



# THE WCO DATA MODEL

***CROSS-BORDER TRANSACTIONS  
ON THE FAST TRACK***

## **WCO Data Model: Business Process and Information Modelling**

**World Customs Organization**



## WCO Data Model Overview

### WCO Data Model

[XML Schemas / messages](#)  
[Other readers, Guidelines etc](#)

[Message Implementation Guidelines](#)

[International CodeLists](#)

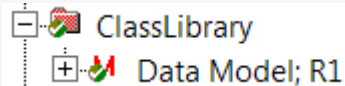
[Harmonised maximum data sets](#)

[Information models](#)

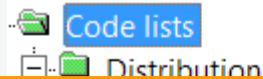
[Business Process Models](#)



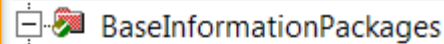
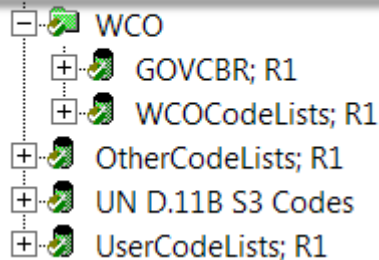
### WCO Data Model Components



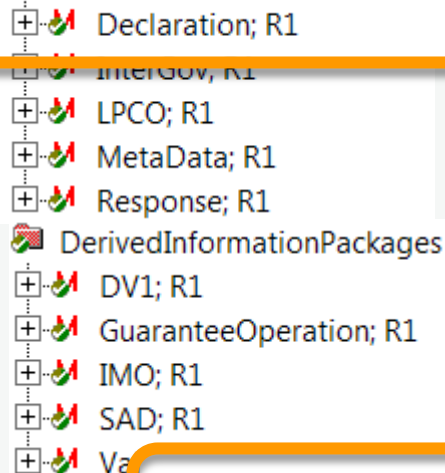
#### WCO Class Library



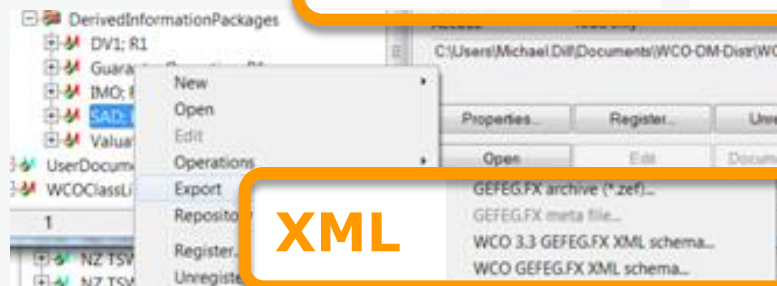
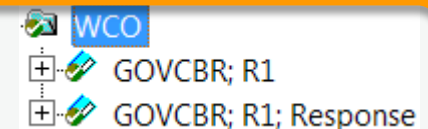
#### Code Lists



#### WCO Information Packages



#### EDIFACT



#### XML



# How the modelling work began and How it developed

## Agenda

- Business Process Modelling
- Information Modelling
- Relationship to International Standards



### Unified Modelling Language (UML®)

b  
u  
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o

➤ **Simple Business Process Model**

➤ **Use Case Diagram**

➤ **Use Case Description**

➤ **Activity Diagram**

➤ **Sequence Diagram**

➤ **Class Diagram**

**Revised Kyoto  
Convention**

**Added detailed  
steps**

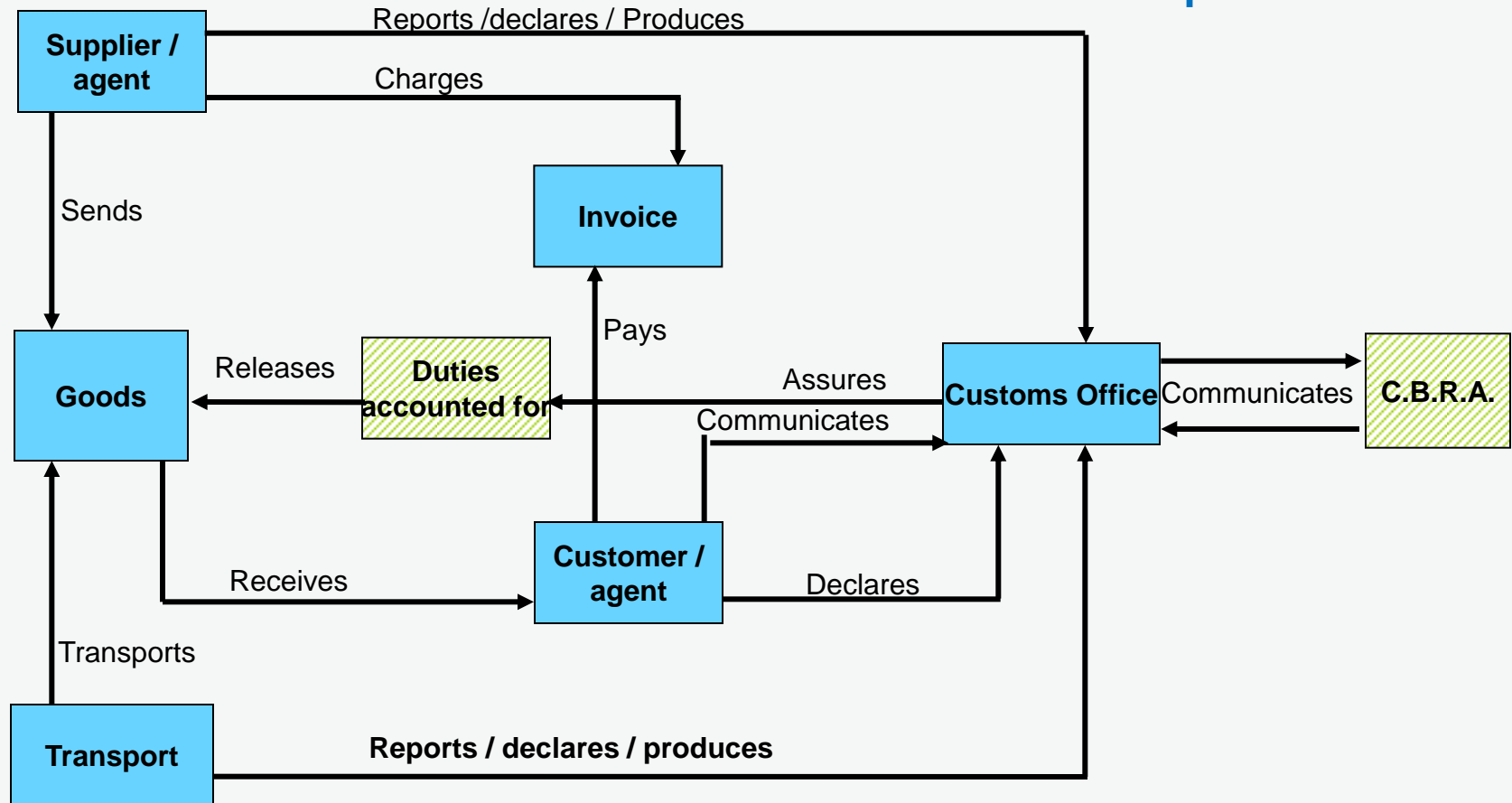
**above  
mentioned  
models**

**WCO Data  
sets.**





## Business Process Modelling Example



Simple Business Process Model (290104)



Supplier: Consignor, Invoicer, Payee, Seller

Agent: Customs Agent, Customs Broker, Declarant, Bank, Credit agency, PSI Company, Insurer

Transporter: Freight forwarder, Carrier

O.G.A.: Other Government Agencies such as Health, Immigration, Veterinary, Agricultural.

Customer: Buyer, Consignee, Invoicee, Orderer

The diagram including the grey boxes give an overview of the Customs Business Processes on a high level. The processes reflected in the grey coloured boxes are out of scope for further modelling based on Data Set Version 1.1, thus without the OGA requirements and Duties Accounted For. Duties Accounted For and communication with the OGAs is no part of the messaging between client and Customs.

This diagram only covers a single transaction and not combined transactions. A combined transaction needs to be broken down in single transactions.

Supplier / Agent: In commercial transaction the supplier is the seller of the goods and in most cases also the declarant of the customs declaration.

Goods: Goods is the consignment/shipment, which is declared with the customs declaration

Invoice: Invoice represents any document to be used as a basis for calculating the customs value. Supplier also provides Customer with other additional documents such as certificates of origin, import/export licenses etc., which can be / have to be used when making a customs declaration

Customer / Agent: In commercial transaction the customer is the buyer of the goods; in this model also represents the delivery address of the goods

Transport represents the actual occurrence of moving the goods from supplier/seller to consignee/buyer. Transport information contains data related to the means and mode of transport and possible incidents during the transportation.

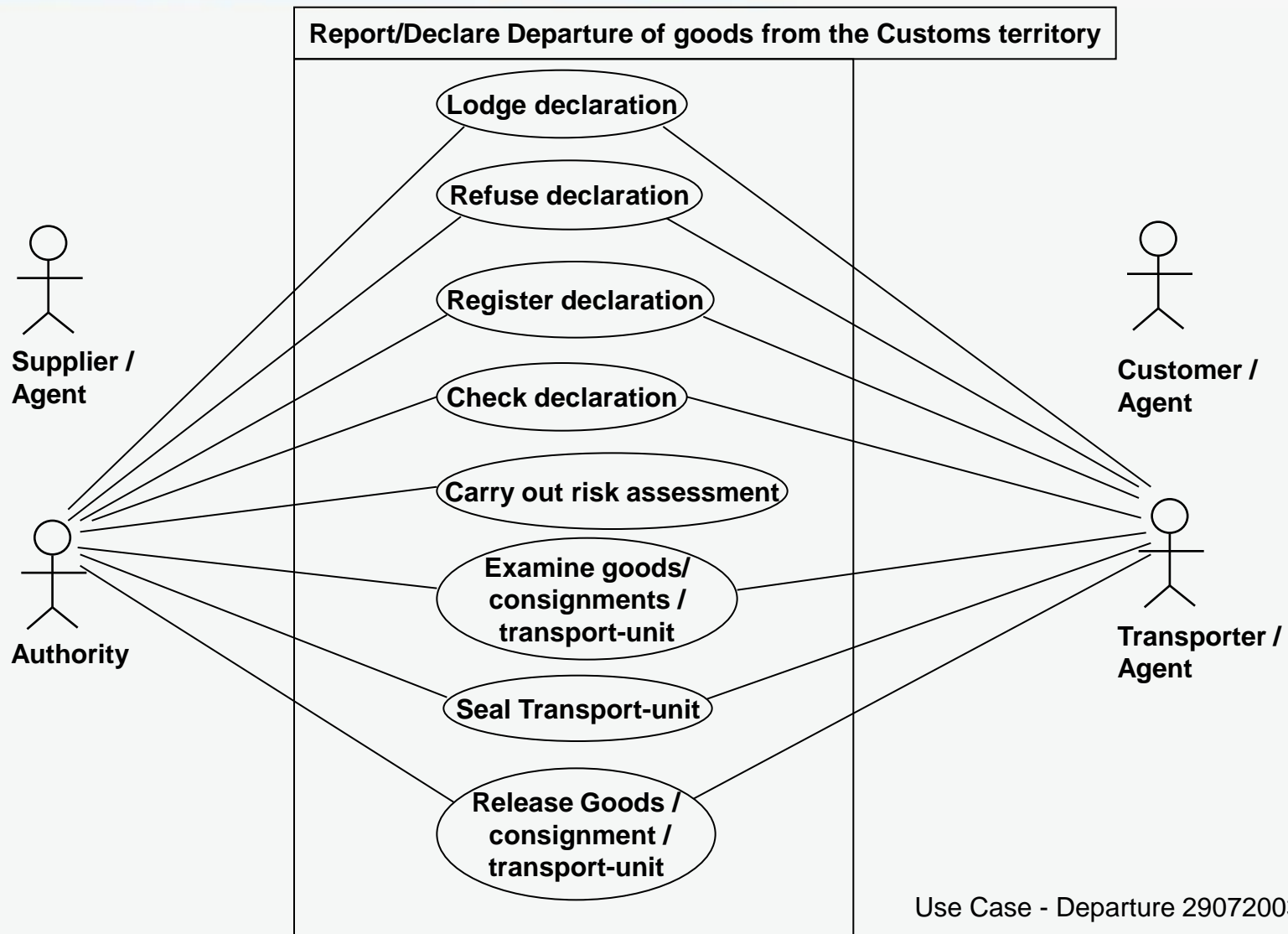
Customs office: This box represents the various Customs Offices as there are Customs Office Inland, Customs Office Outward, Customs Office of Transit and Customs Office Inward. The Customs officer or customs automated system receiving and verifying customs declarations, calculating and charging for possible duties and taxes, making customs decisions and interchanging data with other customs' and administrations. The Customs Offices process information and communicate with the relevant OGA's

OGA; see before.

## Simple Business Process “description”

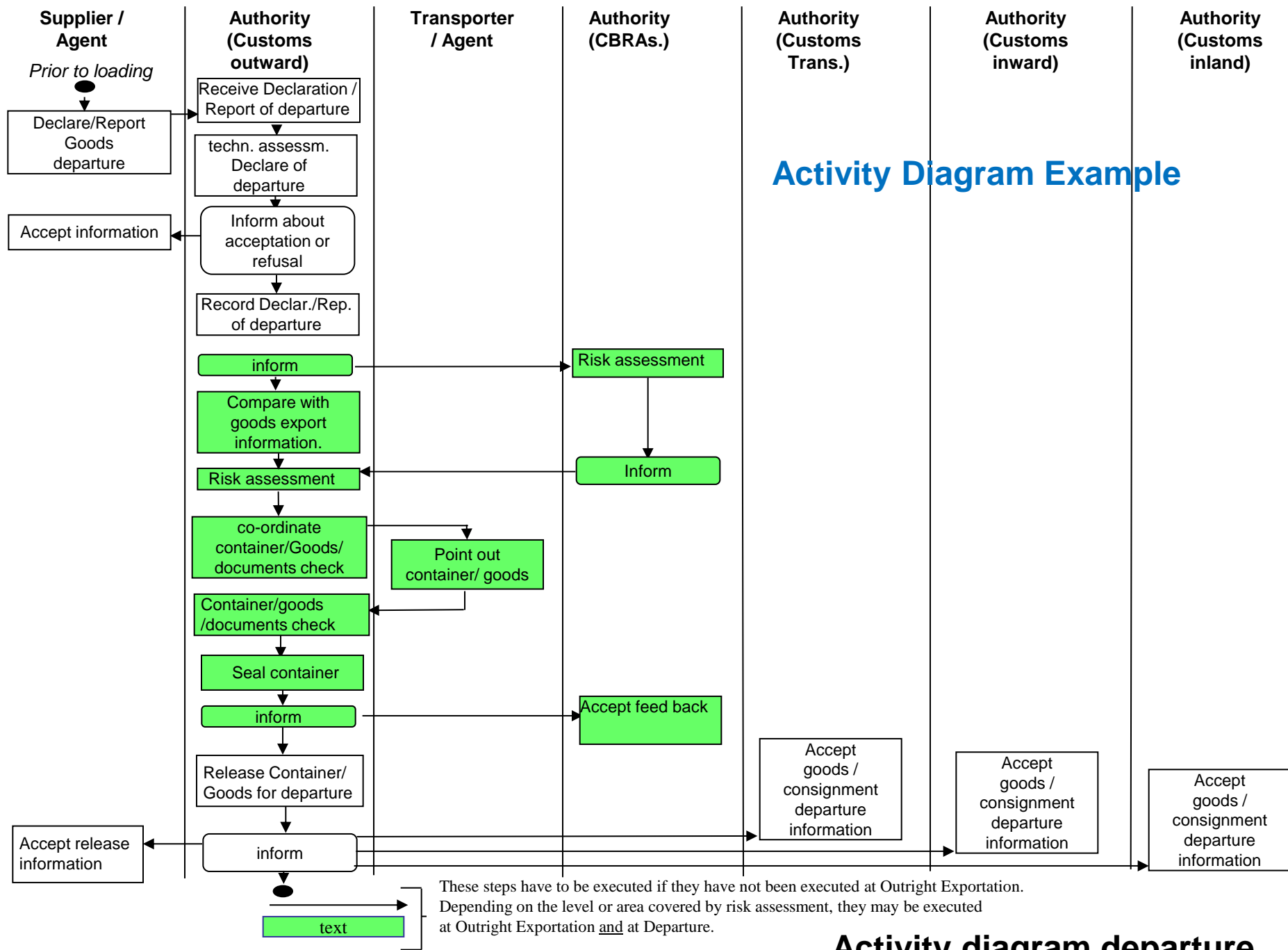


## Use Case Diagram Example



Use Case - Departure 29072003

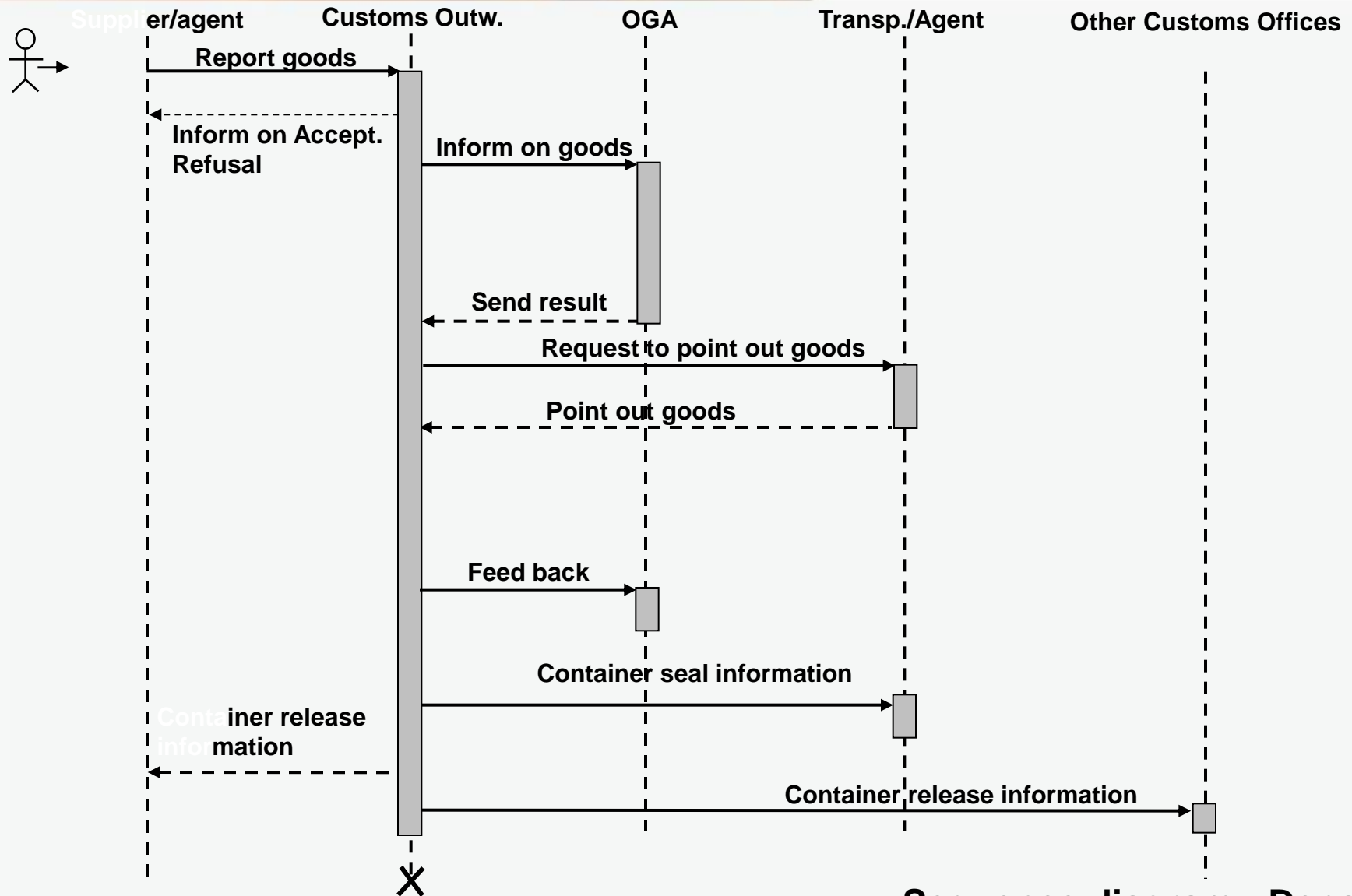




**Activity diagram departure**



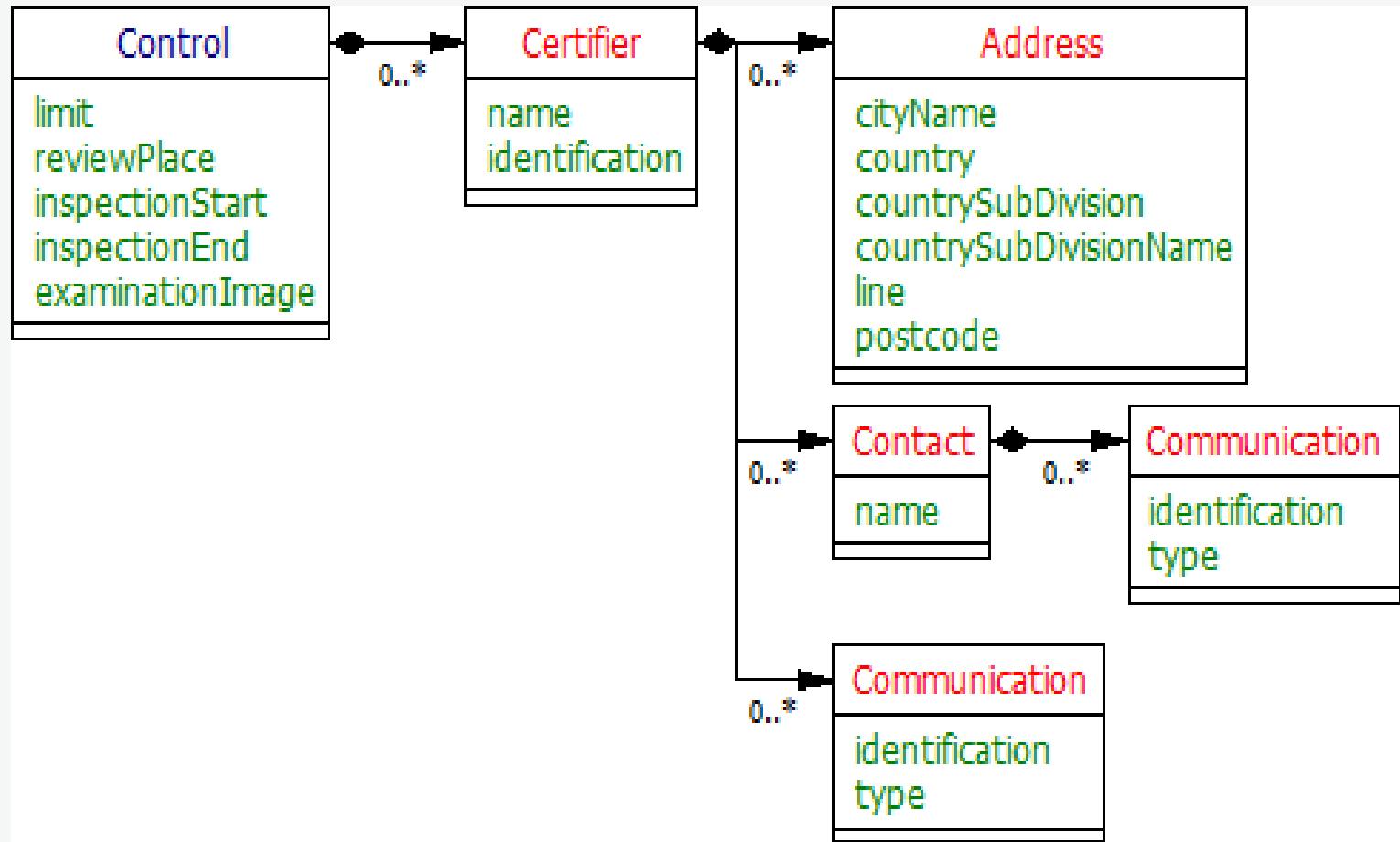
## Sequence Diagram Example



Sequence diagram - Departure



- Classification (grouping) of data elements into subsets where each subset has a clear name and definition that represents a "real-world" concept (object, class)
- Definition of the relationships between the classified concepts (objects, classes)





- Header Level (**Declaration/Entry**)
  - Goods Shipment (**Commercial Details - Header Level**)
    - Invoice
    - Trade Terms
  - Consignment (**Transportation details**)
- Item Level (**Entry Line Item**)
  - Govt Agency Goods Item (**Regulatory View of Goods**)
    - » Commodity (**Product Information**)
    - » Invoice Line (**Commercial Details- Line Level**)





- Header Level (**Manifest**)
  - Carrier
  - Transport Movement
  - Transport Means
- Item Level (**Manifest Line**)
  - Consignment (**Transport Contract**)
    - Consignment Item (**Transporter's View of Goods**)
      - » Commodity (**Product Information**)



- Header Level (**Consignment**)
  - Consignor and Consignee
  - Transport Movement
  - Transport Means
- Item Level (**Consignment Line**)
  - Consignment Item (**Certificate/Permit View of Goods**)
    - Country of Origin
    - Measurements
    - Commodity (**Product Information**)



- The act of exploring 'data-oriented' structures. It is a process for:
  - Formally defining data elements and relationships
  - Producing abstractions for representing and accessing data
    - Range from high-level 'conceptual' to physical data models
  - Establishing the formal meaning of related and structured data
  - Creating the blue-print for a modern information system !!
- Follows a life-cycle starting with:
  - Discovery – Designing – Documentation – Communication – implementation – Ongoing maintenance



- ISO Semantic Standards
  - III79 Data Element Naming and Defining
  - 9735 EDIFACT Syntax
- ISO & UNCEFACT
  - 7372 Trade Data Element Directory (TDED)
  - UN Layout Key and ISO 6422
  - 15000-5 Core Component Technical Specification
- UN/CEFACT Semantic Libraries
  - UN/EDIFACT and UN Code Lists
  - CCL (Core Component Library)
  - UNECE Recommendations for International Trade
- WCO Data Model
- Linking it all together



- An internationally accepted standard *repository for the semantic of trade data elements* used in international trade
- A method to describe information requirements from business perspective (*a non-technical description of trade information*).
- The definition is *syntax-neutral* and provides the *basis for migrating to paperless trade*.
- Defining the data content in terms of the UNTDED makes *different trade documents become directly comparable*, which helps identify duplication and reduce the number of documents to the strict minimum.





- First published 1973
- Flexible aligned data presentation which has become the de facto standard for the majority of international trade documents
- Foundation for International transport conventions e.g. Maritime B/L (ICS), Airwaybill (IATA), Road CMR (IRU), Rail CIM (UIC) etc.
- Foundation of Customs and other Regulatory Procedures e.g SAD, Phyto-Sanitary Certificates, Cert of Origins etc.
- Hundreds of document formats based on UNLK across trade, transport, finance, customs, insurance, inspection etc.
- TDDED (ISO 7372), box completion guidelines...



B2		Document. Type Name.Text			
	A	B	C	D	E
1	UID	ISO7372 TDED Name	Definition	TDED repr.	Locations, Bridges
2	1000	Document. Type Name.Text	Free text name of a document such as 352 for Proforma invoice, 380 for Commercial invoice.	an..35	UNLK: L 02, P 45-80 MAR: IMO/FAL 1-7
3	1001	Document. Type.Code	Code specifying the name of a document such as 352 for Proforma invoice, 380 for Commercial invoice.	an..3	UNLK: L 04, P 41-45 CIMP: (120): a1 SAD: (SAD 1(first to third subdivision))
4	1099	Transport Means. Stay.Identifier	Identifier of the stay of a means of transport in a port or airport	an..35	
5	4219	Transport Service. Priority.Code	Code specifying the priority of a transport service.	an..3	CIMP: (704):a1
6	5068	Invoice. Line Item. Amount	Total sum charged with respect to a single line item of an invoice.	n..18	UNLK: L 56, P 63-80
7	5070	Consignment. For Customs Total.Amount	Total amount for customs purposes of all goods in a consignment, whether or not they are subject to the same customs procedure, and have the same tariff/statistical heading, country information and duty regime	n..18	AWB: L 24, P 71-81 CIMP: (509):n..12, or the letters 'NCV'
8	6094	Consolidation. Package.Quantity	Count of the total number of packages in all of the consignments referred to as one consolidation.	n..16	
9	6292	Goods Item. Gross Weight.Measure	Weight (mass) of goods including packaging but excluding the carrier's equipment.	n..14	AWB: L 33-44, P 13-19 CIM: L 28-33, P 63-74 (CIM 26) CIMP: (600):n..7 CMR: L 28-42, P 63-71 (CMR 11) SAD: (SAD 35) UNLK: L 28-52, P 63-74
10					

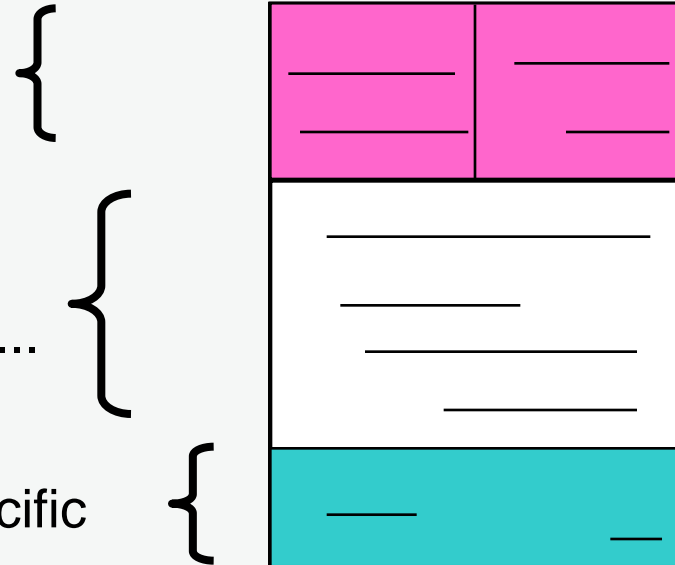


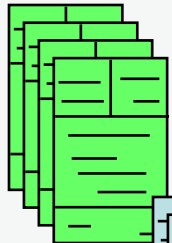
## UNLK – How it Works

# Cross-Sector Transaction Data

Sector Specific Detail e.g.  
order line items, goods items ...

## Document Function Specific

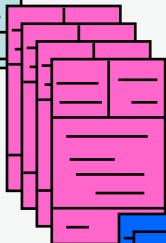




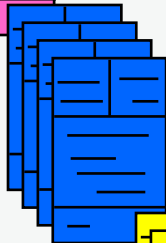
Trade Documents – Quotation, Order, Invoice etc.



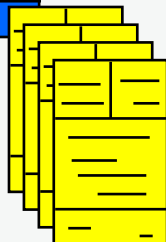
Materials Management Documents – Despatch Advice, Pick List, Packing List etc.



Transport Documents – Bill of Lading, Shipping Instructions etc.



Customs Documents – Export, Import, Transit Declarations, Cargo Reports etc.



Other Regulatory Documents – Cert of Origin, DGN etc.



- **Business Standards**
  - Process Models
  - Reference Data Models
  - Semantic Libraries (UNTDDED, Core Component Library (CCL) and UN/EDIFACT Directories)
- **Trade Facilitation Recommendations**
- **Technical Specifications**
  - EDIFACT Message Design Rules
  - XML Naming and Design Rules





**Biannual  
Publications  
since 1988**

- 1990
- 1991
- 1992
- 1993
- 1994
- 1995
- 1996
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- UN D. 12A S3
- UN D. 12A S3 Codes
- UN D. 12A S4
- UN D. 12A S4 Codes
- UN D. 12A S4i
- UN D. 12B S3
- UN D. 12B S3 Codes
- UN D. 12B S4
- UN D. 12B S4 Codes
- UN D. 12B S4i

FINPAY	2	Multiple interbank funds transfer message
FINSTA	1	Financial statement of an account message
GENRAL	3	General purpose message
GESMES	3	Generic statistical message
GOVCBR	3	Government Cross Border Regulatory message
HANMOV	7	Cargo/goods handling and movement message
ICASRP	2	Insurance claim assessment and reporting message
ICSOLI	2	Insurance claim solicitor's instruction message
IFCSUM	16	Forwarding and consolidation summary message
IFTCCA	4	Forwarding and transport shipment charge calculation message
IFTDGN	8	Dangerous goods notification message
IFTFCC	3	International transport freight costs and other charges message
IFTICL	1	Cargo insurance claims message
IFTMAN	11	Arrival notice message
IFTMBC	10	Booking confirmation message
IFTMBF	12	Firm booking message
IFTMBP	10	Provisional booking message
IFTMCA	3	Consignment advice message
IFTMCS	12	Instruction contract status message
IFTMIN	16	Instruction message
IFTRIN	4	Forwarding and transport rate information message
IFTSAI	10	Forwarding and transport schedule and availability information message
IFTSTA	16	International multimodal status report message
IFTSTQ	4	International multimodal status request message
IMPDEF	2	EDI implementation guide definition message
INFCON	1	Infrastructure condition message
INFENT	2	Enterprise accounting information message
INSDES	3	Instruction to despatch message
INSPRE	1	Insurance premium message
INSREQ	2	Inspection request message

**UNSMs**



# THE WCO DATA MODEL

## UN/EDIFACT

ADR	Address
AGR	Agreement identification
AJT	Adjustment details
ALC	Allowance or charge
ALI	Additional information
APP	Applicability
APR	Additional price information
ARD	Monetary amount function
ARR	Array information
ASI	Array structure identification
ATT	Attribute
AUT	Authentication result
BAS	Basis
BGM	Beginning of message
BI1	Structure identification
BUS	Business function
CAV	Characteristic value
CCD	Credit cover details
CCI	Characteristic/class id
CDI	Physical or logical state
CDS	Code set identification
CDV	Code value definition
CED	Computer environment details
CIN	Clinical information
CLA	Clause identification
CLI	Clinical intervention
CMP	Composite data element identification
CNI	Consignment information
CNT	Control total
COD	Component details
COM	Communication contact

**Segments**

9175	an..3	X	Data element usage type code
9213	an..3	X	Duty regime type code
9280	an..35		Validation result text
9282	an..35		Validation key identifier
9285	an..3	X	Validation criteria code
9302	an..35		Sealing party name
9303	an..3	X	Sealing party name code
9308	an..35		Transport unit seal identifier
9321	an..8		Application error code
9352	an..256		Government Procedure
9353	an..3	X	Government procedure code
9411	an..3	X	Government involvement code
9415	an..3	X	Government agency identification code
9416	an..256		Government action
9417	an..3	X	Government action code
9419	an..3		Service layer code
9421	an..3	X	Process stage code qualifier
9422	an..512		Value text
9424	an..512		Array cell data description
9426	an..35		Code value text
9428	an..35		Array cell structure identifier
9430	an..35		Footnote set identifier
9432	an..35		Footnote identifier

**Data Elements**

**Codes**

Code	Name
1	Clearance
2	Detention
3	Fumigation
4	Inspection
5	Security
6	Means of transport admittance
7	Cargo hold inspection
8	Container inspection
9	Cargo packaging inspection
10	Export certificate not required



# THE WCO DATA MODEL

## UNLK + UNECE Rec. Codes

Adobe Acrobat Professional - [UNSAAD\_SAMPLE.pdf]

File Edit View Document Tools Advanced W

122%

Create PDF Review & Comment

marks

UNeDocs

EXPORT CUSTOMS

1 Consignor / Exporter No.

3

5 Items

7 Reference number

8 Consignee No.

9 Person for financial settlement No.

10 Country first

11 Trading

12 Country of origin

13 Country of destination

14 Declarant / Representative No.

15 Country of despatch / export

16 Country of origin

17 Country of final destination

18 Identity and nationality of means of transport at departure

19 Ctr.

20 Delivery terms

21 Identity and nationality of active means of transport crossing the border

22 Currency and total amount invoiced

23

24

25 Mode of transport

26 Inland mode

27 Place of loading

28 Financial and banking data

29

30 Location of goods

31 Packages and numbers - Container No(s) - Numbers and kind

32 Article No.

33 Commodity code

34 Country origin code

35 Gross mass (kg)

Comments

Rec:16  
UN/Locode

ISO Country Code

Rec:19  
Mode of Transport

Rec: 17  
Payment Terms

Rec:9  
Currency Code

Commodity  
Code

Rec: 28  
Means of Transport

Rec: 21  
Package Codes

Rec:20 Units of  
Measurement



## Mapping Example

Mapping Example showing the relationship between WCO Data Model elements and UN/EDIFACT data.

**WCO Data Model Element:** Supply Chain\_Consignment. Consignor Assigned. Identifier

**UN/EDIFACT Data:**

- TD08: 1140
- UNLK: an..17 L 06, P 63-80
- CCL: Supply Chain\_Consignment. Consignor Assigned. Identifier
- WCO DM: ID 009
- EU SAD: Box 7

The mapping is defined in the CCL (Classification Code List) table, which is shown in the screenshot. The CCL table defines the relationship between the WCO Data Model element and the UN/EDIFACT data.

CCL type	DictionaryEntryName	ObjectClassTerm	ObjectClassTermQualifier(s)	PropertyTerm	PropertyTermQualifier	RepresentationTerm	BusinessTerm	Definition
BBIE	Supply Chain_Consignment. Consignor Assigned. Identifier	Consignment	Supply Chain	Consignor Assigned		Identifier		The unique identifier assigned by the consignor to this supply chain consignment.





# THE WCO DATA MODEL

*For more information*

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