ONE Record data model

Extension of the data model scope

Version 2.0 – June 2021

History

Version	Date	Comments
1.0	November 2020	First version part of ONE Record Nov 2020 release
2.0	June 2021	Second version part of ONE Record June 2021 release, replacing Transport Segment by Transport Movement

Contents

Introduction

1.1. Purpose of this document

This document has been produced by the ONE Record Data Model expert group, part of the ONE Record Task Force, under the Cargo Services Conference (CSC) governance. It describes how the scope of the data model has been extended based on requirements gathered from experts of various areas.

Note that this document, especially the concepts and objects in it, may evolve with revised versions of the data model in the future and will include feedbacks from the industry and pilot projects.

1.2. The ONE Record data model

The Data Model is an essential part of ONE Record and aims to provide the air cargo industry with a standard data structure for data exchange using JSON-LD that facilitates data integration with existing and new data services.

The data model was first defined to cover the interaction of General Cargo between shippers and freight forwarders as well as between freight forwarders and Airlines, this refers to the Airline Core Ontology.

This document focuses on the expansion of the data model in order to include more specific requirements such as Cargo Distribution or the transport of Dangerous Goods.

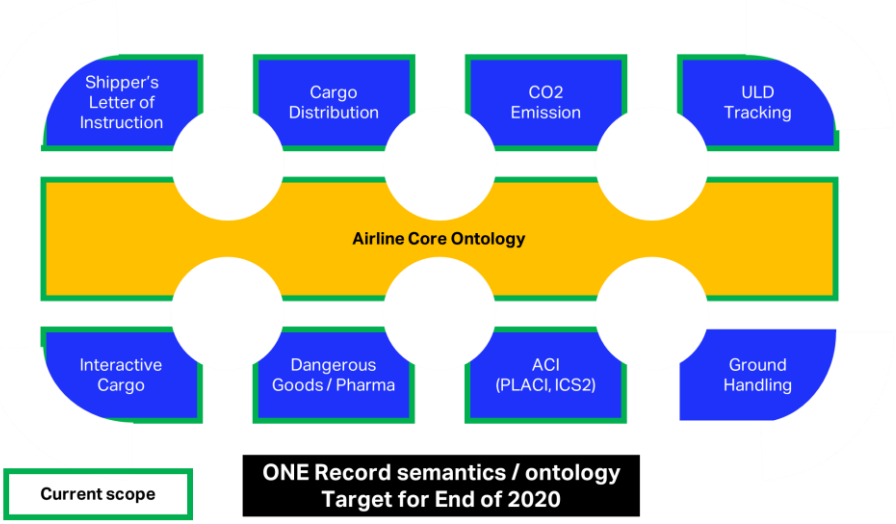


Figure 1 - Scope of the data model

The latest progress made on the ONE Record data model, ontology and technical specifications can be found on the dedicated GituHub space:

https://github.com/IATA-Cargo/ONE-Record

2. Shipper's letter of instruction (SLI)

2.1. Requirements

The SLI is a document in which the shipper gives handling instructions for the freight forwarder. It also allows the freight forwarder to act on the shipper's behalf.

The requirements expressed in this document are based on the XSLI Cargo-XML message, 8th Edition, they can be summarized as follows:

XSLI Header:

- Letter of instruction number / customs reference
- Consignor details, including contact information, tax/customs information
- Consignee details, including contact information, tax/customs information
- Freight forwarder details, including contact information, tax/customs information
- Other parties details
- Transport and booking details, including terms of delivery and transport equipment details
- Special handling information, special service request, reference documents
- Currency details

Packaging detail:

- Complete packages details, including weights, volumes, etc.

Commodity details:

- Complete commodity details, including dangerous goods specific data elements

2.2. Chosen approach in the data model

The Data model already encompasses most of the required information of the SLI, especially, only a few additional data elements are required:

On the **Piece**: Declared values for customs and for carriage as well as package marks information.

On the **Shipment**: Terms of delivery (expected delivery date and location, incoterms), indicators for Weight valuation and Other charges (Prepaid or Collect).

On the **Transport Movement**: Mode Qualifier to indicate Pre-Carriage, Main-Carriage or On-Carriage.

The overall idea is that the SLI document in itself does not exist in the Data Model but can be recreated using existing objects and their data properties. It is then a matter of mapping the right information, essentially:

- Parties are represented by Company objects
- Packaging and handling details are data properties of Pieces and Shipment objects
- Commodity details are data properties of Item and Product objects
- Transport details are data properties of Transport movement linked to the pieces

2.3. Impacts and updates on the data model

As a result of the SLI analysis, a few data properties have been added to the Data Model.

TransportMovement	Piece	Shipment
modeQualifier	declaredValueForCarriage declaredValueForCustoms packageMarkCoded packagedeIdentifier shippingMarks	deliveryDate deliveryLocation Incoterms weightValuationIndicator otherChargesIndicator

3. ULD Tracking

3.1. Requirements

The ULD global tracking business requirements (main operational procedures and minimum data elements to be captured) are based on:

- the existing ULD Control Receipt (UCR) (see Cargo Services Conference Recommended Practice 1654 and Cargo-XML Message XUCR)
- the suggested ULD handover requirements between cargo handling agent (in the warehouse) and ramp handling agent taken consideration of UCR/ XUCR and Cargo iQ FIW/FOW events, and
- the reconciliation requirements for aircraft loading/ unloading of ULDs taken into consideration of CPM/ UWS/ UCM messages

For easy understanding, the recommendation looks at ULD tracking in four scenarios with respective data elements required as follows:

- ULD ground transfer: XUCR data elements
- ULD handover between cargo warehouse and ramp: XUCR data elements (recommended) or relevant data elements in Cargo iQ FIW/ FOW events (optional)
- Aircraft Loading/ Departure: relevant data elements in CPM/ UWS/ UCM
- Aircraft Arrival/ Unloading: relevant data elements in CPM/ UWS/ UCM

3.2. Chosen approach in the data model

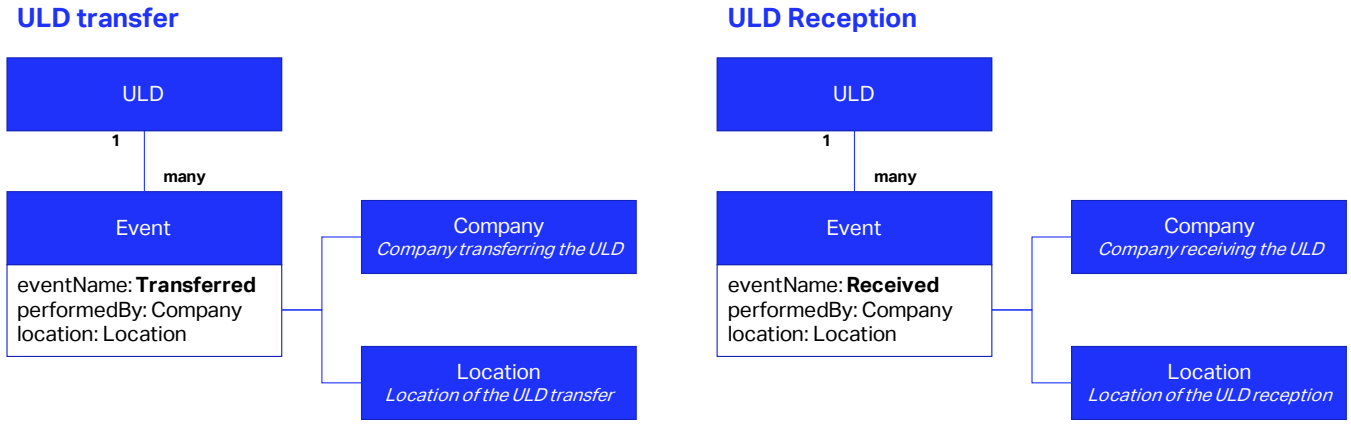
The ULD tracking requirements can be mainly managed with the usage of proper Events in ONE Record, the chosen approach consists of the following:

- Addition of new data elements to the ULD objects, related to damage and details of the ULD

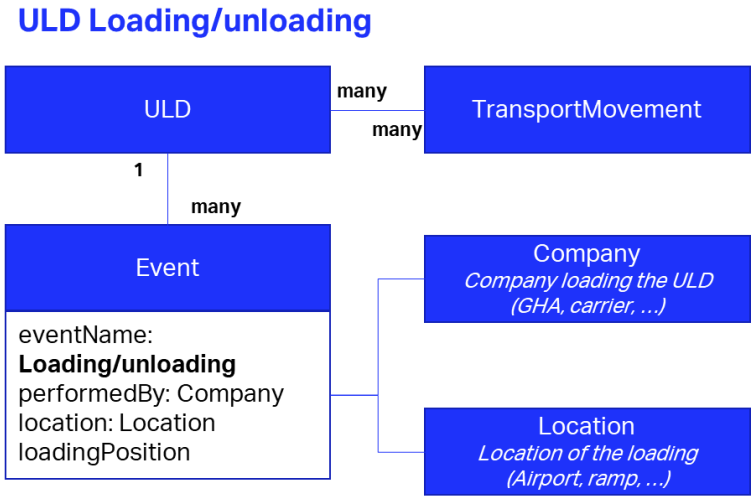
For better **transparency** we propose to split the ground transfer/handover using 2 events. This allows to properly identify the party responsible for the ULD at a given time:

- ULD Transfer: the transferring party creates a “Transfer” Event associated to the ULDs
- ULD Reception: the receiving party creates a “Received” Event associated to the ULDs

With this approach we recommend that events are created on every ULD to ensure proper tracking of the assets.



- Aircraft Loading and Unloading are managed through **Events associated to the ULDs**

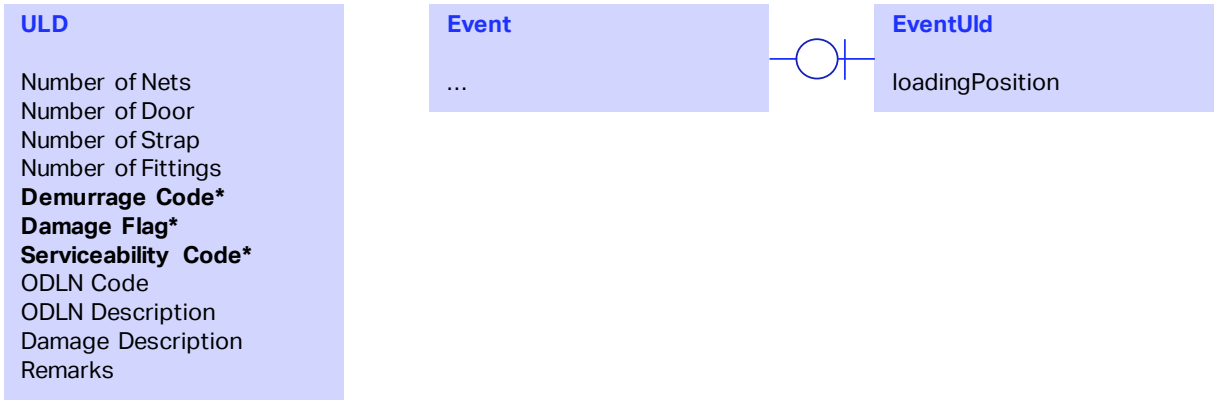


The Transport movement gives details about the associated flight (flight number, time of departure, etc.).

The loadingPosition field in the Event allows to record the loading position of the ULD in the aircraft (e.g. lower or main deck), it is managed by a EventUld subtype of the Event.

3.3. Impacts and updates on the data model

The ULD tracking requirements have highlighted the need for a few additional data properties on the ULD object as well as the need to create a EventUld subtype of Event to record the loading position.



4. CO2 Emissions

4.1. Requirements

CO2 Emissions transparency is an essential topic in order to move toward a more sustainable industry. IATA has been addressing CO2 Emissions measurement methodology, joint with ICAO, in the Recommended Practice 1678, more details can be found on IATA's website dedicated page.

Our objective is to provide necessary information in the data model to be able to calculate or predict CO2 emissions for transport movements. Required information relate to:

- Typical CO2 coefficient
- Distance of the transport movement, calculated and measured
- Fuel consumed, calculated and measured
- Method used for calculation of the CO2 emissions

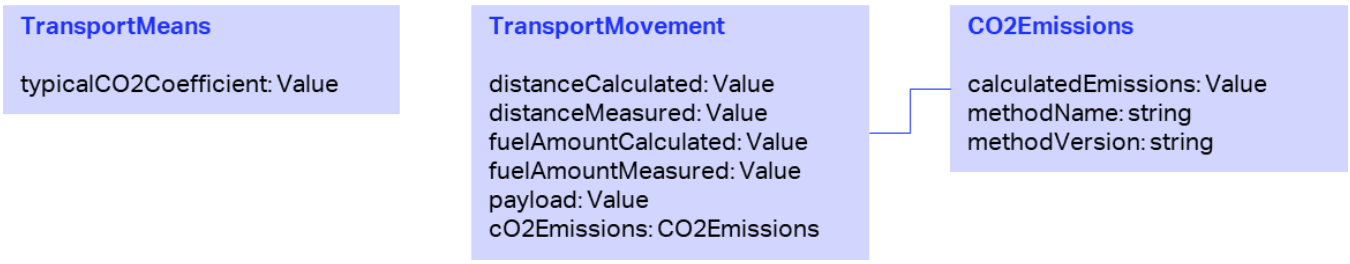
4.2. Chosen approach in the data model

To fulfil these requirements, it has been decided to add relevant data properties in the model on the Transport movement and Transport Means.

Details about the method used for calculation are to be managed outside of the data model. The data model needs to ensure that all required information are recorded and available.

4.3. Impacts and updates on the data model

A few data properties are added on **TransportMeans** and **TransportMovement**. A new object **CO2Emissions** is added as well as depicted below:

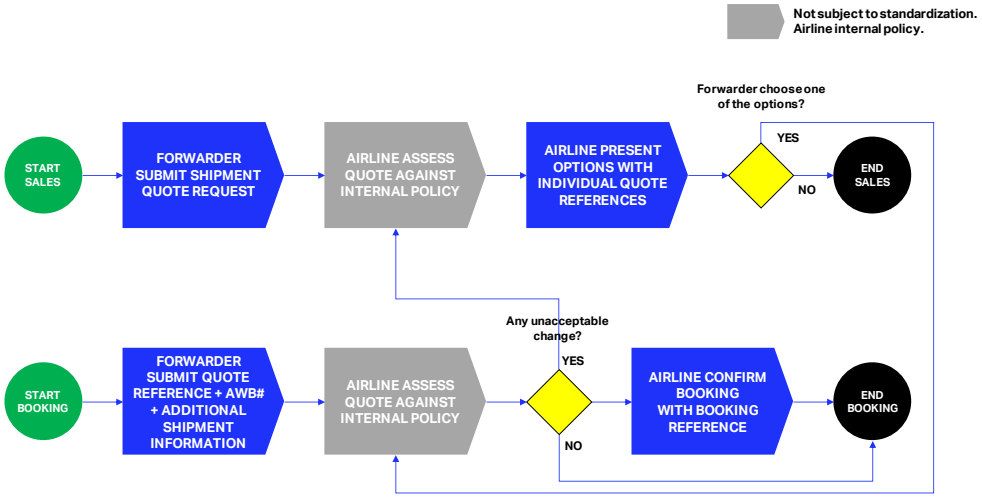


5. Cargo Distribution

5.1. Requirements

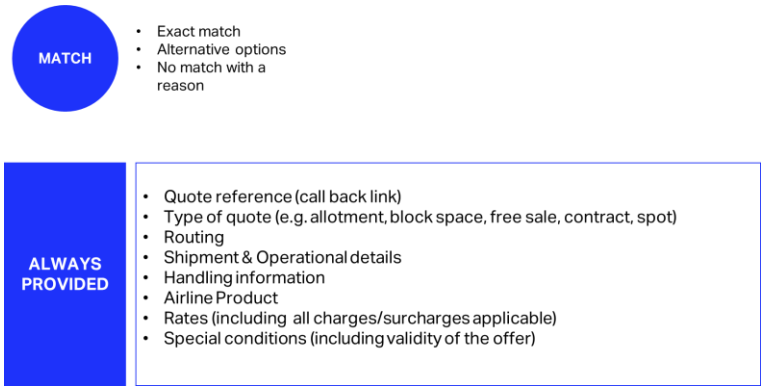
The Modernizing Cargo Distribution working group (MCD) has been gathering in January 2020 to highlight the business and data requirements of Distribution.

The agreed Quote & Book process is the following:

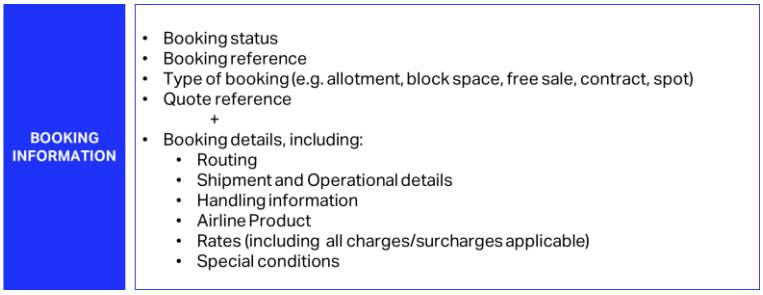


In this process, the quote request should contain a minimum set of information:

The second step, airline presenting booking options, needs to ensure that the following data are included:



The booking confirmation step ends the Quote & Book process, it should ensure that some data are validated and agreed between the two parties. The data are:

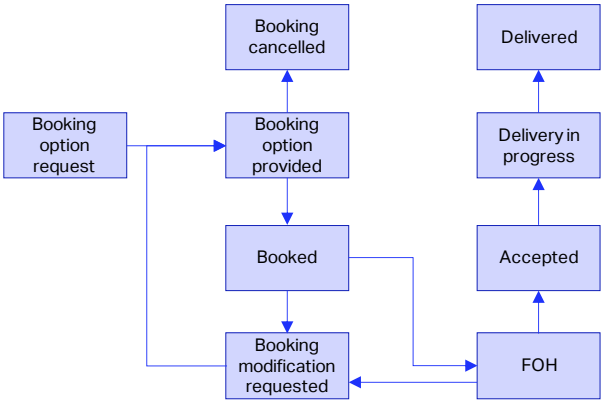


The technical team of the MCD working group has transcribed the business requirements in four main objects:

- Quote Request
- Quote Response
- Booking Request
- Booking Response

Further discussions with MCD working group members allowed to identify the need to properly track the shipment status and data throughout the shipment lifecycle. Essential shipment data such as Weight can evolve as the Quote & Book process moves forward, the data model and ONE Record specifications need to ensure that this is possible.

The group came up with a proposal for a standard shipment lifecycle as depicted below:



This is an example of a typical shipment lifecycle that should help standardize some of the events and milestones that are required on the business side of the Quote & Book process.

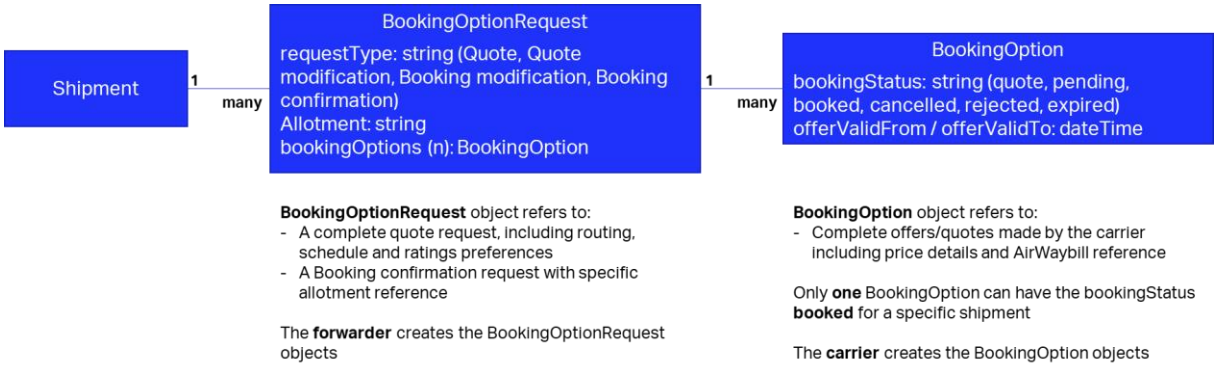
5.2. Chosen approach in the data model

The chosen approach is on multiple levels to make sure that all requirements are met.

5.2.1 Simplifying the approach with two main objects and associated objects

The chosen approach is to combine the four objects expressed by the MCD working group in two main objects:

- **Booking Option:** As quotes and confirmed booking contain almost the same kind of information, it was chosen to merge them in the Booking Option object.
- **Booking Option Request:** It refers to the quote request and booking confirmation request.



Along those two amin objects, a few simpler objects are added to ensure that all information are available for the Quote & Book process. It includes **Routing**, **Schedule**, **CarrierProduct**, **Price**, **Ratings** and **Ranges**.

Ranges are included to address challenges where cargo tendered to Airline has variance versus the booking option request dimension and/or weight.

The bookingStatus data property in the **BookingOption** will be used to capture the milestones of the Sales & Booking process. Current values are:

- Quote: the BookingOption is an offer made by the carrier
- Booked: the BookingOption has been chosen by the forwarder and validated against capacity by the carrier
- Pending: the BookingOption is either being reviewed by the forwarder or being processed by the carrier (eventually processed manually)
- Cancelled: the BookingOption has been properly cancelled by one of the parties
- Expired: the BookingOption is not valid anymore
- Rejected: the BookingOption has been rejected by the carrier

These milestones may change based on the MCD working group progress on the matter.

As the Sales & Booking process may occur before actual operations, we have chosen to allow for some data property at **BookingOptionRequest** level that are to be used for the sole purpose of the quote request. Thus the expectedCommodity and requestedHandling data properties are used at an early stage to indicate what the forwarder intends to ship.

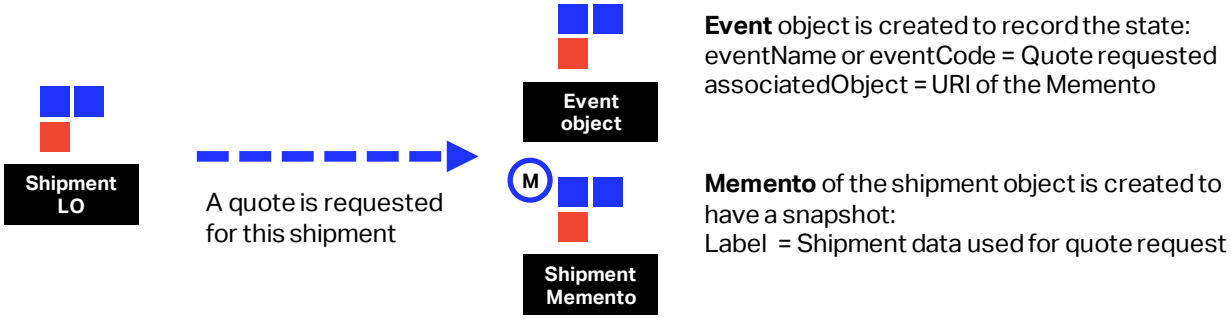
The expectedCommodity values are to be discussed and decided by the MCD working group, the requestedHandling values shall refer to special handling codes.

5.2.2 ONE Record mechanisms to ensure keeping track of data throughout the lifecycle

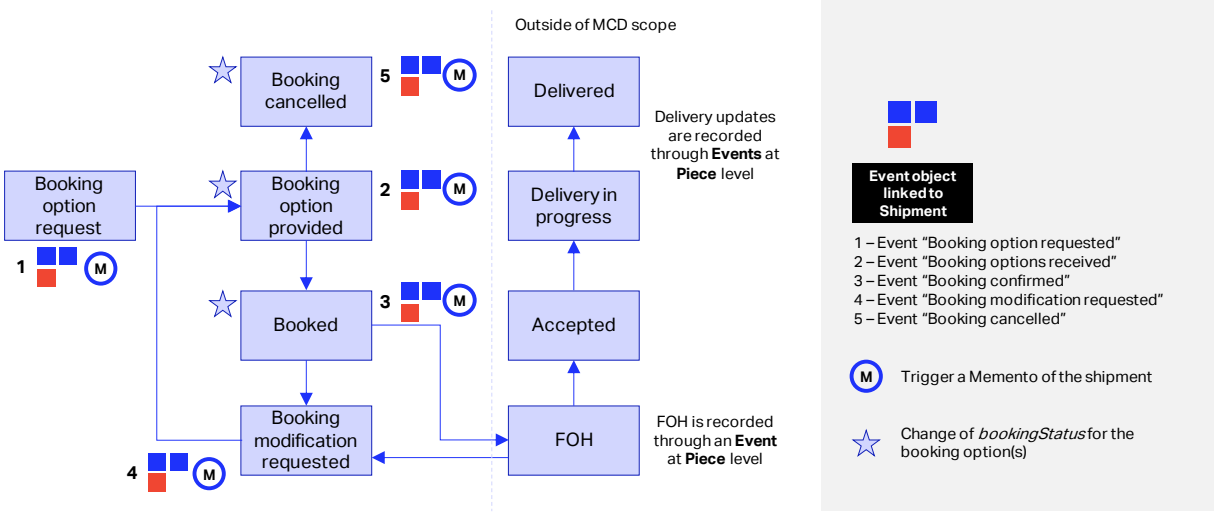
Like all Logistic Objects, **Shipments** can have **Events**. An Event can record the *state* of a shipment (e.g. "Quote Requested, Booking requested, etc.) and reflect the lifecycle.

The Memento protocol offers the possibility to create a snapshot of an object at any time, such snapshots are called Mementos.

The joint usage of Events and Mementos ensures that all historical data are kept and labeled correctly to be easily searched later.



This mechanism can be applied to the shipment lifecycle to record data at the key steps as shown below:



5.3. Impacts and updates on the data model

The new objects and their data properties are the following:

BookingOptionRequest

requestType: string (Quote, Booking, etc.)
transportMovement: TransportSegment
parties (n): OtherParty
unitsPreference (n): string
routingPreferences: Routing
schedulePreferences: Schedule
ratingsPreferences: Ratings
shipmentSecurityStatus: string (SCR / NSC)
shipmentDetails: Shipment
bookingOptions (n): BookingOption
allotment: string
expectedCommodity: string
requestedHandling: string

Routing

maxConnections: integer
aircraftPossibilityCode: string
rfsInd: boolean
onlineInd: boolean

Schedule

earliestAcceptanceTime: dateTime
latestAcceptanceTime: dateTime
timeOfAvailability: dateTime
totalTransitTime: dateTime

BookingOption

bookingStatus: string (list)
waybillNumber: Waybill
consignee : Company
shipper : Company
carrier *: Company
notifyParty (n): Company
freightForwarder *: Company
transportMovement: TransportSegment
carrierProductInfo (n): CarrierProduct
price: Price
routing: Routing
schedule: Schedule
units (n): string
requestMatchInd: boolean
shipmentSecurityStatus: string (SCR / NSC)
requestRef: Request
offerValidFrom: dateTime
offerValidTo: dateTime
event (n): Event

CarrierProduct

productCode: string
productDescription: string

Price

grandTotal: Value
ratings (n): Ratings
carrierChargeCode: string
bookingOption: BookingOption

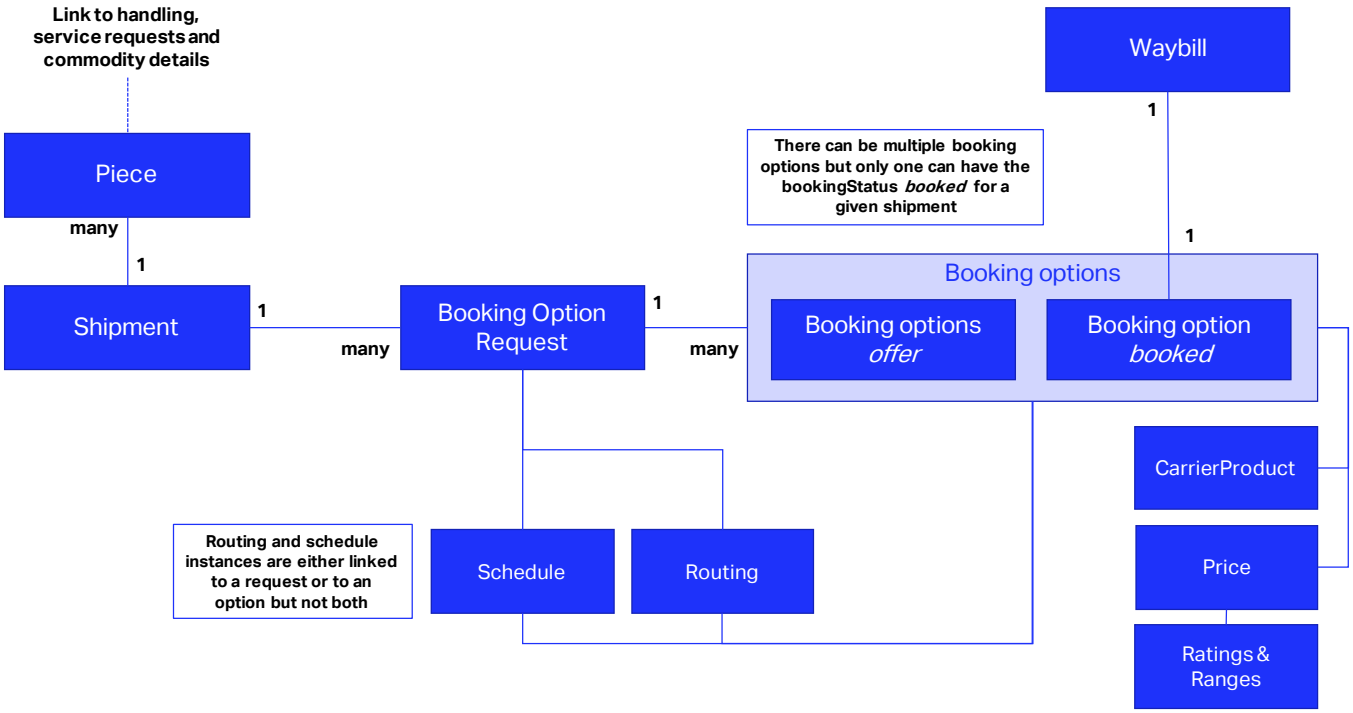
Ratings

priceSpecification: e.g. Street/Group/Spot etc
priceSpecificationRef: string
chargeType: string e.g. Freight / Surcharges
chargePaymentType: string e.g. P / C
chargeCode: enum e.g. MY / SC
chargeDescription: enum e.g. Airfreight / Fuel
subTotal: Value
rcp: string
ranges (n): Ranges

Ranges

rateClassCode: string e.g. Q
ratingType: enum uldRatingType
unitBasis: string e.g. Chargeable Weight
scr: SpecificCommodityCode/ Commodity
minimumQuantity: int
maximumQuantity: int
amount: double

The impacts on the conceptual data model and the way these objects are supposed to interact with each other are quite straightforward and explained in the figure below.



6. Interactive Cargo

6.1. Requirements

The Interactive Cargo requirements are still a work in progress however the dedicated taskforce has drafted a Recommended Practice that expresses requirements as to what kind of data should be recorded. The recommended practice follows the guiding principles of ONE Record, meaning that the integration of the requirements are quite straightforward and in line with the existing data model.

The recommended practice highlights:

IoT Devices:

- They are "tangible objects that provide the technological interface to interact with or obtain information about physical and other digital entities in an Internet-of-Things (IoT) ecosystem. The IoT device extends physical entities and allows them to be part of the digital world."
- IoT devices must contain some information to identify them: manufacturer, model, name, description and serial number.
- IoT devices may include sensors that record measurements

Sensor:

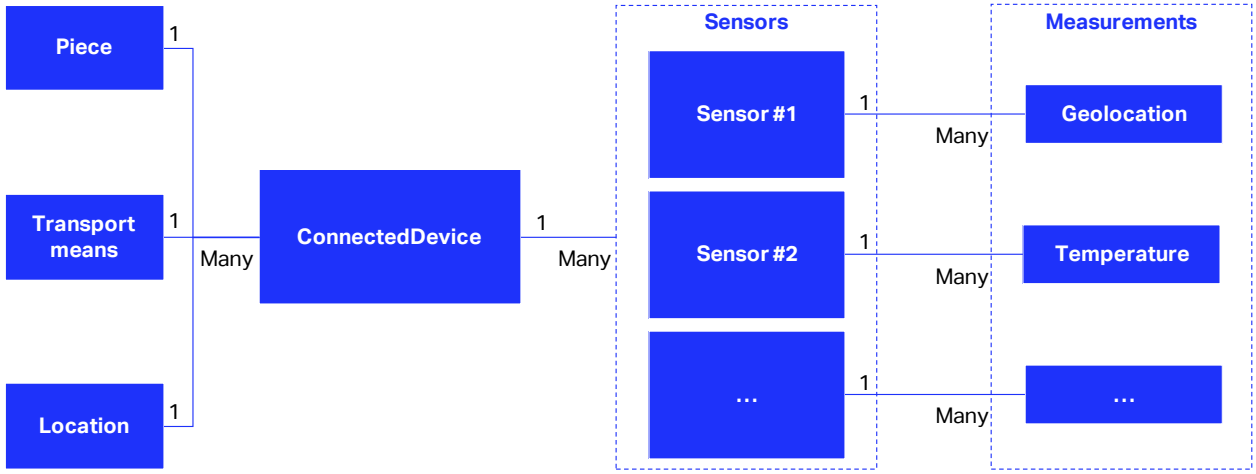
- They refer to "a device that senses and reports physical or chemical properties from the physical environment and transforms them into digital data that can be transmitted over a network."
- Sensors contain information to identify them: name, description, serial number, type
- The type gives information on the type of measurements (property) recorded by the sensor, the RP highlights multiple types of sensors e.g. geolocation, thermometer or humidity.
- Most observed properties have a datatype *double* and a unit of measurement. Only the geolocation differs as the geolocation contains a triplet of values latitude, longitude, altitude.

6.2. Chosen approach in the data model

To meet the requirements of the Interactive Cargo RP there **IotDevice**, **Sensor**, and **Measurements** objects that have been created.

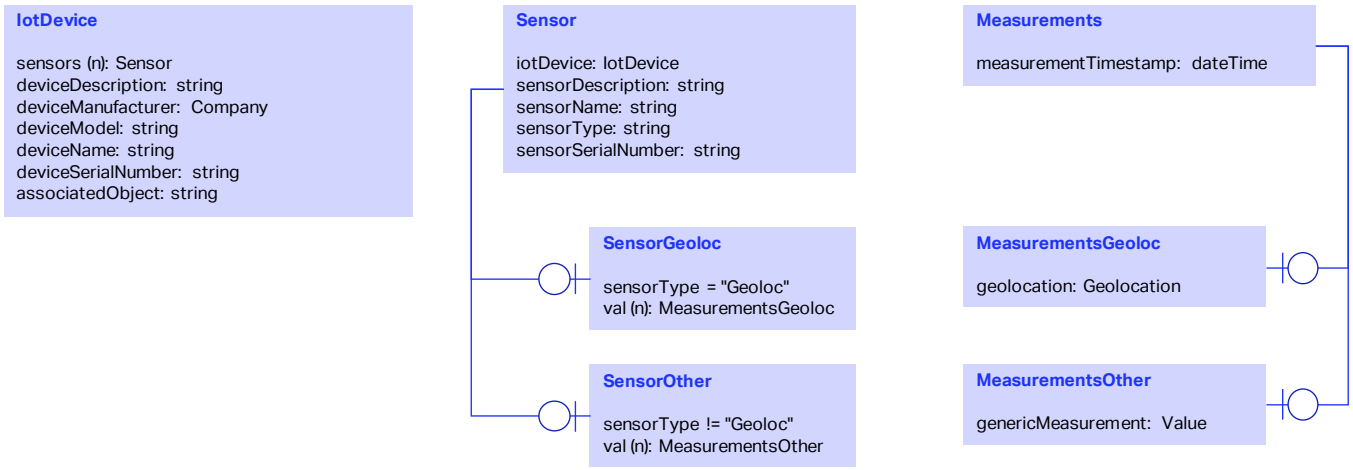
In order to respect the Digital Twin principle and align on the real world, multiple **IotDevice** objects can be linked to any Logistic Object that refers to known physical entities. Such LO can be a Piece, a ULD, a specific location, etc.

Then an **IotDevice** can be linked to multiple **Sensor** objects that record a single type **Measurements**.



6.3. Impacts and updates on the data model

To take into account the specificity of the Geolocation sensor type, subtypes of **Sensor** and **Measurements** have been added to ease the usage of the data model.



7. Dangerous Goods

7.1. Requirements

The requirements for Dangerous Goods are strongly based on the Cargo-XML message xSDG that contains all required information for the transport of dangerous goods. The details of the information can be found in the Cargo-XML toolkit and thus will not be fully transcribed in this document.

7.2. Chosen approach in the data model

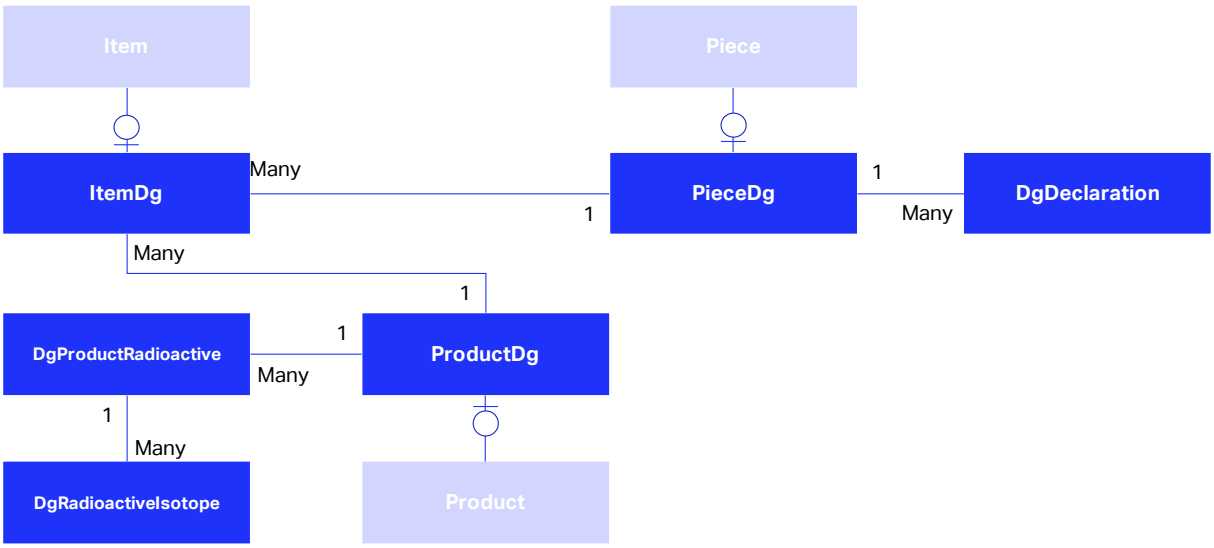
The different data required in the xSDG message are split among objects Piece, Product, Item and some dedicated objects: **DgProductRadioactive**, **DgRadioactiveIsotope** and **DgDeclaration**. A focus is made on making sure that all legal data required are within ONE Record data model.

As Dangerous Goods cargo require specific data, **ProductDg**, **ItemDg** and **PieceDg** objects are added to simplify the data model, they are subtypes of Product, Item and Piece objects.

In details information related to the packaging concept of Dangerous Goods is added on the **PieceDg** object to fully integrate these requirements.

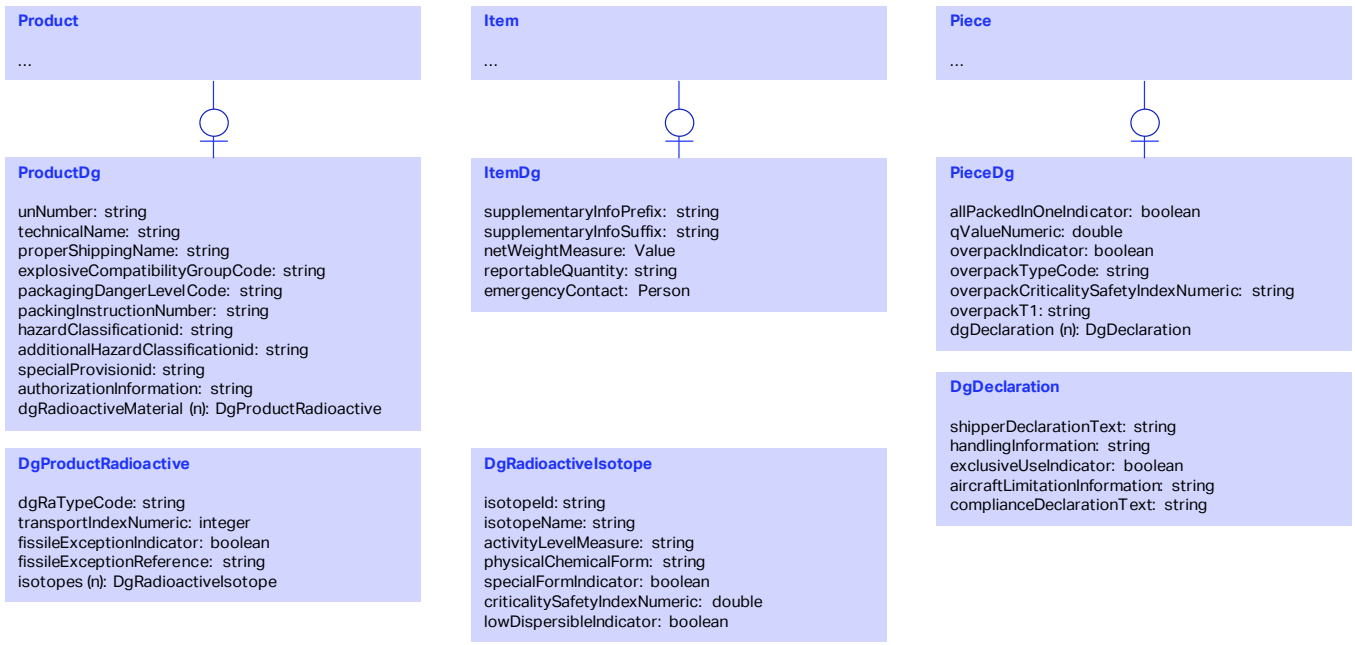
DgProductRadioactive and **DgRadioactiveIsotope** objects contain specific data related to radioactive products and are linked to **ProductDg** object.

DgDeclaration object is used to contain data related to the existing Dangerous Goods Declaration, it is linked to one or many **PieceDg** objects.



7.3. Impacts and updates on the data model

All Dangerous Goods requirements result in the creation of new subtypes or objects, they are described in details below.


Product
...
ProductDg
unNumber: string
technicalName: string
properShippingName: string
explosiveCompatibilityGroupCode: string
packagingDangerLevelCode: string
packingInstructionNumber: string
hazardClassificationid: string
additionalHazardClassificationid: string
specialProvisionid: string
authorizationInformation: string
dgRadioactiveMaterial (n): DgProductRadioactive
DgProductRadioactive
dgRaTypeCode: string
transportIndexNumeric: integer
fissileExceptionIndicator: boolean
fissileExceptionReference: string
isotopes (n): DgRadioactiveIsotope
Item
...
ItemDg
supplementaryInfoPrefix: string
supplementaryInfoSuffix: string
netWeightMeasure: Value
reportableQuantity: string
emergencyContact: Person
DgRadioactiveIsotope
isotopeId: string
isotopeName: string
activityLevelMeasure: string
physicalChemicalForm: string
specialFormIndicator: boolean
criticalitySafetyIndexNumeric: double
lowDispersibleIndicator: boolean
Piece
...
PieceDg
allPackedInOneIndicator: boolean
qValueNumeric: double
overpackIndicator: boolean
overpackTypeCode: string
overpackCriticalitySafetyIndexNumeric: string
overpackT1: string
dgDeclaration (n): DgDeclaration
DgDeclaration
shipperDeclarationText: string
handlingInformation: string
exclusiveUseIndicator: boolean
aircraftLimitationInformation: string
complianceDeclarationText: string

8. Pharmaceutical products

8.1. Requirements

The requirements for pharmaceutical shipments may differ depending on the parties involved. We have highlighted two cases.

From Shipper to forwarder:

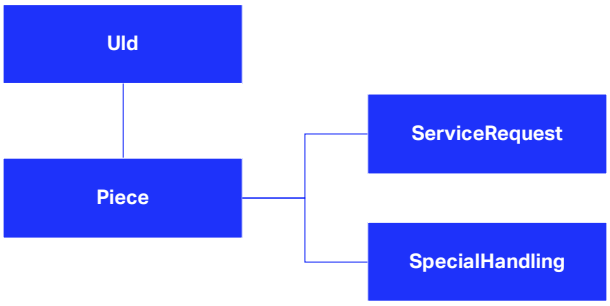
- Product Temperature Range: the shipper express the temperature range the shipment need to handled. The requirement is expressed in free format.
- Packaging Technology: passive or active technology
- Packaging Type: packaging type as per chapter 6.3.7 of the TCR
- Unit Loading Device: information related to the ULD (exemple: uldTypeCode, serialNumber, ownerCode, ataDesignator)

From forwarder to carrier:

- Product Temperature Range: Special handling code (COL, CRT, ERT, FRO)
- Packaging Technology: Special handling code (ACT, PIP)
- Packaging Type: as per chapter 6.3.7
- Unit Loading Device: see ULD data elements from ONE Record data model

8.2. Chosen approach in the data model

The current data model covers the pharmaceutical shipments requirements using the **ULD**, **Piece**, **ServiceRequest** and **SpecialHandling** objects.



1. The ULD object capture all the information related to the ULD used by the shipper/forwarder
2. The information is captured at Piece level. The Piece object enables to capture all the required information, including goods description, product information, ULD information, handling information, packaging type as per chapter 6.3.7 of the TCR. If accompany certificate are required, they can be digitalized (if acceptable) in PDF format for example and the link to the PDF document can be inserted using the externalReference data property.

3. The SpecialRequest object is used to capture the shipper requirements. Either the special handling code can be inserted (if known), or the requirement can be inserted in full text using the statementText attribute. Requirements may include:

    - Active or Passive packaging
    - Product temperature range

4. The SpecialHandling object aims to capture all the special handling codes. For pharma product, the use of the below codes have been identified:

    - PIL: Pharmaceuticals
    - ACT: Active Temperature Controlled System
    - PIP: Passive Insulated Packaging
    - COL: between +2°C to +8°C
    - CRT: between +15°C to +25°C
    - ERT: between +2°C to +25°C
    - FRO: below -18°C

8.3. Impacts and updates on the data model

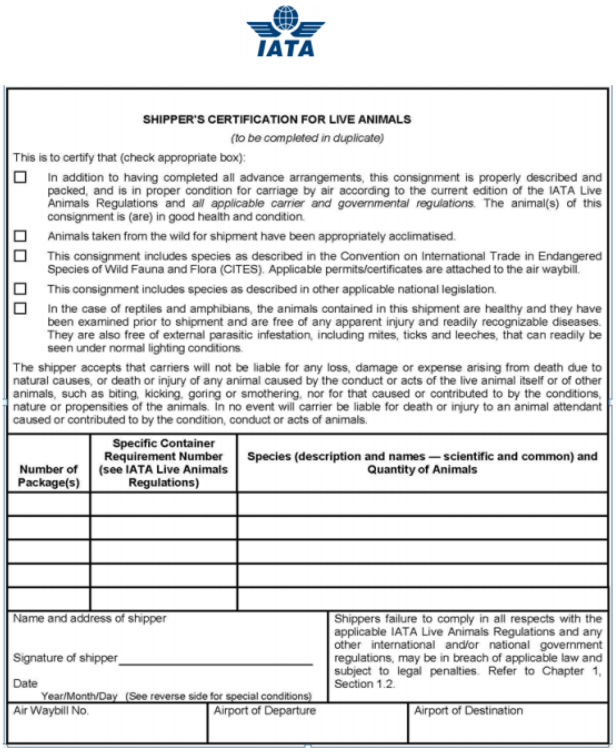
As a result there are no impacts on the data model for the integration of pharmaceutical shipments.

9. Live Animals

9.1. Requirements

9.1.1 Shipper's certification for Live Animals

The shipper's certification for Live Animals is an essential document required to transport live animals. The requirements are described in the Live Animals Regulation as published by IATA.



SHIPPER'S CERTIFICATION FOR LIVE ANIMALS

(to be completed in duplicate)

This is to certify that (check appropriate box):

- ☐ In addition to having completed all advance arrangements, this consignment is properly described and packed, and is in proper condition for carriage by air according to the current edition of the IATA Live Animals Regulations and *all applicable carrier and governmental regulations*. The animal(s) of this consignment is (are) in good health and condition.
- ☐ Animals taken from the wild for shipment have been appropriately acclimatised.
- ☐ This consignment includes species as described in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Applicable permits/certificates are attached to the air waybill.
- ☐ This consignment includes species as described in other applicable national legislation.
- ☐ In the case of reptiles and amphibians, the animals contained in this shipment are healthy and they have been examined prior to shipment and are free of any apparent injury and readily recognizable diseases. They are also free of external parasitic infestation, including mites, ticks and leeches, that can readily be seen under normal lighting conditions.

The shipper accepts that carriers will not be liable for any loss, damage or expense arising from death due to natural causes, or death or injury of any animal caused by the conduct or acts of the live animal itself or of other animals, such as biting, kicking, goring or smothering, nor for that caused or contributed to by the conditions, nature or propensities of the animals. In no event will carrier be liable for death or injury to an animal attendant caused or contributed to by the condition, conduct or acts of animals.

Number of Package(s)	Specific Container Requirement Number (see IATA Live Animals Regulations)	Species (description and names — scientific and common) and Quantity of Animals

Name and address of shipper Signature of shipper_____ Date Year/Month/Day (See reverse side for special conditions)	Shippers failure to comply in all respects with the applicable IATA Live Animals Regulations and any other international and/or national government regulations, may be in breach of applicable law and subject to legal penalties. Refer to Chapter 1, Section 1.2.

Air Waybill No.	Airport of Departure	Airport of Destination

9.1.2 CITES ePermit

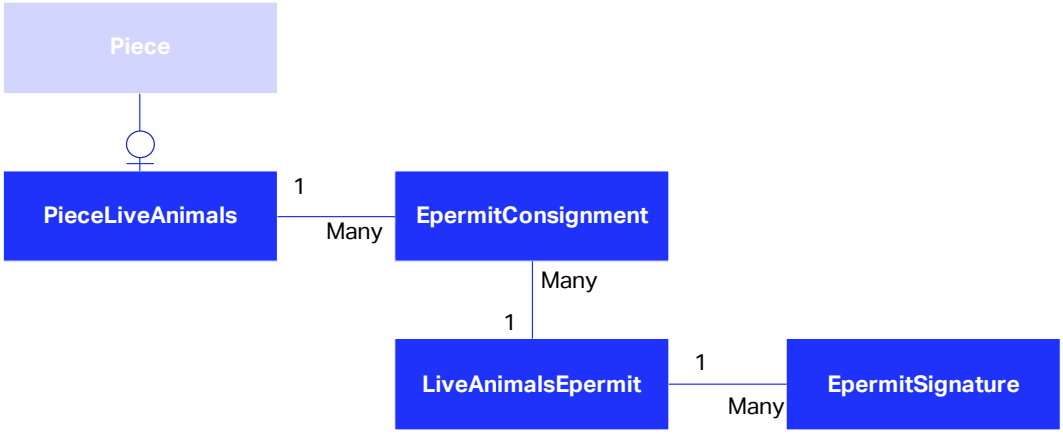
The CITES permit is a the key instrument to control the trade in the species it protects. An extensive work has been done in order to define the requirements for the CITES ePermit, including the ePermit Core Component Data Model V2.0.

The details of the ePermit and the associated data model are in the "CITES electronic permitting toolkit Version 2.0" document that can be found here.

9.2. Chosen approach in the data model

Requirements have shown that the data model requires new objects to capture the specific information for Live Animals. These objects are:

- **PieceLiveAnimals** object, subtype of the Piece class containing data specific for Live Animals
- **EPermitConsignement** object to reflect the pieces (Animals) contained in a eCITES permit
- **LiveAnimalsEpermit** object to reflect the eCITES permit document requirements and allow for its creation from the ONE Record data model
- **EpermitSignature** object to take into account Signature requirements in the eCITES permit, mainly identifying the signatory and recording the date of signature



The mapping with the CITES ePermit data model has been made to ensure all required information are available, it is available in details in the Excel version of the data model on GitHub in the document *IATA-1R-DataModel-LiveAnimalsIntegration Nov 2020*.

Object	Date property	Description	Box	ePermit class
Epermit	permitNumber	The original number is a unique number allocated to each document by the relevant Management Authority.	1	HeaderExchangedDocument-ID
Epermit	permitTypeCode	Code specifying the document name.	1	HeaderExchangedDocument-TypeCode
Epermit	permitTypeOther	Description if TypeCode is Other	1	HeaderExchangedDocument-Name
Epermit	permitCopyIndicator	Indicates if the permit is a copy (true) or an original (false)	1	HeaderExchangedDocument-CopyIndicator
Epermit	transactionPurposeText	Purpose of the transaction in free text	5a	HeaderExchangedDocument-Purpose
Epermit	transactionPurposeCode	Code indicating the purpose of the transaction	5a	HeaderExchangedDocument-PurposeCode
Epermit	specialConditions	**Special conditions**	5	HeaderExchangedDocument-Information
Epermit	permitValidUntil	Permit Valid until	2	HeaderExchangedDocument-ReferenceReferencedDocument-EffectiveSpecifiedPeriod
Epermit	permitValidfrom	Permit Valid from		HeaderExchangedDocument-ReferenceReferencedDocument-EffectiveSpecifiedPeriod
Epermit	issuingAuthoritySignature	Signature details of the Issuing Authority (box 6)	6	FirstSignatoryDocumentAuthentication
Epermit	applicantSignature	Signature details of the Applicant (box 4)	4	SecondSignatoryDocumentAuthentication
Epermit	issuerSignature	Signature details of the Permit issuer (box 13), includes date of issuance of the permit and associated location	13	ThirdSignatoryDocumentAuthentication
Epermit	examiningSignature	Signature details of the Examining authority (box 14)	14	FourthSignatoryDocumentAuthentication
Epermit	consignor	Consignor company details, including complete name and address (box 4, already in applicantSignaure ?)	4	SpecifiedSupplyChainConsignment-ConsignorTradeParty
Epermit	consignee	Consignee company details, including complete name and address (box 3)	3	SpecifiedSupplyChainConsignment-ConsigneeTradeParty
Epermit	transportContractTypeCode	Code specifying the transport document name	15	SpecifiedSupplyChainConsignment-TransportContractReferencedDocument-TypeCode
Epermit	transportContractId	Reference to the Air Waybill or other transport contract document	15	SpecifiedSupplyChainConsignment-TransportContractReferencedDocument-ID
Epermit	consignments	Reference to the pieces and properties linked to the Permit	7 to 12	IncludedSupplychainConsignment
EpermitConsignment	consignementItems	Reference to the pieces		
EpermitConsignment	examiningQuantity	Quantity measured by examining authority (box 14)	14	SpecifiedSupplyChainConsignment-ExaminationTransportEvent-UnitQuantity

EpermitConsignment	usedToDateQuotaQuantity	total number of specimens exported in the current calendar year and the current annuela quota for the species concerned (box 12b)	11a	IncludedSupplychainConsignmentItem-ApplicableCrossBorderRegulatoryProcedure-UsedToDateQuantity
EpermitSignature	signatureTypeCode	Code specifying a type of government action such asinspection, detention, fumigation, security.		...Signatory...TypeCode
EpermitSignature	securityStampId	Security stamp ID	5b	...Signatory...ID
EpermitSignature	signatureStatement	Signatory signature authentication text		...Signatory...Statement
EpermitSignature	signatoryId	Signatory company name		...Signatory...ProviderTradeParty
EpermitSignature	signatureLocation	Place where signature occurred or was registered		...Signatory...IssueLogisticsLocation
Piece	shippingMarks	(see SLI)		
PieceLive Animals	originTradeCountry	country of origin (box 12)	12	IncludedSupplychainConsignmentItem-PhysicalLogisticsShippingMarks-OriginTradeCountry
PieceLive Animals	exportTradeCountry	Country of last re-export (box 12a)	12a	IncludedSupplychainConsignmentItem-PhysicalLogisticsShippingMarks-ExportTradeCountry
PieceLive Animals	originReferencePermitDatetime	Issuing date for Origin reference permit or re-export reference Certificate (box 12)	12	IncludedSupplychainConsignmentItem-PhysicalLogisticsShippingMarks-AssociatedReferencedDocument-IssueDateTime
PieceLive Animals	originReferencePermitTypeCode	identifier of Origin reference permit or re-export reference Certificate (box 12/12a)	12/12a	IncludedSupplychainConsignmentItem-PhysicalLogisticsShippingMarks-AssociatedReferencedDocument-TypeCode
PieceLive Animals	originReferencePermitId	identifier of Origin reference permit or re-export reference Certificate (box 12/12a)	12/12a	IncludedSupplychainConsignmentItem-PhysicalLogisticsShippingMarks-AssociatedReferencedDocument-ID
PieceLive Animals	quantityAnimals	Quantity including units (box 11)	11	IncludedSupplychainConsignmentItem-PhysicalLogisticsShippingMarks-TransportLogisticsPackage-ItemQuantity
PieceLive Animals	goodsTypeCode	Appendix number of the convention (I, II or III) (box 10)	10	IncludedSupplychainConsignmentItem-IncludedSupplyChainTradeLineItem-TypeCode
PieceLive Animals	goodsTypeExtensionCode	Source of the appendix number (box 10)	10	IncludedSupplychainConsignmentItem-IncludedSupplyChainTradeLineItem-TypeExtensionCode
PieceLive Animals	specimenDescription	Description of specimens, including age and sex if LA (box 9)	9	IncludedSupplychainConsignmentItem-IncludedSupplyChainTradeLineItem-SpecifiedTradeProduct-Description
PieceLive Animals	specimenTypeCode	Description of specimens, CITES type code (box 9)	9	IncludedSupplychainConsignmentItem-IncludedSupplyChainTradeLineItem-SpecifiedTradeProduct-TypeCode
PieceLive Animals	speciesCommonName	Species common name (box 8)	8	IncludedSupplychainConsignmentItem-IncludedSupplyChainTradeLineItem-SpecifiedTradeProduct-CommonName
PieceLive Animals	speciesScientificName	Species scientific name (box 7)	7	IncludedSupplychainConsignmentItem-IncludedSupplyChainTradeLineItem-SpecifiedTradeProduct-ScientificName
PieceLive Animals	categoryCode	Operations code ID. Refers to the number of the registered captive-breeding or artifical propagation operation (box 12b)	12b	IncludedSupplychainConsignmentItem-ApplicableCrossBorderRegulatoryProcedure-CategoryCode
PieceLive Animals	acquisitionDatetime	Defined in Resolution Conf. 13.6 and is required for pre-Convention specimens (box 12b)	12b	IncludedSupplychainConsignmentItem-ApplicableCrossBorderRegulatoryProcedure-AcquisitionDateTime
PieceLive Animals	annualQuotaQuantity	total number of specimens exported in the current calendar year and the current annuela quota for the species concerned (box 11a)	11a	IncludedSupplychainConsignmentItem-ApplicableCrossBorderRegulatoryProcedure-AnnualQuotaQuantity

9.3. Impacts and updates on the data model

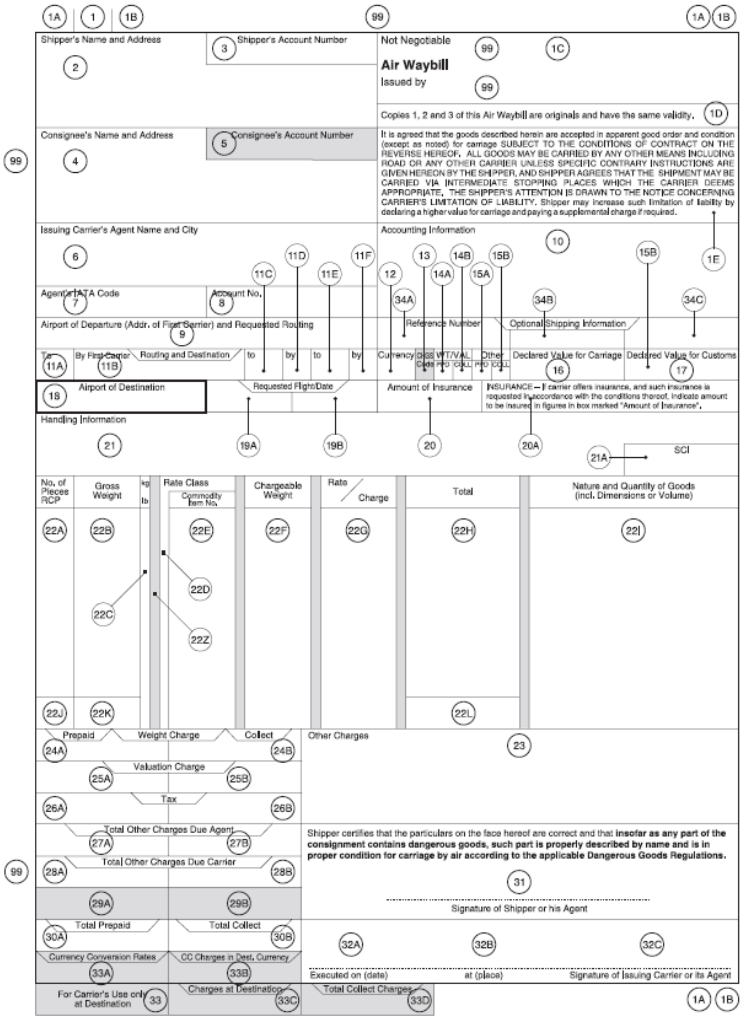
The objects added for Live Animals integration have been specified, accordingly with the existing models.


Piece
...
PieceLiveAnimals
specificContainerNb: integer
speciesScientificName: string
speciesCommonName: string
specimenDescription: string
specimenTypeCode: string
quantityAnimals: integer
exportTradeCountry: Country
originTradeCountry: Country
acquisitionDatetime: dateTime
annualQuotaQuantity: integer
categoryCode: string
goodsTypeCode: string
goodsTypeExtensionCode: integer
associatedEpermit: EPermitConsignment
originReferencePermitDatetime: dateTime
originReferencePermitId: string
originReferencePermitTypeCode: string
EpermitConsignment
consignmentItems: PieceLiveAnimals
examiningQuantity: Value
usedToDateQuantity: integer
LiveAnimalsEpermit
permitNumber: string
permitTypeCode: string
permitTypeOther: boolean
permitValidfrom: dateTime
permitValidUntil: dateTime
permitCopyIndicator: boolean
transactionPurposeCode: string
transactionPurposeText: string
specialConditions: string
consignee: Company
signatures (n): EpermitSignature
consignments (n): EpermitConsignment
transportContractId: string
transportContractTypeCode: string
EpermitSignature
signatoryRole: string
signatoryCompany: Company
signatureDate: dateTime
signatureTypeCode: string
signatureStatement: string
securityStampId: string

10. Air Waybill

10.1. Requirements

The Air Waybill document's requirements are expressed in multiple forms: the Air Waybill paper document as described in the Cargo Services Conference Resolutions Manual (CSCRM) in Resolution 600a and various Cargo XML messages, especially the XFWB and XFZB.



ORIGINAL 3 (FOR SHIPPER)

10.2. Chosen approach in the data model

The analysis has shown that some information were missing in the data model, they were removed when the Waybill object was drastically reduced early 2020. We expect some potential changes in the approach and impacts on the data model in the future, based on feedbacks we may receive from pilots and first implementations of ONE Record.

A mapping has been done to highlight the missing information, in green in the tables below.

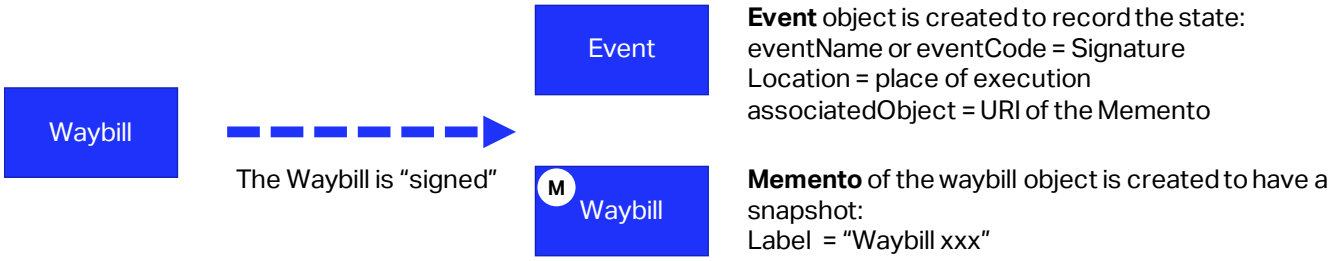
box	Air Waybill requirements	Description/Comment	Data Model mapping
1a	Airline Code Number		in Waybill/waybillPrefix
1b	Serial Number		in Waybill/waybillNumber
1	Airport of departure		in TransportMovement
1c	Issuing Carrier's name and address		in Company details of Carrier
1d	Reference to originals	not to be completed	
1e	Reference to conditions of contracts	up to carrier	
2	Shipper's name and address		in Company details of Shipper
3	Shipper's account number	up to carrier	
4	Consignee's name and address		in Company details of Consignee
5	Consignee's account number	up to carrier	
6	Issuing Carrier's Agent name and city	Issuing carrier's IATA Cargo Agent	in Company details of Carrier's agent
7	Agent's IATA code	IATA code of Cargo Agent. 7-digit IATA code or 7-digit IATA code followed by 3-digit CASS address code and check digit.	in Company details of Carrier's agent
8	Account number	up to carrier	
9	Airport of departure and requested routing		in TransportMovement, duplicate with 1
11a	To (by 1st carrier)	IATA 3-letter code of aiport of destination or first transfer point	in TransportMovement/arrivalLocation
11b	By 1st carrier	Name of 1st carrier, full name or IATA 2-character code	in Company details of Carrier
11c	To (by 2nd carrier)	IATA 3-letter code of aiport of destination or second transfer point	in TransportMovement/arrivalLocation
11d	By 2nd carrier	Name of 2nd carrier, full name or IATA 2-character code	in Company details of Carrier
11e	To (by 3rd carrier)	IATA 3-letter code of aiport of destination or third transfer point	in TransportMovement/arrivalLocation
11f	By 3rd carrier	Name of 3rd carrier, full name or IATA 2-character code	in Company details of Carrier
18	Airport of destination	Airport of destination of the last carrier	in Contractual level TransportMovement/arrivalLocation
19a/19b	Requested Flight/Date		in Contractual level TransportMovement/transportIdentifier
10	Accounting information	Only accounting information required by carriers	
12	Currency	ISO 3-letter currency code of country of departure	in Price/grandTotal as Unit
13	Charge codes - Carrier	Charges codes for carrier	in Price/carrierChargeCode
14a/14b	Weight/Valuation charges	Prepaid or Collect	in Shipment/weightValuationIndicator
15a/15b	Other charges at Origin	Prepaid or Collect	in Shipment/otherChargesIndicator
16	Declared Value for Carriage		in Piece/declaredValueForCarriage
17	Declared Value for Customs		in Piece/declaredValueForCustoms
20	Insurance		in Shipment/Insurance
21	Handling information		Covered by SpecialHandling, DGD, Live Animals certification, etc.
21a	Special Customs Information (SCI)		To be integrated in OCI discussion
22a	Number of pieces		derived from Piece
22a	Rate combination point (RCP)	IATA 3-letter code of the RCP	Deprecated
22b	Gross weight		in Piece/grossWeight
22c	kg/lb		in Piece/grossWeight
22z	Service Code	up to carrier	
22d	Rate class		in Ranges/rateClassCode
22e	Commodity Item number		in Product/commodityItemNumber
22f	Chargeable weight		in Piece/volumetricWeight or Shipment/volumetricWeight
22g	Rate/Charge	Applicable rate or charge	in Ranges/amount
22h	Total charge	Total charge or discount for each line entry	Calculated value
22i	Nature and quantity of goods		Derived from Piece, Product, Item, or special cargo objects
22j	Total number of pieces		Derived from Piece
22k	Total gross weight		Derived from Piece

22l	Total		Derived from Piece
23	Other charges		in Ratings
24a	Prepaid weight charge	Weight/Volume charge, should correspond to total in 22h or 22l	Derived from total charge
25a	Prepaid valuation charge	Assessment of a valuation charge is dependent on the value declared for carriage	in Ratings
26a	Prepaid Tax		in Ratings
27a	Due Agent	Used only if agreed locally	
28a	Due Carrier	Total of prepaid other charges du to carrier	
29a	Untitled box		
30a	Total prepaid	Total of all the prepaid charges above	
24b	Collect weight charge	Weight/Volume charge, should correspond to total in 22h or 22l	Derived/calculated value
25b	Collect valuation charge	Assessment of a valuation chargeis dependent on the value declared for carriage	in Ratings
26b	Collect Tax		in Ratings
27b	Collect charges Due Agent	Total disbursements due to agent	in Ratings
28b	Collect charges Due Carrier	Total disbursements due to carrier	in Ratings
29b	Untitled box		
30b	Total collect	Total of all collect charges above	
31	Shipper's certification box	Signature of the shipper (printed, signed or stamped)	?
32a	Carrier executed on	Date of execution of the air waybill	in Waybill Event - Waybill execution (+ Memento trigger)
32b	Carrier executed at	Name of the place of execution (airport or city) of the air waybill	in Waybill Event - Waybill execution (+ Memento trigger)
32c	Signature of Issuing carrier or its agent		
33	For carriers use only at destination		
33a	Collect charges in destination current - currency conversion code		in Waybill/destinationCurrencyCode
33a	Collect charges in destination current - currency conversion rate		in Waybill/destinationCurrencyRate
33b	Collect charges in destination current - amount	Amount from 30b, converted in destination currency	Derived from 30b and converted
33c	Charges at destination	Charges levied at destination accruing to the last carrier in destination currency	in Waybill/destinationCharges
33d	Total collect charges	Sum of 33b and 33c	Sum of other charges
34a	Optional shipping information - Reference number	Reference number as per shipper/agent/issuing carrier agreement	in Waybill/optionalShippingRefNb
34b	Optional shipping information - Untitled box	up to carrier	in Waybill/optionalShippingInfo
34c	Optional shipping information - Untitled box	up to carrier	

The overall chosen approach for the Air Waybill is to attach each data property to the proper logistic object. We allow for a **Waybill** object but it contains very few data property to avoid redundancy in the data model.

The Air Waybill document can be re-created at any moment as all required information are within the data model and can be retrieved using the linked data (see the conceptual data model in the Design Principles documentation).

To "record" the signature of the Waybill, we use the Memento protocol as specified in the ONE Record API & Security specifications. Joint with the creation of a dedicated **Event** linked to the **Waybill**, it allows to ensure that the data used for the Waybill signature is properly recorded and can be retrieved at any time.



10.3. Impacts and updates on the data model

At this stage the analysis leads to small impacts on the data model, on the **Waybill** and Price **objects**.

Waybill

destinationCurrencyCode
destinationCurrencyRate
destinationCharges
optionalShippingRefNb
optionalShippingInfo

Price

grandtotal: VALUE
carrierChargeCode