Beta Implementations Test Seafood Traceability Standard at Scale

Traceability solutions and systems only deliver on the promise of end-to-end traceability when they are interoperable across the supply chain. To meet the consumer and corporate demands for origin-related attributes in seafood such as food safety, environmental sustainability, and social impact; there has been a tremendous proliferation of traceability solution providers in the sector in recent years. Yet, many companies still struggle to ensure interoperability between these systems across their large and diverse network of upstream suppliers and downstream buyers with whom they need to share data. To overcome this persistent challenge, the Global Dialogue on Seafood Traceability (GDST) developed and, in 2020, published a global standard for both aquaculture and wild caught seafood supply chains. The standard consists of Critical Tracking Events (CTEs) and Key Data Entities (KDEs) communicated using the GS1 EPCIS format. Prior to its publication, more than a dozen companies participated in pilots to develop the standard. Since its publication, nearly 50 companies have committed to implement GDST-compliant, interoperable traceability in their supply chains. Several of those have not just committed but have also engaged with GDST co-convener, the Institute of Food Technologist's Global Food Traceability Center (IFT-GFTC) to conduct beta implementations that test the effectiveness of the GDST standard in live supply chain scenarios at scale. This paper profiles three of these betas and provides learnings gleaned to inform best practices as the sector implements GDST.

Direct Business-to-Business Integration in a Large-scale Multinational Fishmeal Supply Chain

The first beta implementation tested interoperability between business systems of two global corporations operating large-scale seafood businesses. IFT-GFTC worked with a large, privately-held multinational corporation who is also a SeaBOS member, and a leading producer of pelagic fish products on GDST implementation. The implementation focused the companies' shared fishmeal supply chain in which the fishmeal producer supplied the large SeaBOS member. This beta also enabled a test of the GDST under direct business-to-business integration without an external traceability solution provider.

This beta implementation of the GDST standard went smoothly and successfully thanks to the companies' solid resourcing and pre-implementation foundational data-sharing practices. Dedicated development teams at both companies made it easy to implement GDST's XML schema, so their respective traceability systems could share required KDEs. Implementing GDST's data standards was further simplified by the nature of fishmeal, which had many KDEs the companies already shared with each other for quality and manufacturing purposes. The success of this beta demonstrated that many companies already have systems in place that can be adapted to meet GDST's data standards, and that data meeting those standards can be effectively communicated using GDST's EPCIS XML format.

Solution Provider-Enabled Implementation in a Vertically Integrated Aquaculture Supply Chain

The second beta implementation began included Chicken of the Sea, a Thai Union company, Envisible, a solution provider, and WholeChain, Envisible's traceability system. The beta tested implementation in a GDST-compliant aquaculture supply chain, which requires traceability back to the feed mill and hatchery. Because elements of the supply chain, including vessels, mills, and farms were already in WholeChain, incorporating additional KDEs required for GDST compliances was relatively simple. The GDST standard helped Envisible achieve interoperability across Thai Union's value chain because it provided clear instructions on what KDEs were to be captured at which CTEs. It can be confusing when these CTEs / KDEs are not explicitly identified because sometimes neither the solution provider nor the seafood companies know exactly what needs to be captured and identifying and agreeing on data elements takes time to resolve. The most challenging node to integrate in this supply chain was the feed mills and their suppliers (Figure 1). Envisible found feed mills lacked harvest KDEs on the wild caught fish used to manufacture their feed. Many aquaculture facilities do not provide lot-based traceability on their feed. For the most part they can just trace the feed type to a hatchery. This beta worked through these challenges to implement GDST at-scale, for standard for farmed shrimp including the required
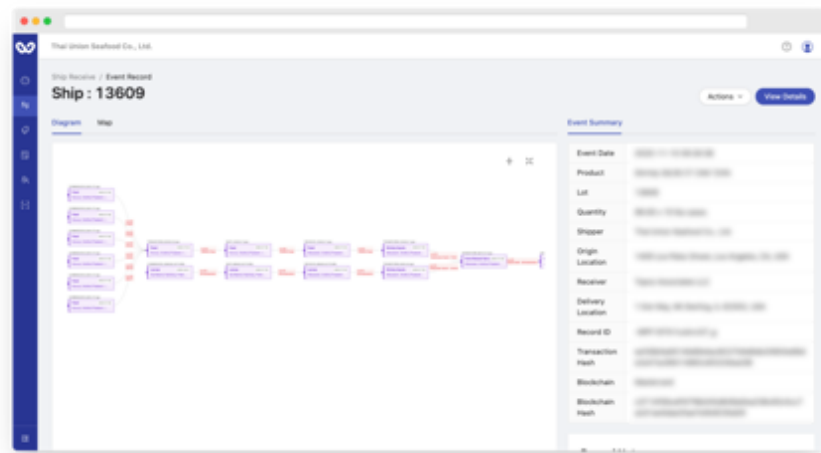

Figure 1. Screenshot of the Envisible/WholeChain beta implementation of GDST in Thai Union's farmed shrimp supply chain. Image: Envisible

traceability back to the source of feed and larvae for every lot. It demonstrates the GDST standard advances the traceability status of aquaculture supply chains, even when solution providers have already established a base level of traceability from farm to consumer. The largest value add from GDST is upstream of the farms, at the feed mills and hatcheries.

Solution-Provider Mediated Implementation Spanning 2 Businesses in a Salmon Supply Chain

IFT-GFTC worked with a salmon farm, a downstream merchant, and a solution provider to conduct a beta implementation across a high-value specialty supply chain. The producer, Mt. Cook Alpine Salmon, is a salmon farm located in the south Alps of New Zealand. The merchant, Culinary Collaborations, are fish mongers with "Clean and Green" all-natural programs core to their brand value and business model. The solution provider, Trace Register, is a seafood traceability solution provider founded in 2002. The beta tested implementation of Trace Register's GDST-compliant traceability system TR5 with both supply chain partners, Mt. Cook Alpine Salmon and Culinary Collaborations.
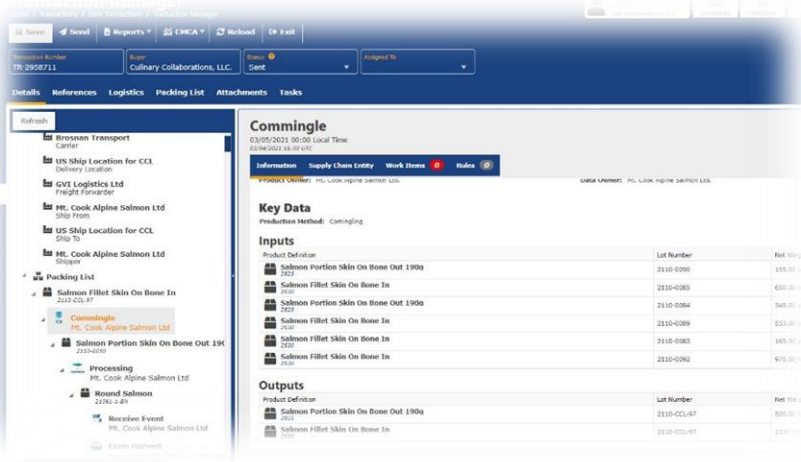
Figure 2. Screenshot of GDST Beta Implementation in the Mt. Cook Alpine Salmon supply chain from hatchery through harvest, processing, and export to end buyer, Culinary Collaborations, LLC.

Mt. Cook Alpine Salmon was able to easily collect data (KDEs) from their internal systems and import that data into TR5 using data integration. KDEs were then exported to Culinary Collaborations using the GDST XML format and GS1 ASN (Figure 2). Culinary Collaborations successfully imported the data from TR5 into their internal systems, demonstrating the ability of companies using GDST-compliant traceability solutions to collect all required KDEs and communicate that data using the GDST XML EPCIS format. GDST's data standards enabled both parties to confirm that a proper level of sustainability and traceability information was collected for each product, and that their traceability data could be shared with any other party that accepted GDST EPCIS XML data.

Conclusions

These beta implementations demonstrated the GDST standards are effective and useful in a wide variety of seafood supply chains from multi-national fishmeal to boutique, high value farmed salmon. The GDST standards are also implementable by in-house development teams, outsourced solution providers working within a single vertically integrated company, or between separate businesses using a GDST-compliant traceability system. Furthermore, they exemplify the variety of supply chains that benefit from sharing uniform data. As more beta tests are completed, GDST will continue to develop documentation for aiding companies looking to implement their standards in the future.