

# Report

## An electronic traceability system based on EPCIS standard: Pilot study

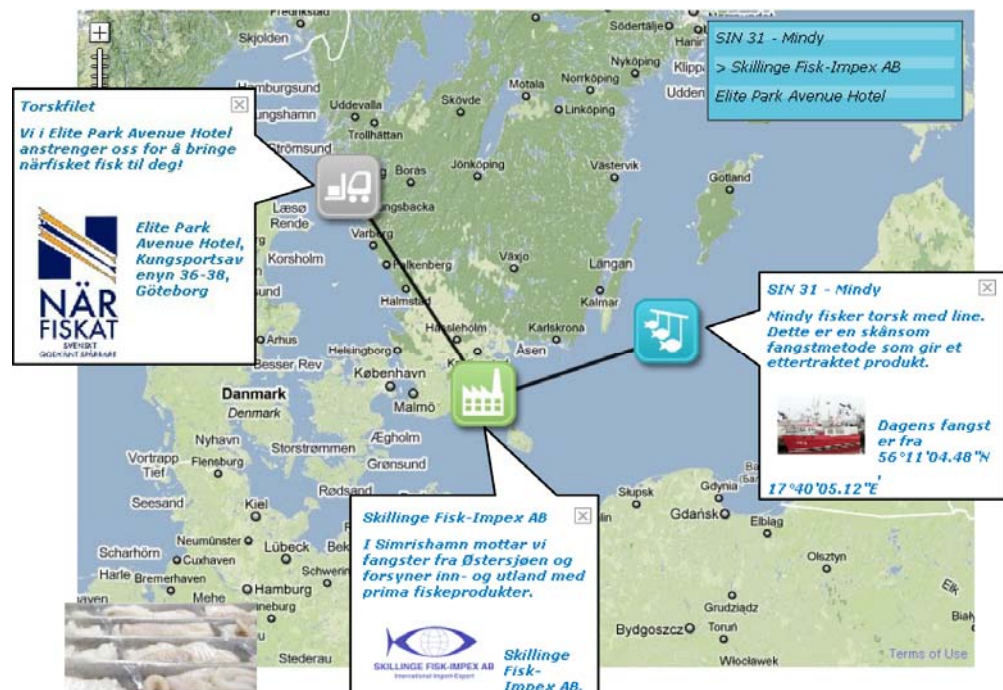
eTrace Swedish Pilot

From catch to retailer – new technology for traceability

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**ABSTRACT**

Within the eTrace project to develop and evaluate an electronic traceability system, a pilot test was performed in Sweden to test an EPCIS-based traceability system to track product through the cod fish value chain. The pilot was conducted successfully from 17th – 21st May, 2010 in Simrishamn, Sweden. The crates containing raw fish and fish fillets labeled with RFID tags were read using hand-held scanners as they moved through the value chain from catch to the retailer. The information related to each finished product was linked back to a particular catch location, landing site and processing location. This information was uploaded to the EPCIS repository and was available to the value chain stakeholders through a web based interface. This system enabled efficient tracking of fish and electronic information exchange throughout the value chain. An increase in cod sale in the retail store was also observed and was attributed to the traceability information displayed next to the product for the retail customers.

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## APPENDICES

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Integration guide for Swedish Fish Pilot, Simrishamn, Sweden

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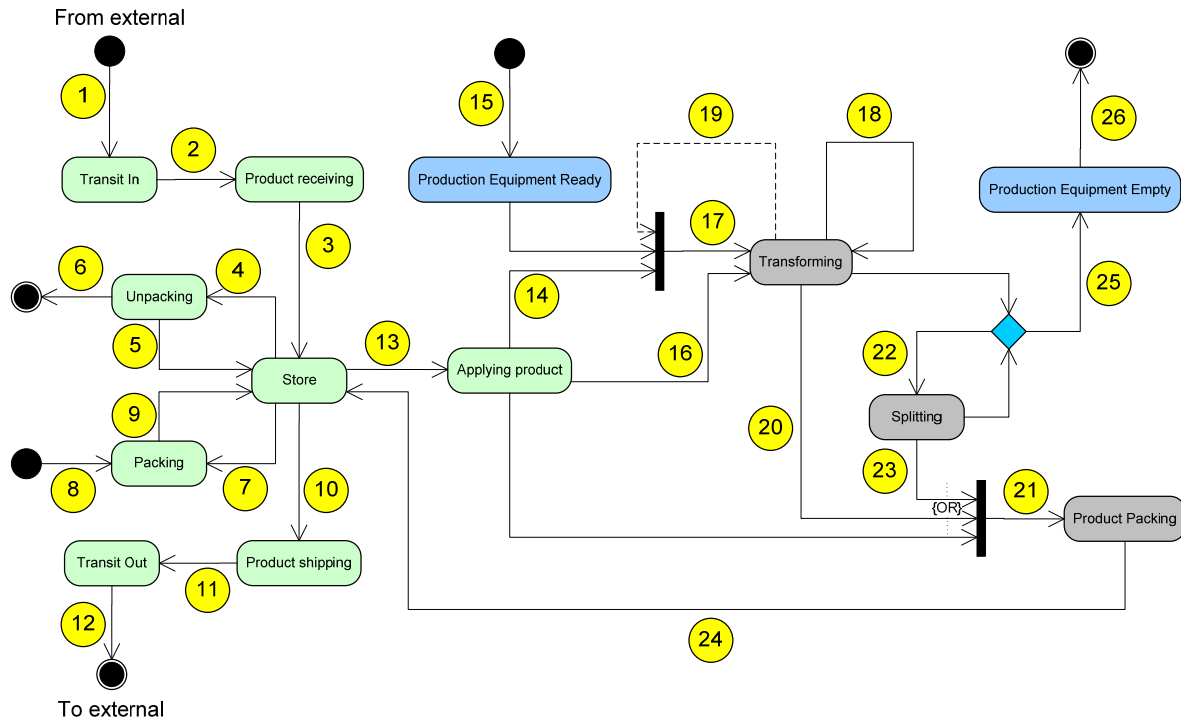
## 1 Introduction

Food safety and quality issues generally occur due to incorrect processing and handling of food products. Monitoring the flow of products, their quality and the process parameters throughout production and linking them to each transition in the state of these products is an effective way of implementing and ensuring product safety and traceability. A food supply chain consists of several stakeholders and raw materials are transported from one stakeholder to another where these raw materials may be processed into finished products while going through various transformations such as mixing, cooking, segregating, etc. The processed food products are then transported to distributors and retailers for sale to the customers for final consumption. Several product transformations and processing steps take place during industrial production of food. These transformations alter the food composition, and if not monitored properly, can affect the food quality as well as food safety. The most important elements of traceability have been identified as unique identification, lot integrity, product transformations and data collection and retrieval (Jansen-Vullers et al., 2003; Bechini et al., 2008; Folinias et al., 2006; TraceFood Wiki, 2009; International Organization for Standardization, 2007).

Electronic traceability systems based on software applications and automatic data capture are the most effective solution for providing relevant information to the food industry and consumers. Automated traceability is based on electronic data capture and exchange. Electronic data capture can be optical or radio-wave systems, for example, barcodes and RFID technology. The interest in RFID technology for traceability has been increasing recently. RFID tags essentially contain generation 2 Electronic Product Codes (EPC) (EPCglobal, 2007). EPC provides a method for unique identification of all items in a supply chain. The use of EPC also makes it possible to register internal and external events electronically that are related to the movement of tagged items. EPCIS is an EPCglobal standard designed to enable EPC-related data sharing within and across enterprises (EPCIS Standard, 2007). This standard for using RFID is based on the EPCglobal standard. Automated traceability systems based on software applications have existed in Nordic countries for several years (Storøy and Olsen, 2007) but EPCIS makes the data capture and exchange electronic thus making EPCIS an applicable standard. There are two kinds of EPCIS data, event data and master data. Event data is created in the course of carrying out business processes, and is captured through the EPCIS Capture Interface and made available for query through the EPCIS Query Interfaces. Master data is additional data that provides the necessary context for interpreting the event data. It is available for query through the EPCIS Query Control Interface. The EPCIS events cover normal logistic and stock control processes by the use of the Event classes: ObjectEvent, AggregationEvent, QuantityEvent and TransactionEvent. The basic chain traceability requirements with respect to managing and recording transactions between different business actors are directly covered by EPCIS Events. EPCIS has promising properties related to food supply chain traceability.

The aim of the eTrace project within SAFEFOODERA is to specify, develop and evaluate an electronic traceability system where different information sources related to food safety and suitable enterprise management systems are integrated. The purpose of this system is to provide efficient traceability operations so that precise and reliable recalls can be performed in case of food scares. The application of the EPCIS standard for food traceability purposes was tested in this project. The approach used is based on identification of states and events in food production and mapping these events to the EPCIS standard. The generic events that take place in food production and processing are shown in Figure 1. For details of this model, see Thakur et al. (2011).

Pilot studies were conducted in fish supply chains. In this report we present the results from the Swedish pilot test. The eTrace pilot test in Sweden was conducted in the cod value chain to test the applicability of the traceability system designed based on the EPCIS standard.



*Figure 1. Generic events in food production and processing*

## 2 Pilot description

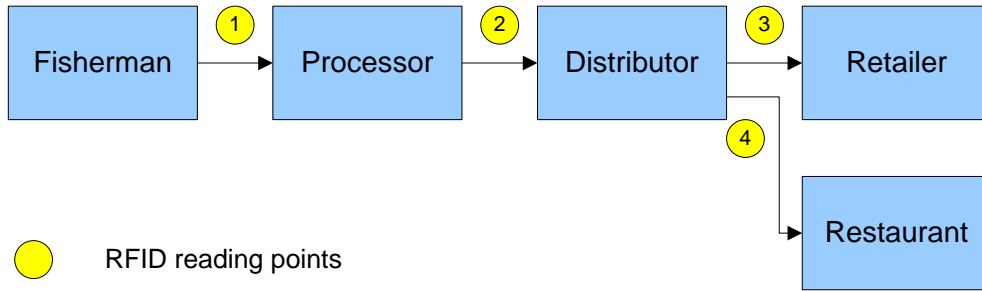
The pilot was carried out in Simrishamn, Sweden from the 17<sup>th</sup> – 21<sup>st</sup> May, 2010. The scope was to track fish all the way through a supply chain, from a fishing vessel, through a landing site, via processor to a final retailer. The following stakeholders were involved in the pilot:

- fishing vessels (3)
- fish processor (1)
- distributor (1)
- retailer (1) [Fiskelyckan]
- restaurant (1) [Elite Park Avenue Hotel]

The main question addressed was if the customer buying fish from the retail store could get information about origin and production path of that particular product.

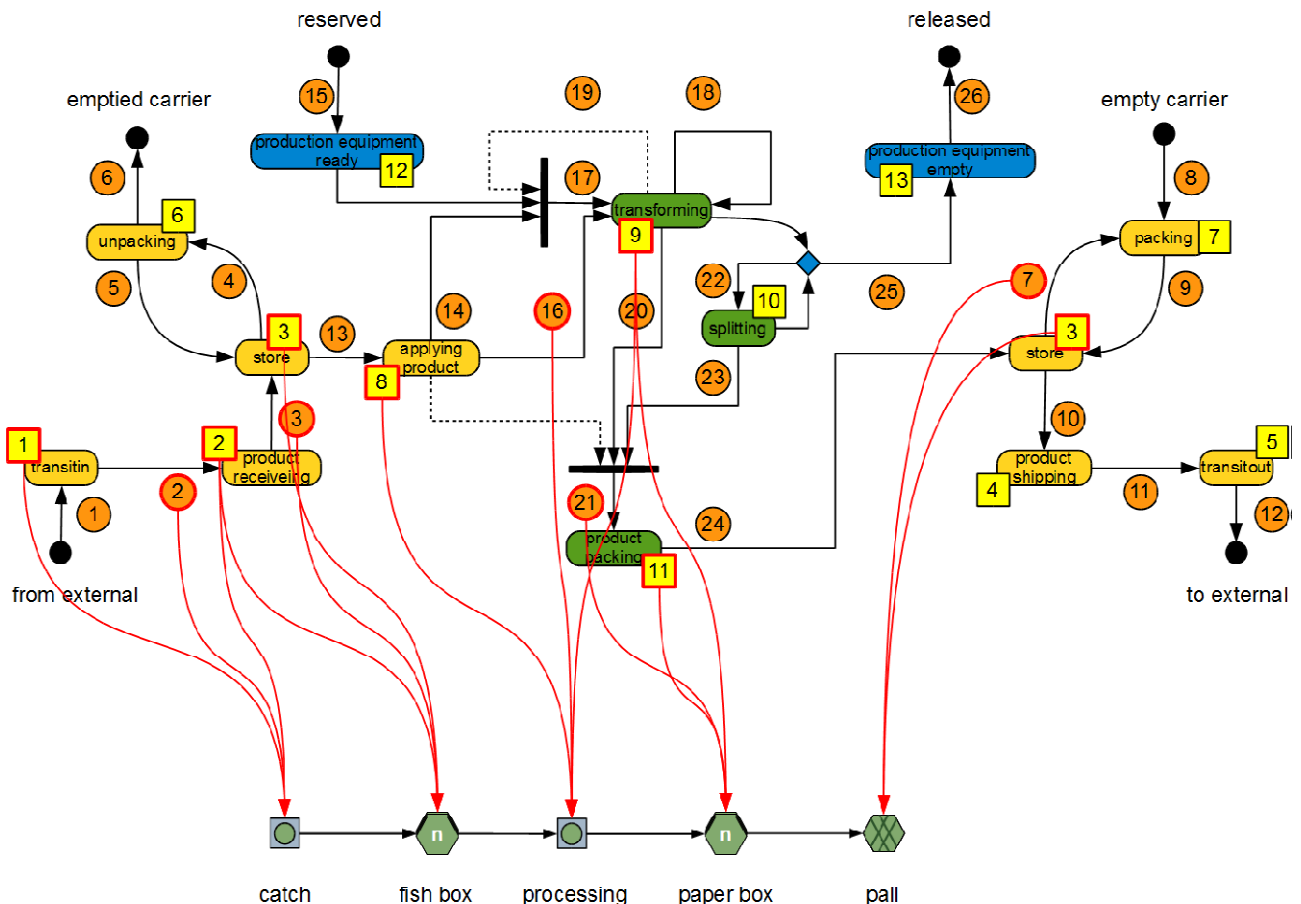
## 3 Pilot implementation

Catches from different vessels were labeled using Radio Frequency Identification (RFID) tags and read using handheld RFID readers as the product moved through landing and processing in Simrishamn to the distributor and retailer and a restaurant in Gothenburg. Figure 2 presents a simple model showing the stakeholders and RFID reading points throughout the value chain.



**Figure 2. Stakeholders and RFID reading points in cod value chain**

In Simrishamn, catches from three vessels were loaded into returnable plastic boxes that were labeled with EPC based RFID tags. Other information already sent to the Fish Authority including vessel id, date, catch type and location was also linked to the uniquely labelled catch. Next step was production, where the raw fish was filleted and packaged in cardboard boxes for distribution. The cardboard boxes were also labelled with new RFID tags, palletized and shipped to the distributor in Gothenburg. The plastic boxes containing fresh fish, cardboard boxes containing fillets and pallets containing several cardboard boxes were read at various points as they moved through the chain as shown in Figure 2. In addition, there were several internal read points at the processor link in the chain. Figure 3 shows a detailed traceability information model for the processor link in the pilot chain.



**Figure 3. Traceability information model for the processor link in the pilot chain**



The orange circles refer to the read point and yellow squares refer to bizLocation. All read points and bizLocations identified in the production process are shown in Figure 3 but only the red-outlined points were used in the pilot study. Since, the basic EPCIS XML format requires that these are expressed numerically, bizLocations are numbered as follows:

0. From external
1. Transit in
2. Product receiving
3. Store
4. Product shipping
5. Transit out
6. Unpacking
7. Packaging
8. Applying product
9. Transforming
10. Splitting
11. Product packaging
12. Production equipment ready
13. Production equipment ready

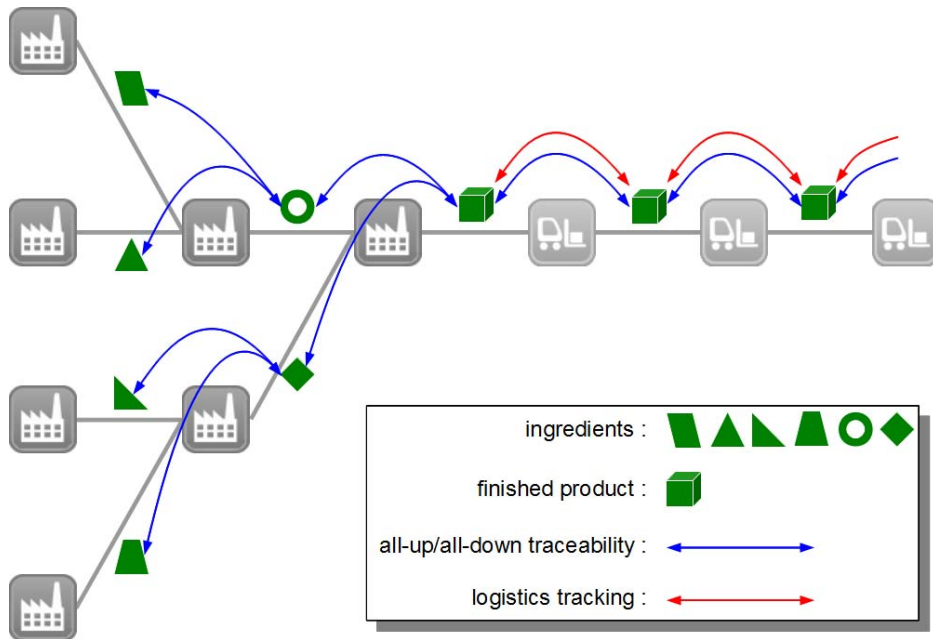
The data from readers was uploaded to an EPCIS repository provided by TraceTracker. These uploads relied on a local server that handled all parts of the communication between the EPCIS and the computer with the data files. This way there was no need for a human operator to be involved. The retailer could now go to a website and print out a map for specific fish product including its origin information and production path (when and where it was caught, and how it came to his store) and present this information to the customers.

The complete XML code and implementation guide is included in the Appendix.

## **4 EPCIS technology**

TraceTracker's EPCIS repository, known as TIX, enables diverse organizations to share information about EPC-tagged products. The TIX stores and manages standardized "event" data related to individual items- the "what, why, when and where" of that item. For example, when a box of fish is scanned and information is uploaded from the RFID reader, the TIX records the unique identification of the box, its location and then other relevant information such as the processing step and time. When the same box is scanned multiple times at different steps, or divided into smaller cases, that information is also stored, creating a history of the fish.

The EPCIS concept builds on logistics tracking, i.e. knowing where an item is and has been. In this project, the handling of transformations that are inherent in production, e.g. mixing ingredients together and creating new items by splitting items from internal production steps are merged with the existing EPCIS technology. This way information recorded in a TIX is able to "glue" together the company's upstream and downstream logistics movements as shown in Figure 4.



*Figure 4. Traceability requires that logistics tracking is extended with transformations of raw materials to (intermediary) products*

#### 4.1 Traceability versus logistics tracking

The basic idea underlying the EPCIS concept is related to logistics, where the challenge is to follow the same identity across multiple business partners. But this approach does not take into account that for all-up/all-down traceability, there is a need to include how raw materials, possibly through multiple steps, are combined into new products. And such products may actually be raw materials in steps that follow downstream.

Figure 4 outlines the difference between logistics tracking (red arrows) and full traceability (blue arrows). By default, the EPCIS concept does not specify how to describe the relationship between raw materials on the upstream side and products on the downstream side. But, the EPCIS standard includes flexibility to let solution providers create the necessary expressiveness, and the eTrace project used the EPCIS repository in order to implement the project objectives.

#### 4.2 Chain traceability

The TIX also has mechanisms for understanding the hand over of custody of an item between organizations. Based on this, chains of companies can be linked together, resulting in the all-up/all down traceability needed for end-to-end traceability.

As a result the EPCIS technology presented in this paper combines the advantages of a standard (EPCIS) with features for tying independent systems together in chains that mirror the physical relationships between companies. This allows easy deployment and efficient use of end-to-end traceability in chains for production of food and other types of products.

## 5 Results

### 5.1 EPCIS based product traceability

The user interface carries views that rely on the traceable entities defined in the underlying model (Figure 3). The graphic below is one such view, where the relationship between the catch, fish boxes, processing and boxes with fish product has become visible. The generic EPCIS modeling has no corresponding view that aggregates information from multiple events.

In this section, we present how the eTrace EPCIS repository was used to provide product traceability information. A snapshot of the eTrace user interface is shown in Figure 5 for catch SWE1372393 (This identity corresponds to the identity of the catch in the vessel's log book.). The "Events" at the very bottom link to the events that involve catch SWE1372393. "Transformations" link this catch with other items while "Properties" list all data attributes associated with this catch. Similarly, by clicking on other items in the graph, the user interface presents corresponding information for the selected item.

### 5.2 Increased sales

The pilot distributed fish products to the Fiskelyckan retail store and the restaurant at the Elite Park Avenue Hotel, both in Gothenburg. The graphic in Figure 6 shows the flyer that was produced for these sites from the available information. The flyer presents the product information that can be provided to the customers. This is one application of the eTrace EPCIS system where a part of the information was used to create the flyers displayed at the two sites for the customers.

The retail customers ended up buying more of the product that was accompanied by access to traceability information shown in Figure 6. The retailer in Gothenburg confirmed an increase in sales of cod fillets from approximately three kilos a day to more than 120 kg over four days. He attributed this boost in sales to the traceability map displayed next to the cod fillets showing where the fish were caught and processed.

TT Navigator - Stage EPCIS - eTrace 1 - Mozilla Firefox

tracetracker.com https://stage-epcis.tracetracker.com/tlx/etrace1/app/getFilteredEntities?id=39: Google

tracetracker

TT NAVIGATOR User: nbof Quick search

Stage EPCIS eTrace 1

Trace & track Show graphs Data management Administration My user details Help Print page Logout

**Internal graph [ Hide ]**

**Catch of fish - SWE1372393 [ Hide ]**

Detail	Value	Reports
Id	SWE1372393	Table of dependencies
Type	Catch of fish	Suppliers and customers
Description	Catch of fish	Entity property log
Class	Basic	Upstream TUs
ItemRef	TRD-epcis-etrace-swefish-batch-catch	Stations log for batch or tu
Timestamp	17/05/10 15:00	Tools
		Audit log
		Data Export

**Properties [ Hide ]**

Property	Value	Property	Value
call signal	SFB-7512	catch area	25
catch date	17/05/10	disposition	urn:epcglobal:cbv:dispin_progress
fishing method	Krokredskap	flag state	SWE
home port	Simrishamn	landing date	17/05/10
landing start time	17/05/10 00:00	product description	Rensad m huvud
readPoint	urn:epcids:sgin:7332656.00001.001002	specie (English)	Cod
specie (Latin)	Gadus Morhua	specie (Swedish)	Torsk
vessel name	MINDY	weight	382

**Transformations [ Hide ]**

From	Type	Into	Time
SWE1372393	Split	urn:epcids:grai:7316272.22222.273	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.272	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.275	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.274	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.271	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.270	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.269	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.265	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.266	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.267	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.268	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.264	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.263	17/05/10 15:01
SWE1372393	Split	urn:epcids:grai:7316272.22222.276	17/05/10 15:01

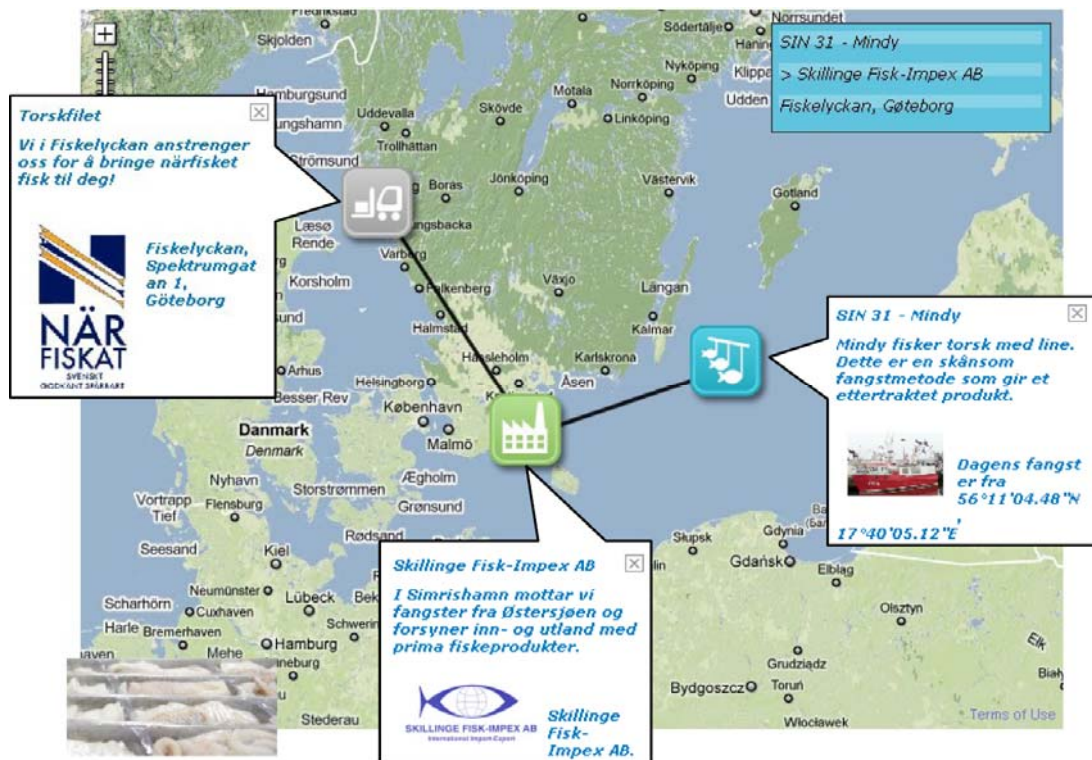
Create transformation(s) Split existing new

**Events [ Hide ]**

Id	Event Type	Action	Biz Step	Biz Location	EPC Class	Quantity	Event Time	Record Time
700	ObjectEvent	ADD	urn:epcglobal:cbv:bizstep:receiving	urn:epcids:sgin:7332656.00001.002			17/05/10 15:00	15/10/10 12:51
798	ObjectEvent	OBSERVE					17/05/10 15:21	15/10/10 12:51

Done

Figure 5. Web based user interface for pilot data



**Figure 6. Product information displayed at the retail and restaurant site for customers**

## 6 Conclusions and future research

The pilot test performed in Sweden was a success and was implemented as planned. The boxes containing raw fish and fish fillets labeled with RFID tags were scanned as they moved through the value chain from catch to the retailer. The information related to each finished product (sold in the retail store) was linked back to a particular catch, catch location, landing site and processing location. This information was uploaded to the EPCIS repository and was available to the value chain stakeholders through a web based interface. Not only, did the system enable efficient tracking of fish but also resulted in increased sales at the retail store because the product traceability information was made available to the customers by means of a map displayed next to the product in store. Other properties including food safety can also be linked to each tagged box in the same way as origin (catch) information.

With the regular reading and data uploading from the fishing and processing to the final product, EPCIS repositories enable improvements in communication between parties within the value chain. In future, EPCIS-based traceability systems open up new possibilities for internal and supply chain optimization if such systems are widely used by all value chain stakeholders. The installation of automatic reading stations in processing plants instead of hand scanners like the ones used in this pilot will also provide a faster and efficient way of information capture and exchange.

All fish value chain stakeholders see the value of having good traceability. An open, automatic system that provides all the information electronically by means of a web based interface is of great interest to the stakeholders. Currently, they spend a lot of time to obtain this information manually. The response from the

fishermen, processors and retailer that have been involved in the project showed that they are very positive about the opportunities for sharing information in a structured and understandable way.

Future work should also focus on secure information access and integration of food safety information such as temperature. Other applications of such systems could focus on making product sustainability information available as these systems may work better than existing environmental labelling standards.

Handheld RFID readers were used in this pilot and the data was uploaded to the EPCIS repository manually. In future, automatic data transfer from the readers to the EPCIS repositories must be studied.

## 7 Acknowledgements

The work presented in this paper was funded by the eTrace Project conducted within SAFEFOODERA (<http://www.safefoodera.net>). The pilot implementation was conducted using TraceTracker's EPCIS technology (<http://www.tracetracker.com>).

## 8 References

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EPCIS Standard, 2007. EPC Information Services Version 1.0.1 Specification. <[http://www.epcglobalinc.org/standards/epcis/epcis\\_1\\_0\\_1-standard-20070921.pdf](http://www.epcglobalinc.org/standards/epcis/epcis_1_0_1-standard-20070921.pdf)>.

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Jansen-Vullers, M.H., C.A. van Dorp and A.J.M. Buelens, Managing traceability information in manufacture, *International Journal of Information Management* **23** (2003), pp. 395–413.

Storøy, J., Olsen, P., 2007. Norwegian, Nordic and European Traceability Research Projects. Presented at the Tokyo International Forum, October, 2007.

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# **Integrasjonsguide for svensk fiskeripilot**

**v 0.95**

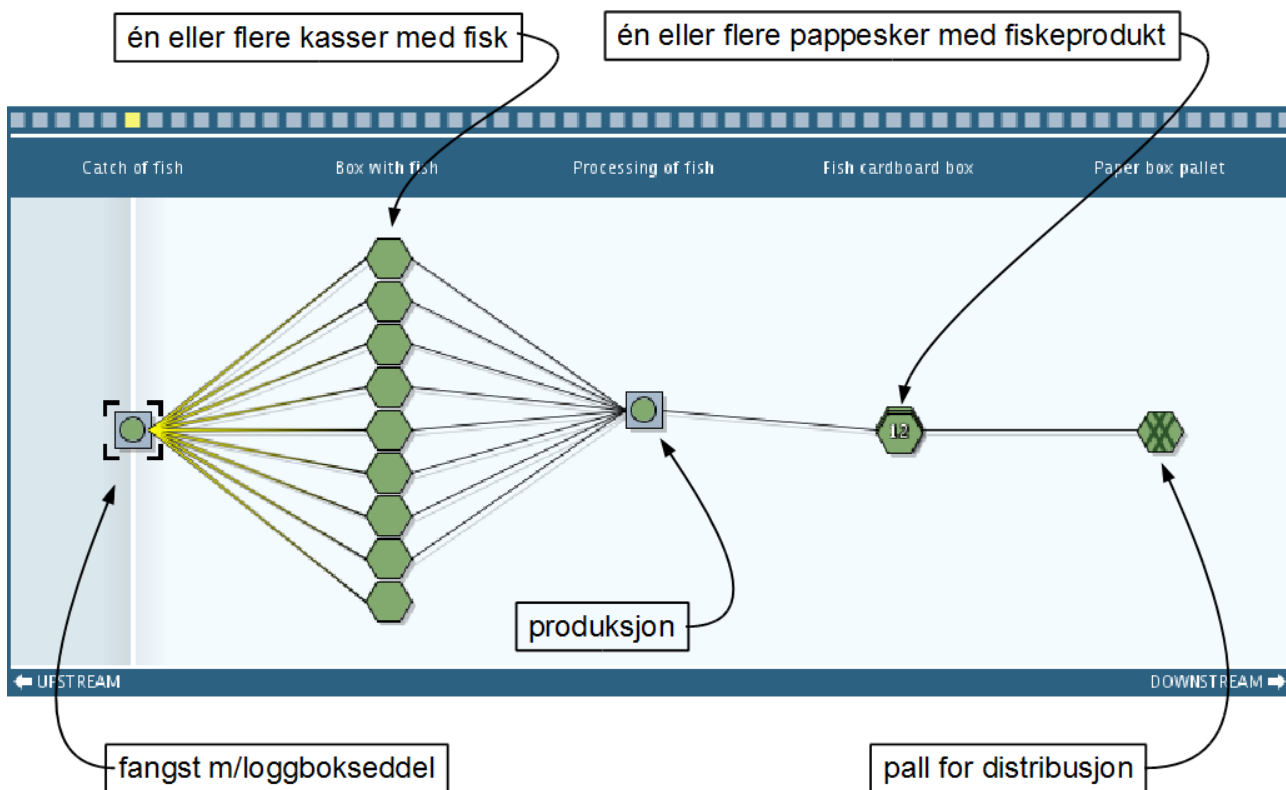
**Øystein Gran Larsen**  
**gran@tracetracker.com**  
**4. mai 2010**



## Innledning

Dette dokumentet beskriver formatet på forskjellige XML-filer som bygger forfatter sporbarhetsinformasjon i eTrace-prosjektets svenske pilotprosjekt. TraceTracker har etablert en EPCIS for prosjektet på <https://stage-epcis.tracetracker.com/tix/etrace1>. Ved å åpne en nettleser mot denne adressen for man tilgang til et grafisk brukergrensesnitt. Dette brukergrensesnittet kalles TraceTracker Navigator. Brukernavn og passord vil være nødvendig for å logge inn.

Skjermbildet under viser sammenhengen mellom de forskjellige trinnene som er definert for piloten, vist i Navigator.

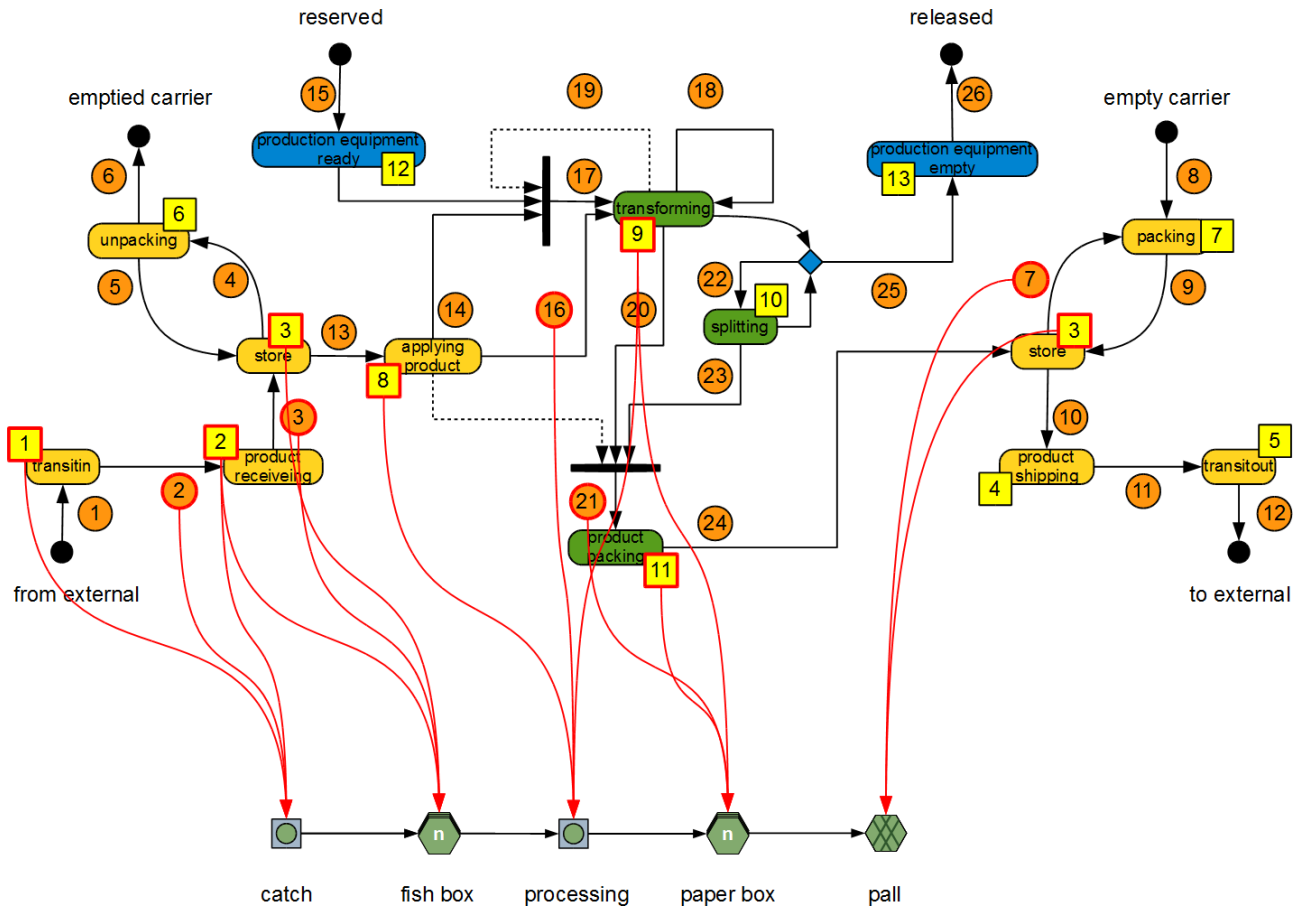


Ikonene i bildet reflekterer synbarheten til de forskjellige typene objekter. Firkanter kalles batch, og brukes for interne prosesstrinn, mens sekskanter kalles trade unit., og beskriver objekter som kan handles mellom bedrifter.

I denne piloten er all aktiviteten samlet i én EPCIS. Ved produksjonssetting av en sporbarhetsløsning vil det derimot være én EPCIS pr. bedrift. Dermed får man ekstern sporbarhet og kan gjøre trace&track i denne.

Sentralt i EPCIS-konseptet står modellering av virksomheter ved hjelp av såkalte bizLocation og readPoint. Disse refererer til (geografiske) lokasjoner i bedriftene. I eTrace-prosjektet har grunnlagsdokumentet DP1 beskrevet hvilken modell som skal følges for å modellere flyten gjennom én bedrift. Denne piloten opererer med en forenklet modell, og vi har valgt å anvende materialet fra DP1 på modellen som om det var snakk om én bedrift.

Figuren under viser hvordan avbildingen mellom sporbarhetsmodellen og hendelsesmodellen er satt sammen. Oransje sirkler refererer til readPoint og gule kvadrater refererer til bizLocation.



Siden det grunnleggende EPCIS XML-formatet forventer at disse er uttrykt numerisk, så bizLocation er nummerert som følger:

- 0. from external
- 1. transitin
- 2. product receiving
- 3. store
- 4. product shipping
- 5. transitout
- 6. unpacking
- 7. packaging
- 8. applying product
- 9. transforming
- 10. splitting
- 11. product packaging
- 12. production equipment ready

### 13. production equipment empty

Nummereringen av readPoint bygger på at disse ligger mellom bizLocation, og at de får en verdi som er sammensettingen av foregående bizLocation og punktets eget nummer. For eksempel blir readPoint 2 identifisert som 001002, slik at det ikke blir "aliasing" mellom de to nummereringene.

For resten av identiteten til readPoint og bizLocation brukes konstanten `urn:epc:id:sgln:7332656.00001.` slik at bizLocation "store" identifiseres som `urn:epc:id:sgln:7332656.00001.003.`

---

## Innhold i XML-filene

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Nedenfor følger eksempler på ObjectEvent og aggregationEvent som illustrerer rollen til forskjellige felter og hvilke som er faste/statiske og hvilke som endrer seg/er dynamiske.

### ObjectEvent

ObjectEvent brukes for å opprette sporbare objekter. Hvert slikt objekt har sin egen identitet som er forskjellig fra identiteten til alle andre objekter i systemet.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd" xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:tttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<ObjectEvent>
<eventTime>2010-04-19T10:34:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<gtnet:entityClass>Batch</gtnet:entityClass>
<gtnet:trdType>catch</gtnet:trdType>
<epcList><epc>SWE1175535</epc></epcList>
<action>ADD</action>
<bizStep>urn:epcglobal:cbv:bizstep:receiving</bizStep>
<disposition>urn:epcglobal:cbv:disp:in_progress</disposition>
<readPoint><id>urn:epc:id:sgln:7332656.00001.001002</id></readPoint>
<bizLocation><id>urn:epc:id:sgln:7332656.00001.002</id></bizLocation>
<gtnet:itemRef>TRD-epcis-ettrace-swefish-batch-catch</gtnet:itemRef>
<ttdata:weight>728.0</ttdata:weight>
...
<ttdata:receivername>Skillinge Fisk-Impex AB</ttdata:receivername>
</ObjectEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>
```

I XML-filen over er forskjellige aspekter ved formatet fremhevet ved farver. Utvidelser fra TraceTracker er satt i **rødt**, mens utvalgte deler av basis EPCIS-formatet er satt i **grønt** (When/når noe skjedde), **turkis** (What/hva som skjedde), **blått** (Why/hvorfor det skjedde), og **brunt** (Where/hvor det skjedde). I tillegg kommer **action** som angir at objektet (**what**) ble opprettet.

Innhold som skal endres for hver ObjectEvent som opprettes:

- eventTime
- epcList

- attributtverdier i ttdata

## AggregationEvent

AggregationEvent brukes for å lage relasjoner mellom flere objekter i systemet. Disse objektene må være opprettet på forhånd (med ObjectEvent) i en rekkefølge som gjenspeiler de faktiske hendelsene. Dette registreres med eventTime. Selve opplastingen kan skje på andre tidspunkter.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd" xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:tttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<AggregationEvent>
<eventTime>2010-04-19T12:46:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<bizStep>urn:epcglobal:cbv:bizstep:transforming</bizStep>
<gtnet:transformationType>SPLIT</gtnet:transformationType>
<parentID>SWE1175535</parentID>
<childEPCs><epc>urn:epc:id:grai:7332656.fishbox.boxnumber</epc></childEPCs>
<action>OBSERVE</action>
<readPoint><id>urn:epc:id:sgln:7332656.00001.002003</id></readPoint>
<bizLocation> <id>urn:epc:id:sgln:7332656.00001.003</id> </bizLocation>
</AggregationEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>
```

Farvebrukern følger samme mønster som for ObjectEvent, over.

Innhold som skal endres for hver AggregationEvent som opprettes:

- eventTime
- parentID
- childEPCs

---

## Tidsrekkefølge på opplasting av XML-filer

---

Følgende rekkefølge illustrerer en mulig kronologisk riktig rekkefølge for opplasting. Tidspunktene i eventTime må selvfølgelig også følge kronologien.

1. Opprette catch
2. Fylle catch med attributter (kan utsettes)
3. Opprette fish box
4. Splitte catch på fish box
5. Fylle fish box med attributter (kan utsettes)
6. Opprette produksjonen
7. Mixe fish box inn i produksjonen
8. Opprette paper box
9. Splitte produksjon ut på paper box
10. Opprette pall
11. Pakke paper box på pall

Det som er avgjørende å merke seg er at en transformasjon (4,7,9,11) må referer til batcher og trade units som er opprettet (eventTime) *før* transformasjonen finner sted. Ellers vil man kanskje ikke få de sammenhengene man forventer, illustrert med sporbarhetsgrafene i TraceTracker Navigator.

---

## Opprette Catch

---

XML-filen under viser en komplett oppretting av en catch. For å identifisere en fangst har vi brukt nummeret fra loggbokseddelen, f.eks.. SWE1175535, og fangsten er modellert som en såkalt batch, som er intern i en bedrift og dermed ikke har noen direkte analogi i GS1s identifikasjonsskjemaer.

Denne identifikatoren må endres (manualet) for hver landing, men da er det bare å lese den av den tilhørende loggbokseddelen. Transformasjoner ut må referere riktig loggbokseddel.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd" xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:ttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<!-- navn på sporbarhetsmodellen - denne er lastet inn i EPCIS -->
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<ObjectEvent>
<!--
    eventTime angir når (eventet) skjedde i sann tid, hvilket for denne
    catch vil si når fangsten med id = SWE1175535 ble opprettet.
    For at kronologien i sporbarhetsinformasjonen skal bli korrekt, så
    må catch opprettes før aktiviteter som avleder andre sporbare enheter.
-->
<eventTime>2010-04-19T10:34:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<!-- batch catch definert i TRD-epcis-ettrace-swefish -->
<gtnet:entityClass>Batch</gtnet:entityClass>
<gtnet:trdType>catch</gtnet:trdType>
<epcList>
<epc>SWE1175535</epc> <!-- Denne hentes fra loggbokseddelen -->
</epcList>
<action>ADD</action> <!-- første observasjon, det vil si opprettelse -->
<bizStep>urn:epcglobal:cbv:bizstep:receiving</bizStep>
<disposition>urn:epcglobal:cbv:disp:in_progress</disposition>
<readPoint>
<id>urn:epc:id:sgln:7332656.00001.001002</id>
</readPoint>
<bizLocation>
<id>urn:epc:id:sgln:7332656.00001.002</id>
</bizLocation>
<gtnet:itemRef>TRD-epcis-ettrace-swefish-batch-catch</gtnet:itemRef>
<!-- her begynner attributtene for catch med id = SWE1175535 -->
<ttdata:weight>728.0</ttdata:weight>
<ttdata:fishinglicensevalidfrom>2011-01-31</ttdata:fishinglicensevalidfrom>
<ttdata:catchdate>2010-04-18</ttdata:catchdate>
```

```

<ttdata:fishinglicensevalidto>2009-01-31</ttdata:fishinglicensevalidto>
<ttdata:imonumber>IMO 8712345</ttdata:imonumber>
<ttdata:productcode>3241</ttdata:productcode>
<ttdata:catcharea>Västra Östersjön</ttdata:catcharea>
<ttdata:fishinglicenseno>SE-01234576</ttdata:fishinglicenseno>
<ttdata:registrationnumber>SWE1175535</ttdata:registrationnumber>
<ttdata:homeport>Simrishamn</ttdata:homeport>
<ttdata:callsign>SVEA</ttdata:callsign>
<ttdata:inmarsatno>+871 01234567</ttdata:inmarsatno>
<ttdata:telefaxno>+4614130575</ttdata:telefaxno>
<ttdata:emailaddress>svea@swemail.se</ttdata:emailaddress>
<ttdata:vesselname>Svea</ttdata:vesselname>
<ttdata:telephoneno>+4614117415</ttdata:telephoneno>
<ttdata:productdescription>WHL</ttdata:productdescription>
<ttdata:flagstate>Sweden</ttdata:flagstate>
<ttdata:specie-eng>cod</ttdata:specie-eng>
<ttdata:specie-lat>gadus morhua</ttdata:specie-lat>
<ttdata:specie-swe>torsk</ttdata:specie-swe>
<ttdata:buyername>Skillinge Fisk-Impex AB</ttdata:buyername>
<ttdata:sellername>-</ttdata:sellername>
<ttdata:receivername>Skillinge Fisk-Impex AB</ttdata:receivername>
<ttdata:certificationid>MSC 1234456</ttdata:certificationid>
<ttdata:certificationscheme>MSC</ttdata:certificationscheme>
<ttdata:fishingmethod>longline</ttdata:fishingmethod>
<ttdata:landingdate>2009-01-31</ttdata:landingdate>
<ttdata:landingstart>2009-01-31T12:34:00</ttdata:landingstart>
<ttdata:landingstop>2009-01-31T13:54:00</ttdata:landingstop>
<ttdata:soaktime>1:32</ttdata:soaktime>
<!-- slutt på attributter -->
</ObjectEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>

```

Oversikt over hvilke attributter (properties) som er knyttet til catch finnes på <https://stage-epcis.tracetracker.com/tix/etrace1/app/getBatchTypeDetails?id=catch>.



## Opprette fish box

XML-filen under viser en komplett oppretting av en fish box. For å indentifisere en fish box har vi brukt et grai-skjema fra GS1. Dette er identifikatorer som kan gjenbrukes, for eksempel ved at kassen etter bruk kan vaskes for så å bli benyttet av en annen båt. Fish box er modellert som en trade unit, siden den trolig kan selges i sin helhet. Hver enkelt Fish box forventes å være utstyrt med en GRAI-identifikator eller lignenede GS1-basert identifikator. Dette fordi det er snakk om handelsenheter som (kan) selges mellom bedrifter.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-
11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd"
xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:ttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-etrace-swefish">
<EventList>
<ObjectEvent>
<eventTime>2010-04-19T10:46:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<gtnet:entityClass>TradeUnit</gtnet:entityClass>
<gtnet:trdType>fishbox</gtnet:trdType>
<epcList>
<epc>urn:epc:id:grai:7332656.fishbox.boxnumber</epc>
<!-- denne leses med håndholdt leser (når kassene landes fra båten) -->
</epcList>
<action>ADD</action> <!-- første observasjon, det vil si opprettelse -->
<bizStep>urn:epcglobal:cbv:bizstep:storing</bizStep>
<disposition>urn:epcglobal:cbv:disp:sellable_not_accessible</disposition>
<readPoint>
<id>urn:epc:id:sgln:7332656.00001.002003</id>
</readPoint>
<bizLocation>
<id>urn:epc:id:sgln:7332656.00001.003</id>
</bizLocation>
<gtnet:itemRef>urn:epc:id:grai:7332656.fishbox.*</gtnet:itemRef>
<!--
    Her begynner attributtene for fishbox med id =
    urn:epc:id:grai:7332656.fishbox.boxnumber
    id'en leses med håndholdt leser
-->
<ttdata:netweight>20.0</ttdata:netweight>
<ttdata:quantity>1.0</ttdata:quantity>
<ttdata:temperaturerecord>-2.5</ttdata:temperaturerecord>
<ttdata:unloading>2010-04-19T10:49:00.0</ttdata:unloading>
```

```

<ttdata:soaktime>2010-04-25T10:48:00.0</ttdata:soaktime>
<ttdata:catchdate>2010-04-18T02:00:00.0</ttdata:catchdate>
<ttdata:landingdate>2010-04-19T02:00:00.0</ttdata:landingdate>
<ttdata:landingstart>2010-04-19T10:47:00.0</ttdata:landingstart>
<ttdata:certificationscheme>MSC</ttdata:certificationscheme>
<ttdata:temperaturecontrolmethod>digital</ttdata:temperaturecontrolmethod>
<ttdata:productform>WHL</ttdata:productform>
<ttdata:catcharea>Västra Östersjön</ttdata:catcharea>
<ttdata:typeofunit>grai crate</ttdata:typeofunit>
<ttdata:productcondition>iced</ttdata:productcondition>
<ttdata:sizegrade>medium</ttdata:sizegrade>
<ttdata:certificationid>MSC-SWE-98675</ttdata:certificationid>
<ttdata:weighingmethod>gravity</ttdata:weighingmethod>
<ttdata:fishingmethod>longline</ttdata:fishingmethod>
<ttdata:sizegradingmethod>manual</ttdata:sizegradingmethod>
<ttdata:specie-eng>cod</ttdata:specie-eng>
<ttdata:specie-lat>gadus morhua</ttdata:specie-lat>
<ttdata:specie-swe>torsk</ttdata:specie-swe>
<!-- slutt på attributter -->
</ObjectEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>

```

Oversikt over hvilke attributter (properties) som er knyttet til fish box finnes på <https://stage-epcis.tracetracker.com/tix/etrace1/app/getTradeUnitTypeDetails?id=fishbox>.

## Opprette processing

XML-filen under viser en komplett oppretting av et objekt for prosesseringen. For å identifisere en produksjon har vi brukt teksten "production" sammen med dagens dato. I tillegg har vi ett ekstra element ("-A") for å kunne gi løpenumre til flere produksjoner samme dag. Produksjonen er modellert som en batch, som er intern i en bedrift og dermed ikke har noen direkte analogi i GSIs identifikasjonsskjemaer. Denne identifikatoren må endres (manualen) for hver produksjon som blir registrert, og transformasjoner inn/ut må referere riktig produksjon.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-
11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd"
xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:ttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<ObjectEvent>
<eventTime>2010-04-19T10:51:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<gtnet:entityClass>Batch</gtnet:entityClass>
<gtnet:trdType>processing</gtnet:trdType>
<epcList>
<!--
    Denne hentes fra anleggets produksjonssystem.
    I denne piloten må kanskje dette systemet simuleres (på papir)
-->
<epc>production-20100419-A</epc>
</epcList>
<action>ADD</action> <!-- første observasjon, det vil si opprettelse -->
<bizStep>urn:epcglobal:cbv:bizstep:storing</bizStep>
<disposition>urn:epcglobal:cbv:disp:sellable_not_accessible</disposition>
<readPoint>
<id>urn:epc:id:sgln:7332656.00001.008016</id>
</readPoint>
<bizLocation>
<id>urn:epc:id:sgln:7332656.00001.009</id>
</bizLocation>
<gtnet:itemRef>TRD-epcis-ettrace-swefish-batch-processing</gtnet:itemRef>
<!--
    Her begynner attributtene for processing med id =
    production-20100419-A.
    Denne id hentes fra produksjonssystemet, som trolig blir simulert
-->
<ttdata:starttime>2010-04-19T10:47:00.0</ttdata:starttime>
```

```

<ttdata:stoptime>2010-04-19T10:52:00.0</ttdata:stoptime>
<ttdata:lotnumber>1</ttdata:lotnumber>
<ttdata:productionlineid>1</ttdata:productionlineid>
<ttdata:batchnumber>production-20100419-A</ttdata:batchnumber>
<!-- slutt på attributter -->
</ObjectEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>

```

Oversikt over hvilke attributter (properties) som er knyttet til processing finnes på <https://stage-epcis.trace tracker.com/tix/etrace1/app/getBatchTypeDetails?id=processing>.

## Opprette paper box

XML-filen under viser en komplett oppretting av et objekt for en paper box. For å indentifisere en paper box har vi brukt et sgtin-skjema fra GS1. Paper box er modellert som en trade unit, siden den selges mellom bedrifter. Hver enkelt Paper box forventes å være utstyrt med en SGTIN-identifikator eller lignende GS1-basert identifikator. Dette fordi det er snakk om handelsenheter som (kan) selges mellom bedrifter.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd"
xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:tttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-etrace-swefish">
<EventList>
<ObjectEvent>
<eventTime>2010-04-19T10:53:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<gtnet:entityClass>TradeUnit</gtnet:entityClass>
<gtnet:trdType>paperbox</gtnet:trdType>
<epcList>
<!-- denne oppstår i skriveren som lager etikett til produktet -->
<epc>urn:epc:id:sgtin:7332656.paperbox.20100419001</epc>
</epcList>
<action>ADD</action> <!-- første observasjon, det vil si opprettelse -->
<bizStep>urn:epcglobal:cbv:bizstep:storing</bizStep>
<disposition>urn:epcglobal:cbv:disp:sellable_not_accessible</disposition>
<readPoint>
<id>urn:epc:id:sgln:7332656.00001.009021</id>
</readPoint>
<bizLocation>
<id>urn:epc:id:sgln:7332656.00001.011</id>
</bizLocation>
<gtnet:itemRef>urn:epc:id:sgtin:7332656.paperbox.*</gtnet:itemRef>
<!--
    Her begynner attributter for paperbox med id =
    urn:epc:id:sgtin:7332656.paperbox.20100419001
-->
<ttdata:netweight>5.0</ttdata:netweight>
<ttdata:quantity>12.0</ttdata:quantity>
<ttdata:temperaturerecord>-5.0</ttdata:temperaturerecord>
<ttdata:dateofdurability>2010-04-29T02:00:00.0</ttdata:dateofdurability>
<ttdata:productiondate>2010-04-19T02:00:00.0</ttdata:productiondate>
<ttdata:productionlineid>1</ttdata:productionlineid>
<ttdata:productionmethod>automated</ttdata:productionmethod>
```

```

<ttdata:batchnumber>1</ttdata:batchnumber>
<ttdata:durabilitytype>use by</ttdata:durabilitytype>
<ttdata:catcharea>Västra Östersjön</ttdata:catcharea>
<ttdata:haccp>-</ttdata:haccp>
<ttdata:hygienechecks>-</ttdata:hygienechecks>
<ttdata:typeofunit>box</ttdata:typeofunit>
<ttdata:productcondition>frozen</ttdata:productcondition>
<ttdata:processspecification>filleting</ttdata:processspecification>
<ttdata:productqualitycontrolchecks>-</ttdata:productqualitycontrolchecks>
<ttdata:customscode>4321</ttdata:customscode>
<ttdata:composition>fillet</ttdata:composition>
<ttdata:specie-eng>cod</ttdata:specie-eng>
<ttdata:specie-lat>gadus morhua</ttdata:specie-lat>
<ttdata:specie-swe>torsk</ttdata:specie-swe>
<ttdata:productname>torskfilet</ttdata:productname>
<ttdata:productspecification>torskfilet</ttdata:productspecification>
<ttdata:arrivewholesaler>2010-04-20T10:53:00+02:00</ttdata:arrivewholesaler>
<ttdata:departwholesaler>2010-04-20T11:53:00+02:00</ttdata:departwholesaler>
<ttdata:arriveretailer>2010-04-20T12:53:00+02:00</ttdata:arriveretailer>
<!-- slutt på attributter -->
</ObjectEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>

```

Oversikt over hvilke attributter (properties) som er knyttet til paper box finnes på <https://stage-epcis.tracetracker.com/tix/etrace1/app/getTradeUnitTypeDetails?id=paperbox>.

## Opprette pall

XML-filen under viser en komplett oppretting av et objekt for pall. XML-filen under viser en komplett oppretting av en pall. For å indentifisere en pall har vi brukt et grai-skjema fra GS1. Dette er identifikatorer som kan gjenbrukes. Pall er modellert som en trade unit, siden den beveger seg mellom bedrifter.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd"
xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:tttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<ObjectEvent>
<eventTime>2010-04-19T10:53:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<gtnet:entityClass>TradeUnit</gtnet:entityClass>
<gtnet:trdType>pall</gtnet:trdType>
<epcList>
<!-- denne leses med håndholdt leser (når pallen gjøres klar for pakking) -->
<epc>urn:epc:id:grai:7332656.pall.20100419001</epc>
</epcList>
<action>ADD</action> <!-- første observasjon, det vil si opprettelse -->
<bizStep>urn:epcglobal:cbv:bizstep:storing</bizStep>
<disposition>urn:epcglobal:cbv:disp:sellable_not_accessible</disposition>
<readPoint>
<id>urn:epc:id:sgln:7332656.00001.003007</id>
</readPoint>
<bizLocation>
<id>urn:epc:id:sgln:7332656.00001.003</id>
</bizLocation>
<gtnet:itemRef>urn:epc:id:grai:7332656.pall.*</gtnet:itemRef>
<!--
    Her begynner attributter for pall med id =
    urn:epc:id:grai:7332656.pall.20100419001
    Flere av attributtene får kanskje verdier på senere tidspunkter,
    når pallen kommer til wholesaler etc.
-->
<ttdata:quantity>5.0</ttdata:quantity>
<ttdata:temperaturerecord>-5.0</ttdata:temperaturerecord>
<ttdata:arrivewholesaler>2010-04-20T10:53:00+02:00</ttdata:arrivewholesaler>
<ttdata:departwholesaler>2010-04-20T11:53:00+02:00</ttdata:departwholesaler>
<ttdata:arriveretailer>2010-04-20T12:53:00+02:00</ttdata:arriveretailer>
<!-- slutt på attributter -->
</ObjectEvent>
```

```
</EventList>  
</EPCISBody>  
</epcis:EPCISDocument>
```

Oversikt over hvilke attributter (properties) som er knyttet til pall finnes på <https://stage-epcis.tracetracker.com/tix/etrace1/app/getTradeUnitTypeDetails?id=pall>.



## Splitte fish box fra catch

XML-filen under viser en transformasjon som splitter innholdet i en catch til en fish box.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd"
xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:tttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<AggregationEvent>
<eventTime>2010-04-19T12:46:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<bizStep>urn:epcglobal:cbv:bizstep:transforming</bizStep>
<!--
    SPLIT betyr at noe av innholdet i parentID blir flyttet
    til childEPCs
-->
<gtnet:transformationType>SPLIT</gtnet:transformationType>

<!-- id på catch (splitte fra denne) -->
<parentID>SWE1175535</parentID>

<!-- id på fishbox (splitte til) -->
<childEPCs>
<epc>urn:epc:id:grai:7332656.fishbox.boxnumber</epc>
</childEPCs>
<action>OBSERVE</action> <!-- observasjon av eksisterende enhet -->
<readPoint>
<id>urn:epc:id:sgln:7332656.00001.002003</id>
</readPoint>
<bizLocation>
<id>urn:epc:id:sgln:7332656.00001.003</id>
</bizLocation>
</AggregationEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>
```

## Mix fish box inn i processing

XML-filen under viser en transformasjon som mixer innholdet i en fish box inn i processing.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd"
xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:tttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<AggregationEvent>
<eventTime>2010-04-19T12:47:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<bizStep>urn:epcglobal:cbv:bizstep:transforming</bizStep>
<!--
    MIX betyr at parentID mottar materiale fra
    childEPCs
-->
<gtnet:transformationType>MIX</gtnet:transformationType>

<!-- id på processing -->
<parentID>production-20100419-A</parentID>

<!-- id på fishbox som blir blandet inn -->
<childEPCs>
<epc>urn:epc:id:grai:7332656.fishbox.boxnumber</epc>
</childEPCs>
<action>OBSERVE</action> <!-- observasjon av eksisterende enhet -->
<readPoint>
<id>urn:epc:id:sgln:7332656.00001.008016</id>
</readPoint>
<bizLocation>
<id>urn:epc:id:sgln:7332656.00001.009</id>
</bizLocation>
</AggregationEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>
```

## Splitte paper box fra processing

XML-filen under viser en transformasjon som splitter innholdet i en processing inn i en paper box.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd"
xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:tttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<AggregationEvent>
<eventTime>2010-04-19T12:53:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<bizStep>urn:epcglobal:cbv:bizstep:transforming</bizStep>
<!--
    SPLIT betyr at noe av innholdet i parentID blir flyttet
    til childEPCs
-->
<gtnet:transformationType>SPLIT</gtnet:transformationType>

<!-- id på processing (splitte fra denne) -->
<parentID>production-20100419-A</parentID>

<!-- id på paperbox (splitte til) -->
<childEPCs>
<epc>urn:epc:id:sgtin:7332656.paperbox.20100419001</epc>
</childEPCs>
<action>OBSERVE</action> <!-- observasjon av eksisterende enhet -->
<readPoint>
<id>urn:epc:id:sgln:7332656.00001.009021</id>
</readPoint>
<bizLocation>
<id>urn:epc:id:sgln:7332656.00001.011</id>
</bizLocation>
</AggregationEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>
```

## Pakke paper box på pall

XML-filen under viser en transformasjon som pakker en paper box på en pall.

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd"
xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:tttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<AggregationEvent>
<eventTime>2010-04-19T12:57:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<bizStep>urn:epcglobal:cbv:bizstep:transforming</bizStep>
<!--
ENTERCLUSTER betyr at enheter blir pakket sammen
-->
<gtnet:transformationType>ENTERCLUSTER</gtnet:transformationType>

<!-- id på pall der enhetene blir plassert -->
<parentID>urn:epc:id:grai:7332656.pall.20100419001</parentID>

<!-- id på enhetne som blir plassert på pall -->
<childEPCs>
<epc>urn:epc:id:sgtin:7332656.paperbox.20100419001</epc>
</childEPCs>
<action>OBSERVE</action> <!-- observasjon av eksisterende enhet -->
<readPoint>
<id>urn:epc:id:sgln:7332656.00001.003007</id>
</readPoint>
<bizLocation>
<id>urn:epc:id:sgln:7332656.00001.003</id>
</bizLocation>
</AggregationEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>
```

## Oppdeling av XML for opplasting i flere omganger

Eksemplene foran har vært komplette, hvilket vil si at alt som skal registreres må være kjent til samme tid. Dette er strengt tatt ikke nødvendig. Derimot er det mulig å laste opp i flere omganger, for eksempel for å etterpopulere attributter. Under følger et eksempel, der en fangst er delt opp i to deler.

1. Opprettelse av fangsten, uten attributter
2. Etterpopulering av attributter

Først opprettelse:

```
<?xml version="1.0" encoding="UTF-8"?>
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd"
xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:tttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<ObjectEvent>
<eventTime>2010-04-19T10:34:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<gtnet:entityClass>Batch</gtnet:entityClass>
<gtnet:trdType>catch</gtnet:trdType>
<epcList>
<epc>SWE1175536</epc>
</epcList>
<action>ADD</action>
<bizStep>urn:epcglobal:cbv:bizstep:receiving</bizStep>
<disposition>urn:epcglobal:cbv:disp:in_progress</disposition>
<readPoint>
<id>urn:epc:id:sgln:7332656.00001.001002</id>
</readPoint>
<bizLocation>
<id>urn:epc:id:sgln:7332656.00001.002</id>
</bizLocation>
<!-- ingen atributter -->
</ObjectEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>
```

Deretter etterpopulering av attributter:

```
<?xml version="1.0" encoding="UTF-8"?>
```

```

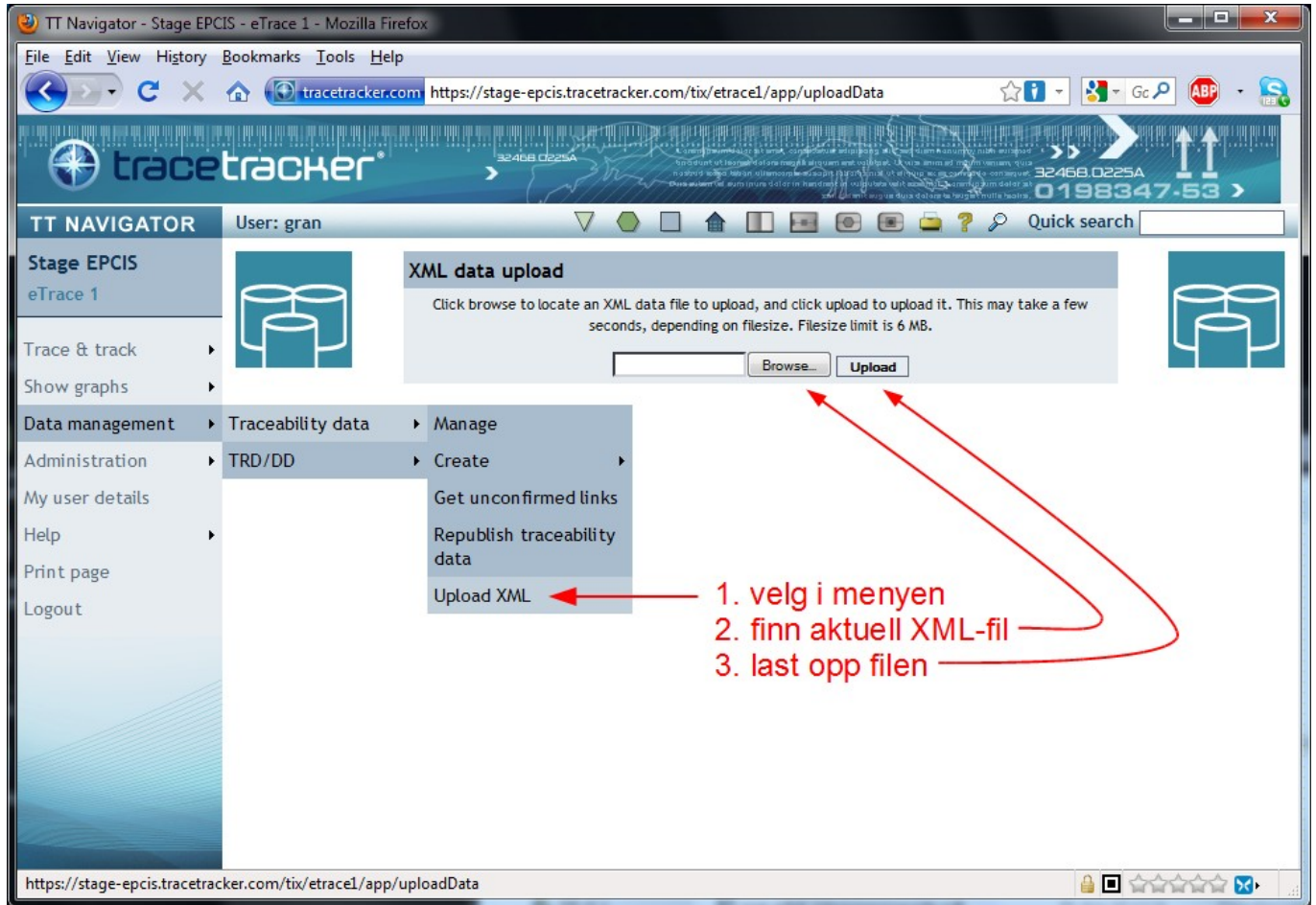
<epcis:EPCISDocument schemaVersion="1" creationDate="2005-07-11T11:30:47.0Z"
xsi:schemaLocation="urn:epcglobal:epcis:xsd:1
http://svn.tt.tracetracker.com/ttdoc/PM/testdata/epcis/schema/EPCglobal-
epcis-1_0.xsd"
xmlns:tc="http://www.tracefood.org/schema/epcis"
xmlns:tttrd="http://www.tracetracker.com/trd"
xmlns:epcis="urn:epcglobal:epcis:xsd:1"
xmlns:gtnet="http://www.globaltraceability.net/schema/epcis"
xmlns:ttdata="http://www.tracetracker.com/data"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<EPCISBody trdRef="TRD-epcis-ettrace-swefish">
<EventList>
<ObjectEvent>
<eventTime>2010-04-19T12:34:00+02:00</eventTime>
<eventTimeZoneOffset>+02:00</eventTimeZoneOffset>
<gtnet:entityClass>Batch</gtnet:entityClass>
<gtnet:trdType>catch</gtnet:trdType>
<epcList>
<epc>SWE1175536</epc>
</epcList>
<action>OBSERVE</action>
<gtnet:itemRef>TRD-epcis-ettrace-swefish-batch-catch</gtnet:itemRef>
<!-- her kommer attributter -->
<ttdata:weight>728.0</ttdata:weight>
<!-- se eksempel over for detaljer -->
<ttdata:receivername>Skillinge Fisk-Impex AB</ttdata:receivername>
<!-- slutt på attributter -->
</ObjectEvent>
</EventList>
</EPCISBody>
</epcis:EPCISDocument>

```

Dette mønsteret kan også anvendes på de andre typene objekter.

## Manuell opplasting til EPCIS

Skjermbildet under viser hvor i Navigator man finner funksjonalitet for å laste opp XML.



---

## Automatisert opplasting til EPCIS

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GCI er vårt capture interface. Det aksesseres med XML over HTTP (ikke SOAP).

- URL til GCI: <https://stage-epcis.tracetracker.com/tix/etrace1/gci/importXMLData>
- URL til XSD for GCI: [http://www.tracetracker.com/tt/dtd/gtnet-capture-interface\\_4\\_2.xsd](http://www.tracetracker.com/tt/dtd/gtnet-capture-interface_4_2.xsd)

Alternative systemer:

- Arbeide direkte mot Capture Interface: [GCIGuide-tix-4.1.8.pdf](#)
- Java-klient: [app-gciclient-java-4.1.28-client.zip](#)
- Java-applet: kjøre fra <http://testtdu.globaltraceability.net/>
- Eldre Java-applet: [app-slurp-web-1.0.2-installer.zip](#) og [slurp-reference-tix-1.0.2.pdf](#)