

# UN/CEFACT 2021 Virtual Forum

Monday, 4 October 2021

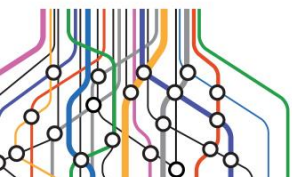
10:00 – 12:30 CET

Introduction Session on CCL and BRS  
for Business Standards Projects

Sue Probert (Chair)  
[suesiprobert@live.com](mailto:suesiprobert@live.com)

Ian Watt (Vice Chair International Supply Chain PDA)  
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# UN/CEFACT Key Outputs

- Business Standards
  - Process Models (**BRS**)
  - Reference Data Models (**RDMs**)
  - Semantic Libraries (**UNTDDED**, Core Component Library (**CCL**) and **UN/XML**)
- Trade Facilitation Recommendations
- Technical Specifications



# UN/CEFACT Open Development Process for Business Standards

Open Development Process  
ECE/TRADE/C/CEFACT  
/2016/17

Provides a description of the  
sequence how projects are carried  
out within UN/CEFACT

PDF 

PDF 

PDF 

<https://unece.org/trade/uncefact/policiesprocedures-and-termsreference>

**Stage 1:** Project Inception

**Stage 2:** Requirements Gathering

**Stage 3:** Draft Development

**Stage 4:** Public Review (Optional)

**Stage 5:** Project Exit

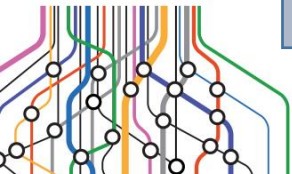
**Stage 6:** Publication

**Stage 7:** Maintenance (Optional)

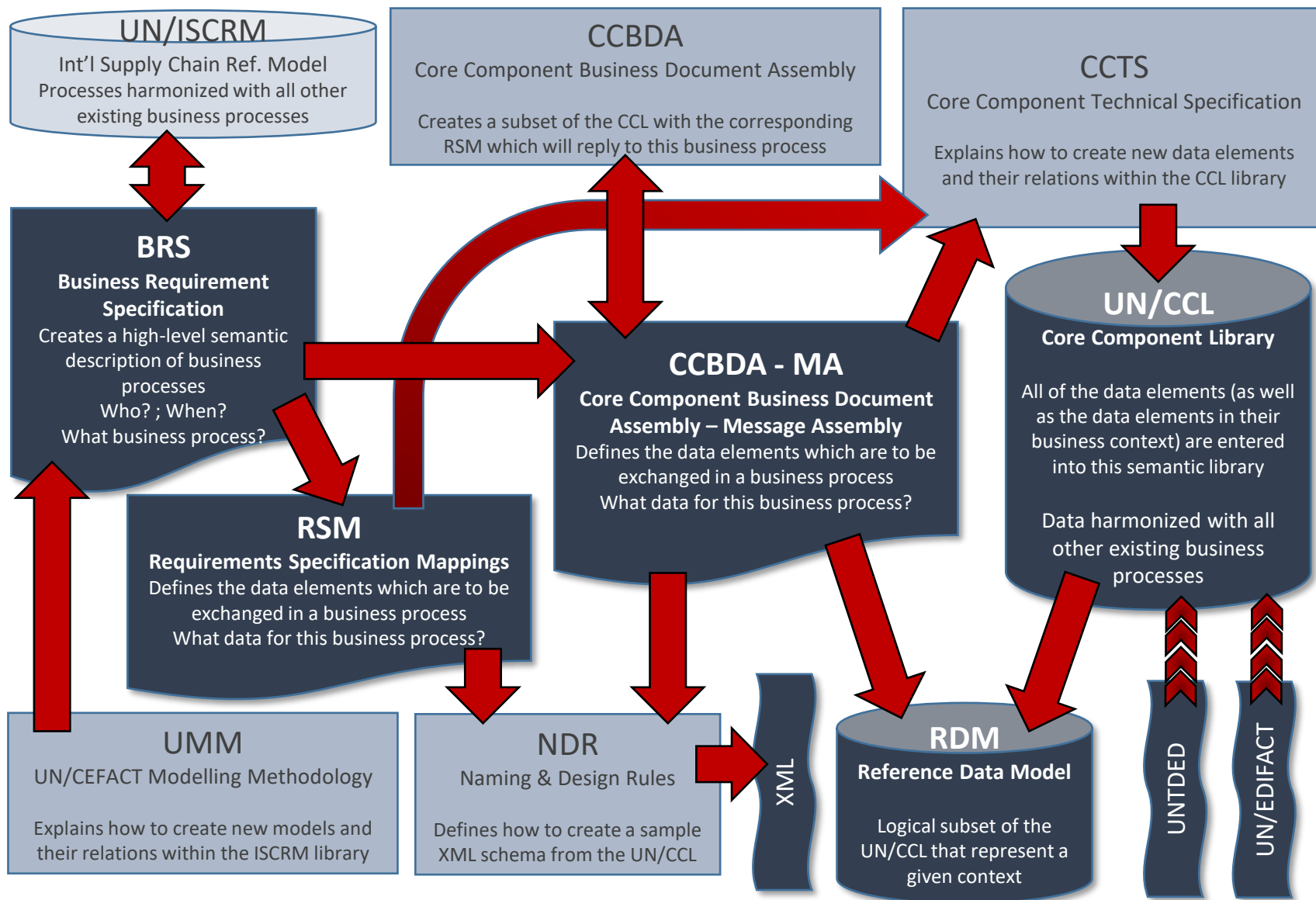


# UN/CEFACT Business Standards Deliverables

- **1:** Business Requirements Specification (BRS) including
- **2:** Business Information Entity Discovery
- **3:** CCL submission (optional)
- **4:** CCBDA subset of Reference Data Model
- **5:** Technical Artefacts production



# Standardizing Business Processes & Data

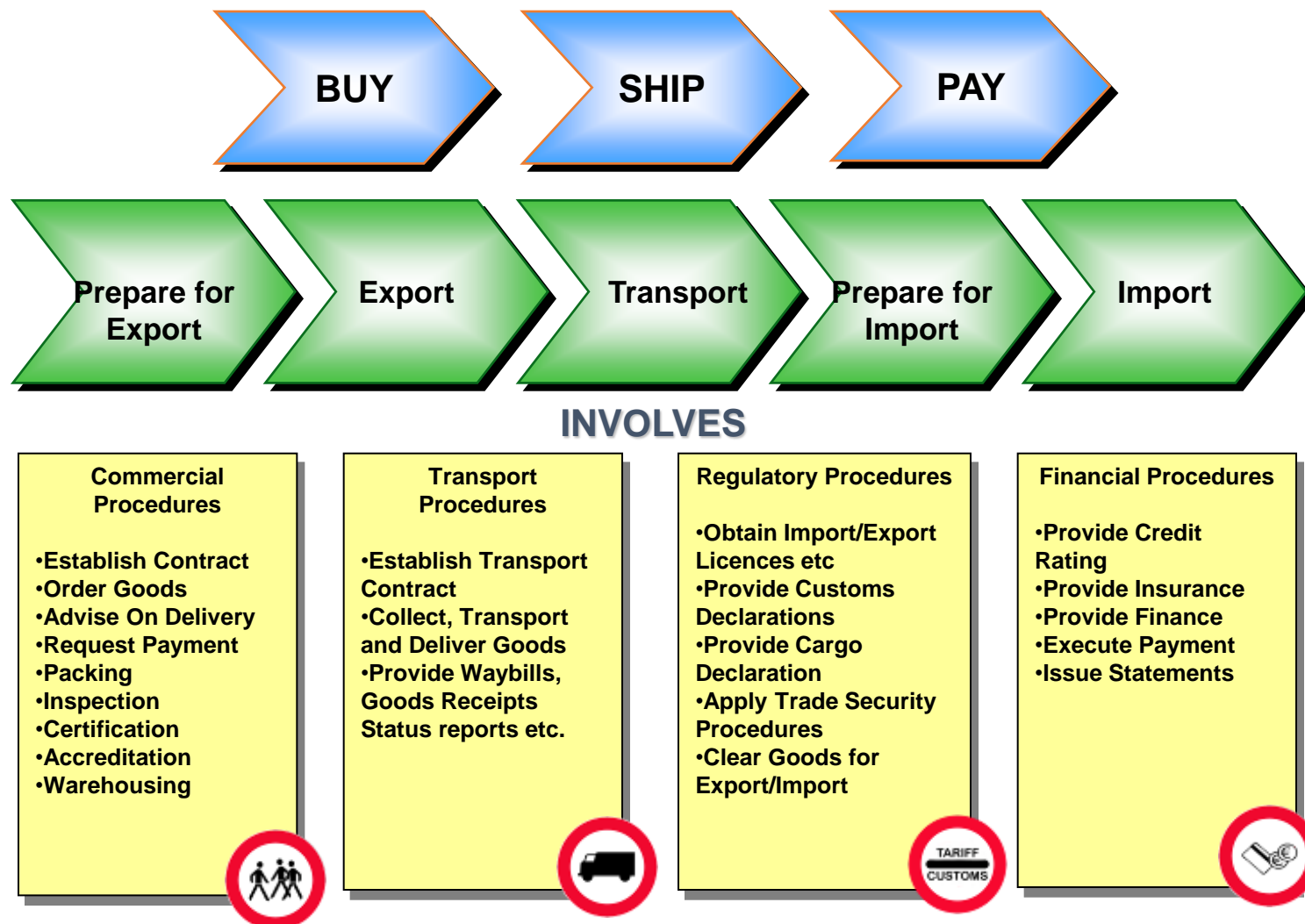




# UN/CEFACT Business Standards Deliverables

- 1:** Business Requirements Specification (BRS) including
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# UN/CEFACT International Supply Chain Process Model





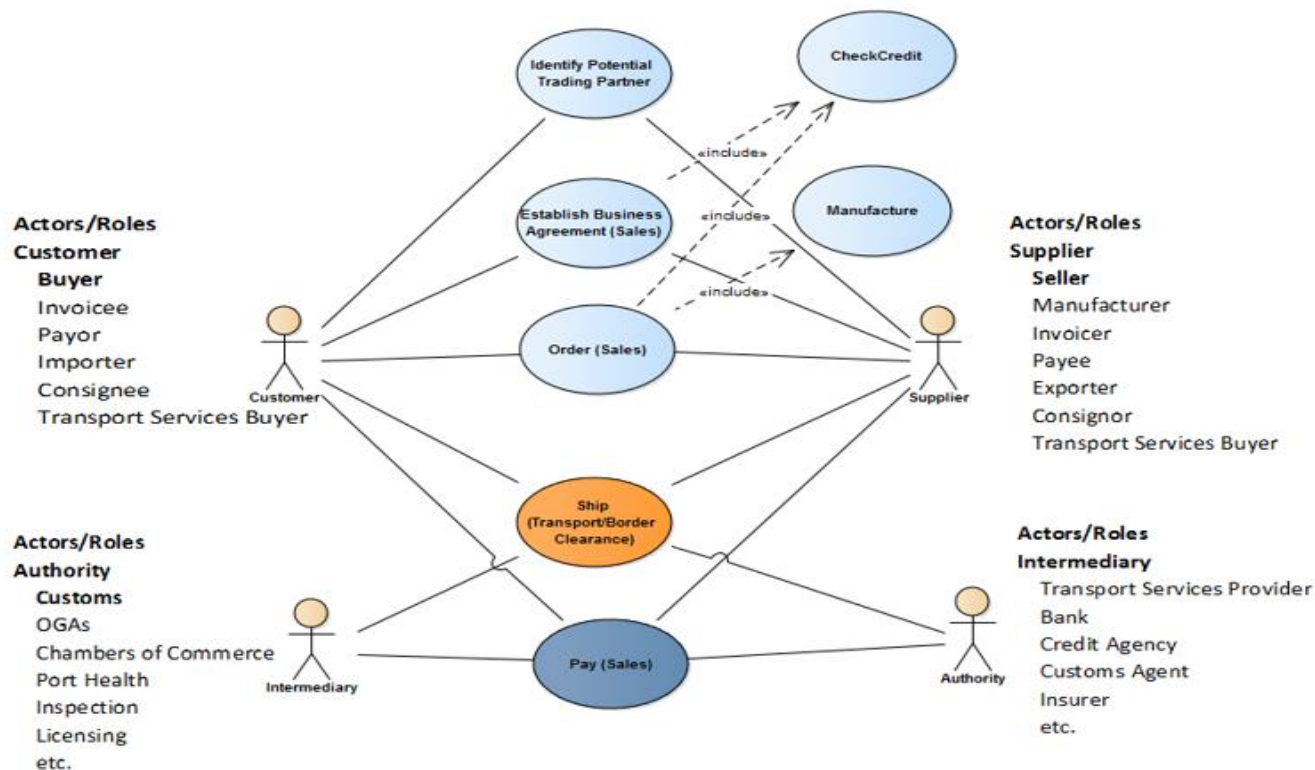
# Basis for Semantic Interoperability

## Agreed and Harmonised

- Party and Role Definitions
- Semantic Anchors
- Message Structures
- Contextualised Code Subsets
- Contextualised Business Rules



# The actors





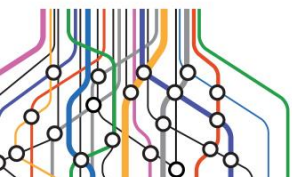
# Global Trade – Semantic Anchors

## Shipment (Trade Delivery)

- A shipment is an identifiable collection of one or more Trade Items (available to be) transported together from the Seller (Original Consignor/Shipper) to the Buyer (Final/Ultimate Consignee):
  - A Shipment can only be destined for one Buyer
  - A Shipment can be made up of some or all Trade Items from one or more Sales Orders
  - A Shipment can have only one Customs UCR
  - A shipment may form part or all of a Consignment or may be transported in different Consignments.

## Consignment

- A consignment is a separately identifiable collection of Consignment Items (available to be) transported from one Consignor to one Consignee via one or more modes of transport as specified in one single transport service contractual document:
  - A Consignment can only have one Transport Service Buyer
  - A Consignment can only have one Transport Service Provider
  - A Consignment can only have one Consignor
  - A Consignment can only have one Consignee
  - The Transport Service Buyer can be either the Consignor or the Consignee
  - A Consignment is made up of one or more Consignment Items
  - A Consignment can be made up of some or all Trade Items (aggregated into Consignment Items) from one or more Shipments



# **Template: Business Requirements Specification**



UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

UNITED NATIONS CENTRE FOR TRADE FACILITATION  
AND ELECTRONIC BUSINESS (UN/CEFACT)

I

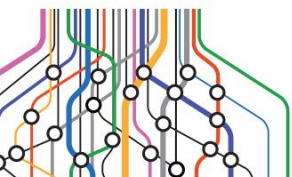
## **BUSINESS REQUIREMENTS SPECIFICATION (BRS)**

### **Documentation Template**

Approved: UN/CEFACT Bureau \_\_\_\_\_

**Version: 2.0**

**Release: 1.0**



# **Template: Business Requirements Specification**



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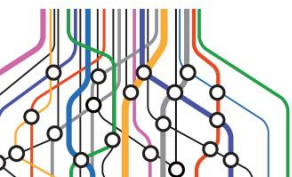
**Version: 2.0**

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## Overview of *BRS Development Process*

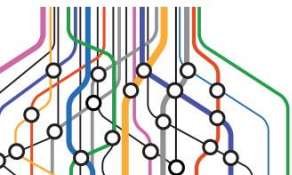
- A BRS **MUST** start with a clear specification of the scope of the project and where this project fits into a global context of business operations and **MAY** refer to a UMM model of the business domain.
- The Scope **MUST** be specified in terms of the Business Processes that are involved and the Business Entities about which information is to be exchanged by the participants who are involved directly in the Information Exchanges that support the related business process. It **MUST** also indicate stakeholders who have an interest in the processes, or may participate in related processes, and whenever appropriate, what is out of scope of this particular project. The process and information flows that constitute the business process, the business rules that govern the exchanges and the details of the information that is to be exchanged during these processes, **SHOULD** then be elaborated.
- The requirements **MUST** first be specified in business terms and then expressed in formalized terms. The business requirements **MUST** be presented as a numbered list so as to facilitate a check to be made that all requirements have been met in the eventual e-commerce solutions proposed. As the process of completing a BRS progresses, new requirements may be recognized and added to the list.

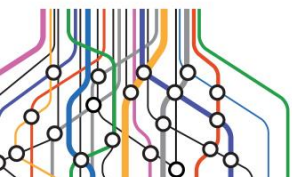




## Overview of BRS Development Process (Cont...)

- The resulting BRS will include text, templates (worksheets) and diagrams, and may refer to a UMM model of the domain. To help with future re-usability, interoperability and to provide a degree of standardization in the developing a BRS, an initial set of preferred terms is provided in Annex 2.
- To minimize the work in creating a new BRS, improve harmonisation and encourage reusability, where ever possible, any relevant existing BRSs artefacts or UMM models **SHOULD** be used as a basis for producing the new requirements.
- A high level BRS **MAY** be used to define the context and scope of a domain that is refined by a cascade of more specific BRSs.
- For example, the Business Requirements Specification Cross-Border Supply Chain (UNeDocs) ECE/TRADE/C/CEFACT/2007/8. This BRS sets the scope for the Common Supply Chain BRS which in turn sets the scope for more specific BRSs for: Ordering, invoicing, etc.





# Reference Documents

Knowledge and application of the following standards is crucial to the development of quality business requirements specifications. Other key references are shown in the appropriate parts of the BRS template document.

- UN/CEFACT Techniques and Methodology Group (TMG). CEFACT's Modelling Methodology (UMM): UMM Meta Model – Core Module. (Candidate for 2.0). 2009-01-30.
- UN/CEFACT Techniques and Methodology Group (TMG). CEFACT's Modelling Methodology (UMM): UMM Meta Model – Foundational Module. (Candidate for 2.0). 2009-01-30.



# Example Cross Industry Invoice BRS - 1

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# Example Cross Industry Invoice BRS - 2

## 4. Scope

This section describes the extent and limits of the business process within the supply chain being described in this document.

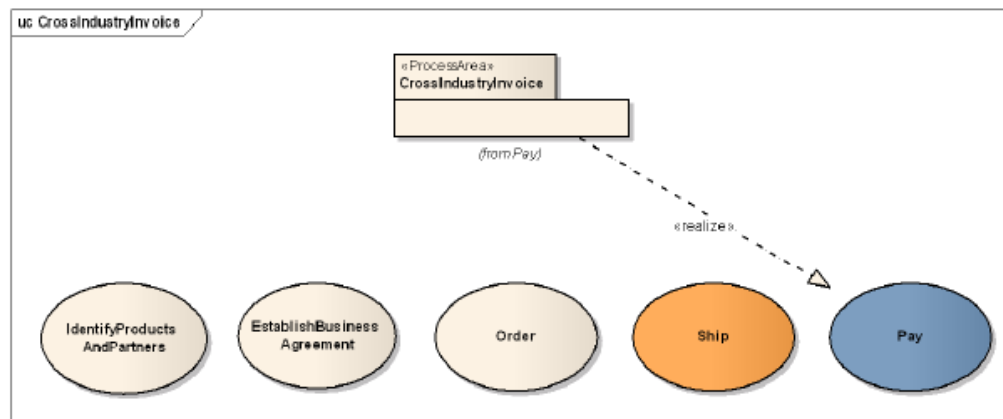


Figure 4-1 Positioning the Invoice in BUY-SHIP-PAY model

Categories	Description and Values
Business Process	Invoice process in the supply chain BUY-SHIP-PAY/Procurement&Sales/Invoice
Product Classification	All
Industry Classification	All
Geopolitical	Global
Official Constraint	None
Business Process Role	Customer and Supplier
Supporting Role	ShipTo, ShipFrom, Consignor, Consignee, Customer's Accountant, Seller, etc.
System Capabilities	No limitations

# Example Cross Industry Invoice BRS - 3

## 5.1. Business Process Elaboration

### 5.1.1. Traditional or supplier initiated invoice (Business Process)

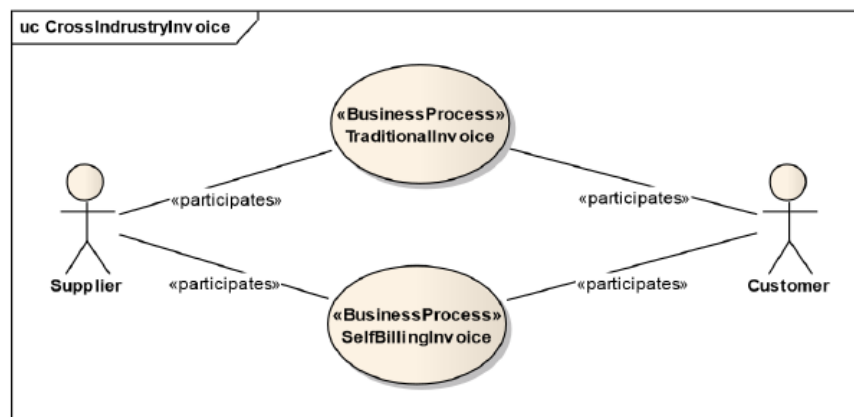


Figure 5-1 Business Process Use Case Diagram

Table 5-1 Business Process Use Case Description

Business process name	Traditional or supplier initiated invoice
Identifier	Cross industry traditional invoice
Actors	Customer, Supplier (Optional, additional roles – Invoicee, Invoice issuer, Customer Accountant, Supplier Accountant)
Pre-conditions	Framework Agreement or Contract and that an order is in place with agreed prices. The supplier has provided goods or services according to the conditions set in the contract, agreement or order. The customer has received the goods or services.
Description	The supplier presents to the customer, for the ordered or delivered, received or consumed goods or services, a detailed statement of trade account payable (invoice). The customer reconciles the invoice with the agreed prices and the goods or services rendered and initiates the payment remittance.
Post-conditions	Based on the reconciled invoices, the customer should issue the notification for the payments. For the incorrect invoices, the customer will generate a dispute notice to the supplier.

# Example Cross Industry Invoice BRS - 4

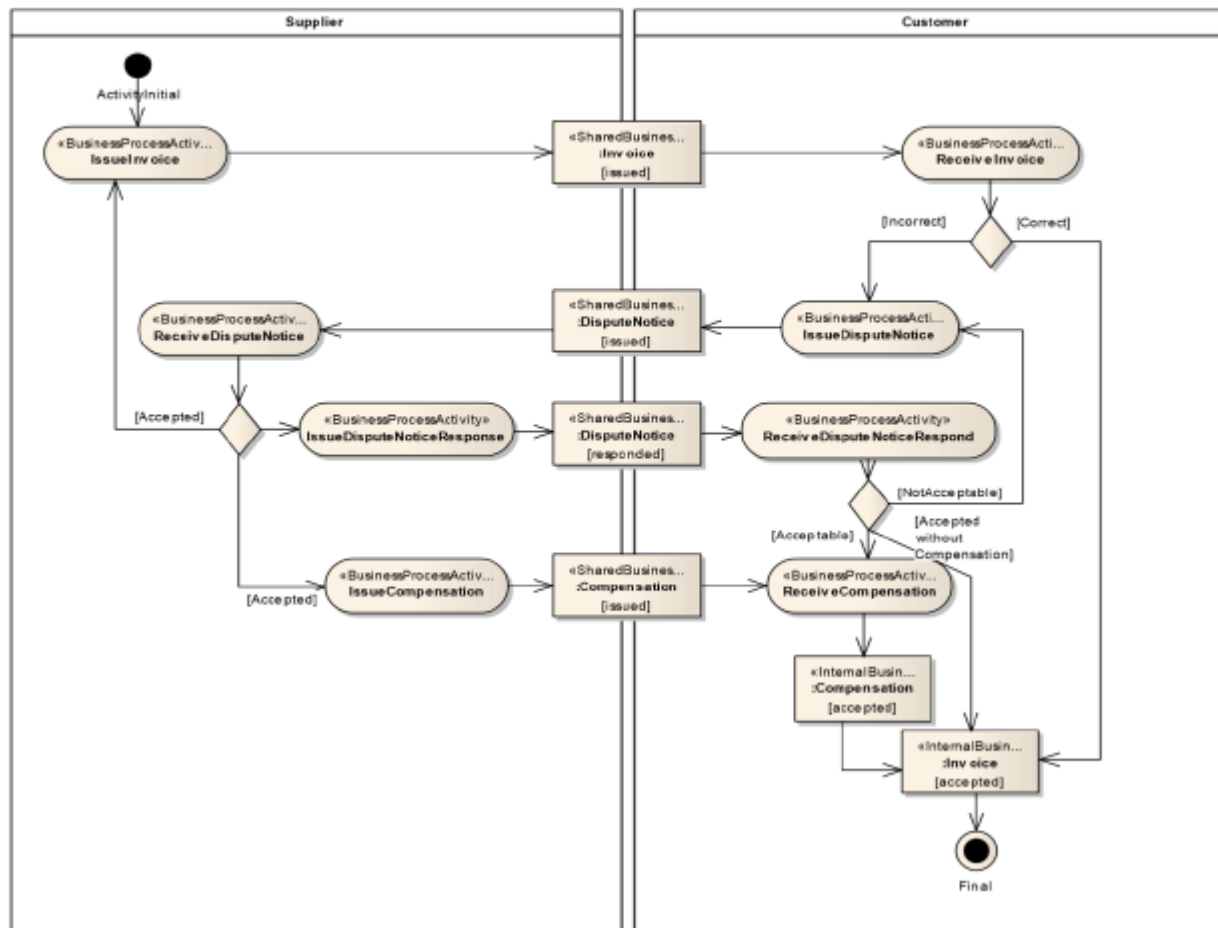


Figure 5-2 Business Process Activity Diagram

# Example Cross Industry Invoice BRS - 5

## 5.1.1.1. Traditional Invoice (Business Collaboration)

**TraditionalInvoice** – (*BusinessCollaboration Use Case diagram*)

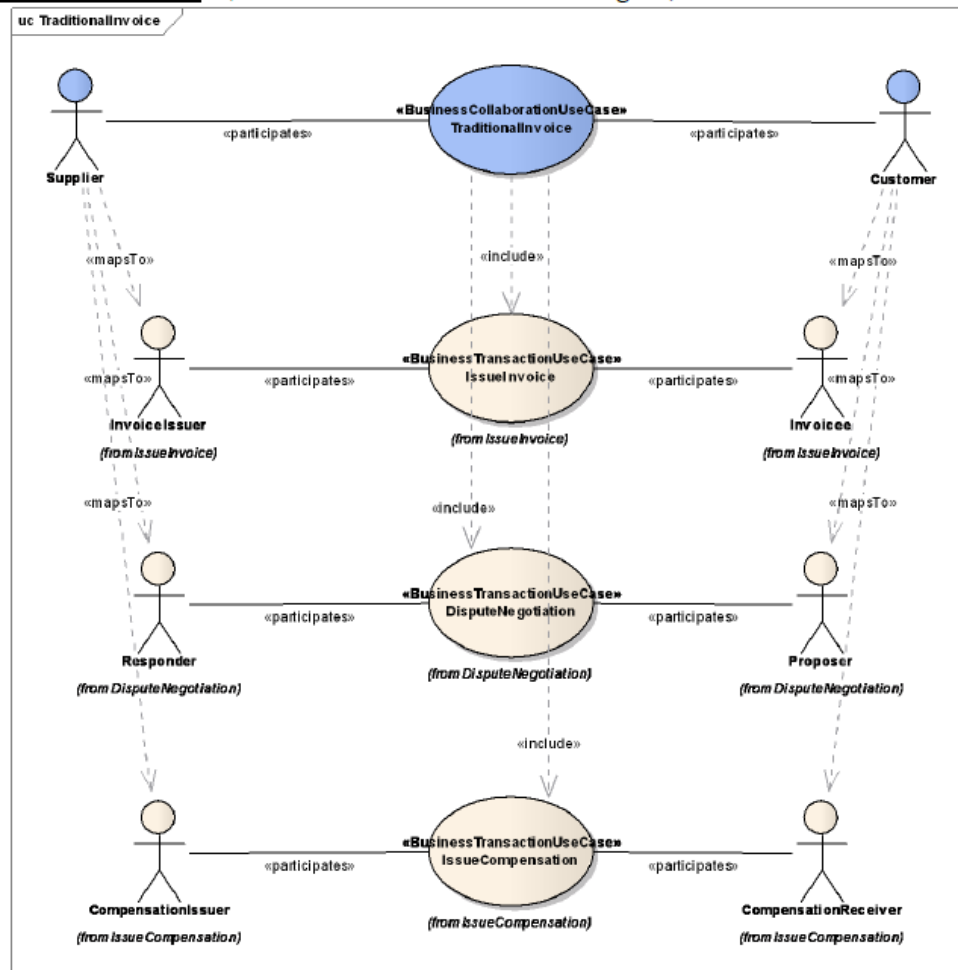
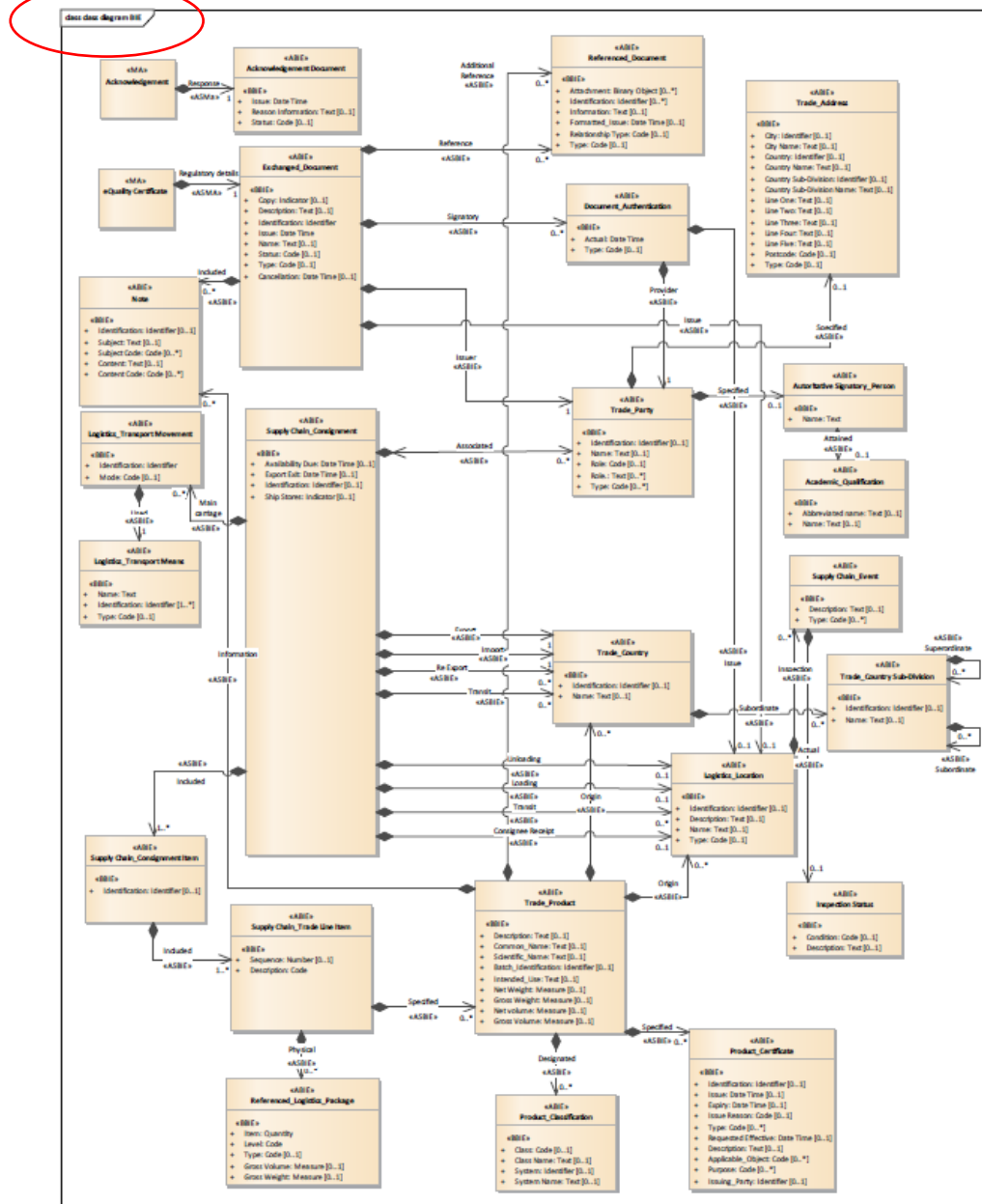


Figure 5-3 Business Collaboration Use Case Diagram

## UN / CEFAC





# UN/CEFACT Business Standards Deliverables

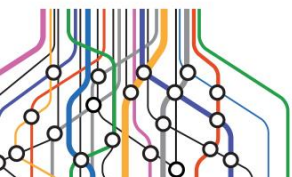
- 1: Business Requirements Specification (BRS) including
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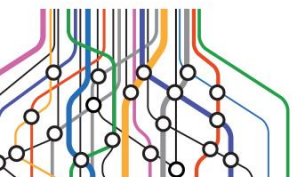
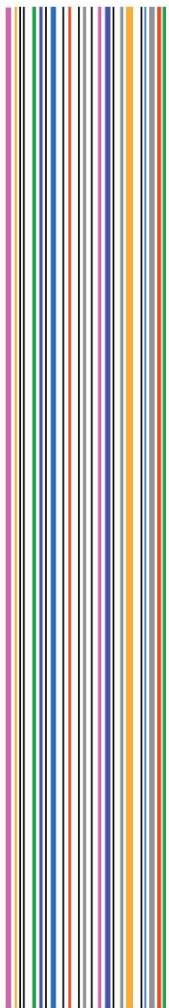


# UN/CEFACT evolution/revolution – Reference Data Models

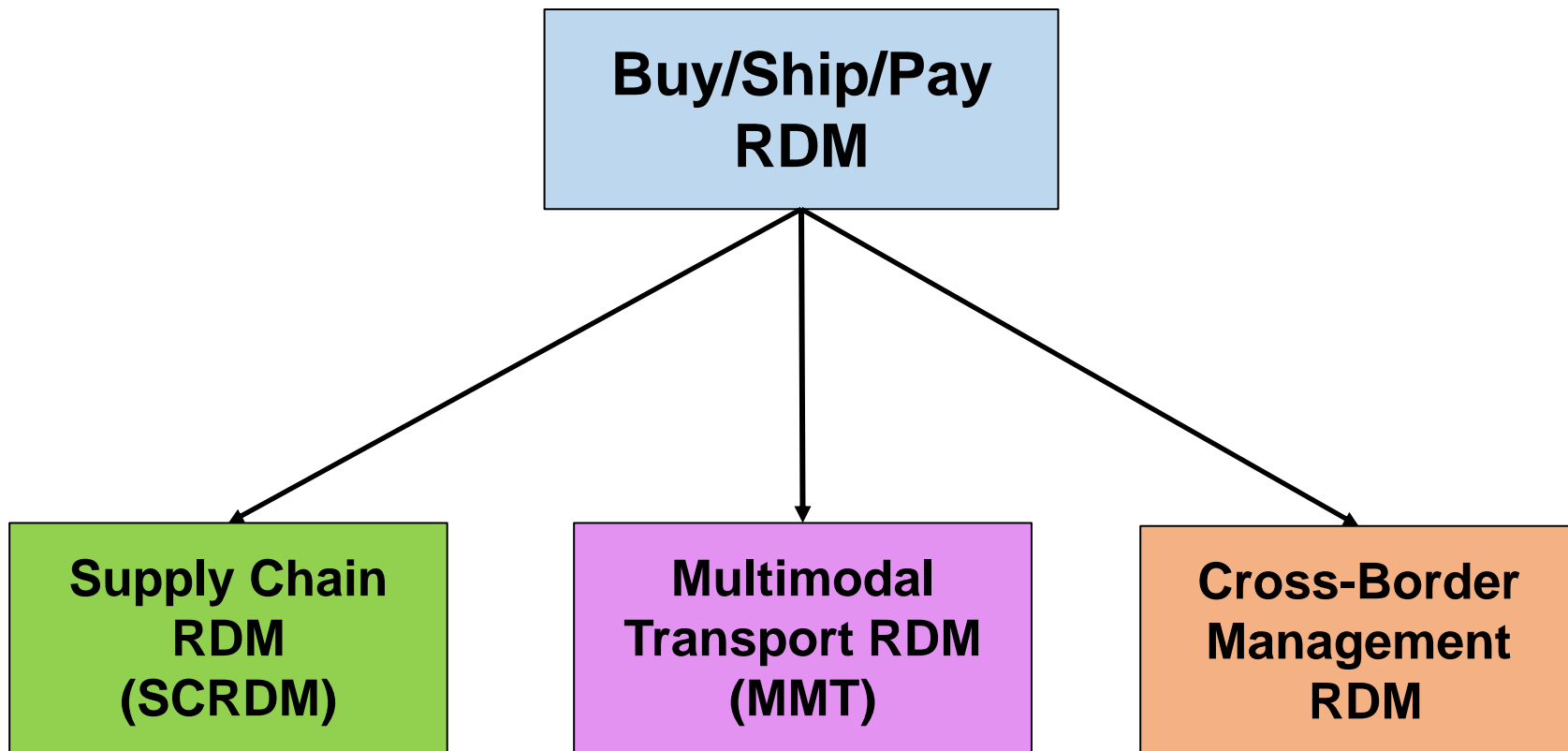
## Benefits of UN/CEFACT Semantic Models

- The support for information sharing, such as enabled by data pipelines, with the timely capture of quality data from original data sources ensuring supply chain visibility
- Reduction of administrative burden by efficient reuse of data shared within the BUY SHIP PAY domain model
- Standardized data exchange structures, based on common Master data exchange structure and independent of exchange syntax
- Common basis for implementing in chosen data exchange syntax(es)





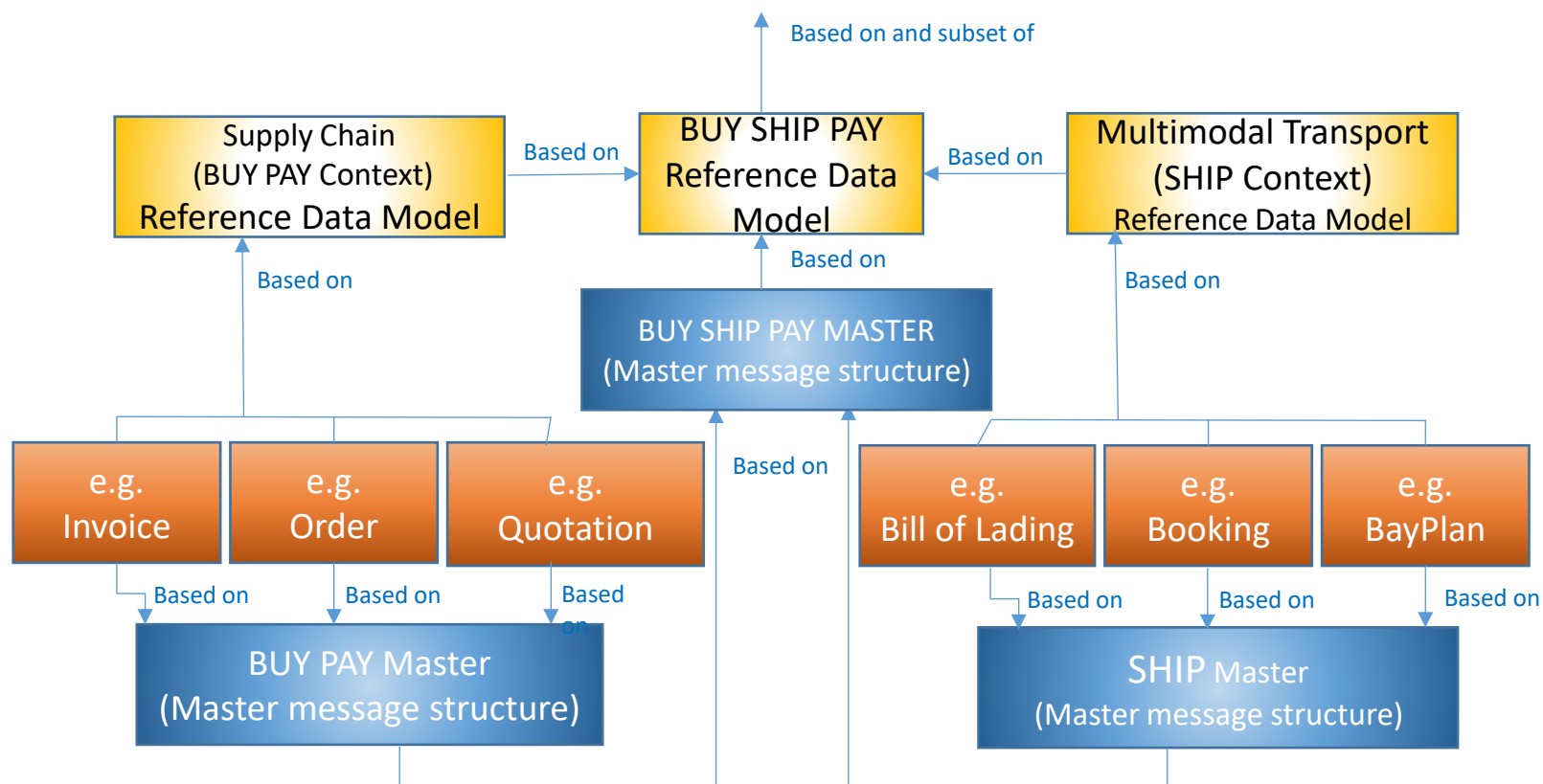
# **UN/CEFACT International Supply Chain Reference Data Model Family**





# Building semantic models using a common library

## UN/CEFACT Core Component Library (CCL)



# CoreComponent → BusinessInformationEntity



## Example Person Core Component

80 Attributes

27 Associations incl.

- > ● A Alternate Language Code
- > ● A Alternate Language Proficiency Code
- > ● A Director Or Officer Indicator
- > ● A Social Insurance Eligibility Indicator
- > ● A Social Insurance Contract ID
- > ● A Medicare Qualified Indicator
- > ● A Social Security Number Release Authorization C
- > ● A Tax Filing Status Code
- > ● A Affiliate Privacy Response Code
- > ● A Third Party Privacy Response Code
- > ● A Disablement Registration Date Time
- > ● A Role Text
- > ● A Attends School Indicator
- > ● A College Grade Average
- > ● A School Disciplinary Action Indicator
- > ● A Highest Grade Completed Text
- > ● A High School Grade Average Text
- > ● A College Grade Average Value
- > ● A Category Code
- > ● A Role Code
- > ● A In Transit Indicator
- > ● C Residence Address
- > ● C Nationality Country
- > ● C Telephone
- > ● C Fax
- > ● C URI
- > ● C Information Address
  - C Alias Person
  - C Filiation Person
- > ● C Specified Event
- > ● C Person Financial Situation

17 reuses as

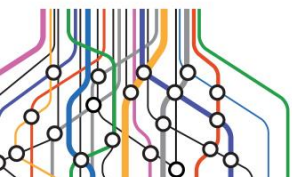
Business Information Entities

- C [Main/ABIE/AAA Chart Of Accounts Person. Details](#)
- C [Main/ABIE/AAA Journal Person. Details](#)
- C [Main/ABIE/AAA Report Person. Details](#)
- C [Main/ABIE/AAA Wrap Person. Details](#)
- C [Main/ABIE/Authoritative Signatory Person. Details](#)
- C [Main/ABIE/Contact Person. Details](#)
- C [Main/ABIE/Guest Person. Details](#)
- C [Main/ABIE/Inspection Person. Details](#)
- C [Main/ABIE/Operator Person. Details](#)
- C [Main/ABIE/Payment Person. Details](#)
- C [Main/ABIE/Project Person. Details](#)
- C [Main/ABIE/Representative Person. Details](#)
- C [Main/ABIE/Reserving Person. Details](#)
- C [Main/ABIE/Responsible Person. Details](#)
- C [Main/ABIE/SPS Person. Details](#)
- C [Main/ABIE/TMW Person. Details](#)
- C [Main/ABIE/Transport Person. Details](#)

Reuse example:

Transport Person for IMO FAL

- ▼ C Transport Person
  - > C Based on "Person"
  - > ● A ID
  - > ● A Name
  - > ● A Birth Date Time
  - > ● A Language Code
  - > ● A Role Text
  - > ● A Role Code
  - > ● A Category Code
  - > ● A Gender Code
  - > ● A Given Name
  - > ● A Family Name
  - > ● A Birth Country Code
  - > ● A Birthplace Name
  - > ● A In Transit Indicator
  - > ● C Nationality Country
  - > ● C Certified Accreditation
  - > ● C Attained Qualification
  - > ● C Embarkation Location
  - > ● C Disembarkation Location
  - > ● C Travel Identity Document
  - > ● C Travel Visa Document
  - > ● C Crew Travel Effects
  - > ● C Landline Telephone
  - > ● C Mobile Telephone
  - > ● C Email Address



# RDM Data Exchange Structure Relationships

- ▼ **C** Buy Ship Pay Master \*\*
    - > ● **C** Exchanged Document Context
    - > ● **C** Exchanged Document
    - > ● **C** Exchanged Declaration
    - > ● **C** Logistics Transport Movement
    - > ● **C** Supply Chain Consignment
    - > ● **C** Logistics Transport Equipment
    - > ● **C** Transport Service
    - > ● **C** Trade Settlement Payment
    - > ● **C** Supply Chain Trade Transaction
    - > ● **C** Valuation Breakdown Statement
    - > ● **C** Financing Request Document
    - > ● **C** Financing Summary
- } Exchange Header
- } Regulatory Header
- } BUY
- } SHIP
- } PAY

# UN/CEFACT Publication Transport Example: electronic Road Consignment Note (eCMR)



BUY SHIP PAY (BSP)

*Semantic model  
Subset of UN/CCL*

SHIP (MultiModal Transport)  
CCL subset

BUY SHIP PAY

*Master message structure*

SHIP

Master message structure

MMT subset

*Exchange syntax-neutral  
data exchange structure*

eCMR message structure

Syntax Instantiation e.g.  
XML schema, JSON LD?

**Multi  
Modal  
Transport  
RDM**

**Multi  
Modal  
Transport  
RDM  
Customised  
Subset  
(Decorated)**

UN / CEFACT

# Core Component Dictionary Entry Names and Definitions

Data model: MMT D20A Context CCL - GEFEG.FX - Professional+

Edit View Publishing Extras Window Help

Show used objects only English

MMT D20A Context CCL Main ABIE Logistics Transport Means Name (Logistics\_Transport Means. Name. Text)

Logistics Transport Means \*

- Type Code
- Type Text \*
- ID \*
- Name \***
- Gross Weight
- Net Weight
- Length
- Draught Level Measure
- Cargo Gross Weight
- Required Lane Length
- Loaded Cargo Measure
- Sequence Number \*
- Driver Accompanied Indicator \*
- Conference Code \*
- Manoeuvring Speed
- Forward Draught Level Measure
- Aft Draught Level Measure
- Waste Reporting Exemption Indicator \*
- Helipad Indicator \*
- ISPS Security Level Code \*
- Approved Security Plan Onboard Indicato
- Tare Weight Measure
- Manufacturing Date Time

BBIE CCTS Notes Enhanced Children

CCTS type	BBIE
DictionaryEntryName	Logistics_Transport Means. Name. Text
ObjectClassTerm	Transport Means
ObjectClassTermQualifier(s)	Logistics
PropertyTerm	Name
PropertyTermQualifier	
RepresentationTerm	Text
BusinessTerm	
Definition	The name, expressed as text, of this logistics means of transport.

Replace object name with DictionaryEntryName

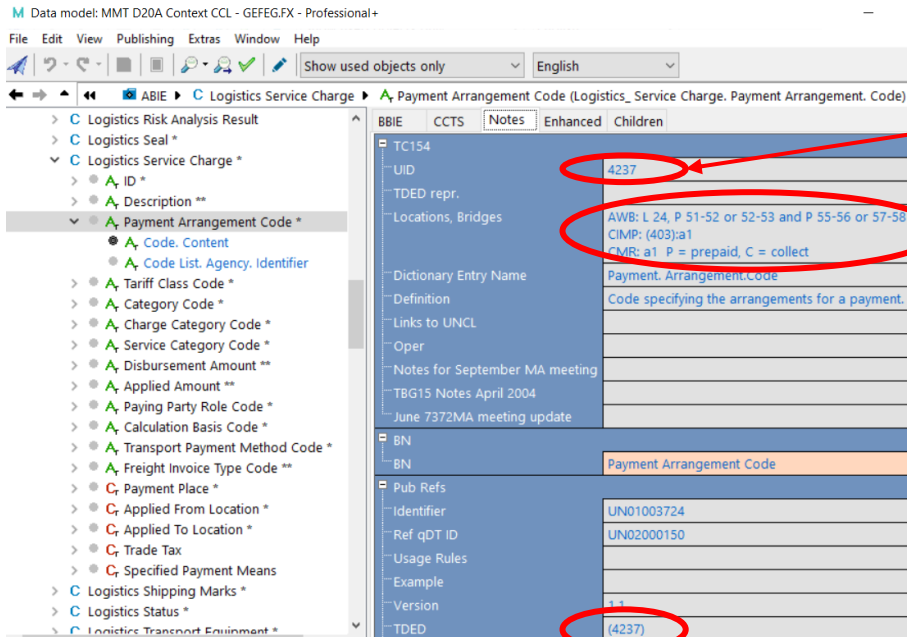
Business Name

Definition

Tripartite Dictionary Entry Name



# Built-in mappings to UNTDED, UN Layout Key and UN/EDIFACT

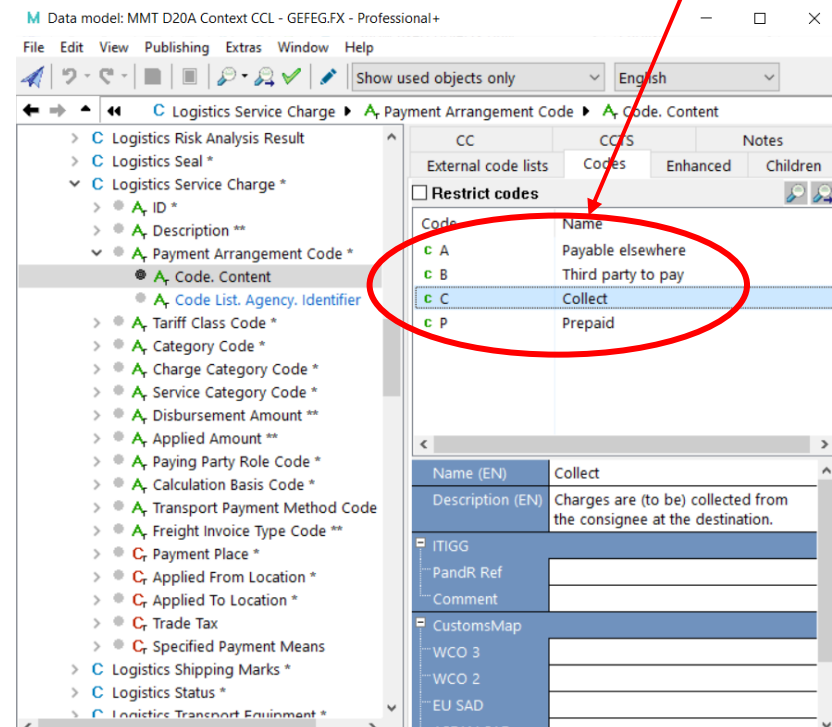


UNTDID  
EDIFACT

UNTDDED

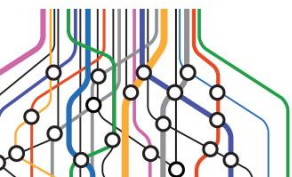
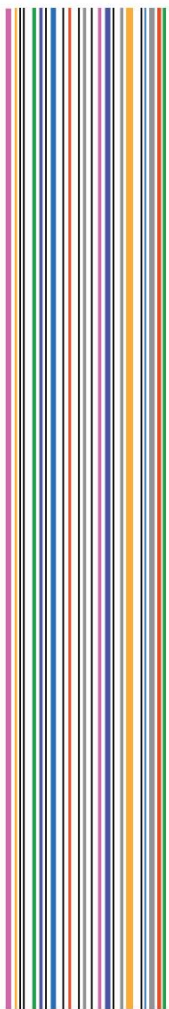
UN Layout Keys

UNCL Codes

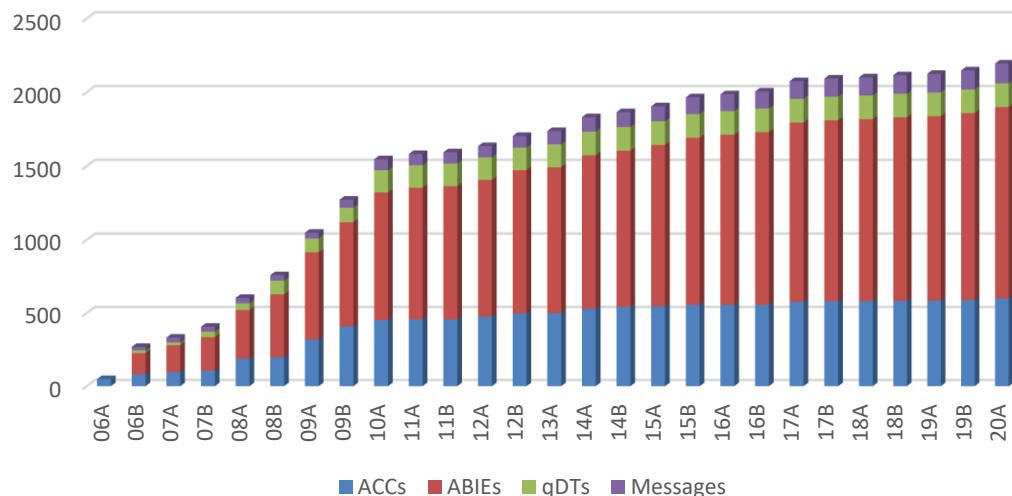




# UN/CEFACT Core Component Library



CCL Progression



## Business Information Entities (BIEs)

Reuses of Object Class Library in different business Contexts

(D20A ~ 1300 BIEs)

## Semantic Foundation - Core Component (CCs)

Object Class Library

(D20A ~600 CCs)

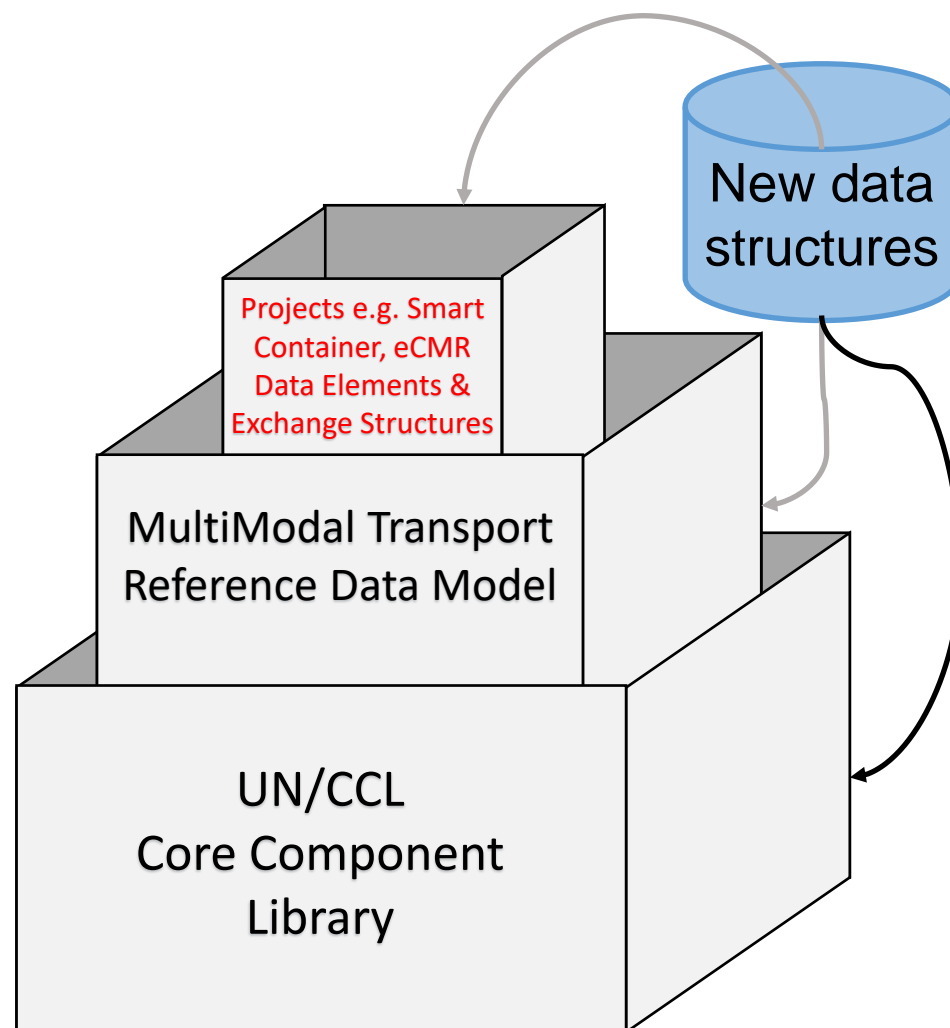
# How CCL growth is managed

Library Maintenance  
Team responsible for

- Cross-Domain  
**Harmonisation**

Project Teams  
responsible for

- **Contextualised** RDM  
development, CCL  
submissions and  
**customised** data  
exchange structures

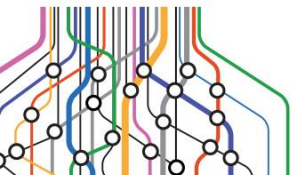






# Example CCL Submission

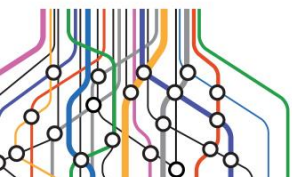
AutoSave Off Covid Submission_20AUG21.xls - Compatibility Mode - Excel Search sue probert														
File Home Insert Page Layout Formulas Data Review View Developer Help														
C6 ASCC														
A	C	D	E	I	K	M	P	T	U	BJ	BK	BL	BO	CD
ADD/CHG	ACC/BCC/ASCC	Dictionary Entry Name (auto generated)	Definition Mandatory	Object Class Term	Property Term	Representation Term	Associated Object Class	Occurrence Min	Occurrence Max	Version	Ref Library Version	Submitter Name	Unique submitter CR ID	Short Name
	ACC		Aggregate Core Component											
	BCC		Basic Core Component contained within the ACC											
	ASCC		Associated (Aggregate) Core Component, associated with the ACC											
ADD	ASCC	Consignment Item. Specified. Risk Analysis Result	A results of a risk analysis calculation for this consignment item.	Consignment Item	Specified		Risk Analysis Result	0	unbounded	1.0	D21A	COVID-19 Multimodal	COVID-19CC001	Risk Analysis Result
ADD	BCC	Dangerous Goods. Radioactive. Indicator	The indicator of whether or not these dangerous goods are radioactive.	Dangerous Goods	Radioactive	Indicator		0	1	1.0	D21A	COVID-19 Multimodal	COVID-19CC002	Radioactive Indicator
ADD	ASCC	Dangerous Goods. Stated. Condition	A stated condition of these dangerous goods.	Dangerous Goods	Stated		Condition	0	unbounded	1.0	D21A	COVID-19 Multimodal	COVID-19CC003	Stated Condition
ADD	ASCC	Radioactive Isotope. Specified. Radionuclide	Radionuclide details specified for this radioactive isotope.	Radioactive Isotope	Specified		Radionuclide	0	unbounded	1.0	D21A	COVID-19 Multimodal	COVID-19CC004	Specified Radionuclide
ADD	BCC	Material. Radioactive Package Transport Index. Code	A code specifying the radioactive package transport index for this material.	Material	Radioactive Package Transport Index	Code		0	unbounded	1.0	D21A	COVID-19 Multimodal	COVID-19CC005	Radioactive Package Transport Index
ADD	BCC	Material. Fissile Criticality Safety Index. Numeric	The number (rounded up to the next tenth) assigned to and placed on the label of a fissile material package, to designate the degree of control of accumulation of packages, overpacks or freight containers containing fissile material during transportation.	Material	Fissile Criticality Safety Index	Numeric		0	1	1.0	D21A	COVID-19 Multimodal	COVID-19CC006	Fissile Criticality Safety Index
ADD	ASCC	Material. Applicable. Isotope	A radioactive isotope applicable to this material.	Material	Applicable		Isotope	0	unbounded	1.0	D21A	COVID-19 Multimodal	COVID-19CC007	Applicable Radioactive
ADD	ASCC	Package. Stated. Condition	A stated condition of this package.	Package	Stated		Condition	0	unbounded	1.0	D21A	COVID-19 Multimodal	COVID-19CC008	Stated Condition
ADD	ACC	Radionuclide. Details	An atom that has excess nuclear energy, making it unstable.	Radionuclide						1.0	D21A	COVID-19 Multimodal	COVID-19CC009	Radionuclide





# UN/CEFACT Business Standards Deliverables

- 1: Business Requirements Specification (BRS) including
- 2: Business Information Entity Discovery
- 3: CCL submission (optional)
- 4: CCBDA subset of Reference Data Model
- 5: Technical Artefacts production**



# Example Business Standard Streamlined Publications 1

## Multi-Modal Transport Reference Data Model (MMT-RDM)

- White Paper on RDM [English](#) [French](#) [Russian](#)
- RDM Guidelines
- BRS
- Executive Guide on RDM [English](#) [French](#) [Russian](#)
- Structure Report / Data Elements
- XSD Schema
- UML Diagram
- HTML index

RDM Artefacts

## International Forwarding and Transfer

Multimodal Booking

Multimodal Shipping Instruction

Multimodal Waybill

Multimodal Status Report / Request

Road Consignment Note (eCMR)

Maritime Bill of Lading

Inland Waterway Bill

Rail CIM-SMGS (URL)

Rail SMGS

Rail Wagon List

Air Waybill

Air Dangerous Goods Declaration

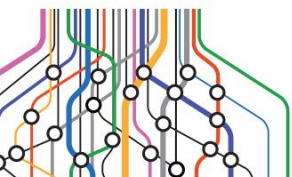
Air Consignment Security Declaration

Smart Containers

Pipeline Data Exchange Standard (PDES)

IMO FAL Compendium

CCBDA Subset  
Business Standards  
Based on MMT RDM








# Example Business Standard Streamlined Publications 2



## Transport and Logistics

**Multi-Modal Transport Reference Data Model**

**International Forwarding and Transfer**

- BRS Overall 
- XSD Schema 
- UML Diagram 
- XLS Guideline Structure 
- Spreadsheet 
- HTML

RDM Artefacts

Business Standard  
CCBDA MMT Subset  
Artefacts