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GS1 Foundation for Fish, Seafood and Aquaculture Traceability Guideline

Implementing traceability in fish, seafood and aquaculture supply chains using the GS1 standards for identification, data capture and data sharing.

Release 1.3, Ratified, Feb 2019

Document Summary

Document Item	Current Value
Document Name	GS1 Foundation for Fish, Seafood and Aquaculture Traceability Guideline
Document Date	Feb 2019
Document Version	1.3
Document Issue	
Document Status	Ratified
Document Description	Implementing traceability in fish, seafood and aquaculture supply chains using the GS1 standards for identification, data capture and data sharing.

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Log of Changes

Release	Date of Change	Changed By	Summary of Change
1.0	June 2015	D.Buckley	GS1 branding prior to eBallot/ratification
1.1	July 2017	D. Buckley, C.Janssen	eBallot version WR 17-026 update in line with latest GDSN Release mainly impacting Annex A.6
1.2	March 2018	Coen Janssen, John Ryu	WR 17-131 update in line with Global Traceability Standard
1.3	January 2019	Coen Janssen, John Ryu	WR 18-108 (additions to EPCIS CBV) and 18-265 (allowing for 2D symbols in addition to 1D on distribution units).

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1 Introduction

The seafood industry continues to evolve to meet consumers' needs. Consumers today are much more knowledgeable and demanding about the foods they purchase. The increased focus on food safety and consumer awareness raises the need to identify and adopt business practices and standards that will aid the seafood sector's ability to track and trace product throughout the supply chain.

1.1 Purpose

Consumers expect safe and nutritious foods. They also expect all participants in the supply chain to have effective practices in place that allow for the rapid identification, location, and withdrawal of food lots when problems are suspected or confirmed. Ensuring that effective practices are in place across a complex and global supply chain is an on-going challenge. For this reason the *Global Fish, Seafood and Aquaculture Implementation Guideline* has been developed to aid in the adoption of consistent business practices to effectively manage traceability for the seafood industry.

1.2 Scope

This implementation guideline is built on the basis of GS1 Global Traceability Standard 2, which defines the minimum traceability requirements across all sectors. The guideline focuses on the additional traceability requirements that are specific for fish traceability.

The scope of this guideline establishes minimum requirements and best practices to share information between distribution channel participants.

This guideline:

- Addresses traceability practices from the processing facility to the point of consumer sale to support Critical Tracking Events (CTEs) such as product creation/repackaging, shipping, receiving, processing, and selling;
- Considers traceability practices upstream from the processing facility, including guidance for source tracking for sustainability;
- Applies to all seafood products for human consumption;
- Applies to all levels of the product hierarchy, which may include consumer items, cases, lots, pallets, etc.; and
- Includes all supply chain participants: farms, vessels, processors, suppliers, exporters, distributors, retailers, and foodservice operators.

1.3 Audience

This is a practical guide that is intended for those responsible for implementing traceability in their company's operations and supply chain. The document provides a guide for traceability practices for seafood farmers, vessels, exporters, suppliers, distributors, retailers and foodservice operators.

However, these traceability practices also define, to a degree, interactions with foodservice distributors, distributors, foodservice operators, exporters, and importers. The guide may be useful to these companies as well.

1.4 About GS1

GS1 believes in the power of standards to transform the way we work and live.

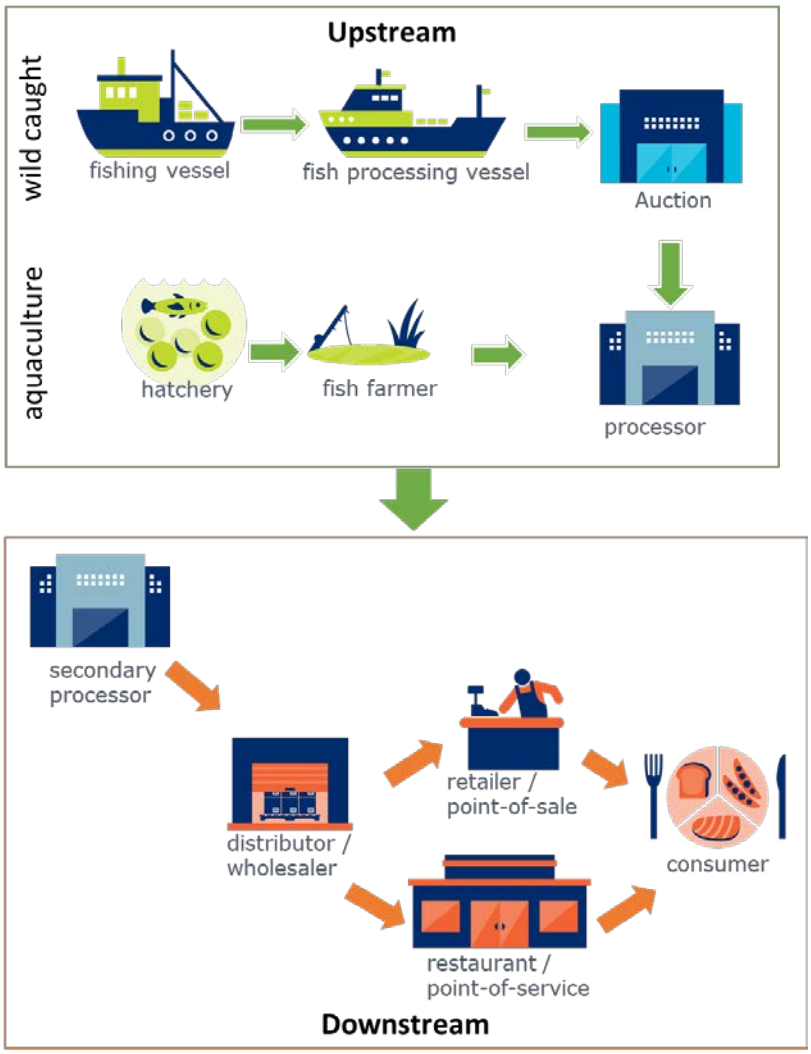
- We create a common foundation for business by uniquely identifying, accurately capturing and automatically sharing vital information about products, locations and assets.
- We enable visibility through the exchange of authentic data.
- We empower business to grow and to improve efficiency, safety, security and sustainability.

2 Supply chain context

2.1 Supply chain overview

The diagram below illustrates the structure of the fish supply chain. It is a generic picture, different paths can be followed going from upstream to downstream.

Figure 2-1 Fish Industry Supply Chain



The fish caught on a vessel is typically filled ungraded into crates of either variable or fixed weight. Alternatively the fish is captured into water tanks. Whether any and which further processing is undertaken directly on the vessel varies largely as well as how many processors are involved down the further supply chain in the port and afterwards. Many different processing scenarios are possible and come across in practice.

On a fish farm the fish is usually graded when caught. Again, the following processing steps and number of parties involved vary to a large intent.

Looking into post-landings, fishery products are first marketed or registered for sale at an auction centre or to registered buyers or to producer organisations. The buyer of fisheries products from a fishing vessel at first sale need to be registered with the competent authorities of the Member State where the first sale takes place.

2.2 Supply chain needs

The two main drivers for fish, seafood and aquaculture traceability are regulatory requirements and the need for greater transparency.

Compliance with regulatory requirements

Product traceability is already a requirement under European Food Law which adopts the 'one up one down' approach for prescribed supplier and consumer information. Hence there is already traceability at all stages of production, processing and distribution from catching or harvesting to retail.

To help combat the landing of illegally caught fish from European waters, fisheries control measures in addition require prescribed information on fisheries and aquaculture products to be available throughout the supply chain.

Although not included within the scope of this guidance, control measures are also applied to imports from non EU countries. This includes a catch certification scheme to prove the fish was legally sourced and provide catch information on entry to the EU.

In other jurisdictions there may be different data requirements, and also a different emphasis on traceability requirements. But generally, whilst it is expected that the European requirements will often be sufficient, there may be additional requirements applicable to other geographical or regulatory constraints.

Transparency

Consumers want to know more and more about the fish they will put on their plates. They may wish to know:

- The exact name of the species
- Whether the fish was caught or farmed
- When it was packaged
- When it was frozen
- Which fishing gear was used to catch the fish
- Where the fish comes from
- Whether sustainable practices were followed
- The environmental impact
- Etc.

Many businesses have already started to add more information on their labels, in order to better differentiate their products and help their customers to make more informed choices.

2.3 Supply chain roles and traceability responsibilities

All parties in the fish supply chain have a shared responsibility when it comes to ensuring traceability. These traceability responsibilities will be driven by regulatory requirements.

Table 2-1 defines the role of each party, and in the last column lists the traceability responsibilities that usually apply. The traceability responsibilities are based on annex C of [GTS2].

Table 2-1 Fish industry supply chain roles and responsibilities

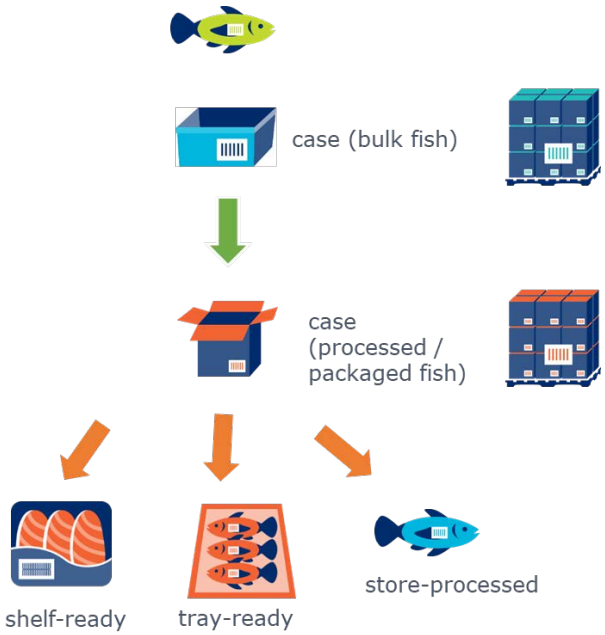
Role	Description	Responsibilities (see [GTS2] Annex C)
fishing vessel	A vessel equipped to catch fish, to perform some basic initial processing and to segregate and sometime grade the various species.	brand owner, data source for master data and event data, recall initiator
fish processing vessel	A vessel with extensive on-board facilities for processing and freezing fish. It catches fish, processes and grades fish, packs fish in retail-ready packaging and freezes them.	brand owner, data source for master data and event data, recall initiator
fish farmer	Feeds, grows and harvests fish for distribution to a processor.	brand owner, data source for master data and event data, recall initiator
auction	Receives fish and confirms compliance with sanitary laws, prior to processing and entry into the commercial supply chain.	shipper, receiver, data source for event data, recall recipient
logistic services provider	Transports caught and harvested fish between any trading partners, physically handles trade items (cases or pallets), maintains sanitary and temperature controls, and maintains accountability information (temperature, traceability, etc.).	carrier, warehouse, physical builder of logistic unit, data source for event data, recall recipient
processor	Receives fish in bulk from fishing vessel, farm or auction, then cleans and fillets the fish, packs it into boxes and ships it to a distribution centre or secondary processor.(	brand owner, data source for master data and event data, recall initiator/recipient
secondary processor	Receives fish from a processor and performs additional processing steps such as creating ready-made meals, sushi-rolls, pre-baked fish, etc.	brand owner, data source for master data and event data, recall initiator/recipient
distributor/wholesaler	Receives fish from producer/processor and then ships to other parties. Wholesaler: Receives product from distribution centre and ships to restaurant to order. These organisations are also referred to as “foodservice distributors”. Also cash & carry wholesalers fall under this category.	shipper, receiver, data source for event data, recall recipient
restaurant/point-of-service	Receives product from wholesaler and consumes it to make prepared food eaten on premises. Includes food prepared in schools, hospitals, etc.	receiver, seller, data source for event data, recall recipient
retailer/point-of-sale	Receives fish from upstream supplier and sells the product to consumers.	receiver, seller, data source for event data, recall recipient

3 Traceable objects

3.1 Overview of traceable objects

Various processing and packaging activities occur in fish supply chains. The fish may undergo various “transformations” before it arrives at the final consumer, and the product will need to be traceable at various packaging levels. The figure below shows the main types of packaging (and physical transformations) that have been identified.

Figure 3-1 Traceable objects



Shelf-ready fish is pre-packed by the supplier. Tray-ready fish is ready to be sold but packed in the store. Store-processed fish still requires final processing before it is sold to the consumer.

3.2 How to identify the traceable objects?

3.2.1 Supported identification keys

GTIN

The GTIN can be used to identify loose or pre-packed trade items at any stage of the supply chain up to the end consumer.

In order to ensure traceability along the entire supply chain, the GTIN should be allocated as early as possible. The brand owner is normally responsible for the allocation of the GTIN. In case of non-branded items (which is typical for the fish sector), the GTIN is assigned by the party which brings the product into the market; this can be the producer/processor or wholesaler.

When retailers, distributors, or operators ask suppliers for own-label products, they (the retailers, etc.) are the brand owner and are therefore responsible for identifying that product in the supply chain. The best practice is to identify these own-label items using the Global Trade Item Number (GTIN). In these cases, the retailers, distributors, or operators will provide the GTIN to use on the product’s packaging.

If a company further processes and packages a product in the supply chain, such as the case with store-processed product, then that company becomes the manufacturer and is responsible for assigning a GTIN and traceability attributes. This may be achieved using a combination of human readable and scannable product information. This information should also be stored for future retrieval if necessary.

Examples
- ✓ Bulk crate of freshly caught cod: GTIN 94444444000018
- ✓ Tray with cod fillets: GTIN 95555555000015
- ✓ Consumer package of cod fillets: GTIN 5555555000029
- ✓ Outer case containing pre-packed cod fillets: GTIN 15555555000026

SSCC

The SSCC is intended for use in transport and logistics processes. It provides a unique serial number that can be used to identify the logistic units in a shipment. The SSCC can be used to identify pallets containing packaged products, as well as bulk units such as containers, bags, sacks, etc. The SSCC in independent of the GTIN, and can be used to identify logistic units with homogeneous as well as mixed contents. The SSCC provides most value when it is used in combination with electronic data exchange, such as the EDI Despatch Advice / ASN or EPCIS.

Example
Pallet containing 20 crates of freshly caught cod: SSCC 344444440000123005

3.2.2 GTIN management rules

The seafood supply chain has product characteristics that are different from general grocery items and therefore additional guidance may be necessary. In addition to the general *GTIN Management Standard*, fish and ingredient suppliers and brand owners should assign GTINs in accordance with the following specific rules:

- Assign a separate GTIN for each product/item.
- Assign a separate GTIN for each different packaging type such as carton-ready, tray-ready and store-processed product.
- Assign a separate GTIN for each primary preservation state in which a product is marketed (e.g., if a product is normally marketed in both a chilled and frozen state, then assign a different GTIN to each state).
- Assign a separate GTIN to product lots that have different marketing claims or production methods when such characteristics are an important marketing feature to buyers (e.g. wild caught, farm raised, species, organic, etc.).
- Assign a separate GTIN for each different pallet and carton configuration.

For more information about the GTIN Management Standard, visit *www.gs1.org/1/gtinrules*

The table below presents, for each relevant stakeholder, a best practice recommendation on the criteria to take into account for GTIN Management of the products in the supply chain (If one of the ticked criteria changes, then the product will need a new GTIN). The criteria are not meant for products which will cross the point-of-sale, i.e. fixed or variable measure packaged products.

Table 3-1 Best Practice - Criteria for GTIN Management

BEST PRACTICE - GTIN MANAGEMENT CRITERIA			
Criteria	Fishing / Farming	Processor	Brand Owner
	Raw product	*Transformed product*	*Consumer product*
Aquatic species	**X**	**X**	**X**
Production method (caught, farmed)	**X**	**X**	**X**
Type of certification (e.g. organic, dolphin friendly)	**X**	**X**	**X**
Conservation reference size	**X**		
Type of preservation (e.g. frozen, salted)	**X**	**X**	**X**

BEST PRACTICE - GTIN MANAGEMENT CRITERIA			
Type of presentation (e.g. untreated, gutted/cleaned, filleted)		X	X
Weight / Grade / Size of fixed measure product (e.g. 200g or 500g) / Quantity (e.g. 4 pieces or 8 pieces)	X	X	X
Type of packaging / container (vacuum plastic, polystyrene)		X	X
Quality label (e.g. certification)	X	X	X

3.2.3 Batch/lot and serial identification

The minimum requirements for traceability rely upon a combination of the GTIN and batch/lot number and/or serial number.

Special care needs to be taken to ensure uniqueness of the batch/lot and serial numbers, especially in situations where multiple parties (e.g. subcontractors) or functional units (e.g. vessels) concurrently assign these numbers for the same GTIN.

Another aspect is non-reuse, in Europe for example the batch/lot number may not be reused for 10 years, which is the archiving period for fish catch records.

Note: If both the batch/lot number and serial number are present, as sometimes happens, the batch/lot number takes precedence in case of a recall.

Example
Bulk crate of freshly caught cod:
GTIN 9111111100001C, batch/lot AB0003-134, serial number 123434552

3.2.4 Fixed and variable measure products and package types

Within the seafood distribution channel, products may be segmented in fixed-weight and variable-weight products. A fixed-weight product is always produced and sold in the same weight. A fixed-weight product is priced per selling unit, rather than by weight. A variable-weight product is a specific product whose weight (and therefore price) varies from unit to unit. A variable-weight product is priced according to the net weight of the item.

Generally, products are delivered by suppliers to retailers, distributors, or foodservice operators in one of the following package types.

Figure 3-2 Seafood package types

Case package types	Definition	Product examples
Fixed-weight units, case or shelf ready	Food Service or Consumer level items ready for sale. Product is processed, packaged, and labelled for sale by supplier.	Breaded or un-breaded seafood, canned seafood, bagged frozen seafood, fresh seafood. Retail and Food Service
Variable-weight units, Case or Shelf Ready Pre-priced	Food Service or Consumer level items ready for sale. Product is processed, packaged, and labelled for sale by supplier.	Bulk shrimp, bulk frozen fillets, chilled shrimp and fillets. Retail and Food Service
Variable-weight units unpriced	Processed, packaged, and partially labelled for consumer sale by supplier. Final labelling for consumer sale is done by the retailer.	Whole round fish or fillets fresh or frozen, bulk shrimp, crab clusters, bulk oysters or scallops. Retail only
Tray-ready	Processed and bulk packed by supplier. Packaged for consumer sale and labelled by retailer.	Bulk shrimp, frozen fillets, chilled shrimp, lobsters and fillets. Retail only

Case package types	Definition	Product examples
Store processed	Bulk packed from supplier and retailer is doing further processing, labelling and packaging.	Whole round fish or fillets fresh or frozen, bulk shrimp, crab clusters, bulk oysters or scallops. Retail only

3.2.5 Industry practice for product dating

Although the date is not used at the case/carton and logistic unit level for traceability, it is related to the product batch/lot number and for retail and food service the date is also critical for inventory management. Selection of the date type used by the type of product is related to the product type packaged.

Some industry practices for product dating by product type and date type are:

- Minimally processed, refrigerated or frozen seafood – use the **production date**.
- Further processed foods – If the process that you use alters the life of the product such as cooking or freezing a refrigerated product, the appropriate date is the **packaging date**.
- Cutup and repacked seafood – Neither of these change the useful life of the product. The original **production date** should be on the case label as described above. The process step of cutup or repack, however, should be traceable by the batch/lot number.
- Otherwise blended seafood – These blends, intended for use in other processes, should be identified with a **use-by date**. By using a use-by date, the items can be produced to satisfy volume needs without regard for final use. The use-by date should be calculated based on the seafood used to produce the product.
- Products for end customers should be marked with the **use by date** (= expiration date), **best by date** (= best before date) or **sell by date**.

3.3 How to mark the traceable objects?

Automatic identification is a prerequisite for the fast and precise tracking of traceable objects. At a minimum, the identification key, batch/lot ID and if applicable serial ID (see section 3.2) need to be marked on the traceable object. Encoding other frequently needed data elements, such as the expiration date or best before date will often be valuable as well.

3.3.1 Supported data carriers

The most important GS1 approved data carriers used for fish traceability are EAN/UPC, GS1-128, GS1 Databar and GS1 2D symbols such as GS1 Datamatrix.

Note: The different data carriers can carry different amount of data and require different technologies to read them and decode them. Linear barcode symbologies such as EAN/UPC symbols, GS1-128 symbols and GS1 Databar symbols can be read by laser-based barcode scanning devices.
In many retail point of sale installations this is still the only technology available. More and more though, newer equipment also includes imaging technology, which enable to not only read linear barcodes but also 2-dimensional (2D) barcodes. The majority of barcode reading equipment deployed after October 2013 has imaging technology. See also https://www.gs1.org/sites/default/files/docs/barcodes/2d_position_paper-release13feb_002.pdf .
In general distribution and logistics image-based technology is also more and more applied, including general-purpose mobile devices such as phones. See also https://www.gs1.org/sites/default/files/docs/barcodes/2D_symbols_distribution_and_logistics_position_papers.pdf .

EAN / UPC

EAN/UPC symbols can carry the GTIN as well as restricted circulation numbers (RCN). EAN/UPC symbols are widely used at retail POS. The symbols do not support other GS1 keys, and also do not allow for inclusion of additional attributes.

Example
The EAN-13 symbol below encodes the GTIN.

GS1-128

GS1-128 barcodes can carry all GS1 identification keys (including the GTIN and SSCC) and also support GTIN key extensions (batch/lot or serial number number), which enhances the ability to track and trace products moving through the supply chain.

Besides the keys and key extensions, also additional attributes such as catch date and catch area can be encoded.

Example
The GS1-128 example below encodes the GTIN (01), expiry date (17) and batch/lot number (10).

GS1 DataBar

A family of symbols that can be scanned at retail point-of-sale (POS). GS1 DataBar symbols can carry the GTIN and GTIN key extensions (batch/lot number and serial number), and additional attributes such as a best before date or expiration date. In this way, GS1 DataBar can improve the in-store management processes for fresh produce, including fish.

Example
The GS1 DataBar Expanded example below encodes the GTIN (01), net weight in kg (3103), best before date (15) and batch/lot number (10)

GS1 2D symbols

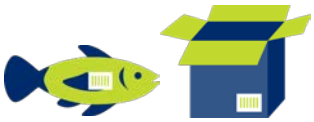
GS1 2D symbols (GS1 DataMatrix and GS1 QR Code) can carry all GS1 keys, GTIN key extensions (batch/lot number or serial number) and additional attributes such as the best before date. Currently, GS1 2D symbols are only allowed in addition to linear barcodes. The reason for this is that not all parties already have the image-based technology required to read 2D symbols. See [GENSPECS section 4.16] for more information.

Example
The GS1 DataMatrix example below encodes the GTIN (01), expiration date (17) and batch/lot number (10)

(01) 0 9501101 53000 3
(17) 150119
(10) AB-123

Note: Although the GS1 2D symbols support a higher data capacity than 1D symbols, it is recommended to limit the contents to the minimum data requirements. This will make it easier to create and preserve a good quality symbol that can be scanned throughout the supply chain. It will be important to establish the right balance between barcoded data and data that will be shared electronically (see also section 4.4).

3.3.2 Marking of cases



Both variable-weight and fixed-weight product cases must be clearly labelled with the same traceability information in text format. Such text should be clearly labelled data elements such as the text “Batch Number” followed by the batch number value. In addition to the text, barcodes can be utilised for efficient exchange of traceability data. The linear barcodes, GS1-128 and GS1 Databar, allow for the use of GS1 Application Identifiers (AI) to define different data elements in a barcode on each case.

A GS1 2D symbol may be included in addition to the linear barcode, enabling parties that are ready or 2D scanning to benefit from these more compact and robust barcode standards.

The supplier must establish product identification, using the GTIN and batch/lot number, at case level to enable effective traceability or product recall. Using a serial number for each case, rather than a batch/lot number, is also acceptable; a batch/lot number or a serial number must be provided in addition to a GTIN.

Table 3-2 Summary of scannable and human readable traceability data elements

	Shelf-ready		Tray-ready / Store-processed	
	Human Readable	Scan	Human Readable	Scan
Brand Owner/Company Name	X		X	
Consumer item product description	X		X	
Lot number as defined	X	X	X	X
Global Trade Item Number (GTIN)	X	X	X	X
Catch date or Best before date or Sell-by date Or Use-by date or Production date	X	X	X	X
Net Weight	X (*)	X (*)	X (*)	X (*)

(*) for variable measure products

Note: Additional data elements may need to be included in situations where parties cannot (fully) rely on electronic communication. See section 4 for more information.

3.3.3 Marking of contained products

This section details how retailers, distributors, or foodservice operators manage the minimum required traceability data for contained products.

The data on the product serves two purposes:

1. Support of POS-scanning and store inventory management. This is accomplished with barcoded data.
2. Provide customers with information about the product. This will mainly be accomplished with human readable information.

The table below provides an overview of the barcoded and human readable data that need to be present at a minimum per type of product.

Table 3-3 Contained product traceability data elements

Data Elements	Shelf-ready		Tray-ready / Store-processed	
	Human readable	Scan	Human readable	Scan
Brand owner/Company name	X		X	
Consumer item product description	X		X	
Lot Number as defined	X	X	X	X
Global Trade Item Number (GTIN)	X	X	X	X
Best before date OR Sell by date OR Use by date OR Production date	X	X	X	
Net weight	X	X (*)	X	X (*)

(*) for variable measure products

Note: Transparency and regulatory requirements can lead to inclusion of several other data elements. See section 4.2 *Key Data Elements* for more information.

The party responsible for packaging, labelling, barcoding, and shelf life management of the products varies with the packaging type. The following table highlights for each packaging type whether the supplier or the retailer has responsibility:

Table 3-4 Responsible party for product traceability data

Packaging type	Packaging		Label placement		Item reference		Shelf life management	
	Supplier	Retailer	Supplier	Retailer	Supplier	Retailer	Supplier	Retailer
Shelf-ready (fixed weight)	X		X		N/A	N/A	X	
Shelf-ready (variable weight)	X		X (*)	X (*)		X		X
Tray-ready		X		X		X		X
Store-processed (full service and packaged)		X		X		X		X

(*) Pre-priced variable-weight shelf-ready product is labelled by the supplier in accordance with retailer instructions; Non pre-priced variable-weight shelf-ready product is labelled by the retailer

3.3.3.1 Shelf-ready products

Although shelf-ready consumer items are always packaged by the supplier, they may be pre-priced or un-priced when delivered to retailers. In either case, the retailer always determines the sell-by date.

Fixed-weight consumer items often have an EAN-13/UPC-A barcode which includes a GTIN, but no additional traceability attributes. While the item reference provides the retailer with information about the type of product sold including the price, it is less useful for more advanced applications such as date checking and processing variable measure trade items.

Using a GS1 DataBar Expanded symbol provides the opportunity to encode additional data other than the GTIN, such as expiry date or lot number.

A GS1 2D symbol may be included in addition to the linear barcode, enabling parties that are ready or 2D scanning to benefit from these more compact and robust barcode standards.

Note: The use of restricted circulation numbers (RCNs) has serious limitations when it comes to traceability, and is therefore not recommended.

3.3.3.2 Store-processed and tray-ready products

For store-processed and tray-ready processed products, it is recommended to apply GTINs (assigned by the retailer or wholesaler) and follow the same method as for shelf-ready products, using EAN/UPC or GS1 DataBar, and potentially a 2D symbol in addition.

For the packaging and labelling of store-processed and tray-ready products, the supplier's case GTIN and batch/lot number or case serial number will need to be associated with the GTIN and sell-by date that is applied to the package by the retailer or wholesaler.

Maintaining this association makes store-processed and tray-processed product traceability a greater challenge than shelf-ready consumer items where product is processed only by the original supplier.

Note: The use of retailer / wholesaler assigned in-store codes has serious limitations when it comes to traceability, and is therefore not recommended.

3.3.4 Products from live seafood providers

Live animal/seafood product lots must be traceable. This is accomplished by associating each seafood lot identification number with the GTIN and batch/lot number of the output product it is used to produce.

Live seafood providers deliver product in various logistic units. Each logistic unit should be individually traceable.

3.3.5 Other product ingredients

Batters, breadings, seasonings, marinades, salt, citric acid, packaging materials and many other product inputs are used in the production process by suppliers.

Product ingredients should be identified by a GTIN and batch/lot number or serial number, assigned by the supplier.

The GTIN and batch/lot or serial number of each input product must be associated with the GTIN and batch/lot or serial number of the output product. See section 4.3.4 *Processing* for more information.

3.3.6 Marking of logistic units

To ensure traceability of logistic units such as pallets and roll-containers and smaller units such as cases that are shipped independently, a label needs to be applied. The GS1 Logistics Label is a standard format that explains how text and barcodes must be positioned and formatted. The Serial Shipping Container Code (SSCC) is the only mandatory element on the label. Additional data elements that provide information on transport, destination and contents of the logistic may be included. See the GS1 Logistics Label Guideline [LOGLAB] for more information.

3.4 How to automatically capture data about traceable objects?

Best practices for maintaining traceability for the suppliers, retailers, processors, wholesalers, distributors, and foodservice operators is to capture all agreed to traceable information and store it within their systems by scanning the information directly from the case and/or consumer item barcodes.

Scanning enables data to be captured, stored, and retrieved without the need to visually review the human readable information and manually key that information into systems. This typically involves the use of a scanning device, usually a barcode scanner.

Product can be scanned for Critical Tracking Events e.g. as it enters a distribution centre; as it is shipped out of the distribution centre; as it is received at a retailer store or foodservice operator; or as it is opened for processing or consumer display.

More and more retailers, processors, distributors and wholesalers are putting processes in place to collect and store at least the minimum product information required to support traceability.

4 Traceability data

4.1 Overview of traceability data

Fish traceability data is needed to provide parties downstream with information on what happened upstream. These data need to be recorded by each individual party and are defined in this guideline as Key Data Elements (section 4.2) and Critical Tracking Events (section 4.3).

Traceability data can be pushed from one party to the next party or provided on request. Two main data sharing standards are supported in this guideline, EDI and EPCIS (see section 4.4). The guideline also supports sharing of data in barcoded form, as explained in section 3.

Traceability data can be used for various business purposes. The most important uses are described in this guideline (see section *4.5*).

4.2 What are the Key Data Elements?

Key Data Elements (KDE) ensure that captured and recorded data can be interpreted by all supply chain partners. Key Data Elements define Who, What, When, Where and Why.

Since a lot of the KDEs are expressed as identification keys, also master data (MD) related to these keys will be required. For a trade item class, for example, master data might include the trade item's dimensions, descriptive text, nutritional information (in the case of a food product), and so on. Although master data is static, it can change over time. It is important to refer to the master data that were in effect at the time of the Critical Tracking Event.

WHO	
GLN of party	Used to identify the fishing or farming company that did the first sale (see *sales note*). Also used to identify buyers and sellers of fish further downstream.
WHAT	
GTIN +	Global Trade Item Number that identifies the type of trade item.
▪ Batch/lot number	The batch/lot number associates a trade item with information the manufacturer considers relevant for traceability of the trade item. The data may refer to the trade item itself or to items contained in it. In combination with the GTIN the batch/lot number identifies a group of trade item instances.
▪ Serial number	A code, numeric or alphanumeric, assigned to an individual instance of an entity for its lifetime. In combination with the GTIN the batch/lot number identifies exactly one trade item instance.
▪ Quantity	The quantity of the respective trade item.
▪ Net weight	Used to identify the net weight of the trade item. Net weight excludes any packaging materials. Has to be associated with a valid unit of measurement.
SSCC	Serial Shipping Container Code that identifies an individual logistic unit.
WHERE	
GLN of physical location	Used for landing location / first processing location in case of caught fish. Used to identify production and inventory locations.
WHEN	
Date and time of Critical Tracking Event (CTE)	E.g. production, shipping, receiving
WHY	
Business process of Critical Tracking Event (CTE)	Used to record the process context of the critical tracking event. Example: Shipping.

Disposition	Status of the traceable object subsequent to the CTE. Example: Available for sale, quarantined.
Transaction reference	E.g. sales note, PO reference, …

4.2.1 Location and party master data

Name and address	Name and address of the party/location.
Additional IDs	Identifiers used in addition to the GLN to identify the party/location.
Tax number	VAT number, company tax number or equivalent ID of the party.
Flag state of vessel	The state under whose laws the vessel is registered or licensed.
Vessel registration number	Number used to identify the vessel in the register of the flag state.
FBO approval number	Number used to identify a food business operator (FBO) in an official registry related to food standards and safety.

4.2.2 Trade item master data

Aquatic species code	The United Nations Fisheries and Aquaculture Department of the Food and Agricultural Organization (FAO) Fisheries and Aquaculture Statistics and Information Service (FIPS) collates world capture and aquaculture production statistics at the species, genus, family or higher taxonomic levels in 2 119 statistical categories (2011 data) referred to as species items. ASFIS list of species includes 12 421 species items selected according to their interest or relation to fisheries and aquaculture. For each species item stored in a record, codes (International Standard Statistical Classification of Aquatic Animals and Plants group, taxonomic and 3-alpha) and taxonomic information (scientific name, author(s), family, and higher taxonomic classification) are provided. An English name is available for most of the records, and about one third of them have also a French and Spanish name. Information is also provided about the availability of fishery production statistics on the species item in the FAO databases; example: IZX. This list can be accessed via: *http://www.fao.org/fishery/collection/asfis/en*
Certification (0..n)	Certification on quality, sustainability, animal friendliness etc.
Commercial designation	Name or names accepted or permitted locally or regionally …, when marketing fish in the EU and are provided to consumers at the point of retail. [source: https://www.gov.uk/government/publications/commercial-designations-of-fish-united-kingdom]
Conservation reference size	This attribute indicates conservation reference size of a fishery or aquaculture product. It is used upstream in order to avoid that below-size products are not sold through consumer channels. Note: For products intended for the European market the legal sizes are defined in COUNCIL REGULATION (EC) No 2406/96 of 26 November 1996, common marketing standards for certain fishery products – Annex II.
Fish presentation code	This attribute indicates presentation form of a fishery or aquaculture product. NB! This attribute is designated for use upstream in the supply chain.
Fish preservation state	Code value indicating the preservation technique used to preserve the product from deterioration.

Production method	The Production Method provides the production method for fish and seafood as specified by the Fisheries and Aquaculture Department of the Food and Agricultural Organization (FAO) of the United Nations. The allowed values, as defined by the Fisheries and Aquaculture Department of the Food and Agricultural Organization (FAO) of the United Nations are: ▪ 01 Caught at Sea ▪ 02 Caught in Fresh Water ▪ 03 Farmed ▪ 04 Cultivated (GS1 code, not defined by FAO)
Scientific name	Every recognised species on earth (at least in theory) is given a two-part scientific name. This system is called "binomial nomenclature" and ensures that every scientific name is unique.
Storage state	A code depicting that the referred product was previously frozen or not.

4.2.3 Trade item master data - instance/lot level

Instance/lot master data (ILMD) are attributes that provide information about one or more specific instances or batches or lots of a product. An example of ILMD is the expiration date of a perishable trade item. Other examples of ILMD include date of manufacture, place of manufacture, weight and other physical dimensions of a variable-measure trade item, harvest information for farm products, and so on.

Important: These examples illustrate that ILMD can also be used to record data about events that happened further upstream. In this guideline it is assumed that the first event that is recorded is the initial packing of the fish. This implies that data about events further upstream will need to be recorded as ILMD.

Producer(s)	
▪ GLN of aquaculture farm details	Identification of a party that engages in aquaculture or mariculture.
▪ GLN of fishing vessel	Identification of a party that engages in commercial fishing. Note: Though fishing vessel name and vessel registration number has some recognition in the market as key identifier neither of them is globally unique. Therefore, as a key identifier of the vessel GLN is recommended as best practice instead. However, GS1 cannot enforce the use of GLNs. In most European countries it is not a recognised identification scheme for fishing vessels yet. In those countries, at best, GS1 can recommend the GLN as an alternative way to submit this information (for that purpose, vessel id and name need to be defined in the respective GLN master data file).
▪ GLN of fish processor	Identification of a party that engages in fish processing.
Batch history dates	
▪ Catch/harvest date(s)	The date or date range period that the fish were caught or harvested.
▪ Production date	The production or assembly date determined by the manufacturer.
▪ First freeze date	The first freeze date is applicable to products that are frozen directly after slaughtering, harvesting, catching or after initial processing of the product. Examples include fresh meat, meat products or fishery products. The first freeze date is determined by the organisation conducting the freezing.
▪ Packing date	The date when the goods were packed as determined by the packager.
▪ Sell by date	The date specified by the manufacturer as the last date the retailer is to offer the product for sale to the consumer. The product should not be merchandised after this date.

▪ Best before date or Use by date	The use by date is the date that determines the limit of safe consumption or use of a product. The best before date signifies the end of the period under which the product will retain specific quality attributes or claims even though the product may continue to retain positive quality attributes after this date.
Catch certificate ID	This attributes contains identification number of a certificate with information demonstrating the legality of the fishery and aquaculture products concerned.
Country of export	Country from which the batch/lot was exported. This is not the same as the country of origin. Note: In the EU this attribute indicates from which third country (outside of European Union) fishery and aquaculture products were exported.
Economic zone	Economic zone in which fishery or aquaculture products were caught or cultivated. Note: In the EU this attribute is used to refer to a list of sovereign waters.

4.2.4 Trade item master data - trade item, lot and instance level

These attributes are used on GTIN level in order to generally describe the product. When used on instance/lot level the attributes are more specific.

Example
GTIN: Scottish salmon. Catch area: 27 - Atlantic Northeast
GTIN + batch/lot: Catch areas 27.10.b & 27.12.c

Catch area (0..n) ▪ Dominant catch area (0..1)	The catch area identifies where the fisheries product was caught using the international fishing areas and subareas as defined by the United Nations Fisheries and Aquaculture Department of the Food and Agricultural Organization (FAO). A complete FAO Catch Area list can be accessed via: *http://www.fao.org/fishery/area/search/en* . It is assigned by the fishing vessel that has caught the fisheries product. The fishing areas comprise: ▪ Major inland fishing areas covering the inland waters of the continents, ▪ Major marine fishing areas covering the waters of the Atlantic, Indian, Pacific, and Southern Oceans, with their adjacent seas. Major fishing areas as well as the subareas can be identified; FAO example: 27.8.e.2 West of Bay of Biscay Non-NEAFC Regulatory Area.
Country of origin (0..n) ▪ Dominant country of origin (0..1)	The country of origin is normally the country in which the trade item has been produced or manufactured. Note: In the EU for farmed fish and aquaculture products the dominant country of origin can be used to indicate in which country the product gained more than half its weight.
Fishing gear category	The fishing gear category is defined by the United Nations Fisheries and Aquaculture Department of the Food and Agricultural Organization (FAO) and is used to identify the type of fishing gear used for catching the fisheries product. The Fishing Gear Type list provides definitions of fishing gear of all kinds, grouped by categories. These definitions and classifications are valid on a world-wide basis for both inland waters and sea fisheries, as well as, for small-, medium-, and large-scale fisheries. This list can be accessed here: *ftp://ftp.fao.org/FI/DOCUMENT/cwp/handbook/annex/AnnexM2fishinggear.pdf* Data example: ▪ 01 Surrounding Nets ▪ 01.1 Purse Seines ▪ 01.2 Surrounding Nets without purse lines

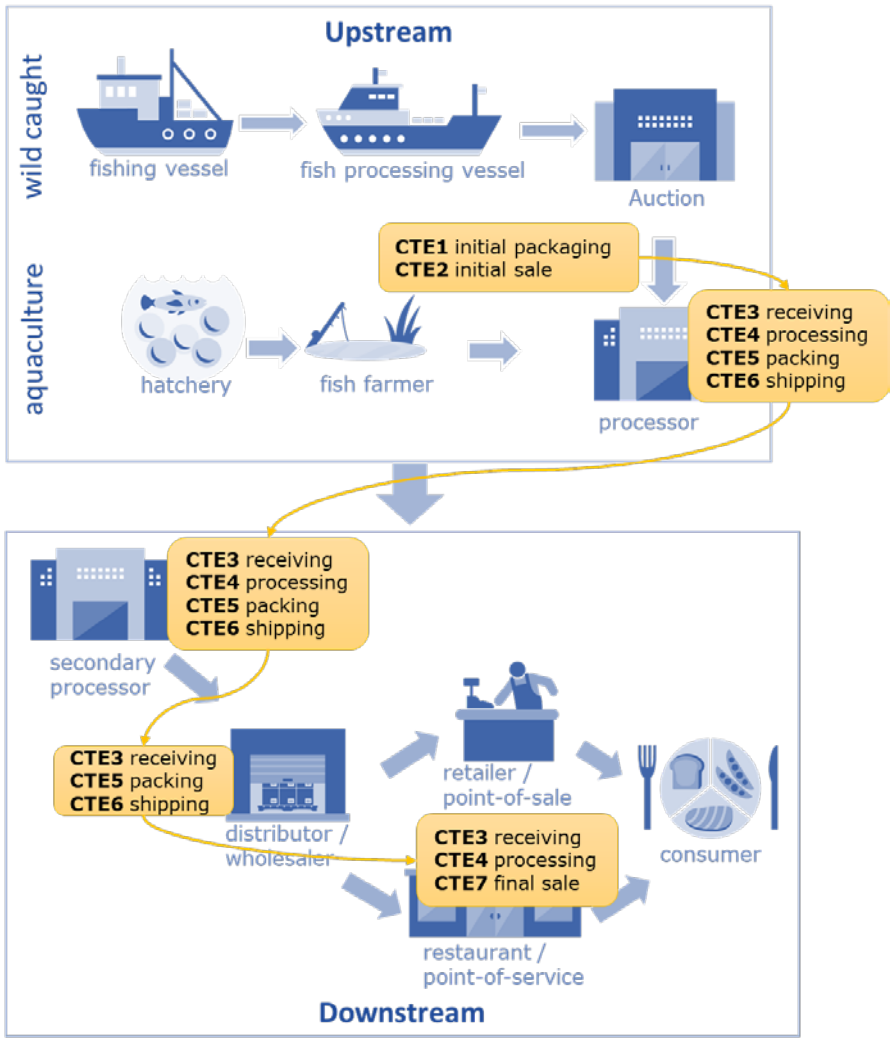
4.3 What are the Critical Tracking Events?

Traceability processes are only as good as the weakest link. Therefore, it is important for suppliers, retailers, processors, distributors, wholesalers, and foodservice operators to understand the value of collecting and maintaining product information that supports, at the very least, “one up/one down” traceability.

Critical Tracking Events are records of the completion of a step in the business process in a supply chain, that is critical to record and share, in order to ensure end-to-end traceability. Critical Tracking Events provide a precise and granular view of the physical events, including the final sale to the end consumer. It goes beyond the recording of commercial transactions between trading partners. See also [GTS2].

The figure below illustrates the Critical Tracking Events that have been defined for the seafood supply chain.

Figure 4-1 *Critical Tracking Events for Seafood Traceability*



Note: The CTEs could be expanded to capture more of the upstream events, both in the aquaculture and wild caught supply chains. In this version of the guideline the first CTE is assumed to be the initial packing of the fish, and data about events before that time are recorded as instance/lot master data.

The following paragraphs provide more details about the KDEs and instance/lot master data that will need to be recorded for each CTE.

4.3.1 Initial packing of caught or farmed seafood

who	GLN of fishing company OR GLN of aquaculture company
what	GTIN + batch/lot ID + quantity OR GTIN + serial ID
when	packing date and time
where	GLN of packing location
why	[cbv] commissioning
ILMD	See sections *4.2.3* and *4.2.4*

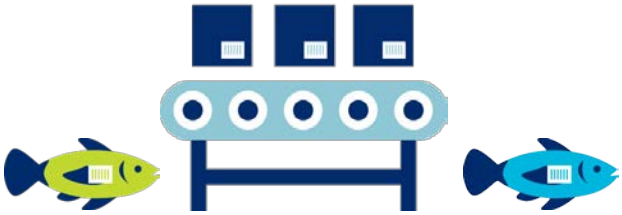
4.3.2 Initial sale of caught or farmed seafood

who	GLN of supplier GLN of customer
what	SSCC GTIN + batch/lot ID + quantity OR GTIN + serial ID
when	date time of sale
where	GLN of shipping location
why	[cbv] consigning Reference to Sales note

4.3.3 Receiving

who	GLN of supplier GLN of customer
what	SSCC GTIN + batch/lot ID + quantity OR GTIN + serial ID
when	date time of receipt
where	GLN of receiving location
why	[cbv] receiving

4.3.4 Processing

	
who	GLN of processor
what	input (can be multiple): GTIN + batch/lot ID + quantity OR GTIN + serial ID output (can be multiple): GTIN + batch/lot ID + quantity OR GTIN + serial ID
when	date time of production process start
where	GLN of processing location
why	[cbv] commissioning ([epcis] transformation event)
ILMD	See sections *4.2.3* and *4.2.4*

4.3.5 Packing

The business process step of primary packing of fish and aquaculture products should be treated as a transformation event, since the packaging materials will be in direct contact with the product.

	
who	GLN of processor
what	input (can be multiple): GTIN + batch/lot ID + quantity OR GTIN + serial ID output (can be multiple): GTIN + batch/lot ID + quantity OR GTIN + serial ID
when	date time of packaging process end
where	GLN of packing location
why	[cbv] packing ([epcis] transformation event)
ILMD	See sections *4.2.3* and *4.2.4*

4.3.6 Aggregation of trade items (logistic units & trade item groupings)

The business process step of secondary and tertiary packing of fish should be treated as an aggregation event.

	
who	GLN of seller (party selling the goods) GLN of customer
what	SSCC GTIN + batch/lot ID + quantity OR GTIN + serial ID
when	date time of despatch
where	GLN of shipping location
why	[cbv] packing ([epcis] aggregation event)

4.3.7 Shipping

	
who	GLN of seller (party selling the goods) GLN of customer
what	SSCC GTIN + batch/lot ID + quantity OR GTIN + serial ID
when	date time of despatch
where	GLN of shipping location
why	[cbv] shipping

4.3.8 Final sale to end customer

	
who	GLN of retailer
what	GTIN + batch/lot ID + quantity OR GTIN + serial ID
when	date time of sales process end
where	GLN of sales location
why	[cbv] retail-selling

4.4 How can the traceability data be shared?

4.4.1 Key data elements (KDE) and instance / lot master data

This guideline supports three main methods for sharing of key data elements and instance/lot master data: 1. Case labels, 2. EDI, 3. EPCIS. The methods do not exclude each other, and different methods may be used in combination.

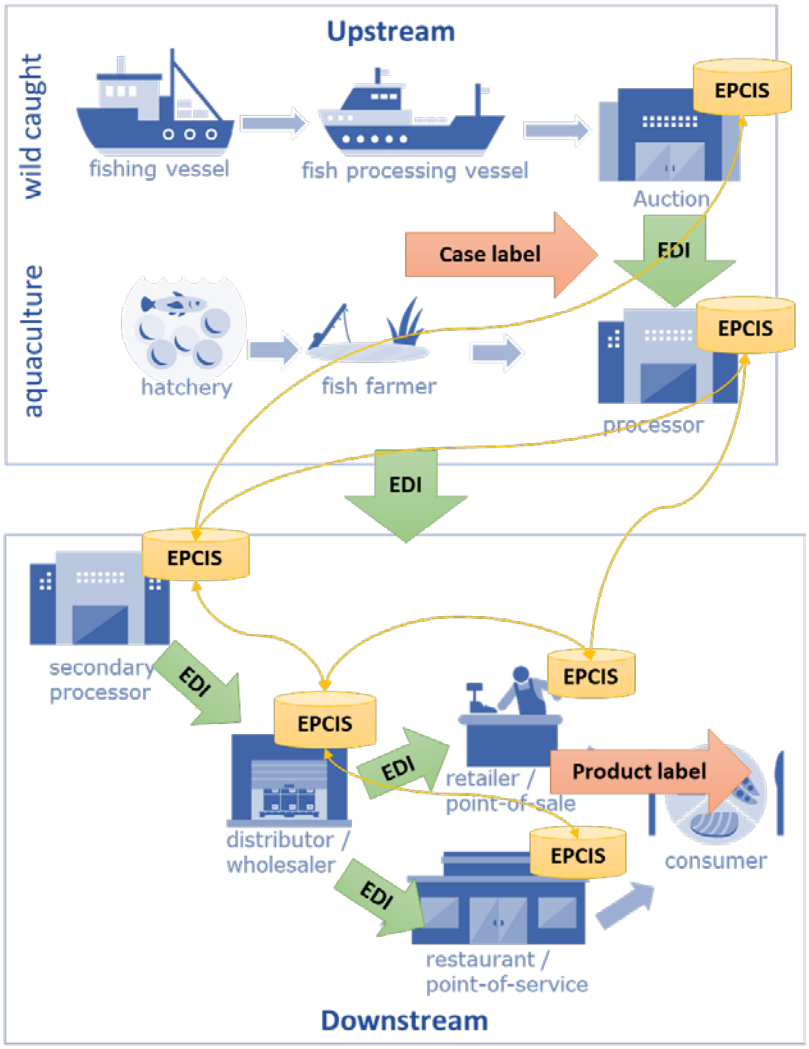
Figure 4-2 illustrates that the case label will often be an important data sharing mechanism for caught or farmed fish.

Further downstream it is expected that EDI or EPCIS will be used, and that the information on the label will serve as back-up information. However, once sold to the final customer, the label again becomes the main source of information.

EDI is especially suitable for the one-to-one exchange of transaction data between trading partners, such as order, despatch advice and invoice (order-2-cash). Traceability data (such as the catch area) can be included in such messages but will need to be carried over between parties (from upstream to downstream).

ECPIS has been designed to records and share records of observed physical events between authorised parties. EPCIS enables direct access across parties to traceability data via a query interface, and so eliminates the need to "carry over" data from party to party. Different choreographies (distributed, centralised) and discovery and access control mechanisms can be applied. See [GTS2] *Section 4.3.3 Data discovery, trust and access control*.

Figure 4-2 Sharing traceability data



Note: The arrows between EPCIS repositories illustrate how the event history of an item can be accessed by querying the respective repositories.

4.4.2 GLN master data and GTIN master data

When it comes to GLN and GTIN master data this guideline supports the following data exchange methods:

1. GDSN (for GTIN master data)
2. GLN Service (for GLN master data)
3. EDI (for GTIN and GLN master data)
4. EPCIS (for GTIN and GLN master data)
5. AIDC (for some critical GTIN master data elements that need to be exchanged upstream)

See section 5 for more information.

4.5 How can the traceability data be used?

4.5.1 Providing compliance evidence to regulators and trading partners

The regulatory requirements mentioned in section 2 lead to stricter reporting requirements. Retailers demand precise data from their suppliers on the origin of fish products. And authorities are demanding detailed data on freshly caught fish as well as imported fish.

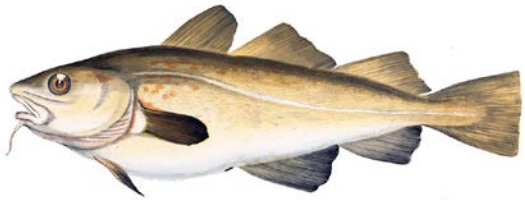
Example
All companies present on the Swedish market which “exchange” fishery and aquaculture products covered by the European Regulations for fish traceability: EC1224/2009 and EU1379/2013 will be obliged to report traceability information to the Swedish Agency for Marine and Water Management. The reporting will start no later than the 1st of January 2019.

4.5.2 Providing data to the consumer

Consumers are more and more interested to know the origin of the product they buy and how it was produced. Based on the traceability data suppliers and retailers can provide detailed and verifiable information on the package as well as online via website or mobile app.

Example

Haddock (Melanogrammus aeglefinus) frozen



first freeze date: Sep-5-2017
shipping company: Captain Hook, Vessel: UK-134
catch area: North-East Atlantic
fishing gear: surrounding nets

4.5.3 Supplier management

Based on traceability data companies can tighten their supply chain partnerships. Upstream suppliers are able to provide accurate, real-time data and therefore establish trustworthy information exchange and strong relationships. Downstream the data can be used in order to communicate at the point-of-sale where goods are coming from and who processed them in what

manner. This can support consumer trust. Furthermore companies in the supply chain can evaluate the traceability data and its quality from their preliminary stage.

This enables to set data quality goals as part of an integrated supplier management.

Example

- ✓ Caught: Herring raw (04000044762199), Lot L20170526HE, catch date: 26.05.2017, caught in FAO Zone 27.4 north sea, catch method: surrounding nets, vessel name: MS Fish, unloading port: Egersund
- ✓ Processed: Herring raw (04000044762199), Lot L20170528HE, production date: 28.05.2017, processor: Fresh Fish AG, best before date: 08.09.2017
- ✓ Importer: Fish Li (GLN ...), import date: 01.06.2017

4.5.4 Supporting product recalls

Traceability data are an essential prerequisite for the management of product recalls. It allows to analyse the cause of an issue by tracing the origin of the product upstream, and quickly locate product batches that were already distributed downstream.

5 Data element formats

GS1 offers several standards to realise the traceability requirements as stated in part I of this guideline. In some cases alternative solutions are offered, in order to help companies meet the requirements in their market. The table below gives an overview:

Table 5-1 Implementation choices

Identification standards	The guideline supports one common set of identification standards. For trade items the guideline supports batch/lot identification as well as serial level identification
AIDC standards (including standardised human readable data)	The guideline supports the following barcoding options. For items scanned at Retail POS the recommended barcode is GS1 DataBar, but in some cases an EAN/UPC barcode may be applied. For items scanned in distribution processes the recommended barcode is GS1-128.
Data exchange standards	The guideline supports the following data exchange options: For event data and instance/lot master data EPCIS and GS1 EDI are available, and in some cases (especially upstream) the data will be communicated using barcodes. For GTIN master data GDSN is the recommended standard for the exchange with retailers and distributors. Further upstream GS1 EDI or EPCIS and in some cases barcode can be more suitable. For GLN master data one of the options (not available in all countries) is the GLN Service. GS1 EDI and EPCIS also support the exchange of GLN master data.

In the following sub-sections a detailed overview is provided of all data elements, and the way they are supported in the GS1 technical standards.

Note: In cases where the data element is not supported yet, but a work request is in preparation, this has been indicated with the term PENDING.

5.1 WHO (Parties)

5.1.1 Seller

AIDC			
AI	AI (412)	N13	PURCHASE FROM
Example	(412)5412345123450		PURCHASE FROM 5412345123450
GS1 EANCOM®			
Data elements	SG2_NAD, 3035 = SU (Supplier) SG2_NAD_C082_3039 (GLN)		
Example	(GLN only) NAD+SU+5412345123450::9'		
GS1 XML			
Xpath	despatchAdviceMessage/despatchAdvice/seller/gln		
Example	<gln>4098765000010</gln>		
EPCIS			
Element	Source (party)		

Example	<sourceList> <source type="urn:epcglobal:cbv:sdt:owning_party"> urn:epc:id:sgln:5412345.123450.0</source> </sourceList>

5.1.2 Buyer

AIDC			
AI	AI (411)	N13	BILL TO
Example	(411)5412345123450		BILL TO 5412345123450
GS1 EANCOM®			
Data elements	SG2_NAD, 3035 = BY (Buyer) SG2_NAD_C082_3039 (GLN)		
Example	(GLN only) NAD+BY+5412345123450::9'		
GS1 XML			
Xpath	despatchAdviceMessage/despatchAdvice/buyer/gln		
Example	<buyer> <gln>4098765000010</gln> </buyer>		
EPCIS			
Element	Destination (party)		
Example	<destinationList> <destination type="urn:epcglobal:cbv:sdt:owning_party"> urn:epc:id:sgln:5412345.123450.0</destination> </destinationList>		

5.2 WHAT (Trade items)

5.2.1 GTIN

AIDC			
AI	(01)	N14	GTIN
Example	(01)04012345123456		GTIN 04012345123456
GS1 EANCOM®			
Data elements	SG17_LIN_C212_7140 SG17_LIN_C212_7143 = SRV (gtin)		
Example	LIN+1++4012345123456:SRV'		
GS1 XML			
Xpath	despatchAdviceLineItem/transactionalTradeItem/gtin		
Example	<gtin>04012345123456</gtin>		
EPCIS			
Element	urn:epc:idpat:sgtin:... (when used to define master data) See batch/lot number and serial number for representations in event data.		

Example	urn:epc:idpat:sgtin:4012345.012345.*
GDSN (module)	
Element	tradeItem/gtin
Example	<gtin>04012345123456</gtin>

5.2.2 Batch/lot number

AIDC			
AI (10)	Batch/lot number	X..20	BATCH/LOT
Example	(10)123abc		BATCH/LOT 123abc
GS1 EANCOM®			
Data elements	SG17_PIA_C212_7140 SG17_PIA_C212_7143 = NB (lot number)		
Example	PIA+1+123abc:NB		
GS1 XML			
Xpath	despatchAdviceMessage/despatchAdvice/despatchAdviceLogisticUnit/despatchAdviceLineItem/ transactionalTradeItem/transactionalItemData/lotNumber		
Example	<lotNumber>123abc</lotNumber>		
EPCIS			
Element	epc (lgtin)		
Example	urn:epc:class:lgtin:4012345.012345.lot1		

5.2.3 Serial number

AIDC			
AI	AI (21) Serial number	X..20	SERIAL
Example	(21)456xyz		SERIAL 456xyz
GS1 EANCOM®			
Data elements	SG17_PIA_C212_7140 SG17_PIA_C212_7143 = SN		
Example	PIA+1+123456:SN		
GS1 XML			
Xpath	despatchAdviceMessage/despatchAdvice/despatchAdviceLogisticUnit/despatchAdviceLineItem/ transactionalTradeItem/transactionalItemData/serialNumber		
Example	<serialNumber>123456</>		
EPCIS			
Element	epc (sgtin)		
Example	urn:epc:id:sgtin:4012345.012345.456xyz		

5.2.4 Quantity

AIDC			
AI	AI (30) Variable count of items	N..8	VAR.COUNT
Example	(30)36		VAR.COUNT 36
GS1 EANCOM®			
Data elements	SQ17_QTY_C186_6060 SQ17_QTY_C186_6063=12 (Despatch quantity)		
Example	QTY+12:170:PCE		
GS1 XML			
Xpath	despatchAdviceMessage/despatchAdvice/despatchAdviceLogisticUnit/ despatchAdviceLineItem/despatchedQuantity		
Example	<despatchedQuantity>170</despatchedQuantity>		
EPCIS			
Element	quantityElement/quantity		
Example	<quantityElement> <epcClass>urn:epc:class:lgtin:4012345.012345.lot1</epcClass> <quantity>170</quantity> </quantityElement>		

5.2.5 Net weight

AIDC			
AI	AI (310n) Net weight	N6	NET WEIGHT (kg)
Example	(3100)000001		NET WEIGHT (kg) 1
GS1 EANCOM®			
Data elements	SQ17_QTY_C186_6060 SQ17_QTY_C186_6063=12 (Despatch quantity)		
Example	QTY+12:170:KGM		
GS1 XML			
Xpath	despatchAdviceMessage/despatchAdvice/despatchAdviceLogisticUnit/ despatchAdviceLineItem/despatchedQuantity		
Example	<despatchedQuantity measurementUnitCode="KGM">170</despatchedQuantity>		
EPCIS			
Element	quantityElement/quantity		
Example	<quantityElement> <epcClass>urn:epc:class:lgtin:4012345.012345.lot1</epcClass> <quantity>170</quantity> <uom>KGM</uom> </quantityElement>		

5.3 WHEN (Date and time)

5.3.1 Event date & time

AIDC – NOT SUPPORTED	
GS1 EANCOM® – NOT SUPPORTED	
GS1 XML – NOT SUPPORTED	
EPCIS	
Element	eventTime
Example	<eventTime>2018-08-16T13:26:00.000+02:00</eventTime>

5.4 WHERE (Physical locations)

5.4.1 Physical location details

AIDC			
AI	AI (410) Ship to –Deliver to GLN AI (416) GLN of the production or service location	N13	SHIP TO PROD/SERV LOC
Example	(410)5412345123450		SHIP TO 5412345123450
GS1 EANCOM®			
Data elements	SG2_NAD, 3035 = SF (Ship From) SG2_NAD, 3035 = DP (Delivery Party) SG2_NAD_C082_3039 (GLN)		
Example	NAD+SF+5412345123450::9' NAD+DP+5412345123450::9'		
GS1 XML			
Xpath	despatchAdvice/shipFrom/gln despatchAdvice/shipTo/gln		
Example	<shipFrom><gln>5412345123450</gln></shipFrom> <shipTo><gln>5412345123450</gln></shipTo>		
EPCIS			
Element	Readpoint Business location		
Example	<readPoint><id>urn:epc:id:sgln:4054738.00001.0</id></readPoint>		

5.5 WHY (Business processes)

5.5.1 Business step and disposition

AIDC – NOT SUPPORTED
GS1 EANCOM® – NOT SUPPORTED
GS1 XML – NOT SUPPORTED

EPCIS	
Element	Business step (bizStep) Disposition
Example	<bizStep>urn:epcglobal:cbv:bizstep:receiving</bizStep> <disposition>urn:epcglobal:cbv:disp:available_for_sale<disposition>

5.5.2 Transaction

AIDC – NOT SUPPORTED	
GS1 EANCOM® – implied by message type	
GS1 XML – implied by message type	
EPCIS	
Element	Business transaction (bizTransaction)
Example	<bizTransaction type="urn:epcglobal:cbv:btt:po">ABC123</bizTransaction>

5.6 Location and party master data

5.6.1 Name and address

AIDC – NOT SUPPORTED	
GS1 EANCOM®	
Data elements	(in NAD segment) SG2_NAD_C080_3036 (Name) SG2_NAD_C059_3042 (Address - street) SG2_NAD_3164 (Address – city) SG2_NAD_3251 (Address – postal code) SG2_NAD_3207 (Address – country code) (in LOC segment) SG20_LOC_C517_3224 (Name)
Example	(in NAD segment) NAD+SU+5412345123450::9+Fishy+Ocean Bay 1+Dublin+IE' (in LOC segment) LOC+44E+0123654789630::9:Mary Jane'
GS1 XML	
Xpath	(example based on seller, similar mappings apply to other party/location roles) despatchAdviceMessage/despatchAdvice/seller/gln despatchAdviceMessage/despatchAdvice/seller/address/name despatchAdviceMessage/despatchAdvice/seller/address
Example	<gln>4098765000010</gln> <name>Fishy</name> <address> <streetAddressOne>Ocean Bay 1</streetAddressOne> <postalCode>143CD</postalCode> <city>Dublin</city> <countryCode>IRL</countryCode> </address>

EPCIS	
Element	cbv:gln-mda name and address data elements
Example	<attribute id="urn:epcglobal:cbv:mda:name">Fishy</attribute> <attribute id="urn:epcglobal:cbv:mda:streetAddressOne">Ocean Bay 1</attribute> <attribute id="urn:epcglobal:cbv:mda:postalCode">143CD</attribute> <attribute id="urn:epcglobal:cbv:mda:city">Dublin</attribute> <attribute id="urn:epcglobal:cbv:mda:countryCode">IRL</attribute>
GLN Service	
Element	glnParty/name glnParty/address
Example	Similar to GS1 XML

5.6.2 Tax number

AIDC – NOT SUPPORTED	
GS1 EANCOM®	
Data elements	SG3_RFF_C506_1153 = VA (VAT registration number) SG3_RFF_1154 (the tax number)
Example	RFF+VA:6558774'
GS1 XML	
Xpath	(party)/dutyFeeTaxRegistration/dutyFeeTaxRegistrationID (party)/dutyFeeTaxRegistration/dutyFeeTaxTypeCode
Example	<buyer> <dutyFeeTaxRegistration> <dutyFeeTaxRegistrationID>6558774</dutyFeeTaxRegistrationID> ....<dutyFeeTaxTypeCode>VAT</dutyFeeTaxTypeCode> </dutyFeeTaxRegistration> </buyer>
EPCIS	
Element	cbv:additionalPartyID
Example	<attribute id="urn:epcglobal:cbv:mda:additionalPartyID"> <additionalPartyID partyIDTypeCode="EU_VAT_IDENTIFICATION_NUMBER"> IE1234567WA</additionalPartyID> </attribute>
GLN Service –SUPPORTED	

5.6.3 Flag state of vessel

AIDC – NOT SUPPORTED	
GS1 EANCOM® - PENDING	
GS1 XML - PENDING	
EPCIS	
Element	ILMD: vesselCatchInformationList/vesselFlagState
Example	<cbvmda:vesselFlagState>UK</>
GLN Service – NOT SUPPORTED	

5.6.4 Vessel registration number and name

AIDC – NOT SUPPORTED	
GS1 EANCOM® - PENDING	
GS1 XML - PENDING	
EPCIS	
Element	ILMD: vesselCatchInformationList/vesselID & vesselName
Example	<cbvmda:vesselID>DE-X-1234</> <cbvmda:vesselName>Fishy 1</>
GLN Service – NOT SUPPORTED	

5.6.5 Food business operator approval number

AIDC – NOT SUPPORTED	
GS1 EANCOM®	
Data elements	SG3_RFF_C506_1153 = GN (government reference number) SG3_RFF_1154 (the approval number)
Example	RFF+GN:1204545097'
GS1 XML	
Xpath	(party) organisationDetails/legalRegistration/ legalRegistrationNumber & legalRegistrationType
Example	<organisationDetails> <legalRegistration> <legalRegistrationNumber>1204545097</> <legalRegistrationType>BUSINESS_REGISTRATION</> </></>
EPCIS - PENDING (plan to add to cbv:gln-mda as generic legal ID)	
GLN Service – NOT SUPPORTED	

5.7 Trade item master data - trade item level

5.7.1 Aquatic species code

AIDC			
AI	AI (7008)	X..3	AQUATIC SPECIES
Example	(7008)COD		
GS1 EANCOM®			
Data elements	SG17_PIA_C212_7140, 7143 = XZ5 (Fish species)		
Example	PIA+1+COD:XZ5		
GS1 XML			
Xpath	fishDespatchAdviceLineItemExtension/aquaticSpeciesCode		
Example	<aquaticSpeciesCode>COD</>		
EPCIS			

Element	cbv:gtin-mda speciesForFisheryStatisticsPurposesCode
Example	<attribute id="urn:epcglobal:cbv:mda:speciesForFisheryStatisticsPurposesCode ">COD</attribute>
GDSN	
Element	DairyFishMeatPoultryItemModule: FishReportingInformation/speciesForFisheryStatisticsPurposesCode
Example	<FishReportingInformation> <speciesForFisheryStatisticsPurposesCode>COD</> </>

5.7.2 Certification

AIDC - PENDING (certification scheme type only)	
GS1 EANCOM®	
Data elements	SG18_RFF_1154, 1153=AXO (Product certification number) ⇨ No certification scheme type available
Example	RFF+AXO:EG12345'
GS1 XML	
Xpath	despatchAdviceLineItem/productCertification (certification scheme type not supported)
Example	<despatchAdviceLineItem> <productCertification> <entityIdentification>EG12345</> </></>
EPCIS	
Element	cbv:gtin-mda certificationList
Example	<attribute id="https://gs1.org/cbv/cbvmda:certificationList"> <certification> <certificationStandard>MSC</certificationStandard> <certificationAgency>Global Certification One AISBL</certificationAgency> <certificationValue>4</certificationValue> <certificationIdentification>MSC-C-12345</certificationIdentification> </certification> </attribute>
GDSN	
Element	CertificationInformationModule:CertificationInformation/certificationStandard CertificationInformation/Certification/certificationValue CertificationInformation/Certification/certificationIdentification
Example	<CertificationInformation> <certificationStandard>GREEN FISH</> <Certification> ....<certificationValue>II</> </></>

5.7.3 Commercial designation

GS1 EANCOM®	
Data elements	SG17_IMD_C272_7081=ANM (commercial designation) SG17_IMD_C273_7008 (item description)

Example	IMD+F+ANM::9+:::Cod'
GS1 XML	
Xpath	despatchAdvice/despatchAdviceLogisticUnit/despatchAdviceLineItem/ transactionalTradeItem/tradeItemDescription
Example	<tradeItemDescription languageCode="en">Cod</>
EPCIS	
Element	cbv:gtin-mda tradeItemDescription
Example	<attribute id="urn:epcglobal:cbv:mda:tradeItemDescription">Cod</attribute>
GDSN	
Element	TradeItemDescriptionModule: TradeItemDescriptionInformation/tradeItemDescription
Example	<TradeItemDescriptionInformation> <tradeItemDescription languageCode="en">Cod</> </>

5.7.4 Fish presentation code

Note: EU codelist *http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R0404* annex I - table 1.

AIDC – PENDING	
GS1 EANCOM®	
Data elements	SG17_IMD, 7081=FPC (Fish presentation code), 7009
Example	IMD+S++FIL::9'
GS1 XML	
Xpath	fishDespatchAdviceLineItemExtension/fishPresentationCode
Example	<fishDespatchAdviceLineItemExtension> <fishPresentationCode>FIL</> </>
EPCIS	
Element	cbv:gtin-mda tradeItemConditionCode
Example	<attribute id="urn:epcglobal:cbv:mda:tradeItemConditionCode">GUS</attribute>
GDSN	
Element	SalesInformationModule: SalesInformation/tradeItemConditionCode
Example	<SalesInformation> <tradeItemConditionCode>CUT_FOR_SALE</> </>

5.7.5 Fish preservation state

Note: EU based codelist exists

AIDC – PENDING
GS1 EANCOM® – PENDING
GS1 XML – PENDING

EPCIS	
Element	cbv:gtin-mda preservationTechniqueCode
Example	<attribute id="urn:epcglobal:cbv:mda:preservationTechniqueCode">COLD_SMOKE_CURING</attribute>
GDSN	
Element	FarmingAndProcessingInformationModule: FarmingAndProcessingInformation/preservationTechniqueCode
Example	<FarmingAndProcessingInformation> <preservationTechniqueCode>COLD_SMOKE_CURING</> </>

5.7.6 Production Method

AIDC			
AI	AI (7010) Production method	X..2 Values: ▪ 01 = Caught at Sea ▪ 02 = Caught in Fresh Water ▪ 03 = Farmed ▪ 04 = Cultivated	PROD METHOD
Example	(7010)01		
GS1 EANCOM®			
Data elements	SG17_IMD_C272_7081= PRO (Production method) SG17_IMD_C273_7009 (production method code), values: ▪ F01 Caught (GS1 Code) ==> incorrect name in EANCOM? ▪ F02 Caught in freshwater (GS1 Code) ▪ F03 Farmed (GS1 Code) ▪ F04 Cultivated (GS1 Code)		
Example	IMD+S+PRO::9+F01::9'		
GS1 XML			
Xpath	fishDespatchAdviceLineItemExtension/fishCatchOrProduction/ productionMethodForFishAndSeaFoodCode		
Example	<productionMethodForFishAndSeaFoodCode>MARINE_FISHERY </>		
EPCIS			
Element	ILMD:productionMethodForFishAndSeafoodCode		
Example	<productionMethodForFishAndSeafoodCode>MARINE_FISHERY</>		
GDSN (module)			
Element	DairyFishMeatPoultryItemModule: FishCatchInformation/productionMethodForFishAndSeafoodCode		
Example	<productionMethodForFishAndSeafoodCode>MARINE_FISHERY</>		

5.7.7 Scientific name

AIDC – NOT SUPPORTED

GS1 EANCOM®	
Data elements	SG17_IMD_C272_7081=SCT (scientific name) SG17_IMD_C273_7008 (item description)
Example	IMD+F+SCT::9+:::Gadus morhua'
GS1 XML	
Xpath	fishDespatchAdviceLineItemExtension/aquaticSpeciesName
Example	<aquaticSpeciesName>Gadus morhua</>
EPCIS	
Element	cbv:gtin-mda speciesForFisheryStatisticsPurposesName
Example	<attribute id="urn:epcglobal:cbv:mda:speciesForFisheryStatisticsPurposesName ">Gadus morhua</attribute>
GDSN	
Element	DairyFishMeatPoultryItemModule: FishReportingInformation/speciesForFisheryStatisticsPurposesName
Example	<FishReportingInformation> <speciesForFisheryStatisticsPurposesName>Gadus morhua</> </>

5.7.8 Conservation reference size

AIDC – REQUEST PENDING	
GS1 EANCOM®	
Data elements	SG17_IMD, 7009?, 7081=FSS (Fish standardised size)
Example	IMD+C+FSS::9+3'
GS1 XML	
Xpath	fishDespatchAdviceLineItemExtension/fishSizeCode
Example	<fishDespatchAdviceLineItemExtension> <fishSizeCode>3</> </>
EPCIS	
Element	ILMD: vesselCatchInformationList/fishConservationReferenceSizeCode
Example	<cbvmda:fishConservationReferenceSizeCode>LEGAL</>
GDSN – NOT SUPPORTED (is only relevant upstream)	

5.8 Trade item master data - instance/lot level

5.8.1 Producers (Who)

5.8.1.1 GLN of farm

AIDC			
AI	AI (7030)	N3+X..27	PROCESSOR # 0

Example	(7300)4012345123456	
GS1 EANCOM®		
Data elements	SG20_LOC_3227 = 19 (Factory / plant) SG20_LOC_C517_3224 (Production unit GLN)	
Example	LOC+19+4012345123456::9:Fish Resource XYZ'	
GS1 XML		
Xpath	fishDespatchAdviceLineItemExtension/aquaCultureProductionUnit/gln	
Example	<fishDespatchAdviceLineItemExtension> <aquaCultureProductionUnit> <gln>4012345123456</> </></></>	
EPCIS		
Element	CBV ILMD: farmList/farm	
Example	<farm> <farmIdentification>4012345123456</> ..<farmIdentificationTypeCode>EPC-GLN</> </>	
GDSN – NOT SUPPORTED		

5.8.1.2 GLN of fishing vessel

AIDC			
AI	AI (7030)	N3+X..27	PROCESSOR # 0
Example	(7300)9990123654789630		
GS1 EANCOM®			
Data elements	SG20_LOC_3227 = 44E (Fishing vessel) SG20_LOC_C517_3225 (Fishing vessel GLN)		
Example	LOC+44E+0123654789630::9:Mary Jane'		
GS1 XML			
Xpath	fishDespatchAdviceLineItemExtension/fishingVessel/gln		
Example	<gln>0123654789630</gln>		
EPCIS			
Element	ILMD: vesselCatchInformationList/vesselOperatorGLN		
Example	<cbvmda:vesselOperatorGLN>urn:epc:id:sgln:061414.00001.0</>		
GDSN – NOT SUPPORTED			

5.8.1.3 GLN of fish processor

AIDC			
AI	AI (7030)	N3+X..27	PROCESSOR #
Example	Example with GLN: (7300)9990123654789630 Example with ISO code and national approval number: (7300)52887587445		
GS1 EANCOM® - PENDING			

GS1 XML – PENDING
EPCIS ==> Use readpoint in transformation events of the processor
GDSN – NOT SUPPORTED

5.8.2 Batch history dates

5.8.2.1 Catch / harvest date(s)

AIDC			
AI	AI (7007)	N6..12	HARVEST DATE
Example	(7007)141001141003		
GS1 EANCOM®			
Data elements	SG17_DTM_C507_2005 = X22 (Catch date/time) SG17_DTM_C507_2380 SG17_DTM_C507_2379 = 102 (CCYYMMDD) or 718 (CCYYMMDD-CCYYMMDD)		
Example	DTM+171:20141001:102' DTM+171:20141001-20141003:718'		
GS1 XML			
Xpath	*date:* fishDespatchAdviceLineItemExtension/fishCatchOrProductionDates/catchDateTime *period:* fishDespatchAdviceLineItemExtension/fishCatchOrProductionDates/catchStartDate fishDespatchAdviceLineItemExtension/fishCatchOrProductionDates/catchEndDate		
Example	<catchDateTime>2014-10-01</catchDateTime> OR <catchStartDate>2014-10-01</> <catchEndDate>2014-10-03</>		
EPCIS			
Element	ILMD: harvestStartDate & harvestEndDate		
Example	<cbvmda:harvestStartDate>2014-10-01</> <cbvmda:harvestEndDate>2014-10-03</>		
GDSN – NOT SUPPORTED			

5.8.2.2 Production date

AIDC			
AI	AI (11)	N6 (YYMMDD)	PROD DATE
Example	(11)141001		
GS1 EANCOM®			
Data elements	SG17_DTM_C507_2005 = 94 SG17_DTM_C507_2380 SG17_DTM_C507_2379 = 102 (CCYYMMDD)		
Example	DTM+94:20141001:102'		
GS1 XML			

Xpath	despatchAdviceLineItem/transactionalTradeItem/transactionalItemData/productionDate
Example	<productionDate>2014-10-01</>
EPCIS ==> event time (generate event if needed)	
GDSN – NOT SUPPORTED	

5.8.2.3 First freeze date

AIDC			
AI	AI (7006)	N6 (YYMMDD)	FIRST FREEZE DATE
Example	(7006)140912		
GS1 EANCOM®			
Data elements	SG17_DTM_C507_2005 = 91E (First freezing date) SG17_DTM_C507_2380 SG17_DTM_C507_2379 = 102 (CCYYMMDD)		
Example	DTM+171:20140912:102'		
GS1 XML			
Xpath	fishDespatchAdviceLineItemExtension/fishCatchOrProductionDates/firstFreezeDate		
Example	<firstFreezeDate>2014-09-12</>		
EPCIS			
Element	ILMD:firstFreezeDate		
Example	<cbvmda:firstFreezeDate>2014-09-12</>		
GDSN – NOT SUPPORTED			

5.8.2.4 Packaging date

AIDC			
AI	AI (13)	N6 (YYMMDD)	PACK DATE
Example	(13)141001		
GS1 EANCOM®			
Data elements	SG17_DTM_C507_2005 = 365 SG17_DTM_C507_2380 SG17_DTM_C507_2379 = 102 (CCYYMMDD)		
Example	DTM+365:20141001:102'		
GS1 XML			
Xpath	despatchAdviceLineItem/transactionalTradeItem/transactionalItemData/packagingDate		
Example	<packagingDate>2014-10-01</>		
EPCIS ==> event time of packaging event			
GDSN – NOT SUPPORTED			

5.8.2.5 Sell by date

AIDC			
AI	AI (16)	N6 (YYMMDD)	SELL BY
Example	(16)141001		
GS1 EANCOM®			
Data elements	SG17_DTM_C507_2005 = 360 SG17_DTM_C507_2380 SG17_DTM_C507_2379 = 102 (CCYYMMDD)		
Example	DTM+360:20141001:102'		
GS1 XML			
Xpath	despatchAdviceLineItem/transactionalTradeItem/transactionalItemData/sellByDate		
Example	<sellByDate>2014-10-01</>		
EPCIS			
Element	cbv-ilmd: sellByDate		
Example	<cbvmda:sellByDate>2014-10-01</>		
GDSN – NOT SUPPORTED			

5.8.2.6 Best before date

AIDC			
AI	AI (15)	N6 (YYMMDD)	BEST BY / BEST BEFORE
Example	(15)161231		BEST BEFORE (dd-mm-yyyy) 31-12-2016
GS1 EANCOM®			
Data elements	SG17_DTM_C507_2380, 2005 = 361 (Best Before date)		
Example	DTM+361:20161231:102'		
GS1 XML			
Xpath	despatchAdviceLineItem/ transactionalTradeItem/transactionalItemData/bestBeforeDate		
Example	<transactionalItemData> <bestBeforeDate>2016-12-31</> </>		
EPCIS			
Element	CBV ILMD: bestBeforeDate		
Example	<cbv:bestBeforeDate>2016-12-31</cbv:bestBeforeDate>		
GDSN – NOT SUPPORTED			

5.8.2.7 Use by date

AIDC			
AI	AI (17)	N6 (YYMMDD)	USE BY / EXPIRY
Example	(17)161231		USE BY (dd-mm-yyyy) 31-12-2016
GS1 EANCOM®			

Data elements	SG17_DTM_C507_2380, 2005 = 36 (Expiry date)
Example	DTM+36:20161231:102'
GS1 XML	
Xpath	despatchAdviceLineItem/ transactionalTradeItem/transactionalItemData/itemExpirationDate
Example	<transactionalItemData> <itemExpirationDate>2016-12-31</> </>
EPCIS	
Element	CBV ILMD: itemExpirationDate
Example	<cbv:itemExpirationDate>2016-12-31</cbv:itemExpirationDate>
GDSN – NOT SUPPORTED	

5.8.3 Catch certificate ID

AIDC – NOT SUPPORTED	
GS1 EANCOM® - PENDING	
GS1 XML – PENDING	
EPCIS	
Element	bizTransaction
Example	<bizTransactionList> <bizTransaction type="urn:epcglobal:cbv:btt:cert"> ..http://fish.example.com/catchCertificate/xyz12345</bizTransaction> </bizTransactionList>
GDSN – NOT SUPPORTED	

5.8.4 Country of export

AIDC – NOT SUPPORTED	
GS1 EANCOM®	
Data elements	SG20_LOC_3227=35 Country of exportation/despatch SG20_LOC_C517_3225
Example	LOC+35+BE
GS1 XML - PENDING	
EPCIS	
Element	CBV ILMD: countryOfExport *When multiple countries of export are included, the dominant country of export SHALL be included as the first element.*
Example	<cbv:countryOfExport>BE</cbv:bestBeforeDate>
GDSN – NOT SUPPORTED	

5.8.5 Economic zone

AIDC – NOT SUPPORTED	
GS1 EANCOM® - PENDING	
GS1 XML - PENDING	
EPCIS	
Element	ILMD: vesselCatchInformationList/economicZone *When multiple economic zones are included, the dominant economicZone SHALL be included as the first element.*
Example	<cbvmda:economicZone>XEU</>
GDSN – NOT SUPPORTED	

5.9 Trade item master data - trade item, instance and lot level

5.9.1 Catch area & dominating catch area

(PENDING) It should be possible to choose FAO catch area on Area, Subarea, Division, Subdivision and Unit levels in accordance with EU list for relevant geographical areas.

(PENDING) Need to be able to indicate in all syntaxes except GDSN which catch area is the dominating catch area for the batch in terms of quantity.

AIDC - PENDING (to support dominant catch area and repetition)			
AI	AI (7005)	X..12	CATCH AREA
Example	(7005)21.6		
GS1 EANCOM®			
Data elements	SG17_IMD_C272_7081= GEO (Geographical area) SG17_IMD_C273_7009 (catch area) SG17_IMD_C273_1131 = X59 (FAO fishing areas) SG17_IMD_C273_3055 = X7 (FAO responsible agency)		
Example	IMD+S+GEO::9+21.6:X59:X7'		
GS1 XML			
Xpath	fishDespatchAdviceLineItemExtension/fishCatchOrProduction/catchArea		
Example	<catchArea>21.6</catchArea>		
EPCIS			
Element	ILMD: vesselCatchInformationList/catchArea *When multiple catch areas are included, the dominant catch area SHALL be included as the first element.*		
Example	<cbvmda:catchArea>21.6</>		
GDSN			
Element	PlaceOfItemActivityModule: PlaceOfProductActivity/productActivityTypeCode = CATCH_ZONE, ExternalCodeValueInformation/externalAgencyName = FAO, productActivityRegionZoneCodeReference = fishing area / subarea according to FAO code list		

Example	<PlaceOfProductActivity> <ProductActivityDetails> <productActivityTypeCode>CATCH_ZONE</> <productActivityRegionZoneCodeReference> <externalAgencyName>FAO</> <EnumerationValueInformation> <enumerationValue>21.6</> </><></><></><></>

5.9.2 Country of origin & dominating country of origin

(PENDING) Need to be able to indicate in all syntaxes except GDSN which country is the dominating country of origin for the batch in terms of quantity.

AIDC			
AI	AI (422) Country of origin of a trade item	N3	ORIGIN
Example	(422)528		ORIGIN Belgium
GS1 EANCOM®			
Data elements	SG20_LOC_3227=27 Country of origin SG20_LOC_C517_3225		
Example	LOC+27+BE		
GS1 XML			
Xpath	despatchAdviceLineItem/countryOfOrigin		
Example	<countryOfOrigin>BE</>		
EPCIS			
Element	cbv-mda:countryOfOrigin Note: *When multiple countries of origin are included, the dominant country of origin SHALL be included as the first element*.		
Example	MDA: <attribute id="urn:epcglobal:cbv:mda:countryOfOrigin">BE</attribute> ILMD: <cbvmda:countryOfOrigin>BE</>		
GDSN			
Element	PlaceOfItemActivityModule: PlaceOfProductActivity/countryOfOrigin/countryCode		
Example	<PlaceOfProductActivity> <countryOfOrigin> <countryCode>BE</></></></>		

5.9.3 Fishing gear category

AIDC			
AI	AI (7009)	X..10	FISHING GEAR TYPE
Example	(7009)01.1		
GS1 EANCOM®			

Data elements	SG17_IMD_C272_7081= FGT (Fishing gear type) SG17_IMD_C273_7009 (Fishing Gear Type) SG17_IMD_C273_1131 = X60 (FAO fishing gear type) SG17_IMD_C273_3055 = X7 (FAO responsible agency)
Example	IMD+S+FGT::9+01.1:X60:X7'
GS1 XML	
Xpath	fishDespatchAdviceLineItemExtension/fishCatchOrProduction/fishingGearTypeCode
Example	<fishCatchOrProduction> <fishingGearTypeCode>01.1</></></>
EPCIS	
Element	ILMD:vesselCatchInformationList/fishingGearTypeCode
Example	<cbvmda:fishingGearTypeCode>01.1</>
GDSN (module)	
Element	DairyFishMeatPoultryItemModule: FishCatchInformation/catchMethodCode
Example	<FishCatchInformation> <catchMethodCode>PS</></></>

5.9.4 Storage state

AIDC – SUPPORT NEEDED?	
GS1 EANCOM®	
Data elements	SG17_IMD_C272_7081= FRZ (Freezing information) SG17_IMD_C273_7009, values: ▪ FZ1 Previously frozen (GS1 Code) ▪ FZ2 Not previously frozen (GS1 Code)
Example	IMD+S+FRZ::9+FZ1::9'
GS1 XML	
Xpath	fishDespatchAdviceLineItemExtension/storageStateCode
Example	<fishDespatchAdviceLineItemExtension> <storageStateCode>PREVIOUSLY_FROZEN</> </>
EPCIS	
Element	ILMD:storageStateCode
Example	<storageStateCode>PREVIOUSLY_FROZEN</>
GDSN (module)	
Element	DairyFishMeatPoultryItemModule: DairyFishMeatPoultryInformation/FishReportingInformation/FishCatchInformation/storageStateCode
Example	<DairyFishMeatPoultryInformation> <FishReportingInformation> <FishCatchInformation> <storageStateCode>PREVIOUSLY_FROZEN</></></></></>

A Glossary

A.1 Business terms

Sales note

Report to government of initial sale of fish after it was landed or harvested.

Aquaculture, mariculture

Aquaculture, also known as aquafarming, is the farming of fish, crustaceans, molluscs, aquatic plants, algae, and other aquatic organisms. Aquaculture involves cultivating freshwater and saltwater populations under controlled conditions, and can be contrasted with commercial fishing, which is the harvesting of wild fish. Mariculture refers to aquaculture practiced in marine environments and in underwater habitats. [Source: Wikipedia]

Fishing vessel

A fishing vessel is a boat or ship used to catch fish in the sea, or on a lake or river. [Source: Wikipedia]

'Fishing vessel' means any vessel equipped for commercial exploitation of living aquatic resources. [Source: EC 1224/2009]

A.2 GS1 terms and acronyms

Also see the GS1 glossary: *www.gs1.org/glossary* and the *GS1 Global Traceability Standard* [GTS2].

Abbreviation	Full term
AI	GS1 Application Identifier
AIDC	Automatic Identification and Data Capture
CBV	Core Business Vocabulary
CTE	Critical Tracking Event
EDI	Electronic Data Interchange
EPC	Electronic Product Code
EPCIS	EPC Information Services
GDSN	Global Data Synchronisation Network
GLN	Global Location Number
GTIN	Global Trade Item Number
GTS	Global Traceability Standard
HRI	Human Readable Interpretation
KDE	Key Data Element
POS	Point-Of-Sale
RFID	Radio Frequency identification
TDS	Tag Data Standard
UTC	Coordinated Universal Time

B Regulatory background

B.1 Europe

Note: The introduction and table have been based on the [FISH_EU] guideline. The table has been further extended in version 1.2 of this global guideline.

The European regulations, EC 1224/2009 and EC 404/2011, make specific stipulations regarding the capturing and sharing of traceability information for fish and aquaculture products. The regulations require that all lots of fisheries products are traceable at all stages of production, processing and distribution, from catching or harvesting, to sale to the final consumer. This requirement places particular demands on the way product is handled, packaged, stored, sold and processed, right along the supply chain, from the fishing vessel to the end consumer, to ensure the accuracy and authenticity of the information.

Regarding marking and labelling especially Art. 58 of EC 1224/2009 (on establishing a Community control system for ensuring compliance with the rules of the common fisheries policy) is relevant with respect to B2B information as well as Art. 35 of EU 1379/2013 (on the common organisation of the markets in fishery and aquaculture products) with respect to B2C information. For a more detailed overview, please see annex 2 (EU Fish Regulations on Traceability and Consumers' Information).

Several attributes or key data elements can be derived from these regulations. They are listed in the following mapping table.

	Attribute / Key Data Element	EC 1224/2009	EU 1379/2013
1	**GTIN**	**Art. 58** Traceability **5:** minimum labelling and information requirements **(a)** the identification number of each lot	
2	**Lot**		
3	**Quantity or Net Weight**	**Art. 58** Traceability **5:** minimum labelling and information requirements **(e)** The quantities of each species in kilograms expressed in net weight or, where appropriate, the number of individuals	
4	**Expiration or Best Before Date** (dependent upon product of concern)		**Art. 35** Mandatory Consumer Information **1:** appropriate marking or labelling **(e)** The date of minimum durability, where appropriate
5	**Fishing Vessel GLN**	**Art. 58** Traceability **5:** minimum labelling and information requirements **(b)** The external identification number and name of the fishing vessel or the name of the aquaculture production unit	
5.1	**Fishing Vessel Name**		
5.2	**Flag State of the Vessel**		**Art. 39** Additional voluntary information in the case of fishery products caught at sea, details of the flag State of the vessel that caught those products;
5.3	**External Identification Number of the Fishing Vessel**	**Art. 14** Completion and submission of the fishing logbook the external identification number and the name of the fishing vessel	

	Attribute / Key Data Element	EC 1224/2009	EU 1379/2013
6	**Production Unit GLN**	**Art. 58** Traceability **5:** minimum labelling and information requirements **(b)** The external identification number and name of the fishing vessel or the name of the aquaculture production unit	
6.1	**Production Unit Name**		
7	**Fish Species**	**Art. 58** Traceability **5:** minimum labelling and information requirements **(c)** The FAO alpha-3 code of each species	
7.1	Scientific Name		**Art. 35** Mandatory Consumer Information **1:** appropriate marking or labelling **(a)** The commercial designation of the species and its scientific name
7.2	Commercial Designation		
8	**Catch Area**		**Art. 35** Mandatory Consumer Information **1:** appropriate marking or labelling **(c)** The area where the product was caught or farmed, and the category of fishing gear used in capture of fisheries, as laid down in the first column of Annex III to this Regulation
8.1	**Dominating catch area**		**Art. 35** Mandatory Consumer Information the same species but which has been derived from a variety of catch areas or fish–farming countries, at least **the area of the batch which is most representative in terms of quantity shall be stated**, together with an indication that the products also come from different catch or fish-farming areas. **Should be for one dominating catch area.**
8.2	**Catch Certificate ID**	**Art. 58** Traceability **catch certificates** submitted in accordance with Regulation (EC) No 1005/2008.	
9	**Catch Date(s)**	**Art. 58** Traceability **5:** minimum labelling and information requirements **(d)** The date of catches or the date of production	
10	**Supplier GLN**	**Art. 58** Traceability **5:** minimum labelling and information requirements **(f)** The name and address of the suppliers	
	Supplier Name		
	Supplier Address		
11	**Production Method**		**Art. 35** Mandatory Consumer Information **1:** appropriate marking or labelling **(b)** The production method, in particular by the following words "… caught …" or "… caught in freshwater …" or "… farmed …"

	Attribute / Key Data Element	EC 1224/2009	EU 1379/2013
12	**First Freeze Date**	**Art. 58** Traceability **5:** minimum labelling and information requirements **(h)** Whether the fisheries products have been previously frozen or not	**Art. 35** Mandatory Consumer Information **1:** appropriate marking or labelling **(d)** Whether the product has been defrosted
12.1	Storage State Code	**Art. 58** Traceability whether the fisheries products have been previously frozen or not	
13	**Fishing Gear Type**		**Art. 35** Mandatory Consumer Information **1:** appropriate marking or labelling **(c)** The area where the product was caught or farmed, and the category of fishing gear used in capture of fisheries, as laid down in the first column of Annex III to this Regulation
14	**Fish quality grade**		
15	**Fish size**		
16	**Fish presentation form**	Art. 64 Content of the sales notes the quantities of each species in kilograms in product weight, broken down by type of product presentation or, where appropriate, the number of individuals Product presentation is defined as combination of presentation (table 1 in annex I to EU 404/2011) and preservation forms (table 2 in annex II to EU 404/2011).	
17	**VAT Number "specific to supplier or buyer"** **Initial Buyer add supplier party ID section 10.3**	Art. 59 First sale of fisheries products For the purpose of registration, each buyer shall be identified according to its **VAT number**, tax identification number or other unique identifier in national databases	
18	**National Tax Identification Number "specific to supplier or buyer"**	Art. 59 First sale of fisheries products For the purpose of registration, each buyer shall be identified according to its VAT number, **tax identification number** or other unique identifier in national databases	
19	**Conservation reference size**		**Art. 7** Objectives of producer organisations avoiding and reducing as far as possible unwanted catches of commercial stocks and, where necessary, making the best use of such catches, without creating a market for those that are below the minimum **conservation reference size**, in accordance with Article 15 of Regulation (EU) No 1380/2013;

	Attribute / Key Data Element	EC 1224/2009	EU 1379/2013
20	**Fish preservation state**	**Art. 64** Content of the sales notes the quantities of each species in kilograms in product weight, broken down by **type of product presentation** or, where appropriate, the number of individuals. Product presentation is defined as combination of presentation (table 1 in annex I to EU 404/2011) and preservation forms (table 2 in annex II to EU 404/2011).	
23	**Country of export**		**Art. 38** Indication of the catch or production area In the case of aquaculture products, a reference to the Member State **or third country**
24	**Economic zone**	Art. 58 Traceability 'relevant geographical area' means a sea area that is considered as a unit for the purposes of geographical classification in fisheries expressed by reference to a FAO sub-area, division or sub-division, or where applicable an ICES statistical rectangle, fishing effort zone, **economic zone** or area bounded by geographical coordinates.	
25	**Certification**	Fish certified by the respective organisation (quality, body)	

B.2 United States

From [FISH_US] guideline:

Bioterrorism Act requirements of 2002 for chain of custody are contact information and product data for the company that shipped the product and for the company that the product has been shipped (one step forward, one step back). The Food Safety Modernization Act of 2010 affirms the Bioterrorism Act but details no further traceability requirements. This guide recommends an additional voluntary approach in best practices for identifying and tracking of seafood from farm or vessel to point of sale.

B.3 Other regions

Information on regulatory requirements in other regions to be added in future versions.

C Examples

C.1 Product labels

The figure below shows a consumer label that meets all minimum traceability requirements for a shelf-ready fixed-weight product, including a GS1 DataBar barcode.

Figure C-1 Shelf-ready fixed weight consumer item

The figure below shows a consumer label that meets all minimum traceability requirements for a shelf-ready variable-weight product, including a GS1 DataBar barcode.

Figure C-2 Shelf-ready variable weight consumer item

C.2 Case Labels

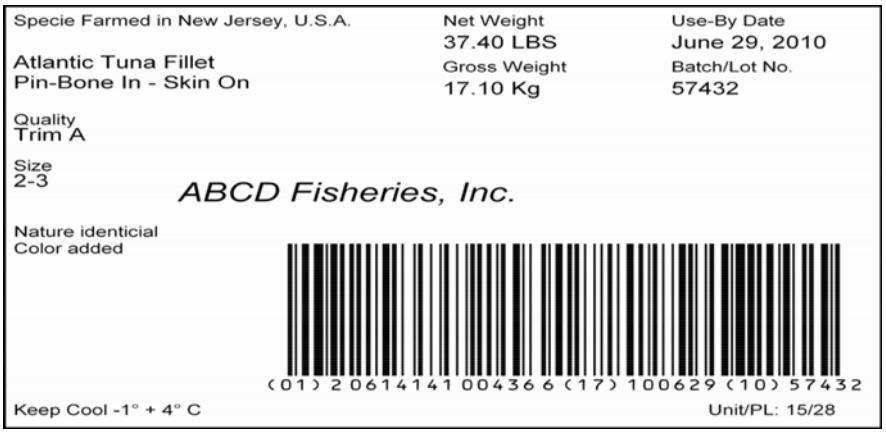
The GS1 identification standards and human readable information provide traceability information for the capture or harvest of fish.

The labels shown in the figures below provide an examples of the use of barcodes, GS1 identification keys, application identifiers and human readable information. The various data attributes such as

expiry date, catch area, fishing gear and production method are considered dynamic data and can be included using GS1 Application Identifiers.

The figure below is an example of a fixed-weight case label that contains all of the required traceability information and additional information.

Figure C-3 Fixed-weight case label-example



The GS1-128 barcode on the label includes the GTIN AI (01), the expiration date AI (17) and the batch/lot number AI (10).

The figure below shows an example of a variable-weight case label.

Figure C-4 Variable-weight case label-example

The GS1-128 barcode on the label includes the GTIN - AI (01), the net weight - AI (3102), and the batch/lot number - AI (10).

D References

Table D-1 Normative references

Abbreviation	Document	Author / Year
CBV	Core Business Vocabulary Standard version 1.2.1, *http://www.gs1.org/epcis*	GS1, 2017
CBVCN_17339	CBV CN 17-339 Addition of Tax ID	GS1, 2018
CBVCN_18108	CBV CN 18-108 Addition of Fish Attributes	GS1, 2018
EDI	GS1 has currently three sets of complementary EDI standards: ▪ GS1 EANCOM® ▪ GS1 XML ▪ GS1 UN/CEFACT XML See *https://www.gs1.org/edi* for more information.	GS1
EPCIS	EPC Information Services Standard version 1.2, *http://www.gs1.org/epcis*	GS1, 2016
GENSPECS	GS1 General Specifications, version 17.1, *http://www.gs1.org/genspecs*	GS1, 2017
GTIN-MAN	GTIN Management Rules, *http://www.gs1.org/1/gtinrules/en/*	GS1, 2016
GTS	GS1 Global Traceability Standard, version 2, *https://www.gs1.org/sites/default/files/docs/traceability/GS1_Global_Traceability_Standard_i2.pdf*	GS1, 2017
LOGLAB	GS1 Logistics Label guideline, version 1.2, *http://www.gs1.org/shipping-and-receiving*	GS1, 2017
RECALL	Product Recall Business Message Standard, version 3.3, *http://www.gs1.org/edi-xml-recall/xml-product-recall/3-3*	GS1, 2017
TDS	GS1 Tag Data Standard (TDS), version 1.10, *http://www.gs1.org/epc-rfid*	GS1, 2017

Non-normative references:

- [FISH_US] Traceability for Seafood U.S. Implementation Guide, National fisheries institute & GS1 US, 2011
- [FISH_EU] Fish Traceability in Europe Guideline, GS1 in Europe, .2015