# UN/CEFACT 2021 Virtual Forum

Monday, 4 October 2021

10:00 – 12:30 CET

Introduction Session on CCL and BRS for Business Standards Projects

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# UN/CEFACT Key Outputs

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

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# 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 |

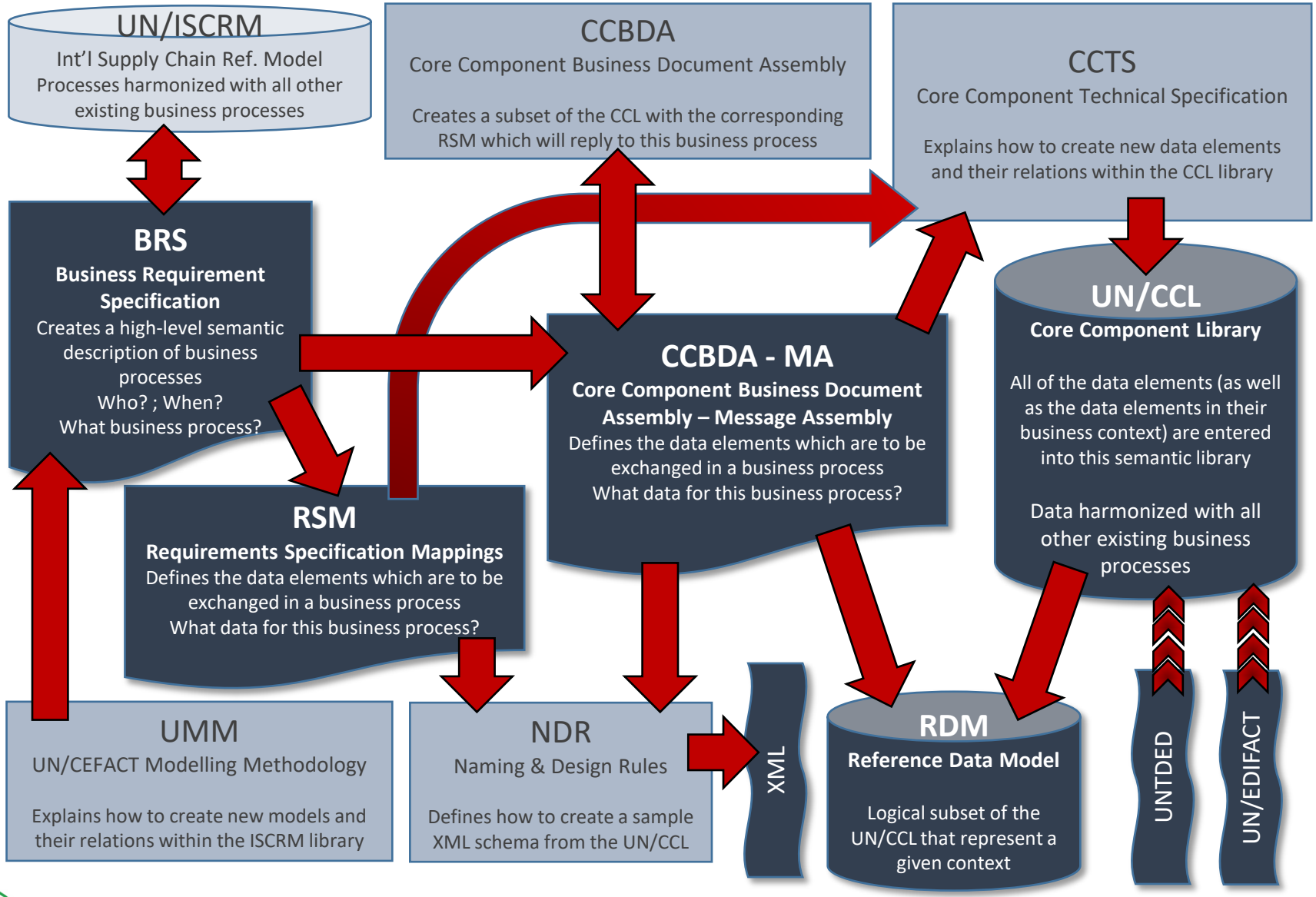
https://unece.org/trade/uncefact/policiesprocedures-and-termsreference

**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

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# UN/CEFACT Business Standards Deliverables

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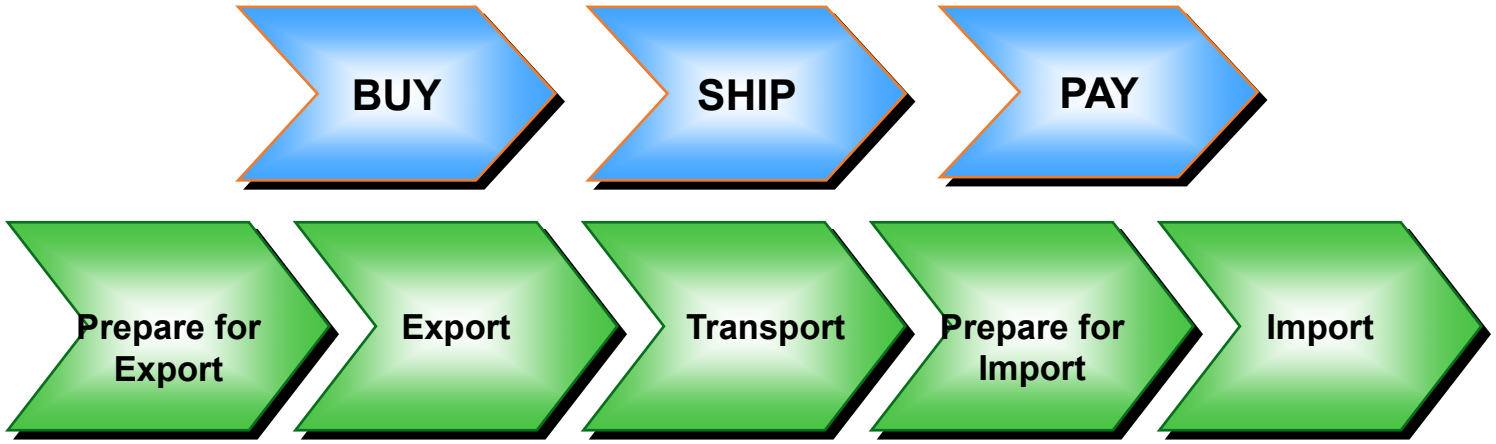
# UN/CEFACT International Supply Chain Process Model




## INVOLVES

**Commercial Procedures**

- Establish Contract
- Order Goods
- Advise On Delivery
- Request Payment
- Packing
- Inspection
- Certification
- Accreditation
- Warehousing

**Transport Procedures**

- Establish Transport Contract
- Collect, Transport and Deliver Goods
- Provide Waybills, Goods Receipts Status reports etc.

**Regulatory Procedures**

- Obtain Import/Export Licences etc
- Provide Customs Declarations
- Provide Cargo Declaration
- Apply Trade Security Procedures
- Clear Goods for Export/Import

**Financial Procedures**

- Provide Credit Rating
- Provide Insurance
- Provide Finance
- Execute Payment
- Issue Statements

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# Basis for Semantic Interoperability

## Agreed and Harmonised

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

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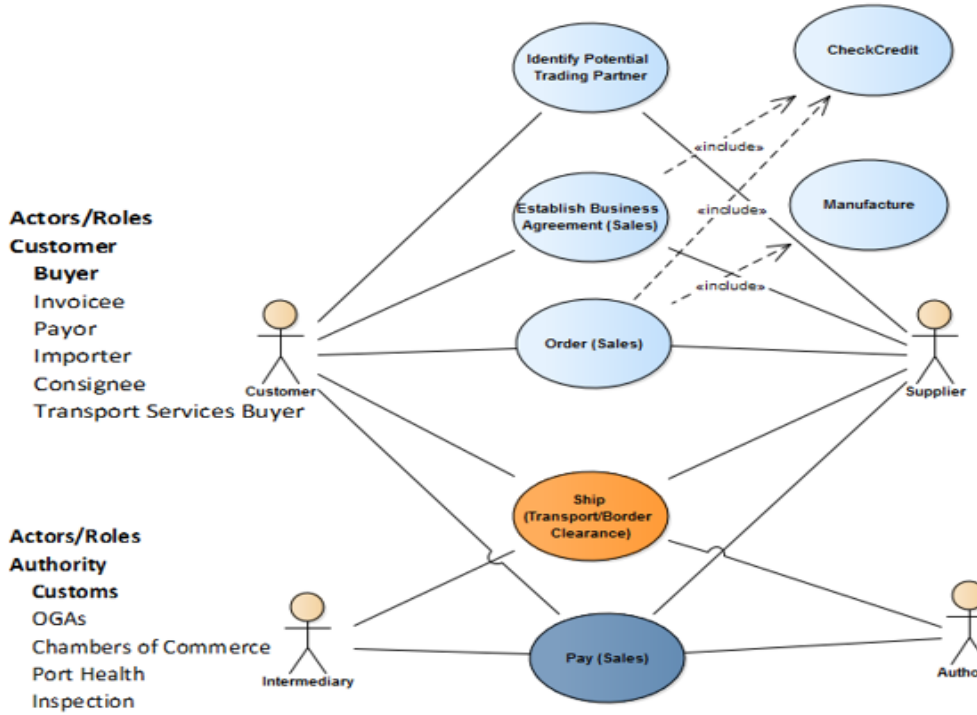
# The actors




**Actors/Roles**
**Customer**
**Buyer**
Invoicee
Payor
Importer
Consignee
Transport Services Buyer

**Actors/Roles**
**Supplier**
**Seller**
Manufacturer
Invoicer
Payee
Exporter
Consignor
Transport Services Buyer

**Actors/Roles**
**Authority**
**Customs**
OGAs
Chambers of Commerce
Port Health
Inspection
Licensing
etc.

**Actors/Roles**
**Intermediary**
Transport Services Provider
Bank
Credit Agency
Customs Agent
Insurer
etc.

# 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

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# 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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## BUSINESS REQUIREMENTS SPECIFICATION
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**Documentation Template**

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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.

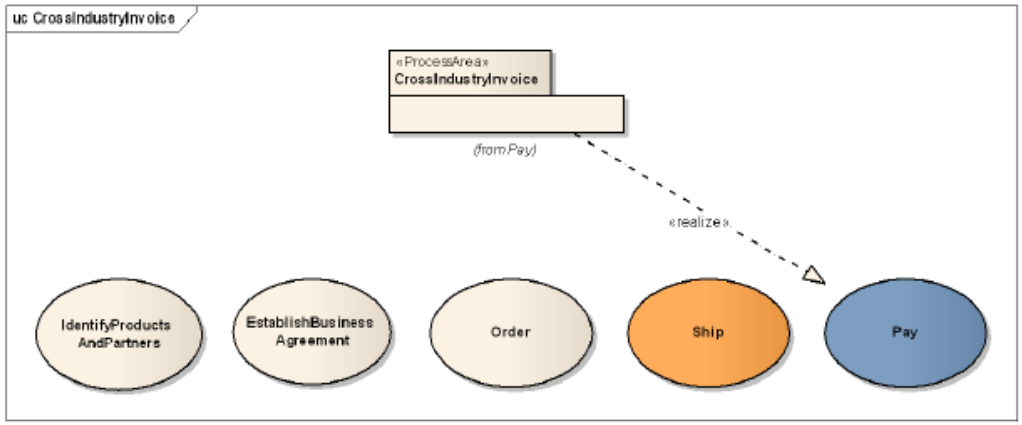



**Figure 4-1** Positioning the Invoice in BUY-SHIP-PAY model

| Categories | Description and Values |
|---|---|
| Business Process | Invoice process in the supply chain<br>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)

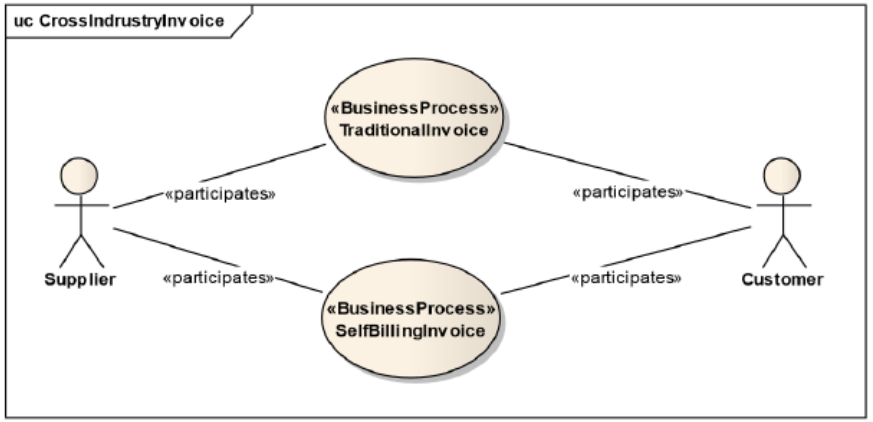



**Figure 5-1** Business Process Use Case Diagram

**Table 5-1** Business Process Use Case Description

| | |
|---|---|
| **Business process name** | Traditional or supplier initiated invoice |
| **Identifier** | Cross industry traditional invoice |
| **Actors** | Customer, Supplier<br>(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.<br>For the incorrect invoices, the customer will generate a dispute notice to the supplier. |

# Example Cross Industry Invoice BRS - 4



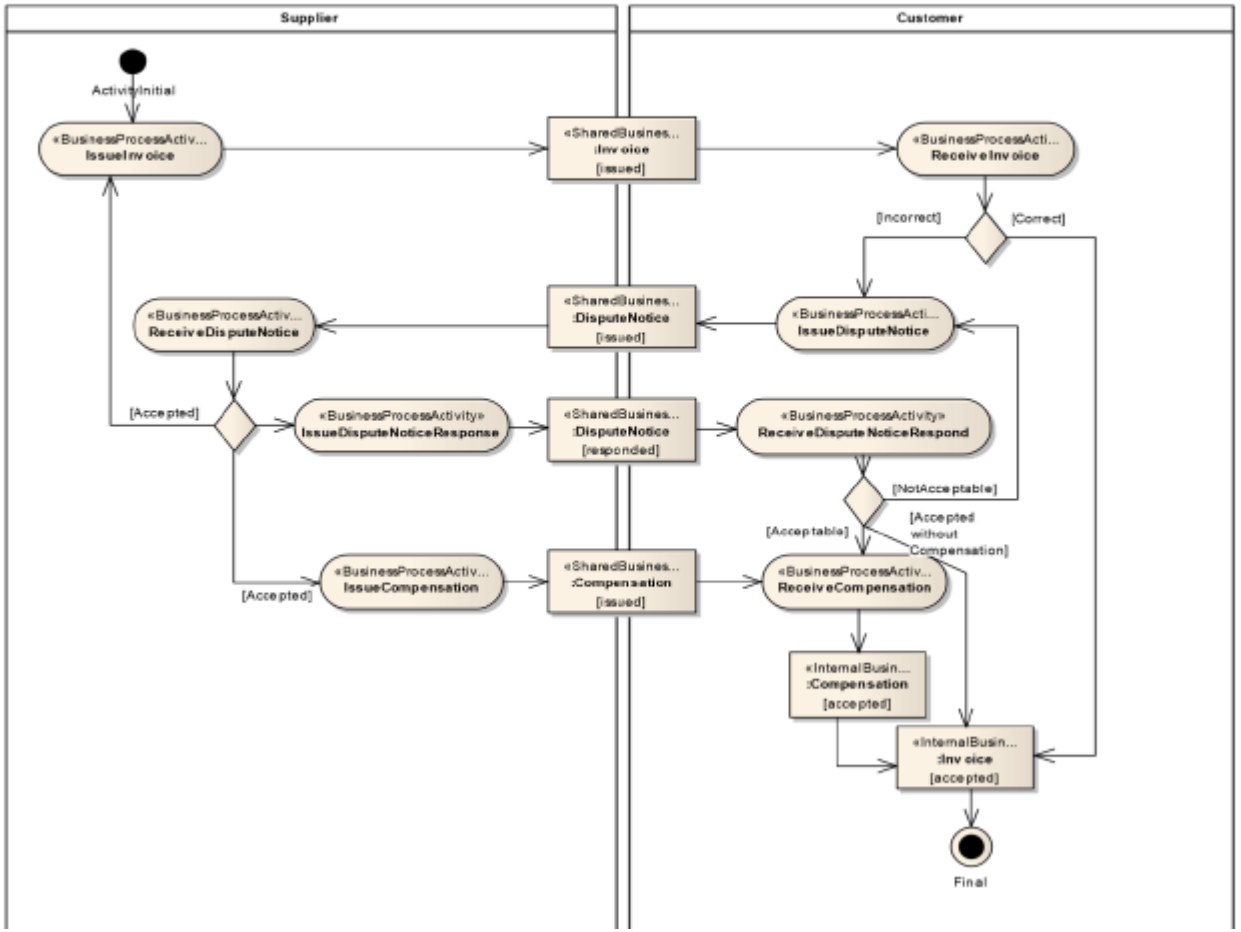



Figure 5-2 Business Process Activity Diagram

# Example Cross Industry Invoice BRS - 5

### 5.1.1.1. Traditional Invoice (Business Collaboration)

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

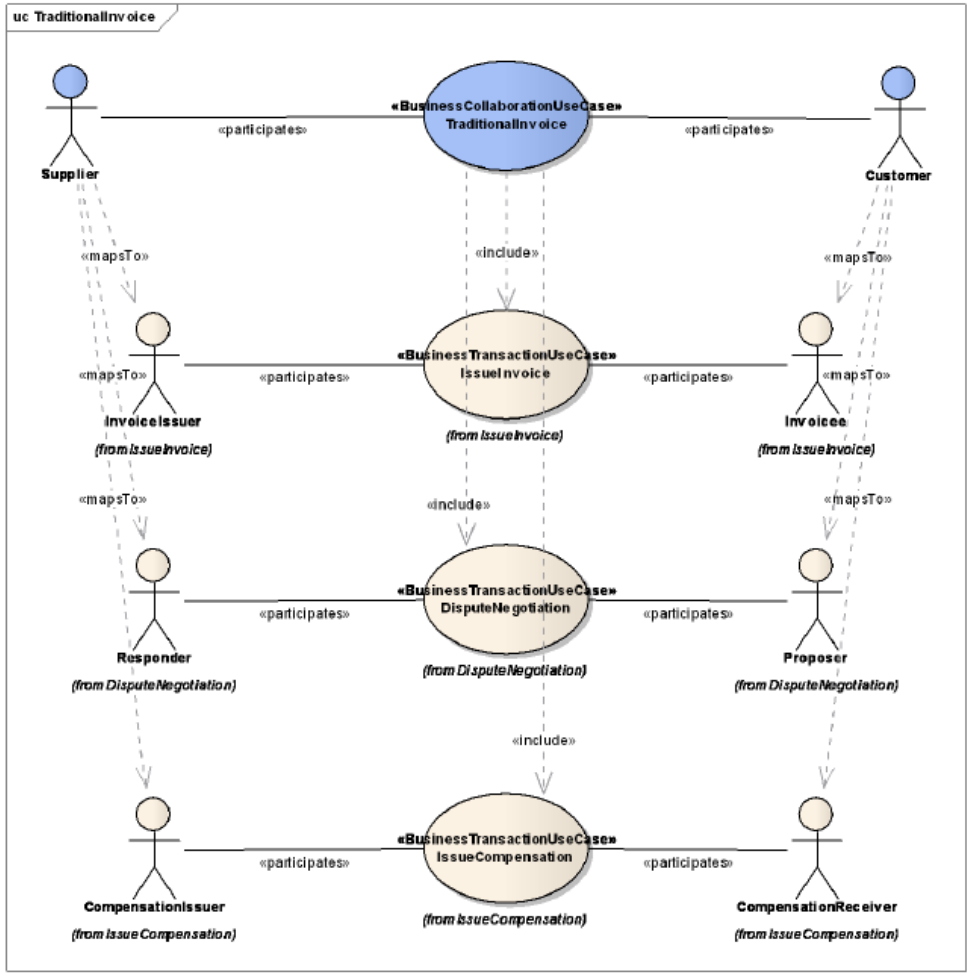
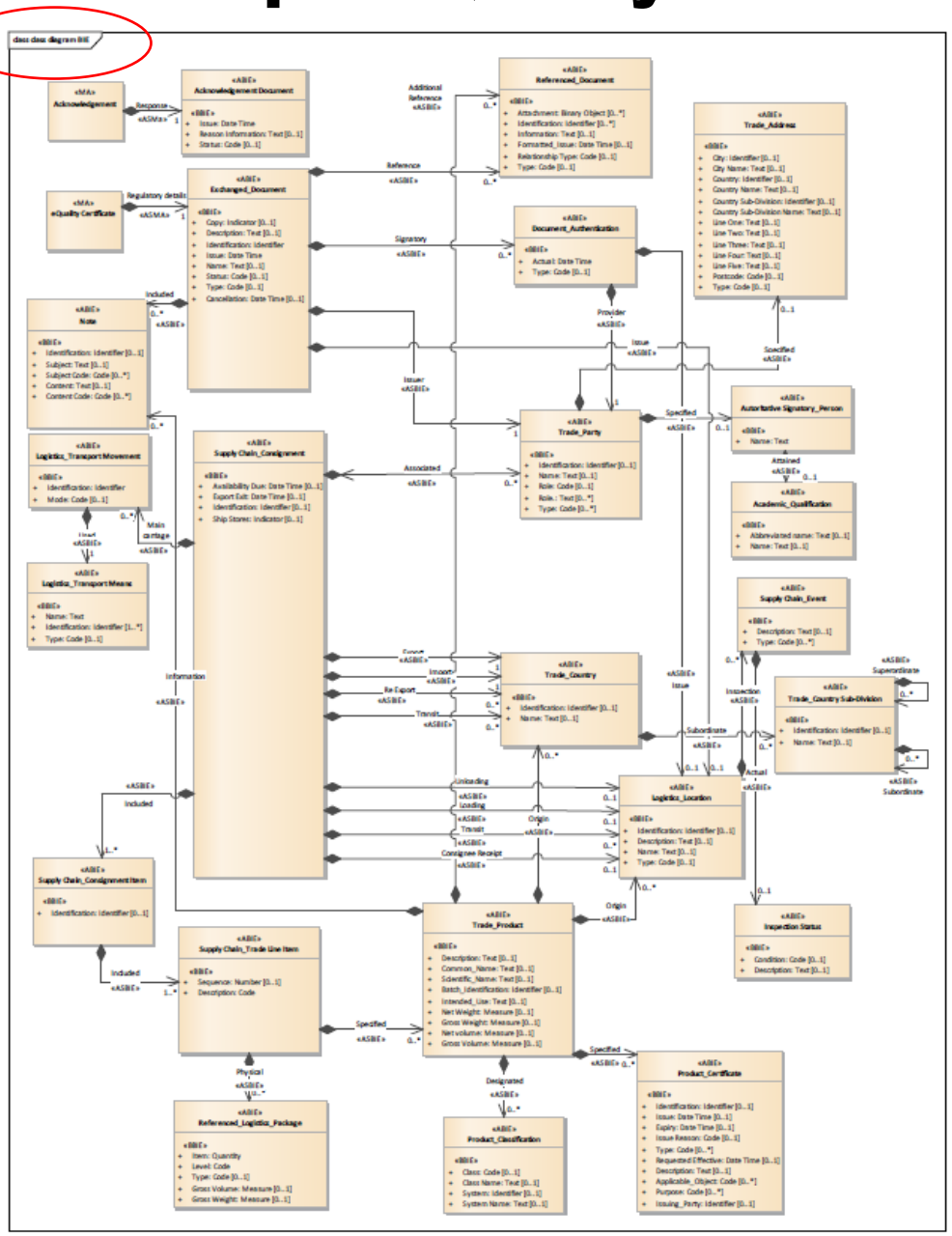



Figure 5-3 Business Collaboration Use Case Diagram

# Example eQuality BRS - 6



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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)

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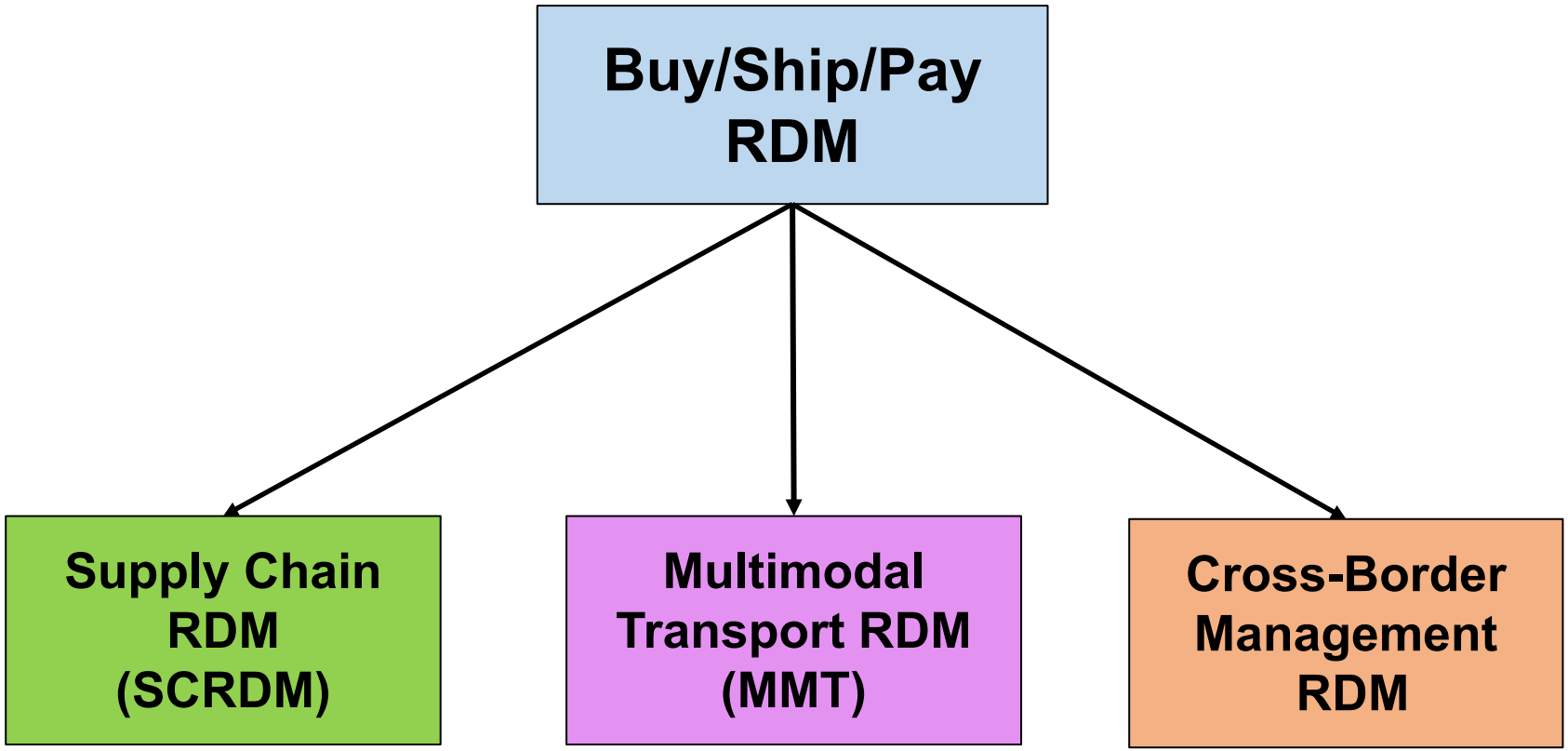
# UN/CEFACT International Supply Chain Reference Data Model Family

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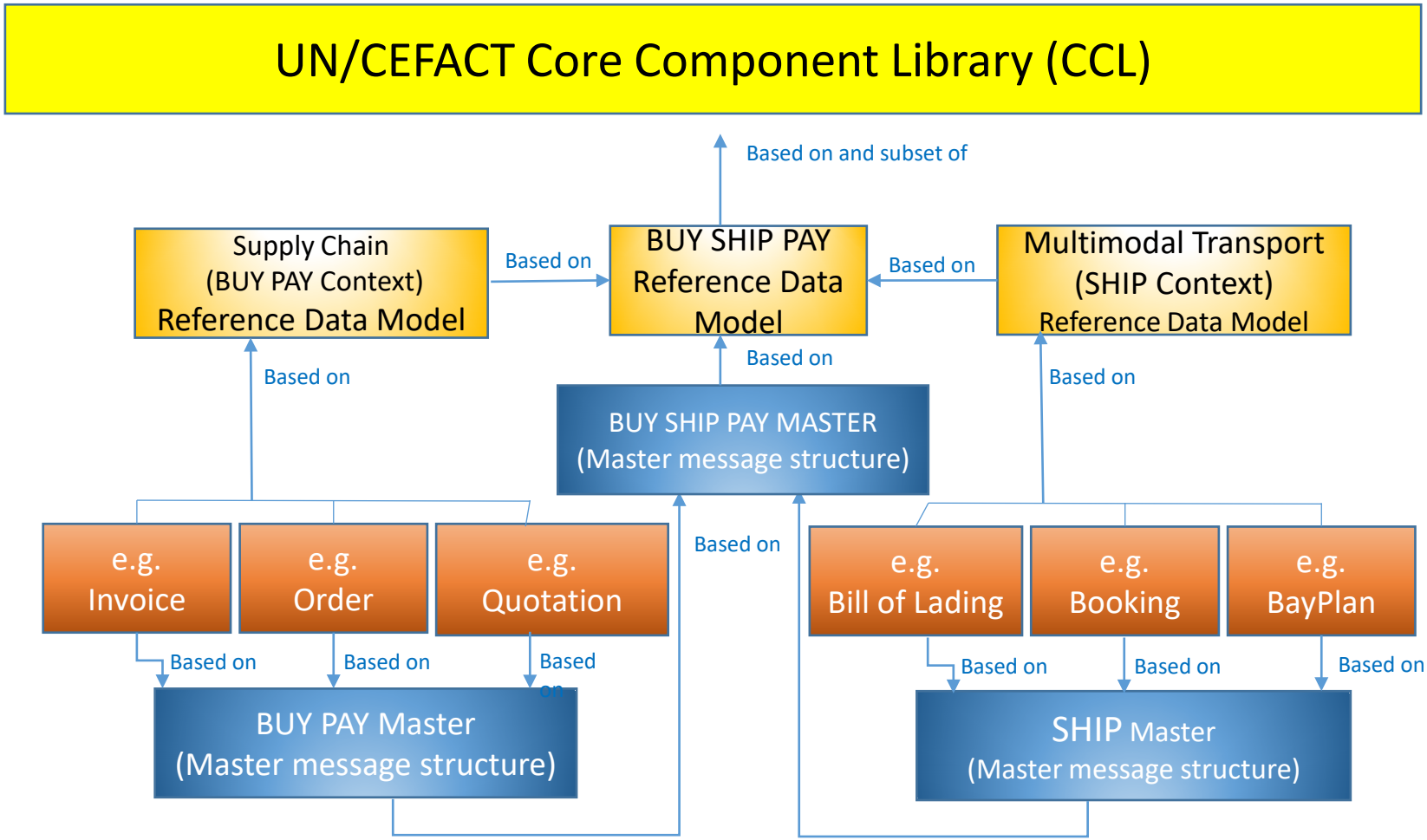
# Building semantic models using a common library

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# 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

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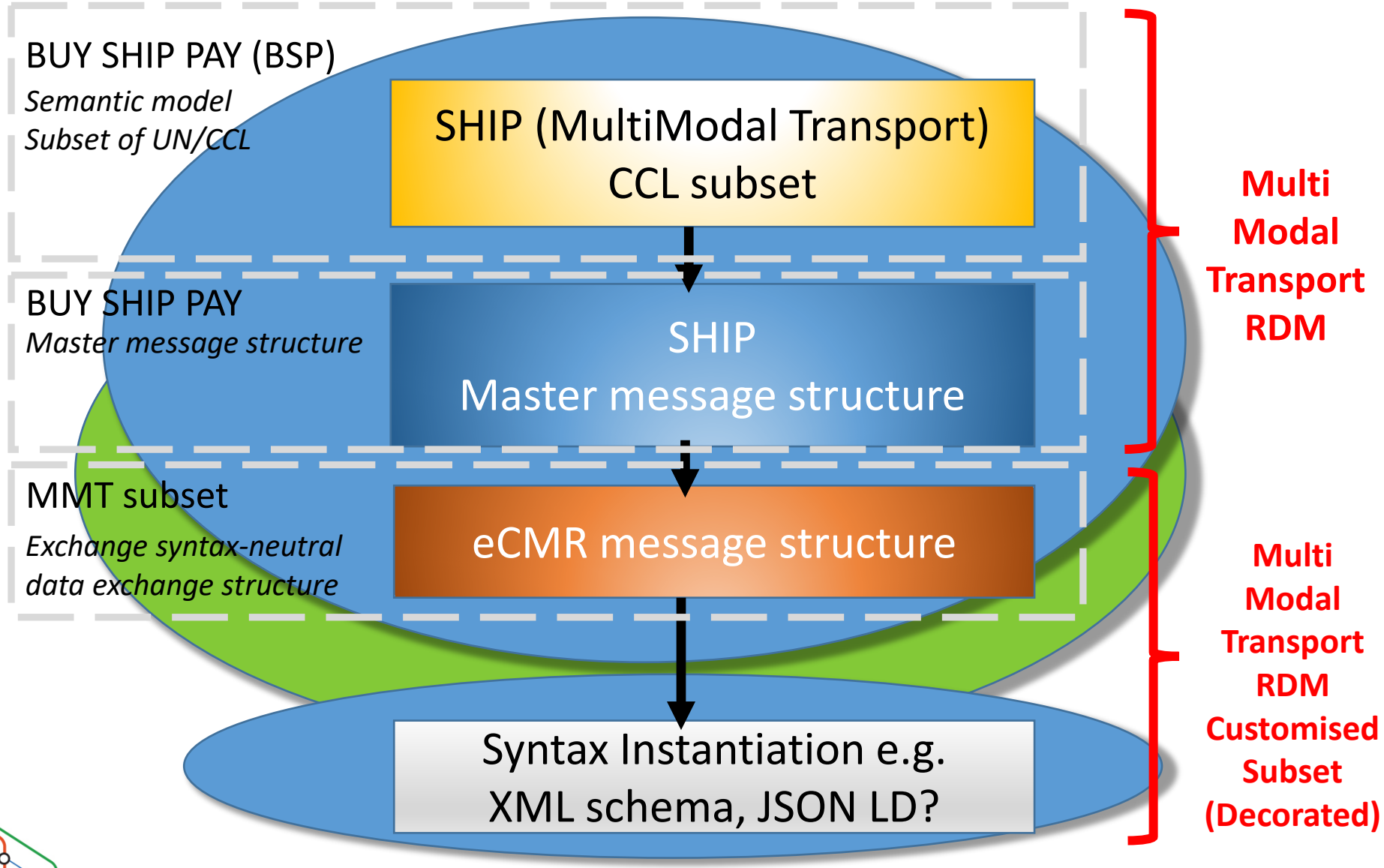
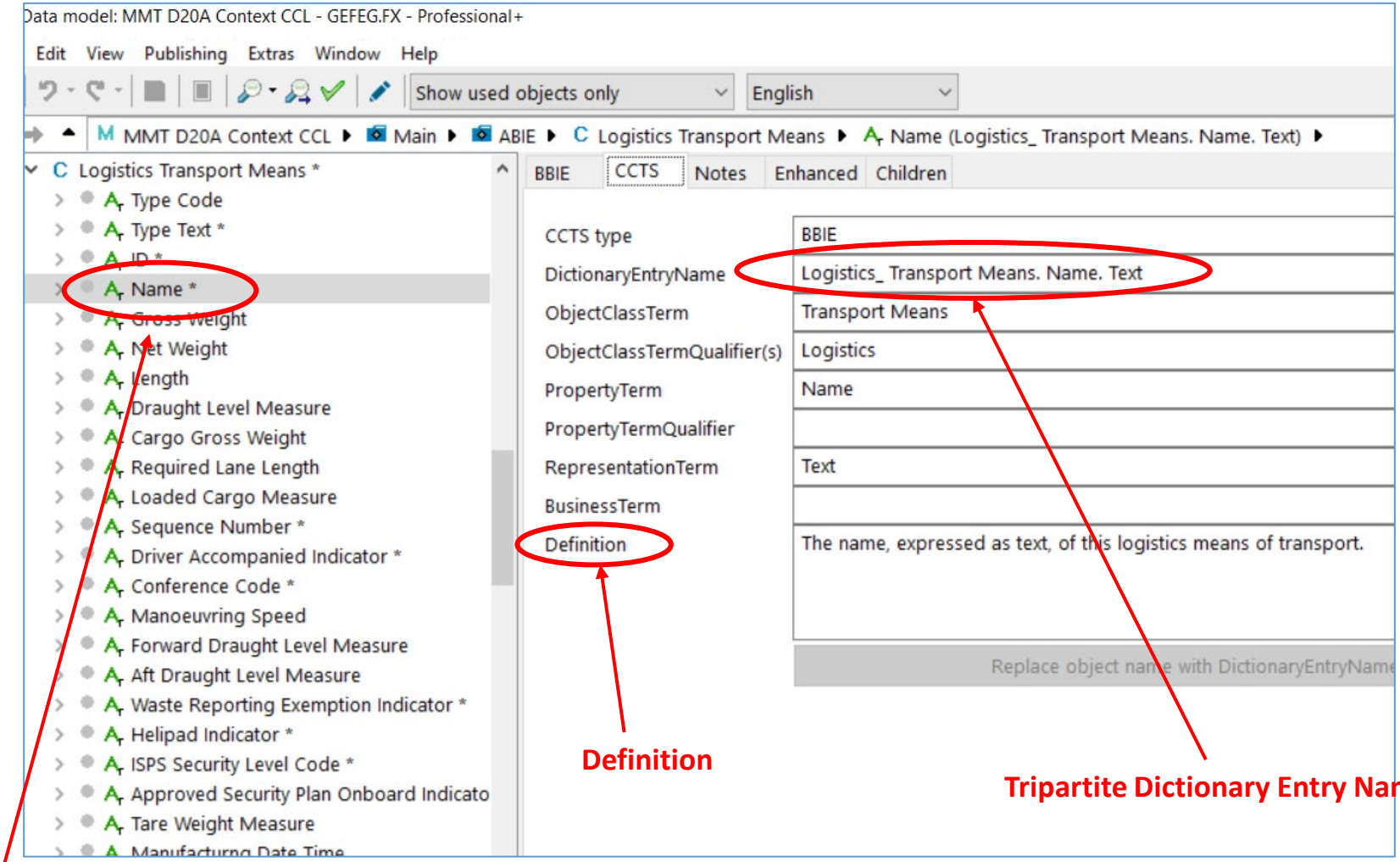
# UN/CEFACT Publication Transport Example: electronic Road Consignment Note (eCMR)



# Core Component Dictionary Entry Names and Definitions

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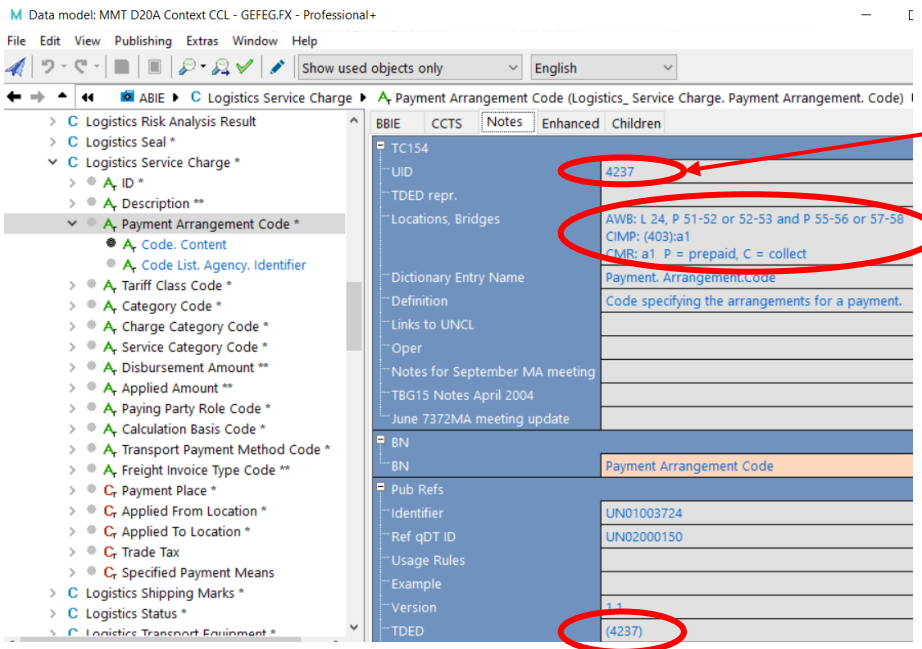
# Built-in mappings to UNTDED, UN Layout Key and UN/EDIFACT

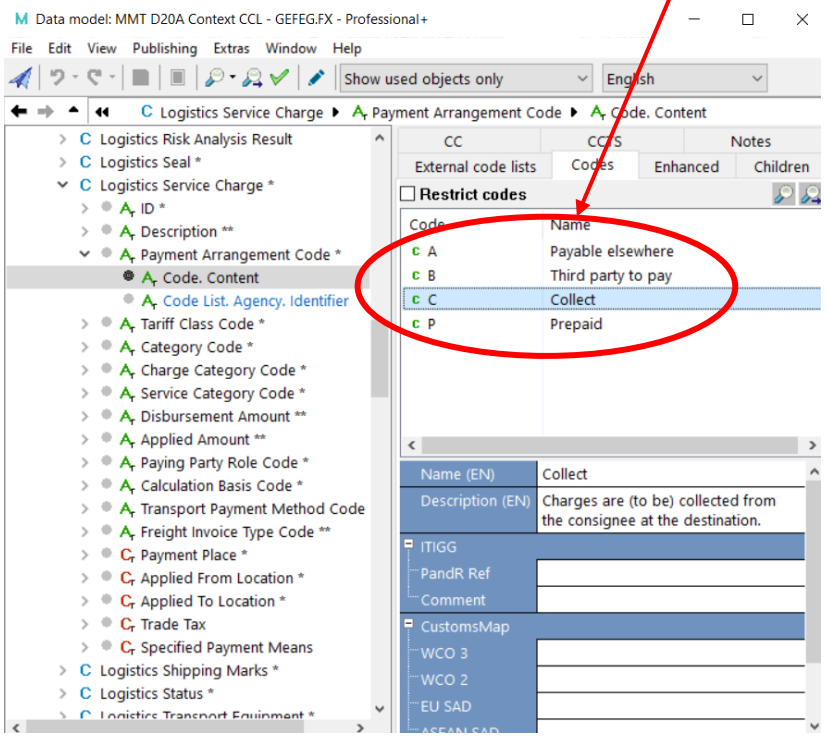



UNTDED

UN Layout Keys

UNTDID
EDIFACT

UNCL Codes

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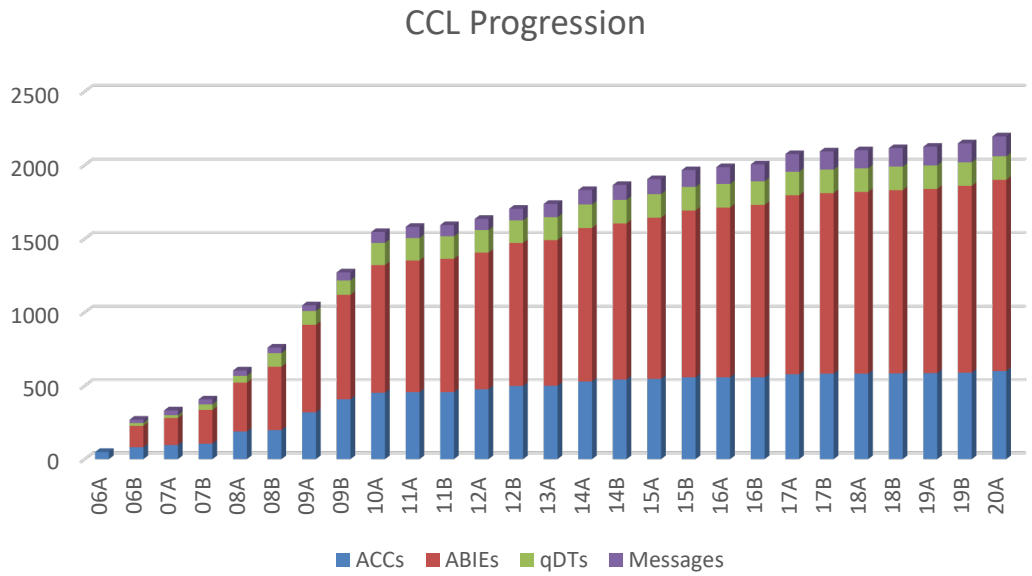
# UN/CEFACT Core Component Library




**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)

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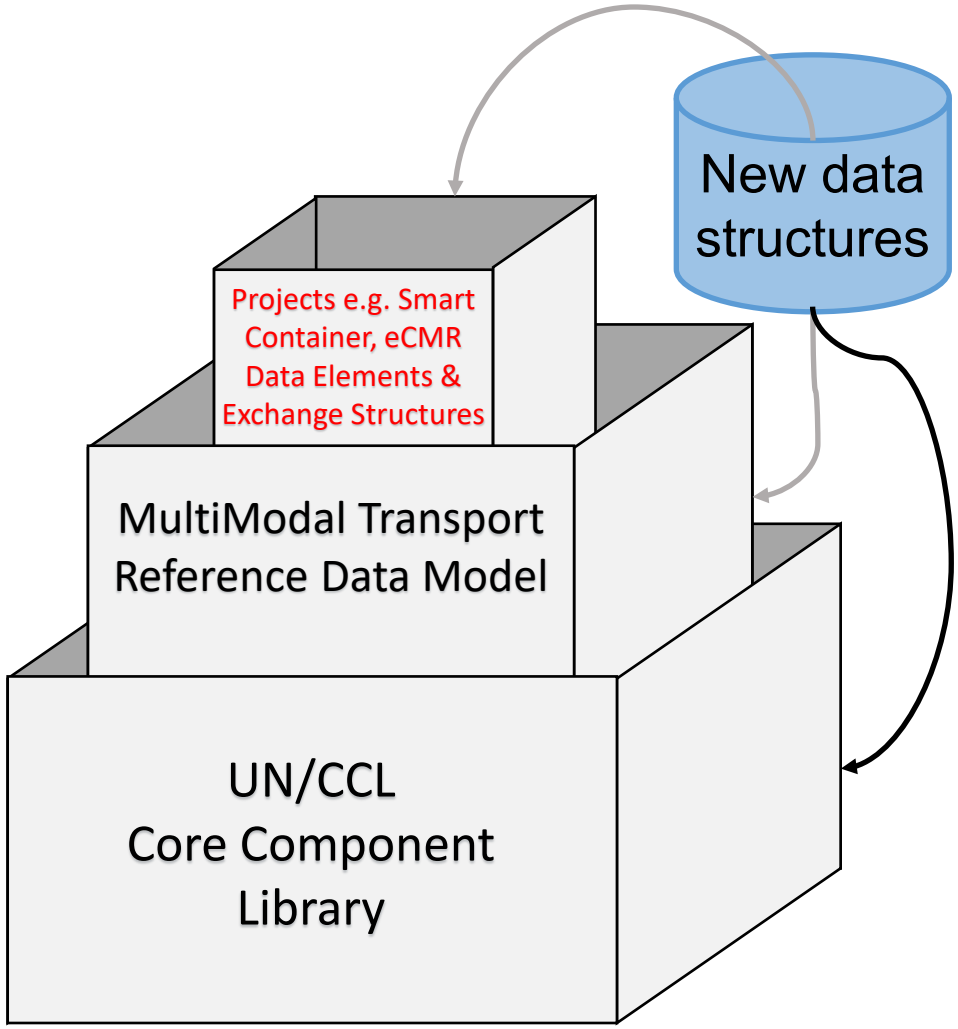
# How CCL growth is managed

Library Maintenance Team responsible for

- Cross-Domain Harmonisation

Project Teams responsible for

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

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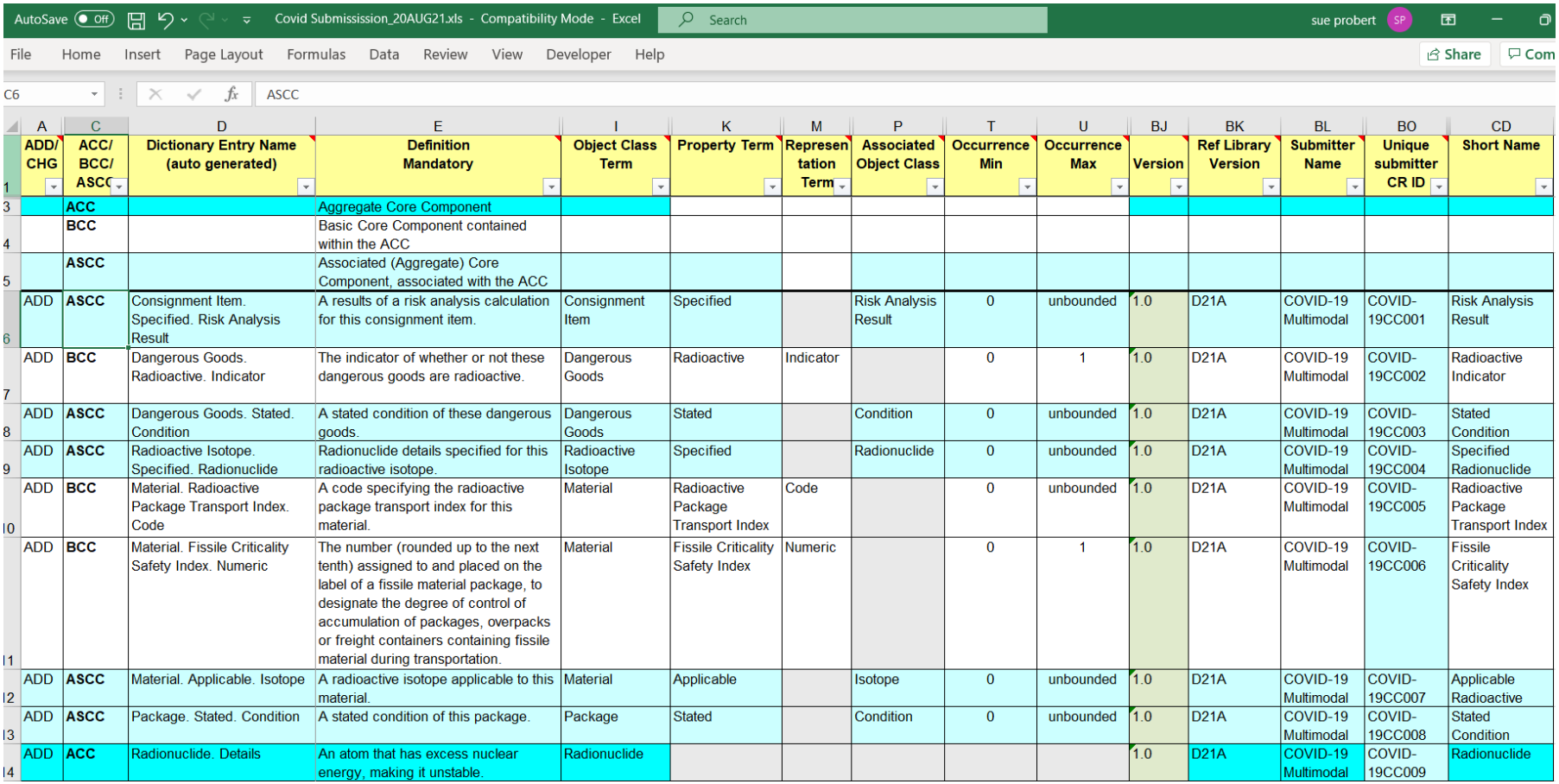
# Example CCL Submission



Covid Submisission_20AUG21.xls - Compatibility Mode - Excel

C6: ASCC

| | A | C | D | E | I | K | M | P | T | U | BJ | BK | BL | BO | CD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 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 |
| 3 | | ACC | | Aggregate Core Component | | | | | | | | | | | |
| 4 | | BCC | | Basic Core Component contained within the ACC | | | | | | | | | | | |
| 5 | | ASCC | | Associated (Aggregate) Core Component, associated with the ACC | | | | | | | | | | | |
| 6 | 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 |
| 7 | 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 |
| 8 | 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 |
| 9 | 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 |
| 10 | 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 |
| 11 | 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 |
| 12 | 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 |
| 13 | 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 |
| 14 | ADD | ACC | Radionuclide. Details | An atom that has excess nuclear energy, making it unstable. | Radionuclide | | | | | | 1.0 | D21A | COVID-19 Multimodal | COVID-19CC009 | Radionuclide |

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# 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