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White	<input checked="" type="checkbox"/>
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Toolkit Usage Example

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1. Introduction

In the context of the EU Project e-IMPACT it was identified the need to build a toolkit containing the adequate artefacts to support an interested party (to be designated simply by adopter hereafter) in the adoption of the e-Freight Common Framework.

Activity 1 of the project aimed the development of the artefacts. They have two natures: documents and software. In Sub-Activity 1.1 the artefacts were identified and developed.

The present document is included in the list resulting from the identification process (done under SubAct 1.1, Task 1.1.1). Its aim is the **provision of examples** on how to use the artefacts (mainly the ones that are documents) of e-IMPACT and, through this, adopt the e-Freight Common Framework.

Important: Provision of examples.

The examples are not only on a particular tool / artefact of the toolkit. They cover several, appearing accordingly to the approach made by a fictitious adopter (see 1.3).

The artefacts being exemplified are not described or defined here, but in their own definition document. In each artefact definition document, a reference to the applicable example is made.

Important: THIS DOCUMENT IS NOT COMPLETE. EXAMPLES OF USAGE OF THE OTHER ARTEFACTS NEED TO BE INCLUDED.

HOWEVER, FOR THE MAPPING TOOL, THE CONTENT IS COMPLETE EXCEPT FOR A DETAIL REVISION.

1.1 Audience

This document is to be used by everyone interested in using e-Freight messages and has, or is developing, an IT application to support its business, or already uses electronic messages for document interchange in other formats.

It is important to have deep knowledge of its own business scenario, context, requirements and data, where e-Freight is being applied. This will allow to align with the example.

Important: It is this degree of involvement that will support the adequate choices during the message specification.



It is useful to have some IT basic knowledge mainly on data modelling and data mapping.

1.2 Complementary Documents

By the nature of the toolkit and of this document, this document complements the other documents of the toolkit. The other documents, when referring to examples, should point to the proper example in this document, eventually adding some specific complementary information.

Example: The document “e-IMPACT Mapping Templates Manual” that explains how to use the templates, in its chapter 6 should point to this document for the reader to see how the templates can be used in a practical situation.

1.3 How to use the example

As all the artefacts in the toolkit are related with each other, it made sense to create a common context to demonstrate their usage. Even if the adopter opts to use a subset of the available tools, the utility and full potential of each one is enhanced if demonstrated together.

The context is given by a story presenting a hypothetical situation where a company decides to accede to e-Freight. The departure situation and the general goals are presented. Then, the steps made by using the tools are described as the main character in the story takes them.

The reader should read the story to get the whole picture. Then he/she can jump to the chapter/section where each tool is exemplified, although it is recommended to read the whole document.

The story is written in *italic* font, interlaced with portions in normal font for extra comments.

2. The story

Context

¹DRYHAN, Co is a company that operates an inland logistics platform. Its services include containers’ handling and storage, stow and stuff, groupage, and reefer. The area is linked to the road and rail infrastructure, and is located near a general purpose sea port.

DRYHAN clients’ consist of logistics service providers, each one specialised in specific market segments. But they have in common the operation of containers. So the main revenue comes from container handling, storage, and reefer assistance while located in

¹ The story, all names, characters and incidents portrayed in this story are fictitious. No identification with actual persons, places, systems, buildings, and products is intended or should be inferred.



the platform. But the lowest SKU² handled by the company is package, allowing the possibility of cross-docking operations when required. Also, Customs verifications are done when required.

The most common container flow is their arrival by train and the departure by truck, or the other way around. Trucks serve the regional economy mostly made of SME's. The trains connect the platform with other regions and the nearby port (although truck movement also exist for this connection).

To support its operations, DRYHAN has an IT application, known by YardSys¹. The application allows users to record the existences in the platform, the services required and performed, and even configure packages of services in order to respond to the most common demanded services. The application also allows the planning of services, but it is hardly to use due to the manual overload comparing with the gains obtained.

Joan Booth is an IT analyst at DRYHAN, Co. She has been working in the company for 14 years, so her knowledge of the business operations is high, although her academic background is IT.

Joan was called to a meeting with her management a few weeks ago. It was explained that DRYHAN had decided to pursue the following goals:

- *increase its efficiency mainly by improving planning and integration with authorities;*
- *promote the quality of its services by providing to their clients by increasing supply chain visibility;*
- *broaden the diversity and number of clients;*

in a context sustainable growing demand.

The company had to perform several parallel and complementary actions to achieve this. But to Joan, she was given the mission of applying the necessary technical and procedural measures linked with the IT application and its usage, to support the way to these goals.

Immediately Joan jumped into the subject.

Present situation

By following the IT trends in the logistics sector, Joan was aware that the lack of interconnectivity of DRYHAN IT application with outside applications for electronic document exchange was preventing the extraction of full potential of the application, not to mention the improvement of the efficiency of the operations. However the stable and small range of clients didn't encouraged the steps of overcoming the lack of deep knowledge to follow an implementation process, and cope the costs. So Joan was facing a situation of having quite complete and sophisticated application, but totally isolated in terms of the outside world.

She did some research and became acquainted with e-Freight.

She learned that e-Freight provided definitions for several messages intended to allow electronic document interchange, in bidirectional relations. This would help DRYHAN to receive data from the clients allowing to mitigate the effort of data feed of the planning

² Stock Keeping Unit.



feature of the application. On the other hand, it also allowed the intended provision of supply chain visibility since the recorded events of the services performed can be smoothly shared with the clients and authorities.

She found out that these definitions were part of ISO 19845 Standard, that itself incorporates UBL v2.1.

Also, e-Freight presented the concept of interconnectivity infrastructure. As Joan understood it was something that allowed her to connect to several clients through the same channel and using the same messages' format. And this was interesting for DRYHAN because of the goal of broaden the diversity and number of clients. This goal implies a larger number of messages' definitions and connections according to the number of clients and their requirements. This represents a significant effort, complexity and cost. e-Freight can allow this effort increase, but in a significant lower proportion.

Another aspect Joan noted on e-Freight is the purpose of not substitute other already used standards where implemented. e-Freight allows and proposes the mapping between messages' formats in other syntaxes and the formats defined by e-Freight.

Joan knew that some of DRYHAN clients already used other standards for exchange electronic documents with other parties, and that they made a significant effort and investment in the implementation. Because of this, she was aware that any attempt to make these clients to change or adopt additional messages' formats would get strong opposition. With e-Freight the already existent work could be used.

Having this knowledge in hand, Joan asked herself "What now?"

3. The approach

This chapter presents the process that Joan follows in order to DRYHAN, Co. be able to use e-Freight. She uses her technical and business background to make her choices in each step of the process.

Get acquainted with the e-IMPACT Toolkit

Additionally to the standard documents, namely ISO 19845 and documents available in the OASIS website, during her research, Joan became aware of the existence of a set of documents and software components that resulted from a European Project named e-IMPACT. These documents and components were organized as a toolkit. Their purpose is to assist newcomers in the adoption of e-Freight.

Joan thought "These tools are what I need!". Although the UBL and e-Freight documents and specifications she found during his research were quite complete and clear, it was not easy for her to figure out how to apply them to DRYHAN reality. As standards that they are, the documents are generic and leave out guidelines for specific or particular implementations. This toolkit would be handy.



3.1 – Fundamentals

The first tool she used was the “Fundamentals” document. In here she found information that she already knew from his research. But she learned how to use the toolkit and more detailed information on the relation between e-Freight and ISO 19845 (UBL v2.1).

Reading this document she was able to familiarize with the roles in logistic and transport, the set of principles of e-Freight and its usage, the e-Freight messages definitions, the Access Points specification and its usage and deepening her knowledge on the used standards.

3.2 – Self-Assessment Questionnaire

From the Fundamentals, Joan found that the first step was to assess DRYHAN position in relation to e-Freight and identify the messages to use. For that she used the tool Questionnaire.

☞ This tool contains a set of questions of different nature. By answering these questions the adopter can gain a perception of his current situation in relation to e-Freight considering all features of e-Freight.

Additionally the tools support the adopter in the making of the major choices and paths of approach.

There are no correct answers. However according to the answers provided, some advice is given in the form of suggestions.

After completing the questionnaire, Joan concluded the follow:

- *DRYHAN has mainly a Logistics Service Provider (LSP) role according to e-Freight definition. It is from this perspective that Joan is going to follow the adoption process.*
- *Current DRYHAN clients, also in the role of Logistic Service Client (LSC), by their nature they are also LSP. However, the new target clients include manufacturing companies and distribution chains, and these are “pure” LSC.*
- *The messages she is going to adopt are:*
 - *TransportationStatusRequest (TSR) to allow clients to ask for data to get supply chain visibility, and TransportationStatus (TS) for DRYHAN to provide that visibility.*
 - *TransportExecutionPlanRequest (TEPR) for clients to provide information for requiring services, but also for DRYHAN get planning data, and TransportExecutionPlan (TEP) to fine tune the required services and the subsequent planning.*
 - *GoodsItemItinerary will allow DRYHAN to continuously update visibility data as events occur, but also in terms of depth on the supply chain.*
 - *CommonReportingSchema (CRS) will allow DRYHAN to share information with authorities, mainly Customs, allowing them to make earlier plans of their intervention when required.*
 - *TransportProgressStatusRequest (TPSR) will allow DRYHAN to ask for information regarding the means of transport going to the platform or to*



the nearby port, and TransportProgressStatus (TPS) to receive the required data. That will allow DRYHAN to update its own planning, and share with the clients after combining with its own information.

- *In terms of code lists to be used, DRYHAN will adopt, at least*
 - *Country Code*
 - *UN/LOCODE*
 - *CargoTypeCode*
 - *LocationTypeCode*
 - *TransportationStatusTypeCode*

Now Joan is ready to move on and apply this decisions.

3.3 – Mapping Templates

In this section, pictures of the templates are included. For the purpose of readability, some columns and/or lines are hidden, depending on what is intended to illustrate in each picture.

One of the tools she found in the toolkit is a set of templates that she can use to map the e-Freight data elements with DRYHAN application data structures. Simultaneously she can analyse which e-Freight elements she actually requires and which to discard.

So, following the “e-IMPACT_Mapping_Template_Manual” recommendation, she makes working copies of the following templates:

- *e-IMPACT-TransportationStatusRequest-2.1 – MapTemplate*
- *e-IMPACT-TransportationStatus-2.1 – MapTemplate*
- *e-IMPACT-TransportExecutionPlanRequest-2.1 – MapTemplate*
- *e-IMPACT-TransportExecutionPlan-2.1 – MapTemplate*
- *e-IMPACT-GoodsItemItinerary-2.1 – MapTemplate*
- *e-IMPACT-CommonReportingSchema-2.1 – MapTemplate*
- *e-IMPACT-TransportProgressStatusRequest-2.1 – MapTemplate*
- *e-IMPACT-TransportProgressStatus-2.1 – MapTemplate*

Joan finds also in the same manual, that it is also advised to make several working copies of the e-IMPACT-CommonLibrary-2.1 – MapTemplate. To her collection, she adds:

- *e-IMPACT-CommonLibrary-2.1-TSR*
- *e-IMPACT-CommonLibrary-2.1-TS*
- *e-IMPACT-CommonLibrary-2.1-TEPR*
- *e-IMPACT-CommonLibrary-2.1-TEP*
- *e-IMPACT-CommonLibrary-2.1-GII*
- *e-IMPACT-CommonLibrary-2.1-CRS*
- *e-IMPACT-CommonLibrary-2.1-TPSR*
- *e-IMPACT-CommonLibrary-2.1-TPS*

Working on the first chosen message



With this collection, she has to start from somewhere. She decides to start working the relation between DRYHAN and the nearby port. To take this option, she had the following issues in mind:

- It is a one-to-one relation. So it is easier to work with, considering the novelty of the e-Freight to her.
- The amount of data required for this is small comparing with other documents.
- The data provided would be used to complement information to be send to the clients in the other messages. So she expected the anticipation of future work that wouldn't need to be repeated.


First she started to look to the template of the TransportProgressStatusRequest (TPSR) Message. As DRYHAN had no previous usage of electronic messages, Joan ignored the columns related to syntaxes. Her focus would be on the columns called "Internal application ...".

YardSys data model contained some data fields that could be mapped to the e-Freight messages' structure. But no current messaging module existed. It would need to be built but considering the e-Freight requirements in the initial versions. This module would be called ChannelModule.

Looking into the template, Joan noticed that there were some required elements (simple and composite). This conclusion was based on the Cardinality column that gives the cardinality under UBL definition, but also based on column e-IMPACT Cardinality.

Mainly at header level, the values for these elements depend on the context of the relation. So they would be mapped into the fields of ChannelModule. Although this application still didn't exist, Joan could advance with some assumptions. Some of them were that ChannelModule would automatically generate message's ID' and provide issue Data/Time from the system. Also, it would keep the several profiles according to the entities with whom messages will be exchanged.

The template to work with is e-IMPACT-TransportProgressStatusRequest-2.1 – MapTemplate. A first version of it use is showed next.

	A	AH	AI	AJ	AK	AL	AM	AN
1	 Co-financed by the European Union Connecting Europe Facility							
2	UBL Name	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
3	TransportProgressStatusR							
4	UBLVersionID	T_Parameters	UBLVersionID	varchar	5		ChannelModule	
5	CustomizationID	T_Parameters	dummyValue	varchar	35	value="void"	ChannelModule	
6	ProfileID	T_Relations	profileID	varchar	35	value="PortProfileV0"	ChannelModule	
7	ProfileExecutionID							
8	ID	T_ID_Collection	TPSRmsgID	varchar	35			
9	CopyIndicator							
10	UUID							
11	IssueDate	system date				format "yyyy-mm-dd"		
12	IssueTime	system time				format "hh24.mi:ss+/-hh.mi (timezone)"		
13	Note							
14	Signature							
15	SenderParty							
16	ReceiverParty							
17	TransportMeans							
18	StatusLocation							
19								

Next Joan looks at the composite elements.

SenderParty is DRYHAN itself, while in this context the ReceiverParty would be the port. Anyway data would also be kept in ChannelModule. At this moment Joan was not



concerned with the detail of these composite elements, but already was figuring out how to identify the entities. Being the VAT ID of general usage in DRYHAN area of operation, it was secure choice.

On the other hand, TransportMeans and StatusLocation are business data. So its source is YardSys. Now the template would look like this.

UBL Name	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
TransportProgressStatusR							
UBLVersionID	T_Parameters	UBLVersionID	varchar	5		ChannelModule	
CustomizationID	T_Parameters	dummyValue	varchar	35	value="void"	ChannelModule	
ProfileID	T_Relations	profileID	varchar	35	value="PortProfileV0"	ChannelModule	
ProfileExecutionID							
ID	T_ID_Collection	TPSRmsgID	varchar	35			
CopyIndicator							
UUID							
IssueDate	system date				format "yyyy-mm-dd"		
IssueTime	system time				format "hh24:mi:ss+/-hh:mi (timezone)"		
Note							
Signature							
SenderParty						ChannelModule	DRYHAN identified by VAT id.
ReceiverParty						ChannelModule	The port identified by VAT id.
TransportMeans						YardSys	
StatusLocation						YardSys	

Joan noticed that StatusLocation is of optional use. For the StatusLocation, although it was the port, Joan prefers to extract the value from YardSys instead of omit the element or provide a fixed value. This way he doesn't compromise future contexts of application.

Looking into business elements: the detail

At this point, Joan has to give the next step in the process: look into the definition of the composites.

One thing that she noticed in the previous research was the recursive nature of some definitions. This is something to give some attention because in real business this does not exist. But in certain cases the functionality offered by this could be useful.

Joan remembered that there is tool with recommendations in the Toolkit. Perhaps it could contain some guidance on this.

☞ The section about Rules and Recommendations exemplify the usage of this tool and how our character can solve its doubt.

The first elements Joan looks for are the SenderParty and ReceiverParty. As the message underwork at the moment is TPSR, Joan is going to work with e-IMPACT-CommonLibrary-2.1-TPSR template.

From the previously template, Joan saw that both elements were based on Party definition, so it was this element she would look for. She looked into the column "applied to e-Freight message TPSR" and found that none of the simple elements of Party were used in TPSR message.

At this point she also noticed that all the other elements were optional. Now at this point she has to make the following reasoning: if SenderParty and ReceiverParty are required in TPSR message, it means that at least one of the optional elements must be used, but she's



free to choose which one. Recall that she decided to identify the SenderParty and the ReceiverParty by their VAT id. Looking at the elements present in Party, she sees that composite element PartyIdentification should do the job. Looking at its definition she finds that this composite has one simple element only.

So it is this one she chooses. But, at this time she is not sure if she needs to refer other parties using other elements. In the template she is going to make note of this by putting a note on in the Internal application condition column.

Used by e-Freight	UBL Name	Applied to e-Freight message TPSR	User Cardinality	Internal application schematable	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
1388	OrderReference									
1388	OrderReference									
1386	OrderedShipment									
1399	Package	Y								
1415	Party	Y								
1415	MailCareIndicator									
1417	MailAttentionIndicator									
1418	WebSiteURLID									
1419	LogoReferenceID									
1420	EndpointID									
1421	IndustryClassificationCode									
1422	PartyIdentification	0..1	1	T_Entity				Required to identify the Sender and Receiver	YardSys	VAT id of the party
1423	PartyName	0..1	0							
1424	Language	0..1	0							
1425	PostalAddress	0..1	0							
1426	PhysicalLocation	0..1	0							
1427	PartyLegalScheme									
1428	PartyLegalEntity									
1429	Contact	0..1	0							
1430	Person	0..n	0							
1431	AgentParty									
1432	ServiceProviderParty									
1433	DiverseOfAttorney									
1434	FinancialAccount									
1435	PartyIdentification	Y								
1436	ID	1		T_Entity		varchar	35			For Sender and Receiver look for VAT number
1437	PartyLegalEntity	Y								
1438	PartyIdentification	Y								

Again, as Joan is not sure of the need to identify other entities and how, she leaves the column Internal application field of element ID of composite PartyIdentification blank.

The example is assuming that in YardSys a party can have different identifications or number in its attribute list (VAT number, national register number, EAN code, etc.). So a party can be identified by any of this. However, it is assumed that all these attributes are varchar type with size 35.

Now Joan looks into TransportMeans and StatusLocation in e-IMPACT-TransportProgressStatusRequest-2.1 – MapTemplate.

TransportMeans is based on itself. So it is that definition Joan looks for in e-IMPACT-CommonLibrary-2.1-TPSR template.

Joan finds interesting potential in the definition. Although DRYHAN does not operate vessels, they have a relevant flow of goods to/from the nearby port. So they can request and get feedback about a particular vessel that are aware it will call the port. Achieving this, a better planning and operations' execution is possible since they get visibility on the transport chain a next level deeper.

In YardSys, DRYHAN keeps data on every means of transport involved each service that was ordered. However, records are kept in the same table independently of the transport mode, using qualifiers to identify the mode. Joan has to have this in mind when mapping the YardSys fields into the e-Freight elements.

Joan finds the cardinality in the template adequate. But DRYHAN, for identification checking purposes of trucks entering the premises, requires a confirmation of trucks nationality of register. So Joan has to express that in the element RegistrationNationalityID present in the TransportMeans definition.

Important: This illustrates the usage of column "User Cardinality". It allows the user to include in its mapping, an element of the Full Profile (so part of



the e-Freight definition) but not present in the Code Profile³ (so not part of the essential e-Freight definition).

At this point Joan has this composite element mapped.

Used by e-Freight	UBL Name	applied to e-Freight message TPSR	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
2397	TransportExecutionTerms	Y								
2409	TransportHandlingUnit	Y								
2437	TransportMeans	Y								
2438	JourneyID	0.1	0.1	T_TransVehicle	voyage	varchar	35			
2439	RegistrationNationalityID			T_TransVehicle	nationality	varchar		2 only when modeType="Road"		ISO country code
2440	RegistrationNationality									
2441	DirectionCode									
2442	TransportMeansTypeCode									
2443	TradeServiceCode									
2444	Stowage									
2445	AirTransport	0.1		T_TransVehicle				modeType="Air"		
2446	RoadTransport	0.1		T_TransVehicle				modeType="Road"		
2447	RailTransport	0.1		T_TransVehicle				modeType="Rail"		
2448	MaritimeTransport	0.1		T_TransVehicle				modeType="Sea"		
2449	OwnerParty									
2450	MeasurementDimension									
2451	AgentParty									
2452	ShipmentStage									
2453	TransportSchedule	Y								
2466	TransportationSegment	Y								

Now Joan looks into each type of transport and the following sequence of images shows how the mapping of the elements is done in e-IMPACT-CommonLibrary-2.1-TPSR template.

Used by e-Freight	UBL Name	applied to e-Freight message TPSR	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
43	AddressLine	Y								
45	AirTransport	Y								
46	AircraftID	1		T_TransVehicle	id_number	varchar	35	modeType="Air"		
47	AllowanceCharge									
63	AppointTerms									

Used by e-Freight	UBL Name	applied to e-Freight message TPSR	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
1276	MaritimeDeclarationOfHealth	Y								
1302	MaritimeTransport	Y								
1303	VesselID	0.1		T_TransVehicle	id_number	varchar	35	modeType="Sea"		
1304	VesselName	0.1	0	T_TransVehicle	name	varchar	70	modeType="Sea"		
1305	RadioCallSignID	0.1								
1306	ShipRequirements									
1307	GrossTonnageMeasure									
1308	NetTonnageMeasure									
1309	MMSI/Number									
1310	SegregateBallastMeasure									
1311	ShipConfirmationCode									
1312	INP-ShipClassCode									
1313	AntennaLocation									
1314	RegistryCertificateDocumentReference									
1315	RegistryPortLocation									
1316	VesselDynamics									
1317	Master									
1325	MasterParty									
1331	MasterReading									

Used by e-Freight	UBL Name	applied to e-Freight message TPSR	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
1687	QuotationLine									
1699	RailTransport	Y								
1700	TrainID	1		T_TransVehicle	id_number	varchar	35	modeType="Rail"		
1701	RailCarID	0.1	0							
1702	ReceiptLine									
1723	Regulation									
1777	RateScheme									

³ See the Mapping Templates' Manual, section 5.1.



Used by e-Freight	UBL Name	Applied to e-Freight message	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
1819	RetailPlanImpact	Y								
1824	RetailTransport	Y								
1825	LicensePlateID	1		T_TransVehicle	id_number	varchar	35	modeType="Road"		
1826	SalesItem									

At this point Joan has the necessary to deal with the transport means information. Eventually she will identify validation rules or conditions. But at any point in time, before “go live” or after as part of a revision process, the template can be revisited.

So only StatusLocation is missing to finish this template.

DRYHAN nominated several points to monitor transports coming to or leaving from the platform. These points are different in nature and because of that, are identified differently. Example, one is the nearby port and the other platforms directly connected with DRYHAN. But there is a road junction of two important motorways where some heavy traffic is usual. So DRYHAN also wants to monitor this way point in relation to trucks. Due to the diverse nature of the set of points, different ways to identify them must be used. The port, rail stations/platforms and the other logistic installations are quite simple to identify since they have a UN/Locode to identify them. But the motorway junction and other road points are identified by coordinates. Addresses are also to take into account since DRYHAN wants to include manufactures and SME’s in its client portfolio.

Finally, not all types of locations are required. Joan sees that element LocationTypeCode has a code list associated to it. So only a subset of it is needed in this message.

Joan sees that e-Freight accommodates this requirement and can put some conditions in order to state the usage of additional information when the coordinate system is used. The StatusLocation composite element is based on the Location composite element. So that’s where to Joan is looking now.

The several mapping options that Joan takes are shown in the next sequence.

Used by e-Freight	UBL Name	Applied to e-Freight message	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
1196	ItemPropertyGroup									
1200	ItemPropertyRange									
1205	Language									
1209	LineItem									
1242	LineReference									
1247	LineResponse									
1250	Location	Y								
1251	ID	0..1		T_Places	UNLCode	varchar		5 if a UNLCode exists		
1252	Description		0							
1253	Conditions									
1254	CountrySubentity									
1255	CountrySubentityCode									
1256	LocationTypeCode	0..1	1	T_Places	placeType	varchar	3			subset of LocationTypeCode List
1257	InformationURI	0..1	0							
1258	Name	0..1	0..1	T_Places	placeName	varchar		35 needed when place is given by coordinates or address		
1259	ValidityPeriod									
1260	Address	0..1		T_Address						
1261	SubsidiaryLocation	0..n	0							
1262	LocationCoordinate	0..1		T_Places				not used when place is identified by UNLCode		
1263	LocationCoordinate	Y								
1264	CoordinateSystemCode	0..1	0							
1265	LatitudeDegreesMeasure	0..1	1	T_Places	coordinates	varchar	12			sub string from 0 to 1
1266	LatitudeMinutesMeasure	0..1	1	T_Places	coordinates	varchar	12			sub string from 2 to 3
1267	LatitudeDirectionCode	0..1	1	T_Places	coordinates	varchar	12			sub string 4
1268	LongitudeDegreesMeasure	0..1	1	T_Places	coordinates	varchar	12			sub string 6 to 8
1269	LongitudeMinutesMeasure	0..1	1	T_Places	coordinates	varchar	12			sub string 9 to 10
1270	LongitudeDirectionCode	0..1	1	T_Places	coordinates	varchar	12			sub string 11
1271	AltitudeMeasure									
1272	Validation									



Used by e-Freight	UBL Name	applied to e-Freight message TPSR	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
Y	Address	Y								
	ID									
	AddressTypeCode									
	AddressFormatCode									
	Postbox	0..1	0..1	T_Address	postbox	varchar	12			
	Floor									
	Room									
	StreetName	0..1	1	T_Address	street	varchar	35			
	AutonomousStreetName									
	BlockName									
	BuildingName	0..1	0..1	T_Address	building	varchar	35			
	BuildingNumber	0..1	0..1	T_Address	number	varchar	12			
	InhouseMail									
	Department									
	MarkAttention									
	MarkCare									
	PlotIdentification									
	CitySubdivisionName									
	CityName	0..1	0..1	T_Address	city	varchar	35			
	PostalZone	0..1	0..1	T_Address	postalCode	varchar	35			
	CountrySubentity									
	CountrySubentityCode									
	Region	0..1	0..1	T_Address	region	varchar	35			
	District	0..1	0..1	T_Address	district	varchar	35			
	TimezoneOffset									
	AddressLine	0..n	0							
	Country	0..1	1	T_Address	country	varchar	2			ISO country code
	LocationCoordinate									
Y	AddressLine	Y								

At this point Joan has the sufficient to implement the *TransportProgressStatus* message in terms of the structure.

She still needs to deal with the dynamic of the process like “What action triggers the issuing of the message?” These sort of things depend on the application functioning and user behaviour, and requires a deeper study later. Eventually, some revision of hers templates may be done to express the dynamic, for instance, by placing notes in the “Internal application conditions” and/or “Internal application rules”. Eventually in an external document.

Important: The e-Freight defines the processes between the several roles involved indicating the messages used in each process. This is also included in UBL. In the common framework⁴ it is also included the use cases and collaboration diagrams where each role is involved, defining the mission of each participating party. However the detailed way on how each action is performed, triggered or considered as finished, depend on the operational particularities of each party. Due to this openness and the existing modelling tools, no specific tool was developed in the context of the toolkit.

Although the logical sequence for Joan to follow is look at *TransportProgressStatus (TPS)* as the response message to *TPSR*, she prefers to look at something more related to goods and less with transport means.

Moving on...

Joan recalled that *DRYHAN* wanted to provide ways for its clients to have an increased visibility over the supply chain. Based on her previous research, she decides to work on *TransportationStatus (TPS)* message.

⁴ See <http://www.its.sintef9013.com/CF/v1/>



She found out that this message usage presented interesting challenges and capabilities. The data to be provided through this message is to be picked up from YardSys. However, these data is provided to YardSys from multiple sources, even being the same element. For example the date an event on the goods occurred can be provided by the DRYHAN operative worker that actually did the action on the goods (example: pallet wrapping). But this date can also be inferred by YardSys when referring to the goods departure in a vessel from the nearby port, when the system receives the TransportProgressStatus (TPS) about that vessel.

Important: This situation intends to alert the reader for two things:

- **The overall potential that can be achieved when the mapping process of one message is done considering the other e-Freight messages and the processes that make them combine.**
- **The type of questions the adopter may face during the mapping process between its current reality and e-Freight formats.**

Now Joan isn't going to give too much attention to this issue but she will keep it in her mind while doing the mapping process.

One thing she is aware is that TransportationStatus (TS) is the response message of TransportationStatusRequest (TSR). So some data can be available in the status report to the requestor only if sufficient information is provided in the request, preferably, or via other means. Any way she can anticipate some of these data.

So she is going to take on e-IMPACT-TransportationStatus-2.1 – MapTemplate and on e-IMPACT-CommonLibrary-2.1-TS template (the working copy of e-IMPACT-CommonLibrary-2.1 – MapTemplate for this message).

On opening the TS template she noticed significant differences in relation to TPSR. But she also found the common elements mostly related with what is known to be the message header. The relation with ChannelModule also applies here.

Also at the header level Joan found three new elements comparing with TPSR: Description, TransportationStatusCode and TransportExecutionStatusCode.

Joan decided to use Description but as optional. DRYHAN operatives could place general information or remarks about a service in YardSys that could be shared with clients.

She also decided to use TransportationStatusCode but as required. This way she could clarify to the receivers the type of status DRYHAN was reporting. However, although being business information it is tightly related with the request message. So the field with the value for this element will be in the ChannelModule.

She also considers the usage of TransportExecutionStatusCode. From the point of view of providing deeper visibility, giving status information at a more detail level (consignment level, for example) makes more sense. However in situations where the status applies to all consignments, it may be more interesting to send a smaller message with the overall status. The source of data will be YardSys since it is where service progress is registered (as



said above, by the workers or by receiving related messages). A consequence of this approach is that only a small set of the codes present in the associated code list will be used in this element. Only codes representing overall situations make sense here.

After dealing with header mapping of TS, Joan gets to the following.

UBL Name	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
TransportationStatus							
UBLVersionID	T_Parameters	UBLVersionID	varchar	5		ChannelModule	
CustomizationID	T_Parameters	dummyValue	varchar	35	value="void"	ChannelModule	
ProfileID	T_Relations	profileID	varchar	35	value="PortProfileV01"	ChannelModule	
ProfileExecutionID							
ID	T_ID_Collection	TPSRmsgID	varchar	35			
CarrierAssignedID							
LIUID							
IssueDate	system date				format "yyyy-mm-dd"		
IssueTime	system time				format "hh24.mi:ss+/-hh.mi (timezone)"		
Name							
Description	T_Service	serviceObs	varchar	512		YardSys	
Note							
ShippingOrderID							
OtherInstruction							
TransportationStatusTypeCode	T_Request_Msg	requestedStatus	varchar	5		ChannelModule	Required. TransportationStatusTypeCode List.
TransportExecutionStatusCode	T_Service	progressStatus	varchar	5		YardSys	
Consignment							
TransportEvent							
DocumentReference							
Signature							
SenderParty							
ReceiverParty							
TransportationStatusRequestDocumentReference							
TransportExecutionPlanDocumentReference							
UpdatedPickupTransportEvent							
UpdatedDeliveryTransportEvent							
StatusLocation							
StatusPeriod							

Continuing to the composite elements section of the template, Joan looks for those with cardinality 0..1 or 1 since these can be considered to be part of the message header.

Joan meets with the already known SenderParty and ReceiverParty, with the same purpose and e-IMPACT cardinality as in TPSR message. Here the mapping is just a repeat of what was done in the previous template. The difference is the ReceiverParty will be one of DRYHAN's clients. Because of this, Joan may have to consider other alternatives to identify the party. She makes note of it.

Now she looks at TransportationStatusRequestDocumentReference and TransportExecutionPlanDocumentReference. These two elements provide context to a particular TS messages. Being TS a reply to a request (provided by a TSR), the first element allows DRYHAN to help the requestor (the client) to identify to which "question" the "response" is about. So it will be easier to match. The second element is a reference to DRYHAN and to the client to understand under which service contract the status is being provided. So, both elements are related to the business, being registered in the YardSys. Additionally, DRYHAN considers these elements important for providing clear information to authorized parties. Because of that Joan marked the elements as required.

Another couple of elements with cardinality 0..1 are UpdatePickupTransportEvent and UpdateDeliveryTransportEvent. DRYHAN does not perform goods transport directly. These services are hired by DRYHAN or by the client. Anyway, by receiving information from the transport companies (directly or indirectly), DRYHAN can continuously monitor the transport execution and provide update to the client. But by the fact these two elements are considered in the DRYHAN implementation does not mean that they used always. Only when needed. They are optional.

So the template looks like this:



UBL Name	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
CarrierAssignedID							
UIID							
IssueDate	system date				format "yyyy-mm-dd"		
IssueTime	system time				format "hh24:mi:ss+/-hh:mi (timezone)"		
Name							
Description	T_Service	serviceObs	varchar	512		YardSys	
Note							
ShippingOrderID							
OtherInstruction							
TransportationStatusTypeCode	T_Request_Msg	requestedStatus	varchar	5		ChannelModule	Required. TransportationStatusTypeCode List.
TransportExecutionStatusCode	T_Service	progressStatus	varchar	5		YardSys	
Consignment							
TransportEvent							
DocumentReference							
Signature							
SenderParty						ChannelModule	DRYHAN identified by VAT id.
ReceiverParty						ChannelModule	Our Client. See how to be identified
TransportationStatusRequestDocumentReference						YardSys	Required.
TransportExecutionPlanDocumentReference						YardSys	Required.
UpdatedPickupTransportEvent						YardSys	
UpdatedDeliveryTransportEvent						YardSys	
StatusLocation							
StatusPeriod							

Still in the composite elements' section, Joan now looks upon the elements that have cardinality 0..n since these correspond to the detail level of the message.

The first one that Joan looks to is Consignment. This seems to be a fundamental element since DRYHAN can provide status about each particular consignment being processed under the contracted service. This fits in the goal of providing supply chain visibility. Most of the times this element will be reported since allows the desirable granularity of the information. But in certain cases that Joan identified earlier, that might not be required. So it is optional. Anyway it is clear the information comes from YardSys.

Next Joan looks to TransportEvent. By one hand, this element may appear multiple times, making it look like detail information. However from the DRYHAN perspective, it makes sense to report events related to consignments (goods). But there is no way to relate elements TransportEvent and Consignment. So Joan has two options:

- If after looking into details of Consignment, she finds a way to associate with an event, then she can opt by:
 - Not use TransportEvent at this level at all.
 - Use TransportEvent to report only events on the whole service (an event not related with a particular consignment) and limit the cardinality to 0..1.
- If she does not find this way of relation, she can fix a rule of building and interpret the message in order to implement a one-to-one relation between the two elements.

Important: The e-Freight messages structures allow a range of possible usage. Although limited, it is open enough for incompatible implementations to be implemented. Why? Because although the parties can use exactly the same structure (or format if you prefer) the interpretation given by each party can differ. This situation is an example of the questions an adopter can face during the process of adopting e-Freight.

The toolkit in general, and the Rules and Recommendations in



particular, intend to help the adopter in the process of taking an option, by narrowing the range of possible choices and/or by given guidance on the option to take.

StatusLocation and StatusPeriod present the same challenges. Because of this Joan postpone the definition of their usage.

So Joan concludes that it will be the study of the Consignment element and the options to be taken that will set up the usage of the other elements.

Now it is time to look into e-IMPACT-CommonLibrary-2.1-TS template.

As SenderParty and ReceiverParty have the same meaning and usage, Jaon limits to copy the mapping information from e-IMPACT-CommonLibrary-2.1-TPSR.

Next Joan looks to elements TransportationStatusRequestDocumentReference and TransportExecutionPlanDocumentReference. Both share the same definition that is based on DocumentReference. In e-IMPACT-CommonLibrary-2.1-TS template it can be seen that the minimum required element is just the ID of the document. But other elements exist that can complement the information and help on situation where some kind of ID collision can occur. The DocumentReference to mapping for DRYHAN is shown next.

Used by e-Freight	UBL Name	applied to e-Freight message TS	User Cardinality	Internal application schematable	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
709	DestinationPostal									
719	Dimension									
725	DocumentDistribution									
729	DocumentReference	Y								
730	ID	1	1	T_Reference	refID	varchar	35			
731	CopyIndicator									
732	LIUID									
733	IssueDate		1	T_Reference	refDate	date		format "yyyy-mm-dd"		
734	IssueTime		1	T_Reference	refTime	date		format "hh24 mi ss+/-hh mi (timezone)"		
735	DocumentTypeCode		0 1	T_Reference	docType	varchar		5 use code list DocumentTypeCode		In TransportationStatusRequestDocumentReference use 45
736	DocumentType		0 1	T_Reference	docTypeDesc	varchar		70		Use only if not code is provided.
737	idPath									
738	LanguageID									
739	LocaleCode									
740	VersionID									
741	DocumentStatusCode									
742	DocumentDescription									
743	Attachment									
744	ValidityPeriod									
745	IssueParty									
746	ResubClassification									
747	DocumentResponse									

YardSys uses IssueDate and IssueTime elements to compliment ID data.

In order for usage of date and time to be possible, in a previous (but not illustrated) mapping process, DRYHAN has to implement the following rule. On receiving the TransportationStatusRequest, its values in IssueDate and IssueTime of shall be copied to YardSys.

In the context of TransportationStatus, since it is a reply to a TransportationStatusRequest the reference being "responded" is of the type "Transport Status Request". Code 45 of the code list will be used. Identically, TransportationExecutionPlan provides the context under which the request and the status is provided. This context results from an order for the provision of services between the clients and DRYHAN. In this case code 220 is the adequate to identify the document reference.

But, as DocumentReference may be used in other circumstances in TransportationStatus, the mapping stills considers the usage of other codes and element DocumentType as an alternative. Instead of placing these conditions in the e-IMPACT-CommonLibrary-2.1-TS



template, Joan updates e-IMPACT-TransportationStatus-2.1 – MapTemplate, becoming like this:

UBL Name	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
Name							
Description	T_Service	serviceObs	varchar	512		YardSys	
Note							
ShippingOrderID							
OtherInstruction							
TransportationStatusTypeCode	T_Request_Msg	requestedStatus	varchar	5		ChannelModule	Required. TransportationStatusTypeCode List.
TransportExecutionStatusCode	T_Service	progressStatus	varchar	5		YardSys	
Consignment						YardSys	
TransportEvent							
DocumentReference							
Signature							
SenderParty	T_Party				partyType="Sender"	ChannelModule	DRYHAN identified by VAT id.
ReceiverParty	T_Party				partyType="Receiver"	ChannelModule	Our Client. See how to be identified
TransportationStatusRequestDocumentReference						YardSys	Required. Use Code 45 in DocumentTypeCode
TransportExecutionPlanDocumentReference						YardSys	Required. Use code 220 in DocumentTypeCode
UpdatedPickupTransportEvent						YardSys	
UpdatedDeliveryTransportEvent						YardSys	
StatusLocation							
StatusPeriod							

☞ Notice “Internal application rules” column for TransportationStatusRequestDocumentReference and TransportExecutionPlanDocumentReference elements.

For now, Joan leaves behind the UpdatePickupTransportEvent and UpdateDeliveryTransportEvent.

The first noticed point on expanding Consignment definition, is the number of contained elements, indicating a large set of data and high level of detail. However she also noticed that in TransportationStatus message, the number of elements used is quite small, mainly at Consignment header level. Nevertheless, Joan decides to go through all of them in order to see how useful they can be for DRYHAN purposes.

The first set of elements that were considered were some ID’s (example ConsignorAssignedID). Joan found that these elements relevant to provide supply chain visibility. Each player in the chain related with a particular consignment can easily identify it through a reference that is familiar, when a status is reported.

Another set is the Indicators (example: BulkCargoIndicator). These could be provided by the requestor or other entity that ordered the service. But DRYHAN can provide update information based on some evidence. For example, a particular consignment is not indicating that is related with hazardous goods. But during the operations in DRYHAN (example, consolidation as a result of cross-docking operations) it is found that this risk exist because involves goods that have compatibility problems. On status report, the updated indicator will alert any interested parties on this.

Also important are the TotalGoodsItemQuantity, TotalTransportHandlingUnitQuantity and TotalPackagesQuantity. These elements can be used for checking purposes to the requestor. Note that, also with these elements, DRYHAN can update them in case that has some evidence. Example: if in a container it is said that 10 pallets are in it but actually there are only 9, DRYHAN will only know it if he container is opened.

With SplitConsignementIndicator, DRYHAN can inform the requestor and all the interested parties in the supply chain related with a particular consignment that a split was done. This may happen when there is a capacity constrain on the transport means or a time constrain.



ChildConsignmentQuantity is total refereeing the number consignments that make part of the consignment. This occurs when goods from different consignments are gather together for transport means capacity optimization or other situation, resulting in a new consignment. So DRYHAN can inform the requestor if this is the case or check the information provided by the requestor.

☞ On a first look this seems the opposite of the split consignment. But it is not. Actually a consignment can result from a consolidation act, but after can be split. Depends on several factors like the stage in the transport sequence, the customer requirements, and other logistics services performed. Although not obvious initially, this allows data sharing at a very granular level, increasing the visibility among all chain interested parties.

After this analysis, Joan arrives to the following mapping solution on Consignment:

Used by e-Freight	IRIS Name	applied to e-Freight message TSR	applied to e-Freight message TS	Notes (e-IMPACT)	User cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
305	Consignment	Y	Y									
313	CarrierAssignedID	Y	Y		1	T_Consignmen	carrierID	varchar	35	refType is "Carrier"		if provided in previous received message related with consignment
319	ConsigneeAssignedID	Y	Y		1	T_RefList	refrval	varchar	35	refType is "Consignee"		if provided in previous received message related with consignment
322	ConsignerAssignedID	Y	Y		1	T_RefList	refrval	varchar	35	refType is "Shipper"		if provided in previous received message related with consignment
323	FreightForwarderAssignedID	Y	Y		1	T_RefList	refrval	varchar	35	refType is "Forwarder"		if provided in previous received message related with consignment
324	BrokerAssignedID	Y	Y		1	T_RefList	refrval	varchar	35	refType is "Broker"		if provided in previous received message related with consignment
325	ConsolidationAssignedID	Y	Y		1	T_RefList	refrval	varchar	35	refType is "Forwarder"		if provided in previous received message related with consignment
326	PartisanCarrierAssignedID	Y	Y		1	T_RefList	refrval	varchar	35	refType is "Broker"		if provided in previous received message related with consignment
328	SummaryDescription											
329	TotalInvoiceAmount											
330	DeclareCustomsValueAmount											
331	TarifDescription											
332	TarifCode											
333	InsurancePremiumAmount											
334	GrossWeightMeasure											
335	NetWeightMeasure											
336	ChargeableWeightMeasure											
337	GrossVolumeMeasure											
338	NetVolumeMeasure											
339	NetVolumeMeasure											
340	LoadingLengthMeasure											
341	Remarks											
342	HazardousRiskIndicator				0..1	T_Consignmen	IsHazard	boolean				
343	AnimalFoodIndicator				0..1	T_Consignmen	IsAnimalFood	boolean				
344	HumanFoodIndicator				0..1	T_Consignmen	IsHumanFood	boolean				
345	LiveStockIndicator				0..1	T_Consignmen	IsLiveStock	boolean				
346	BulkCargoIndicator				0..1	T_Consignmen	IsBulk	boolean				
347	ContainerizedIndicator				0..1	T_Consignmen	IsContainer	boolean				
348	GeneralCargoIndicator				0..1	T_Consignmen	IsGeneralCargo	boolean				
349	SpecialSecurIndicator				0..1	T_Consignmen	ResSpecialSec	boolean				
350	ThirdPartyIndicator				0..1	T_Consignmen	ResSpecialSec	boolean				
351	CarrierServiceInstructions											
352	CustomsClearanceServiceInstructions											
353	ForwarderServiceInstructions											
354	SpecialServiceInstructions											
355	SequenceID											
356	ShippingPriorityLevelCode											
357	HandlingCode											
358	HandlingInstructions											
359	Information											
360	TotalGoodsItemQuantity				0..1	T_Consignmen	TotalQty	number	7,0	if not determine in yard, then get from TSR, other wise dont send		
361	TotalTransportHandlingUnitQuantity				0..1	T_Consignmen	TotalQty	number	7,0	if not determine in yard, then get from TSR, other wise dont send		
362	InsuranceValueAmount											
363	DeclareForCarriageValueAmount											
364	DeclareIntrinsicValueAmount											
365	FreeOnBoardValueAmount											
366	SpecialInstructions											
367	SplitConsignmenIndicator				0..1	T_Consignmen	HasSplit	boolean				
368	DeliveryInstructions											
369	ConsignmenQuantity											
370	ConsolidationIndicator											
371	HaulageInstructions											
372	LoadingSequenceID											
373	ChildConsignmenQuantity				0..1	T_Consignmen	ChildQty	number	5,0	if there is no child consignment, send 0		
374	TotalPackagesQuantity				0..1	T_Consignmen	TotalQty	number	7,0	if not determine in yard, then get from TSR, other wise dont send		

Now Joan looks into the composite elements in the Consignment element. TransportationStatus message core definition does not require many of these, but Joan identified some that can one that can be useful: ChildConsignment.

More important is that Joan can confirm that it is possible to report a Status on a particular consignment respecting the relation between consignment and the status. The implementation of a solution is simplified since she does not have to create some specific mechanism at TransportationStatus header level to relate TransportEvent element and Consignment element. And the same reasoning can be done to UpdatePickupTransportEvent and UpdateDeliveryTransportEvent.

Now it is time to get into details of each.

☞ The following picture show how composite elements are in the Consignment, already considering some choices that Joan made.



Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
375	ConsolidateShipment	0..n	only Shipment ID who issuesParty for	0..n	T_ShipmList					YardSys	Resulted shipment when consolidation is a consolidation.
376	CustomsDeclaration										
377	RequestePickupTransportEvent										
378	RequesteDeliverTransportEvent										
379	PlannedPickupTransportEvent										
380	PlannedDeliverTransportEvent										
381	ActualDeliveryTransportEvent		to be included in UBL 2.2								
382	ActualPickupTransportEvent		to be included in UBL 2.2								
383	Status	0..n		0..n	T_ConsStatus				partyType="Consignee"	YardSys	Consignments "inside" the consignment.
384	ChildConsignment			0..n	T_Consignment					YardSys	
385	ConsigneeParty	0..1		0..1	T_Party					YardSys	
386	ImporterParty								partyType="Shipper"	YardSys	
387	ConsignorParty	0..1		0..1	T_Party					YardSys	
388	ImporterParty										
389	CarrierParty										
390	FreightForwarderParty										
391	NotifyParty										
392	OriginalDispatchParty										
393	FinalDeliverParty										
394	PerformingCarrierParty										
395	SubstituteCarrierParty										
396	LogisticsOperatorParty										
397	TransportAdvisorParty										
398	HazardousItemNotificationParty										
399	InsuranceParty										
400	MortgageHolderParty										
401	BillOfLadingHolderParty										
402	OriginalDepartureCountry										
403	FinalDestinationCountry										
404	TransitCountry										
405	TransportContract										
406	TransportEvent										
407	OriginalDispatchTransportationService										
408	FinalDeliveryTransportationService										
409	DeliveryTerms										
410	PaymentTerms										
411	CollateralPaymentTerms										
412	DisbursementPaymentTerms										
413	ExpensePaymentTerms										
414	FreightAllowanceCharge										
415	OtherAllowanceCharge										
416	MainCarriageShipmentStage										
417	PreCarriageShipmentStage										
418	OnCarriageShipmentStage										
419	TransportHandlingUnit	0..n		0..n	T_HandUnit					YardSys	
420	FirstArrivalPortLocation										
421	LastExitPortLocation										
422	AdditionalDocumentReference		CRS extension								
423	OfficeEntry		CRS extension								
424	OfficeOfSubsequentEntry		CRS extension								
425	OfficeOfExit		CRS extension								
426	OfficeOfDeparture		CRS extension								
427	OfficeOfDestination		CRS extension								
428	OfficeOfImport		CRS extension								
429	OfficeOfExport		CRS extension								
430	Consignment										

Shipment element is rather simple because although it has several simple and composite elements according to UBL v2.1 definition, only one is used in the e-Freight context that is the ID. Joan can use this element to identify the shipments related with the consignment that resulted from a consolidation. So the mapping is in the following figure.

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
1852	Shipment	Y									
1853	ID	1			T_ShipmList	shipmentID	varchar	35		YardSys	
1854	ShippingPriorityLevelCode										
1855	HandlingCode										
1856	HandlingInstructions										
1857	Information										
1858	GrossWeightMeasure										
1859	NetWeightMeasure										
1860	NetWeightMeasure										
1861	GrossVolumeMeasure										
1862	NetVolumeMeasure										
1863	TotalGoodsItemQuantity										
1864	TotalTransportHandlingUnitQuantity										
1865	InsuranceValueAmount										
1866	DeclaredCustomsValueAmount										
1867	DeclaredPreCarriageValueAmount										
1868	DeclaredOnBoardValueAmount										
1869	DeclaredOnBoardValueAmount										
1870	SpecialInstructions										
1871	DeliveryInstructions										
1872	SplitConsignmentIndicator										
1873	ConsignmentQuantity										
1874	Consignment										
1875	GoodsItem										
1876	ShipmentStage										
1877	Delivery										
1878	TransportHandlingUnit										
1879	ReturnAddress										
1880	OriginAddress										
1881	FirstArrivalPortLocation										
1882	LastExitPortLocation										
1883	ExportCountry										
1884	FreightAllowanceCharge										
1885	OtherAllowanceCharge										

Then Joan looks into Status definition. It seems clear and simple for her. The mapping is straightforward.



Used by e-Freight	URL Name	Applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
2012	Y Status	Y			T_ConstStatus	code	varchar	5			e-Freight code list
2014	ConditionCode	0..1			T_ConstStatus	code	varchar	5			Date when the status occurred
2015	ReferenceDate	0..1			T_ConstStatus	date	date		format "yyyy-mm-dd"		Time when the status occurred
2016	ReferenceTime	0..1			T_ConstStatus	date	date		format "hh24:mi:ss+hh:mi (timezone)"		
2017	Description	0..n		0..1	T_ConstStatus	description	varchar	350			
2018	StatusReasonCode	0..1			T_ConstStatus	reasonCode	varchar	5			Rec 24 rev 5
2019	StatusReason	0..n		0..1	T_ConstStatus	comments	varchar	350			
2020	SequenceID										
2021	Isail										
2022	IndicatorIndicator										
2023	Percent										
2024	ReleaseAccount										
2025	Condition	0..n		0							

Now Joan looks to ChildConsignment. Here Joan has to give additional thoughts on the element. According to the definition, the ChildConsignment is also a Consignment. So Joan has some kind of recursive definition that, in theoretical limit, is an endless loop. The challenge here is not to understand the concept from the e-Freight perspective. The problem is how to represent and keep the relations between consignments in the YardSys data structures. This also considering the message building process.

Basically, as long as data had been provided, the elements to report in a ChildConsignment will be the same as the "parent" consignment. Because of this, Joan doesn't make any additional analysis on the Consignment definition itself.

As it is out of the scope of the example, the steps done by the character in terms of reanalysis of her system are not described. However, for the sake of the completeness of the example, it can be said that one way to go could be implementing internal extra fields that can refer other records of the same type (like a linked list data structure for example).

ConsigneeParty and ConsignorParty are both based on Party. So Joan looks at them simultaneously. The main difference in relation to SenderParty and ReceiveParty is that DRYHAN may not have any relation with them, making impossible to agree with them on a simple way to identify them. As consequence, more elements in the Party definition have to be consider.

Used by e-Freight	URL Name	Applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
1419	Y Party	Y									
1416	IsCarrierIndicator										
1417	IsCarrierIndicator										
1418	WebsiteURLID										
1419	LegalReferenceID										
1420	EmployerID										
1421	IndustryClassificationCode										
1422	PartyIdentification	0..1		0..1	T_Entity				Required to identify the Sender and	YardSys	VAT id of the party
1423	PartyName	0..1		0..1	T_Entity						
1424	Language										
1425	PostalAddress	0..1		0..1	T_Entity						
1426	PhysicalLocation	0..1		0..1	T_Entity						
1427	PartyRoleName										
1428	PartyLegalEntity	0..1		0..1	T_Contact						
1429	Contact	0..n		0							
1430	Person										
1431	AgentParty										
1432	ServiceProviderParty										
1433	PowerOfAttorney										
1434	FinancialAccount										
1435	PartyIdentification	Y			T_Entity	ID	varchar	35			For Sender and Receiver look for VAT number
1436	ID	Y									
1437	PartyLegalEntity	Y			T_Entity	name	varchar	70			
1438	PartyName	Y									
1439	Name	Y			T_Entity	name	varchar	70			

PostalAddress and PhysicalLocation are based on Address and Location, respectively. And those Joan had mapped them already when dealing with TransportProgressStatusRequest.

One interesting element is Contact. If provided DRYHAN can direct questions or alerts to a more specific target.



Used by e-Freight	UBL Name	Applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schematable	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
Y	Contact	Y									
510	ID			0..1	T_Contact	name	varchar	70			
511	Name			0..1	T_Contact	name	varchar	70			
512	Telephone			0..1	T_Contact	phone	varchar	25			
513	Telex			0..1	T_Contact	fax	varchar	25			
514	ElectronicMail			0..1	T_Contact	email	varchar	70			
515	Note										
516	OtherCommunication										
617	Contract										

The last element in Consignment that Joan has to look is *TransportHandlingUnit*. This is also an element to give a deep look since it is in this element that the goods subject to the service requested are described.

She observes that *TransportHandlingUnit* is like an entry point in the *TransportationStatus* message structure related with any type of item that is benefiting from the logistic service. It can be bulk cargo (no transport equipment involved), containerized, empty transport equipment, and so on. However, although in the UBL context, from one *TransportHandlingUnit* several items can be reached, in e-Freight it is a relation one-to-one.

It is at Consignment level that it can be known how many items are present. But it is at each item level that their type is known. Of course that depending on the type, different characteristics may apply.

Some of the elements that are not part of the core profile, Joan plans to use them having in mind that they are useful to report additional information found during operations. For example, *HandlingInstructions* can be used for DRYHAN to inform the requestor or other interested party on advice or warning on further handling. Another example is with *DamageRemarks*. If during operation it is found that the handling unit is damage, and this can be reported.

Looking at the composite elements Joan decides to use the same elements as presented in the core profile. The only difference is that only one status information will be reported for each handling unit.

Joan arrives to the following mapping.

Used by e-Freight	UBL Name	Applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schematable	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
Y	TransportHandlingUnit	Y									
2410	ID			0..1	T_HandUnit	id	varchar	35			
2411	TransportHandlingUnitTypeCode			0..1	T_HandUnit	code	varchar	5			
2412	HandlingCode			0..1	T_HandUnit	code	varchar	5			
2413	HandlingInstructions			0..1	T_HandUnit	instructions	varchar	350			
2414	HazardousRiskIndicator			0..1	T_HandUnit	isHazard	boolean				
2415	TotalGoodsItemQuantity										
2416	TotalPackageQuantity										
2417	DamageRemarks			0..1	T_HandUnit	damage	varchar	350			
2418	ShippingMarks										
2419	TraceID										
2420	HandlingUnitDespatchLine										
2421	ActualPackage										
2422	ReceivedHandlingUnitReceiptLine										
2423	TransportEquipment	0..1		0..1	T_Equip					YardSys	
2424	TransportMeans	0..1		0..1	T_Means					YardSys	
2425	MassGrossOrNet										
2426	MeasurementDimension			0..1	T_HandUnit					YardSys	
2427	MinimumTemperature										
2428	MaximumTemperature										
2429	GoodItem	0..1		0..1	T_Gdstm					YardSys	
2430	FloorSpaceMeasurementDimension										
2431	ReferenceShipment										
2432	ShipmentDocumentReference										
2433	Status	0..n	w/o Condition	0..1	T_HandUnit					YardSys	
2434	CustomsDeclaration	0..n		0..n	T_RelList					YardSys	
2435	ReferenceShipment	0..1	only Shipment ID	0..1	T_Pack					YardSys	
2436	Package										
2437	TransportMeans	Y									

Now she goes through *TransportEquipment* element.

At simple elements' level, Joan also uses some of the elements not included in the e-Freight Core Profile. The goal is the same: provide complementary and/or updated information to the supply chain interested parties.



Joan make note on the Description element. Its usage is only needed when in the presence of a very specific equipment of a non-standard type or characteristics. This is not the normal case at DRYHAN.

Also important is the GrossWeightMeasure. Joan is aware that a new IMO Convention has been applied recently, related with Verified Gross Mass. That is important mainly when containers leave DRYHAN in direction to the nearby port. In this element DRYHAN can provide updated information on containers' weight to supply chain interested parties, to the port and to maritime shipping companies.

The resulting mapping of the TransportEquipment header elements looks like this.

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schemaTable	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
Y	TransportEquipment										
	ID	0..1		0..1	T_Equip	id	varchar	35			
	ReferenceConsignmentID										
	TransportEquipmentTypeCode			0..1	T_Equip	typeCode	varchar	5			Code list associated with UNEDIFACT DE 8053.
	OwnerTypeCode										
	SizeTypeCode			0..1	T_Equip	sizeType	varchar	5			If container, then ISO 5346, otherwise code list UNEDIFACT DE 8155
	DamageIndicator										
	FullnessIndicatorCode			0..1	T_Equip	fullEmpty	varchar	5			Code list UNEDIFACT DE 8160
	ReturnabilityIndicator										
	LegalStatusIndicator										
	HumidityIndicator										
	AnimalFoodApprovedIndicator										
	HazardousGoodsApprovedIndicator										
	DangerousGoodsApprovedIndicator										
	RefrigeratedIndicator			0..1	T_Equip	reefer	boolean				
	Characteristics										
	DamageRemarks										
	Description			0..1	T_Equip	description	varchar	350			
	SpecialTransportRequirements										
	GrossWeightMeasure			0..1	T_Equip	grossWeight	number	7,0			
	GrossVolumeMeasure			0..1	T_Equip	grossVol	number	7,0			
	TareWeightMeasure			0..1	T_Equip	tare	number	7,0			
	TrackingDeviceCode										
	PowerIndicator			0..1	T_Equip	needsPower	boolean				
	TraceID										
	MeasurementDimension			0..1	T_Equip						
	TransportEquipmentSeal	0..1		0..1	T_EquipSeal					YardSys	

Now looking into the composite elements (the detail data of the transport equipment) it is more straightforward. Except for ContainedInTransportEquipment, all e-Freight composite elements are used when needed. For example, if the transport equipment is not carrying goods requiring controlled temperature, then MinimumTemperature and MaximumTemperature elements are not to be sent.

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schemaTable	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
	PowerIndicator			0..1	T_Equip	needsPower	boolean				
	TraceID										
	MeasurementDimension			0..1	T_Equip				In case of oversize.	YardSys	
	TransportEquipmentSeal	0..1		0..1	T_EquipSeal					YardSys	
	MinimumTemperature	0..1		0..1	T_Equip				If goods require controlled temperature.	YardSys	
	MaximumTemperature	0..1		0..1	T_Equip				If goods require controlled temperature.	YardSys	
	ProduceParty										
	LoadingParty										
	SupplierParty										
	OwnerParty										
	OperatingParty										
	LoadingLocation										
	UnloadingLocation										
	StorageLocation										
	PositioningTransportEvent										
	QuarantineTransportEvent										
	DeliveryTransportEvent										
	RevisedTransportEvent										
	HandingTransportEvent										
	LoadingTransportEvent										
	TransportEvent										
	ApplicableTransportMeans										
	HouseTradingTerms										
	HazardousGoodsTransport										
	PackagedTransportHandlingUnit										
	ServiceAllowanceCharge										
	FreightAllowanceCharge										
	AbstractTransportEquipment										
	Delivery										
	Pickup										
	Dispatch										
	ShipmentDocumentReference										
	ContainerInTransportEquipment									YardSys	
	Package	0..n		0..n	T_Pack					YardSys	
	GoodsItem	0..n		0..n	T_GdsItem				If equipment is full or is being commercial/ transacted.	YardSys	

MeasurementDimension is based on element Dimension. Joan wants to use this element in situations when off-dimensions equipment is being handled, normally oversize. For example, open top containers carrying cargo that is higher than the height of the container.



For each equipment record, YardSys has three data fields: one for width, one for length and one for height. But in the message it is the same composite. So Joan has to specify a local rule in order to correctly map the values into the message. For that, she uses the element AttributeID in the Dimension element.

So, for this particular element, the mapping is:

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
Y	Dimension			1	T_Equip						
	AttributeID			1	T_Equip						Use to identify the field for the value
	Measure			1	T_Equip	W or L or H	number	7,0			
	Description			1	T_Equip		varchar	5			Unit of measure (m or ft)
	MinimumMeasure										
	MaximumMeasure										
	DocumentDistinction										

The following element is the TransportEquipmentSeal. It is only to be used when the equipment has a seal securing its doors. Joan has no special concern with this element, so the mapping is obvious.

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
Y	TransportEquipmentSeal	Y		1	T_EquipSeal	seal	varchar	35			
	SealSealTypeCode			0..1	T_EquipSeal	condition	varchar	350			
	SealStatusCode			0..1	T_EquipSeal	condCode	varchar	5			SealStatusCode codeList
	SealPartType										

To express the temperature, Joan uses the element Description to put the unit in which the temperature is expressed. So the mapping look like this:

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
Y	Temperature			1	T_Equip	type	varchar	5			
	AttributeID			1	T_Equip	value	number	7,0			
	Description			0..1	T_Equip	unit	varchar	5			Unit in which value is expressed
	SealStatus										

Looking into Package and GoodsItem elements, Joan sees that a relation between them can exist that looks symmetrical.

If she sticks to the Core Profile, then the relation is only from the Package to the GoodsItem. In business terms means that the packages in the equipment are declared, and then the goods they contain are declared associated to each package. On the other hand if the goods are not packed, then only the element GoodsItem is needed.

However, if she looks to what Full Profile allows, packed goods can be declared in GoodsItem element and then packages can be stated associated to each goods. But the other way around like the Core Profile proposes is also possible. It is like two different perspectives to represent the same reality in the message.

So Joan prefers to adopt both options in order to respond to requestors with the perspective they prefer.

Additionally Joan notices that it is also possible to express the same type of relation between Package and TransportEquipment in order to perceive in which equipment (a container for example) the package is.

For the Package mapping, she uses quite few additional elements comparing with what is proposed in the Core Profile especially simple elements. The purpose is to provide



complementary information on the package, and facilitate identification when no specific id is provided. Additionally, a composite element MeasurementDimension is used also to provide information on weight or length, for example.

Simple element Quantity can be used as a control total on the number of goods in the package. This number should be equal to the number of repetitions of composite element GoodsItem.

The mapping for Package element looks like this:

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schematable	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
Y	Package	Y		0..1	T_Pack	id	varchar	35			
Y	Quantity	Y		0..1	T_Pack	itmQty	number	7,0			Quantity of items inside.
Y	ReturnableIndicator	Y		0..1	T_Pack	isReturnable	boolean				
Y	PackageLevelCode	Y		0..1	T_Pack	levelCode	varchar	5			ECIFACT OE TD75 Code list
Y	PackagingTypeCode	Y		0..1	T_Pack	typeCode	varchar	5			UNECE Rec 21.
Y	PackingMaterial	Y									
Y	TrackID	Y									
Y	ContainerPackage	Y									
Y	ContainingTransportEquipment	Y		0..1	T_Equip					YardSys	
Y	GoodsItem	Y		0..n	T_GdsItem					YardSys	
Y	MeasurementDimension	Y		0..n	T_Pack					YardSys	
Y	DeliveryUnit	Y									
Y	Delivery	Y									
Y	Release	Y									
Y	Despatch	Y									
Y	Track	Y									

Looking into MeasurementDimension it can be seen that several measure can be express. This leads to a new mapping of the element Dimension.

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schematable	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
Y	Dimension	Y		Y							
Y	AttributeID	Y		1	T_Equip						Use to identify the field for the value.
Y	Measure	Y		1	T_Equip	Wtd, Lgh, Hgh, Mss, Vol	number	7,0			
Y	Description	Y		1	T_Equip	wtdU, lghU, hghU, mssU, volU	varchar	5			Unit of measure.
Y	MinimumMeasure	Y									
Y	MaximumMeasure	Y									

The mapping of ContainingTransportEquipment is done since this element is base on TransportEquipment.

Now looking into GoodsItem element, one relevant point is the composite element Item. This element provides access to a more detailed information on the goods that is useful for some logistics services that DRYHAN provides, like repackaging, cross-docking and re-bundle, and also to provide information about danger.

Another relevant point is the association between the goods and transport equipment that carry them. It is like the bidirectional relation between goods and packages, but this time with transport equipment. This can be helpful. Through some contacts Joan has, she knows that for cargo manifest, shipping agents need to present information organized this way: goods then the associated equipment. So Joan can also receive into and extract from YardSys this reality. So the GoodsItemContainer is used.

So, for the goods we will have the following set of mappings.

The GoodsItem mapping is like this:



Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
958	GoodsItem	Y		Y							
957	ID	0..1		0..1	T_Gdsitm	id	varchar	35			
958	SequenceNumberID										
959	Description										
960	HazardousRiskIndicator			0..1	T_Gdsitm	description	varchar	350			
961	DeclaredCustomsValueAmount										
962	DeclaredForCarriageValueAmount										
963	DeclaredStatisticsValueAmount										
964	FreeOnBoardValueAmount										
965	InsuranceValueAmount										
966	ValueAmount										
967	GrossWeightMeasure			0..1	T_Gdsitm	grossWeight	number	7,0			
968	NetWeightMeasure			0..1	T_Gdsitm	netWeight	number	7,0			
969	NetNetWeightMeasure			0..1	T_Gdsitm	netNetWeight	number	7,0			
970	ChargeableWeightMeasure										
971	GrossVolumeMeasure			0..1	T_Gdsitm	grossVolume	number	7,0			
972	NetVolumeMeasure			0..1	T_Gdsitm	netVolume	number	7,0			
973	Quantity			0..1	T_Gdsitm	quantity	number	7,0			
974	PreferenceCriterionCode										
975	RequiredCustomsID										
976	CustomsStatusCode										
977	CustomsTarriffQuantity										
978	CustomsImportClassifiedIndicator										
979	ChargeableQuantity										
980	ReturnableQuantity										
981	TraceID										
982	Item			0..1	T_Gdsitm					YardSys	
983	GoodsItemContainer			0..n	T_Dist					YardSys	
984	FreightAllowanceCharge										
985	InvoiceLine										
986	Temperature										
987	ContainedGoodsItem										
988	OriginAddress										
989	Delivery										
990	Packup										
991	Despatch										
992	MeasurementDimension										
993	ContainingPackage			0..1	T_Pack					YardSys	
994	ShipmentCustomsReference										
995	MinimumTemperature										
996	MaximumTemperature										

The Item mapping is shown next.

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
1103	Item	Y		Y							
1104	Description			0..1	T_Gdsitm	description	varchar	350			
1105	BasicQuantity										
1106	PackOfQuantity										
1107	CatalogueIndicator										
1108	Name			0..1	T_Gdsitm	isHazardous	boolean				
1109	HazardousRiskIndicator										
1110	AdditionalInformation										
1111	Keyword										
1112	BrandName			0..1	T_Gdsitm	brand	varchar	350			
1113	ModelName			0..1	T_Gdsitm	model	varchar	350			
1114	BuyerItemIdentification										
1115	SellerItemIdentification										
1116	ManufacturerItemIdentification										
1117	StandardItemIdentification										
1118	CatalogueItemIdentification										
1119	AdditionalItemIdentification										
1120	CatalogueDocumentReference										
1121	ItemSpecificationDocumentReference										
1122	OriginCountry										
1123	CommodityClassification										
1124	TransactionConditions										
1125	HazardousItem			0..1	T_Gdsitm					YardSys	
1126	ClassificationCategory										
1127	AdditionalItemProperty										
1128	ManufacturerParty										
1129	InformationContentProviderParty										
1130	OriginAddress										
1131	Remittance			0..n	T_Gdsitm					YardSys	
1132	Certificate										
1133	Dimension										
1134	ItemPresentation										

The ItemInstance allows the register of the serial number which is useful when working with high value small items, like electronic consumer goods.

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schema/table	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
1151	ItemInstance	Y		Y							
1152	ProductTrackID										
1153	ManufactureDate										
1154	ManufactureTime										
1155	IssueBeforeDate										
1156	RegistrationID										
1157	SerialID			0..1	T_Gdsitm	serialID	varchar	70			
1158	AdditionalItemProperty										
1159	LotIdentification										
1160	ItemPresentation										

The HazardousItem element is used to express information about dangerous goods.



Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schematable	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
1009	HazardousItem			Y							
1010	ID										
1011	HazardClassification										
1012	HazardEndorsement										
1013	AdditionalInformation										
1014	UNEDCode			0..1	T_Gdstrim						
1015	EmergencyProcedureCode										
1016	MedicalFirstAidGuideCode										
1017	TechnicalName										
1018	CategoryName										
1019	HazardousCategoryCode										
1020	UpperOrangeHazardPlacardID										
1021	LowerOrangeHazardPlacardID										
1022	MarkingID										
1023	HazardClassID										
1024	NetWeightMeasure										
1025	HazardousMeasure										
1026	Quantity										
1027	PackingGroup		CRS extension								
1028	HarmfulSubstance		CRS extension								
1029	ContactParty										
1030	SecondaryHazard										
1031	HazardousGoodsTransport										
1032	EmergencyTemperature										
1033	FlashpointTemperature										
1034	AdditionalTemperature										
1035	PositionOnBoard		CRS extension								
1036	ImmobilizedSecurity										

As said above, it is important for DRYHAN operations to be aware of how goods are segregated among transport equipment. And it is also important for DRYHAN clients in order to report to the authorities and also for their own operations.

Used by e-Freight	UBL Name	applied to e-Freight message TS	Notes (e-IMPACT)	User Cardinality	Internal application schematable	Internal application field	Internal application field type	Internal application field size	Internal application conditions	Internal application modules/screens/pages	Internal application rules
997	GoodsItemContainer			Y							
998	ID			1	T_Dist	id	varchar	35			
999	Quantity										
1000	TransportEquipment			1	T_Equip					YardSys	

At this point Joan concludes the first mapping proposal of the elements related with goods. Although the sequence of analysis started with element TransportEquipment, the re-usage of the elements at different levels of the message structure means the mappings are also applied at those different levels.

For example, the mapping of GoodsItem element should be the same if that element is reached by Consignment -> TransportHandlingUnit -> TransportEquipment -> Package or if reached by Consignment -> TransportHandlingUnit -> GoodsItem.

However, Joan has conscious that the usage of an element structure, and to do respective mapping, may differ depending on the message level where the element is mentioned.

Back to the beginning, remembering that Joan left StatusLocation and StatusPeriod in e-IMPACT-TransportationStatus-2.1 – MapTemplate for further analysis. Now that she knows that Status information can be reported associated with each consignment (and goods), that is main concern to DRYHAN clients, she decides not to use this elements for now.

So she considers the mapping process for TransportationStatus complete.

☞ For the illustration on the usage of the mapping templates, the examples ends here. As already said, some particular issues on the mapping decisions depend also from the usage of other tools. But this does not affect the general approach and process of approaching the mapping templates.

The example for the other messages that are refereed, follow the same process. Present them here would represent an additional effort for the reader without significant gain.



3.4 – Rules and Recommendations

Joan, during her research on the toolkit, got acquainted with the document Rules and Recommendations. She found that this document provided guidance and tips on the usage of the messages and process involving their exchange.

One item she followed and is reflected in the mapping template for TransportationStatus is the inclusion of the references to the corresponding request and the context of the transaction. The first is provided in element TransportationStatusRequestDocumentReference, and the second in TransportExecutionPlanDocumentReference. This is based on recommendation RC 3.

She also noticed that one of the requirements for the application ChannelModule is that on message building it has to include the sender and the receiver identification, and the date and time of issue. This way ChannelModule will be compliant with rule RL 3.

3.5 – Code Lists and Validation Rules

Joan also looks at the code lists to find out which are appropriate.

In the context of TPSR, Joan looks into complex element StatusLocation of the type Location. It contains in its definition element LocationTypeCode.

Checking the Validation Rules, on section 4.10.3, she finds a rule that shows from which code list this element gets its values, and also that not all applicable (by looking into column Remarks). So, simultaneously she checks these sub-set of values against their meaning in code list LocationTypeCode in section 5.2.26 of Code List tool.

Doing this she finds that even in the subset, not all codes are applicable to DRYHAN scenario. Using the column “Used” in the LocationTypeCode table, she marks what is going to be adopted.



5.2.26 LocationTypeCode (Location function code qualifier)

Key	Value	Used
1	Place of terms of delivery	
2	Payment location	
3	Tare check place	
4	Goods receipt place	
5	Place of departure	X
6	Ward bed	
7	Place of delivery	
8	Place of destination	X
9	Place of loading	
10	Place of acceptance	
11	Place of discharge	
12	Port of discharge	
13	Place of <u>transshipment</u>	
14	Goods item storage location	
15	Place of transfer responsibility	
16	Place of transfer of ownership	
17	Border crossing place	
18	Warehouse	
19	Factory/plant	
20	Place of ultimate destination of goods	
21	Terms of sale place	
22	Customs clearance location	
23	Port of release	
24	Port of entry	
25	Country	
26	City	
27	Country of origin	
28	Country of destination of goods	
29	Railway station	X
30	Country of source	
31	Building	

☞ Only part of the choices made is shown.

3.6 – Access Point Specification

After having taken a look at the message specification and given that the DRYHAN's IT system – YardSys – does not talk to external systems Joan decided to see what the toolkit contained regarding exchange of information between two distinct systems. She found out that there is a document addressing something called Access Points. This seems to address the goal of message exchange. After reading the "e-IMPACT_Access-Point-Specification" document she discovered that a lot of effort has already been placed by the European Union towards the research, specification, implementation and enablement of pilot projects and concrete systems that handle interoperable data exchange between heterogeneous systems.

In this document, Joan found out about the CEF eDelivery building blocks and became especially interested in the Access Point building block. In fact she reads some of the references provided in the "e-IMPACT_Access-Point-Specification" to find that there is already an e-SENS4 open-source reference implementation called Domibus and that the



European Commission provides the source for this implementation under the European Union Public Licence V. 1.1.

She was glad to see that the CEF Access Point specification perfectly fits the requirements of agnostic-payload message exchange and that the European Union already provided an implementation – Domibus. By searching over the web references she concluded Domibus is a live project with a roadmap for several years and there is support either over the internet website or by email. She also found out that there are other CEF e-SENS4 Access Point commercial implementations. For now, she decided to stick with the open-source implementation as it is fully featured and already supports European Union IT projects.

Soon she realizes that much of the effort of data exchange with other heterogeneous systems does not require DRYHAN to abandon or replace its proprietary IT system: YardSys. The only requirement is, in fact, the development of an additional module (a connector in the nomenclature) that acts as a proxy between YardSys and other external systems. More specifically, the proxy would have to:

1. transform information between YardSys internal data model and the e-freight message format.
2. Use a Domibus access point instance to send and receive e-freight messages to/from other systems through their corresponding access points.

For Joan it is now clear that:

- DRYHAN can continue to operate their own proprietary system.
- DRYHAN will need its own access point.
- DRYHAN needs to develop a connector.

Furthermore she understands that:

- Together with DRYHAN clients, partners (possibly authorities), all the access points form a trusted secure network where e-freight messages can be exchanged.
- Each access point is responsible for:
 - sending e-freight messages to a destination by request of the connector.
 - receiving inbound e-freight messages from other systems and enable message retrieval by the connector.

So now Joan realizes what she needs:

- To install a Domibus access point instance;
- To register the instance into the network of trusted access points;
- Develop the connector:
 - the conversion between YardSys and e-freight message;
 - the use of already existing plugins to talk to the access point.

And she writes this down in a TODO list.

3.7 – Access Point Testing

“OK, what now? How can I see an Access Point working?”, said Joan to herself. By searching in the toolkit she found there is a document that addresses access point installation. With her background in IT Joan is capable of following the access point



installation guide. She carefully reads the document and becomes aware that the Domibus Access point will require a Linux operating system, a Tomcat application server and a MySQL database. After having an Ubuntu 16.04 LTS installed in a server she follows the described procedure that enables the installation of a Domibus Access Point in the server. After that she moves to the configuration section and follows the instructions on database and security configurations. By the end of the procedure she starts the tomcat application server only to realize the server is down. By taking another look at the instructions she realizes she overstepped one detail of the tomcat server configuration. After that, the second attempt to start tomcat runs successfully.

Next she goes to her laptop, opens a browser and places the following URL:

```
http://<accesspoint location>:8080/domibus/home
```

She sees the brand new DRYHAN Access Point login web page and, after using the credentials she configured in the previous steps she enters the administration webpages. She goes through each of the links only to find out that these pages do not provide the means to send or receive messages. In fact, she realizes the webpages provide the means to see logs, filter logs and configure the Access Point PMODES.

“But... how can I see my Access Point working?”, she thinks for herself. She goes back to where she left the access point installation document and realizes that the next section is all about testing a recently installed Access Point.

So, she carefully reads these sections and becomes aware that there is an Access Point already available (at APDL) for testing purposes. In fact, an Access Point is fully functional only after it has been tested with respect to its functions. But, as she had previously read in the eDelivery literature and in the installation document, in order for the APDL testing Access Point to talk to the DRYHAN Access Point a trust collaboration needs to be established through the exchange of Digital Certificates containing the public keys of the Access Points.

So Joan now knows she needs to perform two actions:

- to contact APDL:
 - to request the public certificate of APDL access point. After getting it Joan appends the certificate into the DRYHAN access point trust store.
 - to provide APDL with DRYHAN public certificate. After that APDL appends the certificate into their own testing AP trust store.
- To update the PMODE file and append the new party consisting of APDL AP. (APDL performs the same process into their own testing AP).

So Joan sends an email to Manuel⁵ at APDL with the DRYHAN public certificate, requests in the same email the APDL AP public certificate and public IP address. After getting what she needs, she updates the PMODE file appending a new party element with APDL identification and reloads the file through the administration webpages. (Manuel has performed a similar process with respect to APDL AP).

After reloading DRYHAN Access Point (and APDL doing the same with respect to the testing AP) a trust relationship is established between DRYHAN and APDL access points. This means that besides the two institutions becoming formally aware that a trust collaboration is established and all messages between these Access Points will be

⁵ Fictitious character.



securely encrypted with each own private key (and decrypted with the other access point public key).

“Now I have an interlocutor for my Access Point. Things look good...”, and Joan goes back to the testing section of the Access Point Installation document. Over the next paragraphs Joan realizes there is a testing command in the toolkit. In fact it can be run at a server command prompt. According to the contents she reads, the command requires a couple of input arguments and it acts as a backend that uses an origin access point to send a content to a destination access point. If things run as expected - she reads - the command:

- 1) *contacts the origin access point to send a message to a destination access point with the input content as payload (inside an xml structure);*
- 2) *shows a delivery confirmation receipt;*
- 3) *waits for a response;*
- 4) *shows the response given by the destination access point acknowledging that the message was received, processed and a reply returned.*

So, Joan opens an Ubuntu console and runs the command with the DRYHAN Access Point identifier as the origin, the APDL Access Point identifier as the destination and the testing text “good morning” as content. Right after hitting the enter button on the keyboard Joan gets the delivery confirmation by the DRYHAN Access Point and an instant after she sees some more logs where she reads that the APDL Access Point is replying with another message and some more metadata about the operation.

“Success!” is the word that comes to Joan memory. As Joan realizes that DRYHAN Access Point is working, she goes back to her TODO list:

- *To install a Domibus access point instance*
- *To register the instance into the network of trusted access points*
- *Develop the connector:*
 - *the conversion between YardSys and e-freight messages.*
 - *the usage of already existing plugins to talk to the access point.*

She places a check on the first and second item. However, on the second item she writes down for future reference “IMPORTANT: registration needs to be performed for each new Access Point entering the network!”

With only one item remaining in the list “Develop the connector” she goes back to the installation document. Actually this connector is ChannelModule that Joan had previously identified as needed.

She reads that while all the previous sections addressed the common tasks that need to be performed by every company wanting to exchange e-freight messages through Access Points, what comes next is specific to each company because it is heavily related to each company IT systems and internal formats.

Having previously become aware that CEF eDelivery already provides communication between connectors and access point through open-source plugin implementations, the last remaining problem is to develop routines that convert between YardSys and e-freight messages. Having in mind that DRYHAN does not have a software development department and that she requires these routines she calls a software development company and starts a small software project whose purpose is to develop the connector (ChannelModule) and, through this module, make YardSys able to talk to the world.



4. The “go live”

In the sequence of all the analysis process done by our character, and the implementation steps taken (not described in the text), an exchange of e-Freight messages becomes possible.

This chapter provides examples of what the resulting pieces would look like on a possible daily usage.

Although having the story as reference to provide coherence to the examples, they should be understood as illustrative, and may be somehow a little unrealistic.

4.1 – The first practical application

End of story

QuickLog, one of DRYHAN’s clients, is an electric appliances distributor. Its main suppliers are in East Asia and they use maritime transport to get the goods into the country.

They are very focused on their area of business, so they outsource to DRYHAN the work of stripping the containers and organization of goods, in order to be delivered directly to the stores the quantities required of each product. However, for the sake of monitoring the conditions of transport and rechecking customs declarations (they outsource the relations with authorities, but keep records since they are the main responsible party, as importers), they require DRYHAN to inform them in which transport equipment the goods were located on arrival to DRYHAN, and the seal identification.

As QuickLog works in all market ranges (from low to high) some goods are specially identified by the serial number.

An overseas partner cares for the appliances gathering from the several suppliers. Each supplier sends the products on disposable pallets shrink wrapped in plastic sheet. Then the pallets are consolidated into the containers.

QuickLog is expecting the arrival of shipment CN2PT201600521 of goods in the following list.

Goods	Serial Nbr.	Qty	Wgt (kg)	Consignment
Washing Machines	-	40	3000	BW152KJL4
Fridges	-	40	4000	5824861
Micro Wave Owens	-	200	3200	8564HAE
TV set 35”	-	300	2400	265486
TV set 45”	-	180	1980	265486
TV set 65”	-	120	3000	265486
Hi-Fi set	8678075196, 1561185428, 2534790165, 7663855247, 6895978850, 6546292539,	60	720	456771



6072430994, 8281206717,
8378050709, 3949164245,
7203378293, 1890992586,
7827579121, 3959180676,
6984054133, 9727548807,
3804677298, 8872281533,
6982266091, 1049944394,
5303478592, 9070139400,
1601719317, 4102608434,
7959913082, 5225286003,
3818530143, 5598087682,
6982239494, 8700419404,
1982544453, 7409994000,
1062132053, 8735366507,
7052515371, 8040396295,
2193007329, 9274800770,
4259723605, 3526714528,
8158665350, 3148314095,
1499525937, 6862926254,
5056521463, 2535139280,
3668914581, 1724688480,
7252135135, 9142867813,
6592990262, 6645271398,
6320245553, 1914342959,
7613830071, 6681887857,
2565221353, 8442919468,
2306390075, 3452299096

TOTAL	940	18300
--------------	------------	--------------

This arrival is under service contract identified by QL-IN-584356.

These goods are in vessel M/V LAURA bound to the nearby port. Luke, the DRYHAN operative responsible for the link with the port, sees at the port website that the ETA for the vessel is at 2016/11/22 by 08:00, the vessel voyage is 38548NB and it has IMO number 9285645.

In order for internal operations planning and to keep the QuickLog updated, on Nov. 15th by 14:17, Luke sends a status request to the nearby port in order to be informed about the arrival of M/V LAURA.

☞ This request was sent to the port in a TransportProgressStatusRequest message.

Additionally, due to the requirements, QuickLog submitted a status request identified by RQ4ST-1673598 on the goods into YardSys.

☞ This request was received in the system in a TransportationStatusRequest message. However, this is not the focus of this chapter.

Few days later, three ISO containers arrived to DRYHAN. In the accompanied documentation, it is written that the QuickLog should be notified. Luke deduced that these



could be part of the expected shipment. No damages where visible on the containers and the seals where intact.

After opening and striping them, Luke registers the information in YardSys that is reported to QuickLog.

☞ This status is sent from the system in a TransportationStatus message

After receiving the message in YardSys, Luke went through the application and made the following summary.

Goods	Qty of Pallets.	Container	Shipper
Washing Machines	10	KKFU5916852 Seal: PBA851678	Wash Mach, Inc
Fridges	10	KKFY5916852 Seal: PBA851678	Ice Maker, Co
	10	KKFU0245477 Seal: SGC123085	
Micro Wave Owens	10	KKFU5916852 Seal: PBA851678	Controlled Heat Inc.
TV set 35"	10	KKFU0245477 Seal: SGC123085	AudioVideoSystems, Co
TV set 45"	10	KKFU0245477 Seal: SGC123085	AudioVideoSystems, Co
	2*	KKLU2126614 Seal: K98522647	
TV set 65"	20	KKLU2126614 Seal: K98522647	AudioVideoSystems, Co
Hi-Fi set	20 **	KKLU2126614 Seal: K98522647	AudioVideoSystems, Co

* These two pallets are shared between TV sets 45" and Hi-Fi sets.

** Two of these twenty also contain TV sets 45".

4.2 – Outcome

This section provides examples of how code and messages would look like as result of using the toolkit artefacts.

The code is mainly the invocation of the Access Point and the Connector.



The messages are based on the examples of the mapping templates application.

Important: The presented messages are one of the possible outcomes from the resulting map. However, the range of different possible outcomes is significantly shorter with the mapping process done, comparing with not having any mapping at all.

Ideally only one outcome should be possible. But that would require a much detailed definition of the story and the definition of many assumptions that would not bring much value to the objective of the example.

4.2.1 – XML messages

☞ Message generated by ChannelModule as consequence of the request made by DRYHAN operative to the port.

```
<ns2:TransportProgressStatusRequest xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns:udt="urn:oasis:names:specification:ubl:schema:xsd:UnqualifiedDataTypes-2"
xmlns:sac="urn:oasis:names:specification:ubl:schema:xsd:SignatureAggregateComponents-2"
xmlns:sbc="urn:oasis:names:specification:ubl:schema:xsd:SignatureBasicComponents-2"
xmlns:ext="urn:oasis:names:specification:ubl:schema:xsd:CommonExtensionComponents-2"
xmlns:ns2="urn:oasis:names:specification:ubl:schema:xsd:TransportProgressStatusRequest-2"
xmlns:cac="urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-2"
xmlns:xades="http://uri.etsi.org/01903/v1.3.2#" xmlns:ns1="http://uri.etsi.org/01903/v1.4.1#"
xmlns:cbc="urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2"
xmlns:ccts="urn:un:unece:uncefact:documentation:2"
xmlns:ns0="urn:oasis:names:specification:ubl:schema:xsd:CommonSignatureComponents-2"
xmlns:ccts-
cct="urn:un:unece:uncefact:data:specification:CoreComponentTypeSchemaModule:2"
xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns:qdt="urn:oasis:names:specification:ubl:schema:xsd:QualifiedDataTypes-2"
xsi:schemaLocation="urn:oasis:names:specification:ubl:schema:xsd:TransportProgressStatusRequ
est-2 maindoc/UBL-TransportProgressStatusRequest-2.1.xsd">
  <cbc:UBLVersionID>2.1</cbc:UBLVersionID>
  <cbc:CustomizationID>void</cbc:CustomizationID>
  <cbc:ProfileID>PortProfileV01</cbc:ProfileID>
  <cbc:ID>TPSR20160000000000000000000000789541235</cbc:ID>
  <cbc:IssueDate>2016-11-15</cbc:IssueDate>
  <cbc:IssueTime>14:17:00</cbc:IssueTime>
  <cac:SenderParty>
    <cac:PartyIdentification>
      <cbc:ID>502584269</cbc:ID>
    </cac:PartyIdentification>
  </cac:SenderParty>
```



```

<cac:ReceiverParty>
  <cac:PartyIdentification>
    <cbc:ID>500253102</cbc:ID>
  </cac:PartyIdentification>
</cac:ReceiverParty>
<cac:TransportMeans>
  <cbc:JourneyID>38548NB</cbc:JourneyID>
  <cac:MaritimeTransport>
    <cbc:VesselID>9285645</cbc:VesselID>
    <cbc:VesselName>LAURA</cbc:VesselName>
  </cac:MaritimeTransport>
</cac:TransportMeans>
<cac:StatusLocation>
  <cbc:ID>PTLEI</cbc:ID>
  <cbc:LocationTypeCode>153</cbc:LocationTypeCode>
</cac:StatusLocation>
</ns2:TransportProgressStatusRequest>

```

☞ Message generated by ChannelModule as consequence of the reporting from the system to the client about the goods. The XML comments were included for clarification purposes. They may not result from an automatic message building system.

```

<ns2:TransportationStatus xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:udt="urn:oasis:names:specification:ubl:schema:xsd:UnqualifiedDataTypes-2"
xmlns:sac="urn:oasis:names:specification:ubl:schema:xsd:SignatureAggregateComponents-2"
xmlns:sbc="urn:oasis:names:specification:ubl:schema:xsd:SignatureBasicComponents-2"
xmlns:ext="urn:oasis:names:specification:ubl:schema:xsd:CommonExtensionComponents-2"
xmlns:ns2="urn:oasis:names:specification:ubl:schema:xsd:TransportationStatus-2"
xmlns:cac="urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-2"
xmlns:xades="http://uri.etsi.org/01903/v1.3.2#" xmlns:ns1="http://uri.etsi.org/01903/v1.4.1#"
xmlns:cbc="urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2"
xmlns:ccts="urn:un:unece:uncefact:documentation:2"
xmlns:ns0="urn:oasis:names:specification:ubl:schema:xsd:CommonSignatureComponents-2"
xmlns:ccts-
cct="urn:un:unece:uncefact:data:specification:CoreComponentTypeSchemaModule:2"
xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns:qdt="urn:oasis:names:specification:ubl:schema:xsd:QualifiedDataTypes-2"
xsi:schemaLocation="urn:oasis:names:specification:ubl:schema:xsd:TransportationStatus-2
maindoc/UBL-TransportationStatus-2.1.xsd">
  <cbc:UBLVersionID>2.1</cbc:UBLVersionID>
  <cbc:CustomizationID>void</cbc:CustomizationID>
  <cbc:ProfileID>GoodsStatusV01</cbc:ProfileID>
  <cbc:ID>TS__20160000000000000000000000789541235</cbc:ID>
  <cbc:IssueDate>2016-11-23</cbc:IssueDate>
  <cbc:IssueTime>13:05:30</cbc:IssueTime>
<!-- Cargo Conditions -->
  <cbc:TransportationStatusTypeCode>2</cbc:TransportationStatusTypeCode>
<!-- Stripped -->
  <cbc:TransportExecutionStatusCode>55</cbc:TransportExecutionStatusCode>
<!-- Washing Machines -->

```



```

<cac:Consignment>
  <cbc:ID>BW152KJL4</cbc:ID>
  <cbc:ContainerizedIndicator>true</cbc:ContainerizedIndicator>
  <cbc:TotalGoodsItemQuantity>40</cbc:TotalGoodsItemQuantity>
  <cbc:TotalTransportHandlingUnitQuantity>1</cbc:TotalTransportHandlingUnitQuantity>
  <cbc:TotalPackagesQuantity>10</cbc:TotalPackagesQuantity>
  <cac:Status>
    <cbc:ConditionCode>6</cbc:ConditionCode>
    <cbc:ReferenceDate>2016-11-23</cbc:ReferenceDate>
    <cbc:ReferenceTime>11:35:00</cbc:ReferenceTime>
    <cbc:Description>Complete.</cbc:Description>
  </cac:Status>
  <cac:ConsigneeParty>
    <cac:PartyName>
      <cbc:Name>QuickLog</cbc:Name>
    </cac:PartyName>
    <cac:PostalAddress>
      <cbc:StreetName>Av. da Liberdade</cbc:StreetName>
      <cbc:BuildingNumber>4782</cbc:BuildingNumber>
      <cbc:CityName>Valongo</cbc:CityName>
      <cbc:PostalZone>4445</cbc:PostalZone>
      <cbc:District>Porto</cbc:District>
      <cac:Country>
        <cbc:IdentificationCode>PT</cbc:IdentificationCode>
      </cac:Country>
    </cac:PostalAddress>
  </cac:ConsigneeParty>
  <cac:ConsignorParty>
    <cac:PartyName>
      <cbc:Name>Wash Mach, Inc</cbc:Name>
    </cac:PartyName>
    <cac:PostalAddress>
      <cbc:StreetName>Great Wall Av.</cbc:StreetName>
      <cbc:BuildingNumber>4782</cbc:BuildingNumber>
      <cbc:CityName>Foshan</cbc:CityName>
      <cbc:Region>Guangdong</cbc:Region>
      <cac:Country>
        <cbc:IdentificationCode>CN</cbc:IdentificationCode>
      </cac:Country>
    </cac:PostalAddress>
  </cac:ConsignorParty>
  <cac:TransportHandlingUnit>
    <cbc:HandlingCode>2</cbc:HandlingCode>
    <cac:GoodsItem>
      <cbc:NetWeightMeasure>3000</cbc:NetWeightMeasure>
      <cbc:Quantity>40</cbc:Quantity>
      <cac:Item>
        <cbc:BrandName>ELECWASHERS</cbc:BrandName>
        <cbc:ModelName>WM-5624 Power Saver</cbc:ModelName>
      </cac:Item>
    </cac:GoodsItem>
  </cac:TransportHandlingUnit>

```




```

<cac:GoodsItemContainer>
  <cbc:ID>BW152KJL4_00001_0001</cbc:ID>
  <cac:TransportEquipment>
    <cbc:ID>KKFU5916852</cbc:ID>
    <cbc:SizeTypeCode>40GP</cbc:SizeTypeCode>
    <cbc:FullnessIndicatorCode>7</cbc:FullnessIndicatorCode>
    <cbc:TareWeightMeasure>4180</cbc:TareWeightMeasure>
    <cac:TransportEquipementSeal>
      <cbc:ID>PBA851678</cbc:ID>
      <cbc:SealStatusCode>1</cbc:SealStatusCode>
    </cac:TransportEquipementSeal>
  </cac:TransportEquipment>
  <cac:GoodsItem>
    <cbc:Quantity>40</cbc:Quantity>
  </cac:GoodsItem>
</cac:GoodsItemContainer>
</cac:GoodsItem>
<cac:ReferencedShipment>
  <cbc:ID>CN2PT201600521</cbc:ID>
</cac:ReferencedShipment>
</cac:TransportHandlingUnit>
</cac:Consignment>
<!-- Fridges -->
<cac:Consignment>
  <cbc:ID>5824861</cbc:ID>
  <cbc:ContainerizedIndicator>true</cbc:ContainerizedIndicator>
  <cbc:TotalGoodsItemQuantity>40</cbc:TotalGoodsItemQuantity>
  <cbc:TotalTransportHandlingUnitQuantity>1</cbc:TotalTransportHandlingUnitQuantity>
  <cbc:TotalPackagesQuantity>20</cbc:TotalPackagesQuantity>
  <cac>Status>
    <cbc:ConditionCode>6</cbc:ConditionCode>
    <cbc:ReferenceDate>2016-11-23</cbc:ReferenceDate>
    <cbc:ReferenceTime>10:27:00</cbc:ReferenceTime>
    <cbc:Description>Complete.</cbc:Description>
  </cac>Status>
  <cac:ConsigneeParty>
    <cac:PartyName>
      <cbc:Name>QuickLog</cbc:Name>
    </cac:PartyName>
    <cac:PostalAddress>
      <cbc:StreetName>Av. da Liberdade</cbc:StreetName>
      <cbc:BuildingNumber>4782</cbc:BuildingNumber>
      <cbc:CityName>Valongo</cbc:CityName>
      <cbc:PostalZone>4445</cbc:PostalZone>
      <cbc:District>Porto</cbc:District>
    </cac:PostalAddress>
    <cac:Country>
      <cbc:IdentificationCode>PT</cbc:IdentificationCode>
    </cac:Country>
  </cac:ConsigneeParty>

```



```

<cac:ConsignorParty>
  <cac:PartyName>
    <cbc:Name>Ice Maker, Co</cbc:Name>
  </cac:PartyName>
  <cac:PostalAddress>
    <cbc:StreetName>Red St.</cbc:StreetName>
    <cbc:BuildingNumber>215</cbc:BuildingNumber>
    <cbc:CityName>Foshan</cbc:CityName>
    <cbc:Region>Guangdong</cbc:Region>
    <cac:Country>
      <cbc:IdentificationCode>CN</cbc:IdentificationCode>
    </cac:Country>
  </cac:PostalAddress>
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      <cac:TransportEquipment>
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        <cbc:FullnessIndicatorCode>7</cbc:FullnessIndicatorCode>
        <cbc:TareWeightMeasure>4180</cbc:TareWeightMeasure>
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</cac:TransportHandlingUnit>
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<!-- Micro Wave Owens -->
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    <cbc:FullnessIndicatorCode>7</cbc:FullnessIndicatorCode>
    <cbc:TareWeightMeasure>4180</cbc:TareWeightMeasure>
    <cac:TransportEquipementSeal>
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      <cbc:SealStatusCode>1</cbc:SealStatusCode>
    </cac:TransportEquipementSeal>
    <cac:GoodsItem>
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    </cac:GoodsItem>
  </cac:TransportEquipment>
</cac:GoodsItemContainer>
</cac:GoodsItem>
<cac:ReferencedShipment>
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</cac:TransportHandlingUnit>
</cac:Consignment>
<!-- TV sets -->
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  <cac:PartyName>
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  </cac:Country>
</cac:PostalAddress>
</cac:ConsigneeParty>
<cac:ConsignorParty>
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    <cbc:FullnessIndicatorCode>7</cbc:FullnessIndicatorCode>
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```



```

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</cac:GoodsItemContainer>
</cac:GoodsItem>
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</cac:ReferencedShipment>
</cac:TransportHandlingUnit>
</cac:Consignment>
<!-- DRYHAN -->
<cac:SenderParty>
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    <cbc:ID>502584269</cbc:ID>
  </cac:PartyIdentification>
</cac:SenderParty>
<!-- QuickLog -->
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  <cac:PartyIdentification>
    <cbc:ID>5109685321</cbc:ID>
  </cac:PartyIdentification>
</cac:ReceiverParty>
<cac:TransportationStatusRequestDocumentReference>
  <cbc:ID>RQ4ST-1673598</cbc:ID>
  <cbc:IssueDate>2016-11-15</cbc:IssueDate>
  <cbc:IssueTime>11:12:32</cbc:IssueTime>
</cac:TransportationStatusRequestDocumentReference>
<cac:TransportExecutionPlanDocumentReference>
  <cbc:ID>QL-IN-584356</cbc:ID>
  <cbc:IssueDate>2016-10-03</cbc:IssueDate>
  <cbc:IssueTime>16:34:01</cbc:IssueTime>
</cac:TransportExecutionPlanDocumentReference>
</ns2:TransportationStatus>

```

4.2.2 – Access Point interaction

The following sections address interaction between a connector and an access point in what concerns connecting features such as the ability to: send a message, get confirmation by the means of a message ID, list pending messages, and download the content of a message pending for download.

As described in section 3.7 - Access Point Testing - the main character in our story - Joan – executed a connectivity testing command to check if DRYHAN Access Point was operational. This command acted as a backend and that performed a simple, yet powerful, test. As described:



So, Joan opens an Ubuntu console and runs the command with the DRYHAN Access Point identifier as origin, the APDL Access Point identifier as destination and the testing text “good morning” as content. Right after hitting the enter button on the keyboard Joan gets the delivery confirmation by the DRYHAN Access Point and an instant after she sees some more logs where she reads that the APDL Access Point is replying with another message and some more metadata about the operation.

In terms of connectivity, immediately after the command was issued:

1. The connector inside the command sends an e-Freight message to DRYHAN Access Point, and requests it to send that message.
2. As a result from the previous operation DRYHAN Access Point assigns a message ID is received by this connector.
3. After (2), the connector periodically begins to query DRYHAN Access Point for pending messages.
4. On the other side of the entire communication process, the connector behind the APDL Access Point periodically queries for pending messages. As soon as the message from DRYHAN reaches the APDL Access Point, it answers the query with the message ID. For each of the messages IDs the connector performs a “ping-pong” behaviour meaning that it just replies to acknowledge having received the incoming message. This behaviour corresponds to the send of the reply message through the APDL Access Point with DRYHAN Access Point as destination.
5. As soon as the connector inside the command in (1) receives a message ID as the result of the action defined in (3) it downloads the content and displays it in the console.

The following sections detail the content of each of the access point interactions addressed after the system went into production.

After the development of ChannelModule and repeating the testing with DRYHAN Access Point and with APDL Access Point for testing, Joan deployed the solution. In general the final module organization is in the following picture.



It is under this organization that Luke sends the request to the nearby port about M/V LAURA.

Being this a new implementation at DRYHAN, Joan frequently follows with detail the interaction between the three modules: YardSys, ChannelModule and dryhan-ap.

Looking into some logging, Joan confirms the expected functioning resulting from Luke action.

Request for sending a message

After verifying that ChannelModule reacted correctly to Luke’s request, by building the TransportProgressStatusRequest, Joan see that ChannelModule informs the access point that a message is to be sent to the nearby port.



- ☞ A send message request is performed by sending the following SOAP content to origin access point address (in the example: dryhan-ap:8080/domibus/services/backend).

According to the 4-corner model this is an interaction between **C1** and **C2**.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:ns="http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/"
xmlns:_1="http://org.ecodex.backend/1_1/"
xmlns:xm="http://www.w3.org/2005/05/xmlmime">
  <soap:Header>
    <ns:Messaging>
      <ns:UserMessage>
        <ns:PartyInfo>
          <ns:From>
            <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">dryhan-ap
          </ns:PartyId>
            <ns:Role>http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/initiator</ns:Role>
          </ns:From>
          <ns:To>
            <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">nearbyport-
ap</ns:PartyId>
            <ns:Role>http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/responder</ns:Role>
          </ns:To>
        </ns:PartyInfo>
        <ns:CollaborationInfo>
          <ns:Service type="tc1">bdx:noprocess</ns:Service>
          <ns:Action>TC1Leg1</ns:Action>
        </ns:CollaborationInfo>
        <ns:MessageProperties>
          <ns:Property name="originalSender">urn:oasis:names:tc:ebcore:partyid-
type:unregistered:C1</ns:Property>
          <ns:Property name="finalRecipient">urn:oasis:names:tc:ebcore:partyid-
type:unregistered:C4</ns:Property>
        </ns:MessageProperties>
        <ns:PayloadInfo>
          <ns:PartInfo href="cid:message">
            <ns:PartProperties>
              <ns:Property name="MimeType">text/xml</ns:Property>
            </ns:PartProperties>
          </ns:PartInfo>
        </ns:PayloadInfo>
      </ns:UserMessage>
    </ns:Messaging>
  </soap:Header>
  <soap:Body>
    <_1:sendRequest>
      <payload payloadId="cid:message">
        <?xml version="1.0" encoding="utf-8"?>
        <ns2:TransportProgressStatusRequest xmlns:xsi="http://www.w3.org/2001/XMLSchema-
```



```

instance" xmlns:udt="urn:oasis:names:specification:ubl:schema:xsd:UnqualifiedDataTypes-2"
xmlns:sac="urn:oasis:names:specification:ubl:schema:xsd:SignatureAggregateComponents-2"
xmlns:sbc="urn:oasis:names:specification:ubl:schema:xsd:SignatureBasicComponents-2"
xmlns:ext="urn:oasis:names:specification:ubl:schema:xsd:CommonExtensionComponents-2"
xmlns:ns2="urn:oasis:names:specification:ubl:schema:xsd:TransportProgressStatusRequest-2"
xmlns:cac="urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-2"
xmlns:xades="http://uri.etsi.org/01903/v1.3.2#" xmlns:ns1="http://uri.etsi.org/01903/v1.4.1#"
xmlns:cbc="urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2"
xmlns:ccts="urn:un:unece:uncefact:documentation:2"
xmlns:ns0="urn:oasis:names:specification:ubl:schema:xsd:CommonSignatureComponents-2"
xmlns:ccts-
cct="urn:un:unece:uncefact:data:specification:CoreComponentTypeSchemaModule:2"
xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns:qdt="urn:oasis:names:specification:ubl:schema:xsd:QualifiedDataTypes-2"
xsi:schemaLocation="urn:oasis:names:specification:ubl:schema:xsd:TransportProgressStatusRequ
est-2 maindoc/UBL-TransportProgressStatusRequest-2.1.xsd">
  <cbc:UBLVersionID>2.1</cbc:UBLVersionID>
  <cbc:CustomizationID>void</cbc:CustomizationID>
  <cbc:ProfileID>PortProfileV01</cbc:ProfileID>
  <cbc:ID>TPSR2016000000000000000000789541235</cbc:ID>
  <cbc:IssueDate>2016-11-15</cbc:IssueDate>
  <cbc:IssueTime>14:17:00</cbc:IssueTime>
  <cac:SenderParty>
    <cac:PartyIdentification>
      <cbc:ID>502584269</cbc:ID>
    </cac:PartyIdentification>
  </cac:SenderParty>
  <cac:ReceiverParty>
    <cac:PartyIdentification>
      <cbc:ID>500253102</cbc:ID>
    </cac:PartyIdentification>
  </cac:ReceiverParty>
  <cac:TransportMeans>
    <cbc:JourneyID>38548NB</cbc:JourneyID>
    <cac:MaritimeTransport>
      <cbc:VesselID>9285645</cbc:VesselID>
      <cbc:VesselName>LAURA</cbc:VesselName>
    </cac:MaritimeTransport>
  </cac:TransportMeans>
  <cac>StatusLocation>
    <cbc:ID>PTLEI</cbc:ID>
    <cbc:LocationTypeCode>153</cbc:LocationTypeCode>
  </cac>StatusLocation>
</ns2:TransportProgressStatusRequest>
</payload>
</_1:sendRequest>
</soap:Body>
</soap:Envelope>

```



In the previous SOAP content the initiator party is dryhan-ap and the destination party is nearbyport-ap. The message content is sent inside the SOAP content in the body section, more specifically, inside the payload element.

In the example above the, the TransportProgressStatusRequest (from section 4.2.1) is the content that a connector wants to send from origin to destination. The payload content is defined to by text/xml.

Response for a sending message

Joan then sees that the Access Point (dryhan-ap) acknowledges to ChannelModule's request by providing the identification that will be given to the envelope of the TransportProgressStatusRequest. In this case, the id is 6be3418d-a249-4c46-bc1f-bee3e699d2bd@domibus.eu.

After the request presented in the previous section, the origin access point replies with the following soap message acknowledging the reception of the message and given its own message ID that will identify it during the exchange process with nearby port Access Point (nearbyport-ap).

According to the 4-corner model this is an interaction between **C2** and **C1**.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope">
  <soap:Body>
    <ns5:sendResponse xmlns:ns6="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/" xmlns:ns5="http://org.ecodex.backend/1_1/"
xmlns:xmime="http://www.w3.org/2005/05/xmlmime">
      <messageID>6be3418d-a249-4c46-bc1f-bee3e699d2bd@domibus.eu</messageID>
    </ns5:sendResponse>
  </soap:Body>
</soap:Envelope>
```

Request for List pending messages

Meanwhile, in the nearby port there is the Access Point and a connector that guarantees the bridge between nearbyport-ap and the port community system. And this connector (about which Joan unknowns any detail information), periodically asks nearbyport-ap if messages were received.

- ☞ The following SOAP content is sent by a connector to an access point whenever it needs to query an access point for pending messages to download.

According to the 4-corner model this is an interaction between **C4** and **C3**.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:_1="http://org.ecodex.backend/1_1/">
  <soap:Header/>
  <soap:Body>
    <_1:listPendingMessagesRequest></_1:listPendingMessagesRequest>
  </soap:Body>
</soap:Envelope>
```



Actually this type of periodical action is also made by ChannelModule against dryhan-ap.

For illustration purposes the previous request would be periodically issued by a DRYHAN connector to the DRYHAN access point (dryhan-ap:8080/domibus/services/backend) to find if there are pending messages to download. The response for this request is addressed in the next section.

Response for List pending messages

At this moment dryhan-ap has nothing to give to ChannelModule. So the next message is issued by dryhan-ap to ChannelModule.

- ☞ The result of a request for list pending messages is the list of message IDs pending for download. For illustration the following result the following response

According to the 4-corner model this is an interaction between **C2** and **C1**.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope">
  <soap:Body>
    <ns5:listPendingMessagesResponse xmlns:ns6="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/" xmlns:ns5="http://org.ecodex.backend/1_1/"
xmlns:xmime="http://www.w3.org/2005/05/xmlmime">
      </ns5:listPendingMessagesResponse>
    </soap:Body>
  </soap:Envelope>
```

means that there are **no pending messages** waiting for download.

But on the nearby port side, the scenario is different. The nearbyport-ap responded to the port connector with a list of identifications of received messages.

According to the 4-corner model this is an interaction between **C3** and **C4**.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope">
  <soap:Body>
    <ns5:listPendingMessagesResponse xmlns:ns6="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/" xmlns:ns5="http://org.ecodex.backend/1_1/"
xmlns:xmime="http://www.w3.org/2005/05/xmlmime">
      <messageID>919df0c7-f8ba-4e9c-83ee-444fb0121911@domibus.eu</messageID>
      <messageID>80569ceb-44ad-4654-b6ff-998c0fa204cf@domibus.eu</messageID>
      <messageID>6be3418d-a249-4c46-bc1f-bee3e699d2bd@domibus.eu</messageID>
    </ns5:listPendingMessagesResponse>
  </soap:Body>
</soap:Envelope>
```

means that there are **three messages**:

- 919df0c7-f8ba-4e9c-83ee-444fb0121911@domibus.eu
- 80569ceb-44ad-4654-b6ff-998c0fa204cf@domibus.eu



- 6be3418d-a249-4c46-bc1f-bee3e699d2bd@domibus.eu

available and pending for download. Each of these messages can be downloaded by issuing a download message request presented in the next section.

Request for message download

Joan is not aware of the details of the port community system design and implementation, and how it relates with the connector on the port side. However the port system decides to download the message corresponding to the TransportProgressStatusRequest that resulted from Luke action.

The following SOAP content is sent by a connector to an access point whenever it needs to request the download of a message that has been previously identified in the access point as pending.

- ☞ Given the example in the previous section, where the access point reports to contain three pending messages, the following SOAP content illustrates a request to download message ID 6be3418d-a249-4c46-bc1f-bee3e699d2bd@domibus.eu.

According to the 4-corner model this is an interaction between **C4** and **C3**.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:_1="http://org.ecodex.backend/1_1/">
  <soap:Header/>
  <soap:Body>
    <_1:downloadMessageRequest>
      <messageID>6be3418d-a249-4c46-bc1f-bee3e699d2bd@domibus.eu</messageID>
    </_1:downloadMessageRequest>
  </soap:Body>
</soap:Envelope>
```

Response for message download

As a reaction to the download request, the nearbyport-ap provides the message to the nearby port connector.

- ☞ The result of a request for message download is a SOAP content containing the entire message (header and body) corresponding to the message ID declared in the request.

The following example illustrates the message content corresponding to the download request for 6be3418d-a249-4c46-bc1f-bee3e699d2bd@domibus.eu.

According to the 4-corner model this is an interaction between **C3** and **C4**.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope">
  <soap:Header>
    <ns6:Messaging mustUnderstand="false" xmlns:ns6="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/" xmlns:ns5="http://org.ecodex.backend/1_1/"
xmlns:xmime="http://www.w3.org/2005/05/xmlmime">
      <ns6:UserMessage>
        <ns6:MessageInfo>
```




```

    <ns6:Timestamp>2016-12-20T16:50:58.465Z</ns6:Timestamp>
    <ns6:MessageId>6be3418d-a249-4c46-bc1f-
bee3e699d2bd@domibus.eu</ns6:MessageId>
  </ns6:MessageInfo>
  <ns6:PartyInfo>
    <ns6:From>
      <ns6:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">dryhan-
ap</ns6:PartyId>
      <ns6:Role>http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/initiator</ns6:Role>
    </ns6:From>
    <ns6:To>
      <ns6:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">nearbyport-
ap</ns6:PartyId>
      <ns6:Role>http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/responder</ns6:Role>
    </ns6:To>
  </ns6:PartyInfo>
  <ns6:CollaborationInfo>
    <ns6:AgreementRef/>
    <ns6:Service type="tc1">bdx:noprocess</ns6:Service>
    <ns6:Action>TC1Leg1</ns6:Action>
    <ns6:ConversationId>62a73899-64bf-4089-bae1-
f942d681b10f@domibus.eu</ns6:ConversationId>
  </ns6:CollaborationInfo>
  <ns6:MessageProperties>
    <ns6:Property name="originalSender">urn:oasis:names:tc:ebcore:partyid-
type:unregistered:C1</ns6:Property>
    <ns6:Property name="finalRecipient">urn:oasis:names:tc:ebcore:partyid-
type:unregistered:C4</ns6:Property>
  </ns6:MessageProperties>
  <ns6:PayloadInfo>
    <ns6:PartInfo href="cid:message">
      <ns6:Schema/>
      <ns6:PartProperties>
        <ns6:Property name="MimeType">text/xml</ns6:Property>
      </ns6:PartProperties>
    </ns6:PartInfo>
  </ns6:PayloadInfo>
</ns6:UserMessage>
</ns6:Messaging>
</soap:Header>
<soap:Body>
  <ns5:downloadMessageResponse xmlns:ns6="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/" xmlns:ns5="http://org.ecodex.backend/1_1/"
xmlns:xmime="http://www.w3.org/2005/05/xmlmime">
    <payload payloadId="cid:message">
      <?xml version="1.0" encoding="utf-8"?>
      <ns2:TransportProgressStatusRequest xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns:udt="urn:oasis:names:specification:ubl:schema:xsd:UnqualifiedDataTypes-2"

```



```

xmlns:sac="urn:oasis:names:specification:ubl:schema:xsd:SignatureAggregateComponents-2"
xmlns:cbc="urn:oasis:names:specification:ubl:schema:xsd:SignatureBasicComponents-2"
xmlns:ext="urn:oasis:names:specification:ubl:schema:xsd:CommonExtensionComponents-2"
xmlns:ns2="urn:oasis:names:specification:ubl:schema:xsd:TransportProgressStatusRequest-2"
xmlns:cac="urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-2"
xmlns:xades="http://uri.etsi.org/01903/v1.3.2#" xmlns:ns1="http://uri.etsi.org/01903/v1.4.1#"
xmlns:cbc="urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2"
xmlns:ccts="urn:un:unece:uncefact:documentation:2"
xmlns:ns0="urn:oasis:names:specification:ubl:schema:xsd:CommonSignatureComponents-2"
xmlns:ccts-
cct="urn:un:unece:uncefact:data:specification:CoreComponentTypeSchemaModule:2"
xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns:qdt="urn:oasis:names:specification:ubl:schema:xsd:QualifiedDataTypes-2"
xsi:schemaLocation="urn:oasis:names:specification:ubl:schema:xsd:TransportProgressStatusRequest-2 maindoc/UBL-TransportProgressStatusRequest-2.1.xsd">
  <cbc:UBLVersionID>2.1</cbc:UBLVersionID>
  <cbc:CustomizationID>void</cbc:CustomizationID>
  <cbc:ProfileID>PortProfileV01</cbc:ProfileID>
  <cbc:ID>TPSR201600000000000000000789541235</cbc:ID>
  <cbc:IssueDate>2016-11-15</cbc:IssueDate>
  <cbc:IssueTime>14:17:00</cbc:IssueTime>
  <cac:SenderParty>
    <cac:PartyIdentification>
      <cbc:ID>502584269</cbc:ID>
    </cac:PartyIdentification>
  </cac:SenderParty>
  <cac:ReceiverParty>
    <cac:PartyIdentification>
      <cbc:ID>500253102</cbc:ID>
    </cac:PartyIdentification>
  </cac:ReceiverParty>
  <cac:TransportMeans>
    <cbc:JourneyID>38548NB</cbc:JourneyID>
    <cac:MaritimeTransport>
      <cbc:VesselID>9285645</cbc:VesselID>
      <cbc:VesselName>LAURA</cbc:VesselName>
    </cac:MaritimeTransport>
  </cac:TransportMeans>
  <cac:StatusLocation>
    <cbc:ID>PTLEI</cbc:ID>
    <cbc:LocationTypeCode>153</cbc:LocationTypeCode>
  </cac:StatusLocation>
</ns2:TransportProgressStatusRequest>
</payload>
</ns5:downloadMessageResponse>
</soap:Body>
</soap:Envelope>

```



On reception of this message the connector on the port side interacts with the port community system that, after this, knows that has to report information about M/V LAURA to DRYHAN.

Trying to download twice is invalid

However, it was found that the connector on the port side had a bug. It consisted on trying to download twice the same message from nearby-port. This was detected because recurrently the connector received the following message.

- ☞ Please have in mind that after successfully downloading a message contents, trying download a second time results in a response telling the message is not found. The following example corresponds to the answer the connector gets after trying to download message ID 6be3418d-a249-4c46-bc1f-bee3e699d2bd@domibus.eu a second time.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope">
  <soap:Body>
    <soap:Fault>
      <soap:Code>
        <soap:Value>soap:Receiver</soap:Value>
      </soap:Code>
      <soap:Reason>
        <soap:Text xml:lang="en">Message not found, id [6be3418d-a249-4c46-bc1f-
bee3e699d2bd@domibus.eu]</soap:Text>
      </soap:Reason>
      <soap:Detail>
        <ns3:FaultDetail xmlns:xmime="http://www.w3.org/2005/05/xmlmime"
xmlns:ns5="http://www.w3.org/2003/05/soap-envelope" xmlns:ns4="http://docs.oasis-
open.org/ebxml-msg/ebms/v3.0/ns/core/200704/"
xmlns:ns3="http://org.ecodex.backend/1_1/">
          <code>EBMS:0004</code>
          <message>No message with id [6be3418d-a249-4c46-bc1f-bee3e699d2bd@domibus.eu]
pending for download</message>
        </ns3:FaultDetail>
      </soap:Detail>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
```

- ☞ This happens because the first request downloads the message from the access point and deletes the message from the pending list.

And back again...

Knowing that the nearby port system had received the request, Joan knows that when something is needed to be reported that a TransportProgressStatus will be issued by the



port and it will follow the inverse path from the port back to DRYHAN, and the information will be available to Luke and to QuickLog.

