



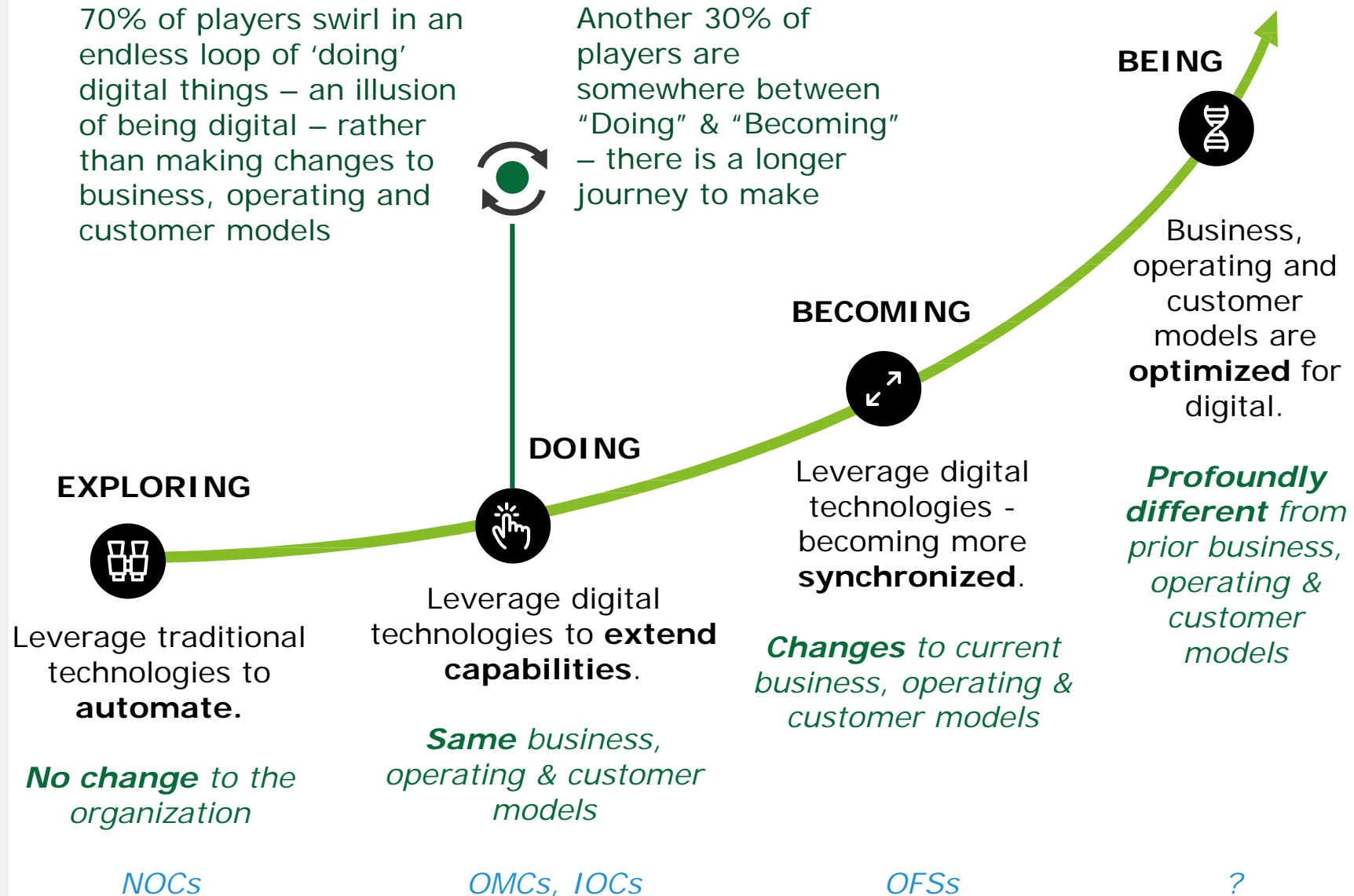
## ENERGY SECTOR DIGITALIZATION

### *Benefits & Challenges*

11<sup>th</sup> April 2018

# Digitalisation is a journey, not a destination

Factors such as **changing market forces, geo-politics, and innovation**, have now reached the higher 'barrier-to-entry' industries.



# The O&G sector needs to chart its own 'digital journey'...

What has worked for other industries...

'PLATFORMING' DRIVING THE  
'SHARED ECONOMY'

*Uber, Airbnb, WeWorks...*

CROWDSOURCING

*Tripadvisor, Spotify, Zomato...*

CONSISTENT DATA  
ARCHITECTURE

*Amazon, Google...*

'START-UP' / BOOTSTRAP  
BUSINESSES FUELED BY DEMAND

*Facebook, Snapchat...*

SCALED ECOSYSTEMS PROMOTING  
INNOVATION

*Android / Apple ecosystems...*

...is not necessarily replicable for O&G

*Complex, diverse data sources,  
Proprietary nature of assets and data*

*One of the oldest and highly  
regulated industry globally*

*Huge number of incumbents  
across the value chain*

*Scale of operations, core business  
is CAPEX intensive*

*Unpredictability of earth science;  
diversity across value chain*

...however, there is hope!

## Digital Twin for Asset Simulation

*Companies are increasingly investing in technologies to simulate and predict asset performances*

## AI for Oil & Gas Production Optimization

*Norway based start-up developed hierarchical neural network model for real time production optimization*

# The Indian O&G industry could potentially unlock ~\$ 1.5 – 2 Bn through Digital interventions over next 10 years...

Select opportunities across upstream, midstream and downstream over 10 years



Upstream

## PRODUCTION ENHANCEMENT

For India, digital interventions around production enhancement could help reduce the import bill

Production enhancing tools

\$ 0.7 – 0.9 bn<sup>1</sup>

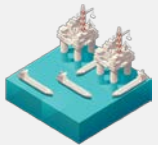
Intelligent Asset management

\$ 0.2 bn<sup>2</sup>

Capital project lifecycle management

\$ 0.6 – 0.9 bn<sup>3</sup>

Midstream



## ASSET MANAGEMENT

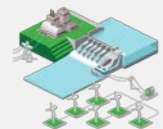
Given the asset intensity in the midstream sector, Tools to improve asset productivity will remain a priority

Upstream

Midstream

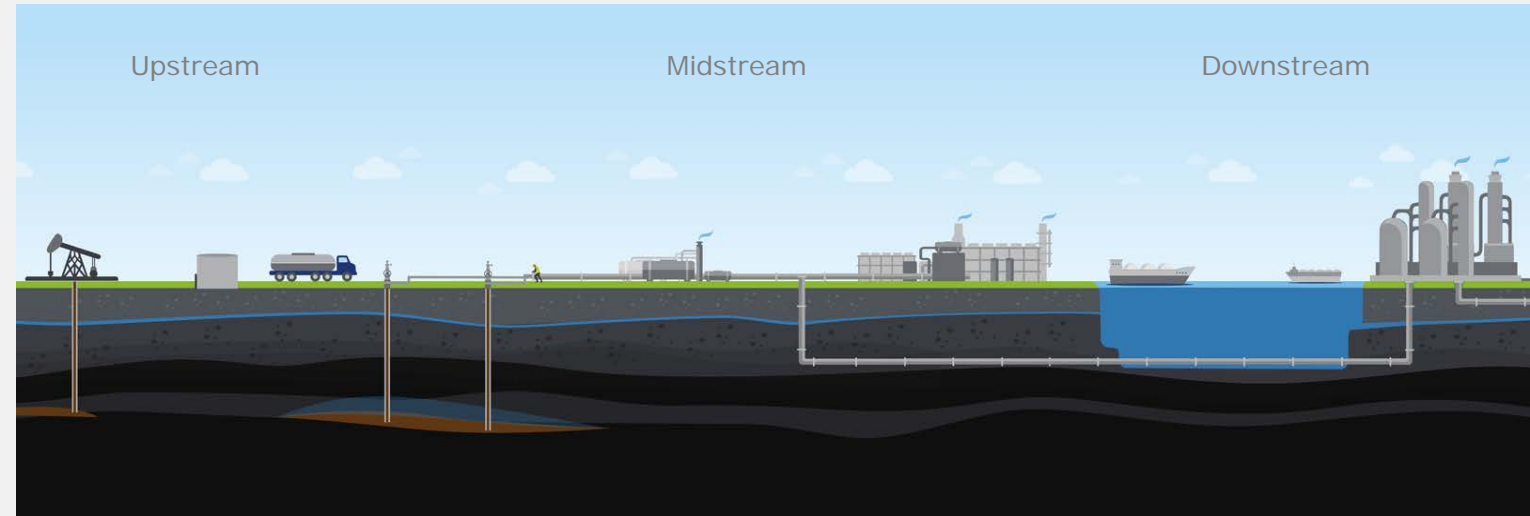
Downstream

Downstream



## CAPITAL PROJECTS

~ \$195 Bn of investments envisaged across the downstream Oil & Gas industry over the next 10 years in India. Optimization of CAPEX will be a focus



<sup>1</sup> Digital production enhancement technologies are typically deployed on large oil fields and can increase production without additional CAPEX; select global use cases and Deloitte Analysis

<sup>2</sup> Maintenance cost is a significant proportion of overall OPEX for Midstream sector and digital interventions like predictive maintenance, smart metering, smart transportation, asset performance monitoring will help reduce costs; Deloitte Analysis

<sup>3</sup> Investment in Indian downstream O&G sector is estimated to be ~195 Bn over ten years (2016-25); Digital interventions will help advanced analytics in project management and reduce delays ensuring capital investment savings; Deloitte Analysis

# Adoption barriers until singularity...

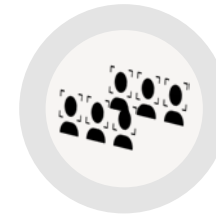
Industry needs to drive a **culture of innovation** and technology adoption across the oil & gas value chain



Oil & Energy is ranked 4<sup>th</sup> 'Top Declining Industries For Millennial Job Switchers'<sup>1</sup>

Average employee age across Oil & Gas is 42 while that for IT/ITeS sector is 32<sup>2</sup>

## AGING WORKFORCE



Incumbents operating in **silos**; disparity of data packets leading to non-integrated systems

Much of the data coming in is not standardized or integrated across platforms.

## LACK OF INTEGRATION



Disparate regimes; ~60% of Global Oil prod comes from non-concession regimes.

Energy geopolitics doesn't not completely encourage innovation

## LEGACY



# FOSTERING ENABLING ECOSYSTEMS

*Policy-makers, governments, industry incumbents and wider society need to come together; help build the innovation ecosystem to unlock value*

<sup>1</sup> The Top Industries Gaining and Losing Millennials – LinkedIn, 2017

<sup>2</sup> Statista: Median Employee Age Analysis, Business Insider; Deloitte Analysis

An aerial photograph of a town, showing a dense grid of streets and buildings. The image is dark, with the streets and buildings appearing as lighter, textured lines against a black background.

OIL  
MAY  
RUN  
THE  
TOWN

A complex network graph visualization. It features a dense web of thin, multi-colored lines (green, blue, yellow, purple) connecting numerous nodes. The nodes are represented by small, semi-transparent circles in various colors (blue, yellow, green, purple). The overall effect is a vibrant, interconnected digital space.

BUT  
DATA  
RUNS  
THE  
OIL.

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