Oil & Gas Authority

TOPSIDES® UK 2019

How Data and Collaboration Could Ensure Successful Project Delivery




Andrew Buchan: OGA
Stephen Ashley: OGTC
Martin Paver: Projecting Success

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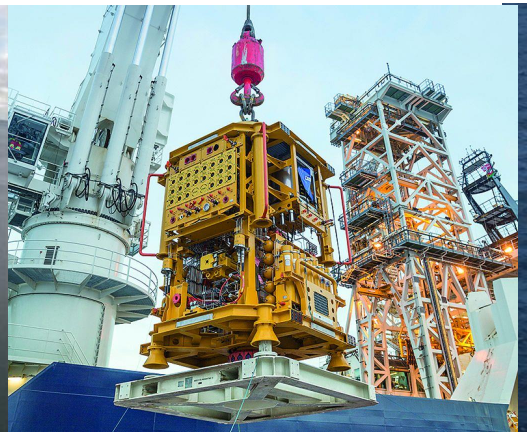
The successful delivery of major capital projects is vital to the future development of new oil and gas fields as part of ensuring the Maximum Economic Recovery (MER) of hydrocarbons from the UK Continental Shelf (UKCS).



OGA's Initiatives to Support Successful Project Delivery

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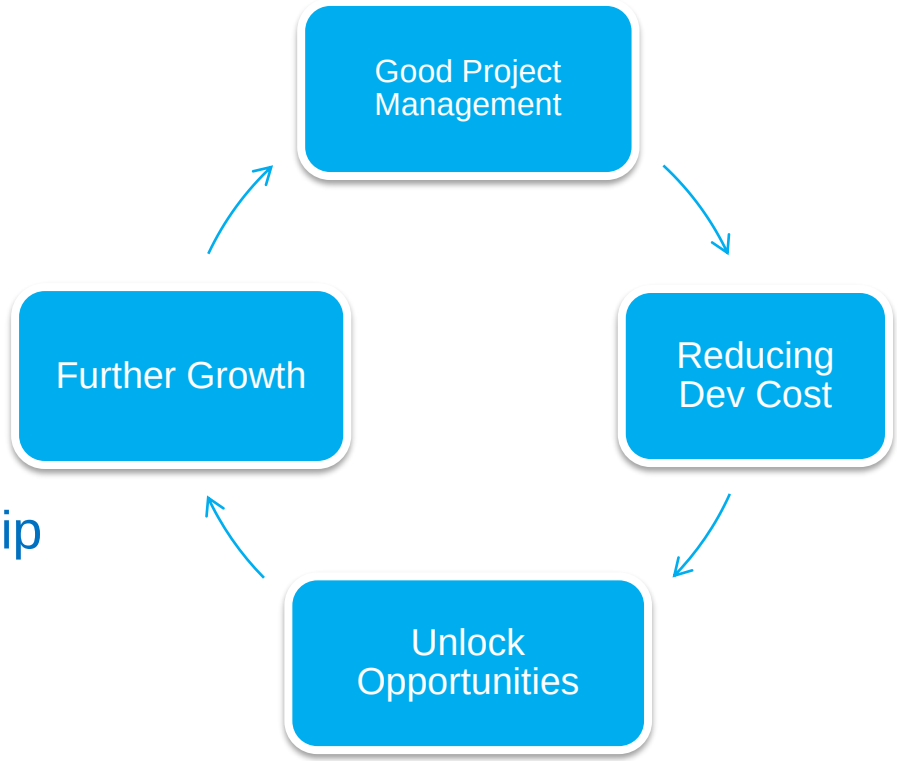
OGA Initiatives:

1. New Field Development Guidance Updated
2. **Developing a prototype - Lesson Learned Database**
3. Robust Project Delivery - Stewardship Expectation Guidance is being updated to better support successful project delivery - Operator/OGA review meetings
4. Support and engagement with Industry on Project Management initiatives



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What is the prize?

The OGA is Tracking over 90 Projects

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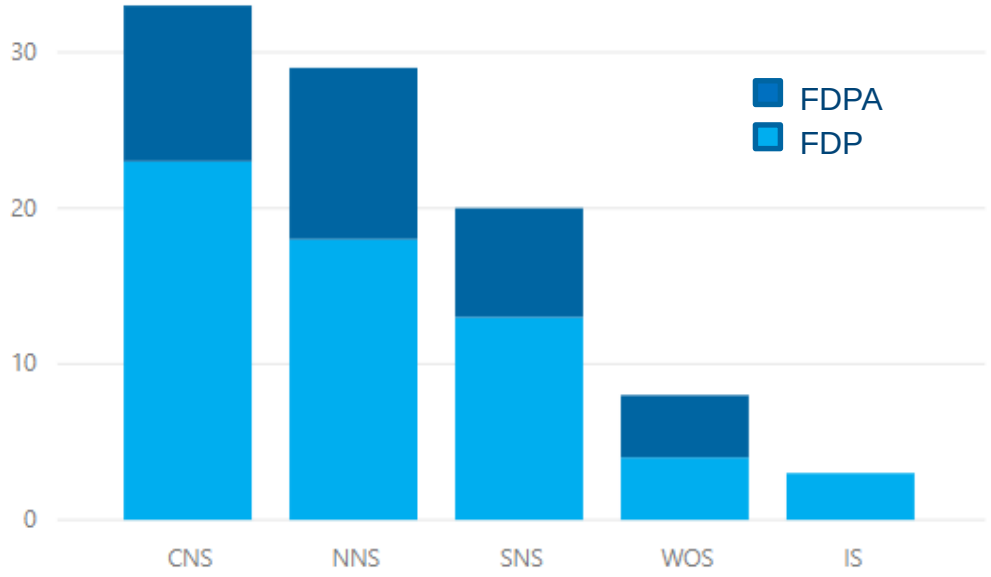
Approval Status



Number of Projects

OGA currently tracking over 90 projects with over 3.5 billion boe and CAPEX of £38 billion

Analysis of Project Performance

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OGA Analysis

	No Projects	Capital cost at FDP (£ billion)	Average delay (months)	Average cost growth
Already started up	38	13.5	10	35%
Under execution	20	25.5	13	20%

Oxford University Analysis

Project Performance Map

	Mean cost overrun	Frequency of cost overrun	Mean schedule overrun	Frequency of schedule overrun	Mean benefit overrun	Frequency of benefit shortfall
Solar power	1%	4 out of 10	0%	2 out of 10		
Energy transmission	8%	4 out of 10	7%	1 out of 10		
Wind power	13%	6 out of 10	22%	6 out of 10		
Pipeline	14%	6 out of 10				
Water	21%	7 out of 10	33%	8 out of 10		
Road	24%	7 out of 10	38%	8 out of 10	-3%	6 out of 10
Bridge	27%	6 out of 10	19%	7 out of 10	2%	7 out of 10
Mining	27%	5 out of 10	45%	6 out of 10		
Oil+Gas	31%	8 out of 10				
Thermal	33%	6 out of 10	37%	8 out of 10	-6%	7 out of 10
Tunnel	37%	8 out of 10	21%	6 out of 10	-21%	8 out of 10
Rail	38%	7 out of 10	39%	6 out of 10	-26%	7 out of 10
	46%	6 out of 10			-15%	5 out of 10
	52%	5 out of 10	41%	8 out of 10	0%	3 out of 10
	61%	9 out of 10	27%	9 out of 10		
Buildings	63%	7 out of 10	38%	6 out of 10	-5%	6 out of 10
IT	74%	4 out of 10	47%	5 out of 10	17%	5 out of 10
Dams	85%	7 out of 10	42%	8 out of 10	-11%	6 out of 10
Nuclear power	122%	10 out of 10	65%	9 out of 10		
Olympics	172%	10 out of 10	0%	0 out of 10		

Oil+Gas 31% 8 out of 10

There is a big prize to get after

Lessons Learned

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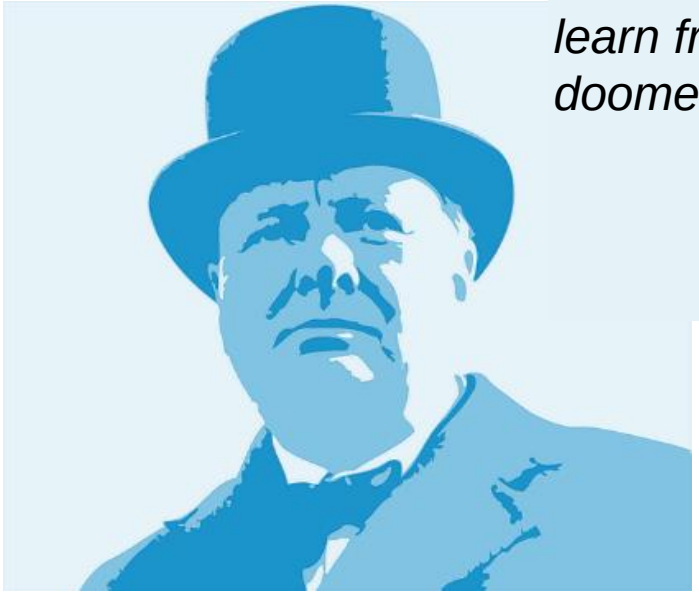
The first lesson I learned when I joined the oil industry

“Lesson are never learned. We repeat the same mistakes over and over!”



"Those that fail to learn from history are doomed to repeat it."

How can we learn the lessons

Lesson learned Report

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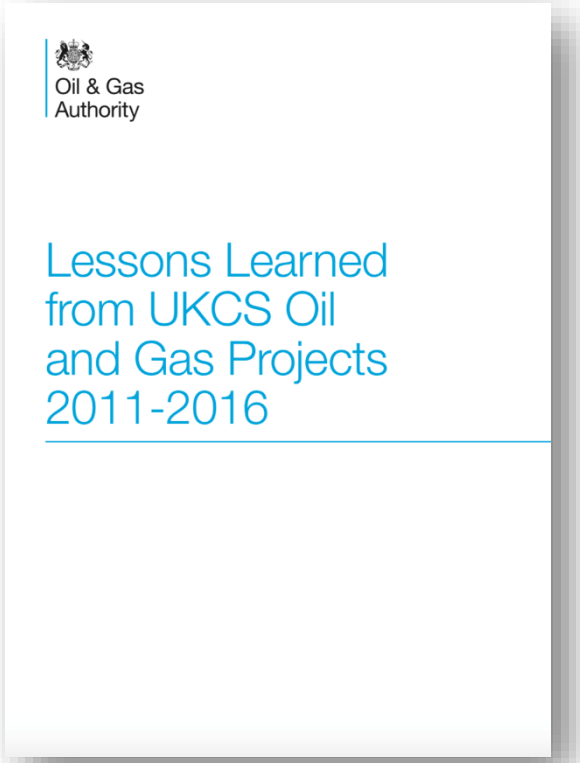

The Oil and Gas Authority (OGA) carried out analysis on 58 major projects executed between 2011 and 2016 in the UKCS.

The report provided industry with valuable insights and information to improve project delivery

Lessons Focus Areas

"Since 2011 fewer that 25% of oil and gas projects have been delivered on time, projects averaging 10 months delay and coming in around 35% over budget"

Lesson Learned Data

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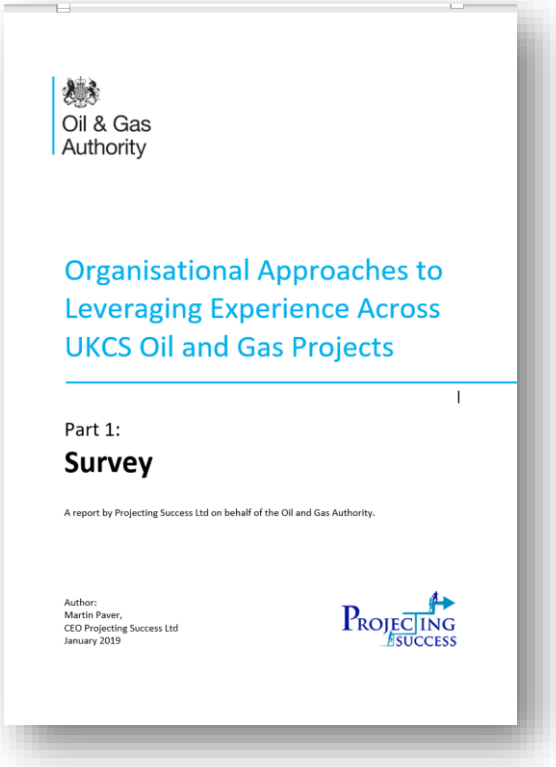
In 2018 the OGA engaged with industry to examine the sector approach to lessons learned and how it could be improved.



Findings:

- A more consistent approach is required across industry regards data collection
- Lessons and associated data should be collected in a way to provide more value in influencing future projects
- Lessons info databases are not user friendly
- There are gaps in the data collected
- The information and lesson are difficult to prioritise
- Root causes aren't always obvious
- Information collection needs to be consistent to avoid bias
- Data analysis can be improved

Lessons Do Not Sit in Isolation

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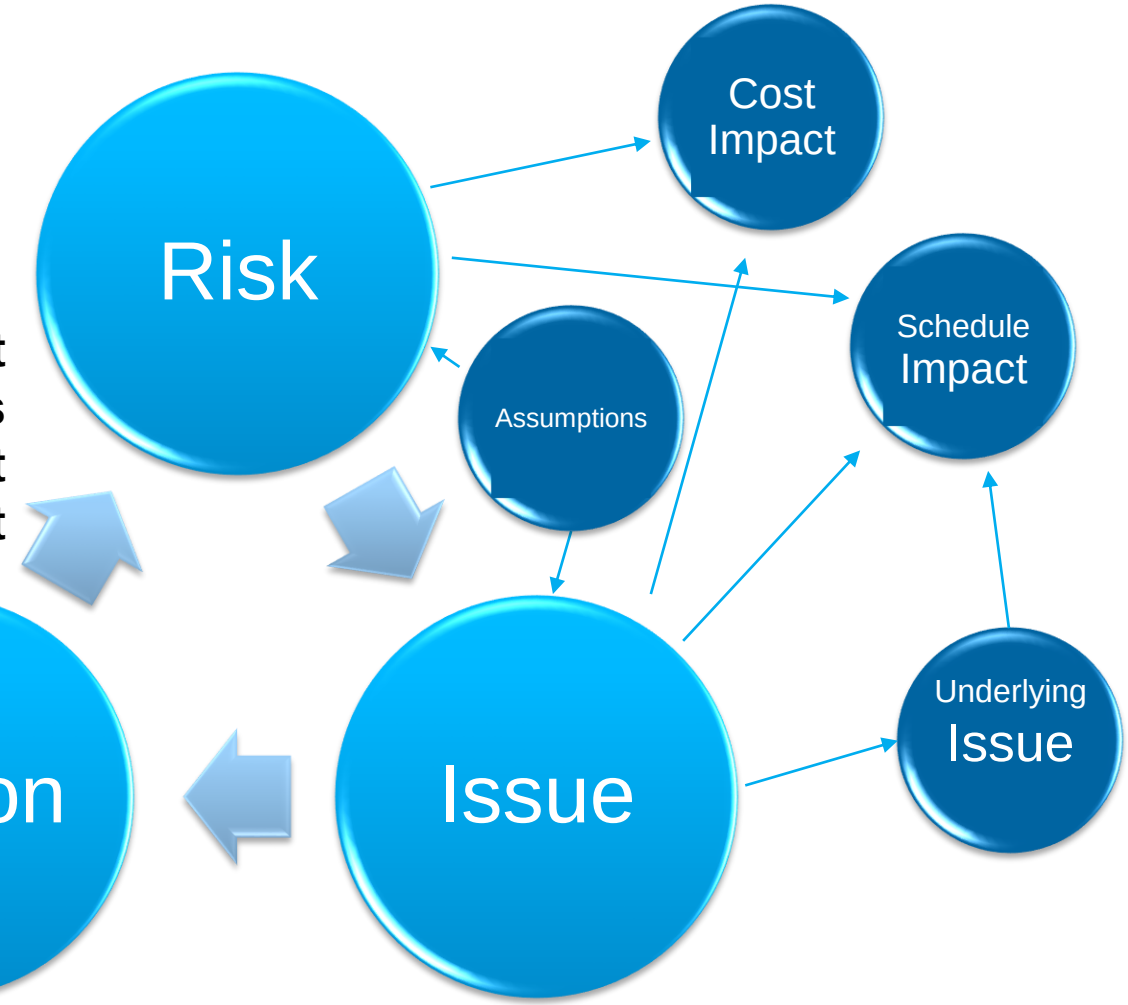
If the lesson is not acted upon it becomes a risk for the next project



Tolerate
Treat
Transfer
Terminate

Its Simple…Just Change the Term

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Lessons Learned

We've been trying it for 40 years

Learning from Experience

The purpose of machine learning

But also implies human learning

Leveraging Experience

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Leveraging the Data

An Example: Crossrail

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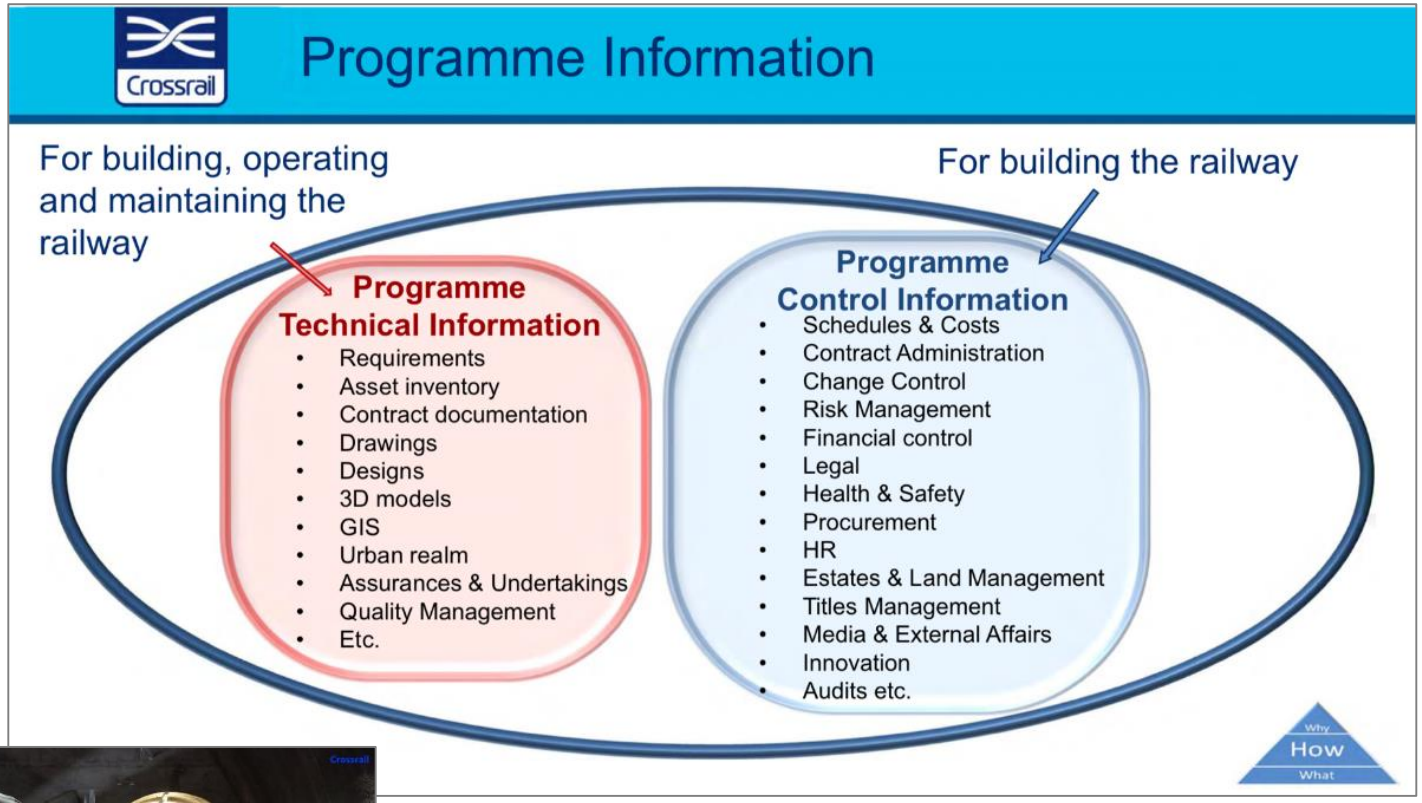

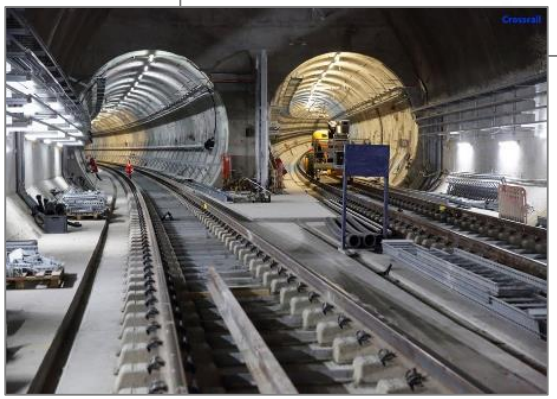

An Example: Crossrail

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Programme Control Information

- Schedules & Costs
- Contract Administration
- Change Control
- Risk Management
- Financial control
- Legal
- Health & Safety
- Procurement
- HR
- Estates & Land Management
- Titles Management
- Media & External Affairs
- Innovation
- Audits etc.

Data is the Key

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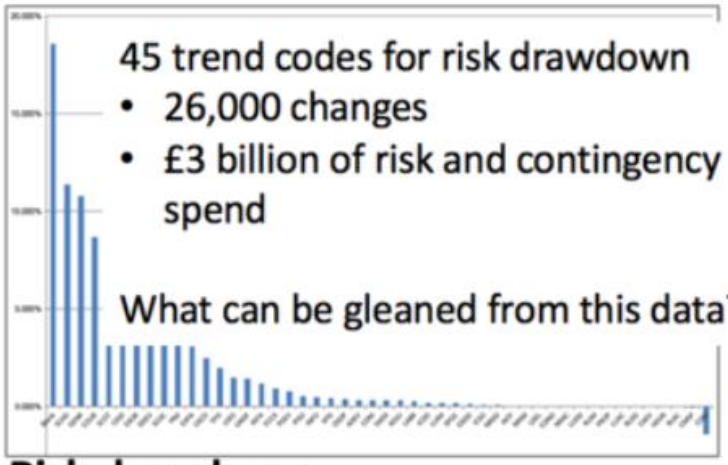
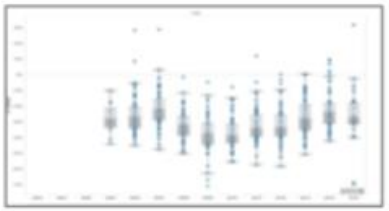


Risk drawdown

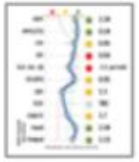


Cost data

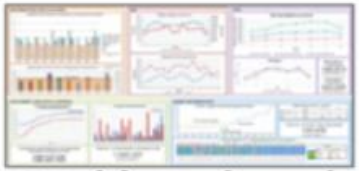
Earned value data

Installation reports

Observations reports



KPI reports



Dashboards and progress reports

What happens to all this Project data?

Project Controls

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"Project Controls are the data gathering, data management and analytical processes used to predict, understand and constructively influence the time and cost outcomes of a project or programme; through the communication of information in formats that assist effective management and decision making."

Project Controls Online

Project Controls Personnel
or **Data Analyst/Scientist?**

Data Graph – Lesson Learned

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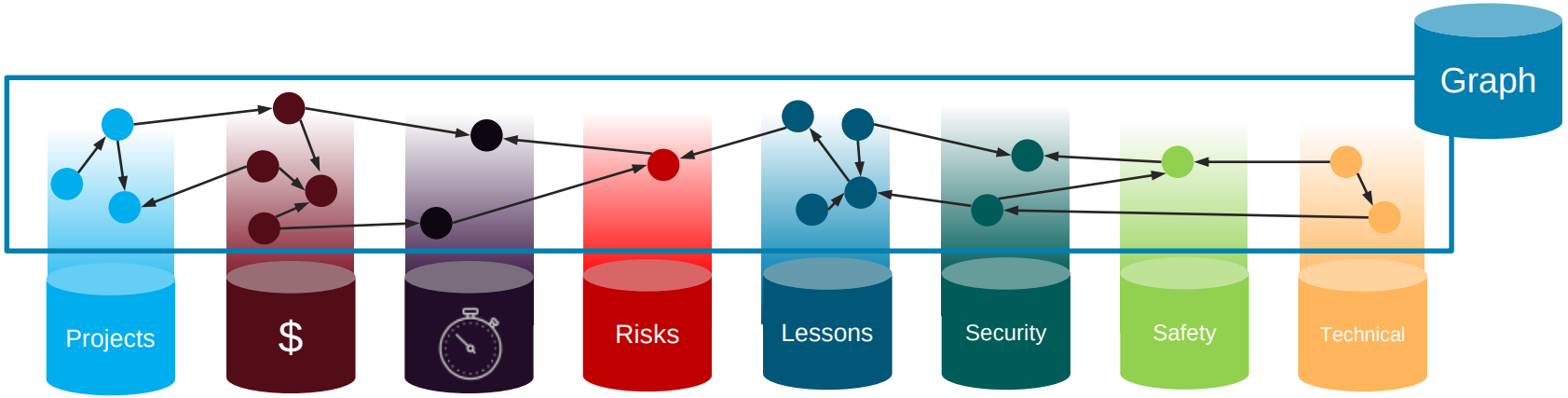
Using operators lesson learned data and other public data, a prototype projects lessons graph database was created

Graph database:

- Extract insights from connected data
- Enable correlation between lessons, risks, issues, impact etc
- Provide a foundation for AI.
- Machine learning is all about learning from experience:
  - Assistive AI then towards full AI.
  - Understanding the predisposition of a project to variance.



Graph Database Portal

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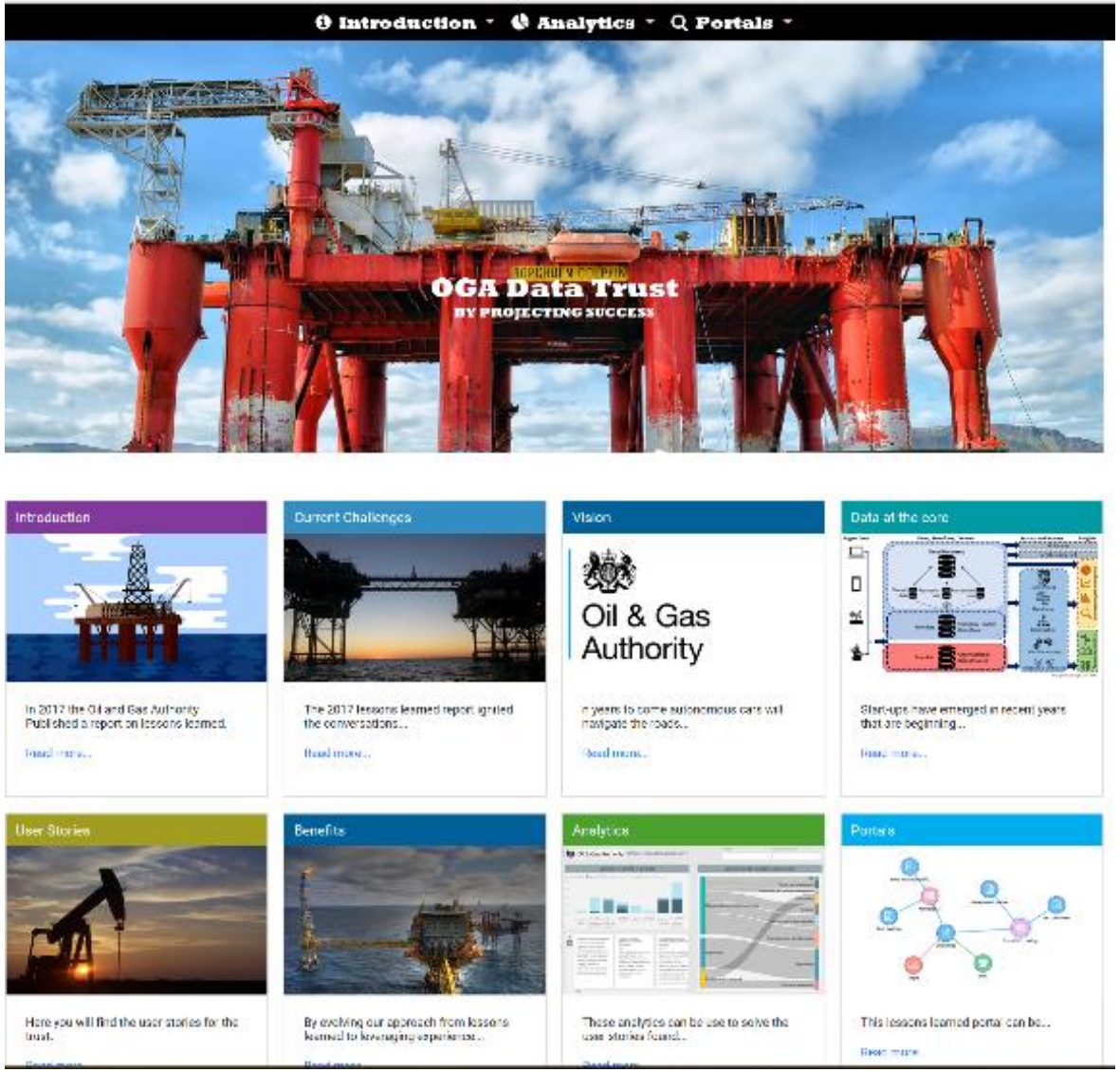
Enables users to explore connectivity between lessons.

Connection between lessons, risks, issues, change, QA observations etc.

Ultimately, provides the foundation for AI to begin to identify early warnings and the predisposition of certain projects to variance.



Our Challenges

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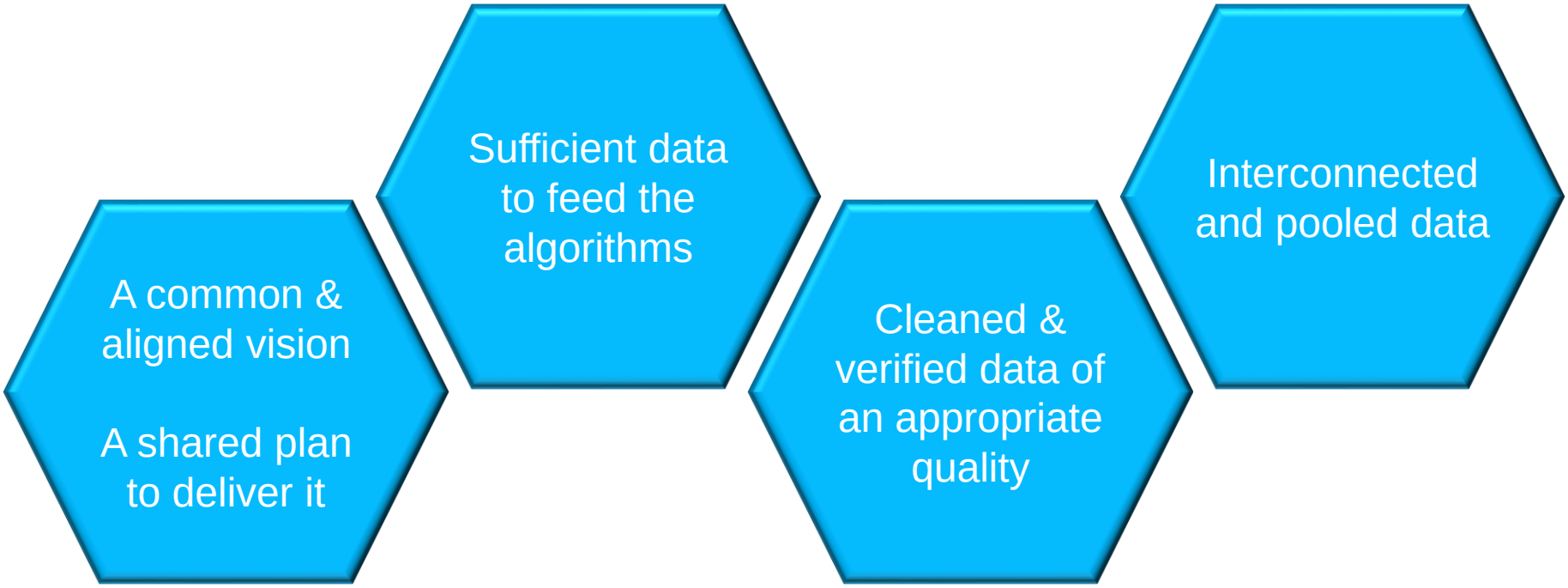

Having confidence in the data

Having confidence in how the data is managed and accessed

Providing a mechanism to leverage the data and innovate

Data Trust Definition

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Definition

"A data trust is a legal structure that provides independent stewardship of data.

The organisations that collect and hold data permit an independent institution to make decisions about how that data is used and shared for an agreed purpose.

The data trust becomes a steward of the data, taking responsibility to make decisions about the data and ensure they support the data trust's purpose"

…. but cannot be independent of data providers / data controllers.

Data Trusts

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https://theodi.org/article/odi-data-trusts-report/

Ingesting and Managing the Data

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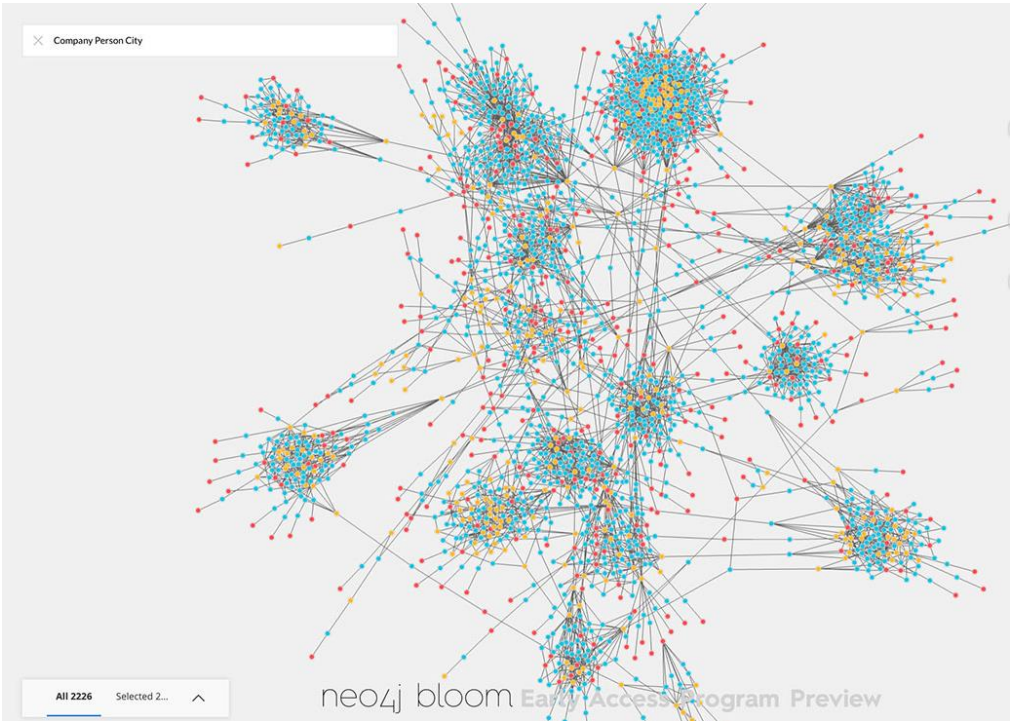
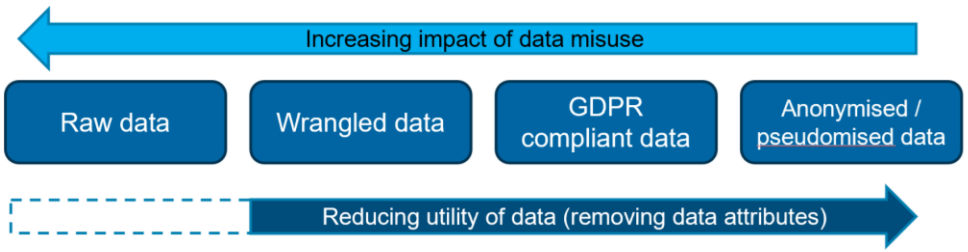
- Data is:
  - Identified
  - Ingested
  - Wrangled
  - Connected
  - Anonymised (if applicable)
- Permissioned as appropriate

We create a graph of project delivery data.





We turbocharge a new era in data enabled project delivery

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The Next Steps

Project Data Analytics T-Junction

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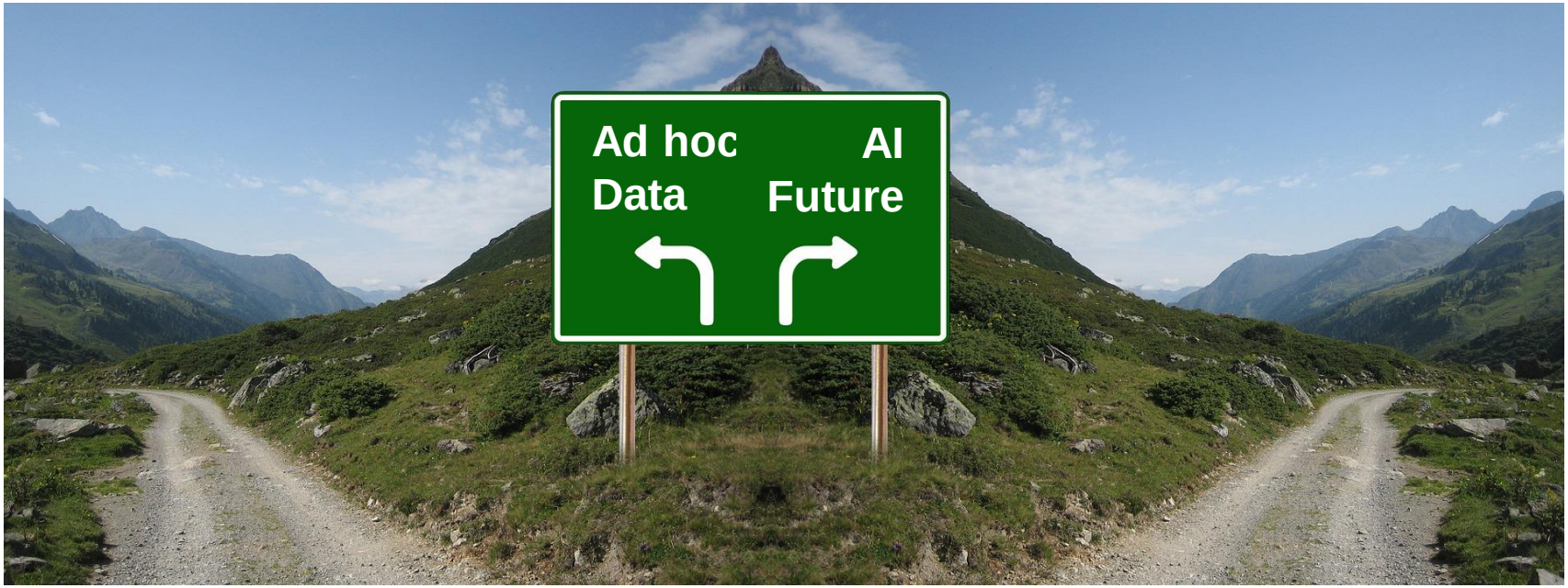

- We accept that our data is patchy
- We acknowledge that its not a priority
- We implement ad hoc improvements
- Data remains an exhaust plume
- Not really ‘invested’

- We believe in the vision
- We develop a roadmap to get there
- We begin to lay the foundations
- We upskill, attend hacks, reshape
- We are ‘invested’

We are reaching a major decision point

Developing the Detail

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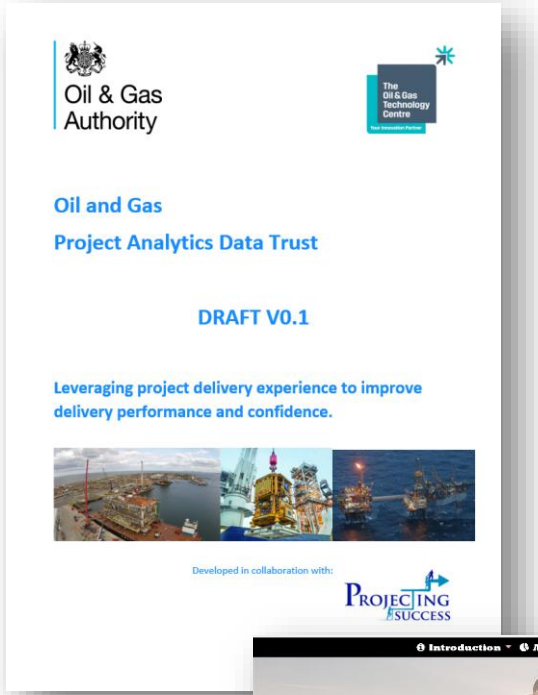

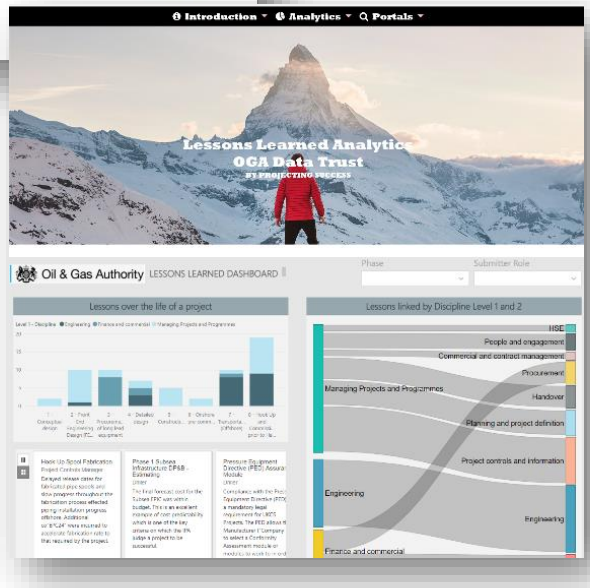

Phasing

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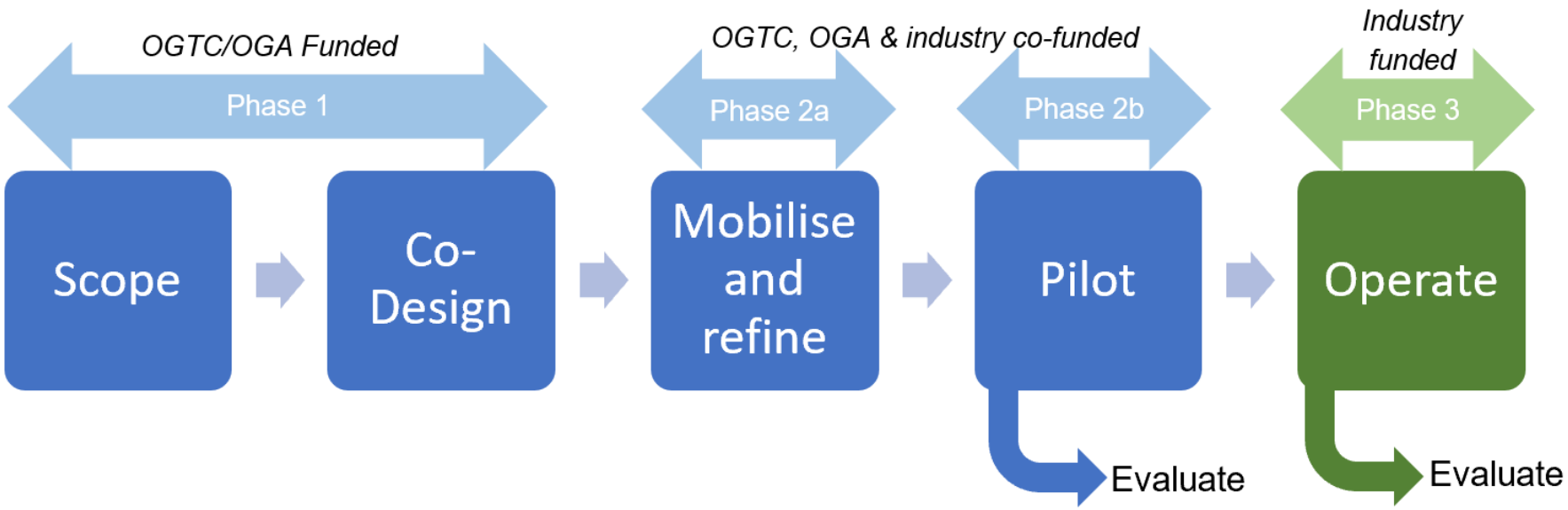

How Will It Work?

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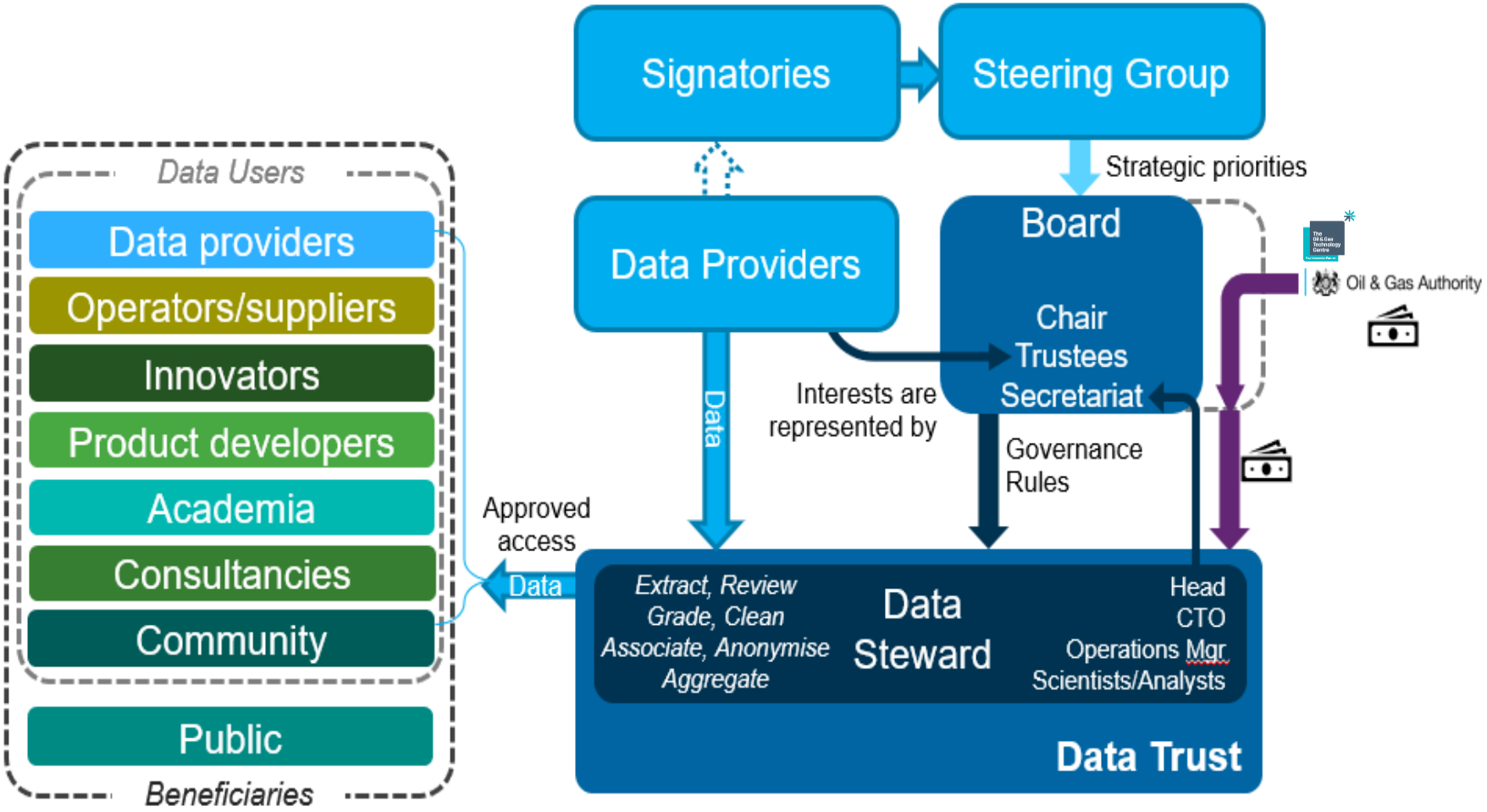

What Will We Get?

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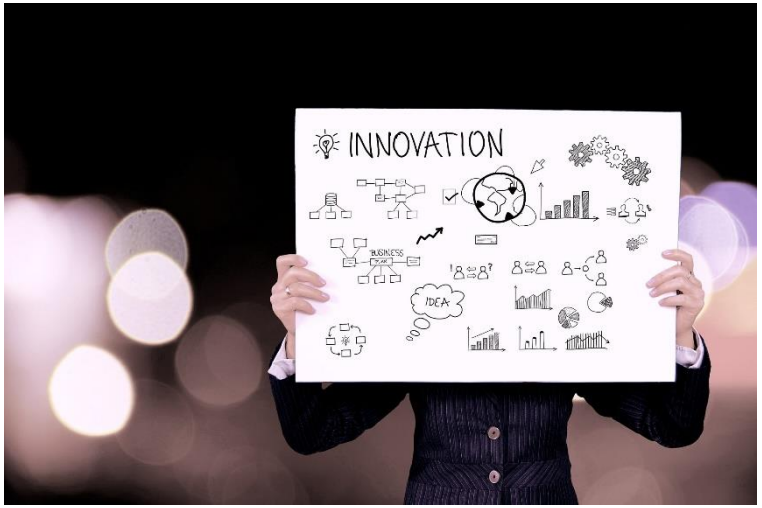
- A secure infrastructure to pool project delivery data

- An interconnected dataset to:
  - Leverage project delivery experience
  - Drive towards AI enabled project delivery

- An improvement in data quality and inspiring people to get involved

- Sufficient volume of data to turbocharge an new era of innovation



The Benefits for Industry

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- Use the insights to drive improvements in delivery efficiency, predictability and reduce outliers.
- Move from anodyne lessons learned to interconnected insights.
- Extract value from previous projects, with relevant insights.
- Pool data for the collective benefit. Collaborative working.
- Prepare your organisation for a future underpinned by machine learning

Lower bids costs

Lower Risk Investments

Improved Delivery Efficiency

Improved Shareholder Value

Increased Delivery Confidence

Improved Competitiveness

Increased investment

Improved Profitability

Deriving maximum value from project activity

The ability to begin to avoid the avoidable and improve certainty of outcomes

Call to Action

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- The data trust **WILL** happen
- **You** can help to shape it
- **You** can help to support it
- **You** can provide data to enable it to thrive
- **You** can shape how we leverage the data
- **You** can help develop the roadmap towards an AI enabled future

YOU can help to transform project delivery

How to Get Involved

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1. **Operators and supply chain:**
    1. Refinement of the data trust rules
    2. Commit effort to make the trust a success
        1. Identify trustees
        2. Identify the challenges to be addressed
        3. Provide data

2. Broader community:
    1. Upskill and prepare for a new future
    2. Help to extract value from the data trust when it is operational
    3. Inspire innovation

How to Get Involved

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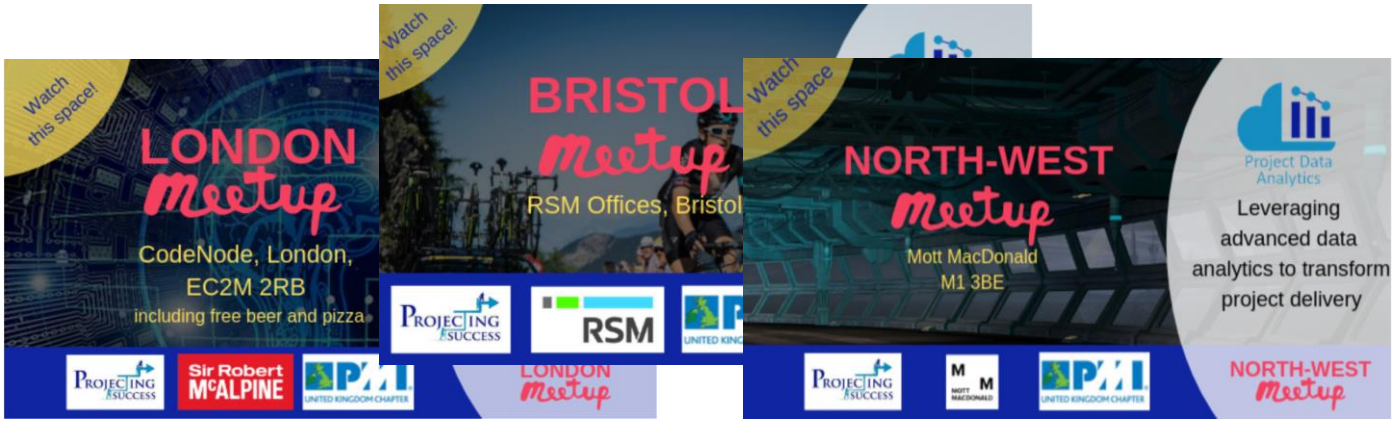
1. Attending meetups and events (https://projectdataanalytics.uk/event-page)



Aberdeen Coming soon

2. Hands on experience via hackathons (https://bit.ly/2HUbV0K)

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The Vision

To transform how we leverage our delivery experience from a world of lists of lessons learned towards an environment where project managers are provided with insights that are highly relevant to their circumstances. Where we anticipate potential problems and head them off in advance.

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The Oil & Gas Technology Centre
Your Innovation Partner

Projecting Success

Thank you – Questions

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