

Technology Managers Network

Data & Digital Task group

23rd April 14:00 – 16:00



Welcome

- Carlo Procaccini,
- Kirsten Oliver

14:00 – 14:10 10mins



DSG & NZTC Open Innovation Update

- Graeme Booth, Tanya Knowles
- Ed Evans [Dan Brown]

14:10 – 14:40 30mins



Offshore Energy Data Trust

- Glen Littlejohn,
- Anthony Newman

14:40 – 15:10 30mins



NZTTP + OLTER Update

- Darren Gee,
- Andy Bell

15:10 – 15:40 30mins



Questions/Discussion/Close

- Kirsten Oliver,
- Carlo Procaccini

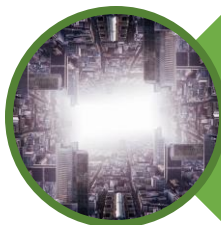
15:40 – 16:00 20mins



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Digitalising Offshore Energy Systems

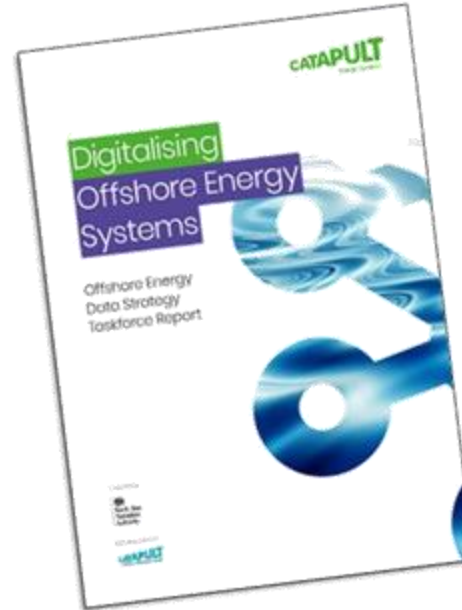
Report available at: <https://www.netzerotc.com/reports/digitising-offshore-energy-systems/>

The Offshore Energy Data Strategy (OEDS)

Taskforce was launched in September 2021 (and closed in July 2022) to encourage a modern, digitalised, and integrated offshore energy sector by:

- Net Zero Technology Centre (NZTC),
- Offshore Energies UK (OEUK),
- North Sea Transition Authority (NSTA),
- The Crown Estate (TCE),
- Crown Estate Scotland (CES),
- the Technology Leadership Board (TLB),
- Renewable UK (RUK)

The Taskforce made a series of seven recommendations that aim to create the conditions for better data sharing and digitalisation initiatives



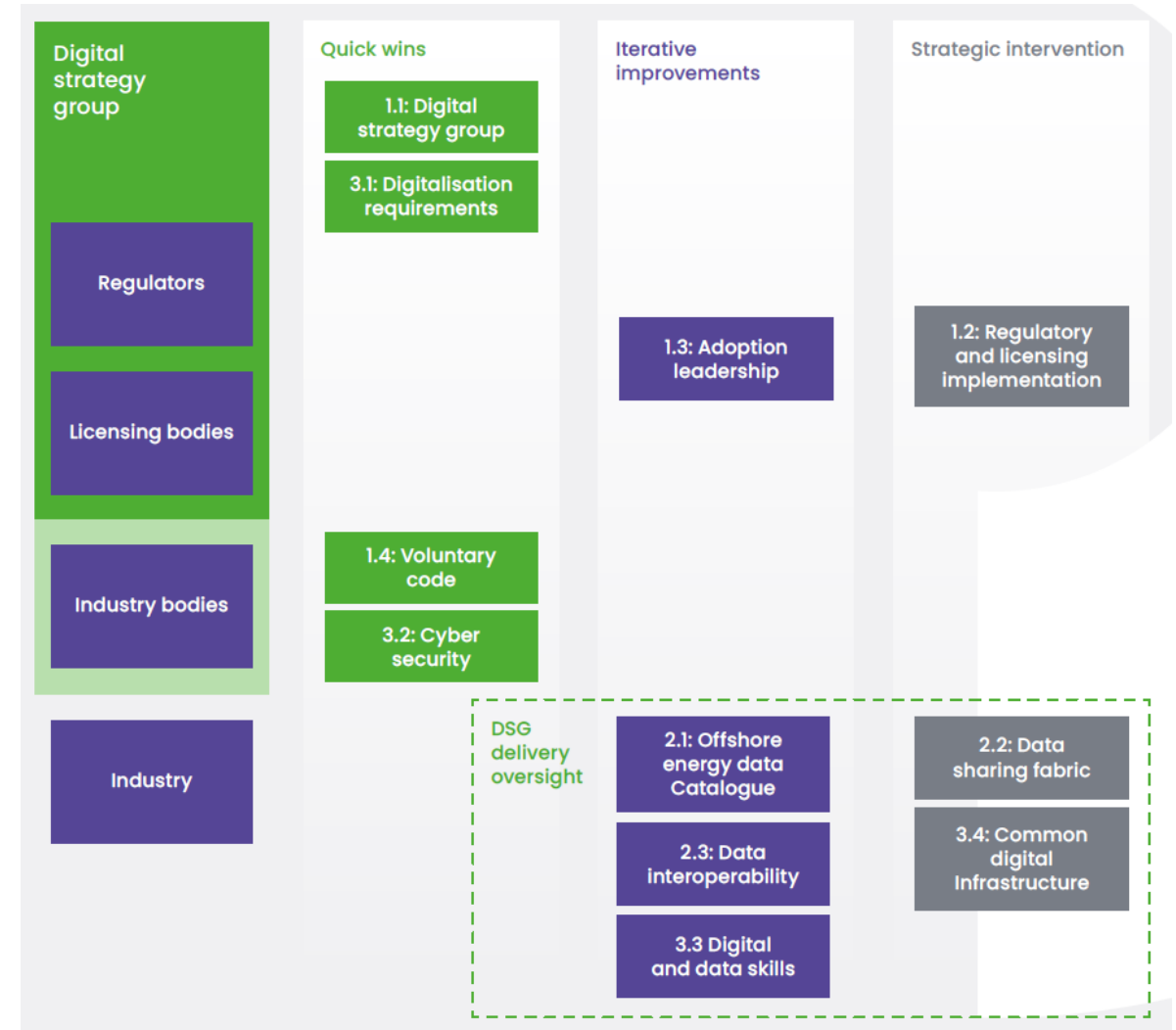
Create a modern, digitalised and integrated offshore energy system

Strategic recommendations

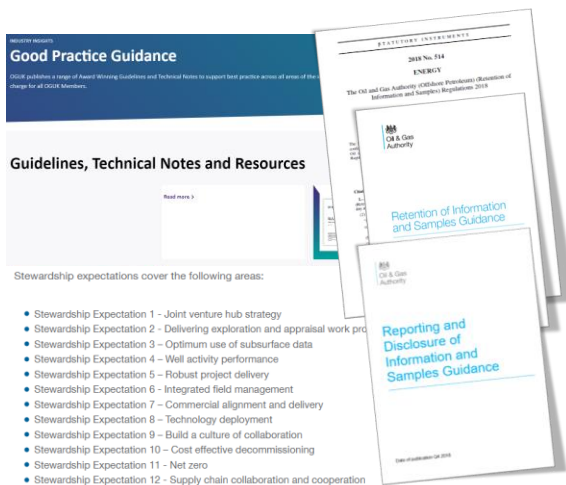
1. Unifying data principles
2. Delivering a common data toolkit
3. Driving cross-sector digitalisation

Workstream recommendations

- A. Enabling whole system planning
- B. Advancing data coordination
- C. Leveraging asset data
- D. Emissions data for Net Zero



Data Principles

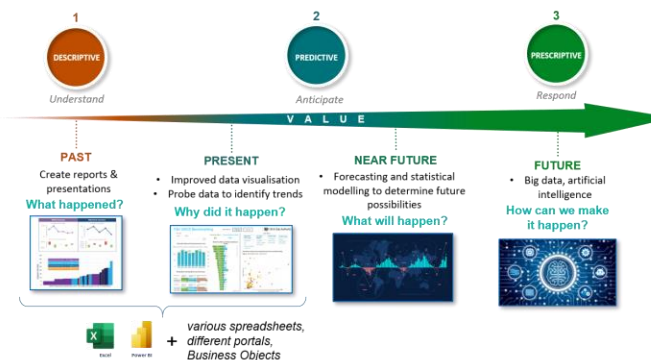
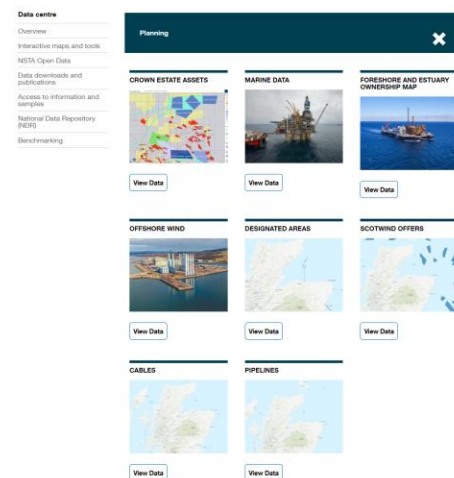


What should I do?

Without accurate, quality data the outcome of what follows is compromised

- Establish clear best practice and set expectations ([Ofgem example](#))
- Regulators use powers/influence
- Trade bodies use voluntary codes of practice

Common Data Toolkit and Leveraging Data



Where is data?

Data is everywhere and clarity needed to establish who has what and where

- Webpage with links to all Energy sector portals
- Agreement on who does what. No duplication.
- Establish common ways to share data

Data driven decisions

Establish and improve data flows and data quality to support decisions

- Standardise reporting to regulators
- Use legacy and operational data
- Make decommissioning data available to the supply chain

Driving Cross sector Digitalisation



Cultural and behaviours

Ensure people have the skills, awareness and support

- Offshore Energy sector Digital and Data Survey 2022 (Deloitte)
- Encourage Cyber and digital skills strategies

Digitalising Offshore Energy Systems Report

Report available at: <https://www.netzerotc.com/reports/digitising-offshore-energy-systems/>



Strategic recommendations

1. Unifying data principles

2. Delivering a common data toolkit

3. Driving cross-sector digitalisation

Workstream Recommendations

Advancing data coordination



Establish a Task Group to drive interoperability of data portals across the sector and promote the discoverability and reuse of existing data through the development of a data portal roadmap.

Actions

- Publish a high-level data portal roadmap
- Improve data portal interoperability

Leveraging asset data



The offshore energy sector should increase the utilisation of existing operational and asset data, using the Open Data Triage process, mitigation techniques, and standardised data sharing agreements to manage risks.

Actions

- Identify critical decommissioning data requirements
- Facilitate wider use of legacy and operational data
- Adopt a standardised, high-level data management process

Enabling whole system planning



The offshore energy sector should create a whole system view of existing and planned infrastructure, aligning different data layers to provide a forward view of development requirements.

Actions

- Publish an asset visibility strategy
- Align transmission network planning requirements

Emissions data for Net Zero



Enable monitoring of Net Zero targets and advanced emissions tracking by leading on the provision of high-resolution and digitised emissions data monitoring and reporting.

Actions

- Digitalise emissions data submission and provision tools
- Align emissions data measurement and reporting requirements
- Ensure alignment of CCUS, Hydrogen operational data reporting

Data Roadmap to drive portal interoperability

Identify, use, standardise and share data

Existing and future asset plans aligned to transmission network

Enable and digitalise emissions data submission and reporting



- Press release on data principles

- <https://www.nstauthority.co.uk/news-publications/data-principles-will-benefit-industry-and-support-transition/>

- Principles out for comment



Kurt Prendergast • 1st

Business Planning and Analysis Manager with Kellas Midstream
1w •

I'm excited to have been involved in the NSTA's Digital Strategy Group (DSG) over the last few months as part of the Data Principles Task Group.

The DSG initiative, chaired by [Nic Granger](#) at [North Sea Transition Authority](#), is all about improving industry collaboration on data and digitalisation, recognising the critical role it plays in maximising value from the North Sea and delivering the energy transition.

I was part of the Data Principles workgroup chaired by [Ed Evans](#) [FBCS](#) of the [Open Data Institute](#) and our role was to sculpt a focused set of data principles to promote and support effective data sharing throughout the industry.

It's great to see the resulting draft document now published, which distils our work into 6 unifying principles, ready for further consideration and improvement across the broader DSG team, and ultimately for wider industry adoption. I look forward to continuing to contribute as this initiative moves forward.



Mark Shaw • 2nd

De-risking Fuel Transition: Expert; Solutions for a Sustai...
1w •

The quickest route to net zero is honesty and by that, we are honesty in emissions data. It's going to expose some industries, but those exposed who act will become victors in their sector.

Do you think your industry will act?
Do you think your industry cannot change?

All questions will be answered in the comments

[#Transparency](#)
[#ESG](#) (Environmental, Social, and Governance)
[#CorporateResponsibility](#)
[#DataIntegrity](#)



Dave Simpson • 1st

Digital Energy - DNV
1w •

How do we move towards a culture where sharing data is 'natural'? How can we challenge ourselves to put data availability high on the agenda? How can we curate datasets not just to fit use cases we know about in our own organisation, but for those we've never even considered, in other organisations?!

H JOBS >>

RIGZONE

JOBS ▼ OIL & GAS NEWS ▼ EVENTS TRAINING EQUIPMENT SOC

WTI Crude \$84.89 -0.9% Brent Crude \$89.71 -0.82%



NEWS

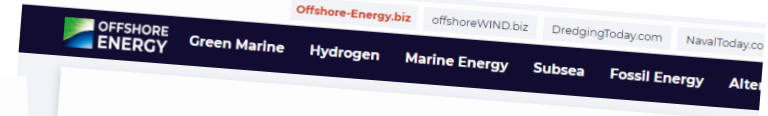
Draft Energy Transition Related Principles Published for North Sea Players

by Andreas Exarheas | Rigzone Staff | Monday, April 08, 2024 | 5:12 AM EST

Post Share LinkedIn reddit this



A set of draft principles designed to support the energy transition and benefit every user of the North Sea has been published for comment and consideration a statement sent to Rigzone recently by the North Sea



< Back to overview

Home > Fossil Energy >

UK's pursuit of digitalization making way for integrated energy system to boost security of supply and net zero aspirations

BUSINESS DEVELOPMENTS & PROJECTS

April 12, 2024, by Dragana NikSe

After the Data Principles Group, a task force set up by the Offshore Energy Digital Strategy Group (DSG), laid out draft principles to strengthen collaboration ties and data sharing among North Sea players, the set of draft principles is now available for comment and consideration in a bid to enable the UK to fortify its energy security while pushing Britain's energy transition agenda forward.



Gavin Starks • 1st

Net zero future. Data as Infrastructure. CEO, ib1.org + board portfolio
Great to see alignment. cf <https://ib1.org/icebreaker-principles>



Icebreaker Principles
icebreakerone.org

Create a modern, digitalised and integrated offshore energy system...

Energy Transition

Commit to actively participating in a shared data ecosystem. Sharing data and collaborating on initiatives that directly contribute to reduced carbon and sustainable practices. By joining forces collectively accelerate progress towards ensuring a sustainable and resilient energy future.

Value of Data

Increase the value of internal data while actively seeking insights and innovations from external data sources. Apply AI and data science on sector wide datasets to accelerate innovation and develop new insights, unlock new opportunities and reduce costs and risks.

Targeted Use Cases

Commit to a use case-by-use case approach, collaborating with relevant stakeholders to develop targeted solutions. This strategic addresses priority challenges. Through collaborative problem-solving expedite the implementation of practical solutions to sector challenges.

Model /Twin Accuracy

Commit to fostering cooperation by actively sharing pertinent data with industry stakeholders. Better visibility of key infrastructure, the subsurface and the natural environment. Enhance predictive models, such as digital twins, ensuring greater accuracy and reliability.

Trusted Data Repositories

Create stewarded, trusted, secure, standardised and accessible data repositories. Facilitate increased data sharing among industry participants, fostering an environment of higher quality data sets conducive to innovation and the application of the latest AI technologies.

Collaboration

Integrating shared data into decision-making processes. Optimising workflows and enhancing efficiency through the application of shared data. Leveraging collaboration to drive tangible improvements in performance, reducing risk and building a more resilient and agile organisation.

Promoting and information gathering

- Promoting existing initiatives
- Gathering momentum for feedback and use cases
- Raising awareness of existing portals without duplicating existing portal of portals

Q2 2024

Q3 2024

Dates
TBC

- Create videos
- Open Data
- NDR

- Data trust for P&A data
- OEDA

- Create CDT introduction video

- CDT re-launch

- Request videos from 'friendly' orgs with data portals

- Release existing videos in a 2-week cycle

- Release requested videos on a 4-week cycle

- Run in-person feedback event

DSG objectives

Commission OE Data catalogue

Oversee coordination of data portals and develop a roadmap that shows direction of travel for relevant data portals

Identify high-priority use cases for legacy and operational data, commissioning and innovation

Cross Sector Digitalisation

Want to know more? Please email dbrown@oeuk.org.uk



- **Offshore Energy Data & Digital Maturity Survey delivered**
 - <https://oeuk.org.uk/product/offshore-energy-data-digital-maturity-survey/>
- **Cyber security**
 - Work continues to speed up cyber security intelligence sharing across the supply chain
 - Preferred tool is MISP (open source, NATO / EU developed)
 - <https://www.misp-project.org/index.html>
 - Vendor selection in progress
- **Digital skills**
 - Centre for People-Led Digitalisation (Bath University) nearing completion of research on the changing digital requirements of roles in the energy sector
 - Aligns with Skills Development Scotland's Digital Economy Skills Action Plan recommendations
 - Likely next step – support for development of a framework and assessment toolkit for "Integrated Digital Skills" - use of complex digital systems by non-IT / digital roles



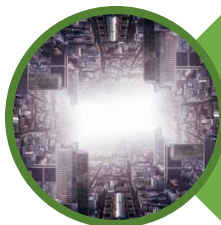
- TLB – Workshop at Energy Exports (<https://www.the-eic.com/EEC>)
 - 12th June 2024, 1300-1600, P&J Live
 - Targeting C-suite
 - To identify how to overcome the barriers to adoption that are currently present.
 - What are the non-technical challenges impacting digital transformation?



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Smart Assets and Field Automation

The North Sea is a smart offshore energy basin with fully digitised automated or remote-controlled assets

Digital and Data Architecture

Offshore operations are empowered by standard digital and data architectures utilising secure data, advanced sensors and edge computing

Robotics and Autonomous Systems

Robotics, automation and visualisation reduce the need for people to work in hazardous environments

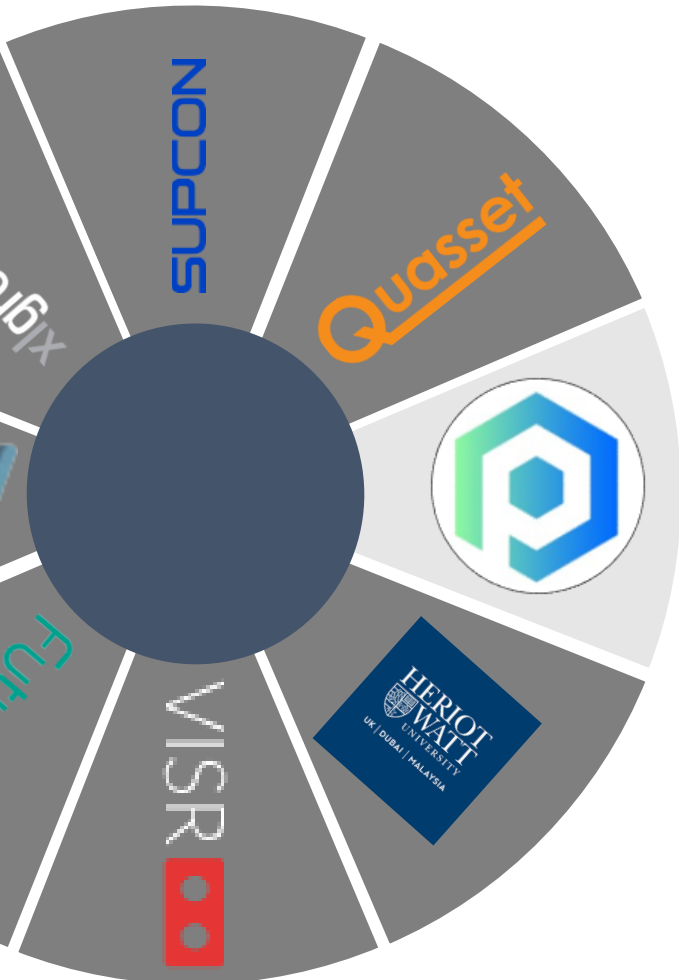
143 applicants from international organisations, reduced to 8 projects

If you are interested in any of these, then [please contact qip2@netzerotc.com](mailto:qip2@netzerotc.com)

INDUSTRY PARTNERS



Petrofac 



Predyct

Predictive AI driven maintenance system with nano-sensors to eliminate visual inspections and NDT on wind farms and offshore energy assets

- Allows for predictive maintenance via analysis of damage mechanisms
- Can be deployed in harsh and hazardous conditions
- Lower running costs as zero power
- Increase the life of offshore wind assets
- Scalable to many asset types. Disruptive.



INDUSTRY
PARTNERS



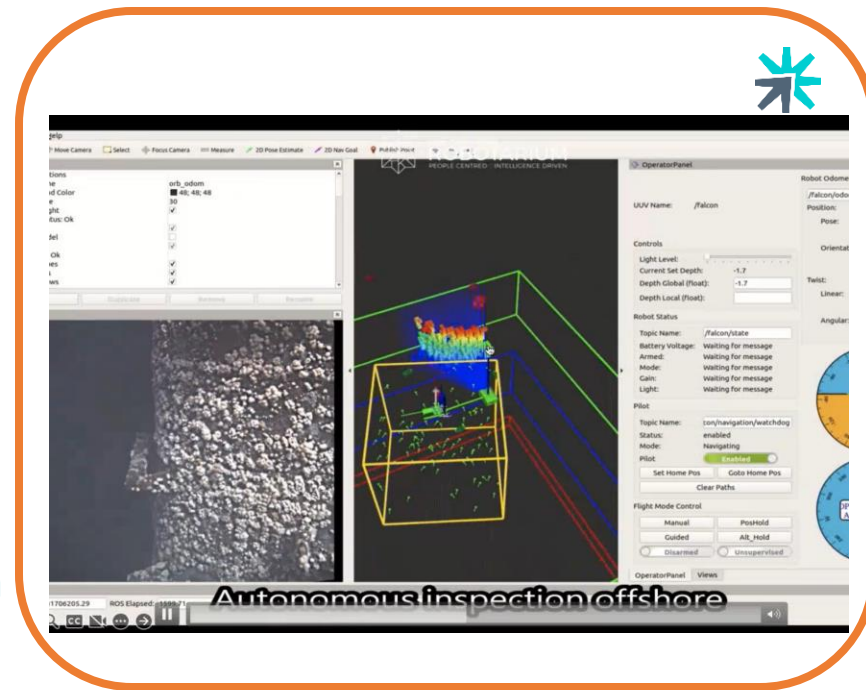
THE NATIONAL
ROBOTARIUM
PEOPLE CENTRED :: INTELLIGENCE DRIVEN



Heriot Watt University

Develop robotics / uncrewed vehicle inspection systems for offshore wind farms using forward looking sonar that also creates 3D model to aid mission planning

- Drastically reduce cost and emissions of subsea inspection
- More frequent inspections to catch issues earlier
- Uses both sight and acoustic to build 3d models of the surrounding area no matter the condition



INDUSTRY PARTNERS

centrica

Magic Leap

Meta

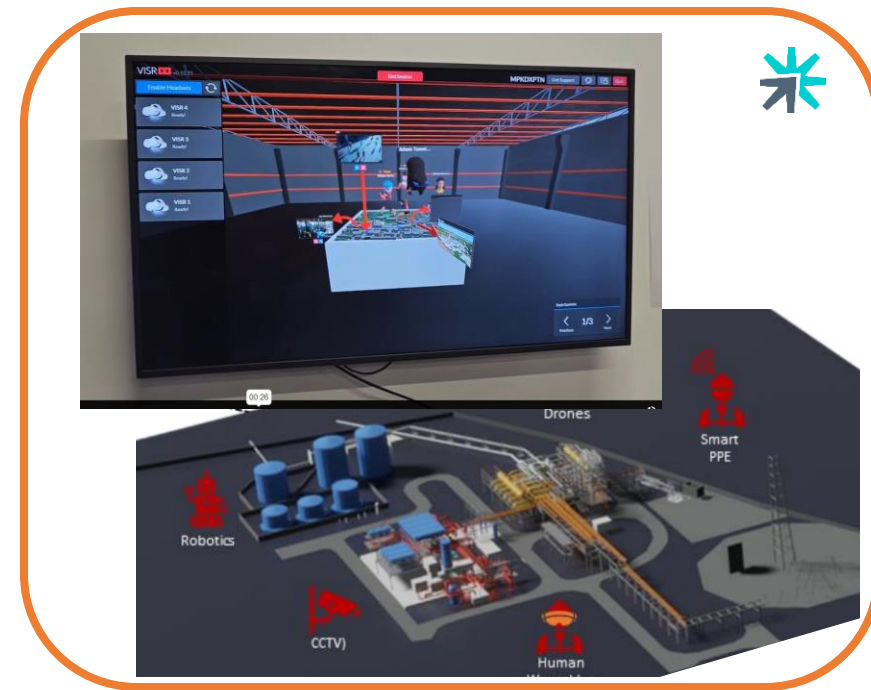
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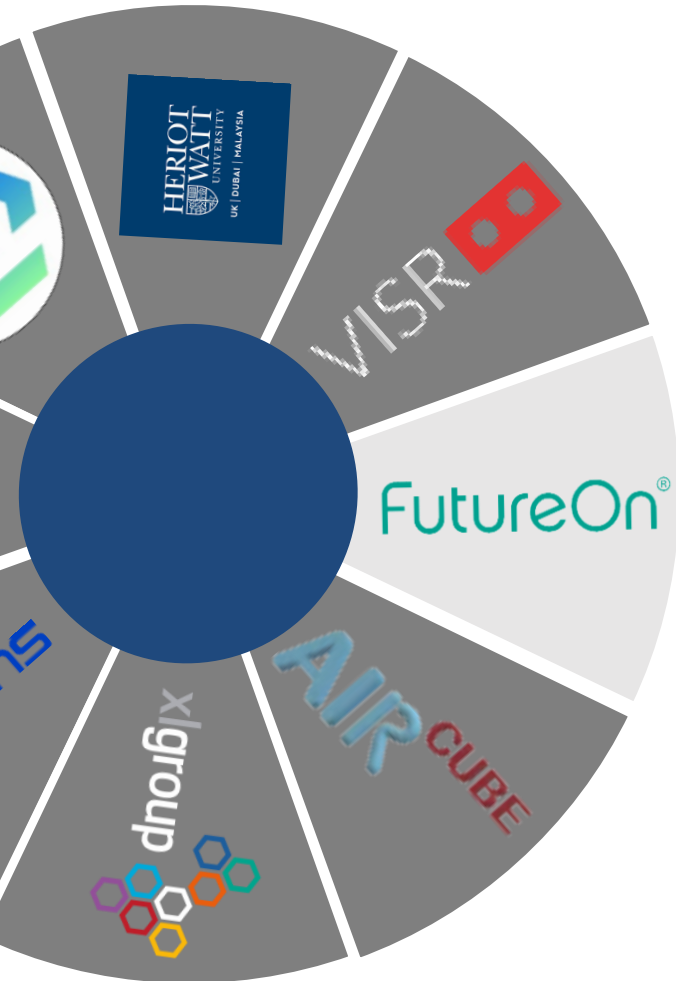
VISR

Based on a real control room, develop an interoperable Metaverse virtual collaboration room, accessible onsite and remotely with real-time video, audio and data streaming.

- Real-time data accessible anywhere
- Allows the collaboration of humans and machines
- Reduces the need for a large physical central control room - increased remote access possible
- Increases the efficiency of monitoring reducing cost and emissions



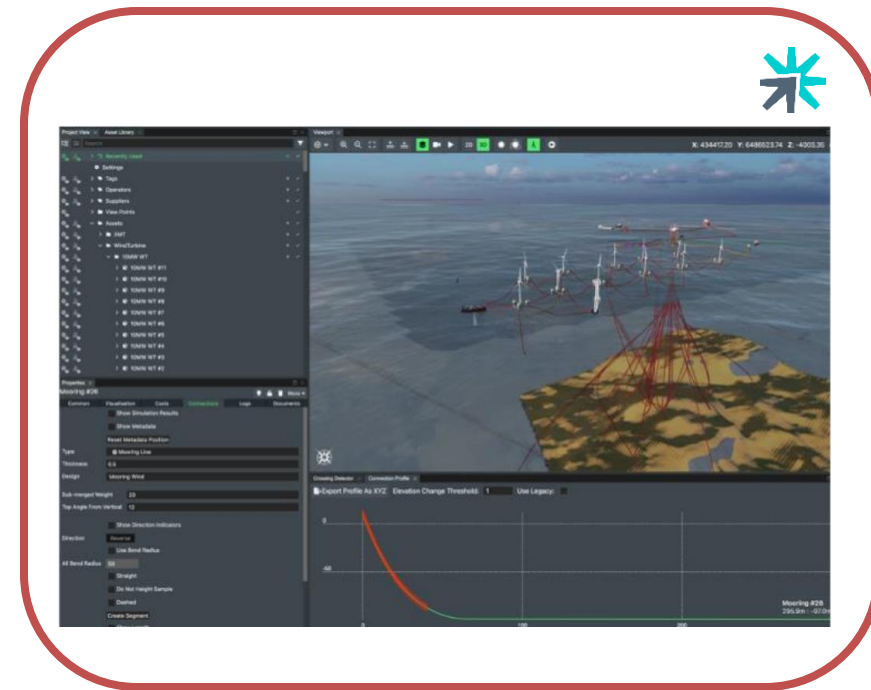
INDUSTRY
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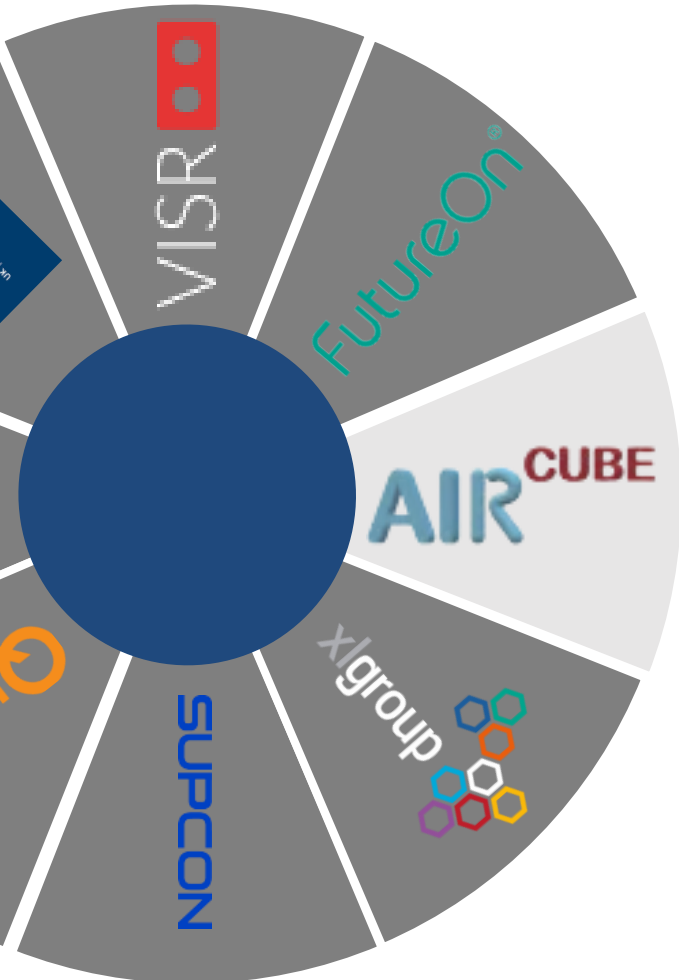


FutureOn

Develop FieldTwin platform to incorporate renewable energy assets and carbon emission tracking and plant optimisation

- Evaluates any offshore energy system in a single integrated 3D data model.
- Provide integrated emissions forecasting during the design phase.
- Links metocean and engineering data to balance of plant workflows dynamically.
- Optimises project scenarios to minimise emissions and GHG.

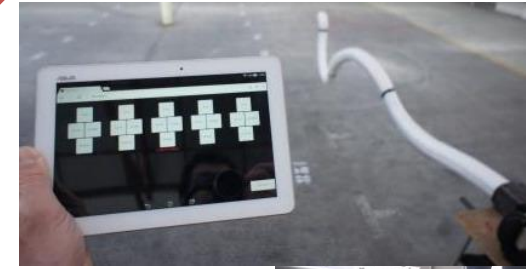




AirCube SAS

Design and development of human-assisted, long range, robotic manipulation capability with haptic feedback

- Novel concept
- Adaptable to different situations
- Made from recyclable materials and run off compressed air or liquid lowering emissions
- Compact inflatable design: can be moved about in a suitcase





XL Group

Towards Scalable and Sustainable Robotics
for Inspection, Maintenance and Support
tasks

- Prove RaaS concept in the field
- Allows scalable management and maintenance for robots at offshore
- Lowers downtime when a fault is detected
- Modular system approach
- Sim-ops in real world





SUPCON

Integrated ground robot & autonomous
drone for GHG survey and assets inspection

- Pilot and deployment of autonomous ground robot & drone for GHG survey and assets inspection
- Sim-ops in real world
- Ground and Air robot coverage for accuracy in data collection





Quasset

Towards Scalable and Sustainable Robotics
for Inspection, Maintenance and Support
tasks

- Accelerated long term reliability of robots
- Allows for robots to be deployed at NUFs in a cost-effective manner
- Prove robots as 'first responders' during operational upsets

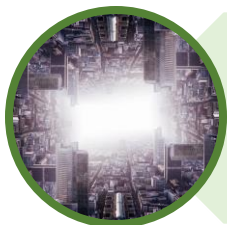




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What is a DATA TRUST?

A **data trust** addresses the challenges related to data sharing, privacy, and trust.

Definition:

- A data trust is an organisational structure or framework that manages and governs data on behalf of a group of stakeholders.
- It acts as a **custodian** of data, ensuring its responsible use, protection, and equitable distribution.

Key Aspects:

- **Stewardship:** Data trusts act as stewards, safeguarding data's value while respecting privacy and security.
- **Trustees:** Trustees oversee the data trust and make decisions about data access, usage, and governance.
- **Beneficiaries:** These are the stakeholders who contribute data or benefit from it (e.g., citizens, companies, researchers).

Objectives:

- **Data Pooling:** Data trusts facilitate trustworthiness and enable secure access of data among stakeholders.
- **Value Creation:** They aim to maximise the value of data by enabling responsible access, collaboration and innovation.
- **Risk Mitigation:** Data trusts manage risks associated with data, such as privacy breaches or misuse.

Data Trust Value Chain:

- The **data trust value chain** ensures that data moves seamlessly, securely, and ethically through different stages and stakeholders in a data ecosystem. At each stage, layers of trust and governance are added to maintain data reliability and accuracy.



DATA TRUST within the UK

Projecting Success has developed and is the data steward for the UK Construction Data Trust. Some of the biggest industry partners are members of the Board and committed to pool their data, including:

- Sir Robert McAlpine
- Mace

They, alongside other construction companies are pooling their data to address productivity challenges via the Construction Productivity Taskforce. The Board are exploring opportunities around carbon emissions, health, safety, wellbeing, but most of all, to improve their project delivery metrics.

The data trust continues to collaborate with:

- National Highways
- Environment Agency
- Infrastructure Projects Authority

And future clients already in the pipeline:

- Nuclear Decommissioning Authority (Sellafield)
- Cambridge University (academic access tier)

Aggregated insights: The data trust shows clients the value that can be derived from their data, and how it can be enhanced when supplemented with other data sets. Increased productivity insight by identifying waste, deliveries, working hours, lost time etc. Driving up data quality and volumes.

Trust and Security: Developed the security protocols to give data providers confidence in pooling and integrating data, leveraging our ISO27001 and Cyber Essentials Plus accreditations with a secure Azure platform integration, protocols and data pipelines. Enabling secure access to the trust by ensuring participation, inclusion and digital equity amongst all parties.



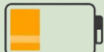
Offshore Energy - NZTC: 'Project Analytics Data Trust'

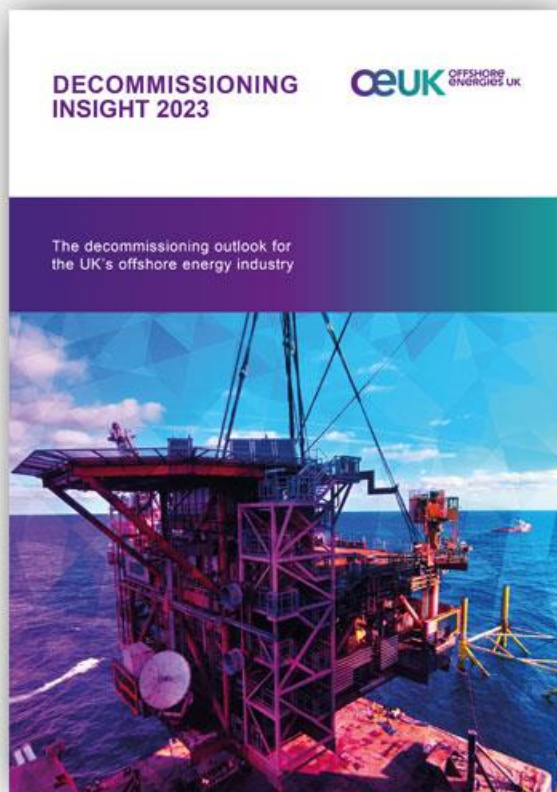


Now known as the 'Offshore Energy Data Trust' (OEDT), Phase 2 commenced Q3 2022 (Phase 1 having been delivered in 2019) to **create and demonstrate the utility of a project analytics data 'trust' platform**

Approved/Sanctioned Scope Output: **Demonstrate a compelling use case using well P&A data** and improve project delivery within the Oil & Gas sector.

A structured project which seeks to **deliver on 5 strategic objectives** (% progress v's plan, Feb 24):

-  1. A prototype data trust, with proposals or options for the roles of different parties in governing project data within the data trust (75%)
-  2. Proposals or options for managing risks associated with project data in the data trust (100%)
-  3. A data architecture outline with proposals and data formats (80%)
-  4. Extract intelligent analytical insights using the well P&A use case and propose further use cases (~30% ↗)
-  5. Drive coherent collaboration across the sector and provide a model for other sectors (30%)



Well P&A form a large portion (45%) of the total decommissioning cost for the UK Continental Shelf (UKCS), a critical area for cost optimisation.



A July 2021 report by OGA showed that **sharing data in this area led to a £3 billion reduction** in total decommissioning cost estimation for the UKCS, showcasing the potential of data sharing.

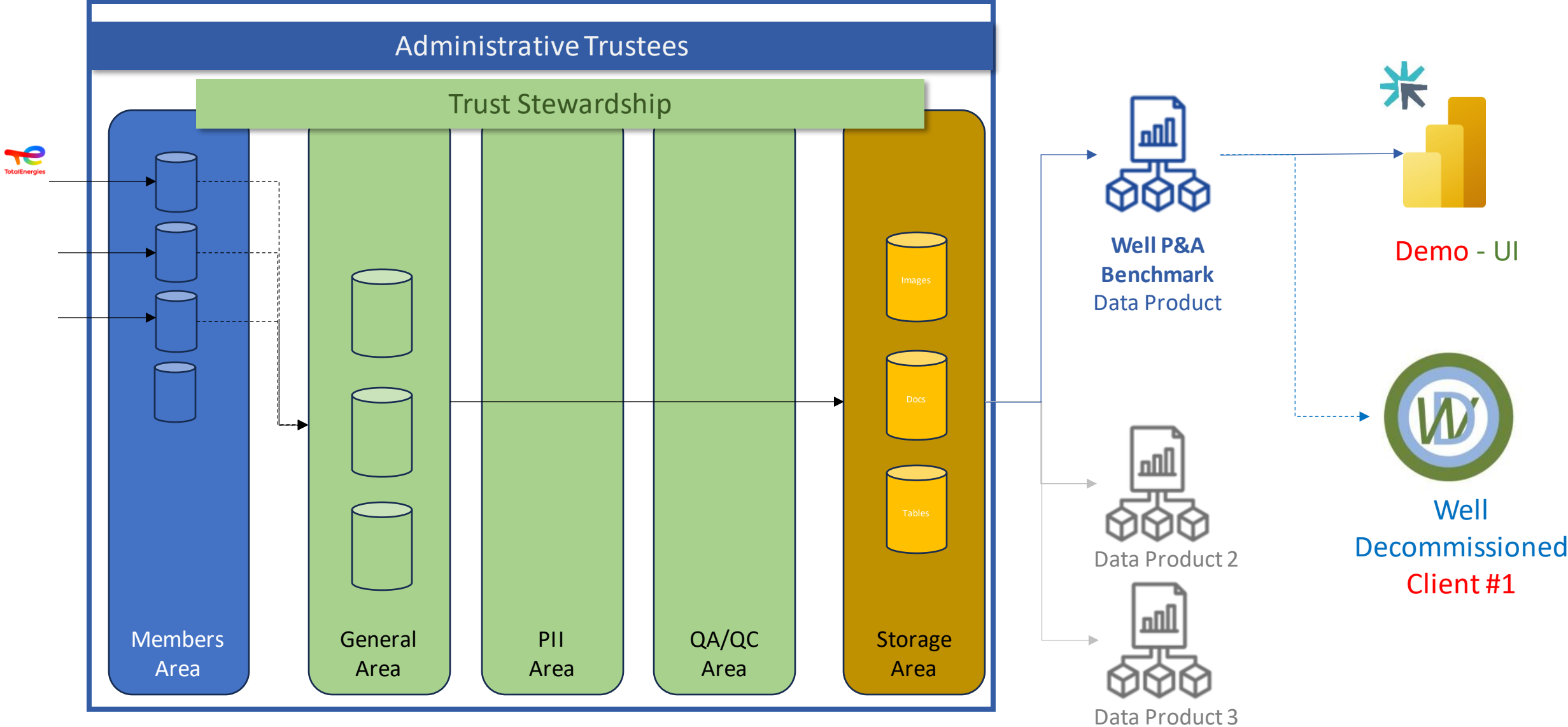


A 2020 report by Struan Energy highlighted that a **10% reduction (£2.7 billion)** in well P&A costs could be achieved by adopting an industry-wide campaign approach, supported by **data sharing**.



Proof of Concept: Well P&A provides a clear and tangible example of how data sharing can deliver significant cost savings and operational efficiencies, serving as a compelling proof of concept for the wider application of data trusts.

Simplified Architecture



PII = Azure Presidio - ensures sensitive data is properly managed and governed.

Use Case 1

Benchmarking – Data Request



Daily Drilling Reports (DDR's)

- Abandonment data at the Daily Drilling Reports level

DDR step durations used to update the Monte Carlo model (Use Case 2)

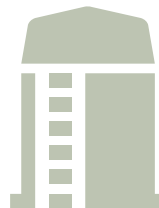
Use: Detailed hour by hour of abandonment operations which provides most granular layer of benchmarking tool



End of Well Reports (EOWR)

- Well type
- Rig type, Cost, Scope assumptions
- Cost breakdown by category
- Duration assumptions for each step
- What was achieved

Use: For use in the benchmarking tool, provides context to the durations.



Abandonment Performance Summary

- Well type
- AFE duration
- AFE Cost
- Actual Duration
- Actual Days
- Exchange Rate

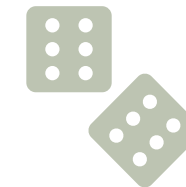
Use: Insight in estimated vs planned performance.



DDR coding structures

- Definitions of the codes used in Daily Drilling Reports for Well P&A activities.

Use: Cross reference against the codes used in DDR's to enable matching across operators.



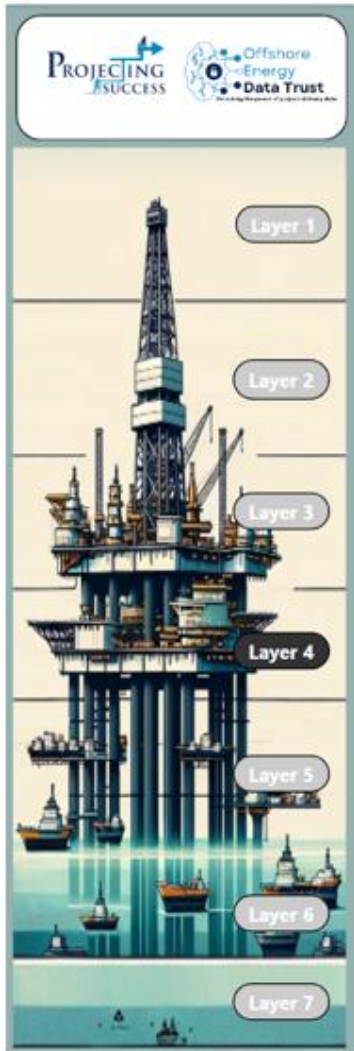
Monte Carlo – Step duration models & Duration Estimates

- Duration Estimate build up from previous Campaigns
- Underlying Monte-Carlo models used to inform estimate

Use: To inform the methodology used in building MC model for Use Case 2.

Use Case 1

Previous Campaign - Benchmarking



Description: Offer more detailed benchmarking than Rushmore.

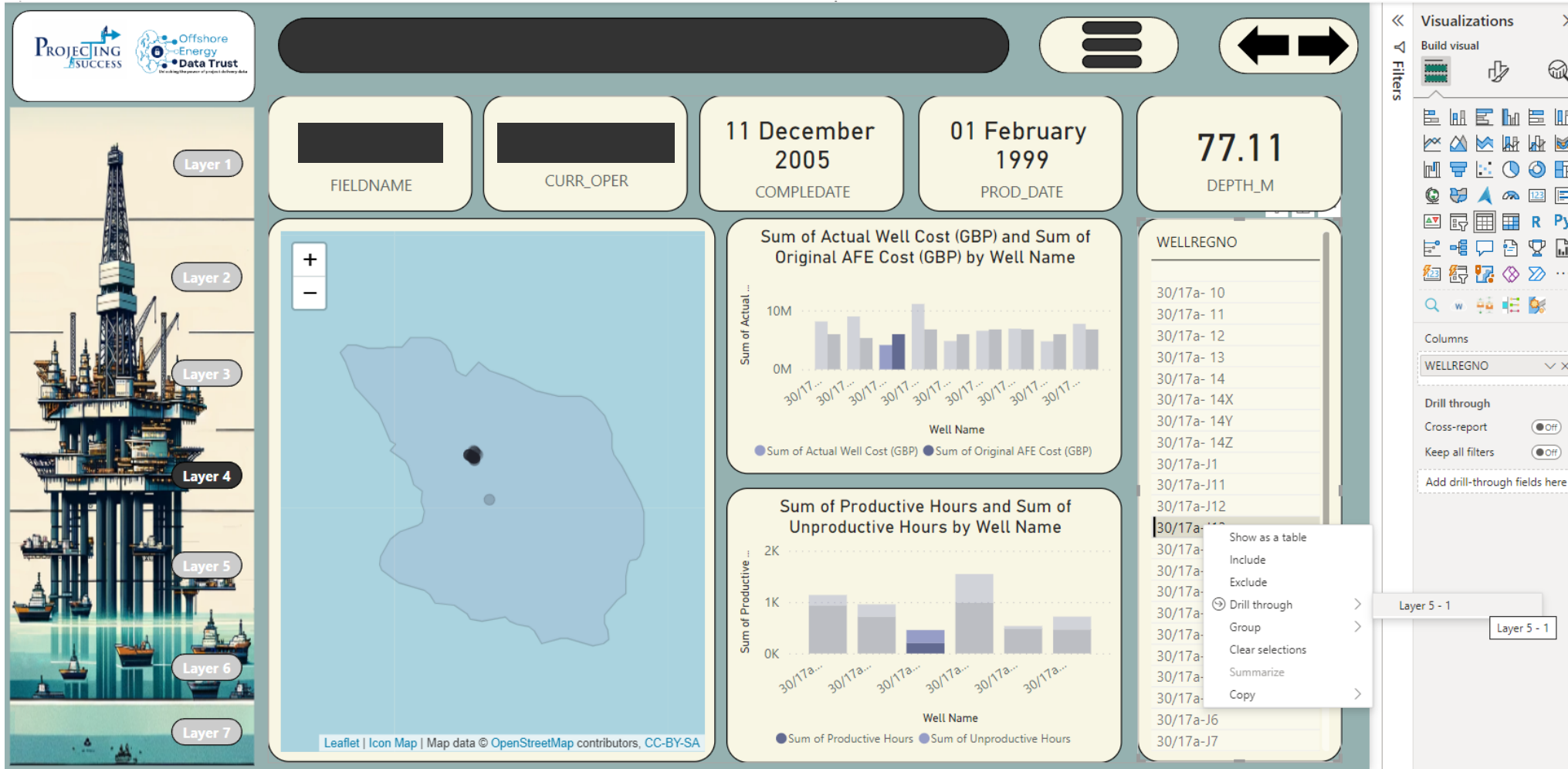
A hierarchical report providing an overview of previous Well P&A performance, allowing users to drill down through various layers for granular insight.

Value Proposition: With over 2000 wells to P&A during the next decade benchmarking and securely pooling data to provide a more effective alternative to the Rushmore database, with drill downs and a development roadmap for additional capabilities.

Proposed Solution: An interactive dashboard with 7 layers:

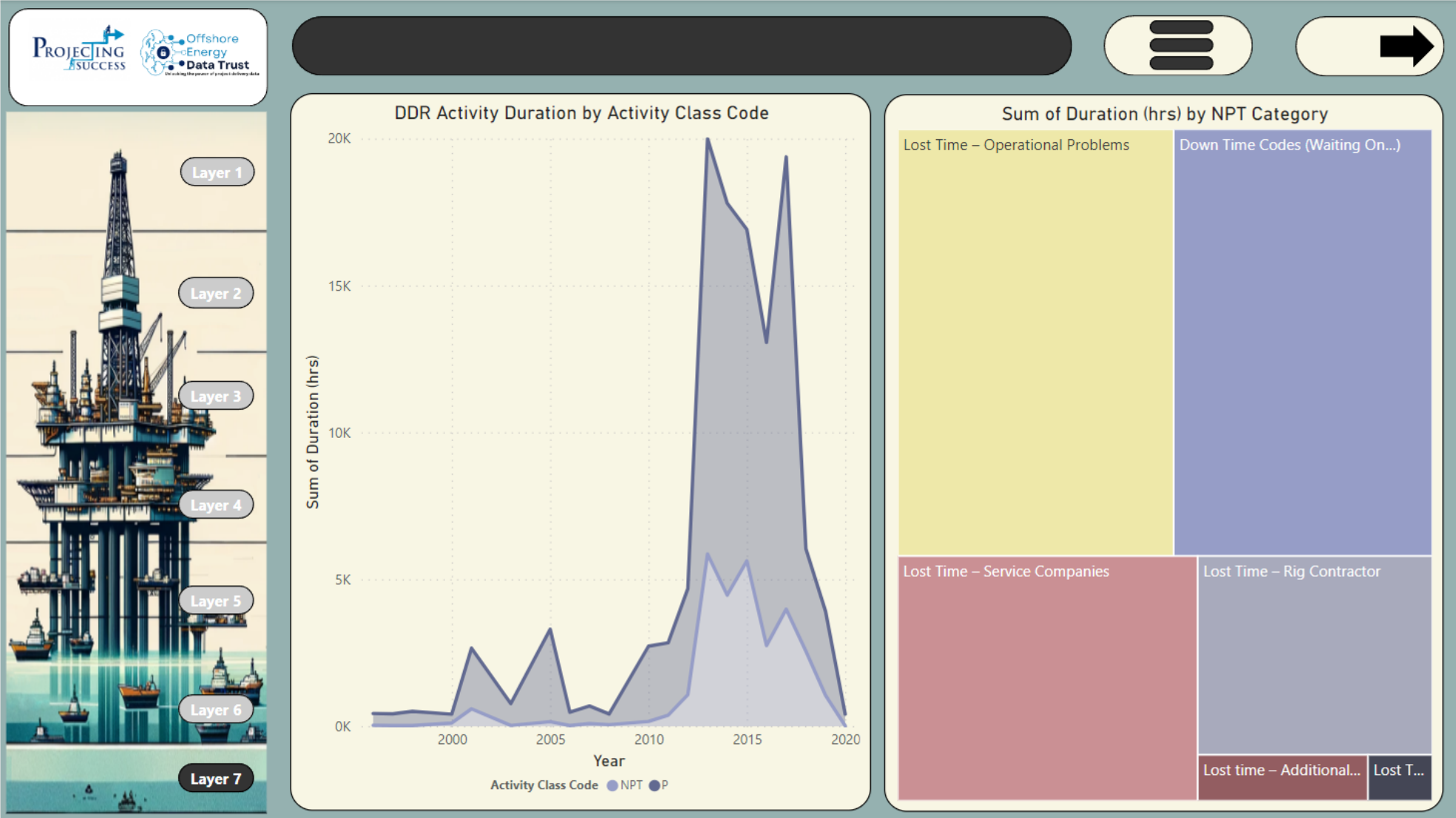
- **Layer 1 - Well Overview:** Subsea Wells, Platform Wells, Land Wells
- **Layer 2 - Performance Metrics:** Overall Time to Abandon, Non-Productive Time, Cost, Objectives Met
- **Layer 3 - General Well Information:** Number of Wells, Overall Complexity, Well Condition
- **Layer 4 - Campaign Overview:** Select Campaign, Narrative, Well Complexity, Campaign Duration Distribution
- **Layer 5 - Well Details:** Well Duration Distribution, Pmean, P90, P10
- **Layer 6 - Phase Analysis:** Phase 1, 2, 3 Total Days - Box and Whisker Plots with Toggles
- **Layer 7 - Detailed DDR Data:** In-depth data operation description data at the Daily Drilling Reports level

Dashboard - Campaign Benchmarking



- ☐ Select well in Layer 4 to 'drill through' to detail in Layer 5
- ☐ Well 30/17a - J13 has been selected in this case.

Visualisation - for Detailed DDR Data



Use Case 1

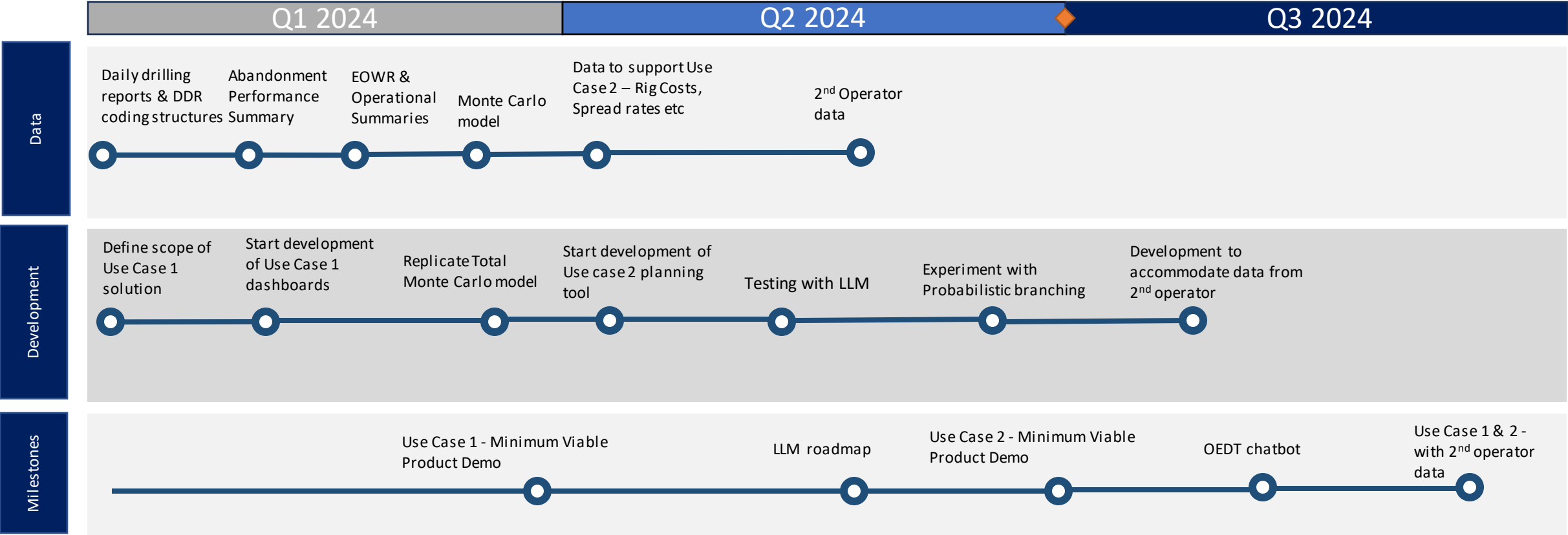
Well P&A Previous Campaign - Benchmarking

	Current Status	Future Intent
Data Sharing	• Several benchmarking capabilities exist: ○ Services are limited to benchmarking. ○ Closed systems with different organisations having different data. ○ Data held by a 3rd party and cannot be used for other purposes. ○ Scope of data collected is limited by benchmarking use case.	• Drive Data Standardisation • Drive more Open Access • Move beyond benchmarking → tackle new use cases. • Pooling resources to share insight, tackle greater use cases. • Collaborate on tools and insights.
Data Pooling	• Conceptually understood but, difficult practically	• Opportunity to widen data sets • Opportunity to expand scope to further use cases. • Opportunity to access source data, subject to defined rules. • Develop a Strategy for data integration from disparate data sources. • Align data to the shared problems that we aspire to solve. • Provide (controlled) data access to train models

Developer TIMELINE



Phase 2b completion



Key Challenges:

- 1. Accessing the right data
- 2. Quality of the data
- 3. Making sense of the unstructured data

4. Developing the high-end predictive insights

- 5. Current data collection methods

Priorities:

- 1. Data Security
- 2. Improve on Rushmore
- 3. Improved campaign planning tools

4. Predictive analytics

- 5. Leveraging LLM's to provide insights

Offshore Energy Data Trust

Recognising the power of shared data and AI in optimising project delivery, Projecting Success was tasked in Oct '22 by NZTC to create what is now known as the 'Offshore Energy Data Trust' (OEDT) a robust, secure means to facilitate data sharing in the Oil & Gas industry.

Technology Leadership Board (TLB) to champion as a Strategic Industry Project, supported by NSTA.

- Phase 1: –'Project Analytics Data Trust' → Completed 2019
- Phase 2a: – Preparation of a Legal Framework → Completed 2023
- Phase 2b:
 - Technical Framework (No 3rd Party Access Point) → Approaching Completion
 - Build a Use Case PoC/Demonstrator → Ongoing Q1 '24
- Phase 3 – Commercialisation & Scale

Actioned

1. Engagement of TLB Support to gather more data and wider industry engagement (to build out the use case and showcase the benefits of data pooling)
2. To engage with TLB to help bring organisations together to facilitate continuation into Phase 3 (Joint-Funded project?)

Request

1. Task group - Support Technical Integration with DSG Requirements
2. Task group - Support Commercial Orientation and shape Phase 3

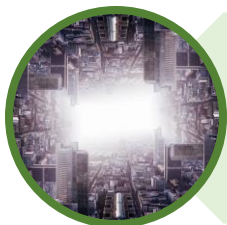




Welcome

- Carlo Procaccini,
- Kirsten Oliver

14:00 – 14:10 10mins



DSG & NZTC Open Innovation Update

- Graeme Booth, Tanya Knowles
- Ed Evans [Dan Brown]

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NZTTP + OLTER Update

- Darren Gee,
- Andy Bell

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Questions/Discussion/Close

- Kirsten Oliver,
- Carlo Procaccini

15:40 – 16:00 20mins

Net Zero Technology Transition Programme

Supporting Organisations



Energy Hub



Identifying key opportunities and technologies to deliver the nation's future low carbon energy requirements



Hydrogen Backbone Link



Scotland in a leading role for the development of pan-European hydrogen infrastructure



Alternative Fuel Gas Turbine



Accelerating development of gas turbines capable of running on clean fuels.



Advancing Remote Operations



Remote operations to create safer, more efficient and lower carbon operations.



Data 4 Net Zero



Developing analytics to unlock energy transition action and deliver the world's first smart energy basin.



Offshore low touch energy robotics & autonomous systems



Enabling next generation robotics and autonomous systems for the offshore energy sector.



Offshore Energy Digital Architecture



Implementing a sector-wide data and infrastructure strategy to enable digitisation.

4% reduction in UK emissions (14 MTCO₂e)

Cumulative economic output of £403bn

Create 21,000 jobs by 2050

Develop next generation education and skills

Create high value design and manufacturing capability

Drive competitive technologies for CCS, H₂ and floating wind

Delivering net zero for the North Sea

Diversify supply chain and double exports

7 integrated projects

£16.5m

3 years

Industry matched

Net Zero Technology Transition Programme

Supporting Organisations



The Scottish Government
Riaghaltas na h-Alba

75+
Companies
Organisation

6+
Supporting more
than 1



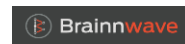
Industry led projects



Cash & benefit in kind realised



Engagement journey continues

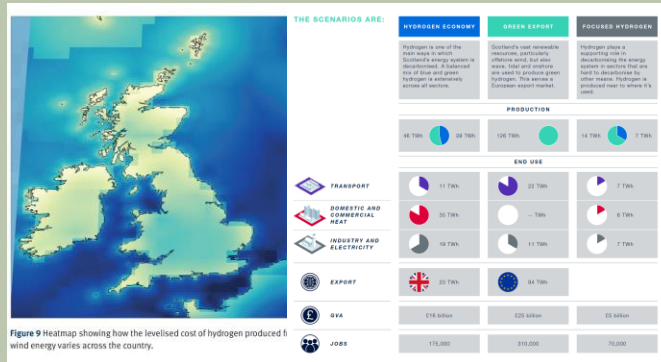


Net Zero Technology Transition Programme

Energy System Projects

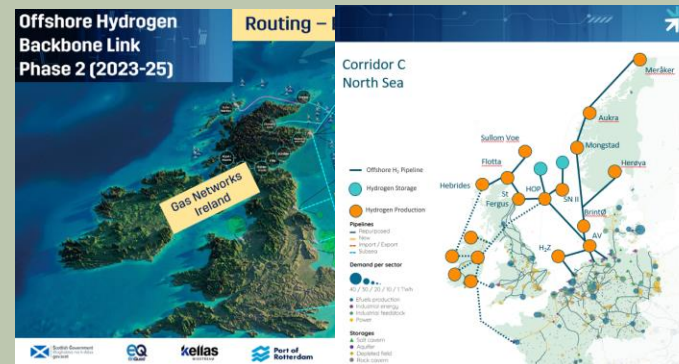


Energy Hubs



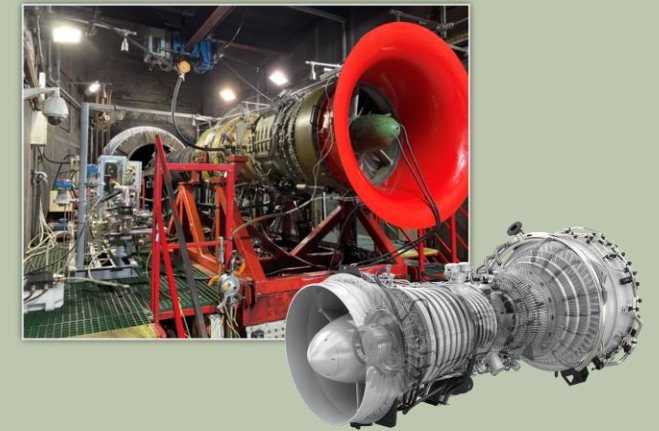
Super Hubs will enable establishment of a green hydrogen export market via the Hydrogen Backbone Link

Hydrogen Backbone



Connect Scotland to the European Hydrogen Backbone to create export opportunities of green hydrogen and hydrogen technologies

Alternative Fuel Gas Turbines



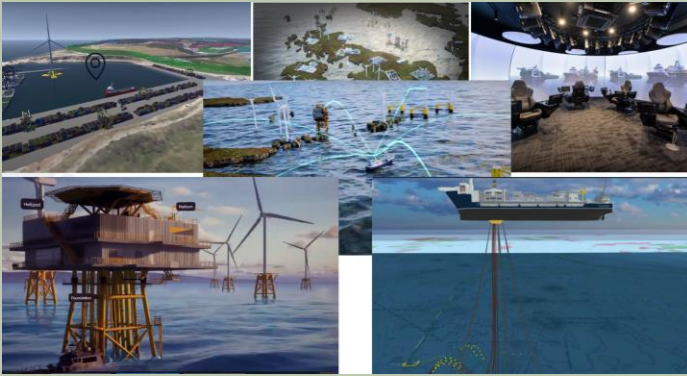
Retrofittable, low-carbon power generation utilising alternatives to fossil fuels”

Net Zero Technology Transition Programme

Digital/Data Projects



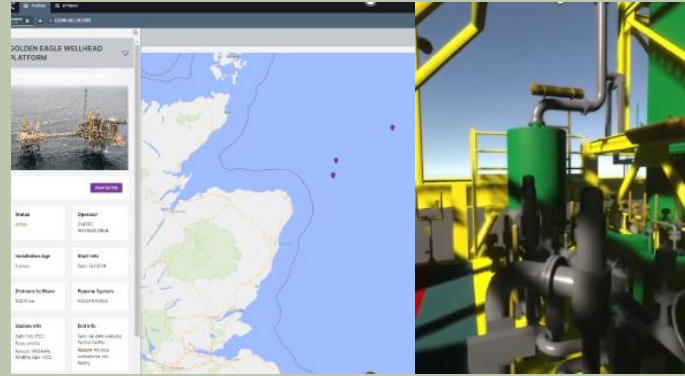
Data for Net Zero (D4NZ)



*Paving the way for a
digital data ecosystem.*

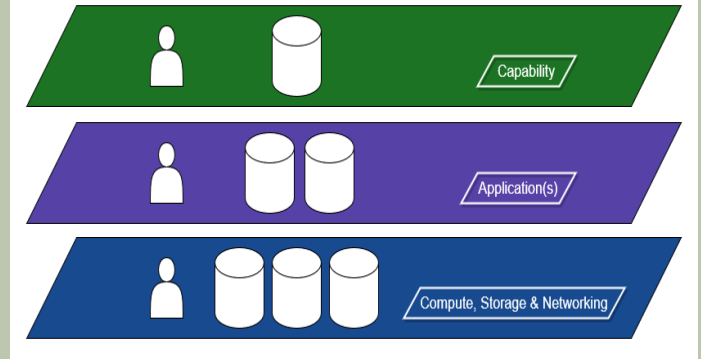
*Delivering the world's first Smart
Basin concept*

Advancing Remote Operations (ARO)



*Preparing the energy industry for
the adoption
of remote operations*

Offshore Energy Data Architecture (OEDA)



*Empowering offshore operations
through
standard digital and data
architecture*

...and Offshore Low Touch Energy Robotics (OLTER)



“Enabling the next generation of robotics and autonomous systems”

Context



ETF set up by Scottish Government to support oil and gas, and the energy sector to recover from COVID19 and the price collapse - £62 million



NZTC won £16.5 million to support 7 projects



OLTER is one of 7 projects – allocated £4.6 million

How do we mitigate the barriers to scalability, commercialisation and adoption?

Net Zero Technology Centre, Offshore Renewable Energy Catapult & National Robotarium

Centre of Excellence



ENGAGE

- Bringing together the Eco-System
- Agreeing benchmarks
- Informing Regulators



DEMONSTRATE

- Onshore & Offshore “art of the possible” RAS technology demonstrations
- Data Hub MVP



KNOWLEDGE

- Technical Reports
- Landscaping Studies
- Commercial Viability Report



ADOPT

- Centre of Excellence to drive scalability, commercialisation and adoption
- Proving ground to test and assure technology
- Physical and virtual testing
- Eco-system of testing centres

Operators, Supply Chain, Regulators, Tech Developers & Academia



ENGAGE



DEMONSTRATE



KNOWLEDGE



ADOPT

Setting “what good looks like”

If each company undertakes their own trials, then they may get some insight into best practice and the art of the possible, but that’s not the same experience across the entire industry:

there are no agreed benchmarks

Safety	Standards
Efficiency	Security
Cost	Data
Persistence	Maintenance
Use Cases	Training

...and have no facility to check any of the above



OLTER has engaged the energy industry to agree the benchmarks and set out the roadmaps for further development.



Demonstrating the “art of the possible”



SORD 1

To reach full-scale everyday permanent offshore deliveries we will follow a four-step process solving the big blockers to BVLOS to achieve commercial scale

1. BVLOS Demonstration	2. Design & test of a TMA Blueprint	3. Pilot commercial Operations	4. Full commercial Scale
Demo State of the art in offshore UAVs: - Offshore BVLOS/BVLOS demonstration - Industry day to promote high automation and safety 1 week BVLOS offshore demo to evidence State of the art in vessel collection, automation & scalability Duration & completion: 6 months Feb 2022 Major Milestones: Demonstration of robust systems with high integrity onboard decision making	Three UK fleets to solve the big blockers: - Design & develop standard aircraft onboard systems and for offshore operations - Design & develop blueprint contract for permanent operations offshore (BVLOS) 1 week BVLOS offshore demo to evidence State of the art in vessel collection, automation & scalability Duration & completion: 6 months Q2 2023 Major Milestones: Test of TMA procedures within an offshore environment flying an offshore ship-to-ship	The world's first offshore UAV delivery in permanent operations: - Design & build TMA blueprint to both UK/EU - Complete six months of everyday pilot commercial operations with high TMA automation vehicles - Demonstrate high payload & controllable UAV Duration & completion: 12-18 months Q2 2024 Major Milestones: First Commercial operation offshore in TMA airspace	Scale to commercially viable everyday UAV deliveries offshore: - Demonstrate day-to-day operations for cost reduction and increased utilization - Demonstrate multi-site operations (e.g. delivery & service) - Scale to meet on-read offshore assets with high costs barriers Duration & completion: 12-18 months Q2 2025 Major Milestones: Profitable Operations & meet outside of innovation budgets

SORD OVERVIEW: STATISTICS

The SORD offshore demo demonstrated the state-of-the-art within offshore BVLOS UAV logistics.

Technical Offshore Demo Statistics			
1,200KM BVLOS kms flown	5 Days of BVLOS flying	7 hours continuous operations	DAY/NIGHT Operations
SATCOM Enabled on all missions	90 SECOND quick Turnaround	Uninvolved People trained to load/unload	
Commercial: Why is this helpful for offshore?		Commercial: What would we carry?	
- We can fly when helicopters cannot - We can operate in high sea states - We can enable completely new services		- Spare Tools & Equipment - Urgent emergency & critical supplies - Product & chemical samples - Food/Cash/Stores/paperwork	

TECHNICAL: RESULTS

We completed all 13 core trial objectives. We also completed additional trials based on customer demand on the day.

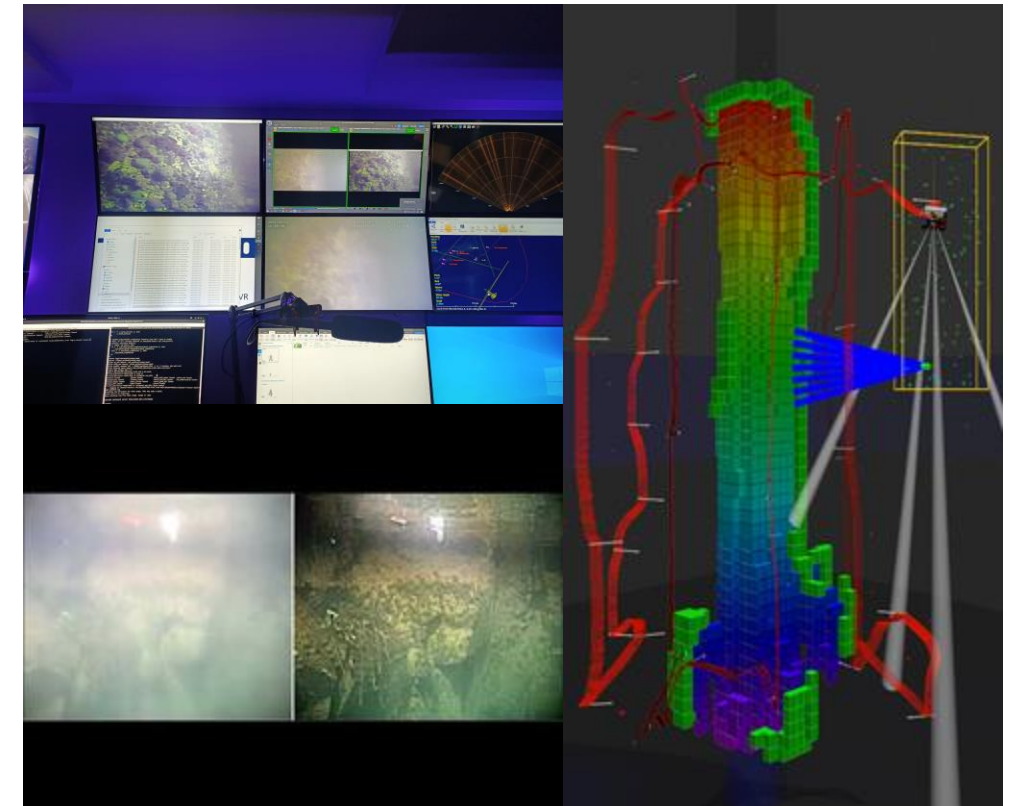
DEMONSTRATION OF STATE OF THE ART (BVLOS AIR)																																																																
Trial Objectives																																																																
IO-01	IO-02	IO-03	IO-04	IO-05	IO-06	IO-07	IO-08	IO-09	IO-10	IO-11	IO-12	IO-13																																																				
Qualify demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate	Offshore demonstration of BVLOS (1000KM) with 100% success rate																																																				
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Demonstrating the “art of the possible”

Subsea Use Case (2024)

- ▶ Tetherless and submersible
- ▶ Gather data on North Sea underwater assets
- ▶ Use data from demonstration in OLTER Data Hub workpackage
- ▶ Demonstrate persistence – no human intervention for a prolonged period of time, and in challenging environmental conditions
- ▶ Document practices, procedures, failure case management, build “standards”, maintenance process, safety case and route map to commercialisation
- ▶ Involvement from the Regulator

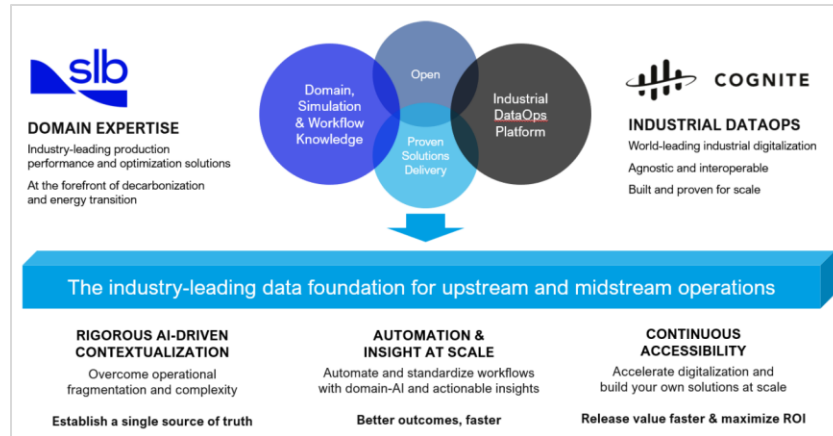


▶ “Sweating the Asset”

▶ Witnessed by Industry and Regulators

▶ Technology Roadmap

Data Hub



Minimum Viable Product - Capabilities

- ▶ Data upload and contextualisation with Cognite Data Fusion from multiple data sources
- ▶ Industry relevant ML libraries to make use of data from multiple sources including images and videos for inspection, tagging, annotation and object recognition
- ▶ The building of a holistic and dynamic high-fidelity digital twin built on Cognite advanced 3D visualisation application integrated with various IT & OT data sources
- ▶ Out of the box Cognite analytics (low/no code) and visualisation capabilities and integration with BI tools
- ▶ Building of custom applications with the help of an openly documented API, open-source SDK's, and application front-end development components

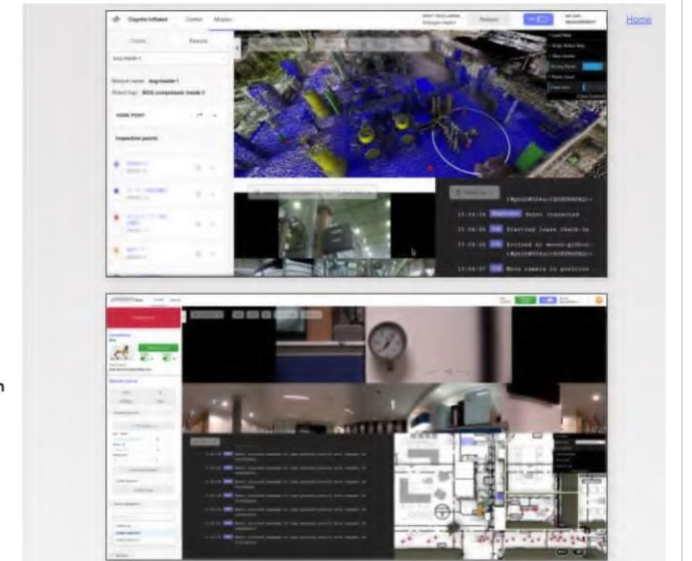
Cognite InRobot Field Execution

Generative AI assisted field work for higher-quality decision and productivity. Automatically plan and deploy missions/inspection routes, without manual intervention

Turn analog gauges into time series
Pre-built computer vision models for common industrial use cases like reading gauges, temperatures, valve condition, and identifying leaks/spills

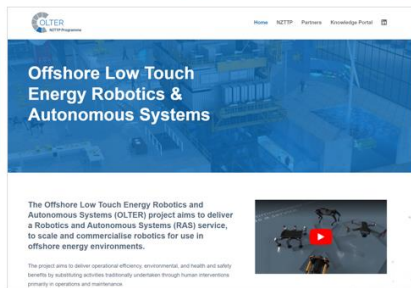
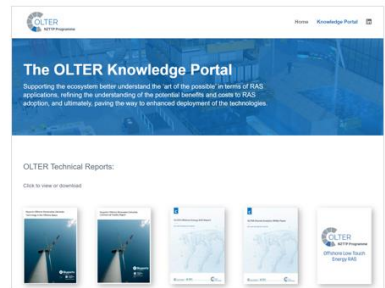
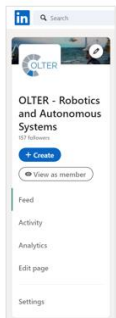
Enrich your data spectrum
Use **infrared or acoustic data collection** to increase understanding of current operating conditions

Investigate hazardous environments
Run on-demand missions without the need for code using 3D models, point-clouds, or engineering diagrams.



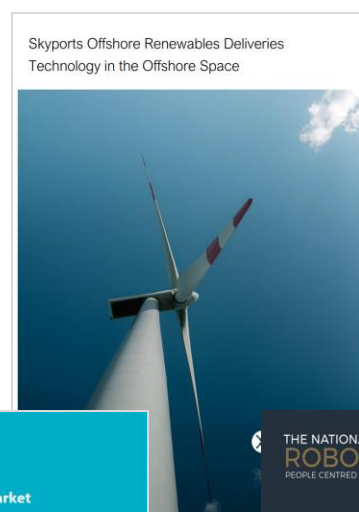
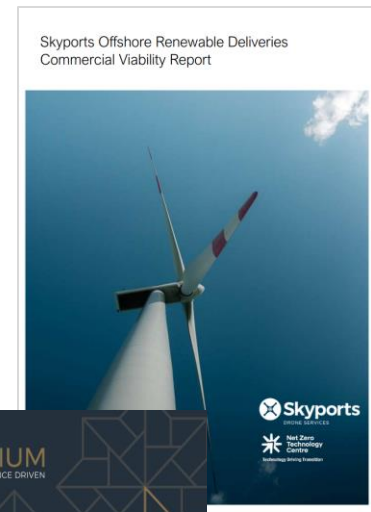
Sharing Knowledge

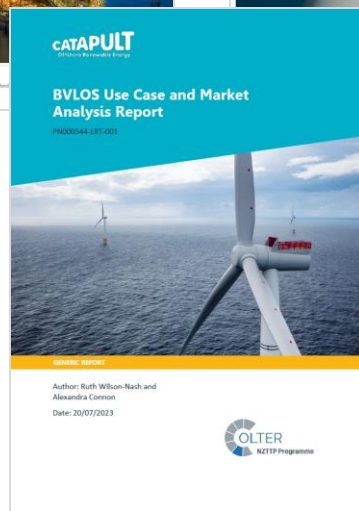
Website & Knowledge Portal




<https://www.olter.co.uk>
<https://www.linkedin.com/company/olter-robotics-and-autonomous-systems/>

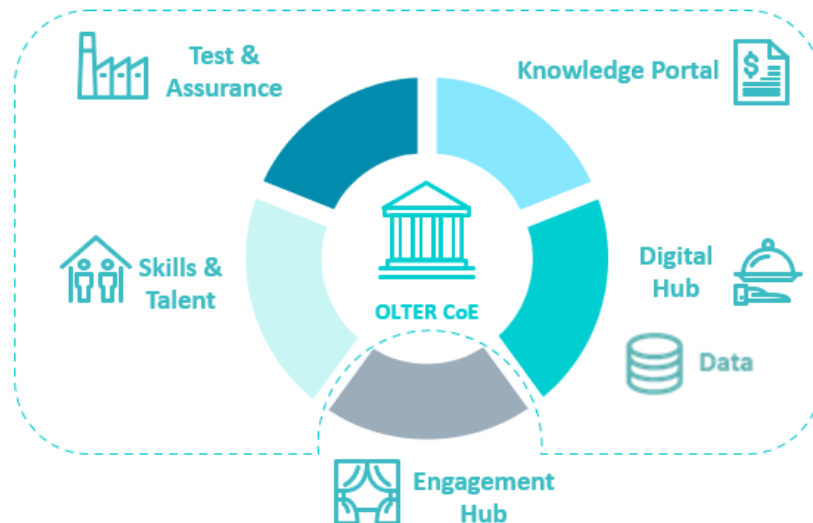




OLTER provides the benchmark for development and use of reliable, on-demand, standardised autonomous systems.

Investable Business Case for a Centre

- The culmination of work to date, supported by industry input
- Functional spaces to target energy industry needs and **enable adoption**
 - Test & Assurance - develop, test, and prove new/existing technologies for industry use
 - Digital Hub – virtual environment to access data, simulate, test, and develop AI/ML capability
 - Skills & Talent – skills development, training and workforce programmes
 - Knowledge Portal – in-house tools & educational resources to support industry
 - Engagement Hub – act as a conduit between the industry ecosystem and regulator community





Request for Industry Support

Areas to Get Involved

- ▶ Letters of Support for a future Centre
- ▶ Financial support to conduct further demonstrations on your behalf and share lessons with Industry
- ▶ If you are conducting demonstrations, can we get involved and share lessons across the Industry
- ▶ Active partner in Data Hub delivery – seeking multiple operators and supply chain to provide data and steer direction of project
- ▶ Support the development of an Investible Business Case

Andy Bell – OLTER Project Manager – andy.bell@netzerotc.com



ENGAGE



DEMONSTRATE



KNOWLEDGE



ADOPT

Thank You



The Scottish Government
Riaghaltas na h-Alba

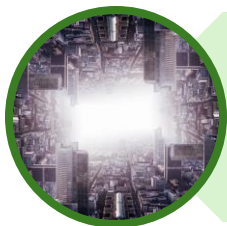




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Backup