



Oil & Gas  
Authority



# UKCS Technology Network

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Third meeting – 29<sup>th</sup> January 2019

OGA offices – Aberdeen and London

- Welcome
- Safety brief (no fire alarm drills are planned)
- Introductions
- Thanks to the presenters and all the participants



THANK  
YOU!

# Agenda

0. 13:00 Introductions

1. 13:05 Opening and agenda (Carlo Procaccini)

## 2. In-depth: Technologies for Subsea

13:20 **Presentation 1 – RepsolSinopec** (Adam Sheikh - 30mins):

- Topsides integrity management: benefits of Non-Intrusive Inspections
- Subsea inspections

13:50 **Presentation 2 – Chevron** (Richard Gale - 20mins):

- A flexible approach to subsea technology adoption and learning from history

14:10 **Presentation 3 – Spirit Energy** (Andy Humphryes - 20mins):

- Subsea proppant separator

14:30 **Presentation 4 – Premier** (Dave Dunn - 20mins):

- Subsea storage – Solan experience

14:50 **Presentation 5 – Equinor** (Roald Sirevaag - 25mins):

- Using past learnings to drive subsea production and processing improvement initiatives

15:15 **Presentation 6 – Tullow** (Shahrokh Mohammadi - 20mins):

- Future technologies – ITMS

15:35 **Presentation 7 – OGTC** (Graeme Rogerson - 20mins):

- Tie back of the future & associated technologies

4. 15:55 Closing (Malcolm Stone)



- Key objective - **knowledge sharing**
  - Across industry (operators, supply chain, technology developers)
  - Technology maps – operators' focus
  - Industry progress with critical technologies
    - Existing – **promote wider deployment**
    - Emerging – **accelerate development and testing**

### 2.1 Operators' technology maps Well Drilling & Completions

Operator	Sub-domains			
	Design & planning	Drilling equipment & operations	Casing & completions	Stimulation
Alpha Petroleum				
Apache North Sea				
BP				
Burgate E&P				
Cain Energy				
Spirit Energy				
Chevron				
Chrysaor				
ENOC				
ENR				
ConocoPhillips				
Corallian Energy				
Dana Petroleum				
Decipher Energy				
Draupner Energy				
Enquest				
Equinor				
Hansa Hydrocarbons				

### 3.2 Existing technologies

**Subsea systems**

Areas	Technologies
<b>Low cost subsea options</b>	<ul style="list-style-type: none"> <li>Mechanically connected pipe systems (Premier, Wintershall)</li> <li>Low cost pipelines (Premier, Wintershall)</li> <li>Low cost subsea tiebacks and platforms for small discoveries (5+ operators)</li> <li>Long/deep water subsea tiebacks (Siccar Point)</li> <li>Standardisation and optimised design of subsea systems (Total)</li> <li>Subsea hot tap technology (NSMP)</li> <li>TCP flowlines and jumpers (Anasura, KNOC)</li> <li>Low cost subsea concepts (5+ operators)</li> </ul>
<b>Subsea boosting</b>	<ul style="list-style-type: none"> <li>Small scale compression and local power generation (Total)</li> <li>Increased oil recovery through subsea separation and pumping</li> <li>Subsea pumping systems (5+ operators)</li> </ul>
<b>Flow assurance and metering</b>	<ul style="list-style-type: none"> <li>Multiphase subsea flowmeter (Alpha, Marathon)</li> </ul>
<b>Subsea inspection and maintenance</b>	<ul style="list-style-type: none"> <li>Efficient subsea inspections and monitoring systems (5+ operators)</li> <li>Intelligent pigging systems (5+ operators)</li> <li>Pipeline wax removal (Total, EOG Resources)</li> <li>AI/Us for subsea inspection and monitoring (Shell, Repsol)</li> <li>Maximising more inspection &amp; detection tools (Total, Repsol)</li> </ul>

**Exemplars**

**Low cost subsea options**

- Chevron, Equinor, Shell, Total and Apache all have experience of long subsea tiebacks up to 100km including deep water applications
- Use of lower cost pipelines such as mechanically connected pipe and composite pipe
- Controlled flow and mechanical hot taps extensively

Horizontal bars measure the number of UKCS technology priorities reported by

- We welcome **your feedback!**
  - Is this information useful?
  - What to change?
  - [Malcolm.stone@ogauthority.co.uk](mailto:Malcolm.stone@ogauthority.co.uk)

### 3.3 Emerging technologies

**Subsea systems**

Areas	Technologies
<b>Low cost subsea options</b>	<ul style="list-style-type: none"> <li>Lighter over-trawlable systems or remove need for such (Total)</li> <li>Small scale unmanned solutions for deep-water applications (Siccar Point)</li> <li>Deepwater subsea tieback technologies for WUS (Siccar Point, BP)</li> <li>Long subsea tieback technologies (Siccar Point, BP)</li> </ul>
<b>'Local' subsea systems</b>	<ul style="list-style-type: none"> <li>All electric subsea control systems (Total)</li> <li>Alternative local energy systems (Shell, Total)</li> <li>Subsea storage of chemicals and hydraulics (Shell, Total)</li> </ul>
<b>HPHT</b>	<ul style="list-style-type: none"> <li>Subsea HPHT and LHPHT (Total)</li> <li>All electric trees for small stranded LHPHT applications (Total)</li> <li>HT reservoirs (WUS, Total)</li> <li>Technologies for small HPHT reservoirs (Total)</li> </ul>
<b>Flow assurance and metering</b>	<ul style="list-style-type: none"> <li>Advanced flow assurance and simulation technologies (Total, Wintershall)</li> <li>Subsea Multiphase flowmeters w/o need for intervention (Alpha)</li> <li>Pipeline drag reduces (multiple Operators)</li> <li>Alternatives to inhibited pigging (swirl eddy current technology)</li> <li>HF localised electric heating for flow assurance (Tullow)</li> </ul>
<b>Subsea separation processing and boosting</b>	<ul style="list-style-type: none"> <li>Multiphase subsea pumping systems (multiple Operators)</li> <li>Multiphase boosting, pumping and metering systems (5+ operators)</li> <li>Subsea processing (5+ operators)</li> <li>Small scale compression and local power systems (Total, Premier)</li> </ul>

**Exemplars**

**Low Cost Subsea Options**

- Efficient tiebacks and removing need for protection structures being evaluated by OIGTC
- Use of efficient reduced manning and unmanned facilities being investigated by OIGTC in a unmanned turret, compact floating facilities
- Reduced lifecycle costs for marginal developments

**All Electric subsea systems**

- Total has piloted the use of an all electric subsea HT well well (EORIV) following a 10 year R&D programme
- Results in simplified installation, enabling longer tie-backs

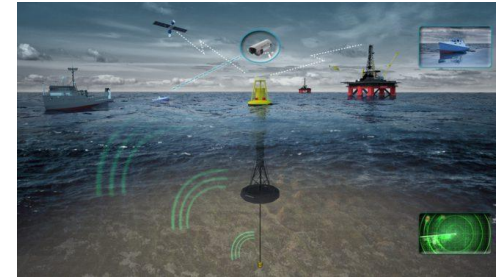
**Alternative Local Power & Storage Systems**

- EOG subsea power has provided local power from sealed currents, recently well tested albeit at a potential that is UKCS
- OL Tech are developing local hydraulic and chemical storage systems as a step towards minimising or eliminating umbilical systems that could be an enabler for long tiebacks

# Technology deployment workshop

- Technology deployment:
  - Pockets of excellence
  - Sometimes a slow process
  - Lack of scale (few and far apart deployments)
- How do we address the **non-technical** barriers?
- **Shell's experience** – tools, processes, and organisational links for technologies' **selection and deployment**
- **Proposed** to have a **technology deployment workshop**
  - Common issues and the critical success factors
  - Proposed approaches and a **practical toolbox**
  - **27<sup>th</sup> March 9.30am-4pm, Aberdeen at the OGTC**

Please feedback to [Malcolm.stone@ogauthority.co.uk](mailto:Malcolm.stone@ogauthority.co.uk)



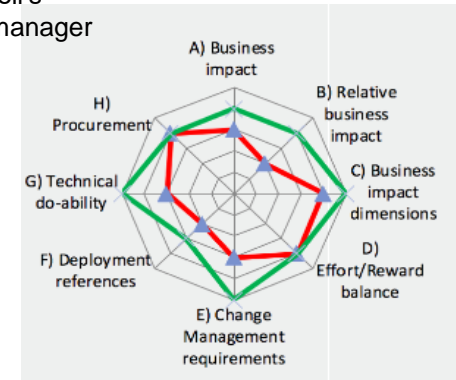
**Deployment**  
*matters*

**Erik Nijveld**

Managing Director | Deployment Matters

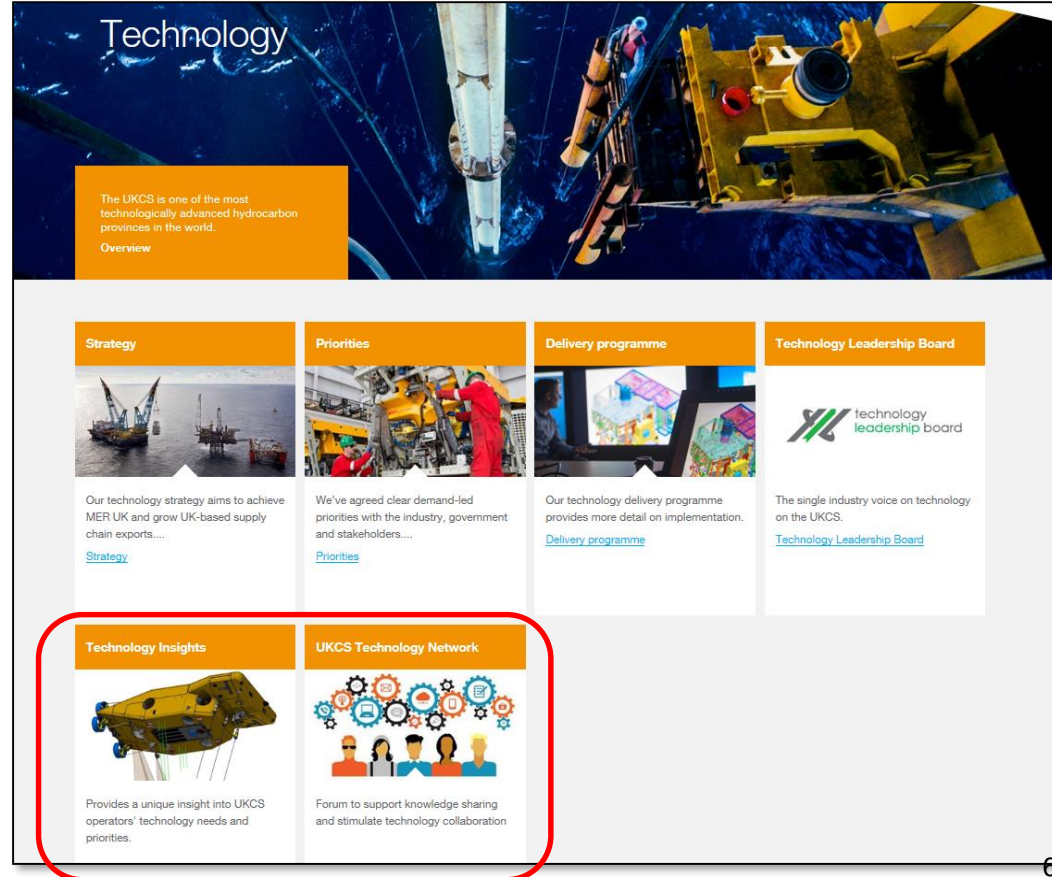
Formerly Shell's

technology manager



# Webpage – knowledge sharing

- <http://www.ogauthority.co.uk/technology/>
- Added link to the **Technology Insights** (from the **operators' technology plans**)
- Link to our **Technology Network**
  - Post meetings' presentations
  - Other content TBD



The screenshot shows the 'Technology' section of the Oil & Gas Authority website. At the top, there is a large image of an offshore oil rig with the word 'Technology' overlaid. Below this is an orange box with the text: 'The UKCS is one of the most technologically advanced hydrocarbon provinces in the world. Overview'. The main content area is divided into several sections:

- Strategy**: Includes an image of an offshore rig and text: 'Our technology strategy aims to achieve MER UK and grow UK-based supply chain exports....' with a link to [Strategy](#).
- Priorities**: Includes an image of workers in a control room and text: 'We've agreed clear demand-led priorities with the industry, government and stakeholders....' with a link to [Priorities](#).
- Delivery programme**: Includes an image of a person at a computer and text: 'Our technology delivery programme provides more detail on implementation.' with a link to [Delivery programme](#).
- Technology Leadership Board**: Includes the logo for the technology leadership board and text: 'The single industry voice on technology on the UKCS.' with a link to [Technology Leadership Board](#).
- Technology Insights**: Includes an image of a yellow subsea module and text: 'Provides a unique insight into UKCS operators' technology needs and priorities.'
- UKCS Technology Network**: Includes an image of people icons and text: 'Forum to support knowledge sharing and stimulate technology collaboration'

The 'Technology Insights' and 'UKCS Technology Network' sections are highlighted with a red rounded rectangle.