

UN/CEFACT Semantics Standards for Global Trade & Transport Data Harmonisation

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UN / CEFACT





UN/CEFACT

Objectives

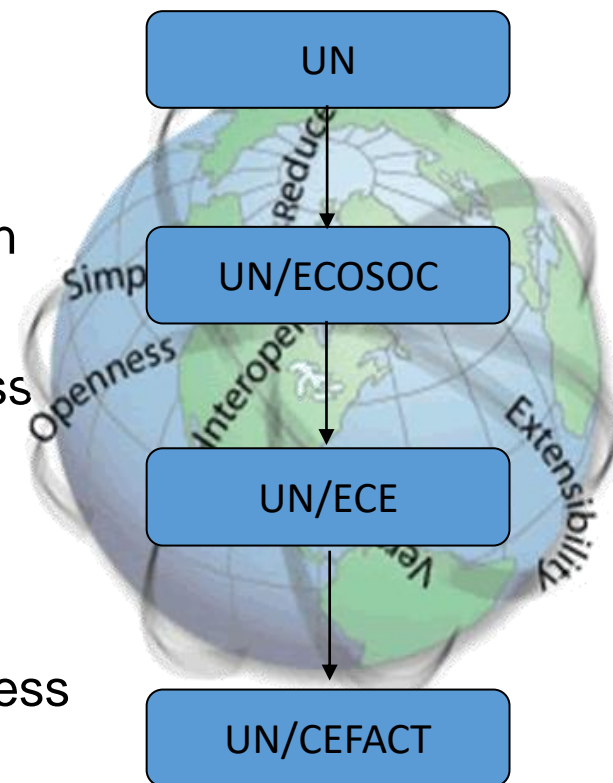
- Simple, transparent and effective processes for global business
- Efficient and automated exchange of information

Outputs

- Global Trade Facilitation and Electronic Business Recommendations and Standards

Means

- Public Private Sector Partnership
 - over 400 experts from government and business
- Experts meet via internet every week plus two Forums per year



Global Remit

UNECE Economic Cooperation and Trade Division (ECTD) in a Nutshell

One Vision: Harnessing Economic Cooperation and Trade for the SDGs

Two Sub-programmes

- Sub-programme 4: Economic Cooperation and Integration
- Sub-programme 6: Trade



Three Thematic Intergovernmental Areas

- **UN/CEFACT – Trade Facilitation and Electronic Business**
- SCTC – Trade Capacity
- CICPPP – Innovation, Competitiveness and PPPs

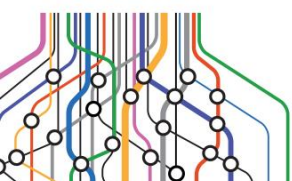
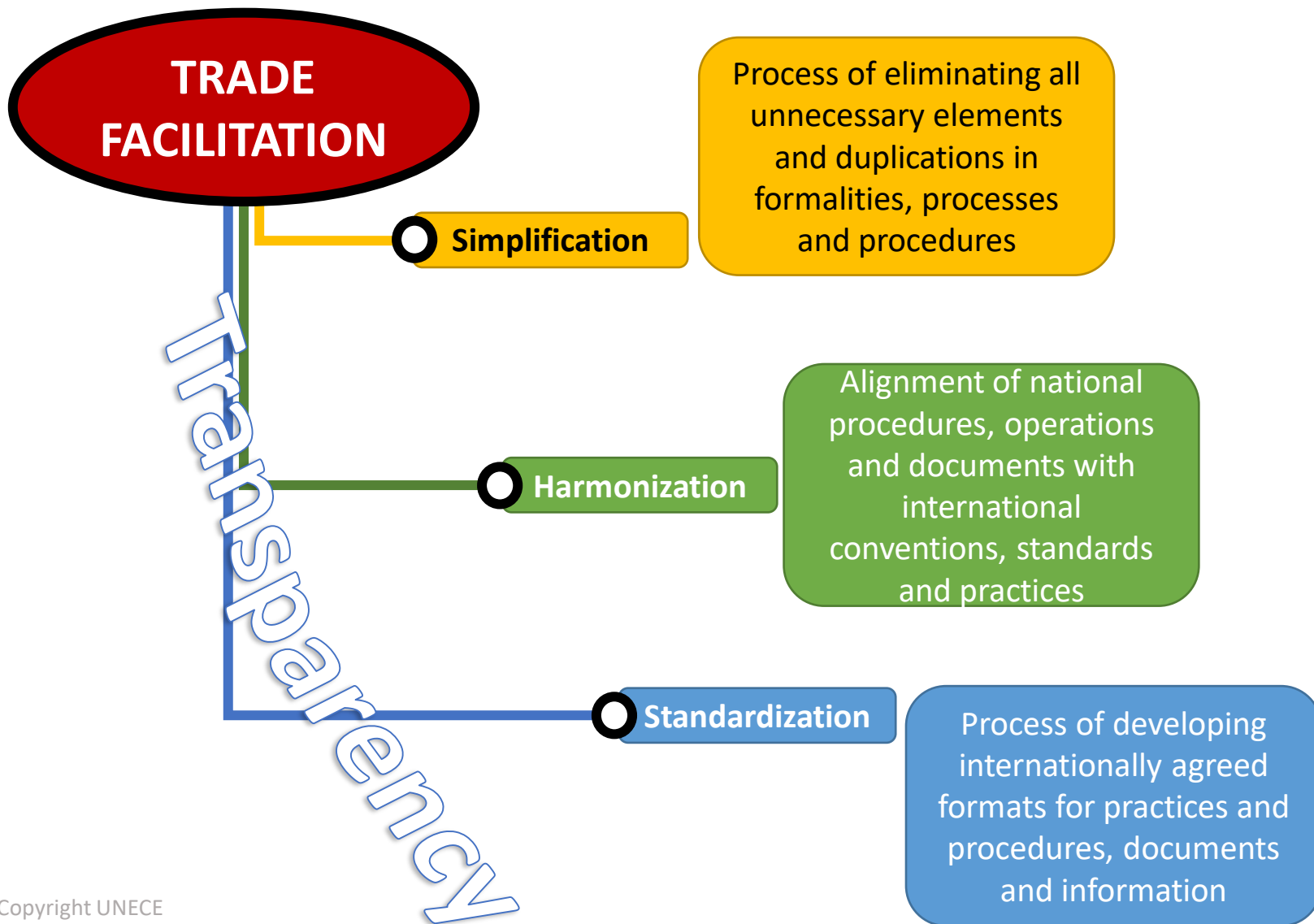
Four Sections

- Cooperation and Partnerships Section
- Innovative Policies Development Section
- Market Access Section
- Trade Facilitation Section





UNECE & Trade Facilitation





Cooperation / Collaboration



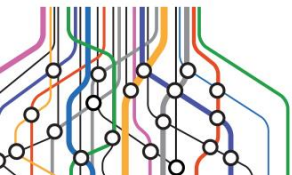
UN / CEFACT





UN/CEFACT – Single Window

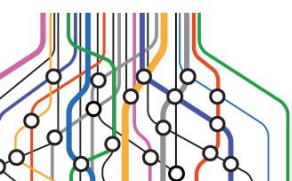
- Rec33 – Single Window Recommendation ([recently revised](#))
- Rec34 – Data Simplification and Standardization for International Trade
- Rec35 – Establishing a legal framework for international trade Single Window
- Rec36 – Single Window Interoperability
- Rec37 – Single Submission Portal ([new](#))
- Rec38 – Trade Information Portal ([new](#))
- Technical Note on terminology for Single Window and other electronic platforms





Some of our Trade Facilitation White Papers

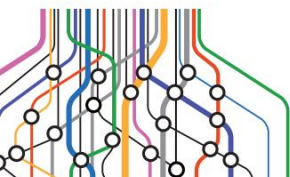
- [White Paper on Paperless Trade](#)
- [White Paper Overview of Blockchain for Trade](#)
- [White Paper on Technical Application of Blockchain to UN/CEFACT Deliverables](#)
- [White Paper on Smart Containers](#)
- [White Paper on Women in Trade Facilitation](#)
- [White Paper on Data Pipeline Concept for Improving Data Quality in the Supply Chain](#)
- [Technical Note on Terminology for Single Window and other electronic platforms](#)
- [White Paper on Reference Data Model](#)
- [White Paper on Integrated Track and Trace for Multi-Modal Transportation](#)





Some of our Trade Facilitation Recommendations

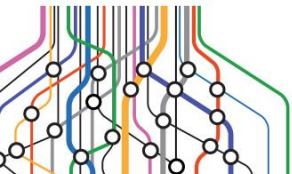
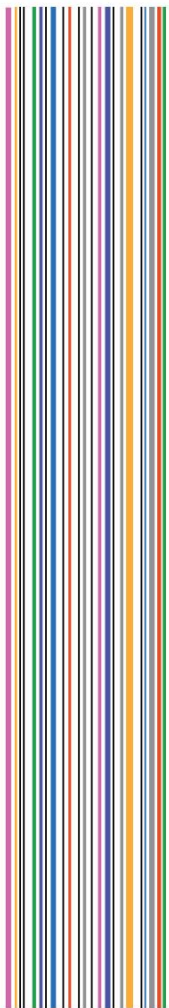
- Rec1 – [UN Layout Key for Trade Documents](#)
- Rec4 – [National Trade Facilitation Bodies](#)
- Rec14 – [Authentication of Trade Documents](#)
- Rec16 – [UN/LOCODE Code for Trade and Transport Locations](#) (recently revised)
- Rec18 – [Facilitation Measures Related to International Trade Procedures](#)
- Rec25 – [Use of the UN Electronic Data Interchange for Administration, Commerce and Transport Standard \(UN/EDIFACT\)](#)
- Rec33 – [Single Window Recommendation](#) (recently revised)
- Rec34 – [Data Simplification and Standardization for International Trade](#)
- Rec36 – [Single Window Interoperability](#)
- Rec37 – [Single Submission Portals](#)
- Rec38 – [Trade Information Portals](#) (recently approved)
- Rec41 – [Public Private Partnerships in Trade Facilitation](#)
- Rec42 – [Trade and Transport Facilitation Monitoring Mechanism](#)
- Rec44 – [Cross-Border Facilitation Measures for Disaster Relief](#)
- Rec45 – [Minimum Standards for Ship Agents and Ship Brokers](#)





UN/CEFACT Key Outputs

- Internationally developed and agreed Trade Facilitation Recommendations
- Internationally developed and agreed Business Standards
- UNTDED (ISO 7372) & UN Layout Key
- Reference Data Models (Buy/Ship/Pay)
- Continually Maintained Libraries
 - UN Core Component Library (CCL)
 - UN/EDIFACT directories
 - UN/XML Schemas
 - Globally applicable Code Sets (UNCL)



UN/CEFACT Deliverables



- Internationally agreed recommendations
- Internationally agreed e-business standards
- Common Libraries
- Common Directories
- Code Lists



UN/CEFACT evolution/revolution – Reference Data Models

Benefits of UN/CEFACT Reference Data Models:

- Cross-Industry
- Multi Modal
- Trade & Transport entity alignment – common BUY SHIP PAY foundation
- 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)



Basis for Semantic Interoperability

Agreed and Harmonised

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

https://unece.org/fileadmin/DAM/cefact/brs/BuyShipPay_BRS_v1.0.pdf



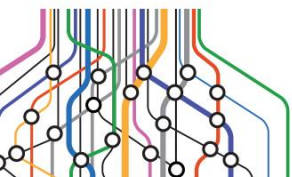
Global Trade – Semantic Anchors

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



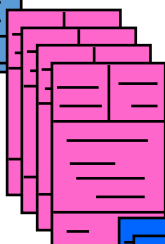
International Supply Chain B2B Data Exchange Families



Trade Documents – Quotation, Order, Invoice etc.



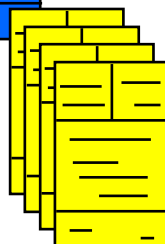
Materials Management Documents – Despatch Advice, Pick List, Packing List etc.



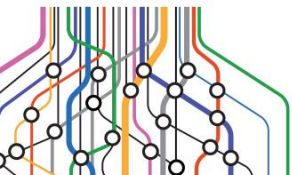
Transport Documents – Bill of Lading, Shipping Instructions etc.



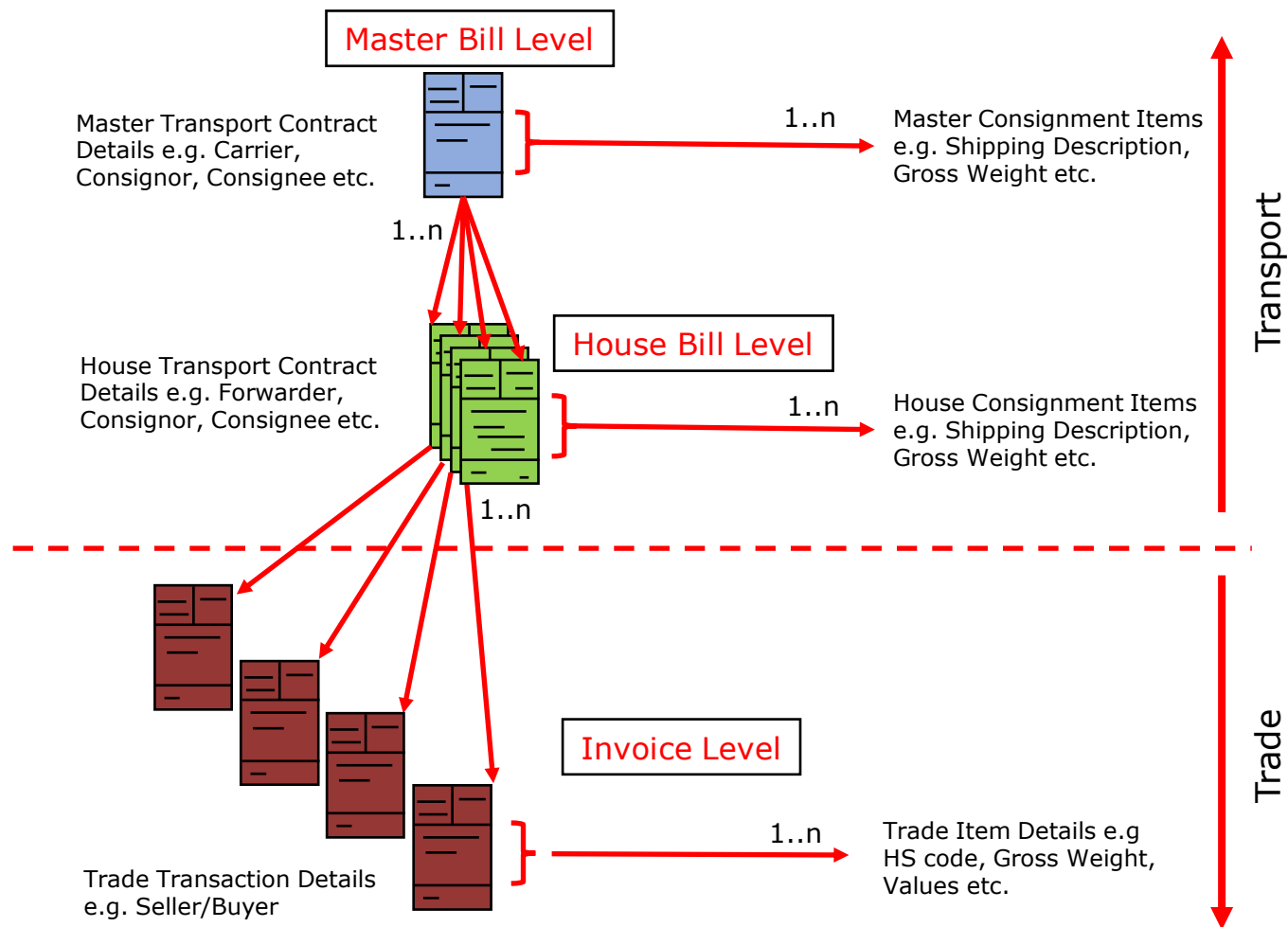
Customs Documents – Export, Import, Transit Declarations, Cargo Reports etc.



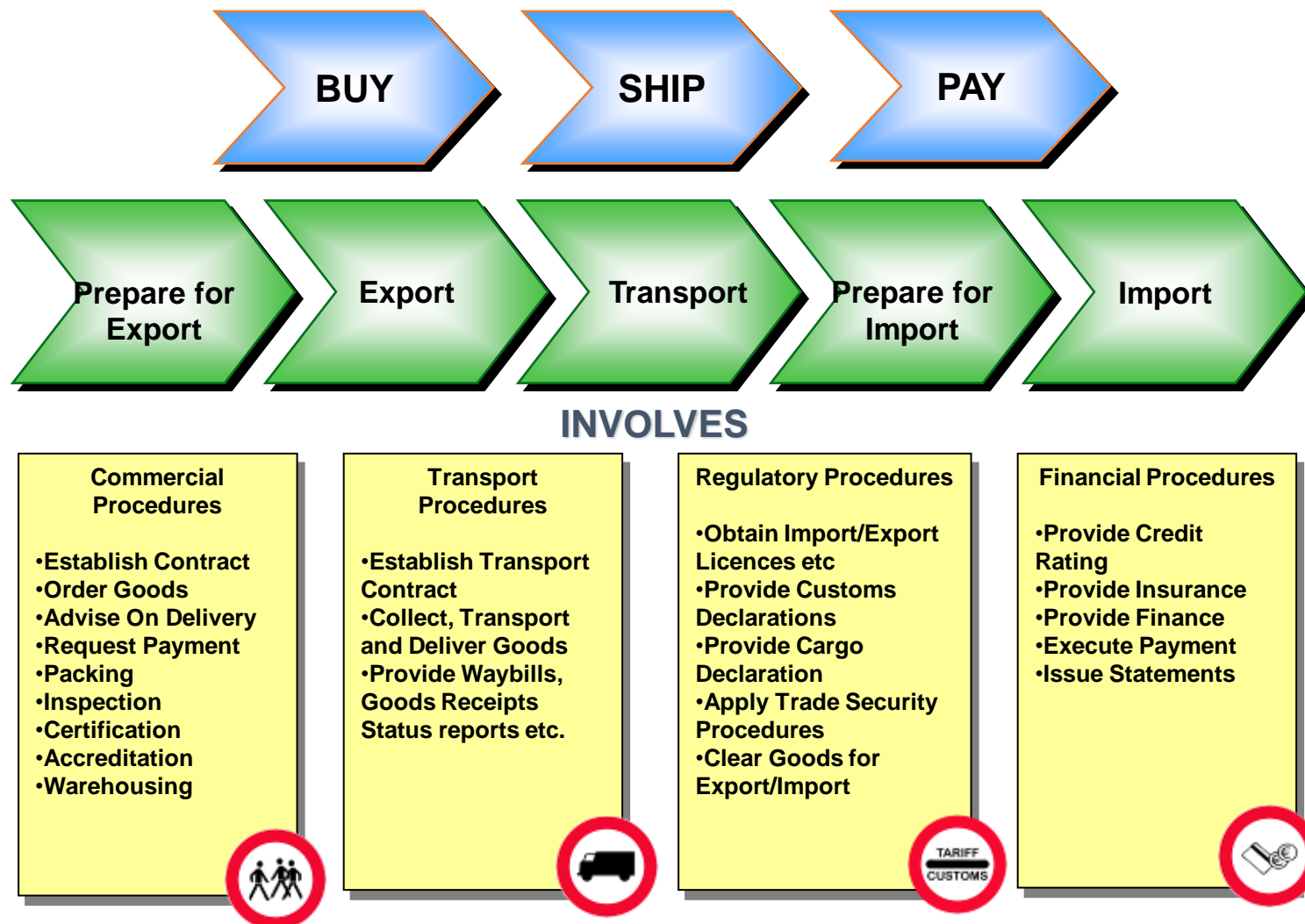
Other Regulatory Documents – Cert of Origin, DGN etc.



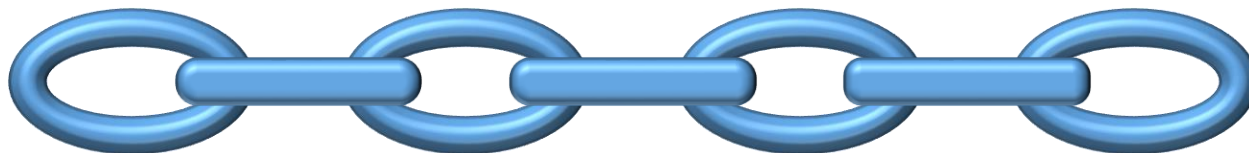
BSP Semantics



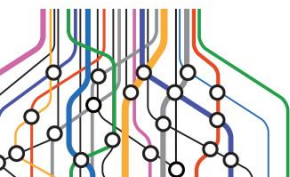
UN/CEFACT International Supply Chain Process Model



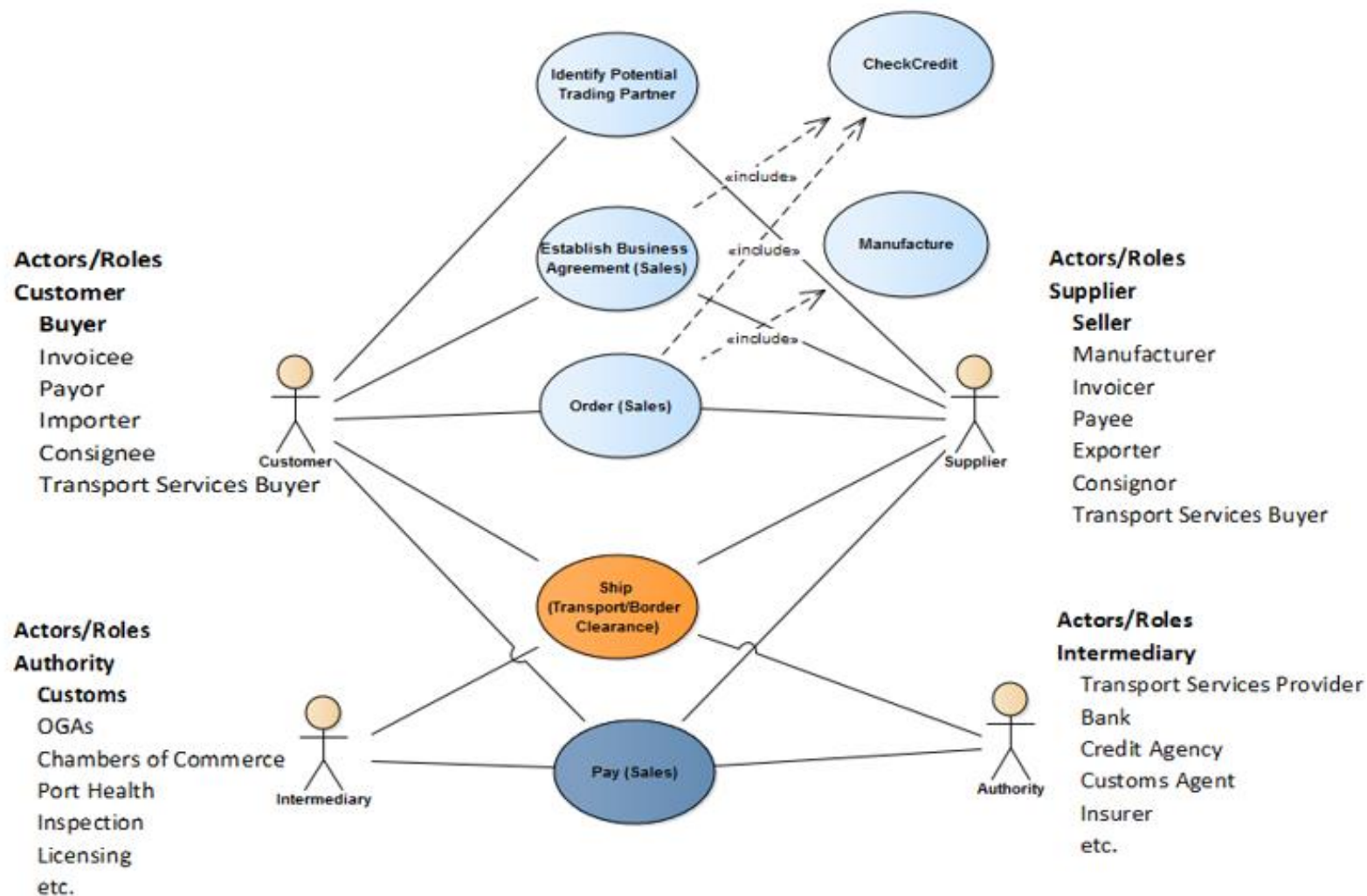
One link in a global supply chain



- Most dematerialization projects are only looking at one sectoral view
 - Almost all sectoral views are just one part of a global supply chain
 - The international supply chain is very complex (multiple actors and multiple relations in data exchanges)
- A holistic view and approach are needed
 - Information will not be related purely to goods or purely to transport or purely to regulatory
 - There are clear links between the information in each part of the global supply chain
- UN/CEFACT deliverables all take this holistic approach

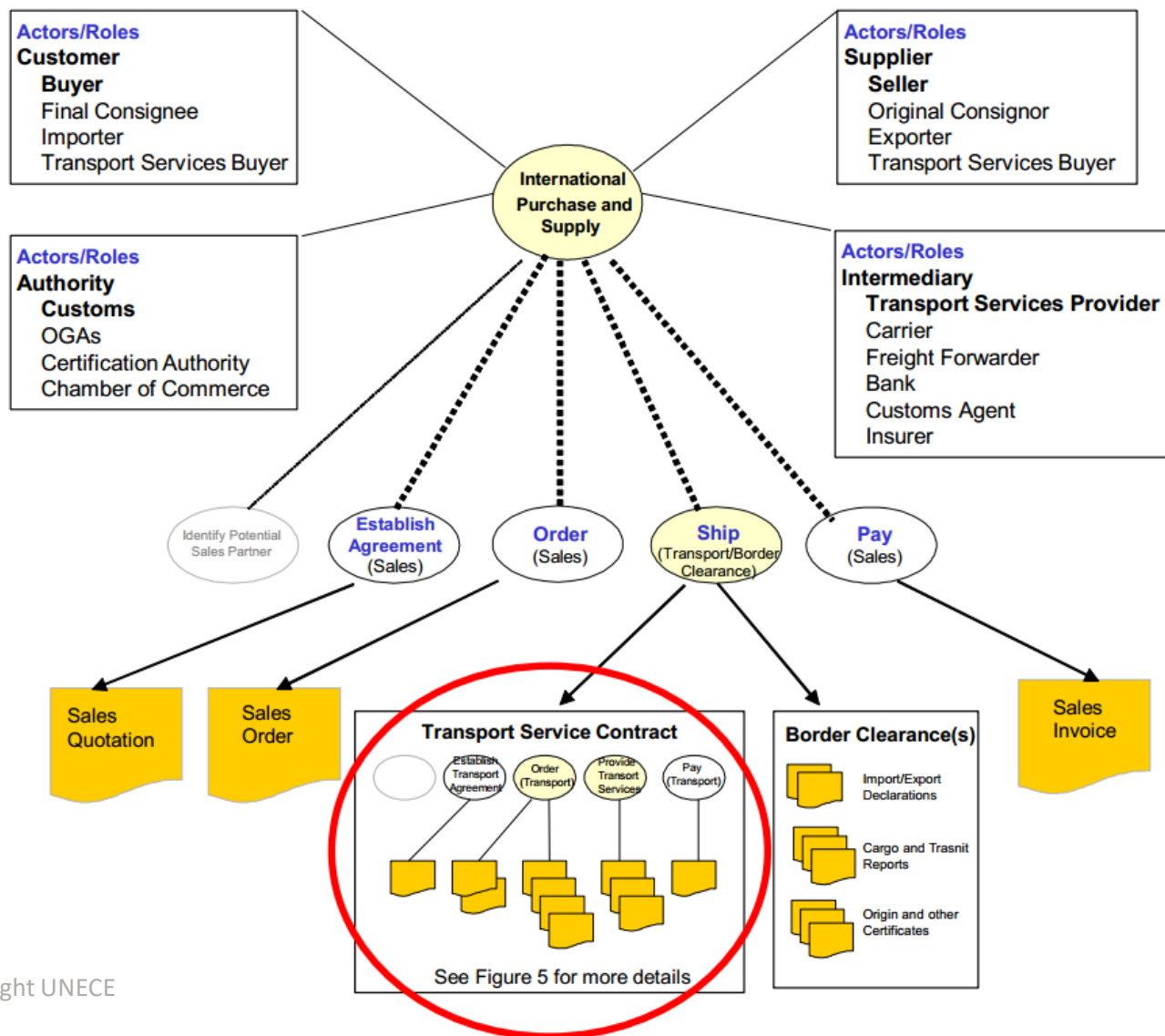


International Supply Chain Actors



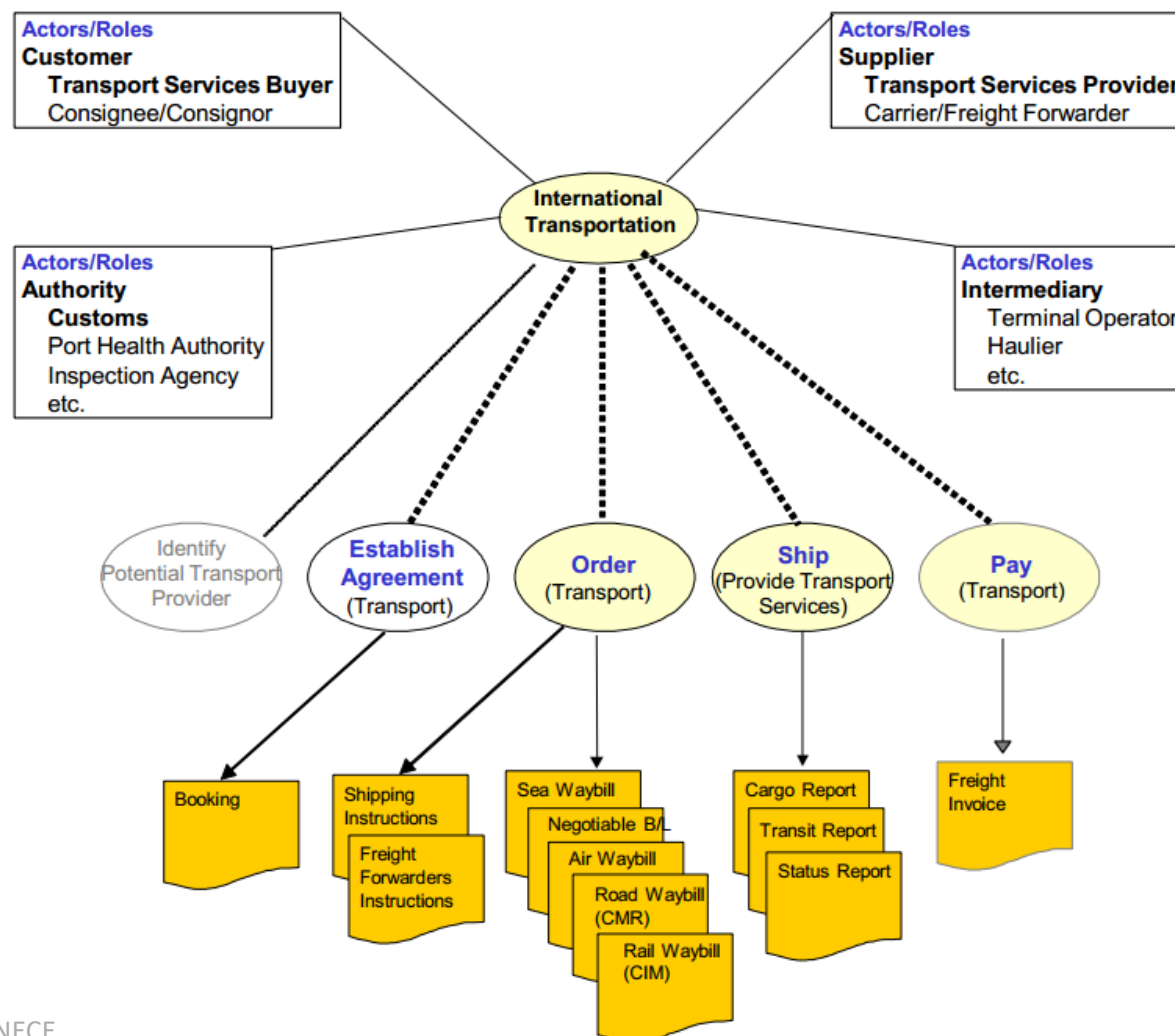
Focussing on the Sales Contract

The Sales Order Contract



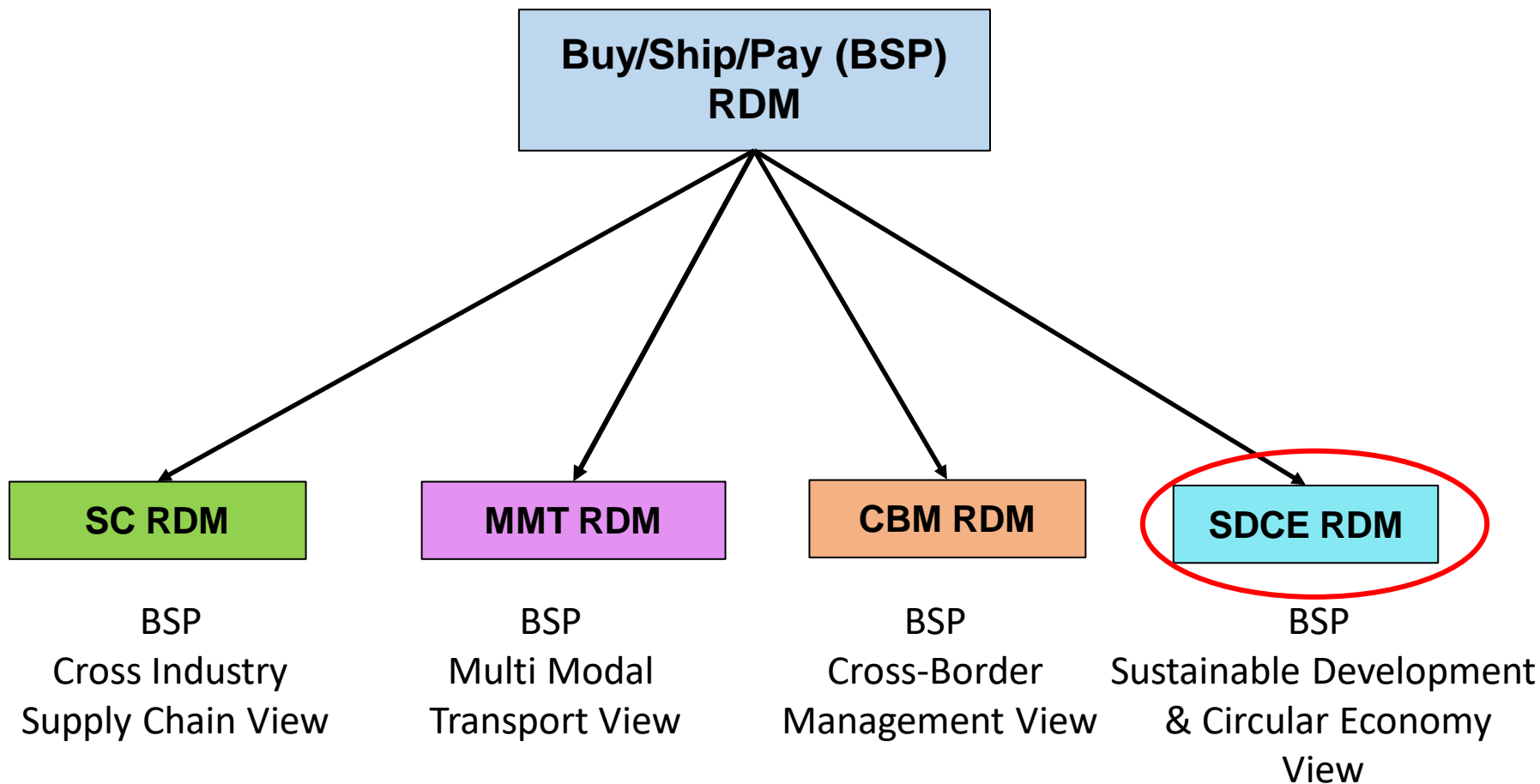
And now the Transport Contract

The Transport Service Contract





UN/CEFACT International Supply Chain Reference Data Model Family - Future

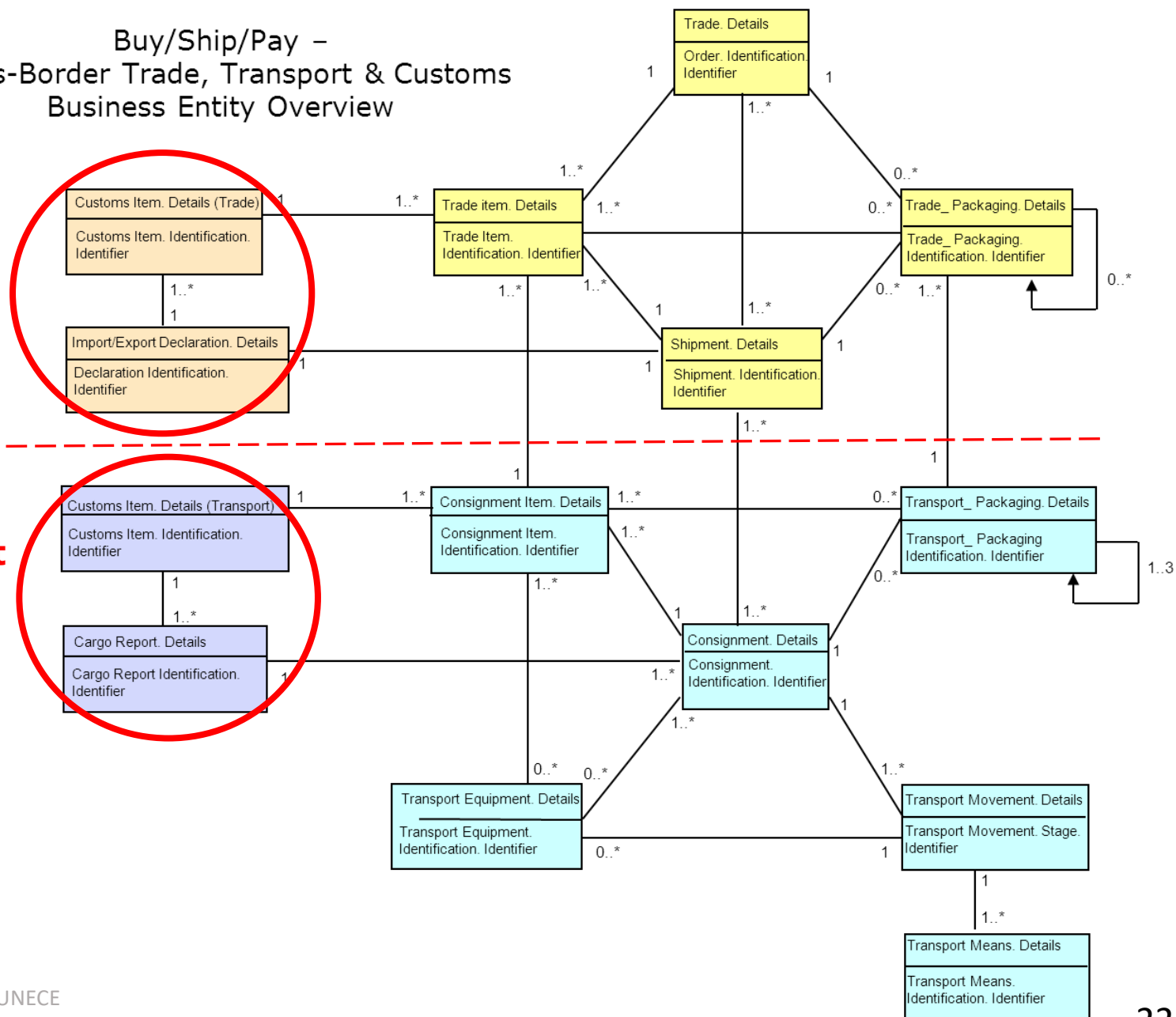




Buy/Ship/Pay – Cross-Border Trade, Transport & Customs Business Entity Overview

**Trade
Data**

**Transport
Data**



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

DictionaryEntryName

ObjectClassTerm

ObjectClassTermQualifier(s)

PropertyTerm

PropertyTermQualifier

RepresentationTerm

BusinessTerm

Definition

BBIE

Logistics_Transport Means. Name. Text

Transport Means

Logistics

Name

Text

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

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

File Edit View Publishing Extras Window Help

Show used objects only English

ABIE > C Logistics Service Charge > A Payment Arrangement Code (Logistics_Service Charge. Payment Arrangement. Code)

BBIE CCTS Notes Enhanced Children

TC154

UID 4237

TDED repr. AWB: L 24, P 51-52 or 52-53 and P 55-56 or 57-58
CIMP: (403):a1
CMR: a1 P = prepaid, C = collect

Locations, Bridges

Dictionary Entry Name Payment Arrangement Code

Definition Code specifying the arrangements for a payment.

Links to UNCL

Oper

Notes for September MA meeting

TBG15 Notes April 2004

June 7372MA meeting update

BN

BN Payment Arrangement Code

Pub Refs

Identifier UN01003724

Ref qDT ID UN02000150

Usage Rules

Example

Version 1.1

TDED (4237)

UNTDID
EDIFACT

UNTDDED

UN Layout Keys

UNCL Codes

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

File Edit View Publishing Extras Window Help

Show used objects only English

C Logistics Service Charge > A Payment Arrangement Code > A Code. Content

CC CCTS Notes

External code lists Codes Enhanced Children

Restrict codes

Code	Name
C A	Payable elsewhere
C B	Third party to pay
C C	Collect
C P	Prepaid

Name (EN) Collect

Description (EN) Charges are (to be) collected from the consignee at the destination.

ITIGG

PandR Ref

Comment

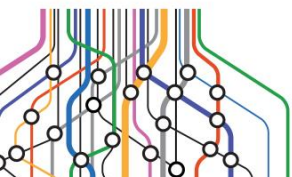
CustomsMap

WCO 3

WCO 2

EU SAD

ASEAN SAD



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



Supply Chain Management

Supply Chain Reference Data Model (SCRDM)

Cross Industry Invoice

- [BRS](#)
- [RSM](#)
- [Cross Industry Common Requirements BRS](#)
- [e-Invoice Executive Guide English](#) [French](#) [Russian](#)
- [XSD Schema](#)
- [UML Diagram](#)
- [HTML index](#)

Cross Industry Delivery

Cross Industry Catalogue

Cross Industry Quotation

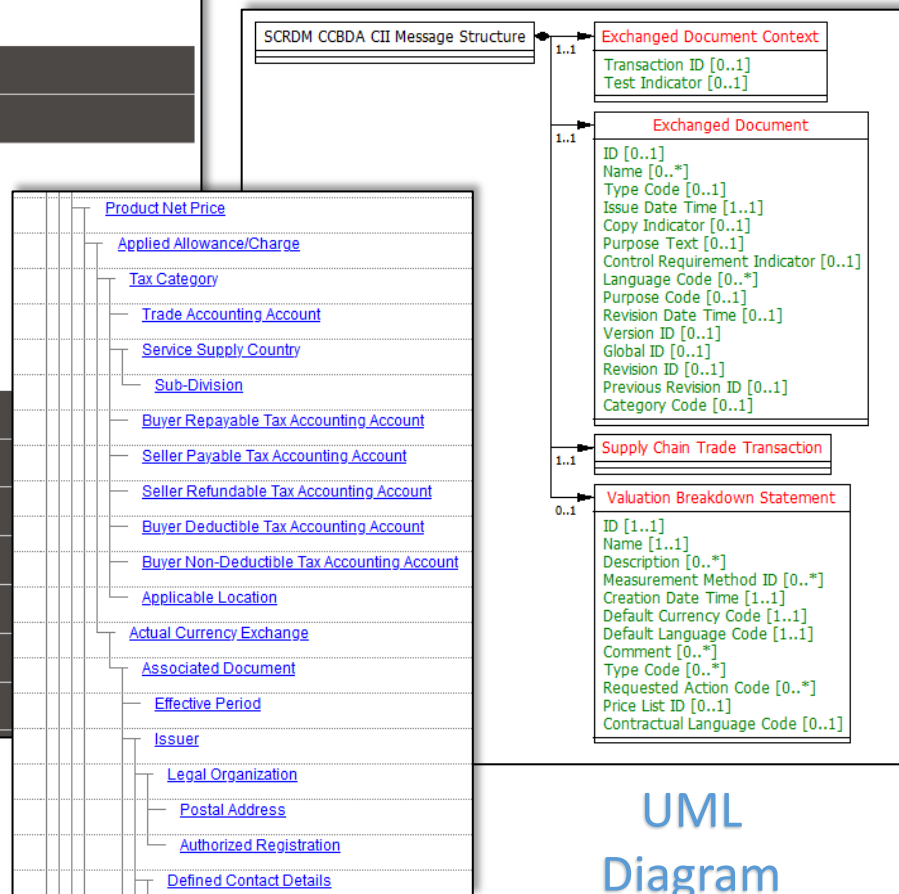
Cross Industry Remittance Advice

Cross Industry Scheduling

Cross Industry Ordering Process

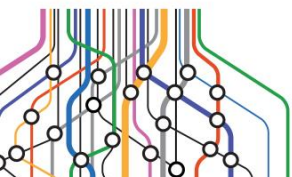
Cross Industry Export Packing List

[UN/CEFACT Streamlined Standards page](#)



UML
Diagram

Message structure (on
HTML index)





Call to Action for Improved Digitalization Through the Use of UN/CEFACT Standards

- Goals of the Call to Action
 - To increase the interoperability in the sectors of trade facilitation and e-business
 - To provide visibility on the use of UN/CEFACT standards, and allow partners to find each other.
 - To enhance the relevance, impact and reputation of the work performed by UN/CEFACT
- Addressees
 - Member States' governments
 - National public administrations
 - International organizations
 - The business community and economic operators engaged in the supply chain
- Functioning
 - Organization registers a commitment for the Call. This includes information about deliverables to be used, goals to be achieved, relation to SDGs, time frame
 - Commitments will be posted to the UN/CEFACT webpage and available publicly
 - Currently studying other communication possibilities such as a specialized logo

<https://unece.org/trade/uncefact/CallToAction-Digitalization>



UNTTC

Transport & Trade Connectivity in the age of pandemics

- UNDA New York launched **COVID-19 initiative to encourage exchange of digitised electronic data** rather than paper documents in transport contract related data exchanges
- **UNECE and UN/CEFACT joint contribution:**
 - Cross-modal project to develop modal guides on reuse of the UN/CEFACT MMT Reference Data Model to support digitised data exchanges between transport modes
 - **7 Heads of Delegation** Supported the Project
(Germany, Spain, Greece, Russia, Italy, US and Ukraine)

Modal Specific MMT-based Customisations



✓ Maritime



✓ Road



✓ Air



✓ Rail



✓ Inland Waterway

UNTTC MMT Comparison Matrix of results

1	2	3	4	5	6	7	8		C	D	E	F	G	H	I	J	K	L	M	N	O
1	BN								FIATA Bill	CIM-SMGS	CIM-SMGS URL	Wagon List	River B/L	Maritime B/L	eCMR	EFTI DR FEB2021	EFTI DG to	Air Waybill	Air CSD	Air DG	
2	BN								FIATA Bill	CIM-SMGS Co	CIM-SMGS Co	Wagon list; Co	River Bill of Lading	Maritime B/L	eCMR MMT; R	EFTI DESCopy	MMT Cont	Air Wayb	CSD; D21	DG Decla	
3	MMT CCBD A IFTM** Data Exchange Structure	X	X		X	X	X	X										X	X	X	
4	Exchanged Document Context														X						
10	Exchanged Document	X	X		X	X	X	X										X	X	X	
11	ID	X	X		X	X	X	X										X	X	X	
12	Name																				
13	Type Code												X	X	X			X	X	X	
14	Issue Date Time	X	X		X	X	X	X					X	X	X			X	X	X	
15	Remark														X						
16	Original Issued Quantity	X						X					X								
17	Copy Issued Quantity	X						X					X								
18	Purpose Code			X		X												X	X	X	
19	Sender Assigned ID			X		X															
20	Recipient Assigned ID			X		X															
21	Version ID			X																	
22	Note			X		X									X				X		
23	Subject Text														X						
24	Content Code														X						
25	Content Text			X		X									X				X		
26	Subject Code														X				X		
27	Reference Document			X		X															
28	Type Code			X		X															
29	Issue Location	X						X					X	X	X			X		X	
30	ID	X						X					X	X	X			X		X	
31	Name	X						X					X	X	X			X		X	
32	Country Code	X													X						
33	Contractual Clause	X	X		X													X			
34	ID	X																X			
35	Content Text	X	X		X													X			
36	Air Waybill Consignor Signatory Authentication	X	X		X		X											X			
37	Actual Date Time	X	X		X													X			

UN/CEFACT Publication Trade Example: Cross Industry Invoice (CII)



BUY SHIP PAY (BSP)

*Semantic model
subset of UN/CCL*

BUY PAY (Supply Chain)

CCL subset

BUY SHIP PAY

Master message structure

BUY PAY

Master message structure

BUY PAY

*Exchange syntax-neutral
data exchange structure*

Invoice data exchange
structure

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

Supply
Chain
RDM

Supply
Chain
RDM
Customised
Subset
(Decorated)

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

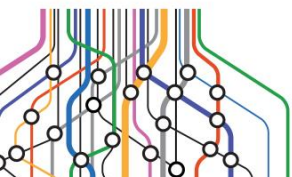
*Exchange syntax-neutral
data exchange structure*

eCMR message structure

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

**Multi
Modal
Transport
RDM**

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



Related Projects

Recently Completed Projects

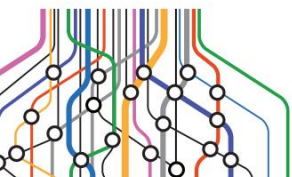
- Buy Ship Pay Reference Data Model
- Smart Container eBusiness standard
- White Paper overview of Blockchain in Trade

Ongoing Projects

- RDM2API
- Cross Industry Supply Chain Track and Trace (White Paper published)
- Cross-Border Management RDM
- UNDA COVID-19 initiative (UNTTTC) – Electronic Transport Data Exchange Structures based on MMT (MultiModal Reference Data Model)

UN/CEFACT Semantic Publications:

<https://unece.org/trade/uncefact/mainstandards>



Thank You

- All UNECE and UN/CEFACT Recommendations, codes, standards and publications are available for free on our website at: www.unece.org/cefact/
- All experts are welcome to join the standards development work free of charge

For further information:

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