Your Innovation Partner

Pathfinder Workshop
5th Nov 2019
Our Goals

£180 million funding from the Aberdeen City Region Deal

Unlock
Unlock the full potential of the UK Continental Shelf

Anchor
Anchor the supply chain in North East Scotland

Inspire
Inspire a culture of innovation and transformation
Technology Vision

Transforming the industry for the low carbon future

**Fix today**
- Data access
- Asset inspection
- Production optimisation
- Revitalise exploration
- Efficient decommissioning
- Alternative well barriers

**Maximise recovery**
- Tieback of the Future
- Integrated energy
- Automation
- Remote operations
- Artificial intelligence
- New materials

**Transform tomorrow**
- Low carbon operations
- Reusable infrastructure
- Hydrogen delivery
- Data driven
- Unmanned facilities
- Zero carbon developments
How We Work

Driving
Action through technology roadmaps to achieve MER UK and grow the supply chain

Delivering
Projects that move the dial on key challenges and opportunities across the UKCS and beyond

Connecting
Industry, governments, regulators and academia to drive technology investment and deployment

Partnering with industry, government and academia
Our Track Record

Delivering strong results

- £119M Invested
  - Co-investing in industry-led projects to develop and deploy new technologies.
  - GOTE: £46.2M
  - Industry: £73.1M

- 850+ Technologies Screened
  - Harnessing the power of an ever-expanding range of transformational new technologies.

- 201 Approved Projects
  - Delivering technology projects to fix today, maximise recovery and transform tomorrow.

- Field Trials
  - Completed: 30
  - In-Progress: 10
  - Planned: 51

- 123 Memberships
  - Bringing together operating, supply chain and technology companies to drive innovative new solutions.

- 55 Operating companies
- 24 Service companies
- 40 Technology developers
- 4 Business Advisors

- TRL Readiness
  - Entry TRL to Achieved TRL

- 22+ TechX Startups
  - Accelerating innovation by helping a new generation of entrepreneurs take their technologies to market faster.

- Visitors 17,500+
  - Creating a culture of innovation in the region through exciting events and workshops.
Are we all flying in the same direction?

The OGTC shaping the future of UAVs in the Energy industry.
Driving solutions to industry challenges

**Digital**
- 10% increase in production efficiency
- Digitally enabled supply chain
- Digital & data architecture
- Smart facilities
- Digitally enabled worker
- Production optimisation

**Subsurface**
- MER UK up to 20bn barrels
- Discover more
- Develop more
- Recover more

**Decom**
- 35% cost reduction
- Late life management
- Post COP OPEX reduction
- Innovative removal
- Optimise abandonment

**Wells**
- 50% lower well construction costs
- Optimise design
- Flawless delivery
- Maximise production
- Optimise abandonment

**Marginal Developments**
- 50% under development
- Tieback of the Future
- Facility of the Future

**Asset Integrity**
- 50% cost reduction
- Risk based inspection & data analytics
- Detection & condition based monitoring
- Enhanced inspection techniques
- Repair & mitigation solutions

**Solution Centres**

Delivering solutions to industry challenges
Workshop Outputs

Do we need to develop UAVs?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>0</td>
</tr>
</tbody>
</table>

How close do you think we are to BvLOS?

<table>
<thead>
<tr>
<th>1-2 years</th>
<th>3-5 years</th>
<th>Beyond</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>23</td>
<td>4</td>
</tr>
</tbody>
</table>

Is there a difference in requirements between renewables and O&G regulations?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>10</td>
</tr>
</tbody>
</table>

Should we aim to replace NDT technicians / OIEs with UAVs?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>26</td>
</tr>
</tbody>
</table>
Workshop Outputs

**Do you feel regulators are onboard with supporting BVLOS?**

- Strongly disagree: 3.6
- Strongly agree

**Should UAVs be resident on platforms or operate from onshore?**

- Resident on platform: 25
- Operated from onshore: 8

**Is there a need for UAVs to be ATEX Certified?**

- Yes: 24
- No: 10

**In order of preference what abilities should a certified UAV have?**

1. Confined space entry
2. Unmanned installations
3. Emissions monitoring
4. Emergency response
What are the barriers in developing and deploying the next generation of UAVs?
RAS (Robotics & Autonomous Systems) are a key driver of modern industry.

O&G → Extreme & Harsh Environments, seek to leverage RAS

Goal → Enhance Safety, Reduce OPEX and increase Efficiency in our Operations

Challenges & Opportunities for BVLOS UAVs in Oil & Gas

- Many workers offshore
- Difficult jobs offshore
- Limited support onshore

- Less workers offshore
- Facilitated jobs offshore
- Developed support onshore

- Few workers offshore
- Supervising jobs offshore
- Extensive support onshore

- No workers offshore
- Operations completely run onshore

Beyond Visual Line of Sight Drones

- BVLoS - Unlocking the Maximum Business Value
  - Mind-set, Connectivity, Long Range Inspection, Delivery & Vehicle Choice

- Drivers
  - Data Connectivity architecture
  - Ensuring Flight Safety
  - Technology Progression

- BVLOS - Surrounding digital architecture
- Trials
- Vision & next phases

Deployment
Offshore flights
Routine OPS
Delivery
Deployment
Challenges & Opportunities for BVLOS UAVs in Oil & Gas

**Challenges**
- Challenging comms availability → control and data management
- Forefront technology
- Co-activity in busy airspace → simultaneous operations procedures

**Opportunities**
- Emergency response capability
- Unmanned remote inspection
- Access to facilities
- Enabler to NUIs

**BVLOS Pilots**
- Asset Engagement → a change from the Norm
- Regulators acceptance
- Building Confidence → Phases

**BVLOS Build for Routine Operation:**
- Flylogix Forefront of engagement with regulators (CAA, NATS & ATC),
- Flylogix/TOTAL jointly with OGTC to develop the procedures to enable drones to operate along-side manned aviation outside segregated airspace.

**Key deliverables for this project:**
- Acceptance by, Authority, Facility End Users and UAV Operators;
- Review and develop ATC procedures, including identifying required airspace changes;
- Continued Field Trials of unmanned flights under controlled conditions.
Rebecca Allison
Asset Integrity Solution Centre

Rebecca.Allison@theogtc.com