

# Potential Business and Cost Model

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OEDA



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**The Offshore Energy Digital Architecture (OEDA) project is a data sharing platform that enables awareness and access to relevant datasets, shared analytics and increased use of data across the sector.**

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# 1.0

## Summary

The Offshore Energy Digital Architecture (OEDA) project is a data sharing platform that enables awareness and access to relevant datasets, shared analytics and increased use of data across the sector. This is to enable decision-making, increased use of automation, remote control technologies and improved overall operational efficiency.

OEDA Report 1 - Data Sharing Landscape captured the output of an extensive literature review that defined the OEDA Requirements from a consolidated set of recommendations, best practices and lessons learned from existing implementations.

OEDA Report 2 - Technical Feasibility demonstrated the concept was feasible and the technologies required were mature.

OEDA Report 3 - Pilot Architecture and Ontology Design further demonstrated how the pilot based on Palantir Technologies' Foundry platform could be adapted to meet the OEDA requirements.

The purpose of this report is to inform the creation of a business and cost model for OEDA based on the pilot programme. The approach was to evaluate organisations that are managed collaboratively that offer similar secure, sector-wide services from the aerospace, defence and rail industry using publicly available information. The development of a specific business and cost model for the pilot is out of scope as further work is required to agree both governance and technical standards. Whilst costs from other organisations were presented, the scaling of existing costs from the pilot programme is not possible as the dataset is too small, not reflecting the long-term usage patterns envisaged.

To support a potential business model for OEDA, a number of legal frameworks that support collaborative working have been examined including case studies from other industries. At least two unique aspects of the offshore industry application have been highlighted. The OEDA organisation is likely to generate a curated data catalogue that is a valuable asset and secondly that some offshore segments are relatively immature and will require different types of representation compared to the case studies from other industries.

It was also identified that these successful implementations of sector wide services are commercially driven and run by industry participants for the benefit of their industry. It is proposed that a formal step is undertaken to preserve the curated data catalogue under extreme conditions such as the use of an Asset Lock as well as a state or government agency taking a custodial position with regards representation of market segments that are in their infancy, such as hydrogen and CCS-based companies.

It is not possible to estimate costs for such an organisation without further input so an alternative macro analysis has been performed looking at Exostar and The Rail Delivery Group to provide a first order estimate. Despite the variety of use cases, different sectors and different services on offer, the operating expenditure is estimated at £40million per year with a workforce of between 200 and 500. It has been emphasised that significant input is required from the community to generate a business and cost model. This report is intended to inform stakeholders of comparable examples from other industries, with some basic financial information, and with a view to identifying features that may benefit an offshore implementation of sector wide service managed collaboratively.

# 2.0

## Offshore Energy Digital Architecture (OEDA)

There are five reports for establishing a sector wide Offshore Energy Digital Architecture (OEDA):

1

OEDA  
Data Sharing Landscape

2

OEDA  
Technical Feasibility

3

OEDA  
Pilot Architecture and Ontology Design

4

OEDA  
Potential Business & Cost Model based on Pilot

5

OEDA  
Review

The first report defined and derived technical requirements for an OEDA Data Sharing Platform by evaluating existing implementations, best practices and recommendations from the wider energy sector and translated them into terms understood within the data industry. The second report demonstrated that an OEDA Data Sharing Platform is technically feasible using an example open source-based architecture to perform the evaluation. The third report was based on the pilot and showed the majority of the data sharing platform requirements could be met and how the platform could be used to explore other potential features. This report examines a potential business and cost model for OEDA. The final report documents the OEDA project and provides recommendations to establish next steps.

To help determine requirements for a sector wide data sharing capability, the OEDA project will use Palantir Technologies' Foundry<sup>1</sup> platform along with InDHu<sup>2</sup> as partners for a pilot. This was primarily due the success of Foundry in the aviation sector with the implementation in Skywise<sup>3</sup>. Airbus was able to create an ecosystem aimed at accelerating and expanding the exploitation of aviation data across multiple parties from customers, suppliers and even competitors in the field of aircraft maintenance.

The foundation for their digital platform was Foundry and many of the key personnel who supported the Airbus digital transformation are now part of the InDHu start-up. In the best traditions of the NZTC in trialling new technologies for the offshore energy sector, the OEDA project will evaluate Foundry as a pilot for the OEDA Data Sharing Platform with the expertise of InDHu in its deployment and configuration.

The purpose of this report series is not to substantiate retrospectively the pilot selection. The scope is to utilise the data sharing platform requirements to evaluate the pilot and inform subsequent platform evaluations from other providers. Experience from the pilot will help determine and refine the proposed requirements to support subsequent phases that will eventually lead to a tender for a data sharing platform.

<sup>1</sup> Palantir Technologies (2023) - [Palantir Foundry](#)

<sup>2</sup> InDHu (2023) - [Industrial Data Hub](#)

<sup>3</sup> Airbus (2023) - [Skywise](#) | [Enhance](#) | [Services](#)



# 3.0

## Scope

The purpose of this report is to inform a business and cost model for OEDA based on the pilot programme. The approach is to evaluate organisations that are managed collaboratively that offer similar secure, sector-wide services from the aerospace, defence and rail industries using publicly available information.

The development of a specific business and cost model for the pilot is out of scope as further work is required to agree both governance and technical standards, which this will inform. Whilst costs from other organisations will be presented, the scaling of existing costs from the pilot programme is not possible as the dataset is too small and does not reflect the long-term usage patterns envisaged.

OEDA Report 2 - Technical Feasibility classified three implementation strategies such as Make, Build and Buy. The Pilot programme reflects the latter, where an existing platform is adapted for the offshore energy sector. The proposed legal frameworks and organisational structures in this report assume the use of an existing externally provided toolset.

Should the community embark on a Make or Build approach, Report 2 identifies additional considerations which will influence the structure and operating model of the organisation; these are not reflected in this report which is based on the pilot.

# 4.0

## Background

In 2020, the Business Case for OEDA (included in Appendix VII of the Net Zero Technology Transition Programme report) identified “the complexity and scale of the challenge to integrate the data from multiple organisations, sectors, technologies, and solutions is substantial. There is a significant risk that meeting the 2045 net zero target will be impossible without investment in deploying key digital technologies in support of this target. Transformation will be excessively costly if these technologies are not deployed in a co-ordinated, collaborative way to avoid a slower, more expensive transformation”<sup>4</sup>.

OEDA is fundamentally a data sharing platform that enables awareness and access to relevant datasets, demonstrates “shared analytics platforms that are as open as possible”, and promotes “increased use of data across the sector to support decision making, increased use of automation, remote control technologies, and improved operational efficiency”.

In August 2021, the Scottish Government awarded the NZTC a £16.5million investment<sup>5</sup> programme to accelerate a range of energy transition projects to help deliver Scotland’s net-zero economy. The Net Zero Technology Transition Programme is expected to enable £403billion for the economy and 21,000 jobs by 2050; it covers seven projects that have matched funding from industry:

Many of the stakeholders for OEDA include participants in the Offshore Energy Data Strategy (OEDS) Taskforce, which made two key strategic recommendations with regards to a data sharing platform. OEDA is not an isolated initiative but forms part of a significant movement within the wider energy sector that has produced multiple projects and at least eight related reports, for both onshore and offshore, over a three-year period between June 2019 and June 2022.



<sup>4</sup> The Oil & Gas Technology Centre (2020) - Net Zero Technology Transition Programme - Appendix VII Offshore Energy Digital Architecture Business Case.

<sup>5</sup> Scottish Government (2021) - [Investing in net-zero technology - gov.scot](https://www.gov.scot/publications/investing-in-net-zero-technology/pages/2/)

# 5.0

## Data Catalogue and Data Sharing Fabric

The overall architecture of the OEDA Data Sharing Platform is in response to the Offshore Energy Data Strategy (OEDS) Taskforce recommendations: Action 2.1: Offshore Energy Data Catalogue (OEDC) and Action 2.2: Data Sharing Fabric (DSF).

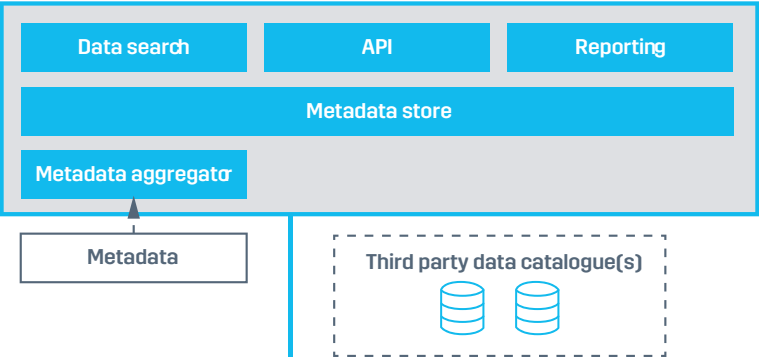
The purpose of the data catalogue is to “improve data visibility and discoverability”<sup>6</sup>. Figure 1 shows three sets of interface.

- Data search to conduct manual queries.
- Application Programming Interface (API) to enable programmatic access and support machine-to-machine communication.
- Reporting function to provide feedback to the community on engagement and other monitoring parameters.

All three are based on a metadata store, which is populated either through a metadata aggregator, a feature that is relatively novel compared to other data catalogue implementations or third-party data catalogue(s) - compatible implementations of OEDA – commonly referred to as a federation of services.

Once the data user has identified the resource of interest, and if it is classified as open, the DSF enables direct access to the resource hosted by the data provider, crucially without requiring any authentication. For resources classified as shared, the DSF provides the means to authenticate and checks the data user’s authorisation against the governance framework prior to providing access to the resource held with the data provider – with no further authentication required. In the figure above, both types of requests are referred to as APIs without specifying the technical protocol and should not be interpreted as REST<sup>7</sup> APIs.

### Data Catalogue (OEDC)



### Data Sharing Fabric (DSF)

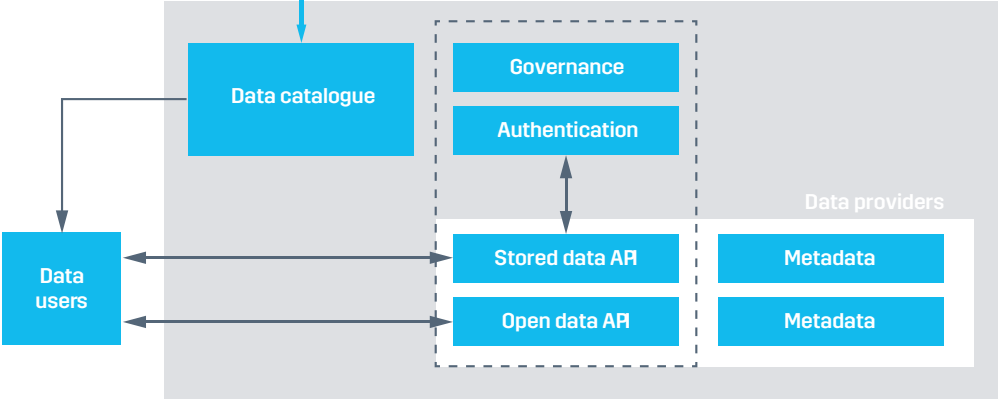


Figure 1: Architecture of OEDC and DSF from OEDS Report with metadata annotation

<sup>6</sup> Energy Systems Catapult (2022) - [Delivering a Digitalised Energy System](#)  
<sup>7</sup> Mozilla (2023) – [MDN Web Docs Glossary: REST](#)



The DSF is the “digital components and protocols to facilitate autonomous data transfer”, which along with the data catalogue, has inherent requirements of the data providers. A collection of metadata can only be constructed if the data providers make it available and that autonomous data transfer through the DSF is only possible if the Identifier or Unique Resource Locator (URL) refers directly to the resource and not an intermediate stage. These two areas will require co-operation and co-ordination within the industry to minimise the disruption and maximise the collaboration between the OEDA Data Sharing Platform and the data providers. Furthermore, these interfaces and underlying agreements will have to change as the offshore industry evolves its use of data as identified within the OEDS report<sup>8</sup>.

A detailed technical description of both components is provided in OEDA Report 2 – Technical Feasibility<sup>9</sup>, and the adaption of the pilot to address these actions and meet the requirements from the wider energy sector are addressed in OEDA Report 3 – Pilot Architecture and Ontology Design<sup>10</sup>.

Agreement around the minimum metadata (fields and keywords) and metadata transfer (protocols and approaches) could be reached through complete consensus, by majority vote or weighted voting (weighted by an external factor such as market share or organization size). These mechanisms are potentially open to abuse such as an “activist” member withholding consent (where complete consensus is required) or existing market leaders seeking to maintain dominance (weighted voting by market share). One common approach is through Standards Committees as used by professional engineering institutions<sup>11</sup> such as the Institute of Mechanical Engineers<sup>12</sup> to act as arbitrator and provide a degree of independence.

These examples illustrate the need for a governance framework that can resolve differences of opinion and is robust to stagnation by minority parties or dominance from incumbents. A key recommendation for the OEDA programme is the establishment of a governance framework that satisfies the needs of the community. These features are in addition to the core functions of an OEDA organisation managing the deployment and support of a sector-wide secure service.

**A key recommendation for the OEDA programme is the establishment of a governance framework that satisfies the needs of the community.**

<sup>8</sup> Energy Systems Catapult (2022) - [Delivering a Digitalised Energy System](#)

<sup>9</sup> NZTC (2023) - OEDA Report 2 – Technical Feasibility

<sup>10</sup> NZTC (2023) - OEDA Report 3 – Pilot Architecture and Ontology Design

<sup>11</sup> Engineering Council (2023) – [Professional Engineering Institutions](#)

<sup>12</sup> Institute of Mechanical Engineers - [Governance](#)

# 6.0

## Pilot for OEDA

The Pilot Architecture and Ontology Design<sup>13</sup> report details how Foundry could be adapted to satisfy the Offshore Energy Data Catalogue (OEDC) and Data Sharing Fabric (DSF) actions along with other relevant requirements from the wider energy sector.

It was also demonstrated that there are additional features within the pilot that can accelerate data sharing for data providers e.g. visibility on how their data is being consumed through the data lineage<sup>14</sup>. To assist in understanding, consuming and exploiting the data, the pilot has features to explore and create data products for non-technical users through Application Building<sup>15</sup>.

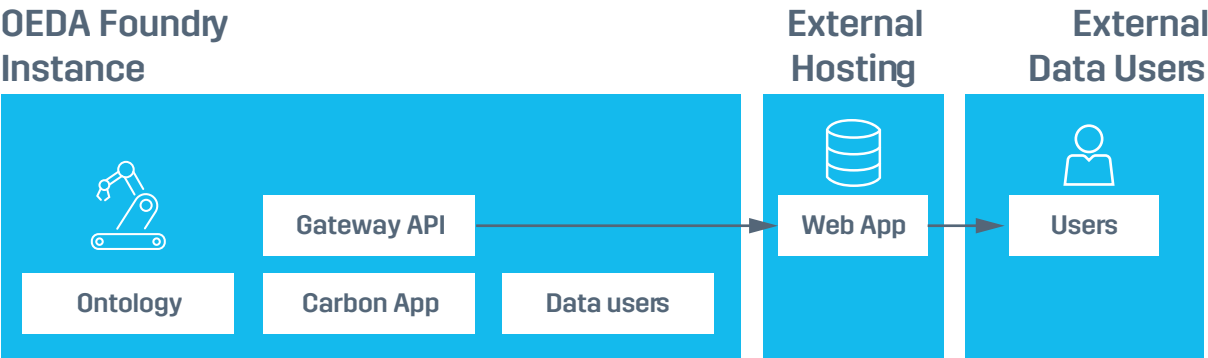
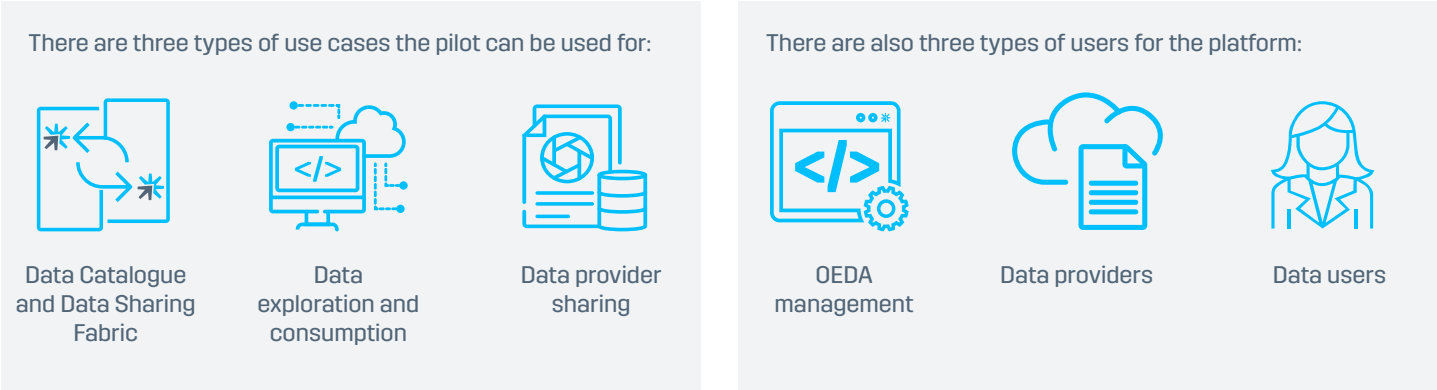


Figure 2: Access to OEDA based on the pilot

<sup>13</sup> NZTC (2023) - OEDA Report 3 – Pilot Architecture and Ontology Design  
<sup>14</sup> Palantir Technologies (2023) – Data Integration – [Data Lineage](#)  
<sup>15</sup> Palantir Technologies (2023) – Data Integration – [Application Building](#)

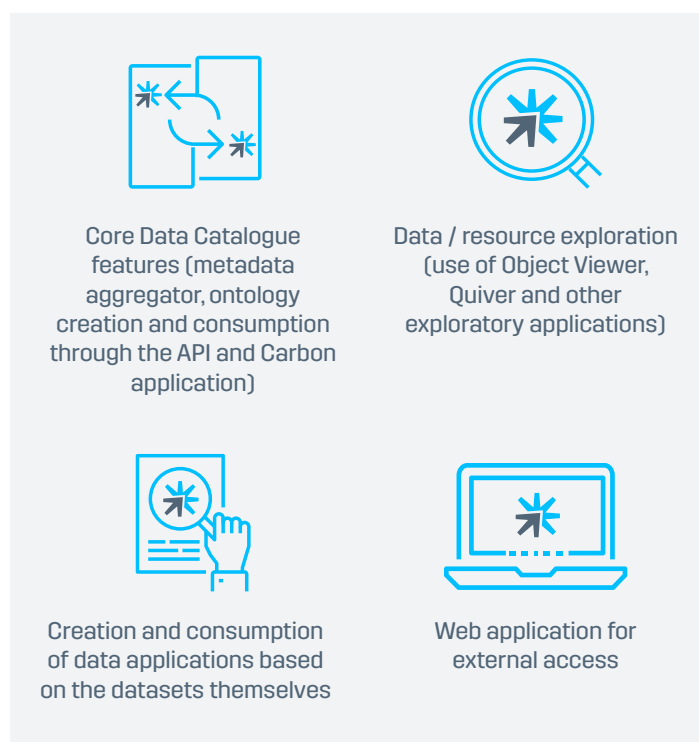
The OEDA management users codify and enforce the agreed interfaces and standards from the wider community such as the minimum metadata, manage and configure the metadata aggregators etc. The data providers manage how their data is connected to the OEDA Data Sharing Platform, get feedback on their data and the quality of their metadata. The data users access the catalogue as described in the previous section but can also use the pilot to explore the data itself as well as create applications based on the data if it is available within the Foundry platform.

Figure 2 shows a simplified architecture to show how users can access the Offshore Energy Data Catalogue based on the pilot:

A key requirement of the Presumed Open Access paradigm is access without authentication<sup>16</sup>. Due to the secure nature of Foundry, authentication is required to access most Foundry resources and in particular, the ontology.

The proposed mitigation was to utilise the Gateway Application Programming Interface (API) and construct a separate web application. Resources classed as Open could therefore be accessed directly whereas resources classed as Shared would require authentication into Foundry.

The costs associated with utilising the Pilot to meet both the OEDA and data practitioner requirements can be grouped as follows:



Although the types of use cases, users and costs illustrated here relate to the pilot, the majority of the requirements for the Business and Cost Model are likely to be platform agnostic. There is a general requirement to distribute costs, agree and evolve standards as well as provision a platform. Using a Make or Build implementation approach, as identified in OEDA Report 2 - Technical Feasibility<sup>17</sup>, will impose additional requirements to develop and then deploy a platform.

<sup>16</sup> NZTC (2023) - OEDA Report 1 - Data Sharing Landscape

<sup>17</sup> NZTC (2023) - OEDA Report 2 - Technical Feasibility

# 7.0

## Business Model

This section illustrates a number of collaborative organisations that have offered sector-wide secure services for the benefit of their respective industries. The purpose is to discuss and identify potential organisational or business features that may benefit the offshore industry in selecting and agreeing a model to support an OEDA Data Sharing Platform deployment.

The simplest approach is to seek a third party to obtain, configure and manage the Foundry platform on behalf of the stakeholders and users. The challenge is that a generic IT related third-party provider is unlikely to understand the nuances, basic expectations and commercial pressures of the offshore industry.

The quality of the service (in terms of uptime, features, changes and responsiveness) becomes a function of the quality of the written legalese between the parties. This means, the stakeholders will have to generate and write down every possible scenario as a means to look after their interests, which is incredibly difficult. In other sectors these types of services are therefore run by the industry for the benefit of the industry to mitigate these issues.

## 7.1 Legal Frameworks

A variety of legal frameworks are available in the UK that support collaboratively run organisations, some of which are employed by the three key examples illustrated below. The three most applicable legal frameworks are:

- Limited Company by Guarantee<sup>18</sup>
- Community Interest Company (CIC)<sup>19</sup>
- Community Benefit Society (CBS) as a form of Co-operative<sup>20</sup>





	Company Limited by Guarantee	Community Interest Company		Community Benefit Society
Purpose	Articles of Association (AoA)	1. Community interest benefit 2. Asset lock 3. Articles of Association		1. Community benefit 2. (Optional) asset lock
Profit	Yes but restricted by AoA	Dividends to asset locked bodies or capped for members		For community benefit only
Influence	 Tiered membership	 Tiered membership	 Share weighting	 One member one vote
Dissolution	Creditors and then by AoA	Residual assets reserved for community (asset locked bodies)		Assets for community benefit only

Figure 3: Potential Legal Frameworks

<sup>18</sup> Companies House (2023) - [Model articles for private companies limited by guarantee](#)  
<sup>19</sup> Office of the Regulator of Community Interest Companies (2023) – [Community Interest Companies](#)  
<sup>20</sup> Co-operatives UK Limited (2023) – [Community Benefit Societies](#)



## 7.1.1 Limited Company by Guarantee

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A Limited Company by Guarantee does not have shares or shareholders but instead has members or guarantors that guarantee a fixed nominal sum should the company become insolvent (typically £1). The absence of shares limits fundraising opportunities but equally as there is no ownership of a company it cannot be sold. It provides a legal structure for members to control the company with the possibility of different types of membership, typically with those who can or cannot vote.

Although there is no legal requirement that prevents the distribution of profits to members, most organisations using this framework are intended for a wider community benefit and use the Articles of Association, (equivalent to a constitution) to set out a governance framework.

The objectives of an organisation using this framework are referred to as objects. As it is a form of limited liability company, it provides the same protection to those running the organisation from company incurred debts.

## 7.1.2 Community Interest Company

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A Community Interest Company (CIC) has largely the same structure as other forms of limited companies but with a significant feature called an Asset Lock. As CICs are intended for the benefit of a community, the Asset Lock is a legal mechanism to ensure any assets or profits must be used for the benefit of the company. Typically, the profits are retained within the organisation but can be transferred out if strict requirements are met<sup>21</sup>. Whilst capital in rare occasions can be returned to members, other types of assets can only be transferred to other Asset Locked Bodies.

In practical terms, imagine the Offshore Energy Data Catalogue has been in service for 10 years – during that time, not only is the body of metadata significant, but the history of its usage, where data has been used, how often and by which users is a significant dataset. This would be recognised as a significant asset, which is of public interest.

The Asset Lock feature could be used to ensure that if the organisation dissolves due to debts, it is not simply sold but only transferred to an equivalent body intended for community benefit. It is a mechanism that could be used to guarantee that the collaborative work undertaken remains accessible in the most extreme circumstances.

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<sup>21</sup> Department for Business, Energy & Industrial Strategy (2016) - [Office of the Regulator of Community Interest Companies: Information and guidance notes - Chapter 6](#)

## 7.1.3 Community Benefit Society

Unlike the two previous examples, a Community Benefit Society is regulated by the Financial Conduct Authority (FCA) instead of Companies House. Much like a CIC, it is intended to support organisations that conduct business activity for the benefit of the community. Membership is through the purchase of share capital with only members able to hold shares. Unlike typical companies limited by shares, the governance of the organisation is based on Co-operative Principles<sup>22</sup> including:

- one-member-one-vote irrespective of share ownership
- assets and organisation must also be used for the benefit of the community
- profits cannot be distributed back to members nor can the assets at dissolution, only to another non-profit body or bodies
- there also remains the option to prescribe an “Asset Lock” much like CICs<sup>23</sup>.

The latter two legal frameworks can in effect be replicated with a Limited Company by Guarantee with appropriate Articles of Association, which could stipulate similar features about the distribution of assets. The main advantage of a CIC and CBS is the clear demarcation and legal backing regarding the use of assets for the benefit of the wider community which may mitigate concerns around publicly developed assets (such as a curated data catalogue and detailed usage history) being “controlled” by few commercial companies.

The perception around how a company is managed is influential in bringing together a variety of stakeholders, who may consider themselves to be rivals or hold opposing views. The features of a CIC or CBS, in particular the use of an Asset Lock can help dispel preconceptions around ownership of the collaborative assets.

<sup>22</sup> Co-operative UK Limited (2023) – [Co-op Values and Principles](#)

<sup>23</sup> Co-operative UK Limited (2023) – [Asset Lock Provisions](#)

## 7.2 Case Studies

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The following three examples are from other industries that have deployed secure, sector wider services that have a data component. They demonstrate that whole organisations are dedicated to delivering these services including the usual departments from Human Resources (HR), Finance and Marketing. Whilst the high level of direction is set by shareholders/members, the day-to-day leadership and operations is run by dedicated employees in the field of these services.

## 7.2.1 Airbus Skywise

Airbus SE is a global aviation and defence company known primarily for its range of commercial aircraft. In 2017, along with The Boeing Company, it dominated passenger aircraft manufacturing with approximately 50% market share each. At this time, it launched the Skywise<sup>24</sup> platform with just four airlines (aircraft operators), but over a five-year period would create an ecosystem aimed at accelerating and expanding the exploitation of aviation data across multiple parties, from customers, suppliers and even competitors.

Skywise utilised the Foundry platform (also used in the pilot) and according to Palantir Technologies<sup>25</sup>, currently has 10,000+ aircraft and more than 25,000 monthly unique users. The figure below was issued in 2018 and shows expansion of the platform from airlines to suppliers.



Figure 4: Supply Chain Skywise Usage<sup>26</sup>

Although Airbus had around 50% market share for aircraft system design and integration, it had minimal market share of operating aircraft (limited to the movement of aircraft parts and employees between its global sites) and a traditionally small presence in the Maintenance, Repair and Overhaul (MRO) market segment for commercial aircraft. It is important to note that the Skywise success with airlines is therefore not due to Airbus' market dominance in that segment of aviation. The fact that Airbus is not a competitor to airlines in these areas is also likely to have been influential in its adoption.

Airbus, using Skywise, was able to convince airlines (aircraft operators) on its central premise that it could provide a baseline OEM specific know-how through its platform for free, in return for aircraft operational data. The customers could then pay for additional applications to meet their specific uses outside of the core services such as crew management, pilot performance and basic logistics.

The applications were developed using an innovative onboarding scheme summarised as “buy two, get one free”. As most airlines had typically very similar use cases, Airbus could adapt existing applications to meet the needs of its new customers (“buy two”), but it would also develop (for free) bespoke applications to meet new use cases (“get one free”) on the basis that these could be added to its application catalogue to benefit other Skywise users. Overtime, the size of the Skywise Application Catalogue grew, making it more attractive for new customers.

As the volume, variety and velocity of the data increased, Airbus was able to provide predictive maintenance services to not only the airlines but also the MRO operators and therefore expand into other market segments. The Skywise offering is an analytics platform designed for the consumption of data to support decision making through the delivery of applications built on that data. The value generation mechanism is more direct than a data catalogue, which is just an enabler and therefore the business case to adopt Skywise and engage with an organisation like Airbus is more direct.

One of the challenges in translating to the offshore industry is that not all segments are at the same maturity point e.g. oil & gas is very mature, offshore wind is maturing but hydrogen and Carbon Capture Schemes (CCS) are in their infancy. Also, Airbus as an OEM for aircraft is central to other segments within aviation in that airlines operate aircraft, MRO centres maintain aircraft and the supply chain provides replacement parts for aircraft. For an offshore equivalent, it is difficult to envisage an existing organisation that is equally critical to the wide range of stakeholders.

In principle, the Airbus Skywise model is a dominant organisation in one segment that can sustain a platform for its own use and then expand out to other segments. Some of the large oil and gas operators have the magnitude and scale of operations to utilise a similar approach. The diversification of these entities into renewables could potentially create a climate for them to engage. There are also some large supply chain partners for these operators that provide offshore components to multiple segments and therefore could be an equivalent to Airbus in the aviation industry.

<sup>24</sup> Airbus (2023) - [Skywise | Enhance | Services](#)

<sup>25</sup> Palantir Technologies (2023) - [Airbus + Palantir](#)

<sup>26</sup> Airbus (2018) - [Airbus extends Skywise to Suppliers](#)

## 7.2.2 Exostar

Exostar is an organisation that provides a collaboration environment to serve the aerospace and defence industries, as well as other highly regulated environments. In terms of scale, in 2017 it had 500k+ users, 175k organisations in 150+ countries transacting over \$100billion in volume<sup>27</sup>. It offers the following services:

- Identity and access
- Collaboration
- Risk management
- Supply chain services



Figure 5: Exostar identity and access services<sup>28</sup>

The Identity and Access service is similar to the Data Sharing Fabric in providing a common and secure method to authenticate and authorise sector wide access to resources/services. The Collaboration feature includes a data sharing mechanism similar to a shared cloud drive or Microsoft Sharepoint but without the features of a data catalogue. The organisation was formed by the five largest aerospace and defence companies in North America: BAE Systems, The Boeing Company, Lockheed Martin Corporation, Raytheon Company and Rolls-Royce PLC. Initially intended to support collaboration on joint development programmes, it expanded to procurement services prior to evolving into a fully fledged collaboration platform.

The genesis for the collaboration was encouragement from the US Government to improve secure working between its main contractors and associated suppliers<sup>29</sup>. The initial step was a two-day conference between the technical experts of each company

collaborating on the minimum requirements to satisfy their own internal stakeholders<sup>30</sup>. As more services were added to the initial one on the Exostar platform they appear to have been adopted by the wider ecosystem simply because of the dominance of the initial group. In effect, the leading companies in defence had agreed on a common toolkit and it became a de facto standard. Suppliers to these five companies were encouraged to adopt the environment for continued business on new developments leading to the growth of the platform.

The legal basis for Exostar is a US Limited Liability Company (LLC), which has minimal differences to a Limited Company by Shares in the UK, with the exception that company shareholders are not taxed twice. Although the shareholders were the five founding defence and aerospace companies, they maintained an independent leadership for Exostar and associated governance structure to focus on delivering the best collaborative environment for all users.

The unique element is that Rolls-Royce, BAE Systems, Boeing, Lockheed Martin and Raytheon are largely direct competitors, however through this particular organisational arrangement, they were able to collaborate for the benefit of the wider sector. This approach had the advantage that only a small number of stakeholders needed to be consulted to develop a sector wide system. The equal shareholding and agreement on the governance structure for Exostar ensured no one entity could direct the organisation to its own benefit. As Exostar was not a core activity for the key stakeholders, it was sold to a third-party organisation when it became mature enough to be standalone in 2020<sup>31</sup>.

In translating the Exostar example for the offshore industry use, there are a number of factors to consider. The core services provided by Exostar were enablers in nature and did not have standalone value unlike the curation of a data catalogue and therefore the risks and responsibilities associated with potential asset transfer are different. The core companies involved are all in effect Original Equipment Manufacturers (OEM) and considered Primes from a US Defence perspective.

The offshore sector has mature companies from the oil and gas segment, companies expanding in offshore wind but critically developing or immature in other areas such as hydrogen and carbon capture. At present, there is not a collection of leading organisations which are in a similar state of maturity, stability and size that can effectively represent all segments within the offshore industry. Therefore, a different mechanism will be required to agree on common standards and operating procedures.

<sup>27</sup> Exostar LLC (2017) – [The Supply Chain Partner for Aerospace & Defence](#)

<sup>28</sup> EvaAviation (2023) – [Exostar LLC](#)

<sup>29</sup> SupplyChain (2020) - [Exclusive interview: Exostar's Supply Chain Lead, Kevin VanLowe](#)

<sup>30</sup> Computer World (2004) – [Exostar LLC: Collaboration Platform Takes Security to New Level](#)

<sup>31</sup> Infosecurity Magazine (2020) – [Exostar to Be Acquired by Thoma Bravo](#)



## 7.2.3 Rail Delivery Group

The Rail Delivery Group<sup>32</sup> is an organisation that supports railway operations in the UK and consists of Train Operating Companies (TOCs), Freight Operating Companies (FOCs) and Network Rail, “a public sector arm’s length body of the Department for Transport”<sup>33</sup>. It was founded in June 2011 and like Exostar, prompted via Government action. The RDG was a result of a recommendation from the McNulty Rail Value for Money study which stated that a “leadership body be established to take responsibility for coordinating and leading on cross industry initiatives”<sup>34</sup>.

It is a collaborative organisation operating as a Company Limited by Guarantee. Each member is entitled to appoint a director to represent its interest on the Rail Delivery Group Board, with the exception of Network Rail, which is entitled to nominate two directors.

- The RDG Articles of Association stipulate three types of membership:
- Member: Passenger or freight company that holds a railway licence with an expected annual turnover greater than £100million or is the rail infrastructure provider (i.e. Network Rail).
  - Licensed Member: Passenger or freight company that holds a railway licence but does not meet the turnover requirement.
  - Associate Member: Anybody that could make a material contribution to the achievement of RDG’s objects.

Only members can vote with a minimum quorum for all decisions requiring both directors (or their delegates) from Network Rail and at least one member each representing a passenger and freight company. Licensed members can contribute to the discussion and influence the decisions but have no voting rights. Associate members have none of the same rights as the other members and are in a supporting role.

Funding of the organisation is through a membership levy, where Network Rail is liable for 50% of the total and the remainder is split between the remaining members. The RDG also offers a number of services to the public, the entire sector and its members. The common element is that the RDG members are operators of train / freight equipment with the exception of Network Rail but do not consist of OEMs, maintainers or owners.

Translating the RDG model to the offshore industry, it provides an example of a tiered membership using turnover as weighting factor. As all members are in one of two key segments (passenger or freight traffic), using turnover weights the decision-making to the existing incumbents in a very mature industry. A single turnover requirement is unlikely to work in the offshore sector as it would not capture the input from newer segments such as hydrogen and CCS and therefore a Top X per segment may be required to provide adequate representation. It has similarities to Exostar in that the decision-making is in effect with those when combined have significant market share and for similar reasons is likely to be unsuitable in its existing form for the offshore sector.

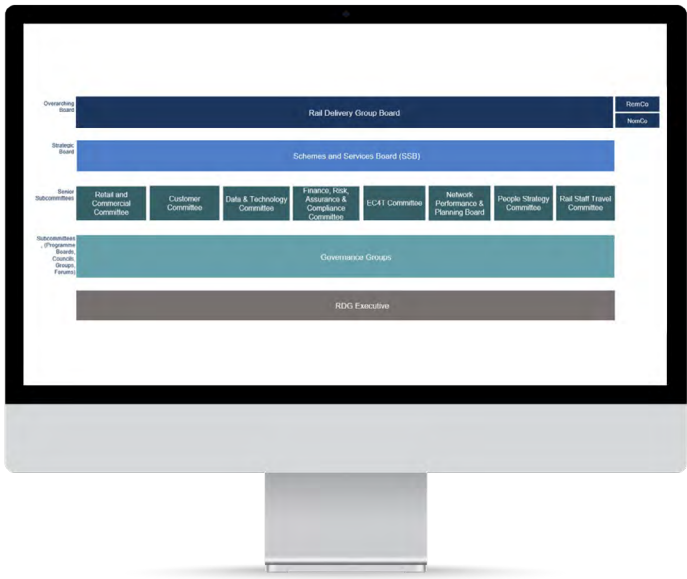


Figure 6: Rail Delivery Group Governance

<sup>32</sup> Rail Delivery Group (2023) – [About Us](#)

<sup>33</sup> Network Rail (2023) – [Who we are](#)

<sup>34</sup> Depart of Transport & Office of Rail and Road (2011) - [Rail Value for Money study](#)

### 7.3 Potential Business Model

The three examples demonstrate that it is possible to deliver secure sector-wide services using a collaborative organisation. Although none of the models presented are directly applicable to the offshore industry there are common elements and individual features that should be considered.

The key difference with regards the OEDA Data Sharing Platform is that the data catalogue is likely to be greater than the sum of its aggregated metadata. The OEDS vision and that from the wider energy sector reports is captured in the following three requirements:

Req ID:	Requirement	Source(s)
E4	OEDA shall support a customisable set of attributes to act as metadata and have the means to define differing levels of priorities and controls.	Several metadata attributes have been defined, in effect the superset from Ice Breaker One on Open Net Zero <sup>35</sup> , EDVP <sup>36</sup> and Dublin Core <sup>37</sup> but recognising the need to set and control differing priorities.
E7	OEDA shall support means for prioritising data sets, either for release, update or additional context.	Multiple reports including EDVP and EDTF cited a two-phase approach to data sharing, where users can see a list of potential sources and request them. These are then prioritised for release based on requests received.
E8	OEDA shall support a mechanism to enable users to provide direct feedback to data providers.	Multiple reports have cited providing feedback between users and data providers, the former to help improve the data sources and the latter to support internal business cases.

Table 1: Subset of OEDA Technical Requirements

The requirements in effect stipulate that in addition to the data provider provisioned metadata, the community should be able add value by assigning additional, corrective or replacement attributes to improve data visibility and discoverability. Furthermore, use these attributes to construct a data lineage between assets and through the use of the data itself provide feedback to the data providers. The output of these activities is in effect a curated data catalogue, which is greater than the sum of its original aggregated metadata and as such, a valuable asset in its own right. The mechanism in how that collaboration is achieved and co-ordinated emphasises the recommendation to agree governance framework for the offshore energy sector.

The services from the Rail Delivery Group and Exostar do not have the same impact as OEDA but it is a core element of the Skywise approach. Even if an airline withdraws from Skywise and withdraws its data then Airbus cannot unlearn what it has already learned from the data. The residual know-how (and value) is retained within Skywise even if the input is removed. Unlike Skywise, there is a significant level of public interest in a curated data catalogue that supports net zero and therefore additional measures will be required relative to the Exostar and Rail Delivery Group models to protect this asset.

The three examples demonstrate that it is possible to deliver secure sector-wide services using a collaborative organisation.

<sup>35</sup> Icebreaker One & Open Net Zero (2023) - [Open Net Zero by Icebreaker One](#)  
<sup>36</sup> Hippo Digital (2020) - Energy Data Visibility [Discovery report]  
<sup>37</sup> Dublin Core Metadata Initiative (2023) - [DublinCore](#)

## 7.3 Potential Business Model

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A recent example to illustrate this concern is the change in terms and access methods for the Reddit<sup>38</sup> platform. Reddit hosts conversations and enables users to create communities around particular topics called Subreddits. Users sign up and engage in these conversations, Reddit provides the platform, serves advertisements and offers a subscription service to its users (called Redditors). Overtime, due to the quality of the conversations, Subreddits became a trusted source on a range of topics on the internet. A change in the terms of service led many on the platform to participate in a blackout<sup>39</sup> in protest and brought to sharp focus around the ownership of these communities. The ownership of content was not disputed but the right to control the Subreddits, with the CEO of Reddit claiming that moderators were undemocratic<sup>40</sup> was central to the disagreements.

In this example, the moderators and users of these Subreddits felt a sense of ownership over their respective communities due to the impact and authority for these topics as a result of their direct participation. The platform provider felt that this was achieved to a greater extent by provision of the platform itself. It should be noted that this scenario was not envisaged by Reddit when it launched its original service. For OEDA, it should be recognised that the curated data catalogue will have significant value and therefore should be explicitly protected. An Asset Lock mechanism should therefore be considered to reassure individuals and organisational contributors that the value they add will be preserved for the benefit of the community and not subject to commercial interests.

All three case studies were commercially driven and two of the examples had a degree of state or government influence; with Exostar the US Government prompted the industry to meet a common requirement around security with no further direct involvement. The Rail Delivery Group was formed on the basis of a government-funded study and Network Rail has a role with twice the number of votes as other members and no vote can take place without their representation. It should be noted that the majority of members are the primary commercial beneficiaries from a well-run railway.

As these represent mature segments of their industry and the services do not have the same level of public interest as OEDA, a greater state role may be required for two reasons. To act as custodian for a curated data catalogue but also to represent growing market segments (such as hydrogen and CCS), which are in their infancy until they reach a scale where they can effectively represent themselves. To accommodate this, a Community Benefit Society structure due to its democratic nature of one vote per member is unlikely to provide the necessary balancing mechanism; both a Limited Company by Guarantee and Community Interest Company can offer the flexibility to permit a greater role from a state agency.

In summary, the successful implementations of sector-wide services are from commercially driven companies consisting of active members of their respective industries. All three examples offer multiple services and were formed through a mechanism that reflects some level of dominance in their market segment either through market share or turnover. Two of the examples have or had an arm's length state influence in their formation and management. None of the case studies show how smaller entities can participate in the management of an organisation providing a sector wide service.

The offshore sector has two unique challenges that prevents direct adoption of these existing models, in that a curated data catalogue has significant public interest and may require additional protections such as an Asset Lock to encourage community participation and it also has market segments in their infancy, which may not be able represent themselves effectively and should be taken into consideration.

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<sup>38</sup> Reddit Inc (2023) - Reddit

<sup>39</sup> Independent (2023) - Reddit Blackout

<sup>40</sup> NBC News (2023) - Reddit CEO slams protest leaders, saying he'll change rules that favor 'landed gentry'

# 8.0

## Cost Model

The OEDA pilot onboarded 40 trained users but unfortunately the level of platform usage and type of usage is insufficient to estimate a potential cost model for a future OEDA deployment. A macro analysis is therefore presented, looking at the examples presented above with the potential to compare with existing organisations within the offshore sector.

There are no separate financials for the Skywise division of Airbus and therefore it is difficult to estimate the number of personnel and / or costs associated with it. According to LinkedIn, Exostar has between 200 and 500 employees with 216 on LinkedIn itself<sup>41</sup>. There are no public costs for Exostar but there are multiple estimates for revenue around \$40million (£33million)<sup>42 43</sup>, however they should be considered with care as there is no public financial information. For context, Exostar was sold in 2020 with a valuation of \$100million (£100million in 2023 prices).

The financials for the Rail Delivery Group are public and can be accessed through Companies House<sup>44</sup> and show at the end of March 2022 the operating cost was £8.6million<sup>45</sup>. It has no direct employees, which is provided by another company called ATOC Limited with an operating expenditure around £50million, of which 311 employees in the same time frame cost around £20million<sup>46</sup>.

It is not possible to derive or interpolate an equivalent cost for the OEDA Data Sharing Platform without additional inputs from the community. An alternative approach is to examine in absolute terms what it takes to deploy a sector wide service even if it has no similarities with a data sharing platform. In both the examples cited above, there are between 200-500 employees. The operating expenditure for Exostar despite its significantly greater scale is estimated at £33million, whereas the RDG has a higher cost of around £50million. A first order estimate is an operating expenditure of around £40million with between 200 to 500 employees. Although there are reasons to assume that the costs are likely to be less than this given, the smaller potential scale of OEDA to say, Exostar, it should be noted that the use case of a curated data catalogue is likely to be more challenging.

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<sup>41</sup> LinkedIn (2023) - [Exostar](#)

<sup>42</sup> ZoomInfo (2023) - [Exostar](#)

<sup>43</sup> Growjo (2023) - [Exostar](#)

<sup>44</sup> Companies House (2023) - [Rail Delivery Group](#)

<sup>45</sup> Rail Delivery Group Limited (2022) - [Annual Report and Financial Statements](#)

<sup>46</sup> ATOC Limited (2022) - [Annual Report and Financial Statements](#)

# 9.0

## Conclusion

To support a potential business model for OEDA, three legal frameworks that support collaborative working were examined: Limited Company by Guarantee, Community Interest Company and Community Benefit Society. The latter two frameworks have an additional community-orientated test or requirements that are likely to provide confidence to smaller stakeholders that their efforts will be for the benefit of wider industry and not just existing market leaders. A Limited Company by Guarantee can have the same features as the two community-oriented frameworks but lacks the same legal mechanism to ensure a curated data catalogue is preserved for community use. A Community Benefit Society uses the principles of a co-operative including one-member-one-vote, which is unlikely to provide the balancing mechanism needed by a potential state organisation representing sectors in their infancy such as hydrogen and CCS. A Community Interest Company is therefore likely to provide the necessary features to satisfy the legal and perceived development and preservation of a curated data catalogue through an Asset Lock.

In addition to the legal frameworks examples from the aerospace, defence and rail industries using publicly available information, at least two unique aspects of the offshore industry application have been highlighted:

- The organisation is likely to over time generate a curated data catalogue that is a valuable asset.
- Some offshore segments are relatively immature and will require different types of representation compared to these other organisations.

It was identified that successful implementations of sector wide services are commercially driven and run by industry members for the benefit of their industry. It is proposed that a formal step is undertaken to preserve the curated data catalogue with the use of an Asset Lock as well as a state or government agency taking a custodial position.

It has been recognised that although there are more than 40 trained users amongst consortium members for the pilot platform, there is insufficient data and comparable usage examples to extrapolate an estimated cost. An alternative macro analysis has been constructed with an estimate of £40million per year with a workforce of between 200 and 500. It has been emphasised that significant input is required from the community to generate a business and cost model. This report is intended to inform stakeholders of comparable examples from other industries, with some basic financial information and with a view of identifying features that may benefit an offshore implementation of sector wide service managed collaboratively.





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