



FIS040
**Piloting Digitalisation in
Seafood Supply Chains**

Piloting Digitalisation in Seafood Supply Chains



June 2023

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Executive Summary

Overview of the FIS project

Seafood supply chains can be complex, and the capture and sharing of vital information from boat to plate is challenging and time consuming for everyone involved. Yet improving transparency in seafood supply chains can have significant benefits to fishing seafood businesses - for example, allowing them to improve product quality, position the industry proactively, and strengthen and protect seafood brands. This can also help businesses access lucrative markets, as data sharing is important to provide reassurance to retailers - and in turn to their customers - that seafood products have ethical and sustainable provenance.

There are many challenges in the efficient collection, verification, integration, and communication of data. Not least are: the huge volume of different types of data coming from different sources, or requested by different partners, all in different formats; barriers to integration of regulatory and other data streams; and barriers to smaller operators adopting new technology. FIS wanted to understand how to improve the provision of business and research intelligence to fishers, scientists, and managers. FIS asked whether a reliable and accessible digital 'one stop shop' for supply chain data could provide benefits, and reduce the burden of information exchange, along seafood supply chains.

Together with Verifact and Seafood Scotland, FIS embarked on a pilot project to prove the concept of digital data sharing between seafood businesses along supply chains, from catcher to retailer. The aim is to understand if it is possible to incrementally replace the current ad hoc methods of data collection with a co-ordinated digitalised approach.

'Digitalisation' in seafood is information captured once on a digital platform, shared under a set of permissions with selected stakeholders, to improve the efficiency, value and sustainability of seafood supply chains.

FIS' Vision for Digitalisation

Maximising the use of digital technologies will improve data collection and product traceability, and strengthen the seafood brands, with benefits along the supply chain:

- The catching sector is proactively involved in the verifiable collection of the necessary data to answer scientific, sustainability and other management questions, including carbon footprint.
- Value is added to catches through improved access to premium markets and differentiation of sustainable products.
- Producers, processors, food service and retailers have confidence in de-risked, cost-efficient, transparent supply chains.

FIS and Seafood Scotland commissioned seafood traceability experts Verifact to test how current ad hoc data collection could be improved by a coordinated approach, allowing data to be captured once but used as many times as needed and by different users - in science, markets, certification and management.

The pilots aimed to harness existing technology to enable automatic data transfer through the supply chain, and review how this technology could enhance the competitive position of Scottish nephrops (langoustine) and haddock through improved traceability and provenance. These species were selected due to their significant value to both UK and export markets, and to investigate the needs of both larger, more integrated businesses and smaller, more fragmented supply chains.

The aim of the pilots was to provide practical examples of digitalisation solutions to demonstrate how technology can add value to seafood supply chains, explore any lessons learned from this process, and identify recommendations for others looking to digitalise supply chains or conduct pilots in this area.

Key findings and recommendations from the project:

Finding	Recommendation
<p>In some cases, fishing vessel agents and primary processors are not passing on basic data such as vessel names or vessel information to secondary processors one step up the chain. Often, the former does not understand the demand for this type of data from retailers who want more knowledge of their supply chain, are seeking to de-risk it and have declared targets around sustainability that they are bound publicly to report on.</p>	<p>Clear communications, where the need and type of data required at retail level is understood further up the chain, would help get more accurate information while not placing secondary processors in a sometimes-difficult position of looking for this from vessels and agents who may not understand why it is needed. Forums attended by a range of supply chain participants should include agenda items on data trends, what data is needed from what supply chain partners in the short and longer terms.</p>
<p>Accurate certification, sustainability and labour policies at vessel level are not easily accessible further along the supply chain.</p>	<p>The Vessel Details Database developed as part of this project should be utilised to record and store vessel details in relation to vessel participation in sustainability projects and to record individual vessels' policy in relation to labour onboard.</p> <p>The Vessel Details Database should be further developed, and additional functionality could include:</p> <ol style="list-style-type: none"> a. The facility to enable vessels to log in and store crew information on a per trip basis.

	<p>b. The facility to upload and store crew related documents.</p> <p>c. The potential to register and authorise the use of data captured by other systems could be explored.</p>
<p>There are large amounts of data already captured, (through regulatory reporting systems and safety documentation systems, for example) which can be accessed by vessel owners and agents and could address many of the data deficits further along the supply chain.</p>	<p>The use and sharing of the data already captured by existing systems should be explored. The approach taken in relation to the data sharing agreements developed specifically for this project could be utilised as a template for this.</p>
<p>It is difficult to acquire data from companies unless there is a tangible and specific benefit to them.</p>	<p>Where projects are being implemented which have a sectoral benefit, consideration also needs to be given to participating companies and how they benefit individually from such initiatives to encourage buy-in.</p>
<p>Processing companies have the majority of data required under the GDST standard relevant to their own businesses but often require resources to collate the data as it is not held in a coordinated way that allows it to be shared with other supply chain participants.</p>	<p>When processing companies are reviewing, changing or upgrading their existing internal systems they should consider how these could be improved and integrated to facilitate external standards including GDST.</p>
<p>The awareness in the UK fishing industry of the GDST standard is low, and while it will be important in the future it is currently not a strong market driver.</p>	<p>GDST is actively engaged in communicating its role and benefits across the UK sector and organisations should liaise with the GDST team to keep abreast of the standard's development.</p>
<p>The infrastructure developed as part of this project provides a platform to deliver future digitalisation projects, making these projects more achievable and cost effective.</p>	<p>This infrastructure should be maintained.</p>
<p>This project and other similar ones (often requiring large capital expenditure) have experienced challenges around data sharing when the projects were quite advanced, with significant costs already incurred.</p>	<p>We recommend that in advance of undertaking these types of projects, companies should embark on smaller projects as a precursor to set out what data should be shared, why it should be shared and who will share it.</p>

What is the Global Dialogue on Seafood Traceability (GDST)?

The GDST is an international, business-to-business platform established in 2017 to create the first-ever global industry standards for seafood traceability.

The GDST standards are global, voluntary, industry-led standards for seafood traceability that are designed to support three main goals:

1. To enable interoperability among all seafood traceability systems so businesses using different proprietary systems can participate seamlessly in digital traceability across entire supply chains;
2. To communicate (especially to producers/suppliers) harmonized expectations about the basic information (“key data elements”) that should accompany all seafood products, including to ensure seafood is produced legally and to support sustainability claims; and
3. To improve the verifiability of information in traceability systems by establishing agreed authoritative data sources

How was the project conducted?

In order to carry out the work piloting digital seafood data platform it was necessary to create a ‘test environment’. To facilitate this, two virtual machines¹ have been created and configured for the project using Microsoft Azure cloud-based services (a global leader in cloud-based services). One machine hosts the main database and portals that have been developed and implemented during the project and is situated on Microsoft servers at West London. The second machine, which is based at Cardiff in Wales, is for disaster recovery and the data from the first machine is backed up to this at regular intervals. The machines equate to having computers on which tools can be built to support data sharing projects, including this digitalisation project or other projects in the future. The cloud-based nature of the project allows it to be scaled up or shut down easily and securely.

Verifact have built a database that contains all the fields required to meet the Global Dialogue on Seafood Traceability standard (GDST). Verifact used the GDST ‘Key Data Element’ fields as a foundation upon which to develop the system. These fields have been agreed as being fundamental to best practice in exchange of data in seafood supply chains by a large group of key stakeholders. The data captured could be used for other purposes such as providing proof of provenance or feeding into carbon footprint calculations etc.

At the early stages of the project Verifact expected to get files in a range of formats containing data that is exchanged between buyers and sellers of seafood. This proved difficult for three key reasons:

¹ a computer resource that uses software instead of a physical computer to run programs and deploy apps

1. Companies are slow to part with data unless there is a direct advantage for the company itself. This changed the direction of the project and Verifact did come up with ideas around specific company benefits to working with us.
2. The public adoption of GDST has been slower than FIS expected when embarking on the project.
3. The current economic climate meant many companies are battling with increasing costs and challenges with labour and tended to prioritise these issues ahead of becoming involved in projects looking into the future.

Data was obtained from four seafood processing companies, providing the project with sufficient data to draw meaningful conclusions about current data gaps and how they can be addressed.

As part of this project, Verifact also developed a 'Vessel Details Database' to capture vessel details regarding sustainability and labour practices on board. This provides a foundation, which could be expanded, to capture specific details in relation to, for example, crew on board on a per trip basis and documentation regarding those crew. This database provides an immediate value by introducing digitalisation around data currently required by supply chains while preparing for full supply chain digitisation in the longer term.

One of the benefits of engaging with the project offered to companies was to develop a bespoke page, telling the story of a product or company, accessed through a QR code that could be used on products or promotional materials. Two companies took this option (see Appendix One for an example).

Analysing the Data

Verifact examined the data received from participating entities and identified a number of distinct categories:

- Data that was received from all of the companies.
- Data that could be supplied to processing companies by suppliers but is not transferred as current practice.
- Data that was not easily at hand in the companies but is in fact available from public sources, for example the vessel register etc.
- Data that is relatively static - vessel details, registration numbers, home ports etc. This data only changes when a vessel is sold or replaced.
- Product related data – this data is normally captured as product moves along a supply chain e.g. species, product format (fresh, live etc) date landed, catch area.

Technical Development

The technical development element of the project involved four stages:

1. Enter into a hosting agreement in relation to the virtual machines.
2. Configure and implement the two virtual machines so as to meet the agreed requirements of the FIS Digitalisation Pilot Project.
3. Develop, test, and implement the Processor Portal.
4. Develop, test, and implement the Vessels Details Database.

User Agreements and Data Management

Verifact have also developed user agreements for obtaining the data throughout the project and also for using the Vessel Details Database and the Processor Portal.

Benefits of the Vessel Details Database

- The Vessel Details Database provides immediate value to Suppliers to Retail by providing a tool to capture information that retailers are currently looking for e.g. potential to be publicly available on a Fishery Improvement Project Member list,² allowing retailers to see, and select product from, fisheries that are actively engaged in processes to improve their sustainability credentials, if this is a priority for them.
- The database captures all 'static' vessel fields required by GDST.
- A vessel can enter data that meets requirements of FIP membership, GDST, or both.
- If data in the Vessel Details Database is combined with data in the Processor Portal, then all the main fields of GDST can be met. This is a manual process but provides the companies with a mechanism to meet the GDST standard manually.
- Implementing the Vessel Details Database provides immediate value to the supply chain, by collecting and sharing information that can be of direct, practical benefit to their sourcing practice or customer requirements, while supporting the longer-term goal of full GDST implementation.

Deliverables

- The two virtual machines based in the UK have been configured, one in the UK, South London (main machine) and the other (disaster recovery) located at Cardiff in Wales.
- The infrastructure upon which to scale this project or develop new projects in the future is in place.
- A Toolkit was developed as part of this project elements of which can be used together or in isolation. This includes:
 - A vessel details database focused on sustainability and labour policies.
 - A suite of data sharing agreements which sets out the basis of how the data collected is processed and utilised.
 - An online portal which allows processors to upload data in line with GDST requirements to a cloud-based database.
 - A pre- project data questionnaire (see Appendix Six below)
- The code to develop the portals is implemented, tested and operational.
- This report includes the data gap analysis and recommendations to continue to implement digitalisation projects in UK fisheries.

² <https://fisheryprogress.org/directory>

Background

Digitalisation Roadmap for FIS

In early 2021 FIS awarded a contract to Verifact to deliver a [Digitalisation Roadmap](#)³ for Scottish fisheries. As part of this, a broad range of stakeholders in the Scottish seafood industry were interviewed. All the input was collated, and Verifact applied its own experience and knowledge of trends in fishing and other protein sectors to set out the roadmap.

In Quarter 4 of 2021 Verifact was awarded a further short contract by FIS to identify suitable pilots to implement recommendations that had been set out in the Digitalisation Roadmap.

The contract for FIS 040 was awarded to Verifact to implement the digitalisation pilots which had been identified in collaboration with FIS Technical Advisor Committee members. This group selected Scottish nephrops and haddock as the focus of the two supply chain pilots.

FIS 040 Projective Objectives

Enhanced supply chain validation.

This was a key deliverable identified by the retail sector. Successful pilots need to track the product from the catch area right through landing, processing, secondary processing and onto the retail shelf.

Provide the ability to differentiate Scottish seafood in a manner where the provenance can be verified.

The catching sector is keenly interested in ways to differentiate Scottish seafood in terms of its provenance and quality. The proof points required for supply chain validation are the same as those that the catching sector needs to differentiate itself.

Become GDST ready.

The Global Dialogue on Seafood Traceability is a standard emerging that sets out how data should be exchanged in seafood supply chains. Seafood companies and retailers⁴ globally have committed to developing roadmaps as to how their respective companies will achieve the GDST standard in the future. One of the key stipulations which FIS required for FIS 040 was that the pilots needed to consider how the Scottish seafood industry would meet the requirements of the standard going forward.

Establish the value proposition for a wide group of stakeholders.

A key objective of the project was to demonstrate the value of embracing digitalisation across a broad range of stakeholders to include the catching, processing, and retail sectors. The goal of this approach was to ensure that the industry participants 'bought into' implementing digitalisation projects to benefit their businesses over the longer term.

³ <https://fiscot.org/wp-content/uploads/2021/08/FIS036-with-cover.pdf>

⁴ <https://traceability-dialogue.org/gdst-adopters-endorsers/>

Gather accurate data to protect and position the industry for the future.

Digitalisation strategies are being implemented across all protein classes and FIS has adopted a digitalisation strategy to ensure that Scottish seafood is positioned well into the future particularly where it competes directly with these other protein classes and emerging protein classes such as cell cultured seafood and meats ⁵.

Communication and Dissemination

The project team held regular meetings with partners and businesses, attended fishing and seafood Expos and associations, and presented to government groups and others including:

1. Common Language Group:

Verifact and FIS spoke at the Seafish Common Language Group (CLG) meeting held in London in September 2022 to provide an overview of the FIS 040 project setting out its objectives, progress to date and planned future activities. The CLG meeting was organised by Seafish with a view of disseminating to the wider seafood sector how a selection of projects was progressing.

2. Defra: Verifact presented the project development to an extensive team from Defra in October 2022. Defra are interested in how accurate supply chain data fits into its future digitalisation plans.

3. MMO: Verifact and FIS regularly attend discussions arranged by the Marine Management Organisation to discuss traceability strategies and want to explore how digitalisation could contribute to this

⁵ <https://www.forbes.com/sites/briankateman/2022/06/06/cell-cultured-seafood-isnt-just-an-idea-its-a-reality/?sh=695c75eb146d>

Challenges Encountered and responses

Challenge 1 - Individual company benefits

Verifact found that discussing digitalisation and the benefits of the project were always well received in group meetings. These meetings were progressive and there was a high level of engagement from participants. However, when meeting individual companies, it was more difficult to make progress, it is assumed for the following reasons:

- Companies are struggling with increasing costs in their supply chains, primarily due to the increase in energy and labour costs.
- The increased costs of living are also influencing consumer choices in terms of seafood consumption.
- Companies have experienced supply chain disruption as a result of the Russian/Ukrainian conflict.
- Companies have had to implement changes to some of their business processes due to Brexit.
- While there are many signatories to the GDST standard (see section headed 'GDST' below – page 17) awareness in the UK fishing industry is low. Although it has started to appear in sourcing policies it is not currently a barrier to market entry. This is likely to change over the coming years but did present challenges in terms of engaging companies and getting them to commit resources to supporting the digitalisation project.

Response: Verifact decided that the benefits of digitalisation needed to be refined and clearly expressed in the context of the benefits to individual businesses rather than focusing on the benefits to the industry as a whole.

Verifact presented the following benefits to a broad range of companies:

- Verifact assessed the gap between the data the company currently exchanges in the supply chain and that required by the GDST standard.
- Verifact offered to provide each of the participant companies with a landing page and QR Code leading to this landing page. The company could use this QR Code on communication materials, packaging, or social media posts. This landing page included information on the company's sourcing, sustainability, food safety and quality story. See Appendix One below for an example.

Challenge 2 - Resources required to input data

Due to the challenges outlined above, businesses were all pressured for time. In all cases companies had to assign some resources to the project to provide Verifact data. The requirements were for a broad range of data, not always at hand or easy to put together.

Response: Verifact simplified the 'ask' of individual companies by asking each company for 10 sample orders. This ensured that the participating companies did not have to allocate significant resources to gather and input data.

It became clear that once Verifact could review even a small number of orders that lessons would be learned. Verifact reviewed a range of orders. For example, orders included domestically purchased haddock and nephrops and imported cod, nephrops and scallops. Data was also received for product being sold domestically and for product being sent to export markets. This enabled comparisons between the data available for a range of products which highlighted some interesting learnings.

Challenge 3 - Automated data transfer

At the outset of the project Verifact planned to take data from companies in an automated file format and also to capture data through online portals. A budget was set aside by FIS to support companies to provide data in an automated format.

Given the challenges to companies set out above, a lack of pull from the market and no serious driving market force to push them to share data, it did not seem practical or achievable to ask them to make capital investment (which would also require human resources) to give data in large volumes or on an ongoing basis.

Response: Verifact decided to focus on entering the data required solely using online portals. Verifact also agreed to take data in formats such as spreadsheets or any other format that suited the individual company process and the project team entered data for any companies that chose this option. Verifact took data as scanned documents, PDFs, copies of catch certs and from multiple parts of some company systems, collated it and entered it for them.

Analysing the data and how to fill gaps

There are five means to addressing data gaps that were identified:

1. To ensure that companies supply all relevant data they have to buyers, Verifact developed a one-page communication which gave the rationale for improving data sharing between supply chain participants e.g. trends in data requirements such as for GDST, sustainability reporting and carbon footprint measurement.
2. Most of the product-related data fields that are required by GDST are currently being captured by processors. Some gaps remain, for example production dates and expiry dates were not supplied by some of the companies. These are certainly held within the companies and are not something that a FIS solution should seek to address. These are company specific issues and can be addressed by improving internal systems.
3. Processors did lack vision on some areas of data, for example trip dates. However, much of this data is captured on regulatory systems. This can be accessed by producer organisations for member vessels, by companies that have ownership of vessels and by entities that are given permission by vessel owners. There are several considerations when seeking to address this gap: it would be a complex job requiring agreement with producers and supply chain participants; it would mean large scale replication of what is currently being collected; and the slow uptake of GDST in supply

chains would mean a lot of resources would be used to address a problem that has yet not fully emerged. It may be a better use of resources to consider how data captured on regulatory systems could be used rather than embarking on a large-scale project that would only replicate what is already in use.

4. Some required data such as vessel registration numbers and identifiers were not included in shared information, but can be obtained from public sources. However, the Vessel Details Database could make such information more easily accessible.
5. There are gaps in terms of vision on vessels participation in sustainability initiatives and the presence or absence of human welfare policies on vessels. Supply chain participants are focused on these areas for their own sustainability reporting and compliance with retail sourcing policies. Developing the Vessel Details Database could identify if there is value in scaling up such a solution for a broad range of stakeholders. This approach has an immediate, short-term value, with an eye to the bigger picture of fitting into GDST, sustainability initiatives and full supply chain projects over time.

Vessels involved in fisheries improvement projects may be required to provide publicly available vessel lists and to demonstrate compliance with labour policies and practices onboard. A tool to help address these requirements may help seafood businesses access markets.

Technical Development

Virtual Machines

Verifact has built two virtual machines specifically for the FIS project located in the United Kingdom for data protection reasons. One of these machines is located in the London region and the other is located at Cardiff, in Wales. The former is the main server for the project data with the latter acting as backup in a disaster recovery situation.

All data is hosted, managed, and stored on a Microsoft Azure platform and data entered onto the blockchain is stored in the Hyperledger.

UK South (London)

Verifact hired a virtual machine from Microsoft Azure services to run in this location. Each virtual machine runs Ubuntu Linux Server Software version 20. The server runs docker containers and runs the LAMP stack where PHP runs within the Laravel Framework.

UK West (Cardiff)

There is a single server located here which will also run Ubuntu Linux Server Software version 20. This server will host both the web solution and the docker solution. Backup data will be copied here at regular intervals. In the event of the production server going down, this server will be configured to take up the slack for it.

UK South (London)

The UK South virtual machine is the production machine. The emphasis is on performance and a suitable storage size which can deal with large volumes of data.

Requirement ID	Description
1.	Verifact has built a Linux Server Virtual machine running Ubuntu 20 server software. The name is prefixed with the name of the VM instance in the Azure portal, with "FIS" e.g. FIS-Webserver.
2.	Strong passwords are in place for logon to the server.
3.	The server is connected through Wire Guard for security.
4.	Web Server Software List: 1. Laravel Framework version 9 PHP 8.0 2. Apache web server 3. MariaDB database version 10
5.	Blockchain Server Software List:

	<ol style="list-style-type: none"> 1. Docker 10 2. Node.js version 8 3. NVM – node version manager 4. Hyperledger Fabric v.2.x (latest)
6.	Eset server edition antivirus software is on both servers. Licences are provided by Verifact.
7.	Backup procedures are set up to copy data files and the apache website to the DR machine. This is a combination of rysnc commands in conjunction with cron.

UK West (Cardiff)

This acts as the remote Disaster Recovery (DR) machine. It is set up to act as a repository of backup files from the web and blockchain VMs. It is also ready to host the production system, either as a web server, a blockchain server or both.

Requirement ID	Description
1.	A single Linux Server virtual machine running Ubuntu 20 server software is in place. The name “FIS” is displayed in the Azure portal, e.g. FIS-DR-server.
2.	A strong password is generated by the administrator for logon.
3.	Wire Guard is installed for security.
4.	Web Server Software List: <ol style="list-style-type: none"> 1. Laravel Framework version 9 PHP 8.0 2. Apache web server 3. MariaDB database 10 5. Docker 10 6. Node.js version 8 7. NVM – node version manager 8. Hyperledger Fabric v.2.x (latest)

Stages of Development

There were four distinct stages of development to deliver the project.

1. A hosting agreement was entered into with Microsoft for the two virtual machines (one in South London for the main machine and the second based in Cardiff in Wales for the disaster recovery) which were then dedicated to the client.

2. Two Virtual Machines were built by Verifact dedicated to the Fisheries Innovation and Sustainability digitalisation project.
3. A database was built on the London machine (and replicated on the Cardiff one) which had all the data fields required by the GDST standard.
4. A series of portals were developed so that data could be entered into the database.

The portals developed are:

- Vessel Registration – this allows the capture of ‘static’ data relating to an individual vessel that remains unchanged for example registration number, IMO number etc. This can also include membership of sustainability standards or Fishery Improvement Projects. The portal also allows for a vessel to meet the vessel elements of GDST Labour and Certification Requirements.
- Processing Company Data Entry – this is used to capture product information as it moves along the supply chain.

Future Options

1. Follow up projects

Any future FIS projects could use the existing infrastructure. The space on Microsoft servers, database and portals are all available for future use. Building additional functionality, for example, a means of recording crew information on a vessel for each trip would require development work. As described elsewhere, the vessels details database has already been developed. This has been set up so that each vessel has a unique account that can be updated at any time. A new ‘trip’ page could be added to these vessel accounts so that a user could go in each time it goes to sea and add crew information. This would require further development work on both the portal and the database; however, the existing infrastructure would be utilised.

2. Maintain the machines in their current configuration

Verifact will continue to maintain the machines and the portals, and build on them for a period of six months. This gives FIS time to investigate if there is potential to do further projects of value to the UK seafood sector.

3. Wind down machines

If no further opportunities are identified to use the machines in the short term, they can be wound down. This obviously saves the hosting costs. If this were to be the case, Verifact would save all the code used in developing the database and portals so that could all be reused if the machines are spun up again over the coming years. It would be highly likely that the code would need to be updated at that point. This code could

be handed over to FIS if they wish in a form that could be reused by any software development company at a future date.

Participating companies

Companies that provided data

Fourteen companies were approached by Verifact. Seven of the companies were sent various documents, including a brief on the project, NDAs and Terms of Use and Privacy Policies. Four companies provided data that was useful to carry out gap analyses. For the purposes of this report we have called the companies by number, 1, 2, 3, 4.

The data from the companies led back to landings from 21 Scottish vessels. Some of the orders received were for imported product which originated from another five Icelandic vessels. There were also some orders received from imported aquaculture product. The diversity of the orders did enable Verifact carry out analyses across:

- Scottish caught and domestically sold product.
- Scottish caught and exported product.
- Imported whitefish product.
- Imported aquaculture product.

GDST

An objective of this project was to assist companies to become GDST ready. While many processing and retail companies have signed up to the standard, the adoption of it as a requirement for market entry has been slow. This is due to the challenges being experienced across companies in general. There are several implementation projects across seafood processors and retailers underway⁶ so it is likely that the standard will continue to emerge as these projects (including learnings from the FIS Digitalisation Project) make the standard more accessible to participants in the seafood sector. The relevance of this approach continues to be important as the adoption of the standard continues to increase across major retailers and seafood processing companies.

One example of how the standard is emerging is how it is being integrated into existing sourcing policies, such as the latest sourcing policy from a leading UK and international retailer which recommended that suppliers use GDST Key Data Elements to support the information flow of such indicators through the supply chain, and encouraged movement towards compatibility with GDST and full supply chain transparency and traceability.

⁶ Outside the UK supply chain this also include marine ingredients (MarinTrust), warm water prawns (ASC) a tuna supply chain in Vietnam and others

Suppliers should show evidence of work towards full compatibility with GDST and BSI PAS 1550. For example, creating a roadmap to gradual compliance within the full supply chain and setting up protocols for data collection and reporting along the supply chain.⁷

The following points are important to consider in terms of the roll out of GDST:

1. The meta-coalition statement on GDST in 2021 covers 150 seafood companies' commitment to GDST.
https://seabos.org/wp-content/uploads/2021/02/Coalition_Statement_traceability-and-port-state-measures.pdf
2. Tuna retailers and brands are focusing on GDST implementation in their tuna supply chains as a priority as they see the risks are higher in these than UK for now. The Global Tuna Alliance 5-year strategy outlines this commitment.
<https://www.globaltunaalliance.com/wp-content/uploads/2022/03/5-YR-PLAN-25pst.pdf>
3. The WWF Food Basket commitment which includes a commitment to implementing GDST has been signed up to by a further six UK retailers.
<https://www.wwf.org.uk/wwf-basket>
4. The work to demonstrate these policy commitments has started with mapping of KDEs and understanding what software and traceability information exchange mechanisms are being used.

Whilst FIS has been doing this project GDST has transitioned to an industry led partnership organisation. This transition has meant that the initial supporters of GDST with no commitment to implementing it have been replaced by partners that sign a commitment statement. Some of the thought-leaders immediately signed up as partners whilst others are starting on their GDST journey.

While current KDEs are mainly environmentally focused, the GDST dialogue process will examine the inclusion of additional KDEs related to labour and human rights, greenhouse gases and carbon footprints, aquatic animal welfare and marine ingredients.

GDST Gap Analysis

During the course of this project data was received from four separate UK based processors. This data comprised a total of 10 individual orders with information being received from a total of 23 vessels (8 Company 1, 10 Company 2⁸, X Company 3⁹ and 5 Company 4¹⁰). The target for the project was to include data from two processors per supply chain i.e. 4 processors and a maximum of 20 vessels per processor. An analysis of this data was then carried out in comparison with the data that would be required for these orders to be GDST compliant, set out below are the findings and recommendations.

⁷ Extract from the seafood sourcing policy of one of the leading UK retail chains.

⁸ Vessel Names were not provided for all product supplied.

⁹ Data has been promised but not received as of the 31.03.23 from Company 3.

¹⁰ Vessel Names were not provided but Verifact was advised they were known to processor.

Gap Analysis Findings

The GDST standard currently has 35 data entry fields, however 7 were not relevant for this project as they related to transshipment of product which is not applicable for UK Nephrops and Haddock.

Of the 28 remaining fields, 8 were consistently provided by pilot participants, with 6 data fields required being provided by some but not all participants. This left 14 fields for which data was not provided by any participants.

3 of these fields related to data which is readily available at the processor level but was not provided. As part of the project Verifact has developed a portal/spreadsheet which captures this type of data.

It is apparent that the majority of data required is available in one form or another, but information relating to the supplier vessels is missing. This was the basis for Verifact to investigate how these data gaps could be filled, which led to the development of the vessel details database.

Vessel Details Database

Verifact identified fields for which data was regularly provided but which could be obtained relatively simply from vessels supplying product to participating processors. Verifact evaluated what fields would be required for the development of the vessel details database to help fill the data gaps for GDST. The table below sets out the fields required, etc.

Field Name	Type	Description
Vessel Name	Text	
Vessel length (m)	Numeric	Optional
Vessel Size category	Dropdown	Small - under 12m; Large - over 12
Vessel Tonnage (GT)	Numeric	Optional field
Vessel KWs	Numeric	Kilowatts
Vessel Type	Text	Fishing vessel
Home Port	Text	Free text field
Owner Name	Text	
Contact email	Alphanumeric	Contact email
Operator Name	Text	
Vessel Flag	Dropdown	Autocomplete
National Registration Number	Alphanumeric	Registration Number
Licence file upload	Upload	Pdf or jpeg
Licence expiry date	Date	Expiry date
Vessel CFR Number	Alphanumeric	
IMO Number	Alphanumeric	Optional
FIP Name	Dropdown list	Name of FIP
Gear Type	Dropdown	
Certification Name	Alphanumeric	Autocomplete
Certification date	Date	Date of expiration
Human welfare policy	Upload	PDF or JPEG
Human welfare standard	Free text	Free text

The Vessel Details Database allows an account to be created for each vessel registered, which can be updated at any point.

Registration Process

Vessel owners would be able to provide vessel information via a portal, for example:

The image shows a web form titled "Vessel Registration Form" under the "FOS Fisheries Innovation & Sustainability" logo. On the left is a vertical navigation menu with four steps: 1. Vessel Details (highlighted), 2. Vessel Owner Details, 3. Fishing Operations Details, and 4. Submission. The main content area is titled "VESSEL DETAILS" and contains several input fields: "Name" (with a red error icon), "Home Port", "Registration Number", "CFR Number (optional)", "Gross Tonnage", "Length (m)", "Engine (kW)", "IMO Number (optional)", "Flag Country", "Licence (optional)", and "Licence Expiry Date (optional)". There are also file upload buttons for the licence and a "Next" button at the bottom right.

Figure 1 – Mock up of Vessel Registration Form Screen 1 ‘Vessel Details’. A second screen would collect information relating to the ownership of the vessel.

The image shows the second screen of the "Vessel Registration Form", titled "VESSEL OWNER DETAILS". The navigation menu on the left now highlights step 2. The main content area has three input fields: "Vessel Owner Name", "Contact Name", and "Contact Email Address" (with a red error icon). There are "Back" and "Next" buttons at the bottom. At the bottom of the page, it says "Powered by verifact."

Figure 2 – Screen 2 Vessel Owners Details. A third screen collects information required for FIPs or for GDST compliance.

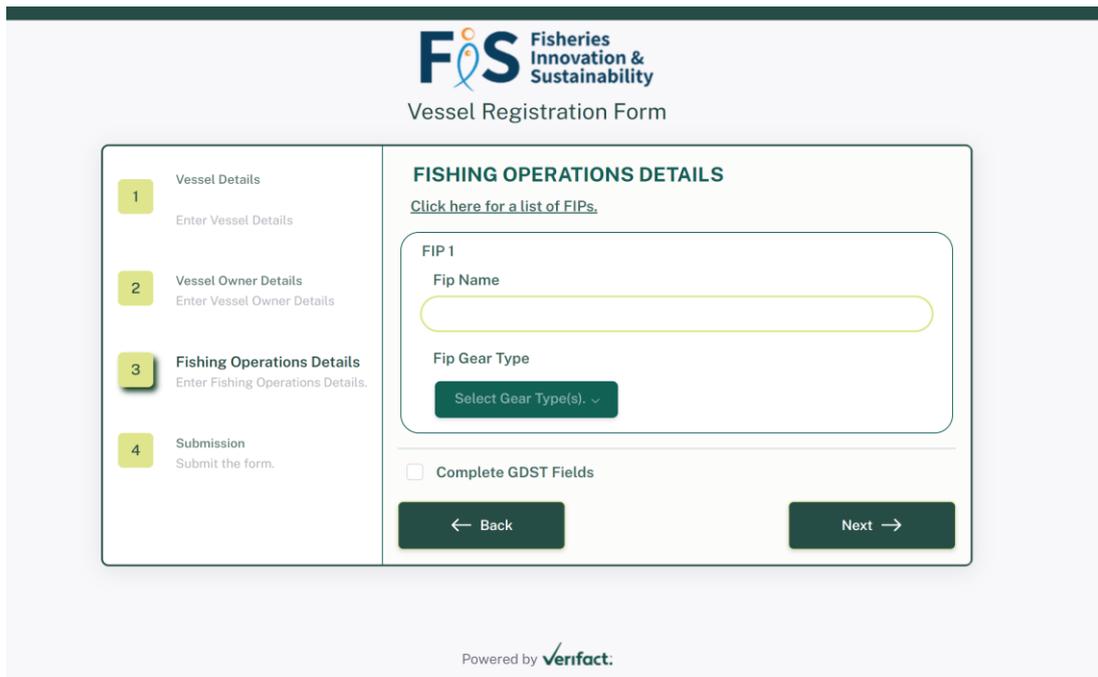


Figure 3 – Screen 3 ‘Fishing Operations Details’

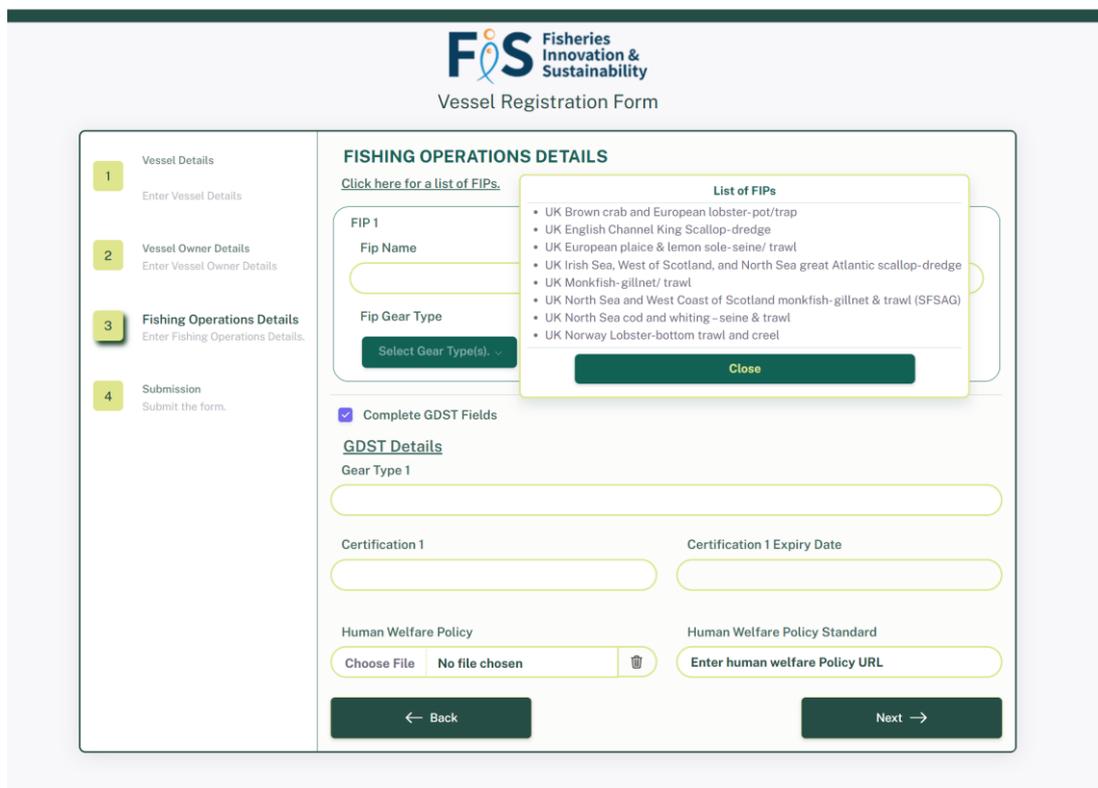


Figure 4 – “Fishing Operations Details” displaying a list of UK registered FIPs.

Once the user has entered the FIP name in the relevant box they can select the relevant gear type or types that the vessel uses in this fishery. The dropdown list displayed is based on the gear types registered with Fishery Progress for that particular FIP.¹¹

¹¹ <https://fisheryprogress.org/directory>

Figure 5 –Screen 3 “Fishing Operations Details” FIP Name and Gear Type entered.
If the vessel is in multiple FIPs, details can be entered by the “Add another FIP” button.

Figure 6 –Screen 3 “Fishing Operations Details” Multiple FIP Names & Gear Types.
Once the user has entered details for all the relevant FIPs they can choose to either add the GDST data or else click “Next” to complete the registration process.

GDST Requirements

Should the user wish to complete the required GDST fields they can do so by ticking the checkbox next to “Complete GDST Fields”. The screen below will then be displayed and some or all of the fields can be completed.

These fields allow the vessel to submit details in relation to any certification schemes they are members of the gear types used by the vessel and also, if they have a human welfare policy for the vessel, upload this policy and confirm if this policy conforms to any existing Human Welfare Policy Standard.

The screenshot shows the 'Fishing Operations Details' section of the 'Vessel Registration Form'. The form is titled 'FISHING OPERATIONS DETAILS' and includes a link for 'Click here for a list of FIPs'. The 'FIP 1' section contains a 'Fip Name' text input field and a 'Fip Gear Type' dropdown menu with a 'Select Gear Type(s)' button. Below this is a checked checkbox for 'Complete GDST Fields'. The 'GDST Details' section includes a 'Gear Type 1' text input field, a 'Certification 1' text input field, and a 'Certification 1 Expiry Date' text input field. The 'Human Welfare Policy' section features a file upload field with 'Choose File', 'No file chosen', and a trash icon, and a 'Human Welfare Policy Standard' text input field with the placeholder 'Enter human welfare Policy URL'. At the bottom, there are 'Back' and 'Next' buttons.

Figure 7 – ‘Fishing Operations Details’ GDST Fields Displayed.

Once the user has entered the information, they can review this via the ‘Submission’ page. They will also need to read and accept the User Agreement and Privacy Policy (see ‘User Agreements’ section below) before submitting the form.

Vessel Registration Form

- 1 **Vessel Details**
Enter Vessel Details
- 2 **Vessel Owner Details**
Enter Vessel Owner Details
- 3 **Fishing Operations Details**
Enter Fishing Operations Details.
- 4 **Submission**
Submit the form.

RECORDED DETAILS FOR SUBMISSION

Vessel Details —

Vessel Owner Details —

Fishing Operations Details —

GDST Details —

Please read and accept ① Terms and Conditions and Privacy Statement and ② Privacy Policy to complete your registration

Terms and Conditions and Privacy Statement

Privacy Policy

Captcha

I'm not a robot

← BackSubmit

Figure 8 – Screen 4 “Submission”.

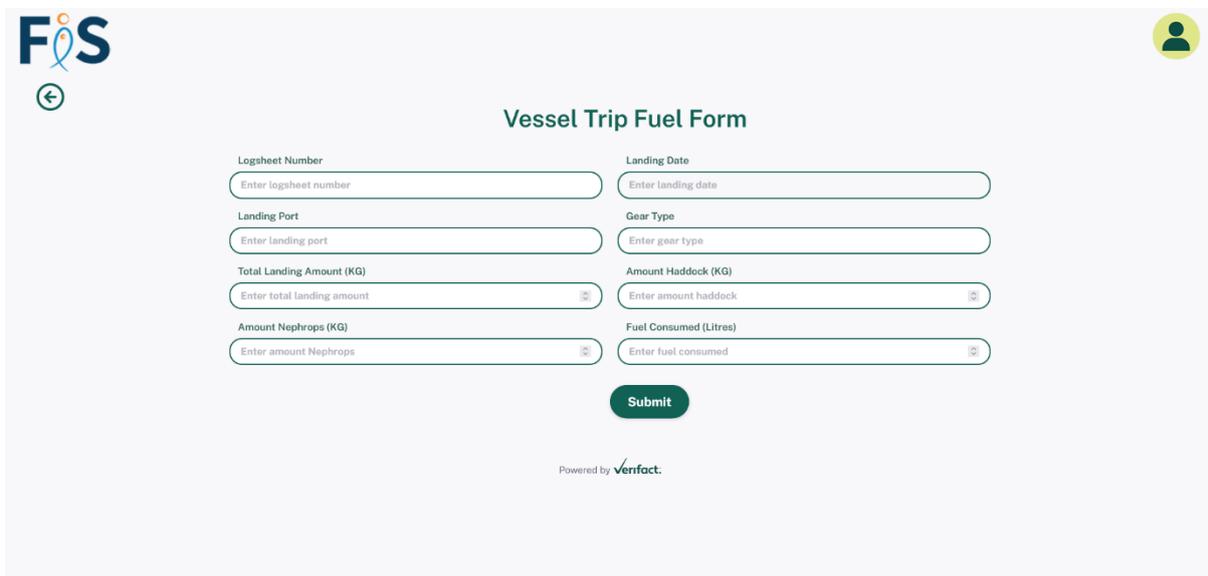
The user will have their username and password emailed to the address provided by them during the registration process.

Vessel Fuel Trip Form

A further component of the Vessels Details Database is the Vessel Trip Fuel Form. Where a vessel has registered in the Vessel Details Database this form will be available to them when they log into their account.

The form allows them to enter data in relation to a specified trip including the total amount of their catch and also the quantity of Haddock and Nephrops (the species this project focused on) contained within that catch.

The form also allows the vessel to record the amount of fuel consumed on the trip. The purpose of the capture of this data is to support carbon footprint calculation.



The screenshot displays the 'Vessel Trip Fuel Form' interface. At the top left is the 'FIS' logo with a fish icon and a back arrow. At the top right is a user profile icon. The form title 'Vessel Trip Fuel Form' is centered. Below the title are eight input fields arranged in two columns. The left column contains: 'Logsheet Number' (text input), 'Landing Port' (text input), 'Total Landing Amount (KG)' (text input with a clear icon), and 'Amount Nephrops (KG)' (text input with a clear icon). The right column contains: 'Landing Date' (text input), 'Gear Type' (text input), 'Amount Haddock (KG)' (text input with a clear icon), and 'Fuel Consumed (Litres)' (text input with a clear icon). A green 'Submit' button is centered below the input fields. At the bottom center, it says 'Powered by verfact.'.

Processor Portal

The processor portal has been designed so as to capture all the fields required to be compliant for GDST. Once the processor has been set up on the system each time, they have a new order they enter the data using the portal. It is a requirement of the system that the vessel the order relates to has registered on the Vessel Details Database.

There are 3 mandatory fields:

1. Product Name
2. Batch or Lot Id
3. Weight/Quantity

Once the processor enters the Vessel Name and Vessel Registration Number, fields will be populated using the information collected in the Vessel Details Database, thereby filling one of the data gaps identified in the Data Gap Analysis. A separate order entry will be made for each vessel who supplied product for that order.

In the initial screen the Processor is asked to enter data about the Product, Batch and Species. To allow for the situation where an individual species may supply more than one species within the same order the second screen allows the processor to enter the required information for multiple species. There is no requirement on the Processor to complete all the fields on the screen to progress to the next screen.

The screenshot displays the 'Data Input Form' for the Processor Portal. The form is titled 'Data Input Form' and is divided into four main sections on the left: 1. Product Related Details (highlighted), 2. Vessel Related Details, 3. Processor Related Details, and 4. Submission. The 'Product Related Details' section contains the following fields: Product Name (Mandatory), Batch or Lot ID (Mandatory), Weight/Quantity (Mandatory), Production Method (Mandatory), Product Origin, Production Date, Expiry Date, Species (Mandatory), Date of Capture, Catch Coordinates, Certification Type, Product Form (Mandatory), Catch Area, Fishery Improvement Project, and Chain of Custody Certification. There are also 'Add New', 'Back', and 'Next' buttons at the bottom of the form. The form is powered by Verifact.

Figure 9 – Processor Portal Screen 1 “Product Related Details”

On the second screen the Processor can enter data relating to the individual vessel who supplied product and information about the catch itself such as date of landing etc. Once the Processor has completed all the fields, they wish they click on the “Next” button. There is no requirement for the Processor to complete all fields in order to progress to the next screen.

Figure 10 – Processor Portal Screen 2 “Vessel Related Details”

If the Processors have a human welfare policy in place, they can upload this on the third screen. In addition if that policy is part of a recognised Human Welfare Policy

Figure 11 – Processor Portal Screen 3 “Processor Related Details”

The final “Submission” screen allows the Processor to review the data they have entered prior to submitting the order details to the database.

Again the processor will be asked to agree with the Terms and Conditions and Privacy Statement and Privacy Policy as included in the Appendices below before submitting the data.

Data Input Form

1 Product Related Details	RECORDED DETAILS FOR SUBMISSION Product Related Details — Vessel Related Details — Processor Related Details — Please read and accept © Terms and Conditions and Privacy Statement and © Privacy Policy to complete your registration Terms and Conditions and Privacy Statement Privacy Policy Captcha <input type="checkbox"/> I'm not a robot  <input type="button" value="← Back"/> <input type="button" value="Submit"/>
2 Vessel Related Details	
3 Processor Related Details	
4 Submission Submit the form.	

Powered by  verifact.

Figure 12 – Processor Portal Screen 4 “Submission”

User Agreements

Verifact's ethos in relation to data protection is that Data Protection should be 'by design and by default'. This means at the outset of each project there is a data protection impact assessment and implement the findings both in the design of the system itself and also in drafting the user agreements for the various user types.

When initially canvassing the industry in relation to their concerns or ideas around potential digitalisation projects concerns were raised regarding potential GDPR issues in collecting the required data.

It is important to be clear as to when GDPR is applicable and when GDPR is not applicable i.e. when data either does not relate to a natural person (i.e. a living human being) or is not in fact personal data.

When GDPR is not applicable there may instead be issues may have related to commercially sensitive data or information which may be subject to a Freedom of Information Request.

In the section below is a brief explanation of the differences between the categories of data which was taken into account by VF when drafting the User Agreements for the project participants.

GDPR

The collection, storing and processing of this data is, post Brexit, regulated by the Data Protection Act 2018, the UK General Data Protection Regulation and The Data Protection, Privacy and Electronic Communications (Amendments etc) (EU Exit) Regulations 2019.

Personal data is defined as any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural, or social identity of that natural person; Under the GDPR data can only be collected and processed where the consent of the person to whom the data relates has been obtained in advance or where the processing is required under law.

To ensure GDPR compliance a data protection impact assessment¹² was carried out during the design phase of the pilot to identify and minimise the data protection risks of the pilot and the findings implemented into the User Agreements.

Sensitive Commercial Data

GDPR only applies to personal data which relates to a natural person. Therefore where, for example, a fishing vessel, processor, or retailer is owned by a company their data is not

protected by GDPR. Usually companies protect what it considers to be “commercially sensitive data” by entering into legally binding agreements with those who have access to the data. These agreements usually set out not only the data the entity will have access to, but also the purpose of this access and who they may or may not disclose the data to. So called “Confidentiality” clauses are standard in all commercial agreements whether NDA’s, contracts for the supply of goods and services and so on.

To address participants' concerns regarding commercially sensitive data the User Agreements were drafted setting out the purpose for the use of commercially sensitive data in the pilot and the participants consent to the same and also the participants consent to the disclosure of this type of data to a specified third party/parties.

Capture of Data from Participants

Prior to receiving any data from participating companies Mutual Non-Disclosure Agreements were entered into between Verifact and the relevant Company.

In addition Participants were provided with and agreed to a Terms of User and Privacy Statement and the FIS Privacy Policy before submitting any data.

Vessel Details Database

Tailored User Agreement was drafted for vessels who supply data through the vessel details database. These were drafted in accordance with UK legislation in relation to the processing of personal data and also deal with commercially sensitive data.

A copy of the Terms of Use and Privacy Statement for the Vessel Details Database is included in Appendix Three below.

A copy of the FIS Privacy Policy is included in Appendix Five below.

Processor Portal

Those processors who participated in the project raised a number of concerns in relation to how the data being supplied by them for the project would be dealt with.

It was important that these concerns be addressed, and this was one of the objectives when drafting the Terms of Use and Privacy Statement for Processors.

Caveat regarding Future Updates

It is likely that the Terms of Use and Privacy Statement for both the Vessel Details Database and the Processor Portal will need to be amended and updated during their lifetime and the process for this has been set out in both sets of User Agreements.

Learnings

- Data is difficult to get from companies unless there is a tangible, focussed benefit for them. Supply chain relationships are delicate, and parties do not wish to upset what works unless there are strong reasons. There are many reasons for participants to share data, for example, to address sustainability reporting, measurement of carbon footprint, telling the story of a product at consumer level, achieving a premium price for a product. Having participants agree on a goal and setting out the objectives in specific supply chains would make projects easier to implement.
- The emergence of the GDST standard is slow and while it will be important in the future it is not currently a strong market driver. It is very likely that GDST will grow in strength. Even if it does not the data required under the standard has multiple uses (see previous point). It is useful to use the standard as a guide for putting together comprehensive supply chain data, but it is important to recognise that this data has many uses regardless of the standards adoption.
- Processing companies have most of the data fields relevant to their own businesses even though it does require some resources to pull it together. Due to regulatory and business requirements processing companies have a lot of data but sometimes this data is not easy to integrate or run reports on. A small amount of investment and planning could improve these datasets internally in many companies. Sharing data would then be easier and not require many resources.
- There are large amounts of data captured for regulatory reasons which can be accessed by vessel owners and agents that could address many of the data deficits further along the supply chain. Maybe this could be done in a way that a third party could validate a transaction and that the data was all available, but not share it all which would be palatable to the catching sector.
- Accurate certification, sustainability and labour policies at vessel level is not available along the supply chain. The Vessel Details Database was developed to address this gap and can be scaled up if the industry sees value in it.
- Data available for imported or exported products is often better than domestically traded products (mostly because catch certs are required).
- In fisheries where a catch certificate is required (associated with either product to be exported or imported) there is a good starting from a data availability point of view.
- The quality of traceability systems in companies varies greatly which directly impacts the quality of the data available for purchases and orders.

Recommendations

- Communication between supply chain participants, written or verbal, about the need for improving data shared would address some issues. Supply chain relationships are delicate so a path forward for future projects could be to agree common goals and objectives for sharing data among specific supply chains as a base to start from. While the FIS role is pre-competitive, it could help with tools and communications that any supply chain could use as a model.
- A strategy to use existing systems that are already in place such as regulatory reporting systems should be explored.
- The infrastructure developed by Verifact provides a platform on which to develop future digitalisation projects making future projects more achievable and cost effective. This infrastructure should be maintained.
- The Vessel Details Database developed by Verifact as part of this project does currently have short term value for collecting and sharing vessel details. It may be valuable to identify pilots for the system to demonstrate this value.
- The Vessel Details Database is set up so that each vessel has a unique account. Functionality could be added so that to enable a vessel owner to record crew information on a per trip basis.

Findings and Recommended Actions

Finding	Recommendation
<p>In some cases, fishing vessel agents and primary processors are not passing on basic data such as vessel names or vessel information to secondary processors one step up the chain. Often, the former does not understand the demand for this type of data from retailers who want more knowledge of their supply chain, are seeking to de-risk it and have declared targets around sustainability that they are bound publicly to report on.</p>	<p>Clear communications, where the need and type of data required at retail level is understood further up the chain, would help get more accurate information while not placing secondary processors in a sometimes-difficult position of looking for this from vessels and agents who may not understand why it is needed. Forums attended by a range of supply chain participants should include agenda items on data trends, what data is needed from what supply chain partners in the short and longer terms.</p>

<p>Accurate certification, sustainability and labour policies at vessel level are not easily accessible further along the supply chain.</p>	<p>The Vessel Details Database developed as part of this project should be utilised to record and store vessel details in relation to vessel participation in sustainability projects and to record individual vessels' policy in relation to labour onboard.</p> <p>The Vessel Details Database should be further developed, and additional functionality could include:</p> <ol style="list-style-type: none"> a. The facility to enable vessels to log in and store crew information on a per trip basis. b. The facility to upload and store crew related documents. c. The potential to register and authorise the use of data captured by other systems could be explored.
<p>There are large amounts of data already captured, (through regulatory reporting systems and safety documentation systems, for example) which can be accessed by vessel owners and agents and could address many of the data deficits further along the supply chain.</p>	<p>The use and sharing of the data already captured by existing systems should be explored. The approach taken in relation to the data sharing agreements developed specifically for this project could be utilised as a template for this.</p>
<p>It is difficult to acquire data from companies unless there is a tangible and specific benefit to them.</p>	<p>Where projects are being implemented which have a sectoral benefit, consideration also needs to be given to participating companies and how they benefit individually from such initiatives to encourage buy-in.</p>
<p>Processing companies have the majority of data required under the GDST standard relevant to their own businesses but often require resources to collate the data as it is not held in a coordinated way that allows it to be shared with other supply chain participants.</p>	<p>When processing companies are reviewing, changing or upgrading their existing internal systems they should consider how these could be improved and integrated to facilitate external standards including GDST.</p>
<p>The awareness in the UK fishing industry of the GDST standard is low, and while it will be important in the future it is currently not a strong market driver.</p>	<p>GDST is actively engaged in communicating its role and benefits across the UK sector and organisations should liaise with the GDST team to keep abreast of the standard's development.</p>

<p>The infrastructure developed as part of this project provides a platform to deliver future digitalisation projects, making these projects more achievable and cost effective.</p>	<p>This infrastructure should be maintained.</p>
<p>This project and other similar ones (often requiring large capital expenditure) have experienced challenges around data sharing when the projects were quite advanced, with significant costs already incurred.</p>	<p>We recommend that in advance of undertaking these types of projects, companies should embark on smaller projects as a precursor to set out what data should be shared, why it should be shared and who will share it.</p>

Appendix 1: SFO QR Code and Landing Page



SFO code – This leads to the SFO Landing Page which was developed for the Seafood Expo in Barcelona. The QR Code leads to a URL on which this page will be hosted on the same domain as the Vessel Details Database and Processor Portal

SFO Landing Page: Below is the landing page which has been developed for the SFO.

Appendix 2: GDST Gap Analysis Spreadsheet

KDE No.	KDE Name	KDE Definition	Data Available	Comment	Recommendations to improve data	Actions	Vessel Details Database Fulfil
W01	Item / SKU / UPC / GTIN	identifier of seafood material to distinguish it within a particular facility, company, or globally.	Yes	Provided by All			
W02	Linking KDE	identifier associated with physical product marking a particular instance of seafood material such as a batch/lot number, serial number, or container number.	Yes	Provided by All			
W03	Weight / Quantity	numerically quantifiable amount of seafood with a standard Unit of Measure.	Yes	Provided by All			

W04	Vessel Name	verbal moniker of a fishing vessel for identifying it visually and on vessel registries.	Yes	Provided by some but data was not available on all domestic products.	Purchaser needs the names of all the vessels who have provided product as part of a batch.	VF has prepared a one pager for processors to provide to their suppliers setting out what data is required and the rationale for providing same.	
W05	Vessel Registration	standardised number or identifier for distinguishing vessels registered under the same flag nation.	No	In general data was not provided but where vessel name was it was possible to obtain data from public registry.	Purchaser needs the registration details of all the vessels who have provided product as part of a batch.	VF has prepared a one pager for processors to provide to their suppliers setting out what data is required and the rationale for providing same.	Yes
W06	Unique Vessel Identification	Identifier associated with a vessel for the duration of its existence that cannot be re-used by any other vessel. Identifier is displayed as a permanent physical marking on the craft.	No	In general data was not provided but where vessel name was it was possible to obtain data from public registry.	Purchaser needs the identification number of all the vessels who have provided product as part of a batch.	Note: if vessel details database registration was completed by all vessels supplying product, then once vessel name was supplied then this data would be available	Yes
W07	Vessel Flag	nation with supervision over safety, fishing operations, and catch reporting.	Yes	Provided by All			Yes

W08	Vessel Trip Dates	Calendar starts and end dates of a fishing vessel's voyage between the last point the fishing hold was empty, and seafood is discharged.	No	Some companies did provide this data but where catch certificates were used as a means of providing data it was not available.	This data is available on Compass system	If access is provided to the Compass system this data can be obtained.	
W09	Date(s) of Capture	date of seafood capture event(s) during the vessels voyage at sea	No	Some companies did provide this data but where catch certificates were used as a means of providing data it was not available.	This data is available on Compass system	If access is provided to the Compass system this data can be obtained.	
W10	Gear Type	equipment used to extract seafood from water for capture.	No	Some companies did provide this data but where catch certificates were used as a means of providing data it was not available.	This data is available on Compass system	If access is provided to the Compass system this data can be obtained.	
W11	Fishing Authorisation	unique number associated with a regulatory document, from the relevant authority, granting permission for wild	No	Some companies did provide this data but not all.	This data is available on Compass system	If access is provided to the Compass system this data can be obtained.	

		capture of seafood by a fisher or fishing vessel.					
W12	Availability of Catch Coordinates	Indicator whether GPS coordinates were collected and are available	No	Not provided	This data is available on Compass system	If access is provided to the Compass system this data can be obtained.	
W13	Satellite Vessel Tracking Authority	Indicator of Satellite Vessel Tracking. Authority responsible for the satellite tracking or verification.		Not provided	Data is publicly available once Flag country known	Look at having a list based on flag country in vessel details database	Yes
W14.1	Catch Area	location(s) where capture of seafood occurred. Catch area FAO		Provided by All			
W14.2	(Compliance with this KDE requires completing all applicable Catch Area data fields)	Catch area EEZ		Not provided	This data is available on Compass system	If access is provided to the Compass system this data can be obtained.	
W14.3							

W14. 4							
W15	Species	scientific (Latin) name of the seafood.		Provided by All			
W16	Product Form	commercial short-hand reference of the degree of transformation of seafood from its original living form.		Provided by All			
W17	Transshipment Location	geographic location where seafood is discharged from a fishing vessel to a transshipment vessel.					
W18	Dates of Transshipment	date on which seafood was discharged from fishing vessel to transshipment vessel					
W19	Transshipment Vessel Name	verbal moniker of a transshipment vessel for identifying it visually and on vessel registries.					

W20	Transshipment Vessel Unique Vessel Identification	Identifier associated with a vessel for the duration of its existence that cannot be re-used by any other vessel. Identifier is displayed as a permanent physical marking on the craft.					
W21	Landing Location	where seafood was first discharged to land.		Not provided	Data available on Compass system	If access is provided to the Compass system this data can be obtained.	
W22	Dates of Landing	calendar start and end dates when seafood is discharged to a landing location.		Provided by All			
W23	Expiry / Production date	Expiration date: calendar date indicating the shelf life of a seafood product.		Not provided			
		Production Date: calendar date of last processing or packaging.		Not provided			

W24	Production Method	categorization, on the spectrum of wild-capture to captive-culture, of the general seafood harvest method.		Not provided			
W25	Product Origin	country where seafood underwent the last substantial transformation.		Not provided			
W26	Harvest Certification	name of harvest standards body which a particular harvest seafood is subject to, and the unique identifier associated with the certified entity.		Not provided	Not required		
W27	Chain of Custody Certification	name of chain of custody standards body which particular harvest seafood is subject to, and the unique identifier associated with the certified entity.		Not provided	Purchaser needs details of any certifications to ensure compliance with sourcing policies	Note: if vessel details database registration was completed by all vessels supplying product, then once vessel name was supplied then this data would be available.	Yes
W28	Fishery Improvement Project	publicly listed name of fishery improvement project which the harvest event is subject to.			Purchaser needs details of any membership of Fishery Improvement Projects	Note: if vessel details database registration was completed by all vessels supplying product, then once	Yes

					to ensure compliance with sourcing policies	vessel name was supplied then this data would be available.	
W29	Transshipment Vessel Flag	nation with supervision over safety, transshipment operations, and catch transfer reporting.		Not provided	Not required		
W30	Transshipment Vessel Registration	standardised number or identifier for distinguishing vessels registered under the same flag nation.		Not provided	Not required		
W31	Landing Authorization	unique number associated with a regulatory document, from the relevant authority, granting permission for discharge of wild capture of seafood to land by a fisher, fishing vessel or transshipment vessel.		Provided by some but not all	Data available on Compass system	If access is provided to the Compass system this data can be obtained.	
W32	Public Vessel Registry Hyperlink	website address with the public registry that contains the listing of the fishing vessel.		Not provided	Data is publicly available once Flag country known		Yes

W33	Transshipment Authorization	unique number associated with a regulatory document, from the relevant authority, granting permission for discharge of wild capture of seafood from a fishing vessel to a transshipment vessel.					
W34	Existence of Human Welfare Policy	Indicator of human welfare policies in place on a vessel/trip, answering the question "What kind of human welfare, labour, or anti-slavery policy was in place on this vessel/trip?" (If internal policy subject to 3rd party audit, select '3P Audit'.)		Not provided	Compliance with GDST requires vessels to confirm whether they have a human welfare policy.	Note: if vessel details database registration was completed by all vessels supplying product, then once vessel name was supplied then this data would be available.	Yes
W35	Human Welfare Policy Standards	Name of internationally recognized standards to which policy on a vessel/trip claims conformity.		Not provided	Compliance with GDST requires vessels to confirm whether they have a human welfare policy.	Note: if vessel details database registration was completed by all vessels supplying product, then once vessel name was supplied then this data would be available.	Yes

Appendix 3: Vessel Details Database Terms of Use & Privacy Statement

This agreement is made between you, the “User” and Verifact International Ltd T/A Verifact having its registered office at Providence House, South Link Business Park, Cork, Ireland T12 CK77, in relation to the use of the services provided by the Verifact software platform. By using our Services, you are agreeing to these terms. Please read them carefully.

Using our Services

In agreeing to use our services you agree to follow any policies relevant to your use of said services as have been provided to you. Using our Services does not give you ownership of any intellectual property rights in our Services.

In connection with your use of the Services, we may send you service announcements, administrative messages, and other information. By signing this agreement, you are consenting to receive such announcements etc. You may opt out of some of those communications by sending an email to support@vfact.com

Your Verifact Account

Once you have signed the user agreement Verifact will create a unique Verifact account for you and will forward on your details to the email address specified in your application.

To protect your Verifact Account, keep your password confidential. You are responsible for the activity that happens on or through your Verifact Account. If you believe there has been unauthorised access to your account, please send an email to support@vfact.com requesting your password be reset.

Privacy and Copyright Protection

Verifact [privacy policy](#) explains how we treat your personal data and protect your privacy when you use our Services. By signing this agreement, you agree that Verifact can use such data in accordance with our privacy policy. From time to time it may be necessary to update our Privacy Policy and a copy of the revised policy will be sent to the email address you provided on signup. If, as a result of same, you wish to withdraw from using our services you can do so by forwarding an email stating same support@vfact.com

Your Content in our Services

Our Services allow you to upload, submit, store, send or receive content. You retain ownership of any intellectual property rights that you hold in that content. When you upload, submit, store, send or receive content to or through our Services, you give Verifact license to use, host, store, reproduce, modify, said content for the sole purpose of demonstrating the efficacy of the Verifact system.

The content uploaded by you will only be available to the entities listed for the duration of the project:

- Verifact International Ltd T/A Verifact (the Service Provider)
- FIS (the Project Owner)

- Processors to whom you supply product.

You are responsible for ensuring that the data you upload to the platform is true and accurate.

If at any time during the project lifetime you wish to withdraw your consent to the use of your content, you can do so by emailing support@vfact.com

About Software in our Services

Verifact gives you a personal, worldwide, non assignable and non-exclusive license to use the software provided to you by Verifact as part of the Services. This license is for the sole purpose of enabling you to use and enjoy the benefit of the Services as provided by Verifact, in the manner permitted by these terms. You may not copy, modify, distribute, sell, or lease any part of our Services or included software, nor may you reverse engineer or attempt to extract the source code of that software.

Pilot System

The platform provided to you is a pilot system and therefore Verifact can give no warranties or guarantees in relation to the system. The system is being provided to you on a free of charge basis for a period of 26 (twenty-six) weeks for the purpose of piloting the system to identify any issues there may be. At the end of the pilot should you wish to continue your use of the software platform a new agreement will be entered into between Verifact and you on terms to be agreed between the parties at that time.

Modifying and Terminating our Services

We are constantly changing and improving our Services. We may add or remove functionalities or features, and we may suspend or stop a Service altogether.

You can stop using our Services at any time using the process set out above. Verifact may also stop providing Services to you or add or create new limits to our Services at any time.

We believe that you own your data and preserving your access to such data is important. If we discontinue a Service, where reasonably possible, we will give you reasonable advance notice and a chance to get information out of that Service.

Our Warranties and Disclaimers

We provide our Services using a commercially reasonable level of skill and care and we hope that you will enjoy using them. But there are certain things that we don't promise about our Services.

OTHER THAN AS EXPRESSLY SET OUT IN THESE TERMS OR ADDITIONAL TERMS, NO SPECIFIC PROMISES ABOUT THE SERVICES ARE MADE. FOR EXAMPLE, WE DON'T MAKE ANY COMMITMENTS ABOUT THE CONTENT WITHIN THE SERVICES, THE SPECIFIC FUNCTIONS OF THE SERVICES, OR THEIR RELIABILITY, AVAILABILITY, OR ABILITY TO MEET YOUR NEEDS. WE PROVIDE THE SERVICES "AS IS."

TO THE EXTENT PERMITTED BY LAW, WE EXCLUDE ALL WARRANTIES.

Liability for our Services

WHEN PERMITTED BY LAW, VERIFACT, WILL NOT BE RESPONSIBLE FOR LOST PROFITS, REVENUES, OR DATA, FINANCIAL LOSSES OR INDIRECT, SPECIAL, CONSEQUENTIAL, EXEMPLARY, OR PUNITIVE DAMAGES.

TO THE EXTENT PERMITTED BY LAW, THE TOTAL LIABILITY OF VERIFACT FOR ANY CLAIMS UNDER THESE TERMS, INCLUDING FOR ANY IMPLIED WARRANTIES, IS LIMITED TO THE AMOUNT YOU PAID US TO USE THE SERVICES AND ONLY IF SAID LOSS IS REASONABLY FORESEEABLE.

Business uses of our Services

If you are using our Services on behalf of a business, that business accepts these terms. It will hold harmless and indemnify Verifact from any claim, suit or action arising from or related to the use of the Services or violation of these terms, including any liability or expense arising from claims, losses, damages, suits, judgments, litigation costs and attorneys' fees.

About these Terms

We may modify these terms or any additional terms that apply to a Service to, for example, reflect changes to the law or changes to our Services. A copy of the revised terms will be sent to the email address you specified in your application. If you do not agree to the modified terms for a Service, you should discontinue your use of that Service using the process set out above.

If there is a conflict between these terms and the additional terms, the additional terms will control for that conflict.

If you do not comply with these terms, and Verifact does not take any immediate action this does not prohibit the taking of such action in the future.

If it turns out that a particular term is not enforceable, this will not affect any other terms.

The laws of the Republic of Ireland will apply to any disputes arising out of or relating to these terms or the Services. All claims arising out of or relating to these terms, or the Services will be litigated exclusively in Irish Courts, and you and Verifact consent to personal jurisdiction in those courts.

Appendix 4: Processor Portal Terms of Use and Privacy Statement

This agreement is made between you, the “User” and Verifact International Ltd T/A Verifact having its registered office at Providence House, South Link Business Park, Cork, Ireland T12 CK77, in relation to the use of the services provided by the software platform.

By using our Services, you are agreeing to these terms. Please read them carefully.

Using our Services

In agreeing to use our services you agree to follow any policies relevant to your use of said services as have been provided to you.

Using our Services does not give you ownership of any intellectual property rights in our Services.

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To protect your Account, keep your password confidential. You are responsible for the activity that happens on or through your Account. If you believe there has been unauthorised access to your account, please send an email to support@vfact.com requesting your password be reset.

Privacy and Copyright Protection

The [privacy policy](#) explains how we treat your personal data and protect your privacy when you use our Services. By signing this agreement, you agree that Verifact can use such data in accordance with our privacy policy. From time to time it may be necessary to update our Privacy Policy and a copy of the revised policy will be sent to the email address you provided on signup. If, as a result of same, you wish to withdraw from using our services you can do so by forwarding an email stating same support@vfact.com

Your Content in our Services

Our Services allow you to upload, submit, store, send or receive content. You retain ownership of any intellectual property rights that you hold in that content.

When you upload, submit, store, send or receive content to or through our Services, you give Verifact license to use, host, store, reproduce, modify, said content for the sole purpose of demonstrating the efficacy of the system.

The content uploaded by you will only be available in aggregated format (i.e. combined with other participants data so as to ensure that no individual data provider can be identified) to the entities listed below for the duration of the project:

- Verifact International Ltd T/A Verifact (the Service Provider)
- FIS (the Project Owner)

You are responsible for ensuring that the data you submit to be uploaded to the platform is true and accurate.

If at any time during the project lifetime you wish to withdraw your consent to the use of your content, you can do so by emailing support@vfact.com

About Software in our Services

Verifact gives you a personal, worldwide, non assignable and nonexclusive license to use the software provided to you by Verifact as part of the Services. This license is for the sole purpose of enabling you to use and enjoy the benefit of the Services as provided by Verifact, in the manner permitted by these terms. You may not copy, modify, distribute, sell, or lease any part of our Services or included software, nor may you reverse engineer or attempt to extract the source code of that software.

Pilot System

The platform provided to you is a pilot system and therefore Verifact can give no warranties or guarantees in relation to the system. The system is being provided to you on a free of charge basis for a period of 26 (twenty-six) weeks for the purpose of piloting the system to identify any issues there may be. At the end of the pilot should you wish to continue your use of the software platform a new agreement will be entered into between Verifact and you on terms to be agreed between the parties at that time.

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We are constantly changing and improving our Services. We may add or remove functionalities or features, and we may suspend or stop a Service altogether.

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We believe that you own your data and preserving your access to such data is important. If we discontinue a Service, where reasonably possible, we will give you reasonable advance notice and a chance to get information out of that Service.

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We provide our Services using a commercially reasonable level of skill and care and we hope that you will enjoy using them. But there are certain things that we don't promise about our Services.

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COMMITMENTS ABOUT THE CONTENT WITHIN THE SERVICES, THE SPECIFIC FUNCTIONS OF THE SERVICES, OR THEIR RELIABILITY, AVAILABILITY, OR ABILITY TO MEET YOUR NEEDS. WE PROVIDE THE SERVICES “AS IS.”

TO THE EXTENT PERMITTED BY LAW, WE EXCLUDE ALL WARRANTIES.

Liability for our Services

WHEN PERMITTED BY LAW, VERIFACT, WILL NOT BE RESPONSIBLE FOR LOST PROFITS, REVENUES, OR DATA, FINANCIAL LOSSES OR INDIRECT, SPECIAL, CONSEQUENTIAL, EXEMPLARY, OR PUNITIVE DAMAGES.

TO THE EXTENT PERMITTED BY LAW, THE TOTAL LIABILITY OF VERIFACT FOR ANY CLAIMS UNDER THESE TERMS, INCLUDING FOR ANY IMPLIED WARRANTIES, IS LIMITED TO THE AMOUNT YOU PAID US TO USE THE SERVICES AND ONLY IF SAID LOSS IS REASONABLY FORESEEABLE.

Business uses of our Services

If you are using our Services on behalf of a business, that business accepts these terms. It will hold harmless and indemnify Verifact from any claim, suit or action arising from or related to the use of the Services or violation of these terms, including any liability or expense arising from claims, losses, damages, suits, judgments, litigation costs and attorneys’ fees.

About these Terms

We may modify these terms or any additional terms that apply to a Service to, for example, reflect changes to the law or changes to our Services. A copy of the revised terms will be sent to the email address you specified in your application. If you do not agree to the modified terms for a Service, you should discontinue your use of that Service using the process set out above.

If there is a conflict between these terms and the additional terms, the additional terms will control for that conflict.

If you do not comply with these terms, and Verifact does not take any immediate action this does not prohibit the taking of such action in the future.

If it turns out that a particular term is not enforceable, this will not affect any other terms.

The laws of the Republic of Ireland will apply to any disputes arising out of or relating to these terms or the Services. All claims arising out of or relating to these terms, or the Services will be litigated exclusively in Irish Courts, and you and Verifact consent to personal jurisdiction in those courts.

Appendix 5: Digitalisation Project Privacy Policy

Our Contact Details

Name: Verifact International Ltd T/A Verifact

Address: Providence House, Unit H1, South Link Business Park, Cork, Ireland.

Phone Number:+ 353 21 245 5670

E-mail: support@vfact.com

The type of personal information we collect

We currently collect and process the following information: personal identifiers, contacts, and characteristics (for example, name and contact details, including telephone number, email)

How we get the personal information and why we have it

Most of the personal information we process is provided to us directly by you for the following reasons: As part of the registration process when you go through the registration process for a Verifact account.

We also receive personal information indirectly, from the following sources in the following scenarios: When other user types such as vessels, processors or retailers go through the registration process for an account and also when submitting or up-loading data related to you on the Verifact system.

We use the information that you have given us in order to create and maintain your account and/or services related to your use of your FIS account. We may share this information with other system users where you have authorised us to do so.

Under the UK General Data Protection Regulation (UK GDPR), the lawful basis we rely on for processing this information are: **Your consent. You are able to remove your consent at any time. You can do this by contacting support@vfact.com**

How we store your personal information:

- Your information is securely stored.
- We keep all personal data for a period of six years being the Statute of Limitations application under Contract Law. We will then dispose of your information by deleting it from our system and any back up copies thereon using an algorithm.

Your data protection rights.

Under data protection law, you have rights including:

- Your right of access - You have the right to ask us for copies of your personal information.
- Your right to rectification - You have the right to ask us to rectify personal information you think is inaccurate. You also have the right to ask us to complete information you think is incomplete.
- Your right to erasure - You have the right to ask us to erase your personal information in certain circumstances.

- Your right to restriction of processing - You have the right to ask us to restrict the processing of your personal information in certain circumstances.
- Your right to object to processing - You have the right to object to the processing of your personal information in certain circumstances.
- Your right to data portability - You have the right to ask that we transfer the personal information you gave us to another organisation, or to you, in certain circumstances.
- You are not required to pay any charge for exercising your rights. If you make a request, we have one month to respond to you.
- Please contact us at support@vfact.com if you wish to make a request.

How to complain

If you have any concerns about our use of your personal information, you can make a complaint to us at support@vfact.com

You can also complain to the ICO if you are unhappy with how we have used your data. The ICO's address:

Information Commissioner's Office
Wycliffe House
Water Lane
Wilmslow
Cheshire
SK9 5AF
Helpline number: 0303 123 1113
ICO website: <https://www.ico.org.uk>

Appendix 6: Pre-Project Questionnaire

1. What is the value of sharing the data proposed?
2. What types of data will be shared?
3. Who will provide the data being shared?
4. How will the data be shared? In what format etc?
5. Is there a clear benefit for each entity providing the data to be shared?
6. Who will have access to the data?
7. What form will the data be reported on in i.e. anonymised, aggregated?
8. Where will the data be stored?
9. Who will process the data?
10. Are the relevant data sharing agreements in place?
11. What happens to the data once the project has been completed?



Fisheries Innovation & Sustainability is a coalition of experts driving strategic innovation for a prosperous and sustainable UK seafood industry. Our remit is to facilitate, coordinate and leverage investment for innovation in UK seafood.

Our Member Organisations include:



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