



A Perspective on Digitalisation in the Oil and Gas Industry

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The Malaysian O&G industry is matured and has a well-established services supply chain

Regulator



Operators (32)



Supply Chain (3,528)

Exploration	Development	Production	Decom	Products
Geophysical Services Field Development Services Reservoir Mngmt Services	Engineering Consultancy Geomatic Services Platform Fabricators Offshore Constructions FPSO Subsea Drilling Rigs/Services Well Services/Completions	Maintenance Fabrication & Repair Underwater Services Asset Integrity Services HSE & Security Marine Vessel Services		Subsea systems Drilling equipment Electrical HVAC ICT Instrumentation Mechanical Rotating equipment Safety

Developments over the last 40 years:

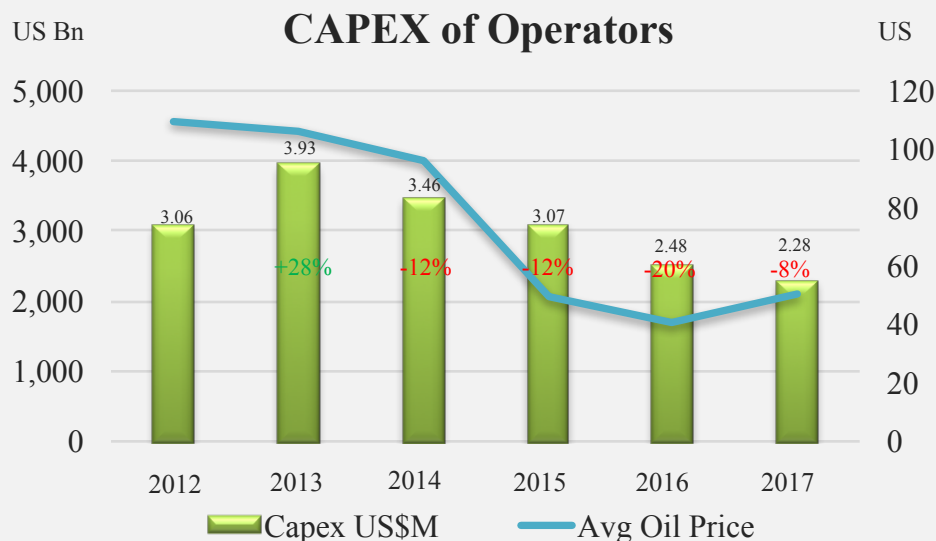
- 105 PSCs and 4 RSCs
- 603 kboed liquid production
- 6,120 mmscfd natural gas production
- 23.2 bil boe discovered resources
- 8,467 km pipeline
- 332 platforms

Source: Petronas, Global Data

However, the global O&G industry today is facing a new normal of 'lower for longer' oil prices

- Competition from shale oil production in the US
- Alternative fuel sources such as renewables gaining more traction
- Policy-making pivots by some Governments to encourage the use of cleaner energy sources
- The drive for energy efficient vehicles among auto makers

In adjusting to the era of lower oil prices, the industry has to rethink their operating models



Impact from low oil prices

- Operators CAPEX are reduced, production from existing brownfield assets continue, downstream investments continue
- Service providers must adjust to this reprioritisation of projects
- Cost competitiveness is the name of the game across the value chain

Digital technology can be game-changing to help O&G companies improve competitiveness and cost efficiency

Technology



Artificial Intelligence



Big Data Analytics

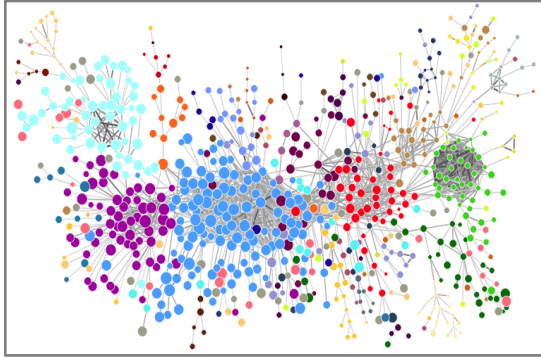


Internet-of-Things

Example of application in Oil & Gas

- **Unmanned Operations/ Minimum Intervention**
 - AI enables self-aware platforms e.g. robotics manipulations based on weather conditions
 - Reduce cost and HSE risks for sending personnel to remote platforms
- **Inspection and Surveying**
 - Drones for flare-tip inspections replaces manual inspection
 - Reduce shutdown time and safety risks e.g. scaffolding
- **Predictive Maintenance**
 - BDA enables high accuracy prediction through physics based modeling + machine learning
 - Eliminate production lost due to unplanned shutdown of rotating equipment (pumps, motors, turbines)
- **Wells, reservoirs and facility management**
 - Provides early and actionable warnings of impending equipment and process problems
 - Faster and real-time decision making

Challenges impeding digital technology adoption..



Data

- Complexity - Data pool is too vast, stored in a fragmented systems, (various systems - various formats, various database)
- Integrity and Security – reliability of data



Infrastructure

- Remote connectivity –platforms up to 150kms from shore

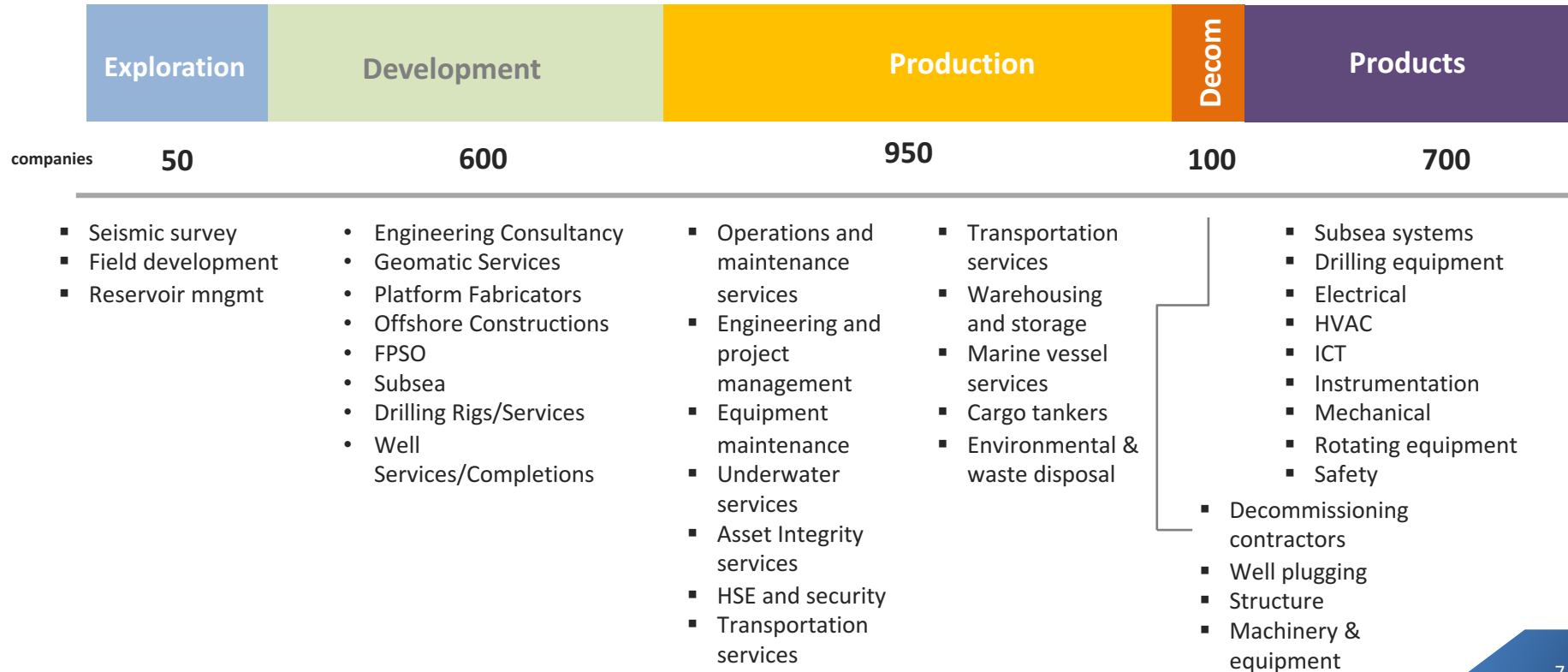


People

- Buy-in – willingness to invest in digital technology
- Talent – data scientists, digital domain experts

Digital players can partner with O&G service providers to achieve synergies in providing end-to-end solutions

Value Chain of Upstream Oil & Gas (RM50bn turnover – 2015)



The Government has introduced pro-innovation policies and initiatives to encourage adoption of digital



Reengineering economic growth for greater prosperity



RM3,488b

Transforming
Services



RM2,421b

Energising
Manufacturing



RM1,417b

Translating
innovation to
Wealth

Budget 2018

RM7bn under SJPP for working capital and guarantee for industry 4.0

RM245mn matching grant under the Domestic Investment Strategic Fund

Accelerated Capital Allowance of 200% for automation equipment

Key takeaways

- O&G downturn opens opportunities for new ways and applications.
- Opportunity for digital and ICT players to partner and leverage OGSE players industry know-how to develop digitally enabled innovation projects to address industry challenges
- Visit <http://mprc.gov.my> to find out more about our innovation and technology initiatives and link up with Malaysian OGSE players





Thank You