#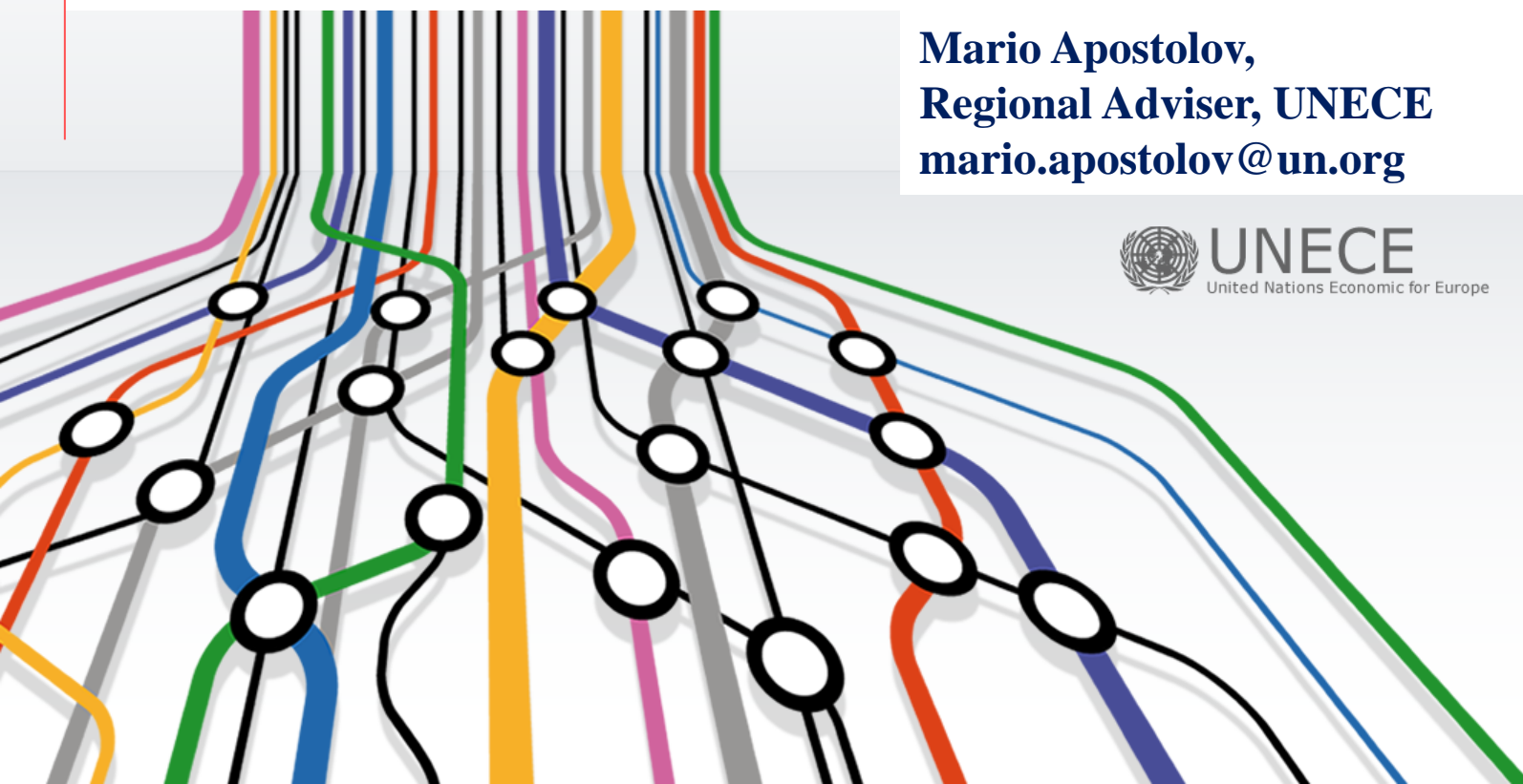 Digital interoperability using UN/CEFACT standards and reference data models and railway data and document exchange digitalization

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

Mario Apostolov,
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UNECE
United Nations Economic for Europe

UN, UNECE, UN/CEFACT

UNECE – one of five UN Regional Economic Commissions

UN Centre for Trade Facilitation and e-Business (UN/CEFACT) a UNECE subsidiary body.

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**

UN → UN/ECOSOC → UNECE → UN/CEFACT
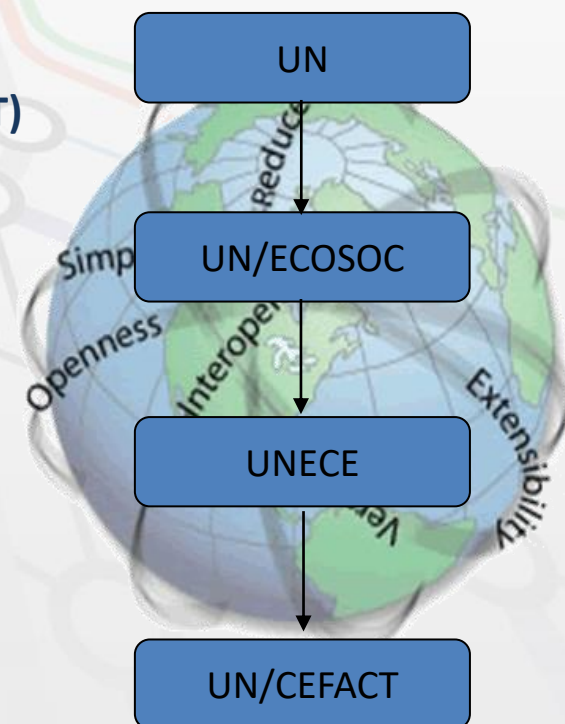
Global Remit

Multi-agency UN Development Account project in response to the COVID-19 crisis. UNECE segment: interoperability of multimodal data exchange using UN/CEFACT standards and reference data models

Upgrading existing and developing new data exchange standards for key documents accompanying goods in various modes of transport

based on UN/CEFACT's multi-modal transport reference data model

Pilot implementation projects: e.g., in a digital multimodal corridor or in various documents (e.g. the FIATA multimodal Bill of Lading, air cargo transportation documents, etc.)

Key partners: UNECE, ICAO, IMO, as well as EC, FIATA, OSJD, CIT, IATA, IRU, GUAM, TRACECA, BSEC, etc.

information about the standards and tools: https://unece.org/trade/uncefact/standards
https://unttc.org/stream/electronic-trade-and-transport-documents-and-data

1. Standards developed for the digitalization of information flows in various parts of the supply chain before 2020:	3. Standardized data exchanges to support cross-modal cargo transfers – package of standards for digitalization of multimodal data exchange
• **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** • **Numerous agricultural certificates, accounting and other docs**	• Inland water transport contract document* (IWT "Bill of Lading"; CMNI consignment note; etc.) • Maritime waybill* • CIM/SMGS and SMGS consignment notes* • 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. Standards for logistics data & document exchange published Oct. 20 at www.unttc.org & https://unece.org/trade/uncefact/mainstandards	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 Feeds)**	• Airwaybill* • Dangerous goods declaration* • Consignment security declaration* Electronic version of the FIATA multimodal Bill of Lading launched in 2022; work ongoing on three other FIATA documents

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

Interoperability is a priority – international trade is multimodal
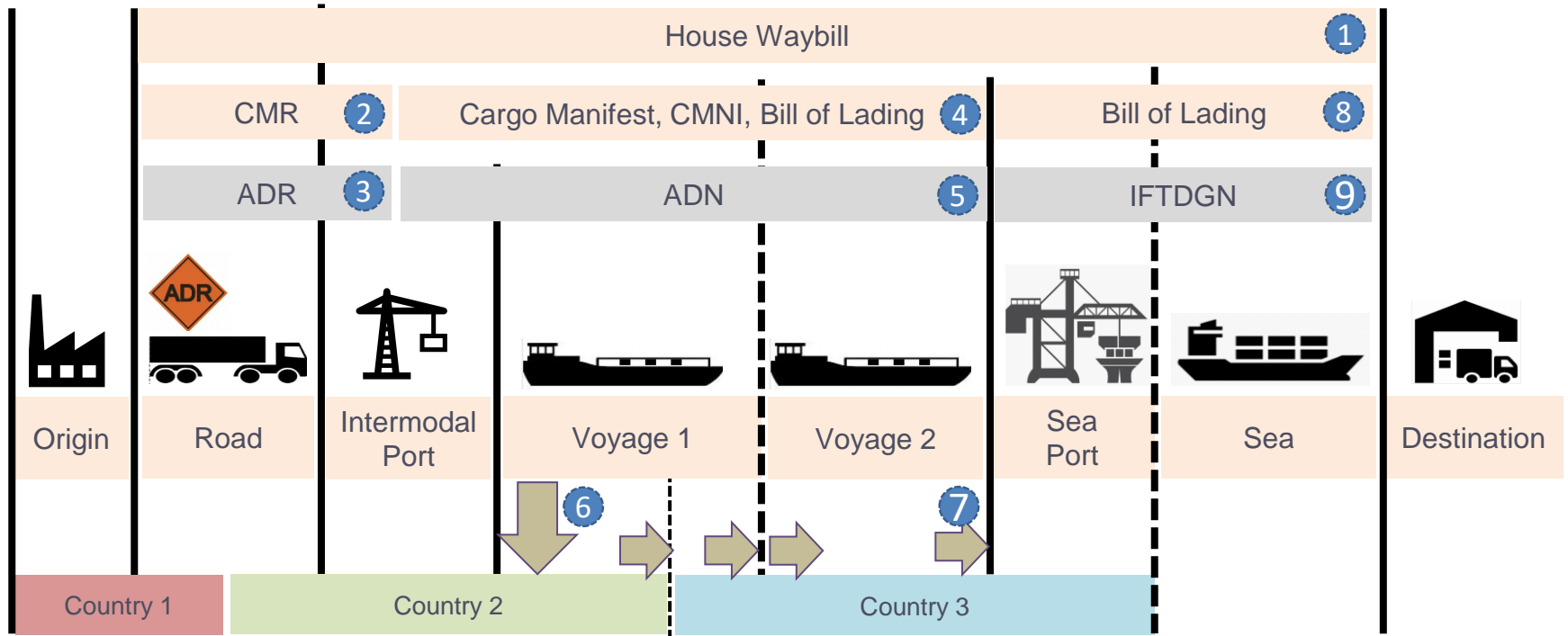
Interoperability within global supply chains / data pipeline

Source: Rudy Hemeleers, UN/CEFACT

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United Nations Economic for Europe

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

Cross Modal Data Matrix
based on the UN/CEFACT Multi Modal Transport Reference Model (auto-generated)

	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; CC	River Bill of Lading	Maritime BL	eCMR MMT; R	eFTi DESCopy	MMT Cont	Air Waybi	CSD; D21A	DG Declar
3	MMT CCBDA IFTM** Data Exchange Structure	X	X	X	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	X
11	ID	X	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
15	Remark								X				
16	Original Issued Quantity	X				X							
17	Copy Issued Quantity	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
30	ID	X				X	X	X			X		X
31	Name	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 International Supply Chain Reference Data Model Family

Buy/Ship/Pay Reference Data Model (RDM)

Supply Chain RDM (SCRDM)	**Multimodal Transport RDM (MMT)**	**Cross-Border Management RDM**
Supports interoperability of data exchange among participants in the trade transactions	Supports interoperability of data exchange among modes of transport and documents	Supports interoperability of data exchange with regulatory systems and documents
Order Despatch Advice Receipt Advice Invoice Remittance Advice other documents & processes	Shipping Instructions Consignment Note Bill of Lading Container Gate In Manifest other documents & processes	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 B2G data exchange between transport and regulatory systems (such as Customs)

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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

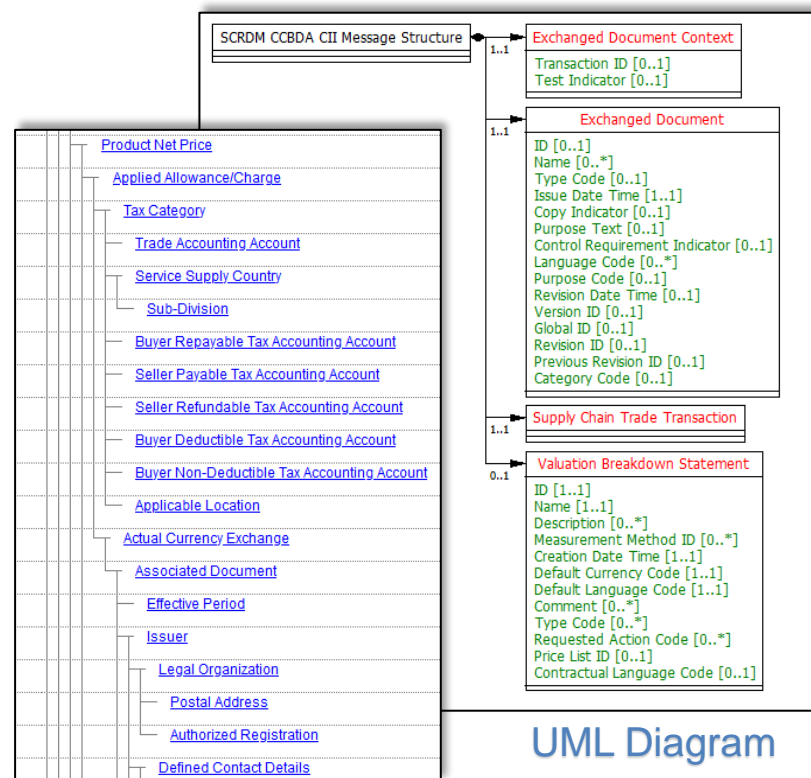**Multimodal Shipping Instruction**

Multimodal Waybill

Multimodal Status Report / Request

Road Consignment Note (eCMR)

Maritime Bill of Lading

Inland Waterway Bill

UML Diagram

Message structure (on HTML index)

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Railway documents and data

Basic data mappings

CIM **URL** **CIM/SMGS** **SMGS** **EDIFACT**

Common railway data elements

No.	Tag	Example
	IFTMIN	Example message
01	UNA	UNA:+.? '
		UNA:+,? '
02	UNB	UNB+UNOC:3+NO0987654321:30+70800890++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'
	FTX	FTX+SSR+++1076:ME01NO'
		FTX+TRR+++DAVA'
		FTX+DEL+++Call 911 before delive
	FTX	FTX+AAR+++0022'
	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	

Multimodal interconnectivity: goals and next steps in the Europe-Asia corridors

1. Multimodal interoperability

2. Compatibility of cargo data exchange E. Asia – W. Europe

- **Legal framework: negotiations – agreements – e-docs recognition**
- **Technological neutrality – suits EDI, XML, JSON API (blockchains)**
- **Call to all stakeholders to collaborate / use standards**
- **Move from documents to the exchange of data sets**

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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