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# How Data and Collaboration Could Ensure Successful Project Delivery



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

May 2019



# Oil & Gas Authority

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).

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# OGA's Initiatives to Support Successful Project Delivery

## 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





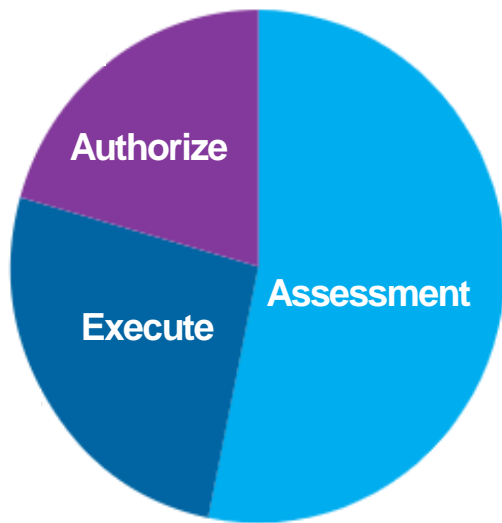
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# What is the prize?

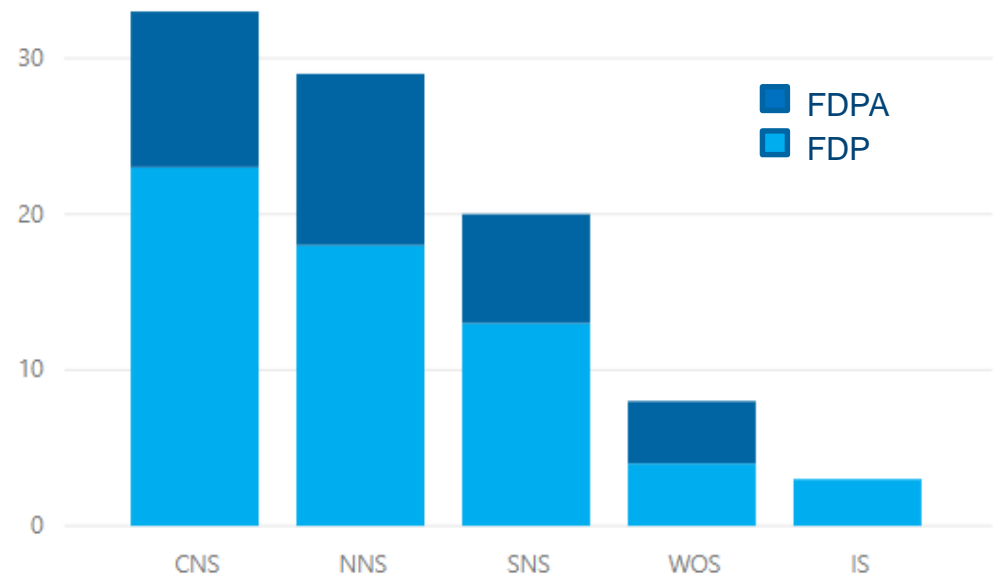
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# The OGA is Tracking over 90 Projects



Approval Status



Number of Projects

# Analysis of Project Performance

## 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

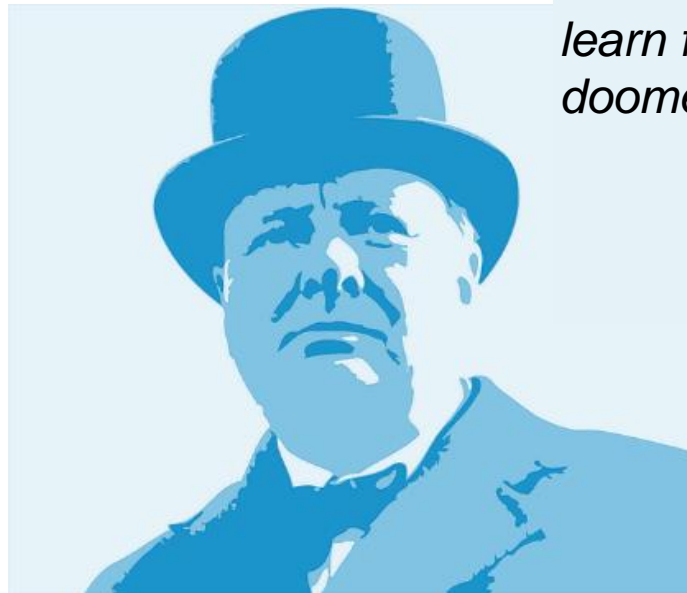
	Mean cost overrun	Frequency of cost overrun	Mean schedule overrun	Frequency of schedule overrun	Mean benefit overrun	Frequency of benefit shortfall
Solar power	1%	4 out of 10	0%	2 out of 10		
Energy transmission	8%	4 out of 10	7%	1 out of 10		
Wind power	13%	6 out of 10	22%	6 out of 10		
Pipeline	14%	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		
<b>Oil+Gas</b>	<b>31%</b>	<b>8 out of 10</b>				
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
<b>Oil+Gas</b>	<b>31%</b>	<b>8 out of 10</b>				
	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		

There is a big prize to get after

# Lessons Learned

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."*

# Lesson learned Report

## Lessons Learned from UKCS Oil and Gas Projects 2011-2016

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

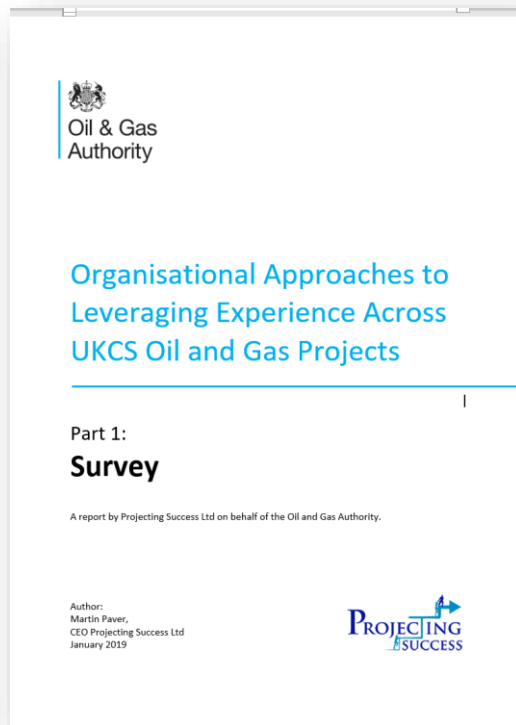


“Since 2011 fewer than 25% of oil and gas projects have been delivered on time, projects averaging 10 months delay and coming in around 35% over budget”



# Lesson Learned Data

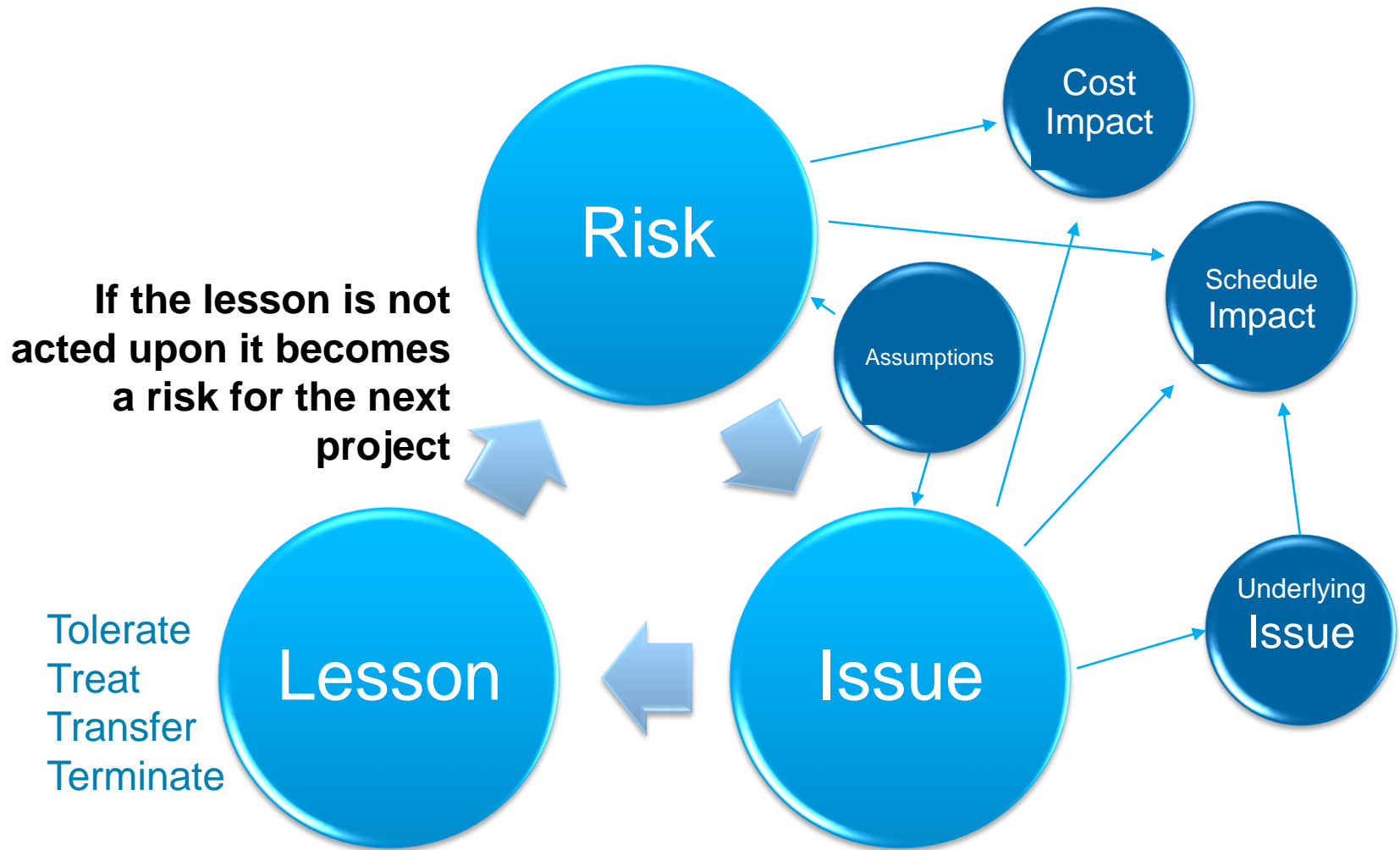
In 2018 the OGA engaged with industry to examine the sector approach to lessons learned and how it could be improved.



## 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



# Its Simple...Just Change the Term

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

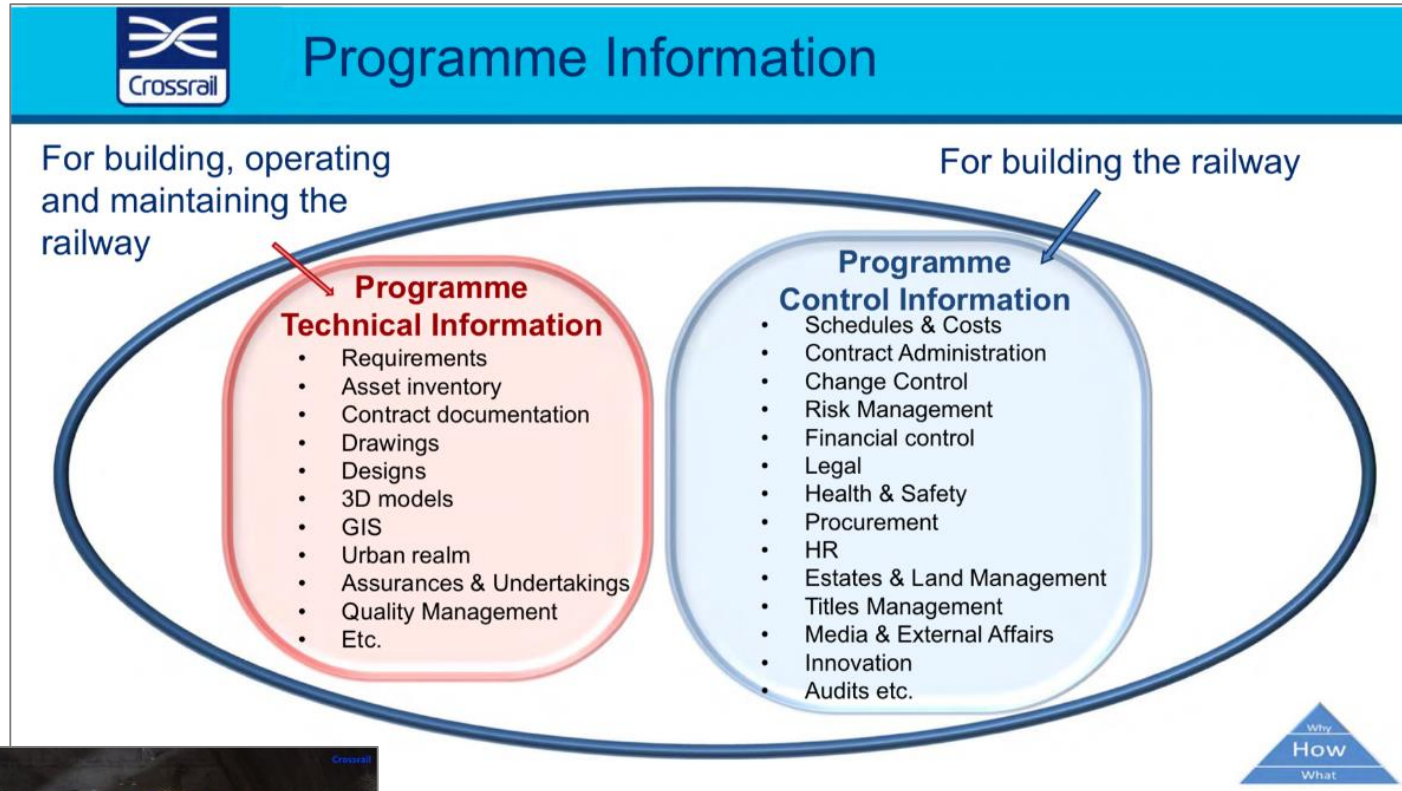
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# An Example: Crossrail



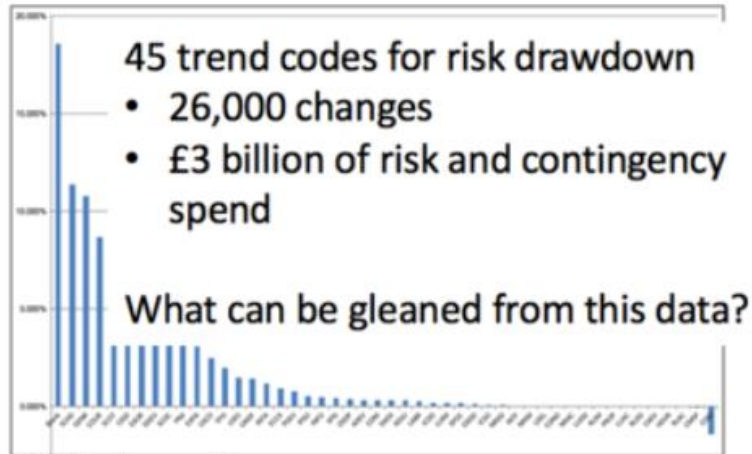
# An Example: Crossrail

## Programme Control Information

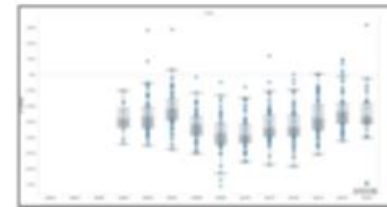
- Schedules & Costs
- Contract Administration
- Change Control
- Risk Management
- Financial control
- Legal
- Health & Safety
- Procurement
- HR
- Estates & Land Management
- Titles Management
- Media & External Affairs
- Innovation
- Audits etc.



# Data is the Key



**Risk drawdown**



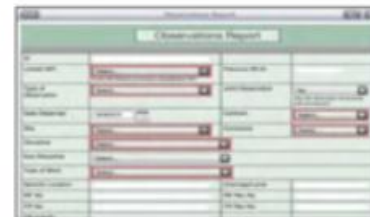
**Cost data**



**Earned value data**



**Installation reports**



**Observations reports**



**KPI reports**



**Dashboards and progress reports**



What happens to all this Project data?

"Project Controls 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?**

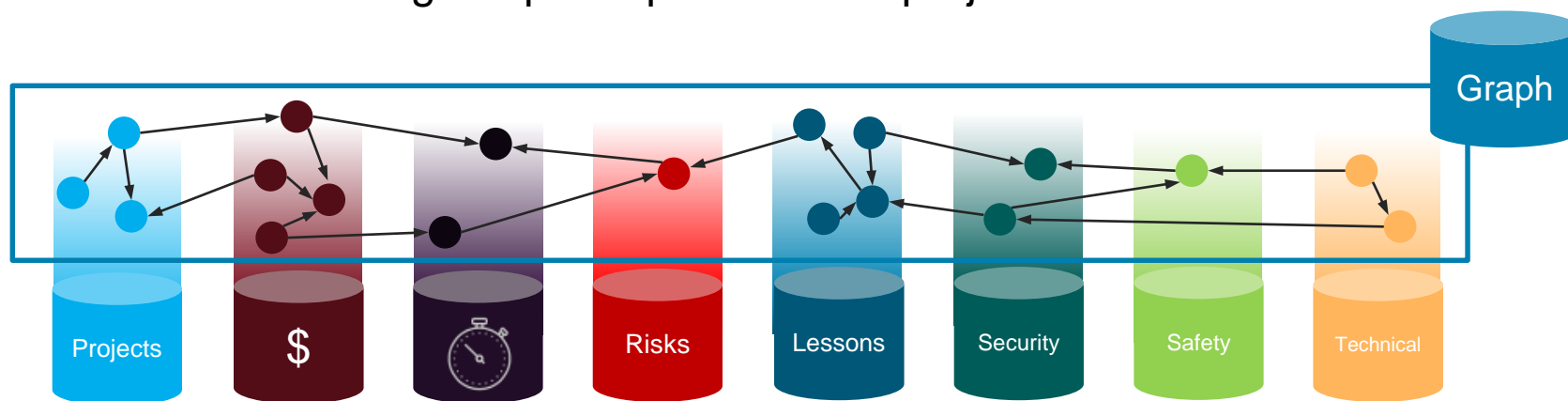


# Data Graph – Lesson Learned

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.

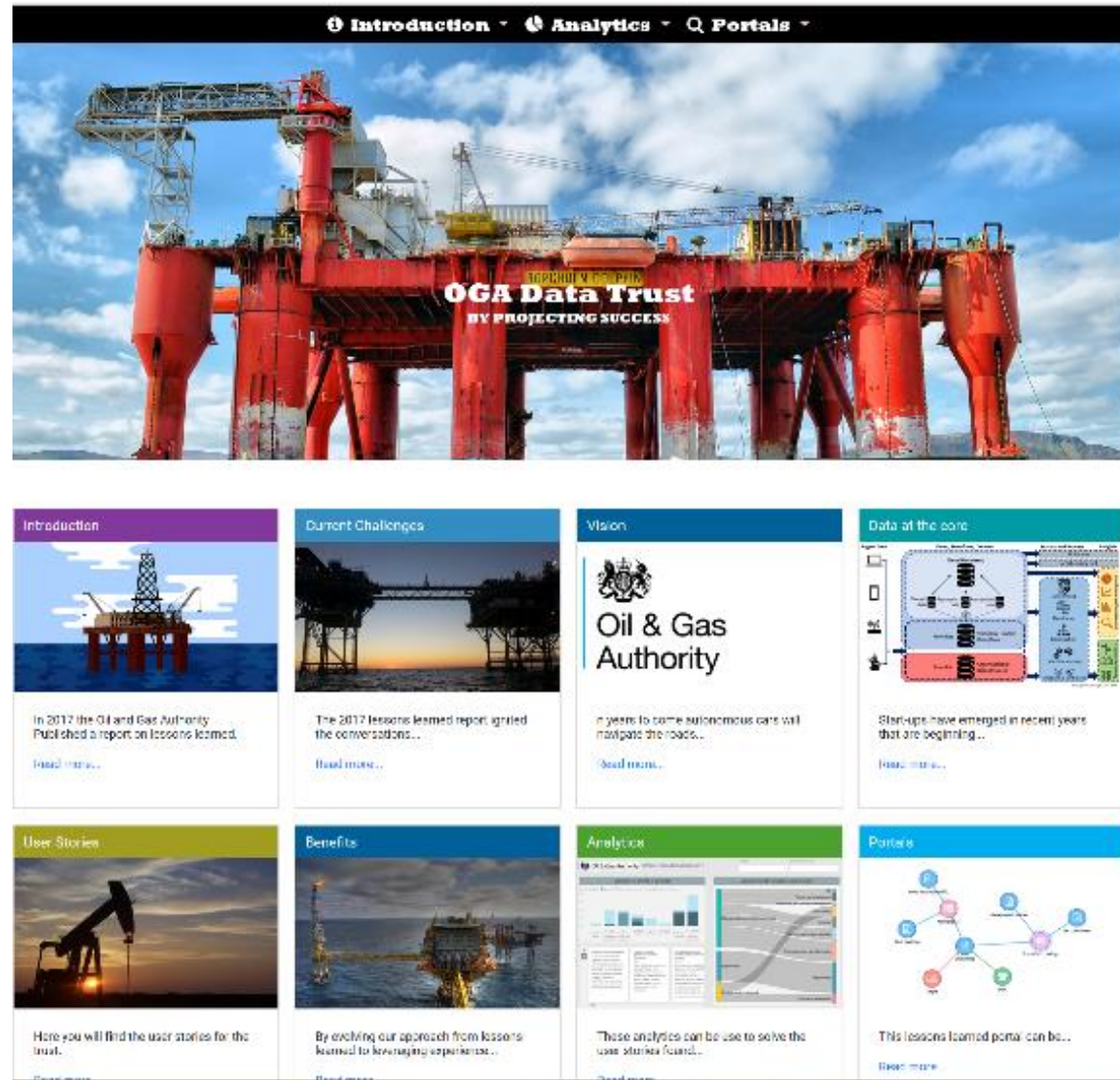


# Graph Database Portal

Enables users to explore connectivity between lessons.

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

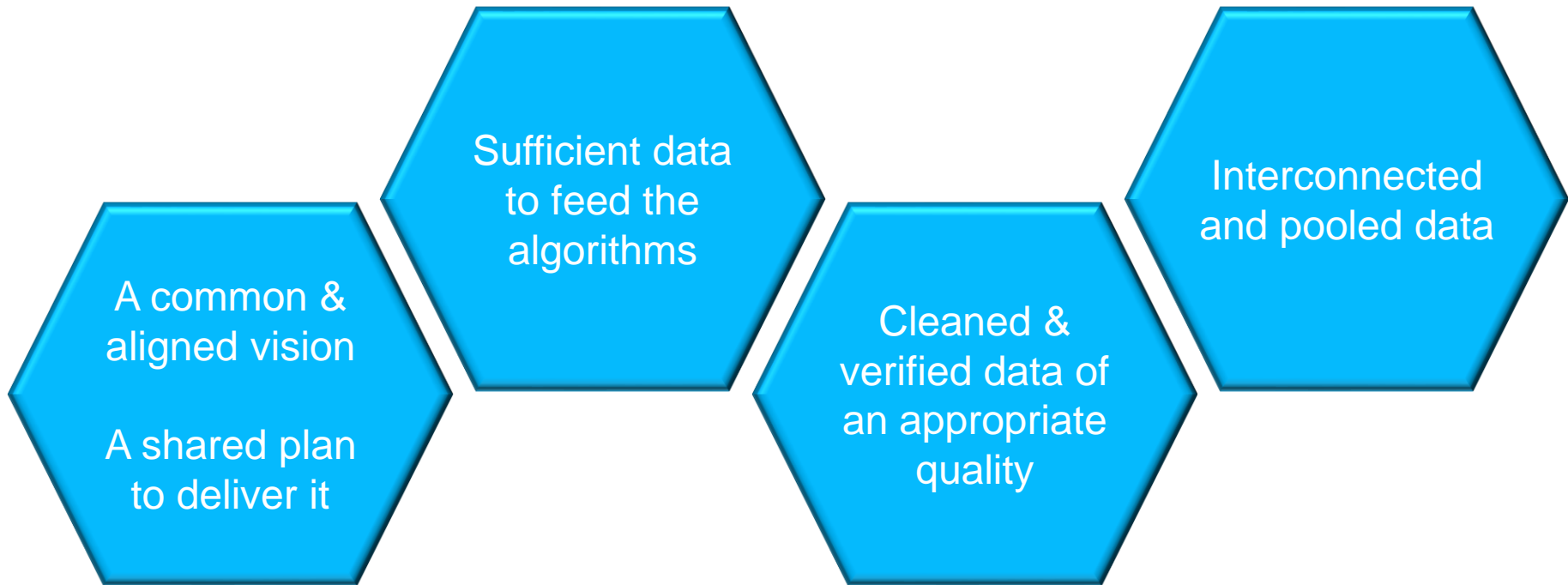
Ultimately, provides the foundation for AI to begin to identify early warnings and the predisposition of certain projects to variance.



The screenshot displays the OGA Data Trust website interface. At the top, a navigation bar includes 'Introduction', 'Analytics', and 'Portals'. Below this is a large banner image of an offshore oil rig with the text 'OGA Data Trust BY PROJECTING SUCCESS'. The main content area is a grid of eight tiles:

- Introduction:** In 2017 the Oil and Gas Authority Published a report on lessons learned. [Read more...](#)
- Current Challenges:** The 2017 lessons learned report ignited the conversations... [Read more...](#)
- Vision:** In years to come autonomous cars will navigate the roads... [Read more...](#)
- Data at the core:** Start-ups have emerged in recent years that are beginning... [Read more...](#)
- User Stories:** Here you will find the user stories for the trust. [Read more...](#)
- Benefits:** By evolving our approach from lessons learned to leveraging experiences... [Read more...](#)
- Analytics:** These analytics can be used to solve the same stories found... [Read more...](#)
- Portals:** This lessons learned portal can be... [Read more...](#)

# Our Challenges



Having confidence in the data

Having confidence in how the data is managed and accessed

Providing a mechanism to leverage the data and innovate



## 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

How do we unlock the value of data while preventing harmful impacts?

### What is a data trust?

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.

### Why set up a data trust?

There are different potential benefits that setting up a data trust could help to bring.

A data trust is an independent institution, so it could help balance conflicting views and incentives about how data should be shared and who can access it.

A data trust could help organisations deliver some of the many benefits that better data access can bring – from enabling collaboration on common challenges to creating new products, services or insights.

A data trust could be used to reduce costs and skills needed to steward and share data, or be designed to generate revenue.

A data trust could create opportunities for startups and other businesses and innovate with enable new technologies, such as AI, that help people make more informed decisions, create jobs and stimulate growth.

A data trust could increase transparency in data is used and the and organisations in otherwise 'walled in' when the data is about use effects them.

A data trust could ensure benefits are distributed widely, ethically and equitably.

### Who can be involved?

Many different types of people or groups might be involved in creating, using or advocating for a data trust.

Data holders from the private, public and third sectors could increase access to the data they hold, while reducing the costs and skills they need to do so.

Groups working with data holders could help them scope, design and operate a data trust, or independently assess it so that other people know whether to trust it.

Citizens and consumers might advocate for a data trust to be created because they want the decisions about how data about them or without use affects them.

## What is a data trust?

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

Find out more

This was produced a project funded by Government's Office Innovate UK. The views are those of the author.

Credits: Thanks to an amazing team of designers and creatives: Adam Phipps / Phipps Design Ltd, David Smith / Smith & Co. Design

## Why set up a data trust?

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A data trust could be used to reduce costs and skills needed to steward and share data, or be designed to generate revenue.

A data trust could create new opportunities for startups and other businesses to access and innovate with data, and enable new technologies, such as AI, that help people make more informed decisions, create jobs and stimulate growth.

A data trust could make control more representative over how data is used and shared, so people have a say who otherwise wouldn't have, especially when the data is about them or its use affects them.

A data trust could ensure data's benefits are distributed more widely, ethically and equitably.

## Data trusts could be used in lots of different ways...

Cities or boroughs could use data trusts to decide how data that's collected by sensors in the built environment is used and shared to make cities easier to navigate for citizens.

NGOs or charities could use data trusts to make sure that data created by academics or businesses can be used to solve a problem, like illegal wildlife trade or food waste.

Businesses could use data trusts to meet consumer demand for more participatory decisions on how data is to be shared and used, or to collaborate on a shared goal.

AI developers could use data that's made available via a data trust to develop new technologies, which people can use to make better and more informed decisions, create jobs and stimulate economic growth.

## What is a data trust?

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

'Data stewards' decide who has access to data, under what conditions and who can benefit from it. Organisations that collect and hold data usually have this role.

With data trusts, 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.

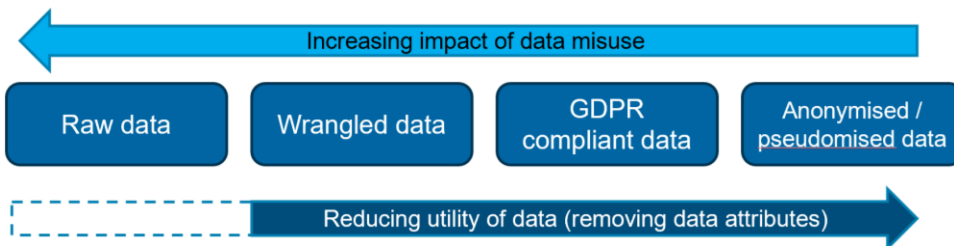
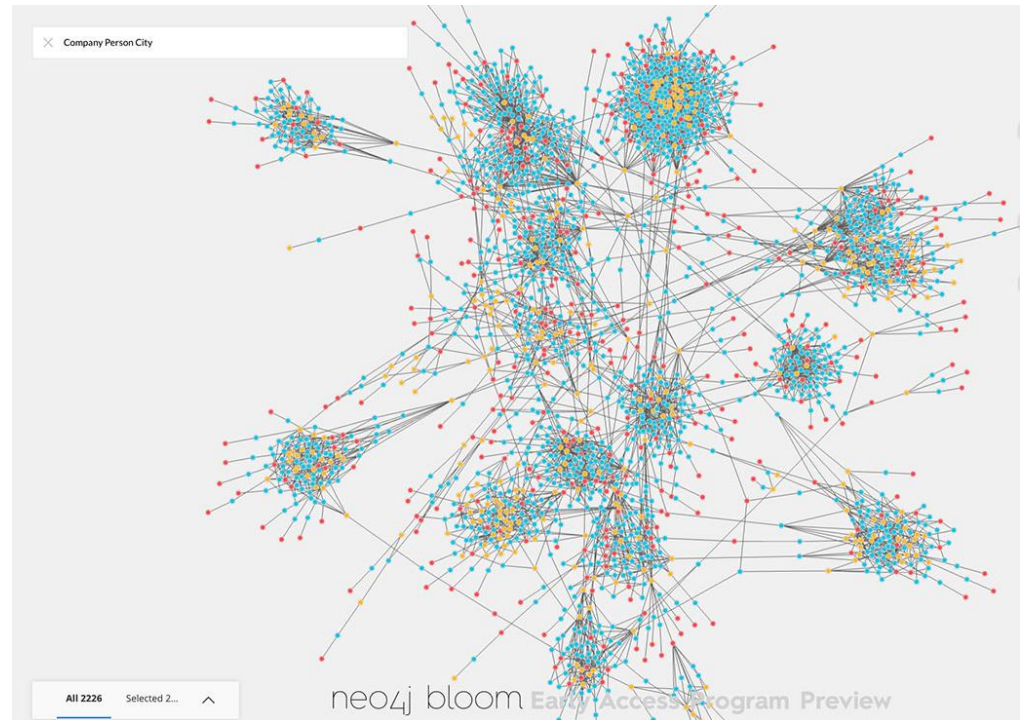
The data trust becomes a steward of the data.

Trustees of the data trust take on responsibility to make decisions about the data – how it is used and shared. They have freedom to share data in ways that unlock its value. They also take on some liabilities – they must ensure these decisions support the purpose of the data trust and the benefits it is intended to bring.

# Ingesting and Managing the Data

- 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

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# 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

## Data Trusts

ODI

### How do we unlock the value of data while preventing harmful impacts?

#### What is a data trust?

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

The organisations that collect and hold data permit data-dependent activities to make decisions about how that data is used, and shared for an agreed purpose.

The data trust becomes a steward of the data, being responsible to make decisions about the data and ensure they support the data trust's purpose.

#### Why set up a data trust?

There are different potential benefits that setting up a data trust could help to bring.

A data trust can act as an independent arbiter, so it could help balance conflicting data and insights about how data should be shared and who can access it.

A data trust could help organisations deliver some of the same benefits that better data access can bring – from enabling collaboration on common challenges to creating new products, services or insights.

A data trust could be used to reduce costs and risks needed to deliver a data trust, or be designed to generate revenue.

A data trust could create new opportunities for data-led products and services to access and combine with data, and create new insights, such as AI, that have never been more informed decisions, create jobs and stimulate growth.

A data trust could make control of data transparent and give the data its own and share it so people and organisations have a say who otherwise wouldn't have, especially when the data is about them or its use affects them.

A data trust could ensure a data's benefits are distributed more evenly, directly and equitably.

#### Who can be involved?

Many different types of people or groups might be involved in creating, using or advocating for a data trust.

Data holders from the private, public and third sector could increase access to the data they hold, while making the best use of it and what they need to do so.

Organisations working with data holders could have more control and operate a data trust, or independently assess first that other people know whether to trust it.

Others and consumers might advocate for a data trust to be created because they want the decisions about how data about them, or whose use affects them, is shared or used to be more open, transparent and collaborative.

Data users might engage in data trusts because they want access to data held by organisations, which might be granted to them if a data trust has control over how the data is used and shared.

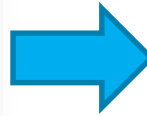
Government might introduce a data trust, for example because data holders are unfairly restricting access. In other cases they might support people to create data trusts themselves through funding and sharing research on how to do it.

**Find out more**

The report was produced as part of a project funded by the UK Government's Office for AI and Innovation UK. The views are those of the authors.

**Find out more, contribute to our research and develop data trusts with us at [trusts.odg.ox.ac.uk](https://trusts.odg.ox.ac.uk)**

ODI: Open Data Institute 2019. <https://www.odg.ox.ac.uk>



## Oil and Gas Project Analytics Data Trust

DRAFT V0.1

Leveraging project delivery experience to improve delivery performance and confidence.

Developed in collaboration with:

Introduction Analytics Portals

### Lessons Learned Analytics OGA Data Trust

Oil & Gas Authority LESSONS LEARNED DASHBOARD

Phase: [dropdown] | Submitter Role: [dropdown]

Lessons over the life of a project

Level 1 - Discipline: [dropdown] | [dropdown] | [dropdown] | [dropdown] | [dropdown] | [dropdown]

Lessons linked by Discipline Level 1 and 2

Managing Projects and Programmes

Engineering

Finance and commercial

People and engagement

Commercial and contract management

Procurement

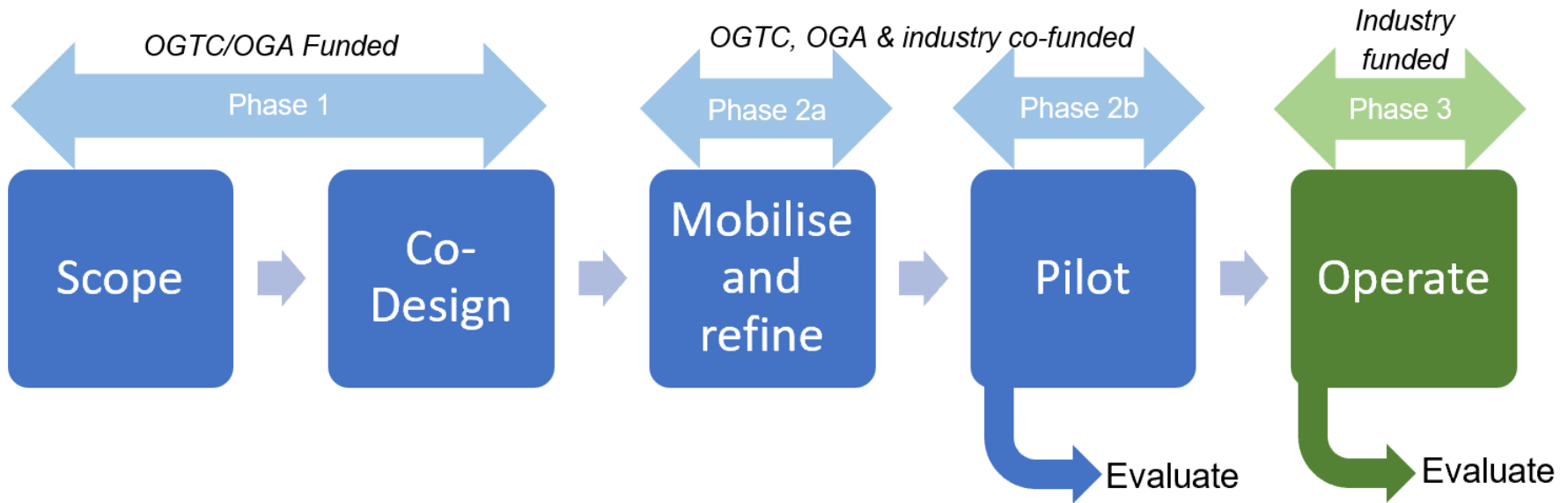
Hardware

Planning and project definition

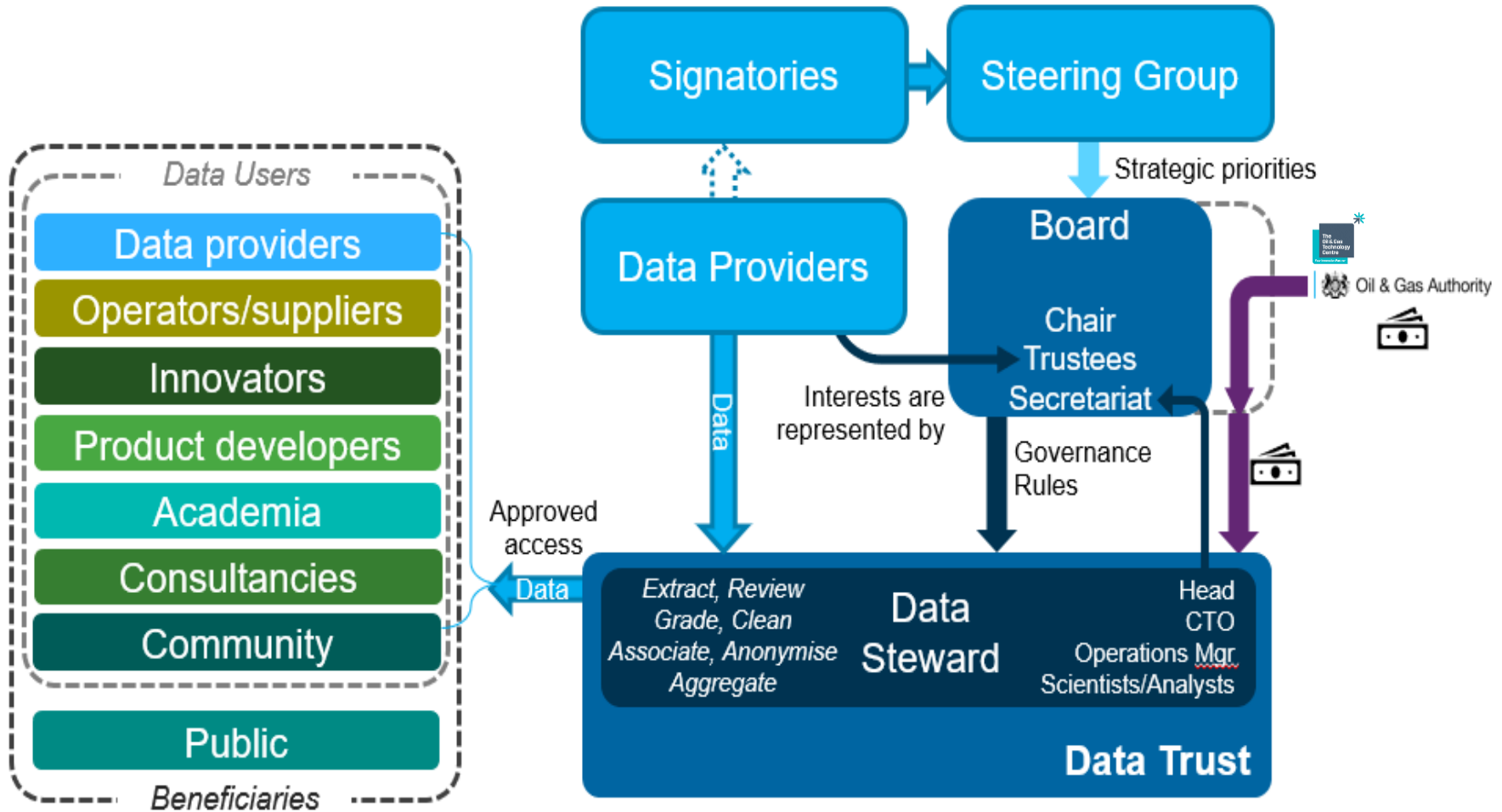
Project controls and information

Financing

# Phasing

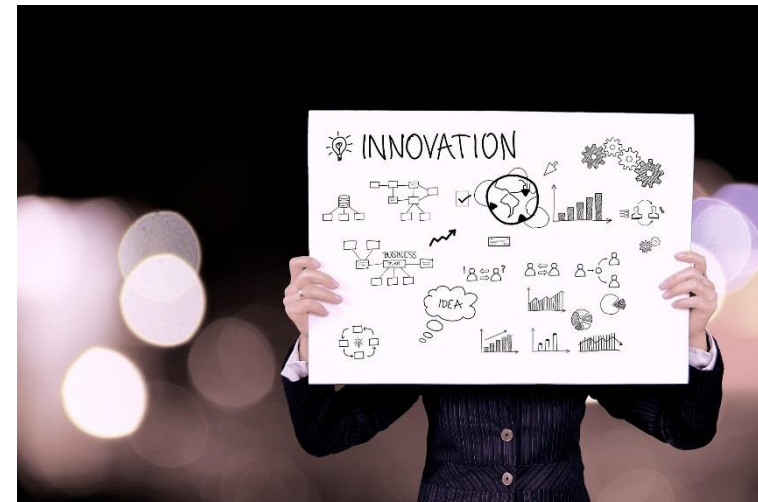


# How Will It Work?



# What Will We Get?

- 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

- 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

Improved Delivery Efficiency

Increased Delivery Confidence

Increased investment

Lower Risk Investments

Improved Shareholder Value

Improved Competitiveness

Improved Profitability



**Deriving maximum value from project activity**

# Call to Action

- 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



## 1. Operators and supply chain:

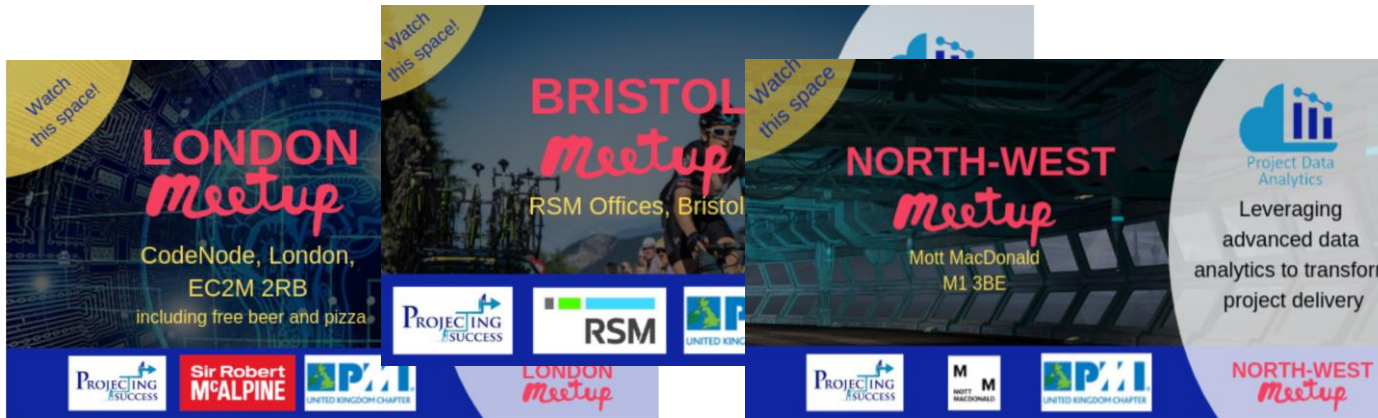
1. Refinement of the data trust rules
2. Commit effort to make the trust a success
  1. Identify trustees
  2. Identify the challenges to be addressed
  3. Provide data

## 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

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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# Thank you – Questions

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Andrew Buchan  
OGA - Senior Project Advisor

Martin Paver  
CEO/Founder

[www.projectingsuccess.co.uk](http://www.projectingsuccess.co.uk)

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