DIGITALIZATION OF MULTIMODAL DATA AND DOCUMENT EXCHANGE USING UN STANDARDS IN ELECTRONIC CORRIDORS

Goal - link developers of the international (UN) standards for multimodal data and document exchange in the supply chain with practitioners implementing digitalization in the regions

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IMPLEMENTING THE DIGITALIZATION ROADMAP IN THE TRANS-CASPIAN TRANSPORT CORRIDOR
https://unece.org/speca/speca-digitalization-roadmap

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

2024

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

2025

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

2026

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

2027

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

2028

- 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.

Solution: Seamless multimodal supply chain info exchange based on UN standards
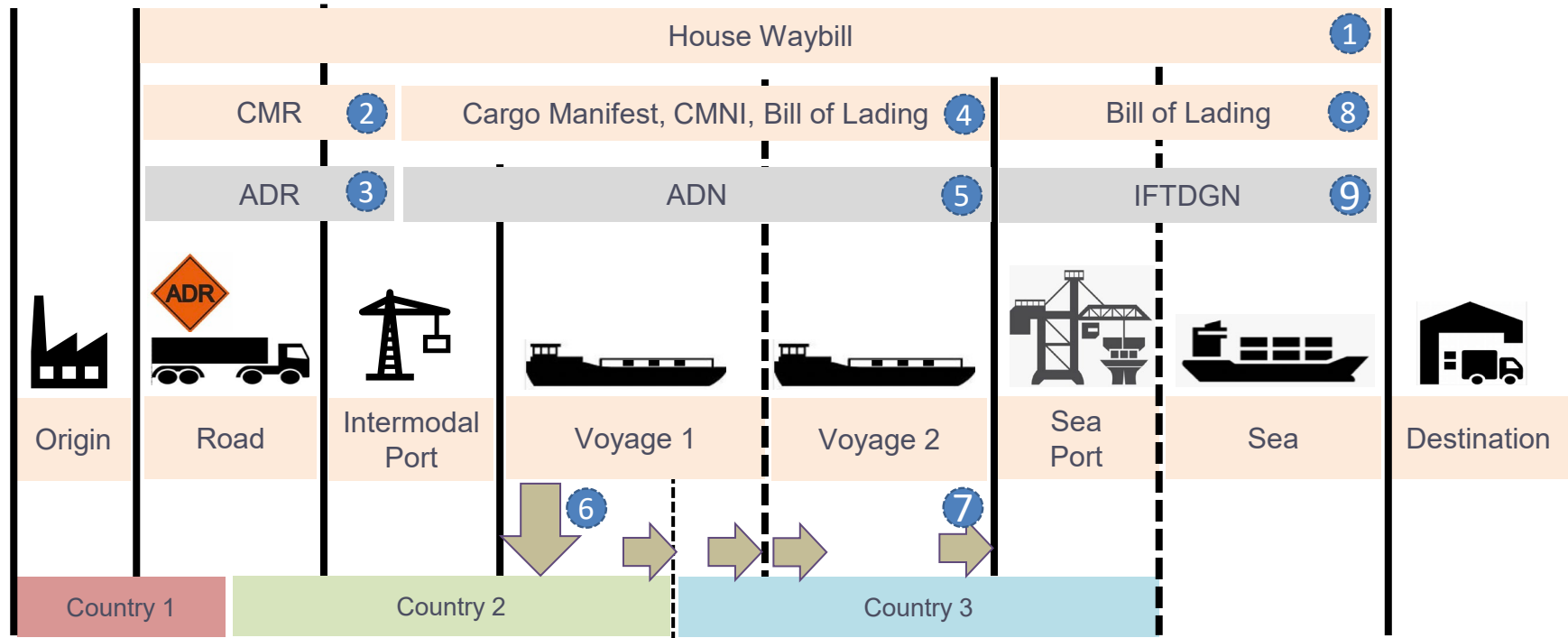
UNTTC.ORG project: developed a package of standards for MMT data sharing

| 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	• **airwaybill,** • **dangerous goods declaration, &** • **consignment security declaration**

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**

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
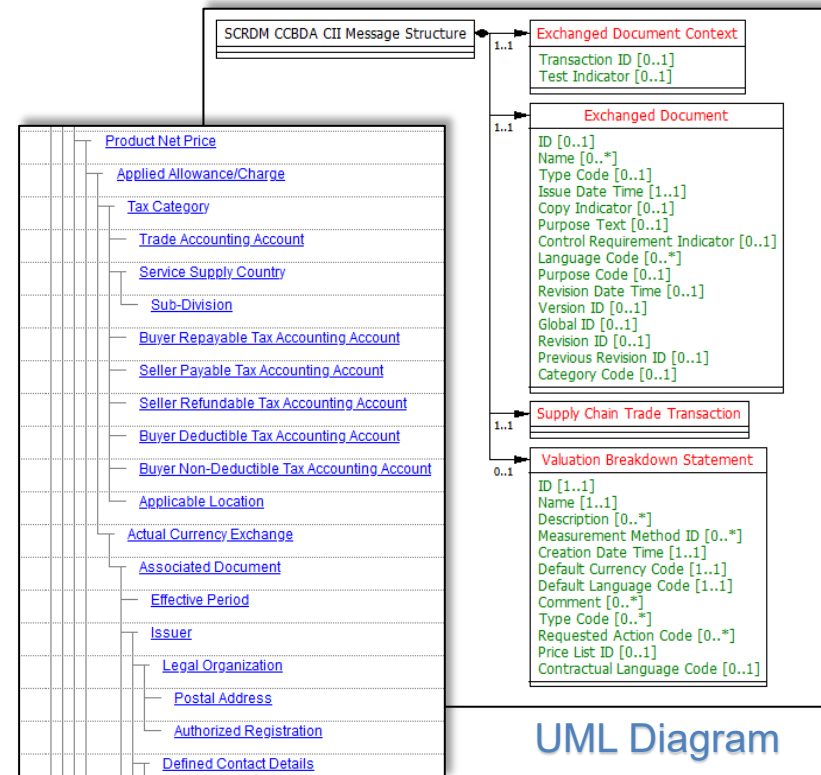
Multimodal Shipping Instruction

Multimodal Waybill

Multimodal Status Report / Request

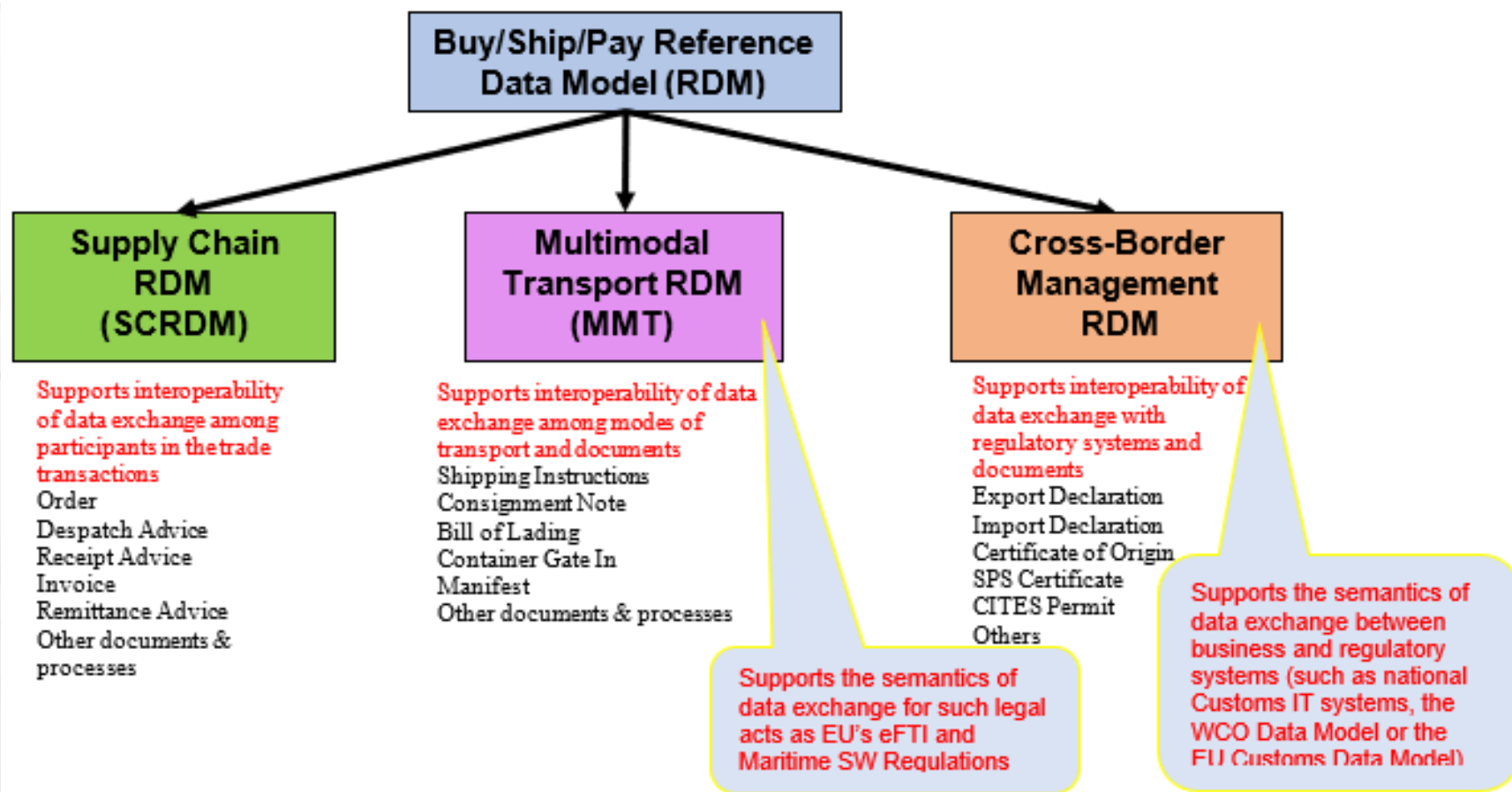## Road Consignment Note (eCMR)

Maritime Bill of Lading

Inland Waterway Bill

UML Diagram

Message structure (on HTML index)

5

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

```
┌─────────────────────────────────┐
│   Buy/Ship/Pay Reference        │
│   Data Model (RDM)              │
└─────────────────────────────────┘
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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

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 for such legal acts as EU's eFTI and Maritime SW Regulations

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

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
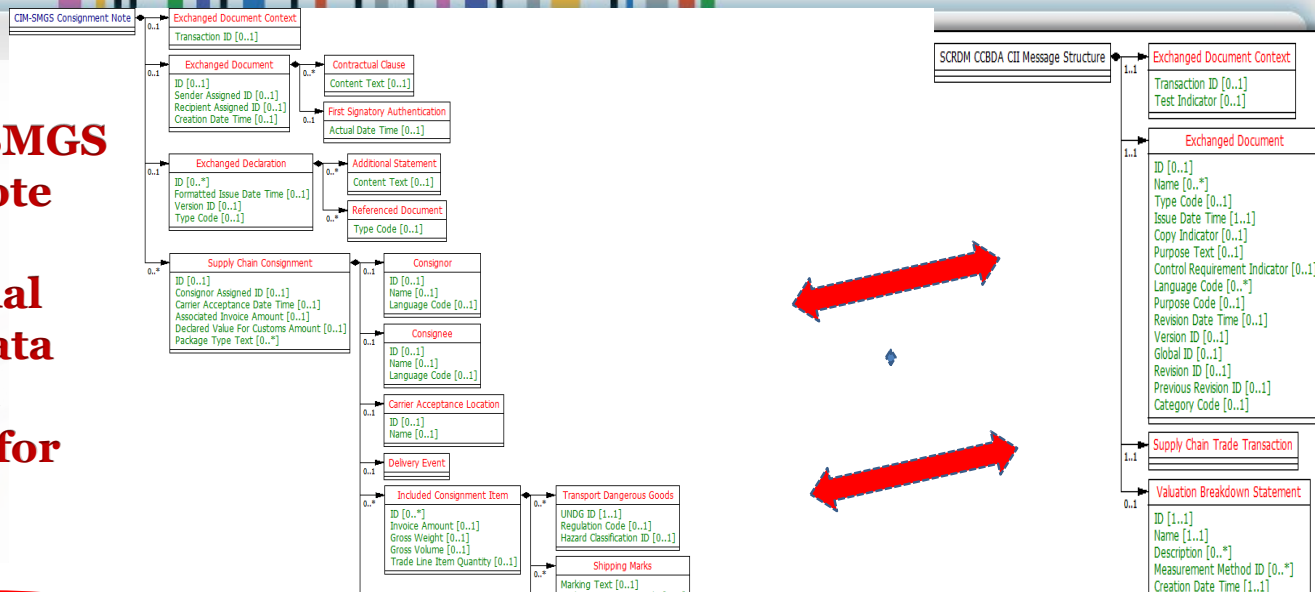
Transport data and documents can and are exchanged between modes and with other sectors

Standards for CIM/SMGS wagon list finalized
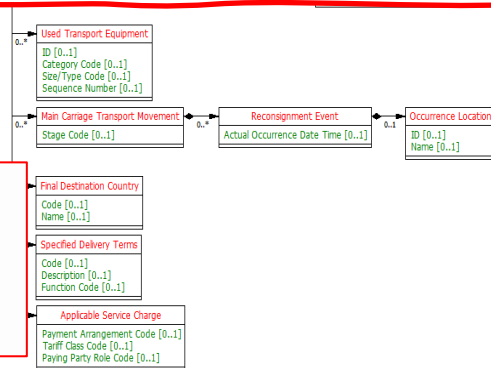
https://service.unece.org/trade/uncefact/publication/Transport and Logistics/CIM-SMGS Consignment Note/HTML/001.htm
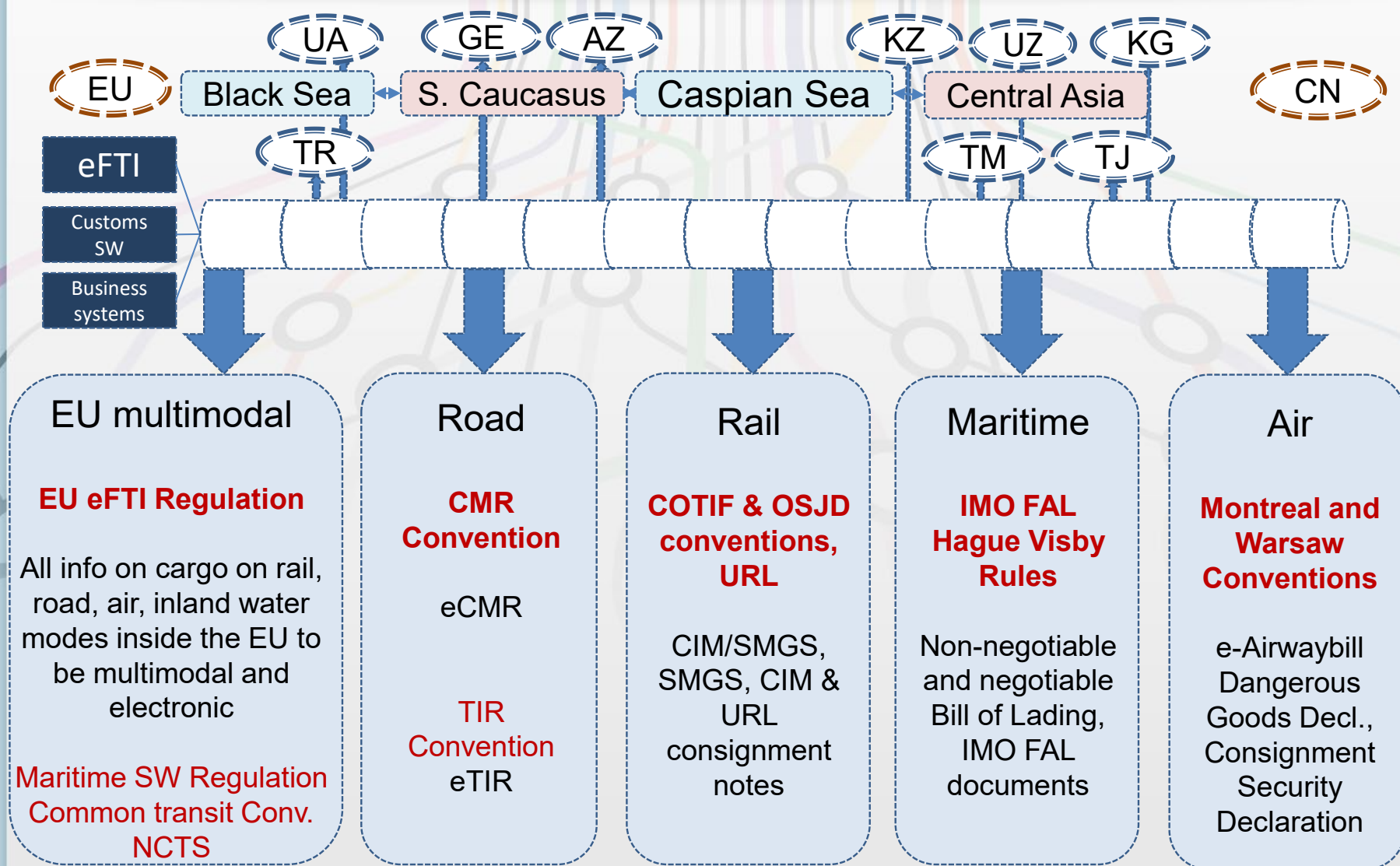
Information sharing: EU eFTI + SPECA Roadmap using UN/CEFACT standards as reference for multimodal interoperability

Interoperability of multimodal data exchange Europe - East Asia:

- **Regulatory framework: agreement**
- **EU eFTI Regulation uses UN/CEFACT MTM RDM for interoperability**
- **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 (as in eFTI)**
- **Link to normative: eFTI & EU Customs Single Window Regulations:**
 **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

EU multimodal	Road	Rail	Maritime	Air
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	**CMR Convention** eCMR TIR Convention eTIR	**COTIF & OSJD conventions, URL** CIM/SMGS, SMGS, CIM & URL consignment notes	**IMO FAL Hague Visby Rules** Non-negotiable and negotiable Bill of Lading, IMO FAL documents	**Montreal and Warsaw Conventions** e-Airwaybill Dangerous Goods Decl., Consignment Security Declaration

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

Digitalization of railway consignment note: pilot project

- Pilot digitalization of CIM/SMGS railway consignment note in the Trans-Caspian Corridor led by TRACECA, with other partners

- In May 2023, 5 railway agencies (KZ-AZ-GE-UA-TR) signed MoU to digitalize CIM/SMGS using UN/CEFACT standards. Prototype eCIM/SMGS being developed

- CIM/SMGS = 95% URL c.n.
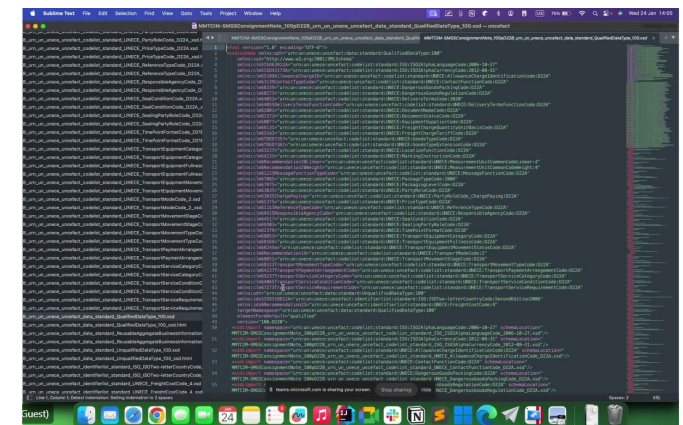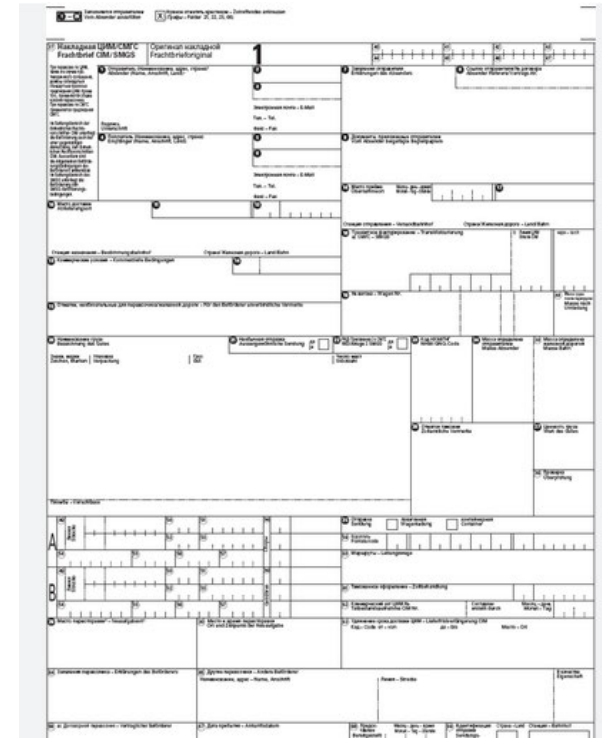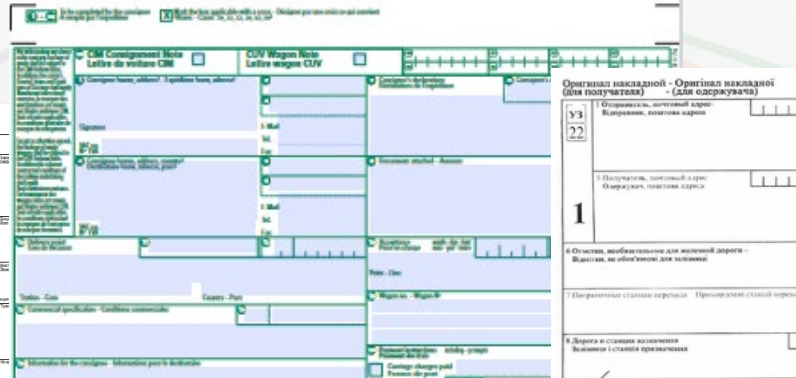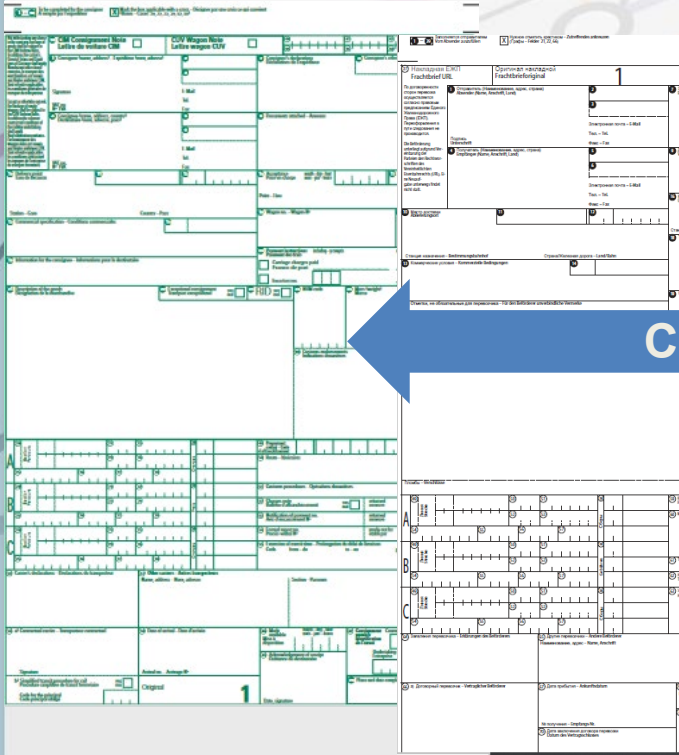
Railway documents and data

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
		FX+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	

EU eFTI Regulation adopted in 2020

- **By end 2026, all information on cargo transported by road, rail, inland water, and air inside EU should be electronic and multimodal. Link to Maritime Single Window Regulation**

- **All economic operators should be able to submit to regulatory agencies required info in multimodal standard form**

- **Public-private Digital Transport and Logistics Forum (DTLF) established as advisory body on implementing eFTI: it recommended use of global UN/CEFACT standards as key reference for interoperability**

- **EU now supports the creation of a standard eFTI legal-based data set, combined for all modes and based on UN/CEFACT standards and MMT RDM**

eFTI Regulation

- **The eFTI Regulation establishes a harmonized legal framework for electronic communication of regulatory information involving operators and authorities concerning the transport of goods in the EU**

- **Elements of eFTI:**
  - **Information required by EU & national legislation**
  - **Obligation for regulatory agencies in EU States to accept standard info**
  - **Optional for economic operators**
  - **Common requirements for service providers and platforms**
  - **Harmonized third party certification for service providers and platforms**

- **Data harmonization based on international standards**

- **eFTI common data set is based on the UN/CEFACT Multimodal Transport Reference Data Model (MMT RDM)**

- **Trust architecture for data exchagne (only authorized users)**

eFTI Architecture Principles

Architectural Principles

P1 - Data is Shared at Source

P2 - Data Sovereignty

P3 - Decentralized Approach, Common Rules of Interaction

P4 - Trust, Non-Repudiation by Default

P5 - Security, Appropriate Authentication

P6 - Access and Rights

P7 - Once-Only

P8 - Open Specifications and Standards, Interoperability

P9 - Technology Independence

P10 - Easy Deployment, Integration and Transition

P11 - Support a Transition Period

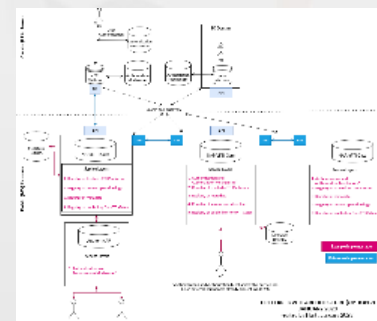## General Architectural Principles

GP1 - Holistic Thinking

GP2 - KISS

GP3 - Scalability

GP4 - Modularity
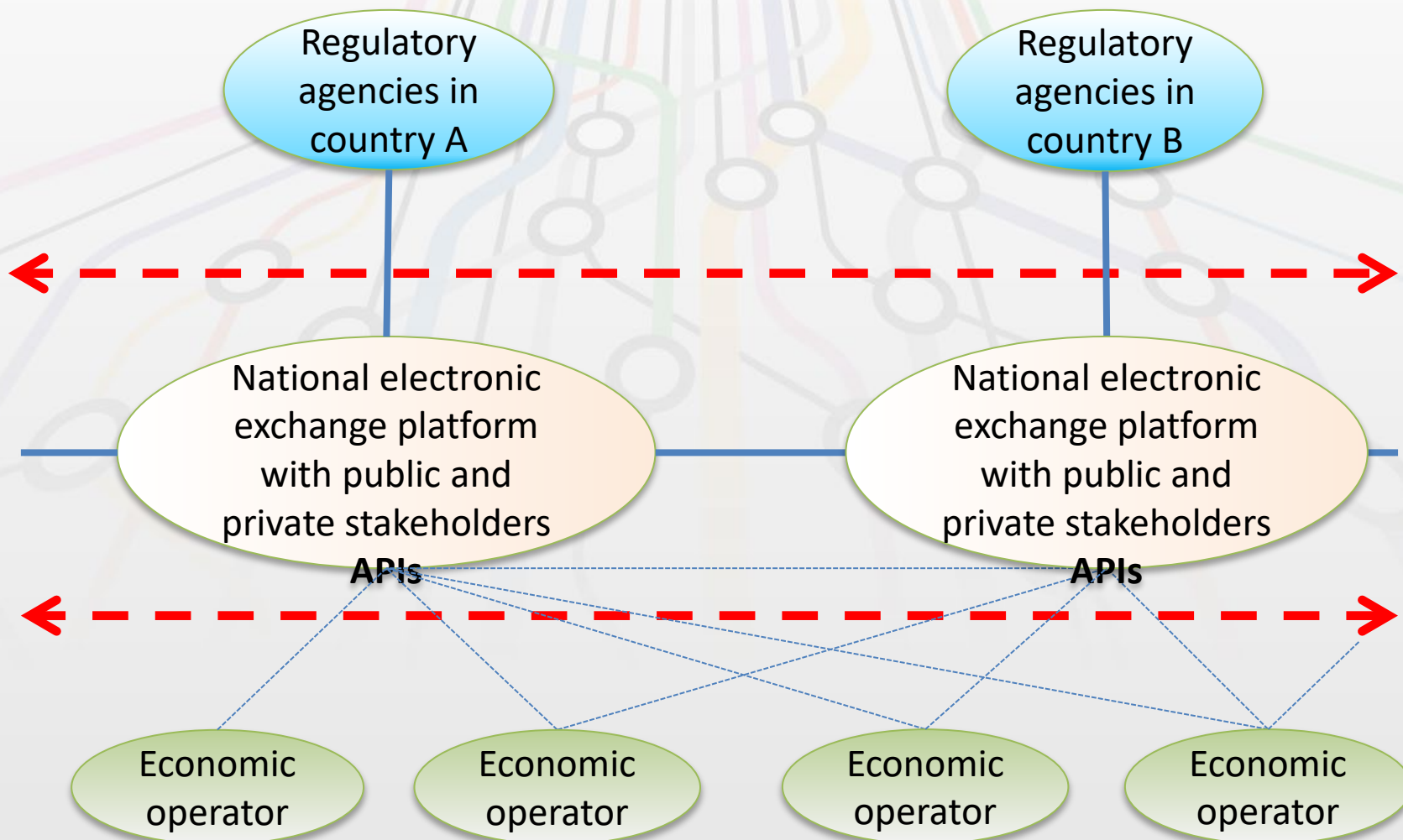
GP5 - Maintenance and Development

GP6 - Sustainability

DIGITAL TRANSPORT & LOGISTICS FORUM

Online platforms play the role of "market makers". Functions:

- **Develop and offer digital solutions aligned with international standards**

- **Match supply with demand, facilitating and structuring online interactions and transactions (OECD).**

- **Develop and exploit large network externalities (offering services even on a global scale).**

- **Acting as "catalysts" of digitalization, transform retail and wholesale trade marketplaces and whole industries (incl. transport and food services) and B2B transactions.**

- **Online platforms surged during the COVID-19 pandemic: experience to build on.**

National layer implementation approach

Regulatory agencies in country A

Regulatory agencies in country B

National electronic exchange platform with public and private stakeholders

APIs

National electronic exchange platform with public and private stakeholders

APIs

Economic operator

Economic operator

Economic operator

Economic operator

Partnerships and capacity-building

- **4 April 2024 side event at the APTFF in Samarkand on the standards and pilot projects**

- **11-12 June 2024 – next regional seminar in Aktau, Kazakhstan**

- **Development partners, national and regional stakeholders are welcome to cooperate on the implementation of UN/CEFACT standards in Asia and the Pacific and the Euro-Asian Trans-Caspian Roadmap, including in the roll out of the AP UN Framework Agreement on Paperless Trade**

- **Cooperate on the creation of centres of excellence/expertise in all regions**

Thanks!
Further Information

Standards and reports available 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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