

# Delivering the 'Digital Oilfield'

Is Oil & Gas Ready for Artificial Intelligence?  
*Robin Auld & Matt Klukas*

## ***read·i·ness – noun***

- 1. The state of being fully prepared for something*
- 2. Willingness to do something*



# Back to the Basics

1. Do you know what problem you want to solve?
2. Do you understand how technology could help solve the problem?
  - What benefits & opportunities are created? What are the resulting risks & challenges?
3. Are you willing to invest time and resources into finding the right technology?
4. Are you willing to fully use the technology once it has been implemented?
  - Do your people ‘trust’ the computer to make recommendations and take action?



# What Does AI Deliver? Stronger Value Chains

AI is redefining the value chain in virtually every sector. It's future-focused; the bar for what's considered "intelligent" is constantly rising.

## Opportunities exist across all value chains, in every industry:

### Smarter forecasting

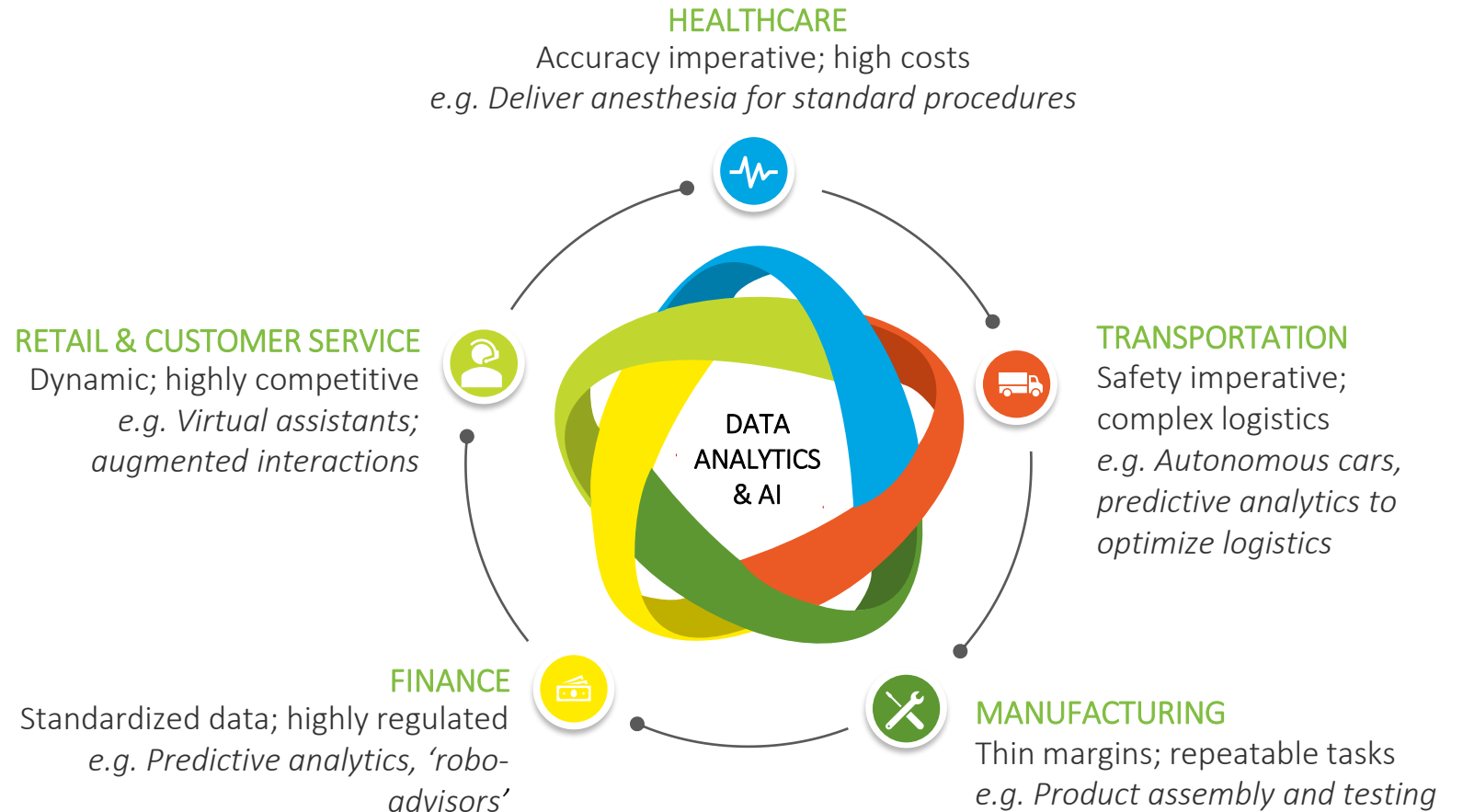
- Predictive analytics

### Improve productivity from people & assets

- Delegate low-value tasks
- Enable better, faster decision-making
- Optimize efficiency through automation

### Increase profitability

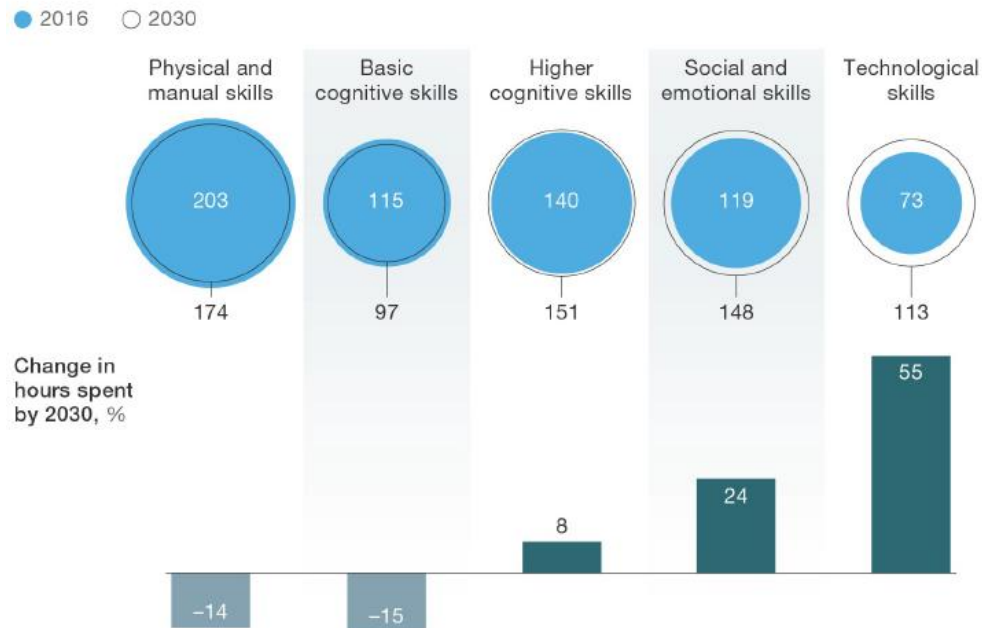
- Better cost analysis
- Targeted sales & marketing
- Innovative revenue streams



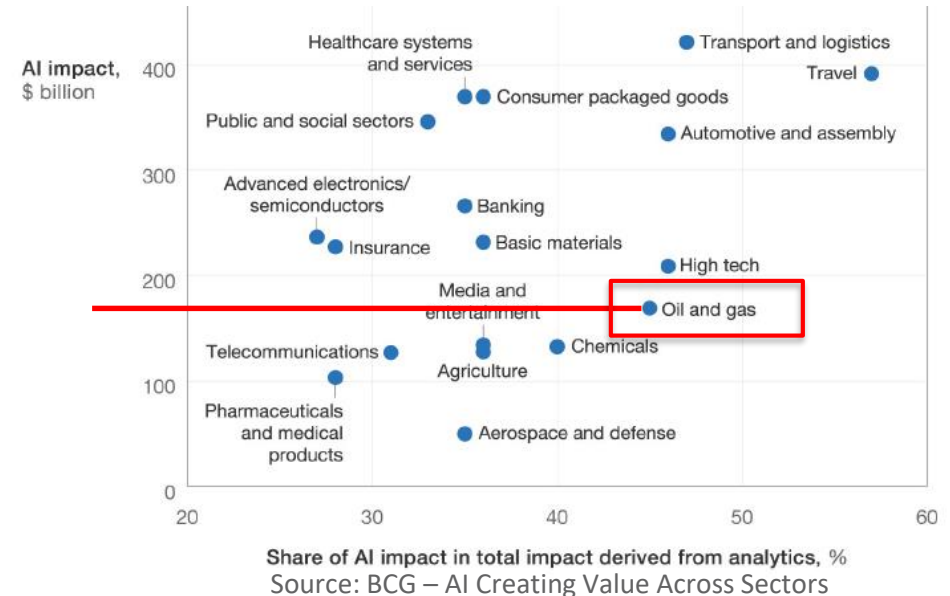
# Unlocking Value by Enabling People

Automation shifts the workforce away from manual labour towards cognitive, social and technology skills. Downward pressure on wages and increased productivity could unlock ~\$200 billion in the O&G industry alone.

Total hours worked in Europe and United States, 2016 vs 2030 estimate, billion



Source: McKinsey Global Institute Workforce Skills Model; McKinsey Global Institute analysis



## We still need people...

- How do you explain a decision made by machine learning?
- How do you remove bias in training data and algorithms?



# Opportunities Across the Value Chain

AI is not 'plug & play' – it's critical to clearly identify the problem you want to solve. Operating segments within O&G have different characteristics, which creates a spectrum of potential drivers.

## Upstream

- Increasingly complex E&P projects
- Variable commodity price
- Increasingly remote / challenging locations
- Access to significant subsurface data and expertise

## Midstream

- Relies on forecasts sensitive to external & cyclical factors
- Crucial to maintain facility integrity and reliability
- Projects constrained by regulatory hurdles and public opposition

## Downstream/Refining

- Manufacturing/margin business
- Continuous optimization to respond to market conditions
- Technology drives efficiency
- Minimize facility downtime
- Maintenance and reliability

Access to substantial, diverse data sets

Zero tolerance for safety or environmental incidents

Capital intensive, with need to lower cost structures



# Today: Expectations are High, Adoption is Low

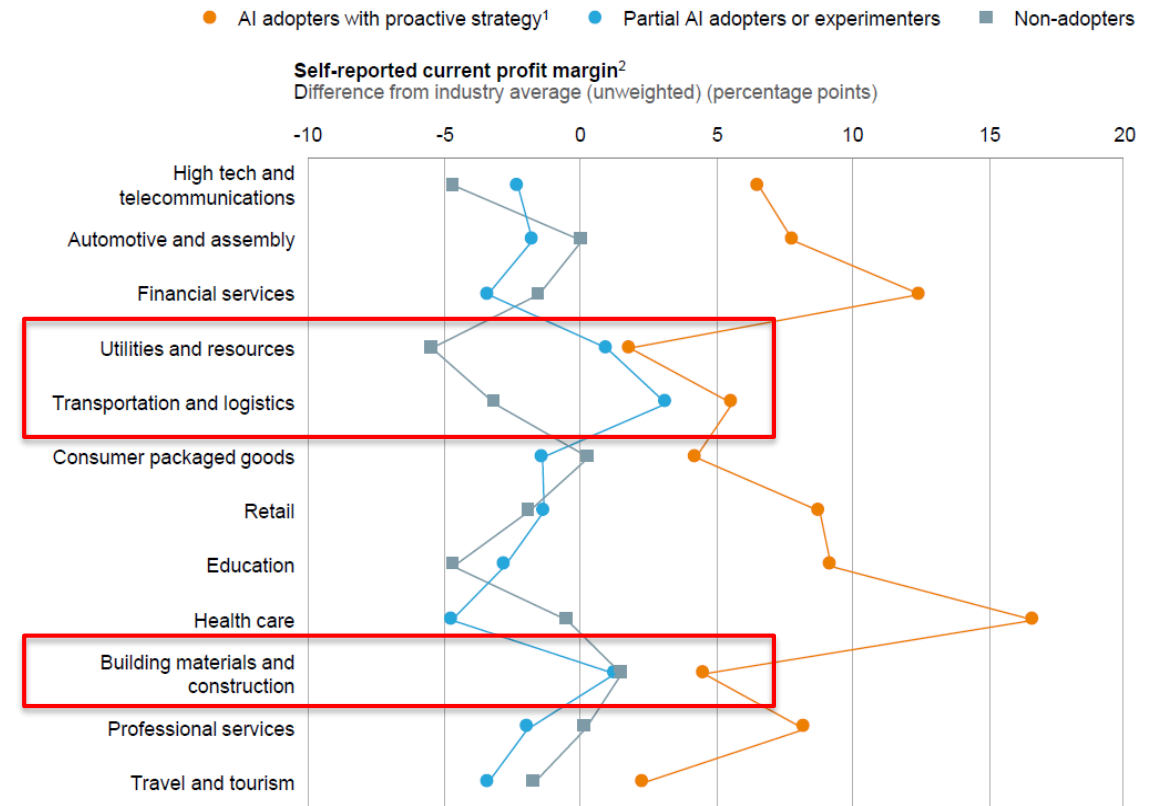
O&G is consistent with other ‘digitally immature’ industries; companies see the potential but have been slow to develop and adopt AI.

## Expectations for AI are high across all industries, but adoption is low, with the exception of ‘Big Tech’ and finance

- Only 20% of companies (across all sectors) have adopted one or more AI-related technology at scale or in a core area of business<sup>1</sup>
- Early adopters are in industries comfortable with digital, with access to standardized data sets
- Focus on protecting or capturing margin, or development ‘net new’ products internally or for customers

## Creates an opportunity to capture “early adopter” advantage

AI adopters with a proactive strategy have significantly higher profit margins



<sup>1</sup> Firms that are big data and cloud services users and report their strategic posture toward AI to be: “Disrupting our industry using AI technology is at the core of our strategy,” “We have changed our longer-term corporate strategy to address the AI threat or opportunity disruption,” or “We have developed a coordinated plan to respond to the AI threat or opportunity but have not changed our longer-term corporate strategy.”

<sup>2</sup> Operating profit margin for selected sectors as a share of turnover, for continuing operations and before exceptional items.

SOURCE: McKinsey Global Institute AI adoption and use survey; McKinsey Global Institute analysis



# So, Are We Ready? Maybe.



## AI is an enabler; not a disruptor

- It will help solve problems and empower employees
- Technology has traditionally been a job creator



## At a macro-level, there are substantial opportunities

- O&G has a lot to gain from implementing AI, if it's done properly
- Positive indicators of readiness exist
- History of technological innovation



## Don't skip the basics

- AI is not 'plug & play'
- Achieve a state of 'readiness'
- First need to understand the problem you want to solve





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