Seamless multimodal information exchange: UN/CEFACT package of standards; pilot projects; and digital corridors

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Pilot reports on the website

https://unttc.org/stream/electronic-trade-and-transport-documents-and-data

SPECA ROADMAP FOR THE DIGITALIZATION OF MULTIMODAL DATA AND DOCUMENT EXCHANGE ALONG THE TRANS-CASPIAN TRANSPORT CORRIDOR, USING UNITED NATIONS LEGAL INSTRUMENTS AND STANDARDS

https://unece.org/speca/speca-digitalization-roadmap

SPECA Summit in Baku adopted the digitalization Roadmap on 24 Nov.2023.

See video at:

https://www.euronews.com/video/2023/12/01/speca-central-asia-reaffirms-its-key-role-in-international-transport

Vision statement: From 2027 onwards, economic operators and all competent authorities in the SPECA participating countries will start to use electronic freight transport data from economic operators in line with relevant United Nations legal instruments and standards, including the UN/CEFACT package of standards. Data will be interoperable between sectors and the relevant modes of transport along the trans-Caspian transport corridor, with a view to increasing the efficiency of data exchange and the movement of goods across borders.

IMPLEMENTING THE DIGITALIZATION ROADMAP IN THE TRANS-CASPIAN TRANSPORT CORRIDOR

Governments will create an enabling environment to realize the vision, together with UNECE and others:

2024

- o Customs, economic operators and national guarantee associations start practical operation of the eTIR system;
- o Governments and business will take part in digitalizing B2B supply chain data exchange based on UN/CEFACT stndds

2025

- o Customs, economic operators and national guarantee associations will use eTIR;
- o Operators will participate in pilot projects using the UN/CEFACT standards: port community systems and others

2026

- o Economic operators use electronic data exchange on documents accompanying goods using UN/CEFACT standards;
- o Customs authorities and economic operators may use eCMR with the use of the UN/CEFACT standards;
- o Economic operators participate in the pilot projects on the operational supply chain data exchange.
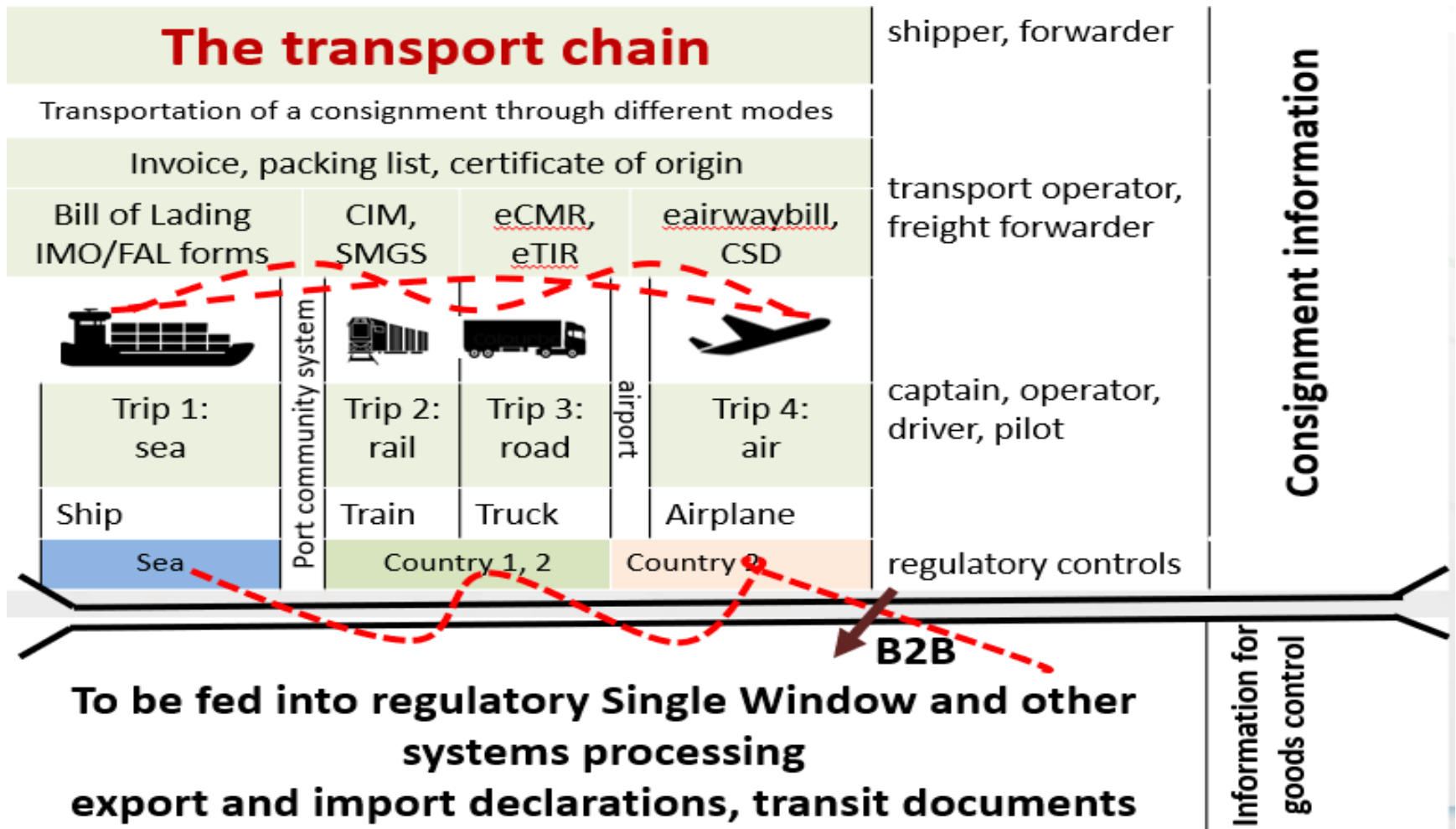
2027

- o Economic operators and authorities to use rail data exchange based on the Unified Railway Law and UN/CEFACT
- o Economic operators may use digital air cargo documents with application of the UN/CEFACT standards;
- o Economic operators in all countries may use the operational supply chain data exchange.

2028

- o New action plan to be agreed

- • The SPECA Governments will convene meetings of experts to elaborate on the implementation details.
- • The implementation of this Roadmap will have a strong capacity-building component,
- • The SPECA Governments recognize the significant value added of the implementation of this Roadmap, will work with UNECE to mobilize the resources and cooperate with development partners.

Problem: fragmentation of digitalization efforts in the international supply chain

Solution: Seamless multimodal supply chain based on UN standards

The transport chain

Transportation of a consignment through different modes

Invoice, packing list, certificate of origin

Bill of Lading IMO/FAL forms	CIM, SMGS	eCMR, eTIR	eairwaybill, CSD
Trip 1: sea	Trip 2: rail	Trip 3: road	Trip 4: air
Ship	Train	Truck	Airplane
Sea	Country 1, 2		Country 2

Port community system

airport

shipper, forwarder

transport operator, freight forwarder

captain, operator, driver, pilot

regulatory controls

Consignment information

Information for goods control

B2B

To be fed into regulatory Single Window and other systems processing export and import declarations, transit documents

Upgrading existing and developing data exchange standards for key documents accompanying cargo in different modes of transport

Based on UN/CEFACT Multimodal Transport Reference Data Model

Pilot applications: e.g. in a digital multimodal transport corridor or documents (FIATA B/L, air cargo, IWT)

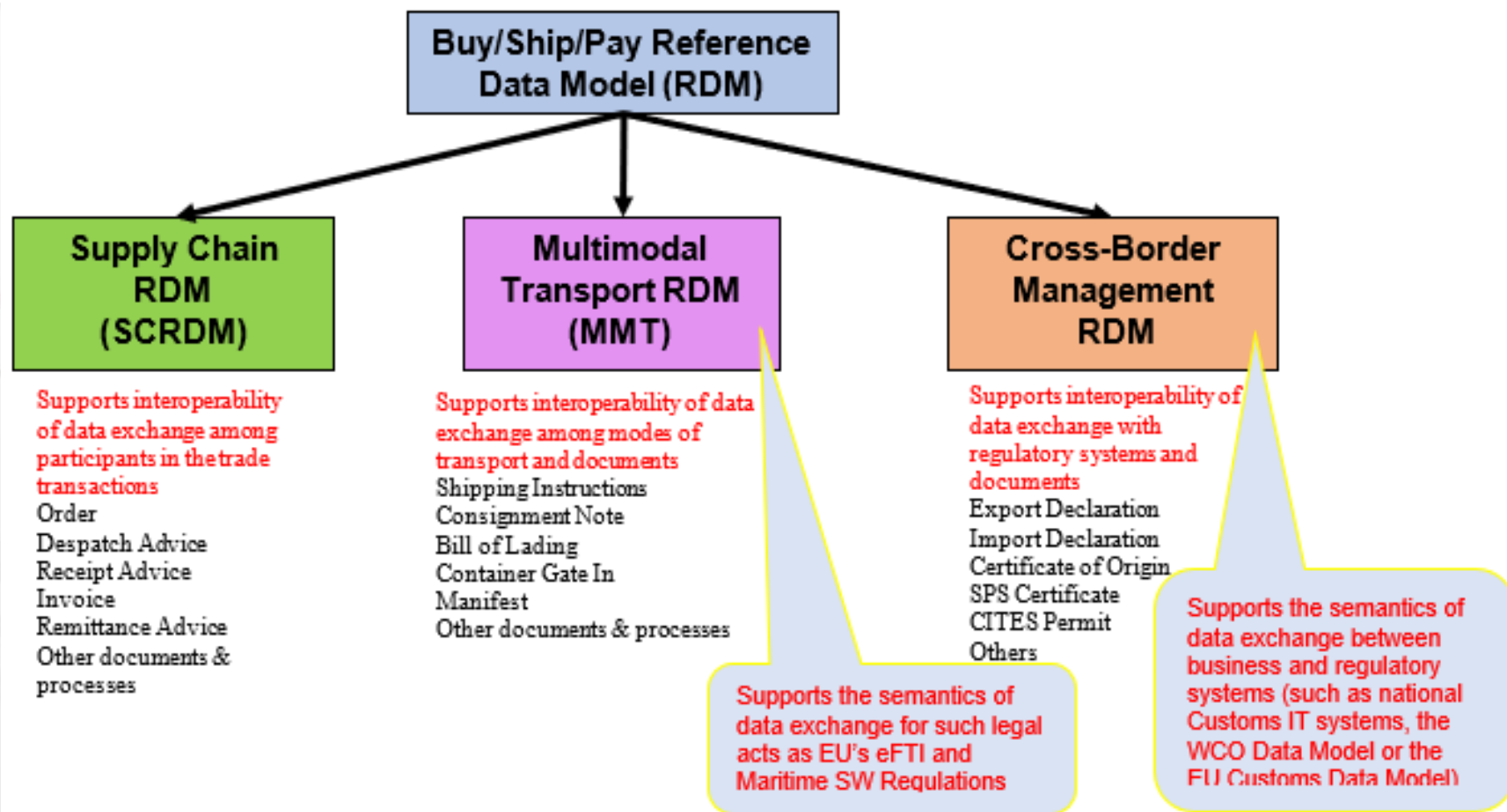| Ready standards or standards under preparation	Key documents accompanying goods (B2B)
1. Standardized data exchanges (executive guide; business requirement specification; business name structure; subset; CCL structure; XLS guideline structure; XSD schema; UML diagram; HTML index, using as a model the e-CMR standard) www.unece.org/uncefact/mainstandards.html, already prepared for the following documents:	**3. Standardized data exchanges to support cross-modal cargo transfers**
• eCMR • Cross Industry Invoice • Cross Industry Delivery • Cross Industry Catalogue • Cross Industry Quotation • Cross Industry Remittance Advice • Cross Industry Scheduling • Cross Industry Ordering Process • Material Safety Data Sheet Details (MSDS) • Contract Financial Execution Management • Market Research Information • Verified Gross Mass (VERMAS) documents • International Forwarding and Transfer documents • Smart container information • A number of agricultural certificates, accounting and other documents These standards you can find at www.unece.org/trade/uncefact/mainstandards.html	• Inland water transport contract document: IWT "Bill of Lading"; CMNI consignment note; etc. • Maritime waybill. • CIM/SMGS and SMGS Consignment Note; • CIM/SMGS Wagon List (+ Commercial Act, etc.) • eCERT (sanitary-phytosanitary certificates and basis for other certificates): aligned to the Buy-Ship-Pay Reference Data Model
2. Standardized data exchanges published in October 2020, making information already in the MMT-RDM more easily discoverable	**4. Air cargo and dangerous goods documents:**
• Provisional booking • Firm booking • Booking confirmation • Shipping instructions • Waybill • Status report • Status request • Packing list • RASFF (Rapid Alert for Security of Food and Feed) (published at www.unttc.org and www.unece.org/trade/uncefact/mainstandards.html)	• **airwaybill,** • **dangerous goods declaration, &** • **consignment security declaration** FIATA multimodal Bill of Lading +

Common foundation for all multimodal data & e-docs based on UN/CEFACT standards & reference data models – Stakeholder agencies retain control over their documents and legal frameworks. **EU's eFTI Regulation uses MMT RDM**

Standards and family of reference data models for interoperability in the supply chain

Buy/Ship/Pay Reference Data Model (RDM)

Supply Chain RDM (SCRDM)

Supports interoperability of data exchange among participants in the trade transactions
Order
Despatch Advice
Receipt Advice
Invoice
Remittance Advice
Other documents & processes

Multimodal Transport RDM (MMT)

Supports interoperability of data exchange among modes of transport and documents
Shipping Instructions
Consignment Note
Bill of Lading
Container Gate In
Manifest
Other documents & processes

Supports the semantics of data exchange for such legal acts as EU's eFTI and Maritime SW Regulations

Cross-Border Management RDM

Supports interoperability of data exchange with regulatory systems and documents
Export Declaration
Import Declaration
Certificate of Origin
SPS Certificate
CITES Permit
Others

Supports the semantics of data exchange between business and regulatory systems (such as national Customs IT systems, the WCO Data Model or the EU Customs Data Model)

In the digitalization of transport information:
- Multimodal solutions are better than modal ones,
- Global solutions are better than local ones.

We do not replace existing standards, like the IATA eAirwaybill.
Data mapping to MMT RDM provides interoperability

UN/CEFACT Streamlined Standards

Transport and Logistics

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

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
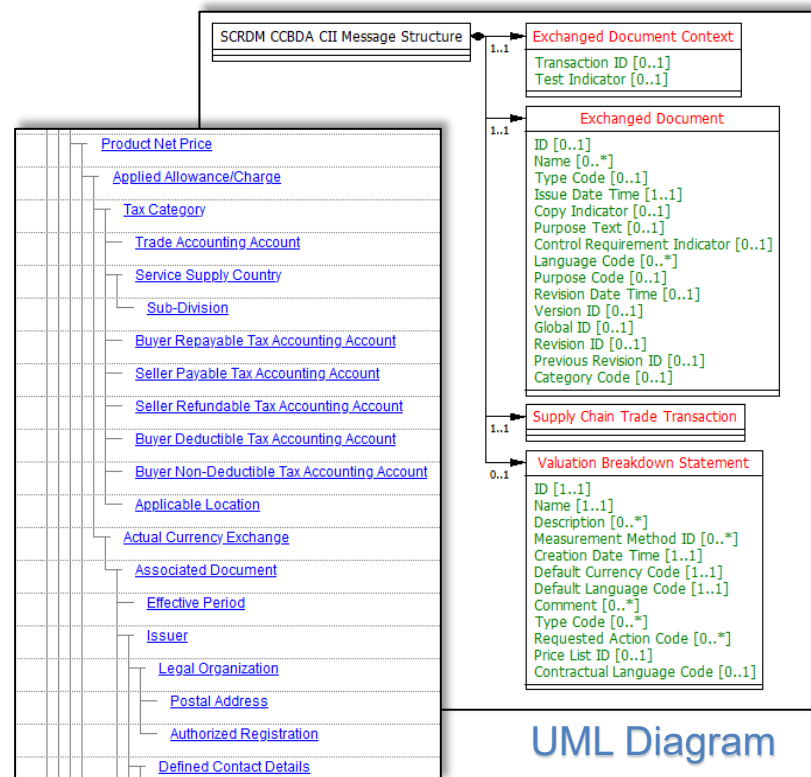
UML Diagram

Message structure (on HTML index)   7

Information sharing in the digital corridor, using UN standards as reference for multimodal interoperability

Interoperability of multimodal data exchange Europe - East Asia:

- **Regulatory / legal framework: agreement (tbc)**
- **Technological neutrality: for EDI, XML, JSON API, blockchain**
- **All parties are invited to cooperate and use the standards**
- **Move from document exchange to data sharing; decentralized**
- **Best practice example:** EU eFTI Regulation uses UN/CEFACT Multimodal Transport Reference Data Model (MTM RDM) for interoperability

https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32020R1056;
https://eur-lex.europa.eu/eli/reg/2022/2399/oj

Information chain in a digital corridor

UA — GE — AZ — KZ — UZ — KG

EU — Black Sea ↔ S. Caucasus ↔ Caspian Sea ↔ Central Asia — CN

TR — TM — TJ

eFTI

Customs SW

Business systems

data pipeline

EU multimodal

EU eFTI Regulation

All info on cargo on rail, road, air, inland water modes inside the EU to be multimodal and electronic

Maritime SW Regulation Common transit Conv. NCTS

Road

CMR Convention

eCMR

TIR Convention
eTIR

Rail

COTIF & OSJD conventions, URL

CIM/SMGS, SMGS, CIM & URL consignment notes

Maritime

IMO FAL Hague Visby Rules

Non-negotiable and negotiable Bill of Lading, IMO FAL documents

Air

Montreal and Warsaw Conventions

e-Airwaybill Dangerous Goods Decl., Consignment Security Declaration

Alignment of data in modal dangerous goods declarations to the UN/CEFACT MMT RDM

For example: the CIM-SMGS railway consignment note referenced to the UN/CEFACT Multi-Modal Transport Reference Data Model, according to the prepared XML schema for CIM-SMGS
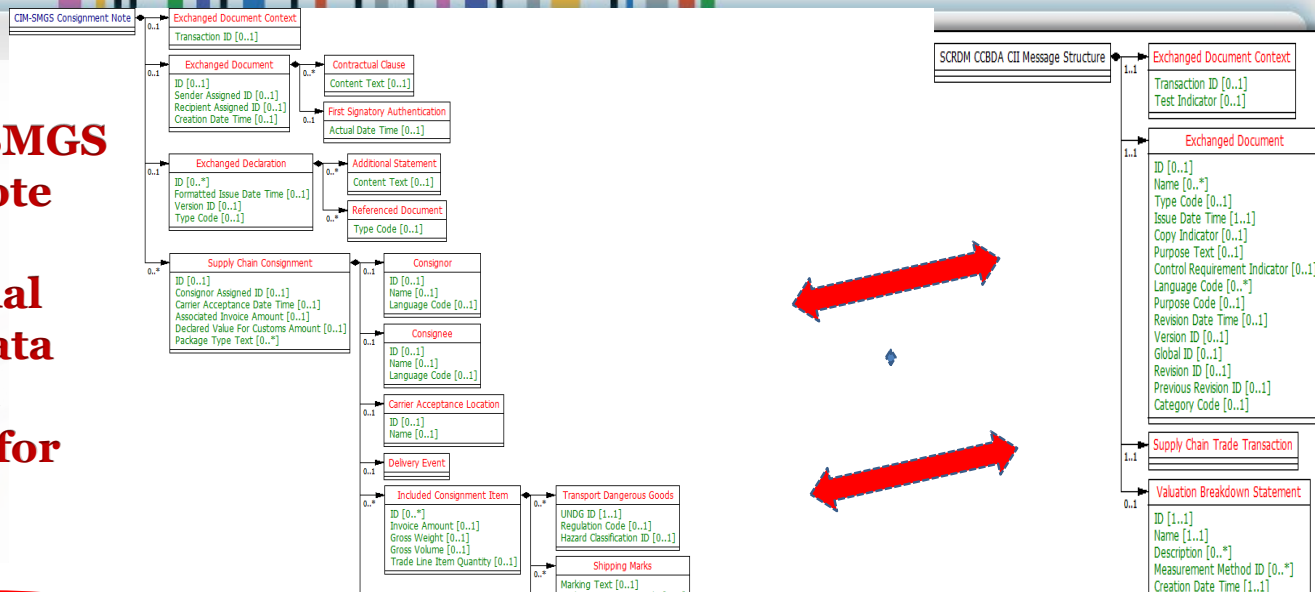
Transport data and documents can and are exchanged between modes and with other sectors

Standards for CIM/SMGS wagon list finalized
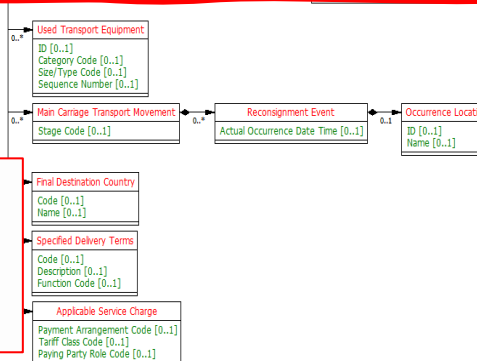
https://service.unece.org/trade/uncefact/publication/Transport and Logistics/CIM-SMGS Consignment Note/HTML/001.htm

Railway documents and data

Basic data mappings

CIM/SMGS SMGS EDIFACT

CIM URL

Common railway data elements

IFTMIN

Example message

No.	Tag	Example
01	UNA	UNA:+.? ' UNA:+,? '
02	UNB	UNB+UNOC:3+NO0987654321:30+70800 890++CONSIGNOR++1++1'
03	UNH	UNH+1234+IFTMIN:D:04A:UN:BIG14'
04	BGM	BGM+610+70123451234567898+1'
05	CTA	CTA+BK+:EDI dep./ Eva HW'
06	COM	COM+eva.hw@bring.com:EM'
07	DTM	DTM+137:20100810:102'
08	DTM	DTM+234:20100810:102'
09	MOA	MOA+22:4530:NOK'
10	FTX	FTX+PRD+++1020:X'
11	FTX	FTX+SSR+++1076:ME01NO'
		+TRR+++DAVA'
		DEL+++Call 911 before delive
		TX+AAR+++0022'
15	CNT	CNT+11:9:PCE'
16	GDS	GDS+11'
	SG2	
17	TOD	TOD+5+CC'
	SG2	
18	TOD	TOD+6++EXW:INCOTERMS2010'
19	LOC	LOC+1+3000::139:Drammen+NO'
	SG3	
20	RFF	RFF+CMR:70701020000000034'
	SG3	
21	RFF	RFF+IV:867'
22	DTM	DTM+171:20100923:102'
	SG8	
23	TDT	TDT+20++3++BCS::87'
24	TSR	TSR+ALY'
	SG9	
25	LOC	LOC+202+1000::87:Bring Logistics
	SG11	
26	NAD	NAD+CZ+10009999999::87++Bring IK etg.+OSLO++0001+NO'
27	LOC	LOC+202+20000::87'
	SG12	

Data mapping to the MMT RDM

Visualization of UN/EDIFACT – XML/etc. converter

UNECE — United Nations Economic for Europe

CIM/SMGS

CIM

SMGS

…

IFTMIN

Data in EDIFACT standart

...
...

NAD+CZ+X:Type++
NAME:NAME:NAME:
NAME:NAME:LNG+AD+
T5++Y+Z'

...
...

MMT Reference Data Models

Data Converter

XML

```
<Supply Chain_ Consignment>
...
  <Consignor>
   <Trade_ Party>
    <Identification>
     <Identifier>
```

Consignor_Identifier
...

JSON

```
"Supply Chain_ Consignment" : {
...
  "Consignor" : {
   "Trade_ Party" : {
    " Identification" : {
     "Identifier" :
```

Consignor_Identifier
...
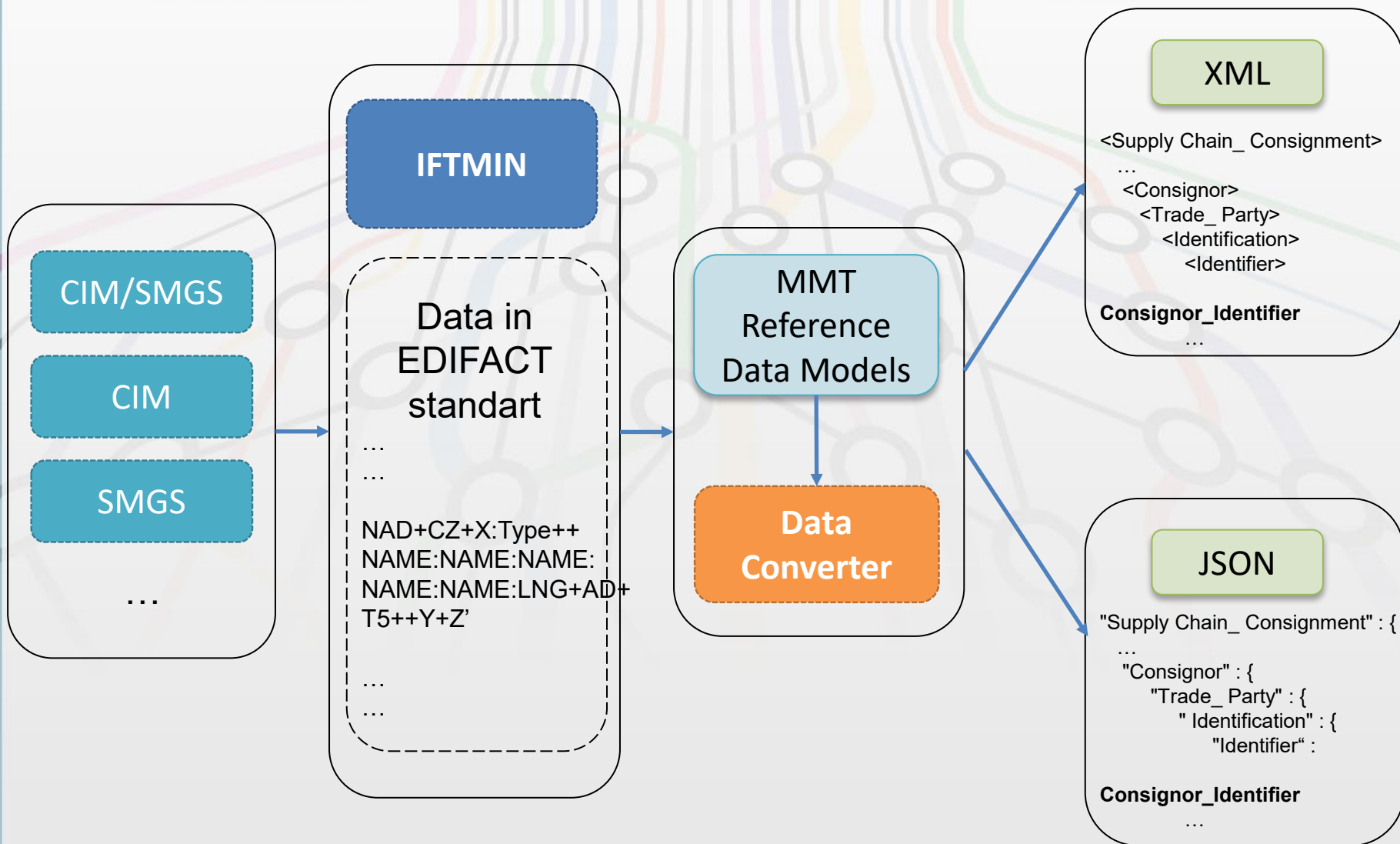
Lessons from work on the convertor UN/EDIFACT - XML

1. **Create seamless interaction between carriers in different modes of transport (consignors/consignees) and state regulatory authorities through harmonization and standardization of data based on the UN/CEFACT Multimodal Transport Reference Data Model (MMT RDM).**

2. **Reduce time and labor costs in preparing transport documents used in different legal systems through:**

   - **automating processing and transmission of electronic messages in multimodal cargo transportation,**

   - **simpler interaction between railway carriers and owners of goods and their agents through a unified electronic format of the messages**

3. **Interaction with state regulatory authorities in standardized electronic format to facilitate border crossing,**

4. **Software should automatically convert UN/EDIFACT format into XML/JSON and vice versa using harmonized directories/specifications (O+P 944, World Customs Organization Standards, etc.).**

5. **Possibility to interpolate into any information system based on the simplified syntax.**

In 2024, create a technical specification for the SMGS electronic consignment note using UN/CEFACT and MMT RDM standards

- **OSJD/RZhD and UN/CEFACT experts cooperate to create a technical specification for the SMGS consignment note**

- **Use it for pilot projects**

Comments to the UN/CEFACT experts suggestions for adjusting the SMGS consignment note dataset in XML format (12.02.2024)

On p. 1:
UNH+N2+IFTMIN:D:97A:UN:OSJD' contains the following data:
- IFTMIN – message type identifier,
Which value should be indicated in Guideline/Version/Name (*BSP Master. Details/BSP Master. Exchanged Document_ Context/Exchanged Document_ Context. Guideline_ Specified. Document Context_ Parameter/Document Context_ Parameter. Specified. Document_ Version/Document_ Version. Name. Text*) in electronic message developed in XML format? In JSON format?
UN/CEFACT Experts: IFTMIN

- D97A – message type version and release number,
Which value should be indicated in Guideline/Version/ID (*BSP Master. Details/BSP Master. Exchanged Document_ Context/Exchanged Document_ Context. Guideline_ Specified. Document Context_ Parameter/Document Context_ Parameter. Specified. Document_ Version/Document_ Version. Identification. Identifier*) in electronic message developed in XML format? In JSON format?
UN/CEFACT Experts: D97A

- OSJD – association assigned code.
Which value should be indicated in Guideline/ID (*BSP Master. Details/BSP Master. Exchanged Document_ Context/Exchanged Document_ Context. Guideline_ Specified. Document Context_ Parameter/Document Context_ Parameter. Identification. Identifier*) in electronic message developed in XML format? In JSON format?
UN/CEFACT Experts: The identifier of the organization responsible for designing and maintaining the message type, which is issued by OSJD.

Which value should be indicated in Guideline/ID/ Identification Scheme Agency. Identifier (*BSP Master. Details/BSP Master. Exchanged Document_*

Thanks!
Further Information

Standards and reports available on UNTTC.org project and UN/CEFACT pages.

On the project web site (unttc.org), we upload information on the standards and tools at https://unttc.org/stream/electronic-trade-and-transport-documents-and-data

A streamlined web presentation of the UN/CEFACT standards can be found at https://unece.org/trade/uncefact/standards

Information on the UN/CEFACT projects:
https://uncefact.unece.org/display/uncefactpublic/Transport+Modal+Views+of+MMT

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