UN/CEFACT Forum, Bangkok, 3 Oct. 2023 (online)

TESTING THE POSSIBILITY TO USE THE UN/CEFACT SEMANTIC STANDARDS AND <u>MULTIMODAL</u> TRANSPORT REFERENCE DATA MODEL (MMT RDM) TO CREATE AN INTEROPERABLE ELECTRONIC DOCUMENT EQUIVALENT

Goal - link developers of the international (UN) standards for multimodal data and document exchange in supply chains with practitioners digitalizing railway data and document exchange in the trans-Caspian (TRACECA) region

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1

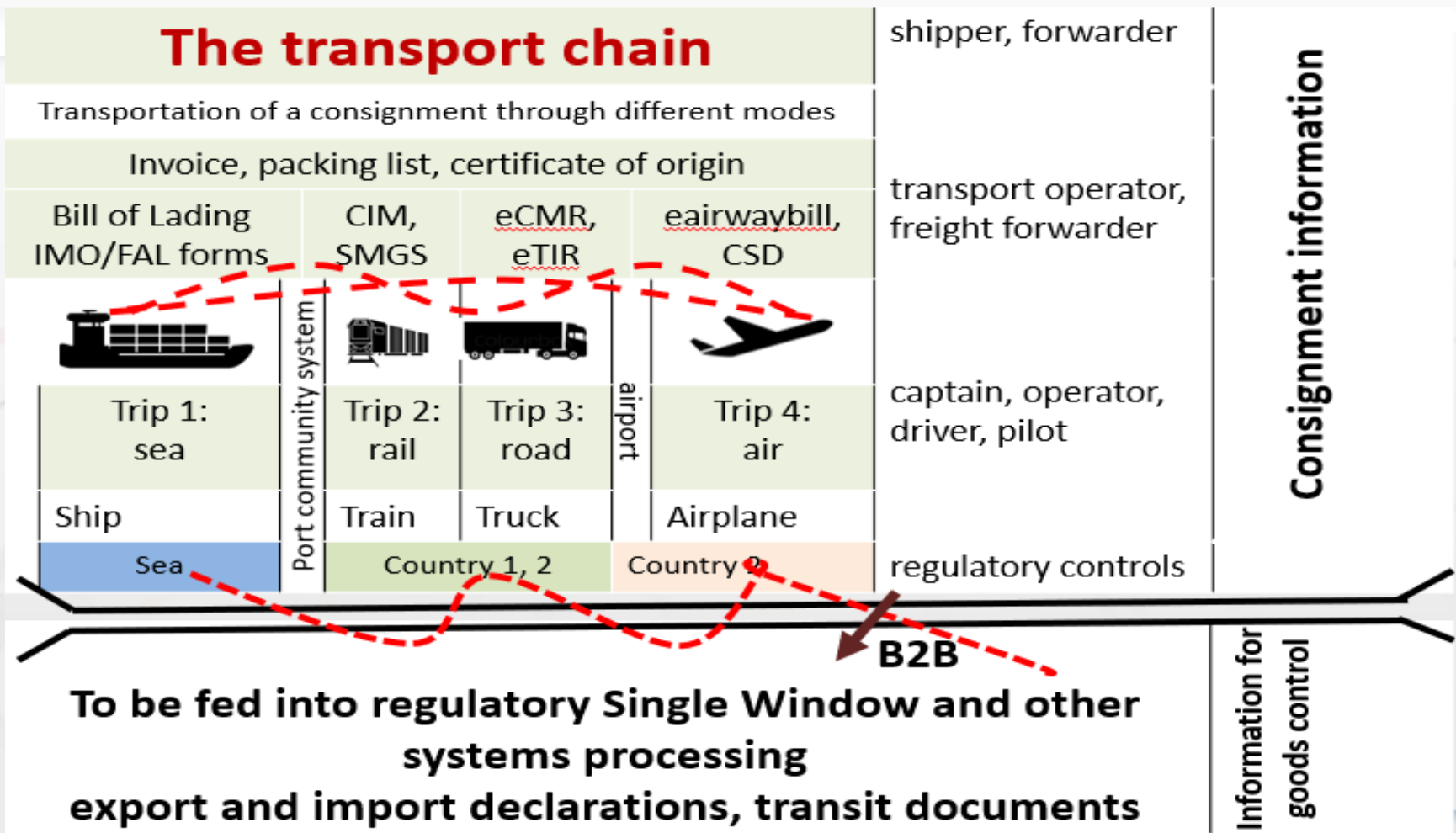# Digitalization of multimodal data and document exchange in the supply chain

Problem: Fragmentation of digitalization efforts

Solution: UN/CEFACT semantic standards and reference data models

A family of RDMs, including UN/CEFACT Multimodal Transport Reference Data Model (MMT RDM) used as key semantic reference, including for the EU eFTI Regulation.

Foresight: World moves from (paper & digital) document exchange to exchange of datasets

Seamless multimodal supply chain

The transport chain

Transportation of a consignment through different modes — shipper, forwarder

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 3

transport operator, freight forwarder

captain, operator, driver, pilot

regulatory controls

Port community system · airport

Consignment information

B2B

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

Information for goods control

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, and** • **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**

Roadmap for information exchange digitalization in the Trans-Caspian Corridor using UN standards: background

SPECA countries DEMAND: process launched by the [International High-level Conference on Digital Transformation of Information Exchange in Supply Chains Using United Nations Standards](), Baku, 31 Oct. 2022. recommended to:

- Strengthen training and CB for experts in the region on UN/CEFACT standards,
- Develop and implement pilot projects, e.g., in the trans-Caspian corridor,

SPECA [Ministerial Meeting]() 17 April 2023 requested "UNECE to develop a Roadmap for digitalization of multimodal data and document exchange along the trans-Caspian transport corridor using relevant United Nations standards, including through realizing a regional pilot project for SPECA participating States"

[13th International UNECE "Odessa" seminar](), 22 Dec.2022, recommended aligning data exchange with the UN/CEFACT Multimodal Transport Reference Data Model and the EU Electronic Freight Transport Information Regulation (eFTI)

In November 2023, Baku will host the SPECA Summit and Forum on turning SPECA into a connectivity hub with global outreach, using UN standards to adopt the Roadmap.

Recommendations for:

- **Roadmap for digitalization of multimodal data and document exchange along the trans-Caspian transport corridor using relevant United Nations standards, and**
- **Pilot implementation projects, notably testing a digital CIM/SMGS CN**

Pilot testing
e.g., the railway consignment note (CIM/SMGS) betw Europe & Asia

Interoperability of multimodal data exchange East Asia – Europe:

- **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

Objectives of TRACECA project

- Develop prototype electronic CIM/SMGS railway consignment note to be tested in the trans-Caspian corridor.

- Follow up on requests of SPECA States (Joint SPECA Ministerial Statement, 17 April 2023) and countries in TRACECA pilot project (MoU from 22 May 2023 between railways of AZ, GE, KZ, TR & UA) on:

  a) executing pilot projects to digitalize multimodal data and document exchange in the trans-Caspian corridor; and

  b) development and use of electronic consignment notes aligned with the UN/CEFACT standards and artefacts.

- National railway agencies in the TRACECA project to contribute to the project. Should the prototype be a completely new solution or upgrading and integrating existing solutions for interaction and exchange of eCIM/SMGS between IT systems of railway agencies?

Details of implementation:

1. **Define data structure for CIM/SMGS (& SMGS) consignment notes, aligned with UN/CEFACT naming and design rules, to provide basis for anyone to develop an electronic equivalent of the electronic consignment note, interoperable with other modes of transport and sectors in the supply chain (commercial and regulatory data exchanges). Notably:**

   - **review the ready UN/CEFACT standards (business requirement specifications) and artefacts (data sets, structures, and schemas) for the CIM/SMGS and SMGS consignment notes,**

   - **receive guidance from UN/CEFACT experts on how to use the above,**

   - **Interact with the national railway agencies under the TRACECA MoU (AZ, GE, KZ, TR, and UA). The PS IGC of TRACECA to help obtain currently used IT solutions (XML schemas, UN/EDIFACT messages - IFTMIN) to be used,**

   - **exchange information on the advancement of work in this project with experts in Europe (RailData) and Europe and Asia (OSJD) on the digitalization of the railway consignment note.**

2. **Develop a "prototype" of an electronic equivalent of the CIM/SMGS and SMGS consignment notes that can be tested in the trans-Caspian corridor:**

   - **technical specification, XML and/or JSON schemas, testable version agreed with the railways.**

   - **Can become basis for a system, and if an organization joins the system, it will follow the same structure, UN/CEFACT naming and design rules.**

   - **Provide possibility for conversion to paper (PDF) that can be printed, sealed and signed, if necessary.**

   - **Data in the electronic document equivalent will be mapped (and aligned, if necessary) to the UN/CEFACT semantic standards, artefacts, derived from the Multimodal Transport Reference Data Model, leaving a clear way for possible updates, as they come from the agencies working with the standards (UN/CEFACT, ERA, RailData, CIT, OSJD, OTIF, UIC).**

Correspondence of datasets in OSJD, RailData, eFTI through reference to the UN/CEFACT MMT RDM

Technical specification of UN/CEFACT standard XML electronic message for SMGS Consignment Note

Element	Box No and name of SMGS Consignment Note	Number of iterations	Notes
SMGS Consignment Note			
1. Exchanged Document Context		0..1	Service information, mandatory data
1.1. Transaction ID	Unique transaction identifier of the original document (message)	0..1	UNB+UNOY:4+SENDER::HOST+RECEIVER::HOST+YYMMDD:HHMM+**N1**++ IFTMIN_JD++++T' Transaction ID – unique transaction identifier of the original document (message)
1.2. Test Indicator	Verification identifier of the original document (message)	0..1	UNB+UNOY:4+SENDER::HOST+RECEIVER::HOST+YYMMDD:HHMM+N1++ IFTMIN_JD++++**T**' Test Indicator – verification identifier of the original document (message): - «1», if data interchange is performed for test purposes and contains test data, not real data; - data element is not transmitted in case of real data interchange.
1.3. Transaction Processing Date Time	Date and time when the original document (message) was prepared	0..1	
1.3.1. DateTimeString	Date and date format when the original document (message) was prepared	1..1	UNB+UNOY:4+SENDER::HOST+RECEIVER::HOST+**YYMMDD:HHMM**+N1+ +IFTMIN_JD++++T' DateTimeString – date and time when the original document (message) was prepared (the point time of message being sent) A:format – attribute of data format (value: 203 –YYYYMMDDHHMM, where YYYY - year; MM - month; DD - day; HH - hour; MM – minutes)
2. Exchanged Document		0..1	
2.1. ID	Consignment number (29)	0..1	Consignment number, mandatory data BGM+Y+**X**+Z' ID = 8-digit numerical consignment number

Element	Box No and name of SMGS Consignment Note	Number of iterations	Notes
2.2. Type Code	Code indicating the type of consignment note blank form	0..1	Type code of consignment note blank form, mandatory data BGM+**Y**+X+Z' Type Code – type code of consignment note blank form (eventual values: 722 – type code of SMGS consignment note blank form; ZWB – type code of Reconsignment invoice sheet (duplicate copy) blank form) A:listID – attribute of data element indicating the code list (value = 1001) A:listAgencyID – attribute of organization responsible for code list maintaining (eventual values: 6 = UNECE if Type Code =722, 288 = OSJD if Type Code = ZWB) A:listName – attribute of document name indicating the qualifier and code list used in electronic data interchange for international railway freight communications on SMGS regulations (value: OSJD Leaflet O+P 944 if Type Code = ZWB)

10

Railway documents and data

Basic data mappings

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

Common railway data elements

No.	Tag	Example
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'
11	FTX	FTX+SSR+++1076:ME01NO'
	FTX	FTX+TRR+++DAVA'
	FTX	FTX+DEL+++Call 911 before delive
	FTX	FTX+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	

IFTMIN
Example message

11

MMT

Trade_ Party. Identification. Identifier

PATH:BSP Master/Specified. Supply Chain_ Consignment/ Consignor. Trade_ Party/ Identification. Identifier

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1 Оригинал накладной (для получателя)

29 Отправка № 0651530

1349

1 Отправитель
ЗАО „БАЛТИЙОС ПЯРВЯЖИМАЙ"
LT-92126 КЛАЙПЕДА УЛ. С.ШИМКАУС 13

2 Станция отправления
ДРАУГИСТЕ (ПОРТ, ЭКСП.) ЛТГ

106101

Накладная СМГС
LTG CARGO

Подпись Justas Kubilius

4 Получатель
ОАО "Гомельстекло""
247045 Гомель, г.п. Костюковка Гомельская 25

3780

7 Заявления отправителя

3 Станция назначения
КОСТЮКОВКА БЧ

155502

6 Пограничные станции переходов
Кяна (эксп.) 120202 ЛТГ

7 Вагон
56507015 ООО "Реал-агент" БЧ

8 Вагон предоставлен 9 Грузоподъемность 10 Оси 11 Масса тары 12 Тип цистерны

8 9 10 11 12
O 69 4 24300

После перегрузки

13 Масса груза   14 К-во мест

15 Наименование груза
Вагоны железнодорожные, как транспортное средство перевозки грузов, имеющие более 2-х осей, порожние, не поименованные особо ГНГ - 9922000000 ЕТСНГ - 421034

16 Род упаковки
Не упакованный

17 К-во мест

18 Масса (в кг)

19 Пломбы

к-во   знаки

SMGS — Consignor code — **C.2**

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37 Накладная ЦИМ/СМГС
Frachtbrief CIM/SMGS

Оригинал накладной
Frachtbriefdoppel

1

40 41 42 43
44 45 46 47

1 Отправитель (Наименование, адрес, страна)
Absender (Name, Anschrift, Land)
ООО"СеМаДрев", 225432 БЕЛАРУСЬ Брестская обл.
ганцевичский р-нгг. Ганцевичи ул. Монтанников 3А оф. 11,
БЕЛАРУСЬ, 1203 ООО"СеМаДрев",
225432,г.Ганцевичи,ул.Монтанников 3А,офис 11

2 1203
2000436

7 Заявления отправителя
Erklärungen des Absenders

8 Ссылка отправителя / № договора
Absender Referenz / Vertrags-Nr.
No CBGM-03/2020-01 года

Электронная почта - E-Mail
seraldrev@mail.ru
Тел. - Tel. 164660208
Факс - Fax 0164662111

Там.оф. по ст.Ганцевичи Там. агент Белтаможсервис: 225406,г.Барановичи,ул.Р-5А,Тел.411627.Отгружено по контракту No CBGM-03/2020-01 года Оплата по БЧ 2000436/1044777. Оплата по УЗ ООО"ДИ ТРАНС"код 8040145750 Оплата по Sped SRL
Carrier on CFR UNICOM TRANZIT cod 3154

Подпись
Unterschrift

4 Получатель (Наименование, адрес, страна)
Empfänger (Name, Anschrift, Land)
ООО Egger Romania S.R.L.,
Radauti.Str.Austriei.Nr.2.Jud.Suceava/Romania, ООО Egger
Romania S.R.L., Radauti.Str.Austriei.Nr.2.Jud.Suceava/Romania

9817

9 Документы, приложенные отправителем
Vom Absender beigefügte Begleitpapiere
Акт загрузки 1 шт; Грузовая таможен.деклараци 1 шт; Дополнительный экзем ведомости 1 шт; Отгрузочная спецификация 1 шт; Паспорт радиационной безо Счет-фактура 1 шт; Удостоверение качества 1 шт; Фитосанитарный сертификат 1 шт

Электронная почта - E-Mail

16 Место приема   Месяц - день - время
Übernahmeort   Monat-Tag-Stunde

15.01.2021

17 139603

10 Место доставки
Ablieferungsort

11 53 51750-8

12 53 51750-8

НФР Дорнешти 53 51750-8 \ CFR DORNESTI.code 53
51750-8 CFR-53

53 53 51750-8   РУМЫНИЯ ЧФР

Станция отправления - Versandbahnhof
Ганцевичи ст. ГАНЦЕВИЧИ 139603

Страна/Железная дорога - Land/Bahn

17 Транзитное фактурирование - Transitfakturierung

CIM/SMGS — Consignor code — **C.2**

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1 — 90 To be completed by the consignor
A remplir par l'expéditeur

X Mark the box applicable with a cross – Désigner par une croix ce qui convient
(Boxes – Cases 20, 22, 23, 30, 52, 58)

40 41 42 43
44 45 46 47

Point 6, 7, 8

49 CIM Consignment Note
Lettre de voiture CIM

CUV Wagon Note
Lettre wagon CUV

Notwithstanding any clause to the contrary, carriage of goods shall be subject to the CIM Uniform Rules. In addition, the carriers General Terms and Conditions of Carriage shall apply. Nonobstant toute clause contraire, le transport des marchandises est soumis aux Règles uniformes CIM. Sont en outre applicables les conditions générales de transport du transporteur.

Except as otherwise agreed, the haulage of empty wagons shall be subject to the CUV Uniform Rules. In addition the relevant contractual conditions of the railway undertaking shall apply. Sauf convention contraire, l'acheminement des wagons vides est soumis aux Règles uniformes CUV. Sont en outre applicables les conditions contractuelles topiques de l'entreprise de transport ferroviaire.

1 Consignor (name, address) – Expéditeur (nom, adresse)

2

3

Signature

E-Mail

Tel.

VAT no.
N° TVA

Fax

4 Consignee (name, address, country)
Destinataire (nom, adresse, pays)

5

6

E-Mail

Tel.

VAT no.
N° TVA

Fax

7 Consignor's declarations
Déclarations de l'expéditeur

8 Consignor's reference – Référence expéditeur

9 Documents attached – Annexes

16 Acceptance   month – day – hour
Prise en charge   mois – jour – heure

17

10 Delivery point
Lieu de livraison

Point – Lieu

Station – Gare

Country – Pays

18 Wagon no. – Wagon N°

19 Section – Parcours   by – par

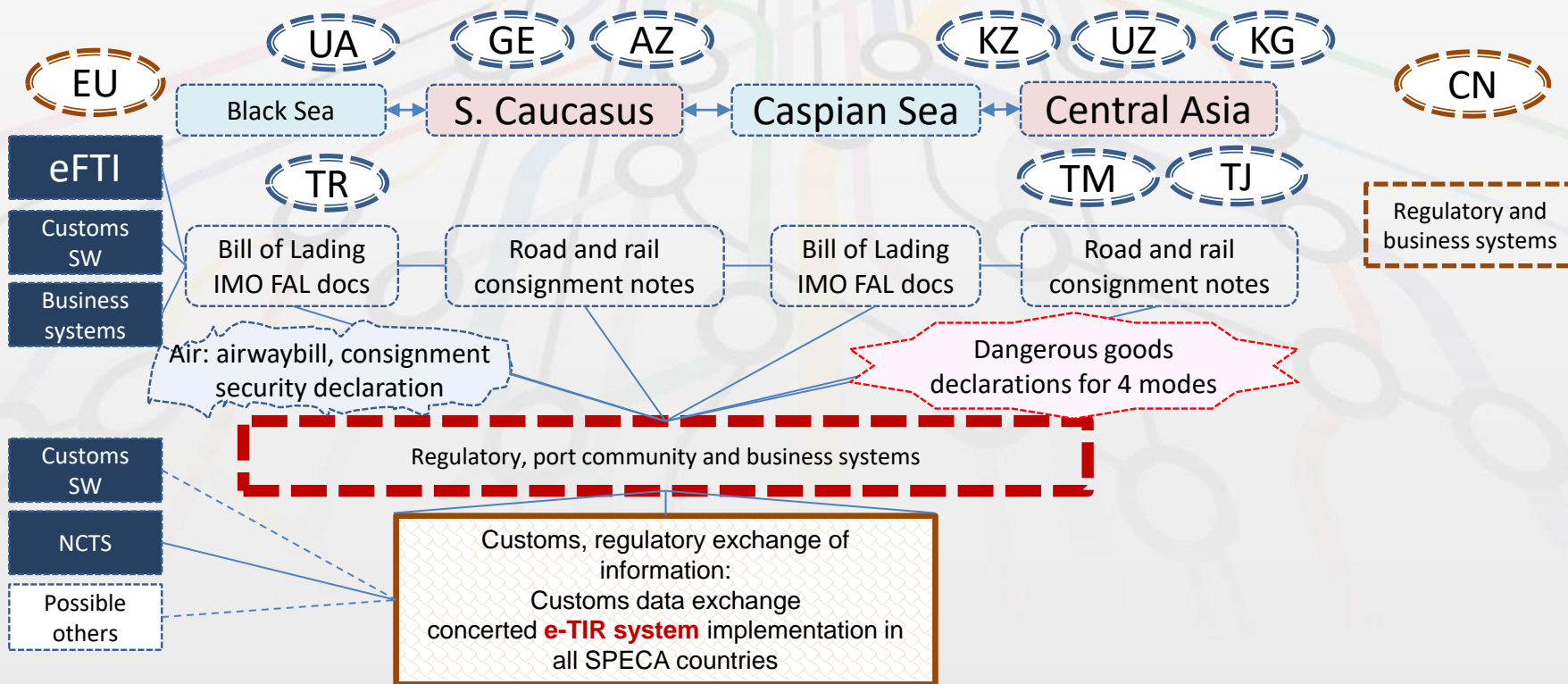13 Commercial specification – Conditions commerciales

14

CIM — Consignor code — **C.2**

Conceptual diagram for a converter between UN/EDIFACT messages (IFTMIN) and electronic consignment notes aligned with the UN/CEFACT Multimodal Transport Reference Data Model
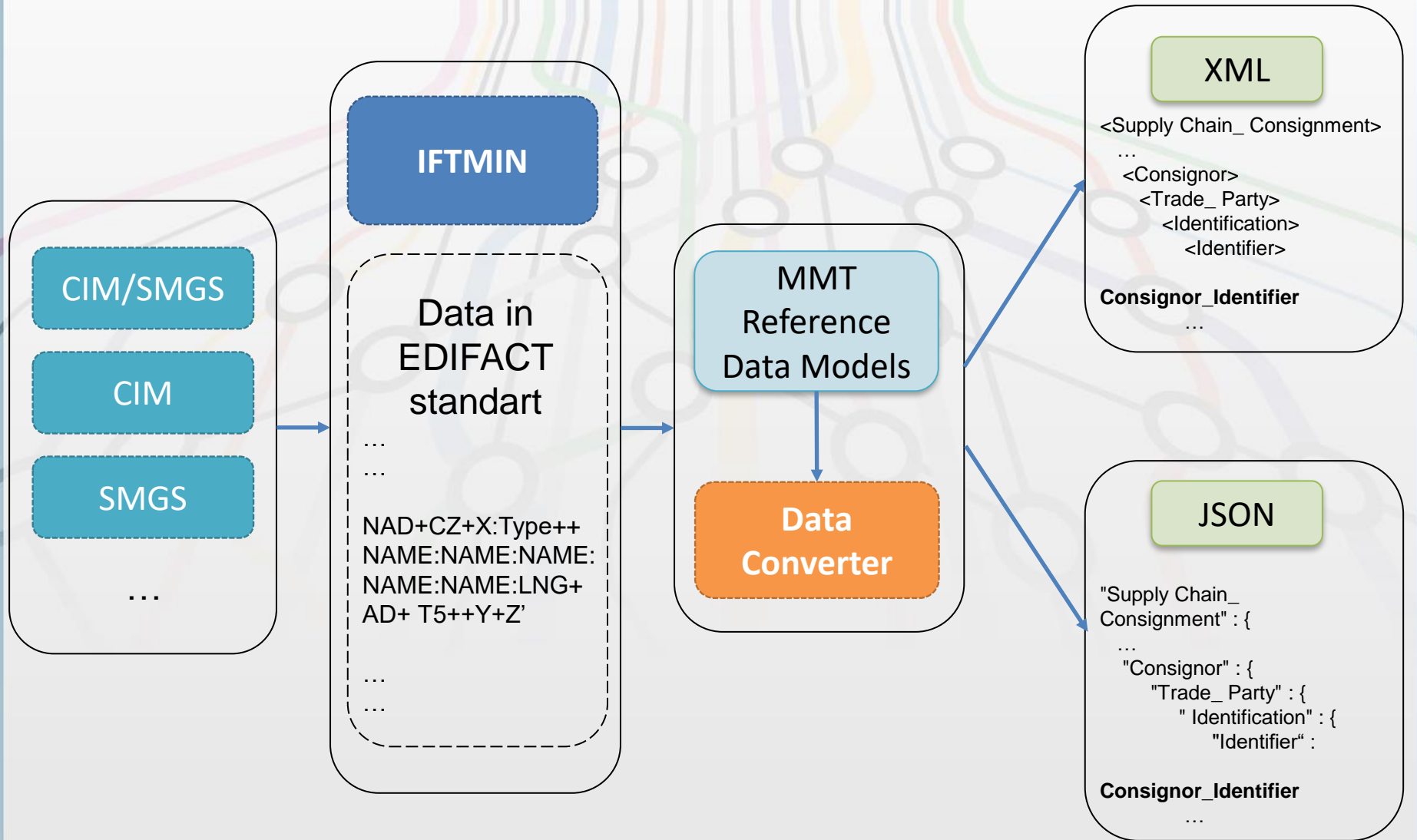
Information chain in the Trans-Caspian route

UA   GE   AZ   KZ   UZ   KG

EU   CN

| Black Sea | ↔ | S. Caucasus | ↔ | Caspian Sea | ↔ | Central Asia |

TR   TM   TJ

eFTI

Customs SW

Business systems

Regulatory and business systems

| Bill of Lading IMO FAL docs | Road and rail consignment notes | Bill of Lading IMO FAL docs | Road and rail consignment notes |

Air: airwaybill, consignment security declaration

Dangerous goods declarations for 4 modes

Customs SW

NCTS

Possible others

Regulatory, port community and business systems

Customs, regulatory exchange of information:
Customs data exchange
concerted **e-TIR system** implementation in all SPECA countries

Legal issues in multimodal digital transformation

- Legal agreements to validate electronic exchange of data
- Legal recognition of electronic document equivalents and data sets, including admissibility to courts
- Identification, authentication and authorization; legal significance of e-docs and e-signatures
- Verifiable credentials
- Legal transformation in the transfer of goods from one mode of transport to another (e.g., between road, railway, and sea transport)
- Validity of data; legal aspects of changing individual data values in a data set, adding new data to a data set, change of data format or data structure
- Data protection
- Authority of regulatory or business entities to access and share data
- Data quality issues
- Liability issues (obligations and responsibilities of stakeholders)
- Arbitration and dispute resolution
- Electronic archiving
- Intellectual property rights and database ownership and processing
- Competition.

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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