

India New Delhi

Parallel Roundtable 3: Energy Sector Digitalization; Benefits and Challenges





Introduction

Market Context

- Industries are going through digital revolution and it has started to reshape each and every one of it
- Though digital is at a nascent stage in O&G industry but players are developing sophisticated initiatives in digital space
- Digital is significant in India and will go beyond 3Ms - males, millennials and metro

Session Objectives

- What technologies today constitute digital?
- To observe themes driving digital investments across O&G industry and how some of the majors are deploying and benefitting from it
- To understand the key challenges in the deployment of digital in Oil and Gas

Key Question: How is digitalization making oil, gas and power sectors more efficient and resilient? What is the role of inventory data, will stocks become more transparent in the digital age?



Digital is a "tremendous rate of change" with an ubiquitous front end



By 2030, the cloud will have more raw computing power than all human brains together



2X growth in connected devices per household—25 (2017) to 50 (2020)



1 internet minute means



0.9Mn logins



156Mn emails



\$0.7Mn spent



4 billion of the world's internet users, will spend a staggering 1 billion years online in 2018



Digitization has started to re-shape the complete industrial world

Industrial Internet

 Tracking (location & temperature) of refrigerated shipping container



Big Data & Analytics

Gene sequencing for agricultural production



Mobile & social

Advanced mobile service assistance



Cloud

SaaS based process engineering tools



Augmented reality

 AR-based assistance in warehousing





Simulation

 3D real-time factory simulation for design and monitoring



Cyber security

 Industrial cyber security for process industries



Horizontal & vertical integration

 Plant engineering integrated with process control system



Additive manufacturing

3D-printed fuel nozzles in the combustion system



Autonomous robots

 Human collaborative robots working side-by-side with workers



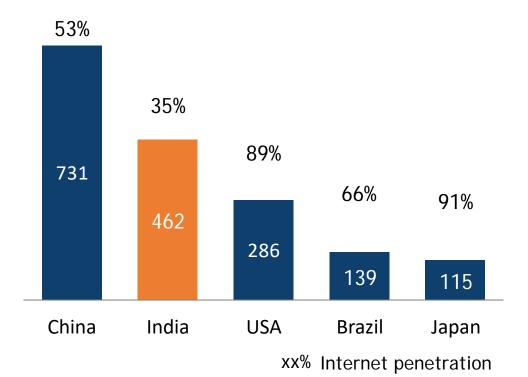




Digital in India is already significant and will continue to grow

India today has the 2nd largest base of internet users in the world

#internet users (Mn)



Internet users to further increase, driven by the rise in smartphone use

650 Mn > Internet users in India in 2020

80% > Users to access internet from phones v/s 70% today

13% > Growth in Indian smartphone market vis-à-vis 3% globally

Source: BCG Analysis, Ethinos Digital India snaphot 2017



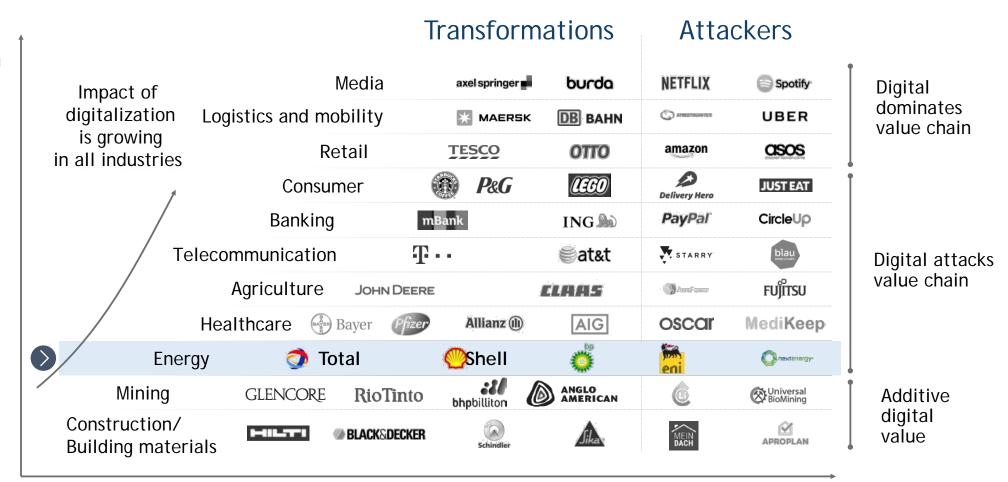
Digital to go beyond 3M's—males, millennials, metro

	Segment	2016 (Mn)	2020 (Mn)	Δ
People who we think use internet in India	Millenials (<34 Yrs)	244	436	1.8
	Male	231	390	1.7
	Metro/T1	96	150	1.6
but many others beyond the stereotype are online	Not So Young (35+ Yrs)	86	214	2.5
	Female	99	260	2.6
	Non-metro	234	500	2.2



Digital is still nascent in Oil and Gas but could cause significant disruption

Impact of digitalization



Digital progress

Source: BCG analysis



"Digital" in O&G: 11 themes are driving innovation in leading global companies

Cybersecurity

Protecting system integrity is a "must-have"

Robotics & automation

Intelligent robots take on complex assignments



Sensors

Low cost, low power, connected sensors capturing spatial and environment information



Unmanned aerial vehicles

Autonomous, low-cost vehicles able to perform complex tasks and remove human presence



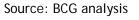
3D scanning

Analyses of real-world object or environment to collect data on its shape/appearance



Collaborative technology platforms

Employee engagement and collaboration enabled by digital platforms and communities





Big data & analytics

Instant analysis of large data sets to identify new patterns



Cloud computing/storage

Highly scalable, variable-cost storage & processing on demand



Virtual reality

Interact more naturally with digital devices and services



Real-time communication and tracking

Every asset, equipment, employee always connected



Mobile connectivity & augmented reality

Virtual tele-presence to remove the need for on-site humans and omnipresent mobile devices





Oil & Gas players are already developing sophisticated initiatives in the digital space

Illustrative



Digital oilfields controlled from a unique Real-Time Drilling Optimization Center

UAV for pipeline inspections



Analytics driven predictive maintenance Digital initiatives in retail (customer segmentation and loyalty)



Submersible robot for Ocean exploration Immersive 3D training simulation



Real time production optimization through big data and machine learning



However, companies are hindered in their "digitalization" by internal roadblocks









Digital talent crunch

72% of CEOs struggle to source the right digital talent¹

Dated processes

74% high digital decisionmakers do not fully agree that their operational process is ready to execute their digital strategy²

Cultural obstacles

"The biggest challenge is cultural change" 3

Inadequate investment in digital infrastructure

Only select cos are investing in state of the art digital infrastructure

Source: World Economic Forum, "Four themes of becoming a digital enterprise", "Digital Transformation In The Age Of The Customer", October 2015, Interview of V. Fauvel in "Transformation Digitale 2016" by EBG, IBM and BCG

Key Questions

- What are some of the most practical areas where digital can help an O&G company in the short term (1 to 3 years)?
- How can one insure smooth infusion of technology into traditional O&G business/companies without disrupting it?
- What is the role of inventory data, will stocks become more transparent in the digital age?





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Background Paper



