibit 2
US crude oil production

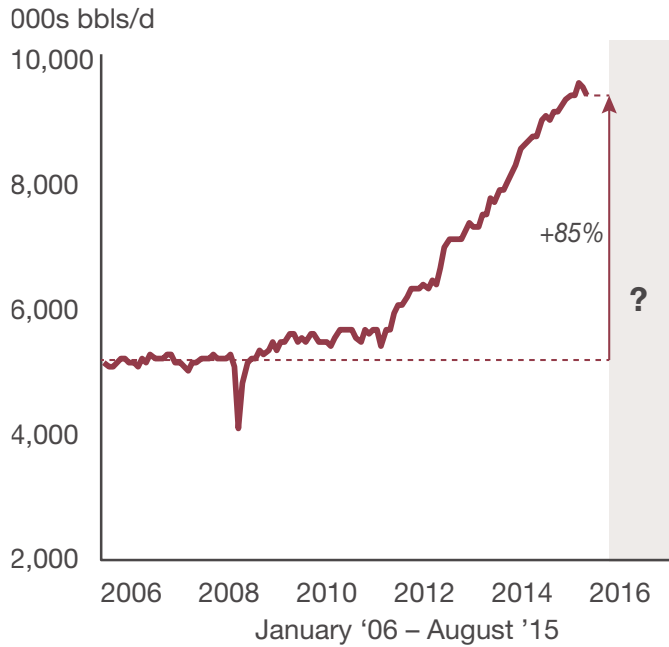


Exhibit 3
Dated Brent (BFOE) spot price



In an environment where oil production continues to increase while prices have dropped 61% since 2014, operational efficiency gains even more significance (*Exhibit 2 and 3*). The need for operational efficiency coupled with maturing technologies represent an inflection point for disruption. The traction of technology trends such as analytics, robotics, sensors, and control systems offers companies the opportunity to accelerate field automation in a pervasive manner. In our discussions with clients, a consensus emerged around five themes that will shape the digital transformation in oil and gas.



Internet of things

Falling costs of sensors and actuators along with the need for operational data that enable predictive analytics is driving the network of “things”



Building alliances

A reduced appetite for M&A is forcing companies to partner effectively to build end to end solutions



Simplification and standardization

Process and equipment standardization across regions as a lever to streamline costs related to maintenance, repair and operations



Solution-based buying

Companies are shifting from buying discrete services to solution based buying thereby reducing risks with disparate interfaces and data

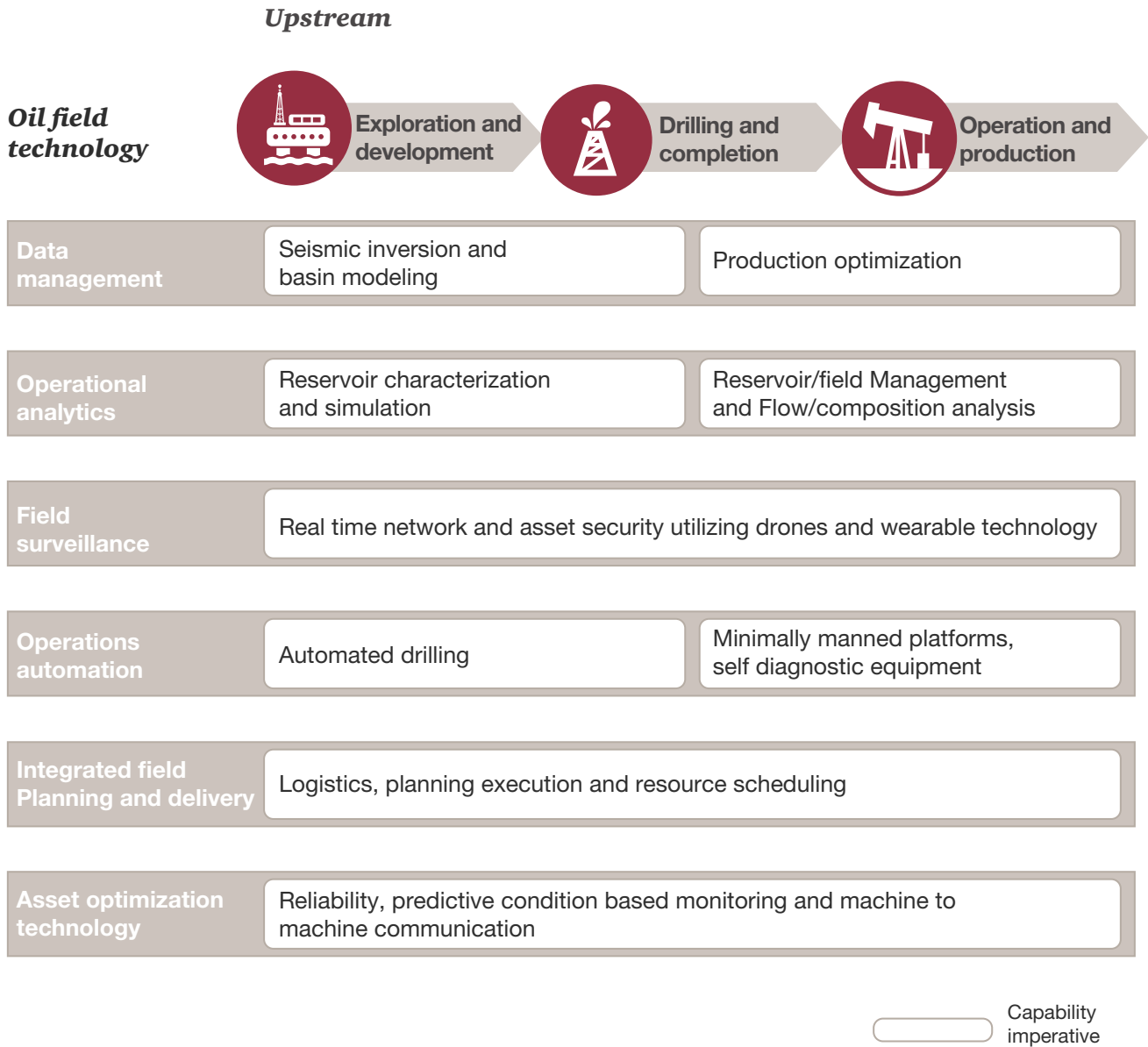


Knowledge Transfer from IOC/NOC to OFS

Oil Field Services Companies (OFS) are investing in R&D to mitigate acquired risks and are collaborating with Independent Oil Companies (IOC) and National Oil Companies (NOC)

Exhibit 4

Six areas of digitization exist for significant value creation in upstream operations



While end to end technology across the value chain may not be realized, technology is maturing from “science fiction” into “everyday”. Marginal improvements in operational efficiency can have significant impact given the large production volumes.

Capturing value from digitization requires a fundamental shift in strategy and operating model complemented with differentiated capabilities. In our experience, companies that successfully drove operational efficiency through technology applied:

- 1. Shared standards:** The confluence of operational technology and information technology requires a common set of standards that meet stringent operational requirements while allowing for information sharing across the organization
- 2. Collaboration and cross training:** Seamless digitization and integration requires multidisciplinary domain knowledge between information technology, operational technology, data management and process design to cybersecurity
- 3. Self funding projects and change management:** Identifying potential brownfield projects that are prime candidates to deploy digital technology drives organization momentum and alleviates resistance to new technologies
- 4. Security and compliance:** As assets become increasingly connected to the network, it is important to protect critical digital infrastructure against cyber attacks — by monitoring threats, identifying vulnerabilities, building robust controls and promoting a culture of security awareness

Technology is rapidly shifting from being the legacy enabler to being more of the game changer. Oil and Gas companies that respond to the shift towards efficiencies by building sustainable digital capabilities will be tomorrow's winner. [PwC/Strategy&](#) can partner with you to comprehensively demonstrate the value of Digital - including demonstrations at our Experience Centers. Our focus is helping create differentiating capabilities and closing the [strategy through execution gap](#).

About the authors

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