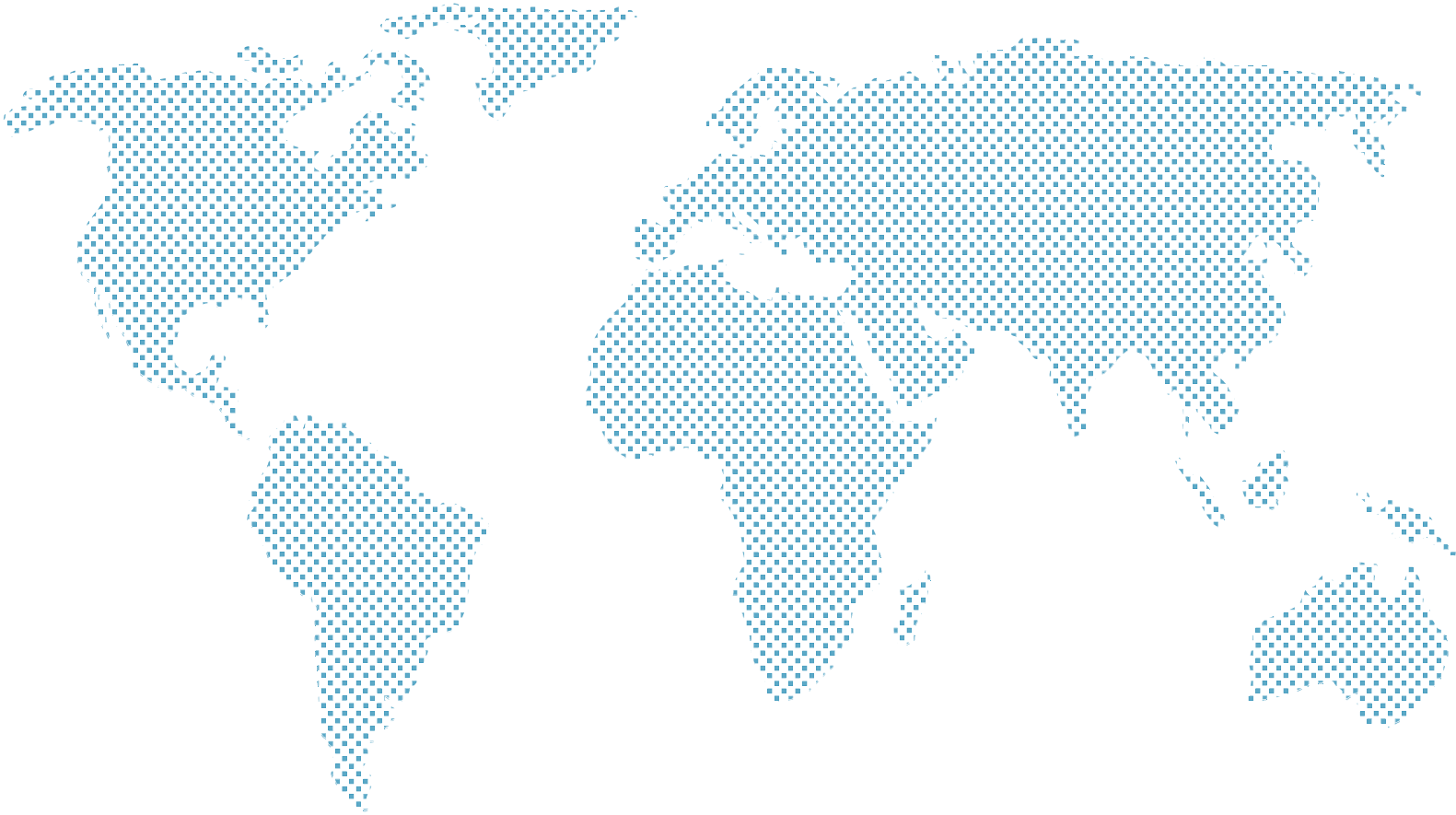
UNTTC | Transport and trade connectivity in the age of pandemics

REPORT: USING THE UN/CEFACT MULTIMODAL TRANSPORT REFERENCE DATA MODEL AND SEMANTIC STANDARDS IN ROLL-OUT PROJECTS, NOTABLY FOR ROAD TRANSPORT

REQUESTING OFFICE: ECONOMIC COOPERATION AND TRADE DIVISION
UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE



SERGEY TUMEL, Consultant

Disclaimer: this report was prepared by Mr. Sergey Tumel, UNECE consultant under the UN Development Account multiagency project "Trade and Transport Connectivity in the Age of Pandemic" https://unttc.org/. The views in this document are those of the author and do not necessarily express the position of the UNECE.

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1. Terms of Reference: Objectives and targets

1. In the context of implementing the UN Development Account project in response to the challenges of the COVID-19 pandemic to connectivity, trade, and transport,
2. In order to support the development of digital multimodal transport corridors,
3. With a view to increasing the harmonization and standardization of data exchange in multimodal international transport, trade, and logistics to encourage electronic data exchange and thereby to reduce person-to-person contacts during and after the COVID-19 crisis in the post-pandemic recovery,
4. Using relevant UN/CEFACT standards,

the Consultant will:

- analyze the need for and level of implementation of international (UN/CEFACT) semantic standards in multimodal transport data and document exchange, as well as trade flows along the Eurasian Economic Union and Black Sea - Baltic Sea corridors from the perspective of harmonizing and standardizing multimodal information exchange;
- within existing digitalization efforts in countries of the Eurasian Economic Union and Black Sea - Baltic Sea corridors work on the development and implementation of digital tools for data and document exchange, in compliance with the semantic standards and reference data models of UN/CEFACT,
- working with the Ukrainian, UN/CEFACT, Eurasian Economic Commission and other experts, prepare electronic document equivalents – XML schemas and JSON API specifications - to be used in the Lithuania-Belarus-Ukraine and Eurasian Economic Union multimodal corridors,
- Align the above work with the UN/CEFACT Multimodal Transport Reference Data Model and the Data Model of the Eurasian Economic Commission,
- Work with relevant government agencies in Belarus, Russia, the Eurasian Economic Commission and, possibly, Kazakhstan, on the practical implementation of digital tools for multimodal data and document exchange, for at least one electronic document equivalent, in the corridors of the Eurasian Economic Union, Work with relevant government agencies in Belarus and Ukraine on practical implementation on the Belarus-Ukraine route, in collaboration with Ukrainian, Lithuanian, UN/CEFACT and other experts,
- Develop a concept note on the use of specific instruments (trusted third party, blockchain or other) ensuring acceptability of electronic equivalents of documents accompanying goods (including, but not only the e-CMR) along corridors passing through Belarus, using the relevant UN/CEFACT white papers (e.g. on trusted third party and blockchain) and other tools,
- Contribute to interoperability among modes of transport (railway and air in particular), based on the UN/CEFACT Multimodal Transport Reference Data Model,
- Consult on regular basis the UN/CEFACT experts to ensure interoperability and alignment to the UN/CEFACT standards and reference data models.

The aim is to foster the harmonization of electronic data sharing using global (*UN/CEFACT) standards for transport, trade, and logistics, and to prepare standards for e-documents based on the UN/CEFACT semantic standards and reference data models*. The Consultant will focus on the development of electronic document

equivalents, using UN/CEFACT tools in the countries developing a digital multimodal transport corridor.

In brief, this consultancy is about using the UN/CEFACT semantic standards, Multimodal Transport Reference Data Model, standards and artefacts in real world projects.

2. Tangible and measurable outputs of the work assignment

1. Electronic document equivalents for the e-CMR: XML schemas and JSON API specifications aligned to the UN/CEFACT Reference Data Model and other standards, the e-CMR Protocol to the CMR Convention, and the Eurasian Economic Commission Data Model, to be used in the Belarus-Ukraine and Eurasian Economic Union multimodal corridors.

2. Test (practical implementation) of the prepared electronic document equivalents in the Eurasian Economic Union, or in the Belarus – Ukraine (- Lithuania) corridor, or in multimodal exchange with the railway and/or air cargo transport industry.

3. Concept note on the use of specific instruments (trusted third party, blockchain or other) ensuring acceptability of electronic equivalents of documents accompanying goods (e-CMR and other documents).

4. Collaboration networks on the above tasks established with UN/CEFACT, EEC, and Ukrainian experts; collaboration and contributions to the work of other experts under this project focusing on multimodal interoperability.

3. Project activities and outputs

3.1. Black Sea - Baltic Sea corridors countries 'as-is' analysis

This section describes analysis the need for and level of implementation of international (UN/CEFACT) semantic standards in multimodal transport data and document exchange, as well as trade flows along the Eurasian Economic Union and Black Sea - Baltic Sea corridors from the perspective of harmonizing and standardizing multimodal information exchange and provides information about the current status of existing electronic documents in the logistics sector in Belarus, Ukraine and Lithuania – (BUL countries) in the geographical scope of initial piloting of Digital Transport Corridor from the Baltic sea to the Black sea. The degree of maturity of electronic logistics within the countries is evaluated, including documents, technologies and services required in the supply chain at all stages from purchasing to delivering goods to buyers.

The geographical scope of the activity is the corridor between the Baltic sea and the Black sea, focusing on the Lithuania - Belarus – Ukraine route. The corridor shall link with Danish, German, and Swedish seaports and TEN-T corridors. A visual representation of such corridor is shown in Image 1.

Figure 1 : Map visualization of cargo movement between the Black and Baltic seas

Source: Preparatory Actions to pilot a Digital Multi-modal Transport Corridor between the Baltic Sea and the Black Sea[1]

We analyzed the following elements:

- Key and supporting logistics electronic documents for rail, road and maritime transport;
- Other additional electronic documents used in the transport chain;

[1] https://eufordigital.eu/wp-content/uploads/2020/06/DTC-report-draft.pdf

- Recommendations and standards of the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), New Computerized Transit System (NCTS) and Global Standard 1 (GS1);
- Technological solutions such as Block chain and Green transport corridor;
- Monitoring systems, including RFID (Radio frequency Identification), QR code, smart containers.

Electronic data exchange projects in Belarus, Ukraine and Lithuania are analyzed in comparison with the EU, which allows for the identification of gaps in the implementation of fully electronic logistics between the regions. The EU approach comprises various cases and standards used in practice, legislation, ICT platforms and direction of digitalization.

The assessment of countries has identified usage of electronic documents and related solutions within logistics supply chain processes.

The following insights were identified during the BUL countries as-is analysis:

- Digital Transport Corridor (DTC) relates to national IT systems and regulations for logistics, cross-border and Customs operations as well as multiple modes of transport. This makes DTC a complex topic, requiring the involvement of multiple stakeholders to ensure interoperability.
- Belarus, Ukraine and Lithuania have varying, yet overall low, levels of digitalization compared to EU.
- The BUL countries lack alignment and cooperation between different modes of transport on a national level.
- Digital information / document exchange between countries is performed on bi-lateral basis, however there is a shortage of easily adaptable technological solutions to enable those agreements. There is also the problem of implementing mechanisms for recognizing "foreign" electronic documents in view of the fact that countries use cryptography that is different from each other.
- Monitoring cargo systems are mainly developed and used by the private sector as business-to-business information exchange is more advanced than business-to-government or government-to-government information exchange.
- Before piloting and implementing a Digital Transport Corridor, specific digital solutions and electronic data and documents exchange mechanisms have to be implemented and used on a national level.

Table 1 illustrates the overall state of play of the countries regarding key electronic logistic documents and related technologies.

Table 1: Status of key electronic documents and related technologies in the logistics sector of the selected countries

	Red colour indicates the areas where no practical or legal solution is implemented.
	Blue colour indicates high level of digitalization with functioning cases.
	Yellow colour indicates where legal background is set or a pilot is ongoing, but no official practical usage.

eLogistics components		BY	LT	UA
Key Logistics Documents	e-CMR			
	eSMGS/eCIM			
	eBill of Lading			
Supporting Logistics Documents	eManifest			
	ePacking list			
	eATA carnet			
	eCertificate of Origin			
	eInsurance			
	eInvoice			
Other Logistics Components	UN/CEFACT Single Window recommendations			
	Green transport corridor			
	NCTS			
	Cross-border electronic data exchange in Customs			
	Block chain in the transport sector			
Monitoring systems	RFID, Electronic seals, GPS, QR code			
	Smart containers			

Source: results of workshops and interviews conducted in Belarus, Lithuania and Ukraine by DTC and national experts (updated for Belarus as of 12.2021)

3.2. Detailed overview of key electronic documents and related technologies in the logistics sector of Belarus

Electronic logistic documents are not used extensively in Belarus due to regulatory and willingness barriers. A key issue is trust. A mechanism for recognizing an electronic document and electronic signature of a foreign state in Belarus has been launched, but there are no practical examples of implementation, since such a mechanism has not been launched in the neighboring countries. Also, the lack of obligation and practice to use electronic data and low penetration of Belarusian exporters into the European market are one of the barriers for electronic information exchange. The most advanced mode in terms of electronic documents is rail where eSMGS is used and bilateral cooperation with Lithuania is progressing. Least developed is maritime logistics due to the small network of dry ports and no direct access to the sea.

At the same time, various business initiatives have been launched to implement certain elements of the Digital Transport Corridors: railway transport documents (by the Belarussian railway company BelZhD), monitoring of transit goods (Beltamozhservice), exchange of commercial data and documents for the supply of goods (EDI-provider CTT), transport and logistics platforms (TRANSINET, LogistLab), and others. Also, a project on cross-border exchange of commercial and transport documents within the framework of the Eurasian Economic Union (namely the “Minsk initiative”) is actively developed (for more detailed information please see chapter 5.7).

Table 2: The status of the eLogistics component in Belarus

	e-CMR - Belarus has already accepted the Additional Protocol to the CMR concerning e-CMR However, e-CMR is not yet used in road transport for cargo movement. As of July 2019, a working group has been formed to start developing the e-CMR project at the level of government agencies.
	eCIM/SMGS and eSMGS - are used in practice for railway cargo between Belarus and Lithuania, Latvia and Russia. Also, pilot projects are in the process of implementation with Ukraine.
	Bill of Lading - there is no practice of using electronic bill of lading for sea transport in Belarus.
	eManifest - there is no practice of using eManifest for sea transport in Belarus.
	ePacking list - there is no practice of using electronic packing list for sea transport in Belarus.
	eATA Carnet - there is no practice of using electronic ATA carnet for all transport modes in Belarus.
	eCertificate of Origin - there is no practice of using electronic certificate of origin in Belarus by Belarus Chamber of Commerce and Industry (BCCI).
	eInsurance - there is no practice of using electronic insurance for all transport modes in Belarus.
	eInvoice – is used inside Belarus by a national standard. However, there is no international cooperation for recognizing eInvoices from foreign countries. The used eInvoice is not in compliance with the UN/CEFACT standard.
	UN/CEFACT Single Window recommendations - Belarus is planning to develop a national single window prototype in 2022, that reflects national transportation requirements.
	Green transport corridor - there is no Green transport corridor in Belarus.
	NCTS - there is no practice of using a NCTS system. Belarus has not signed the convention on accession to the agreement on the application of the NCTS yet.
	Cross-border electronic data exchange in customs - the legal framework for cross-border electronic data exchange between customs in Belarus is setup, but several issues prevent its usage in practice, notably, the recognition of a "foreign" electronic document signed by a "foreign" e-signature. Also, international agreements to that effect are not in place.
	Block chain in the transport sector - there is no practice or pilot projects involving block chain technology related to transport and logistics.
	RFID - the official monitoring of the transit of goods using electronic seals via GPS is carried out by a private company, which is the national sealing operator. In rail transport, private monitoring is carried out by various Chinese and European cargo owners.
	Smart containers – there are some practical cases using containers with geolocation positioning devices, burglar alarms and sensors for temperature in railway transportation. Information from these devices is transmitted via cellular communication to the server of the operator of the refrigerated containers and relevant stakeholders.

Source: the author

3.3. Context of e-CMR

The Convention on the Contract for the International Carriage of Goods by Road (CMR Convention) is a United Nations Convention that was signed in Geneva in 1956 and entered into force in July 1961. The CMR Convention defines the responsibilities and liabilities of carriers (i.e. road haulage companies) during the international carriage of goods by road. The CMR Convention applies to the pick-up and delivery of goods carried out in two different countries, where at least one country is a contracting party, irrespective of the place of residence and the nationality of the parties. The CMR Convention has been signed, acceded to or ratified by 55 countries, including all 28 European Union (EU) Member States.

In February 2008, an additional protocol to the CMR Convention providing for the use of electronic consignment notes (e-CMR) was introduced. The protocol entered into force on 5 June 2011, and to date, 31 countries have acceded to it[2]. Belarus ratified the additional e-CMR protocol on 7 February 2019.

The CMR Convention and its electronic consignment note (e-CMR) offer a pre-existing model for countries to follow when developing their own electronic freight information system. Several EU Member States are already making use of the CMR consignment note for national transport operations. This should encourage EaEU legislative bodies to consider the functionalities and efficiency of the CMR Convention. Amending legislation could further harmonize the information contained in a CMR consignment note and bring it into line with the information required by EU law.

In its paper-based format, the CMR consignment note brings numerous benefits to the road freight transport and logistics sector by harmonizing contractual conditions for goods transported by road and facilitating road freight transport overall. A domestic and international e-CMR solution would not only retain all these benefits, but would bring the system up to date by removing paperwork, positively impacting the environment, improving the speed and reliability of the information exchange, and reducing costs. Recent studies have shown that thanks to faster administration processes, the e-CMR consignment note can contribute to savings of between 40% and 70% of initial costs, equal to about EUR 3 per paper consignment note (assuming an hourly rate of around EUR 28).

By investing in e-CMR consignment notes, transport operators will be able to input data electronically in a number of different languages, therefore limiting the risk of making mistakes, enabling logistics information to be stored more effectively, handling a multilingual environment more efficiently, and exchanging data in real time. Moreover, the e-CMR consignment note, owing to its digital nature, can easily be integrated with other services used by transport companies, such as customs declaration or transport and fleet management services. Moving to an electronic format would also mean that senders would have access to a track and trace system in case of delay or accident.

Table 3 below illustrates the concrete benefits for senders, carriers and consignees.

[2] https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XI-B-11-b&chapter=11&clang=_en

Table 3 : Benefits for senders, carriers and consignees.

Benefits for senders	Benefits for carriers	Benefits for consignees
One standard, one way of working	One standard, one way of working	One standard, one way of working
Paper-free and practical operation	Better service – higher customer satisfaction	Fewer telephone enquiries regarding consignments
Management and control of the logistical chain	No more time-consuming handwritten and printed paper consignment notes	Legal certainty provided by electronic proof of delivery (POD)
Insight into pick-up and delivery times	Fewer telephone enquiries	Damage, defects and delays able to be reported quickly
Faster invoicing	Safe and correct method for signing	No need to scan and manually archive consignment notes
Direct, client-focused action in the event of an emergency		Better planning thanks to insight into delivery times

Source: the author

1. Parties involved

Transport Services Buyer (Sender/Consignor or Consignee) - The buyer of transport services.

Transport Services Provider (Carrier) - The provider of transport services.

Sender/Consignor - The party consigning goods as stipulated in a contract of carriage by road (e-CMR) and referred as Sender in the CMR Convention

Consignee - The party receiving a consignment of goods as stipulated in a contract of carriage by road (e-CMR).

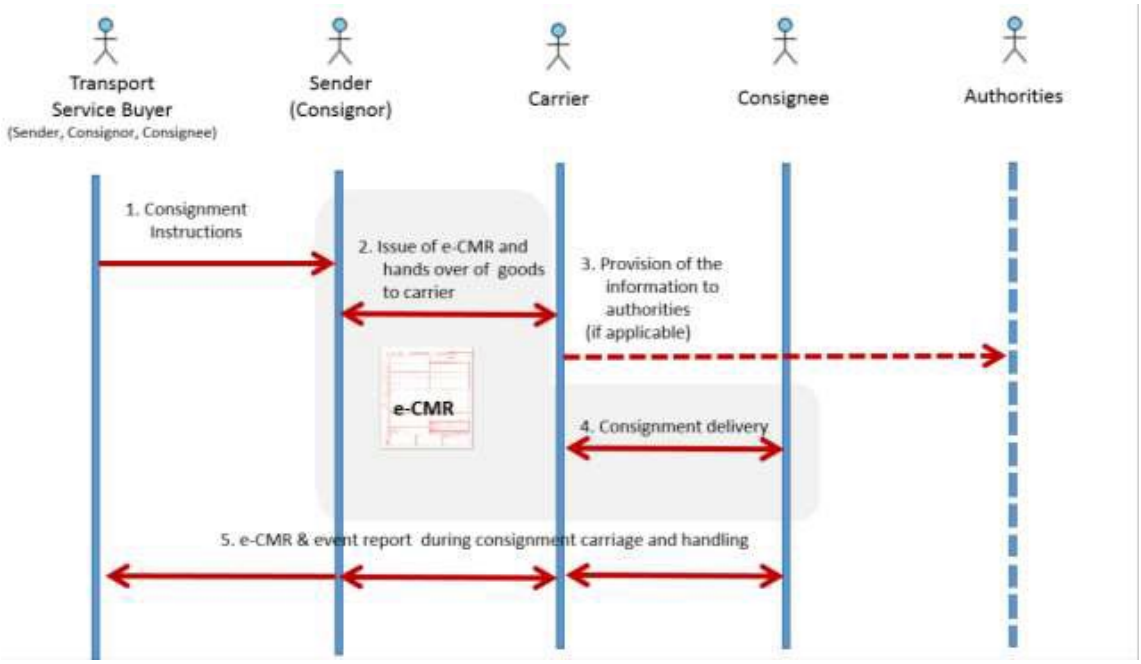
Carrier / subsequent carrier - The party which provides transport services as stipulated in a contract of carriage by road (e-CMR).

Authorities - any supervisory or controlling government bodies that carry out activities to control the movement of goods or make notes in accompanying documents.

2. Business process

The following diagram shows in detail the various parties involved in the transportation of goods by road and the necessary exchange of messages between them. Other scenarios are covered as well by the e-CMR data model:

Figure 2: e-CMR sequence diagram



Source: Business Requirements Specification (BRS) for e-CMR. United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT)[3]

Short description of the business process (may vary depending on the selected Use Case):

1. Transport Services Buyer generates and sends (through the system of the authorized logistic/EDI-operator) to the Sender/Consignor electronically (hereinafter, all documents will be discussed in electronic form) Consignment instructions.
2. Sender/Consignor prepares the goods for dispatch and generates and sends e-CMR to the Carrier.
3. The Carrier checks the cargo and fills its part of the e-CMR before carrying out the transportation (acceptance or correction of data).
4. Sender/Consignor (or authorized provider on behalf of the sender) sends (if necessary) data to an authorized state body for storage in the register.
5. When the cargo crosses the border, the Customs checks, (if necessary) fills in its part, sends the data to the authorized state body of its country, and sends the events according to the document to all participants in the transportation process (through the system of the authorized logistic/EDI-operator).
6. Upon acceptance of the goods by the Consignee, the Consignee fills in its part of the e-CMR and sends it to the Sender and the Carrier.

[3] https://unece.org/fileadmin/DAM/cefact/Standards/eCMR/01_BRS_eCMR_v1.pdf

7. The remaining necessary data on the acceptance of goods and acceptance of the e-CMR by the Consignee are distributed (with the consent of Consignee) to all participants, including the authorized state body in the country of the Consignee.

3.4. Work on creating electronic document equivalents of e-CMR

The UNECE facilitated project is focused on standardized dataset aligned to international standards and data models prepared for pilot use in cooperation with Belarus, notably in the light of a corridor passing through Ukraine, e.g. Black Sea – Baltic Sea (passing through Ukraine, Belarus and Lithuania).

In the scope of the project, an overall standardized dataset of the documents mentioned in the project overview was created and reported in a technical structure view along with an overall XSD schema following the UN/CEFACT schema rules. The overall standard dataset of the documents supports contextualization by means of restriction of international standards.

The document was reviewed against actual documents examples, that are in use in the transport corridor, and some issues were found, that should be solved to support possible real-life use. The overall dataset is a reuse of the UN/CEFACT Multi-Modal Transport Reference Data Model (MMT-RDM) D19A for individual transport related documents but still based on the wider Buy/Ship/Pay (BSP) Reference Data Model scope to cover general international supply chain processes.

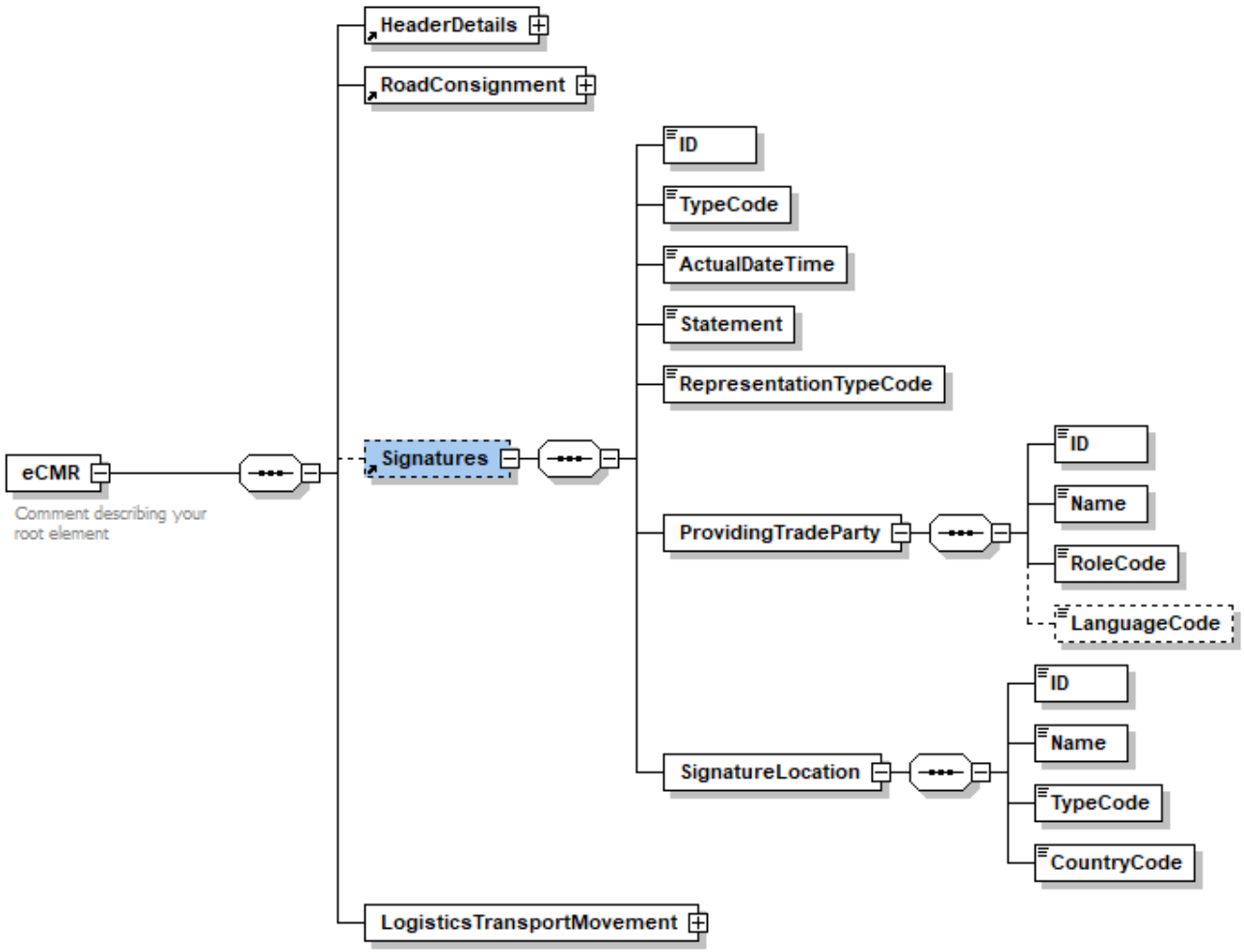
In order to develop equivalents of electronic documents for e-CMR – XSD-schema and JSON API specification, the following mapping with the UN/CEFACT MMT Multi Modal Transport Reference Model was made:

- Cross-Border Multi-Modal Transport Project Proposal and BRS,
- Buy-Ship-Pay Reference Data Model (BSP-RDM) (UN/CEFACT),
- International Freight Forwarding BRS,
- UN/CEFACT Modelling Methodology (UMM) v2.0,
- UN/CEFACT Core Component Technical Specification v2.01 (CCS ISO15000-5),
- UN/CEFACT Core Component Library D15B,
- United Nations Trade Data Elements Directory (ISO 7372),
- International Organization for Standardization (ISO TC154).

The data obtained will be used in the multimodal corridors Lithuania-Belarus-Ukraine, Belarus-Russia (within the existing pilots) and multimodal corridors in the Eurasian Economic Union.

To achieve our goals, **we have developed an XSD-schema for e-CMR** taking into account the realities of cargo transportation across the EAEU countries, as well as with the prospect of using the e-CMR as a multimodal document for converting data into electronic documents for other modes of transport (for example, rail).

Figure 3: e-CMR XSD-schema (changed by Belarus expert group)

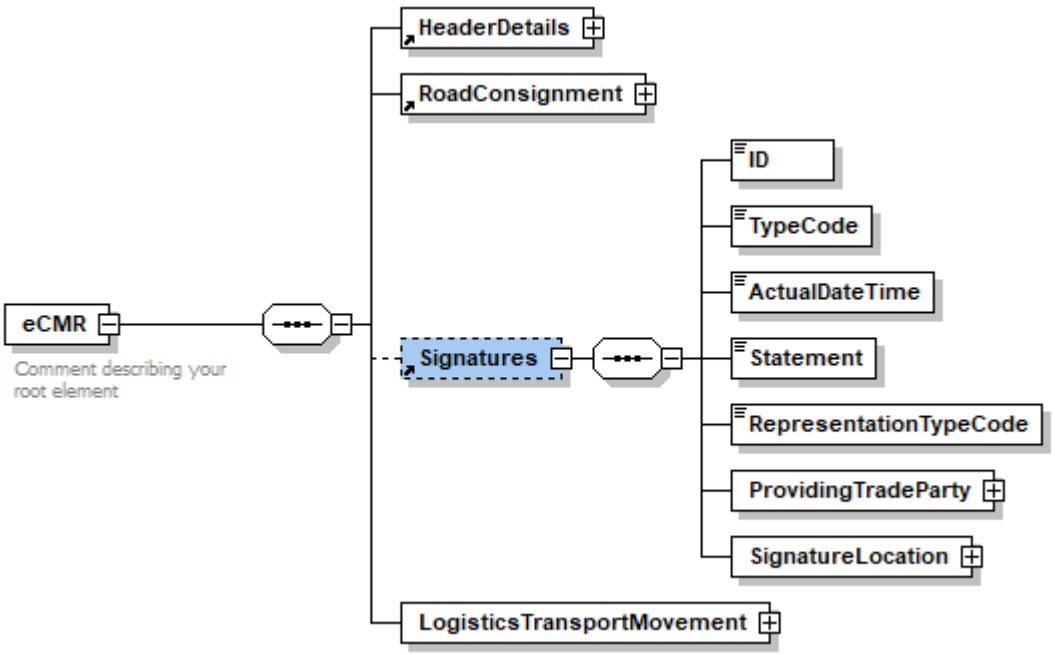


Source: the author

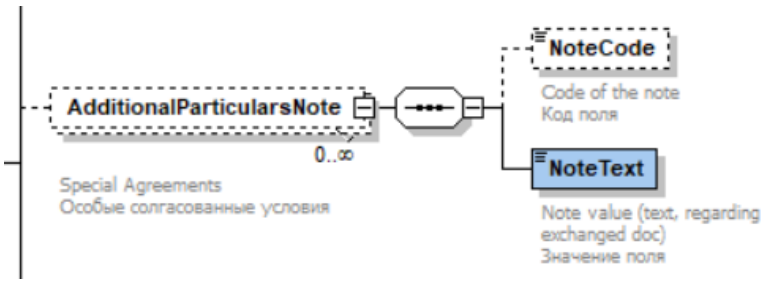
That is why some blocks of fields were added (for example, "Signatures") - see Figure 3. More detailed information on the changes made, as well as on the compliance with the Multimodal Transport Reference Data Model (MMT), is presented below and in Annex 2-6.

3.5. Comparative analysis of elements of the e-CMR data set model (Belarus-Russia pilot) (compliance with the UN/CEFACT'S Multimodal Transport Reference Data Model)

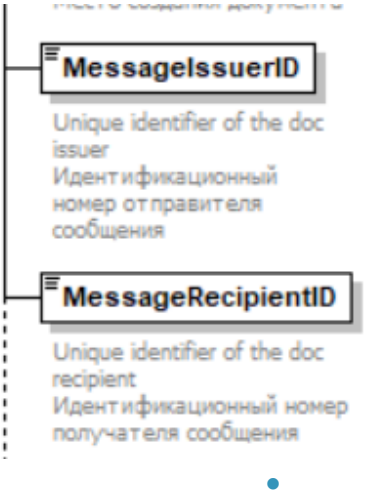
1. Block with digital signatures		
BY (proposed)	**UA**	**MMT RDM**
Additional It is placed in a separate block, so if the conditions for signing/ agreeing on the document change, we will not need to redo the header of the document. Also, in the **Header Details** section, an indicator field has been added: e-CMR/HeaderDetails/**MultiModalTransportationIdicator,** noting which additional functionality related to multimodal transportation should be available for the Sender.	in the section "Header Details"	Missing



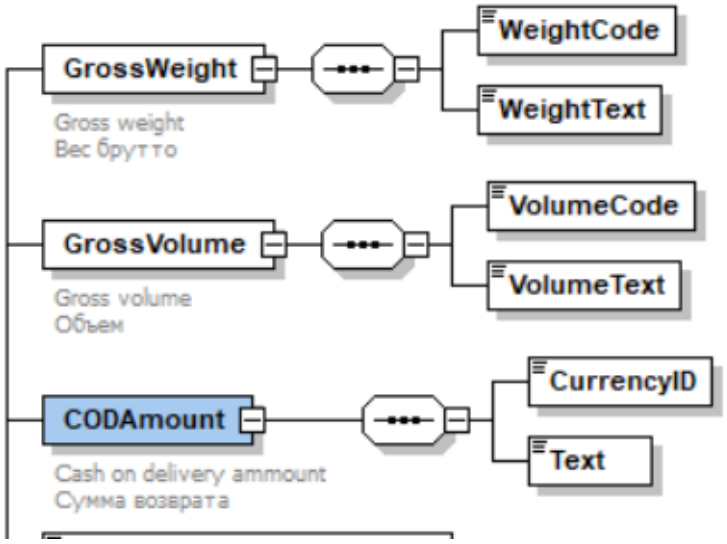
2. Blocks with notes and additional terms		
BY (proposed)	**UA**	**MMT RDM**
The block is available Such blocks always have **Code** and **Textfields:** E-CMR/HeaderDetails/OptionalParticlesNote/NoteCode e-CMR/TitleDetails/OptionalParticles/NoteText This is done so that the parties can automate the filling of these fields by assigning them some specific code. For example, so that the party understands that the field code F345 is an indication of the carriage of dangerous goods and then these conditions are prescribed in the Text field.	Usually in such blocks only the Text field	The block is available



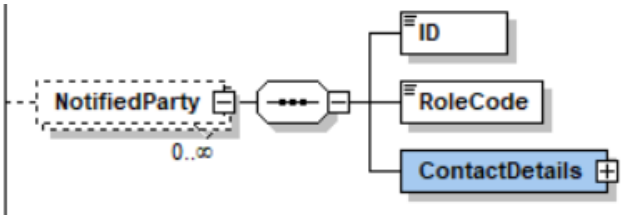
3. Specify theMessageIssuer and MessageRecipient of the document		
BY (proposed)	**UA**	**MMT RDM**
The block is available The document Issuer may be different from the Sender (for example, it may be the head office). The note of the UN/CEFACT document itself states that this is the "T*echnical Issuer of the message*", because it is not a contract entity. E-CMR/HeaderLearnMore/MessageIssuerID e-CMR/HeaderReadMore/MessageRecipientID	Such blocks are missing	Technical Issuer of the message



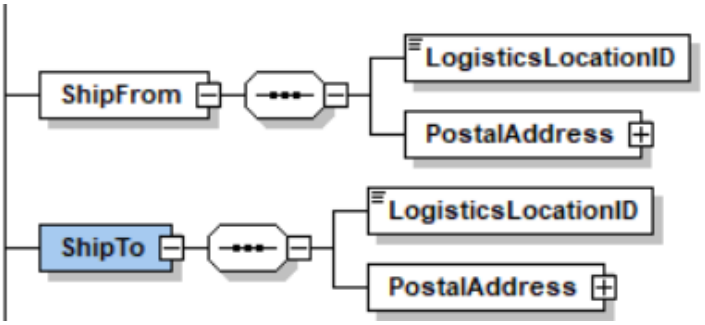
4. Properties: measurements or quantities		
BY (proposed)	**UA**	**MMT RDM**
Additional field "Text"	Only Code (there is no field for specifying the value itself)	Missing



5. Notified party		
BY (proposed)	**UA**	**MMT RDM**
The block is available One can use this block to automatically send a document for review in the future. One can supplement the block with an indicator that the parties agree on.	Such block is missing	The block is available



6. Shipping from/Shipment to Notified party		
BY (proposed)	**UA**	**MMT RDM**
The block is available	Such block is missing	The block is available



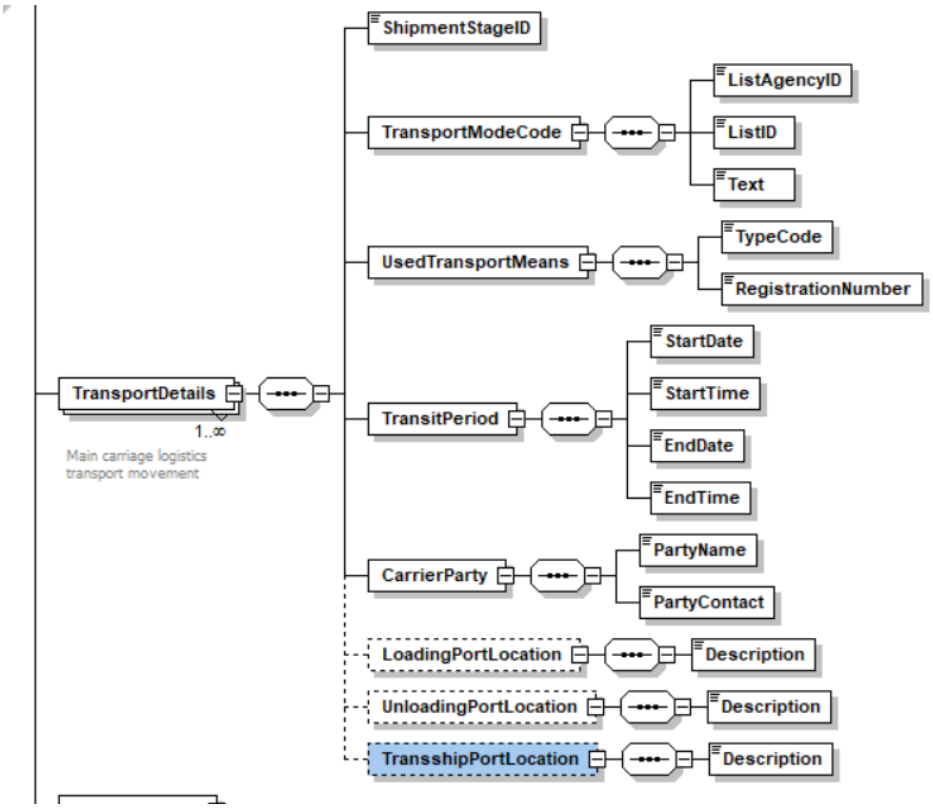
7. Various events

BY (proposed)	UA	MMT RDM
The blocks are missing Such information can be transmitted by separate notifications or service messages (in conjunction with the main document)	The blocks are available	The blocks are available

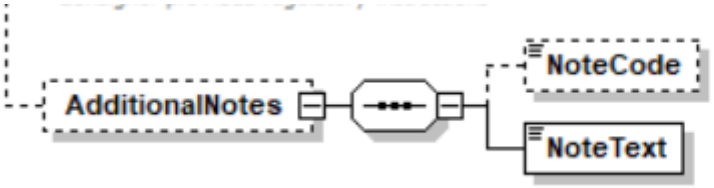
8. **Product section**		
BY (proposed)	**UA**	**MMT RDM**
The blocks are including There is a field: RoadConsignment/IncludedConsignmentItem/**GlobalID** There is a section RoadConsignment/IncludedConsignmentItem/TransportDangerousGoods There are fields RoadConsignment/IncludedConsignmentItem/OriginCountryIdentifier RoadConsignment/ IncludedConsignmentItem/**DestinationCountryIdentifier** There is a block RoadConsignment/IncludedConsignmentItem/ReferencedDocument There is a block RoadConsignment/IncludedConsignmentItem/TransportContract There is a block RoadConsignment/IncludedConsignmentItem/AdditionalParticularsNote	Such block is missing	The blocks are available

9. **Section Used transport equipment**		
BY (proposed)	**UA**	**MMT RDM**
The section is including Added field: RoadConsignment/UsedTransportEpment/**SealedIndicator** added section: RoadConsignment/UsedTransportEquipments/Instructions	The section is missing	The section is available

10. **Section TransportDetails**		
BY (proposed)	**UA**	**MMT RDM**
The section is available **/ designed differently (in alliance with SMGS)** The idea: to specify several blocks of information about the route at once when using various modes of transport. for example, that first the car and all the data regarding the car; then there will be a railway or air, or another mode of transport with its identification data.	The section is available	The section is available



11. **Section RoadConsignment/AdditionalNotes**		
BY (proposed)	**UA**	**MMT RDM**
<u>The section has been added</u> with additional comments to the entire document, which may include additional instructions and comments from the parties. In this section, the parties can also agree on the codes of such fields.	The section is missing	The section is missing



Source: the author

4. Test (practical implementation) of the prepared electronic document equivalents

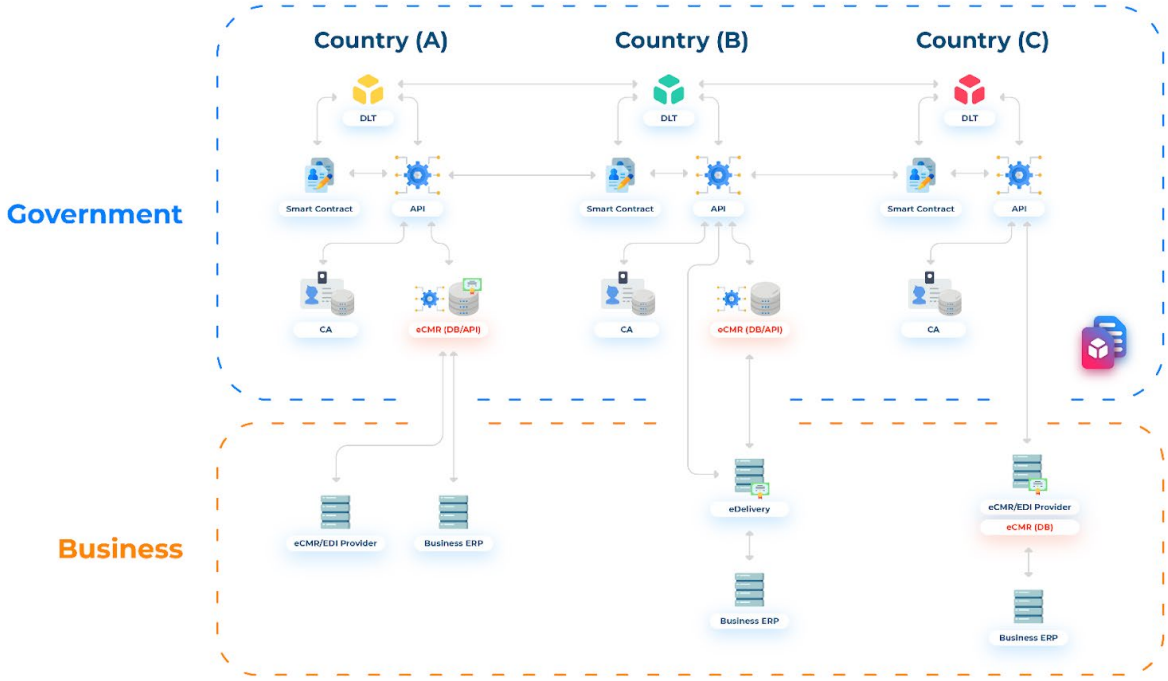
4.1. Creation of a prototype and piloting of e-CMR in the multimodal corridors Lithuania-Belarus-Ukraine

A working group was formed from representatives of the operating companies in the corridor countries: Lithuania (SIS) - Belarus (CTT) - Ukraine (PPL 33-35).

A draft roadmap for the pilot has been drawn up. A list of road carriers from Ukraine and Belarus has been prepared.

Deployment of territorial Blockchain-nodes: infrastructure in Lithuania and Ukraine is deployed. At the moment, the deployment of infrastructure in Belarus is nearing completion. Further, it is planned to integrate the "ground" systems with the central node (a prototype commissioned by the Ministry of Economic Affairs and Communications of Estonia) via API.

Figure 4: Schematic diagram of e-CMR prototype Lithuania-Belarus-Ukraine



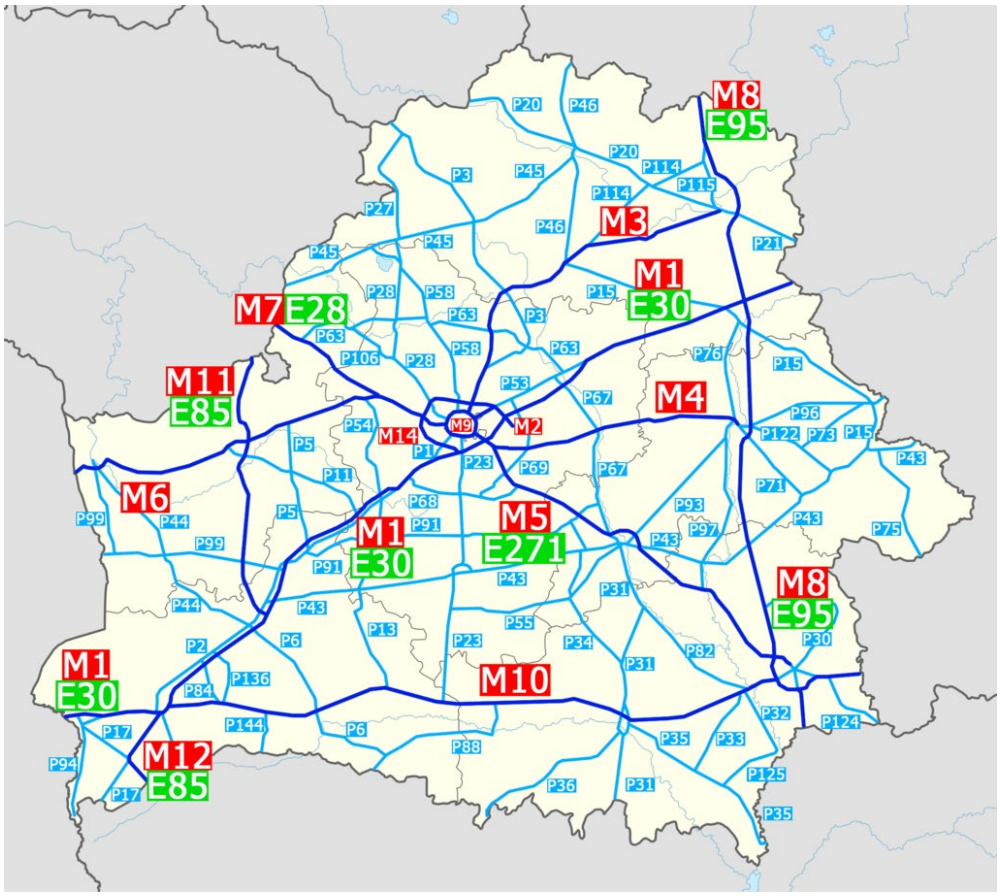
Source: Expert group for the preparation and implementation of the e-CMR pilot Lithuania-Belarus-Ukraine

A business diagram for the e-CMR exchange processes in the pilot countries is at the design stage. The conceptual scheme made by Sergey Tumel is taken as a basis, where the interaction of business partners with a central country node takes place through authorized operators, subsequently eFTI operators. At the same time, it should be noted that it is planned to use several schemes to ensure the legal significance of an electronic document: in the European Union according to the rules of the eFTI Regulation, in the EAEU (in particular in Belarus) according

to the mechanisms of a Trusted Third Party (with further re-signing of the document by the national operator).

The working group unambiguously decided on the e-CMR format and took the UN\CEFACT standard as a basis. It decided to take as a basis the developed equivalents of electronic documents for e-CMR - XML Schema and JSON API Specification - in accordance with the UN/CEFACT Reference Data Model, based upon the UN / CEFACT Core Component Library (CCL), the MultiModal Transport Reference Data Model (MMT) and the Supply Chain Reference Data Model (SCRDM)

Figure 4 : Visualization of cargo AUTO movement transiting Belarus



Source: Wikipedia[4]

4.2. Creation of a prototype and piloting of e-CMR in cross-border deliveries Belarus-Russia

In August 2021, at the initiative of the Ministry of Transport and Communications of the Russian Federation, a discussion started on a roadmap for the implementation of an e-CMR pilot between Belarus and Russia based on a pilot using electronic waybills - pilot "Minsk Initiative" (pilot for cross-border document flow between Belarus and Russia based on the Trusted Third Party (further - TTP)

[4] https://en.wikipedia.org/wiki/Roads_in_Belarus

mechanism for delivering goods using an electronic waybill (BY) and electronic Universal Transfer Document (RU)).

The pilot project goals:

1. Development of an electronic message format to move from a paper CMR document to an electronic legally significant e-CMR document based on the application of the international UN/CEFACT standard, which is of paramount importance in deciding whether to use the electronic message tested under the pilot project and the business scenario by other states, including EAEU, EU, SCO, BRICS countries.
2. Practical development of the technology of cross-border exchange of legally significant electronic documents between subjects of different states using the mechanisms of enhanced qualified electronic (digital) signature (ES, EDS) and "trusted third party" (TTP).
3. Formulation of proposals for amendments to state and supranational regulatory legal acts for the purpose of full-scale application of e-CMR and other electronic shipping documents.

A working group was formed, in which Mr. Tumel entered as an expert from Belarus, consisting of representatives of the ministries of transport and communications of Russia and Belarus, representatives of companies - EDI operators (CTT-BY, SberCorus-RU), representatives of TTP-operators, other companies providing information support to the pilot.

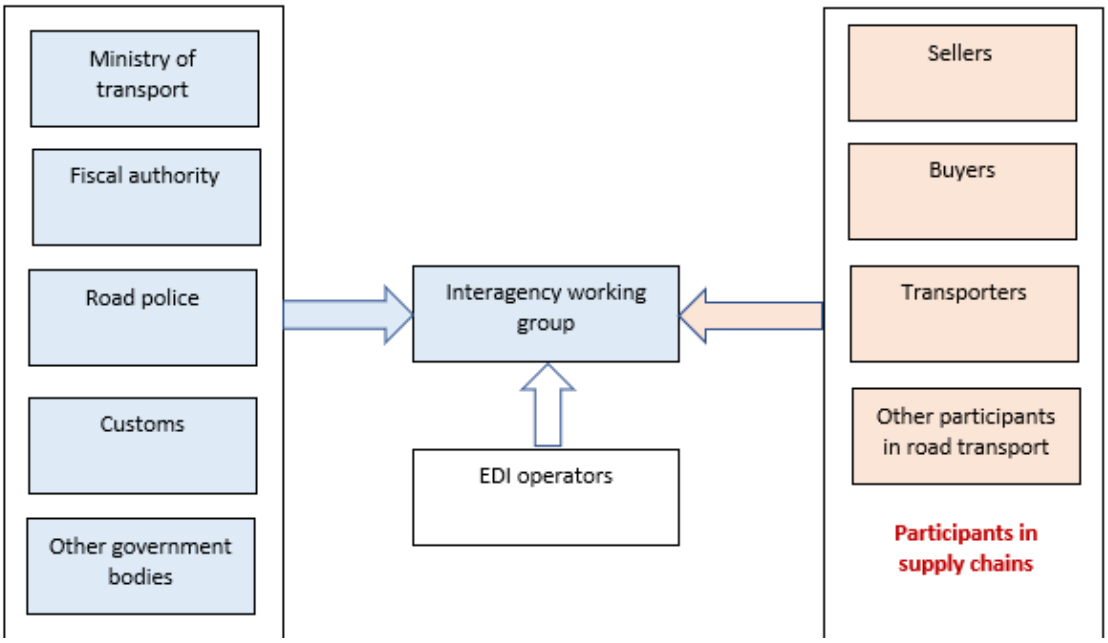
From the Russian Federation:

- Ministry of Transport of the Russian Federation;
- Federal Tax Service of the Russian Federation;
- Department of Digital Development of the Ministry of Transport of Russia;
- Department of International Cooperation of the Ministry of Transport of Russia;
- ANO "Directorate of International Transport Corridors";
- FSUE ZashchitaInfoTrans;
- Digital Initiatives Fund of the Eurasian Development Bank;
- LLC Certification Center GAZINFORMSERVICE (TPA-operator from the Russian Federation);
- Holding company ZAO Sovtransavto
- KORUS Consulting CIS LLC (EDO operator from the Russian Federation).

From the side of the Republic of Belarus:

- Ministry of Transport and Communications;
- Ministry of Communications and Informatization;
- Ministry of Taxes and Duties;
- State Customs Committee;
- RUE "National Center for Electronic Services" (TTS-operator);
- Association of International Road Carriers “BAMAP”;
- LLC "Modern technologies of trade" (Certified operator for the provision of electronic data interchange services (EDI-operator CTT) in the Republic of Belarus, the status of "Solution provider" from the International Association GS1).

Figure 5: Schematic diagram of Working Group of Belarus-Russia e-CMR pilot

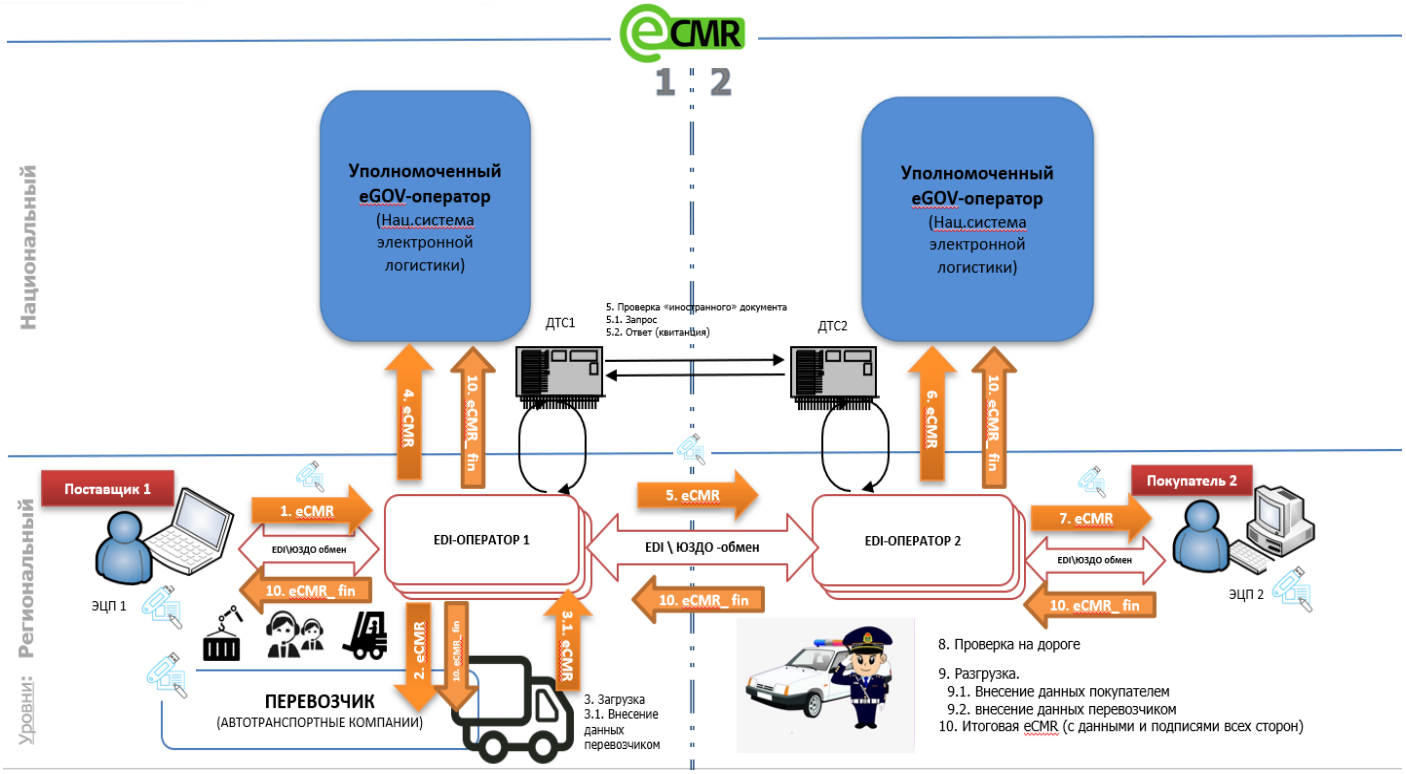


Source: the author

The working group prepared on **10/12/2021 a draft roadmap for the pilot**. At the moment, the Roadmap is sent for approval to the Ministry of Transport and Communications of the Russian Federation (on the level of the Deputy Minister), the Federal Tax Service of the Russian Federation (on the level of the Deputy Head), the Ministry of Transport and Communications of the Republic of Belarus (on the level of the Deputy Minister), the Ministry of Communications and Informatization of the Republic of Belarus (on the level First Deputy Minister), the Ministry of Taxes and Duties of the Republic of Belarus (on the level of deputy minister), as well as the Director of the Department of Digital Development of the Ministry of Transport of Russia, Acting Director of the Department of International Cooperation of the Ministry of Transport of Russia, Deputy Chairman of the State Customs Committee of the Republic of Belarus, the Association of International Carriers "BAMAP" and others.

The working group **has agreed with the proposal of Sergey Tumel (expert from Belarus, CTT)**, who presented a scheme for the implementation of the pilot project (see below), based on the use of a structured e-CMR format (in full compliance with UN/CEFACT standards) with electronic digital signature and exchange of document(s) through authorized EDI-operators in the countries of movement of the Carrier with the placement of the final e-CMR in the National systems of electronic logistics (National databases for e-CMR and other shipping documents). This scheme is implemented using the mechanism of a Trusted Third Party to confirm the authenticity of a document within the jurisdiction of different countries.

Figure 6. Schematic diagram of e-CMR prototype Belarus-Russia



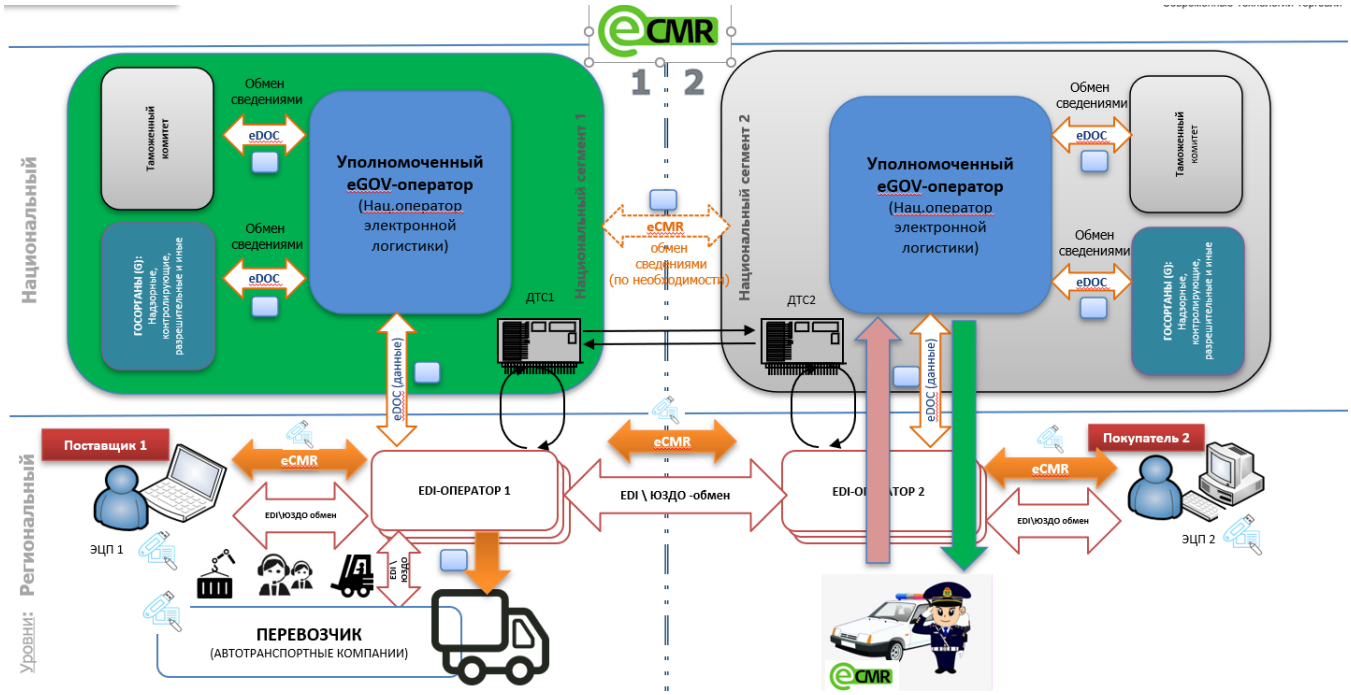
Source: the author

The validity of electronic (digital) signatures will be confirmed by certification centers (CAs) of the two states using the TTP mechanism, which will be implemented in the background invisible to transport market participants based on the interaction of EDI providers with certification centers, including certification centers that perform the functions of a "Trusted Third sides."

In this case, the check on the road can be carried out in 2 ways:

- In automatic mode (traffic cameras on the road transmit data about the car to the authorized state body and it checks it with the available data via e-CMR)
- In "manual" mode - checking by authorized employees of the controlling body of the cargo en route. When carrying out this type of verification, the Carrier presents either the e-CMR itself (on a tablet or mobile phone in an easy-to-view form) or presents a QR code containing a unique e-CMR number. An authorized representative of a control body makes an information request to his department (or an authorized e-GOV operator) about the composition of the e-CMR. He/she decides based on the answer.

Figure 7 : Road control scenario of e-CMR prototype Belarus-Russia



Source: the author

This is in compliance with the rule according to which the carrier will not be able to start the movement of a loaded vehicle until he receives confirmation from his EDI provider that the e-CMR electronic document has reached the database of the national information system (NCES or GIS EPD) of the neighboring state, that it has been verified and is available to the state control bodies of the state of the consignee.

The working group developed a business scenario for an experimental implementation of the service for the use of the e-CMR (for road transport) – see Annex 7.

Table 4. List of Business use cases in the Belarus-Russia e-CMR pilot

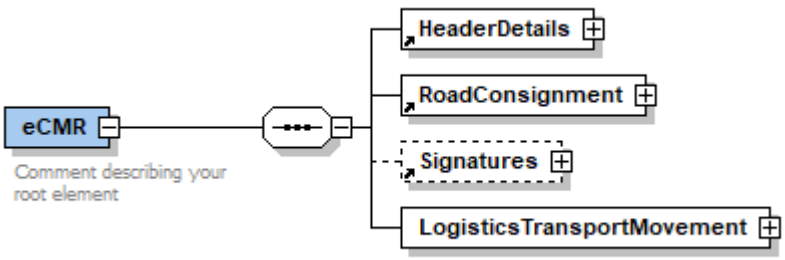
#	Business Use Case
B1	Creation of e-CMR
B2	Verification of the e-CMR transmitted by the EDI-Operator of the Consignor
B3	Document processing by the Carrier
B4	Cargo preparation by the Consignor
B5	Arrival of the Driver at the place of loading. Loading goods
B6	Verification of e-CMR by the Consignor's EDI-Operator

B7	Receipt and processing of e-CMR by the Consignor's National e-Logistics system
B8	Receipt and processing of e-CMR by the EDI-Operator of the Consignee
B9	Verification of a foreign document TTP of the Consignee
B10	Processing of the document by the EDI-Operator of the Consignee
B11	Processing of the receipt by the Consignor's EDI Operator
B12	Road Control
B13	Acceptance of the goods by the Consignee and processing the e-CMR
B14	Processing by the EDI-Operator of the final e-CMR with all signatures
B15	Processing of the final e-CMR and attached documents by the Consignor's EDI-Operator

Source: the author

The working group **agreed with Sergey Tumel's proposal to** use **as a basis** in the pilot **the e-CMR format**, the developed equivalents of electronic documents for e-CMR - XML schema and JSON API specification - in accordance with the UN/CEFACT Multimodal Transport Reference Data Model - a corresponding entry was made in the Roadmap for approval by government agencies.

Figure 8: Implementation scheme



Source: the author

At the working group, the Deputy Head of the Federal Tax Service of Russia (Mr. Egorichev) **made a proposal to expand the pilot:** to expand the number of documents used to accompany the delivery of Belarus-Russia (invoice, CMR, invoice, veterinary certificate, certificate of conformity and others) in the form of electronic documents, according to a similar exchange scenario - EDI operators using the TTP mechanism.

4.3. Multimodality: FIATA Multimodal Transport Bill of Lading (eFBL)

The analysis of multimodal transport information exchange indicated that direct conversion of shipping documents of different modes of transport in the chain acceptance - transfer of transported cargo is practically impossible.

The reason is that carriers of different modes of transport practically do not interact with each other either at the point of re-issuing shipping documents during the acceptance and transfer of goods, or at the point of settling financial payments with each other. Freight forwarders, who have contractual relationships with the carriers in the different modes of transport and with the end-to-end transport operators that liaise between the main participants in the transportation process, perform these functions. The freight forwarders receive data for re-issuance of shipping documents from the sources noted above.

The legal status of the multimodal transport operators is determined in theory by the United Nations Convention on International Multimodal Transport of Goods (Geneva, 24 May 1980), which has not been ratified by most countries in the world. Still, this convention is used as a theoretical basis for the establishment of international private law for cross-border multimodal transport, i.e., it provides options for concluding contracts between participants in multimodal transport to optimize them in the international supply chains.

The specific forms of these contracts have been developed by the International Federation of Freight Forwarders Associations (FIATA). FIATA documents (usually titled freight forwarder's documents) regulate the business relationship between the forwarder and the cargo owner. These documents do not apply to the relationship of the forwarder with the carriers, i.e., they are not considered as documents of carriage. The relationship of the forwarder with the carriers is governed by the relevant transport documents stipulated by national and international transport conventions, laws, statutes, and regulations within the respective modes of transport.

FIATA prepared a digital version of one of its main documents – the "FIATA Multimodal Transport Bill of Lading" as part of the Electronic FIATA Multimodal Transport Bill of Lading (eFBL) pilot project.

FIATA forwarding documents contain full information about the transported goods, their owners (seller and buyer), their postal and bank details, the route of transportation, as well as the operator of multimodal international transportation, including its legal status in relation to the transported goods. These documents are the main legal and information source, based on which the multimodal transportation operator concludes relevant agreements with carriers of different transport modes and other service providers. Therefore, it is useful to align these FIATA forwarding documents with the UN/CEFACT MMT RDM. Such mapping and alignment have already been made with the FIATA Multimodal Transport Bill of Lading as part of the FIATA project for Electronic FIATA Multimodal Transport Bill of Lading (eFBL).

4.4. The possibility of implementing a multimodal delivery (AUTO-RAIL). Issues of electronic document exchange in the project «Kaliningrad Transit»

In 2022, the Eurasian Economic Commission plans to conduct an experiment on the railway transportation of goods in containers along the route between the terminal and logistics centers "East-West" (Kaliningrad region, railway station Chernyakhovsk) and "Bely Rast" (Moscow region, railway station Bely Rast) using electronic transportation data and digital services. Transportation between the specified terminal and logistics centers takes place through the territory of Russia, the Republic of Lithuania, and the Republic of Belarus.

At the request of the United Nations Economic Commission for Europe, studies are being carried out on the application of international standards for electronic data interchange for multimodal transport corridors

In this experiment, the railway transportation of a container between the terminals "Bely Rast" and "Chernyakhovsk", transiting Belarus and Lithuania, is considered as part of the multimodal routes between the countries of the Eurasian Economic Union and the European Union. The initial and final sections of these routes are planned to be made by road transport. The continuation of transportation from the Kaliningrad region to EU countries and back is possible both by rail with reloading onto the rolling stock of the European gauge (1435 mm), and by sea and road transport. This will require an appropriate re-issuing of the shipping documents.

4.5. Cooperation with the Eurasian Economic Commission (Committee on Transport and Infrastructure) and representatives of the Ministry of Transport of the Republic of Belarus

2.1. June 30, 2021 S. Tumel took part in the 16th meeting of the Subcommittee on Infrastructure and Logistics of the Advisory Committee on Transport and Infrastructure of the Eurasian Economic Commission, where he presented the Concept of building the EU-EAEU Digital Transport and Logistics Platform, based on the standards of logistics (and other) documents in accordance with the UN/CEFACT reference data models. One of the decisions of the committee was to strengthen interaction with UN/CEFACT on the synchronization of approaches in the development of standards.

2.2. Since June 2021, S. Tumel had a series of meetings that have been held with representatives of the Ministry of Transport and Communications of the Republic of Belarus (at the level of Deputy Minister S. Dubina) on the implementation of the e-CMR project. At one of the last meetings, Mr. Tumel conducted a detailed demonstration of the e-CMR pilot implementation scheme with the simultaneous use of the TTP mechanism on the territory of the EAEU and the PEPPOL trusted network mechanism (access points) on the territory of the European Union. In implementing the scheme, it was also proposed to use electronic document standards in accordance with the UN/CEFACT Multimodal Transport Data Reference Model. The scheme was approved by Mr. Dubina and his colleagues. Now a more detailed map on the implementation of the pilot is under consideration by the Ministry.

5. Ensuring the legal validity of electronic equivalents of documents accompanying goods (including, but not only the e-CMR) along corridors passing via Belarus.

5.1. Background

One of the main issues is ensuring the legal validity of e-documents and the legal significance of electronic interaction in general. This problem is critical at both the national level (within a single jurisdiction) and transboundary level (interaction of participants acting under jurisdictions of different states).

Cross-border paperless trade requires a certain degree of trust. Some countries have national infrastructures to provide trusted paperless interaction in different spheres: tendering, customs declaration, single window, to name a few. All these infrastructures are usually based on national legislation and may apply different technologies. Consequently, economic operators face obstacles when they engage in paperless trade across borders.

Each business process in international trade involves the exchange of relevant information in the form of trade-related documents among different stakeholders. Trade-related documents and data created in one jurisdiction are exchanged across borders and should be utilized in other jurisdictions. The same should apply to such documents and data in electronic form; trade-related documents and data in electronic form should be exchanged and utilized across borders among relevant stakeholders to serve its intended purpose, despite its electronic format.

However, it is not guaranteed that the legal validity of trade-related documents and data in electronic form created in one jurisdiction would remain valid in another jurisdiction when they are exchanged across different jurisdictions. To make the exchange of trade-related documents and data in electronic form valid, different jurisdictions should provide reciprocal recognition of the validity of such data and documents whenever they are exchanged across borders.

What are the issues in the context of electronic data and documents? In a cross-border paperless trade environment, parties are usually in different jurisdictions. Cross-border paperless trade is challenged because most domestic laws allowing electronic communication are established based on local procedures and national technical standards to achieve authentication and non-repudiation. This is particularly the case for cross-border trade, where the exchange of goods or services could involve document and data exchange between multiple networks which may be hosted on the cloud and multiple different jurisdictions.

To give the same effect as physical transactions to cross-jurisdictional electronic transactions, a mutual recognition framework is needed, which can allow parties in different jurisdictions to exchange and recognize valid documents A mutual recognition framework may take into account certain aspects, such as identity, authentication, authorization, and others.

A mutual recognition framework may allow parties to the contract to decide what constitutes a valid transaction. Governments may also specify guidelines or rules defining a procedure to be followed in validating and accepting a transaction from another jurisdiction, which may be drawn from treaties, agreements between governments.

5.2. Recognition of electronic documents in the Eurasian Economic Union

The Treaty on the Eurasian Economic Union, signed in Astana on May 29, 2014, defines the issues of economic integration in the EAEU space, including, the Treaty includes Appendix No. 3 "Protocol on information and communication technologies and information interaction within the framework of the Eurasian Economic Union", which refers to organizing a transboundary space of trust.

In accordance with Protocol No. 3 of the "Treaty on the Eurasian Economic Union":

“cross-border space of trust” is a set of legal, organizational and technical conditions agreed by the Member States in order to ensure trust in the interstate exchange of data and electronic documents between authorized bodies;

…

19. The exchange of electronic documents and data between participants in electronic interactions, using different mechanisms for protecting electronic documents, should be ensured using services provided by operators of a common infrastructure for documenting information in electronic form, including ***services of a trusted third party.”***

This document introduces legal grounds for solving the problem of ensuring trust in cross-border documents with an electronic digital signature **by using the technology of a trusted third party,** but the text of the agreement limits its use only to interactions between the authorized bodies of the EAEU member states.

Further development of approaches to the use of mechanisms of a trusted third party was found in the "Strategy for the development of a cross-border space of trust" approved by the decision of the EEC Board dated September 27, 2016 No. 105, which determined that "Public authorities of third countries can also become subjects of electronic interaction (their officials and employees), individuals and legal entities (representatives of legal entities), officials and employees of integration associations, international organizations, subject to the conclusion of relevant international treaties.

As part of the implementation of this strategy, the plan is to provide by 2020 "the possibility of electronic interaction of individuals and legal entities between each other, as well as with public authorities of the Member States when individuals and legal entities are located in the territories of their states." At the moment, this task of creating legal, organizational and technological conditions to ensure trust in foreign electronic signatures of legal entities and individuals within the framework of the cross-border space of trust of the EAEU **has not been resolved.**

The Decision of the Supreme Eurasian Economic Council dated December 12, 2020 approved the “Strategic Directions for the Development of Eurasian Economic

Integration until 2025", which defines activities for the "Development of a cross-border space of trust, information interaction and electronic document management":

- 5.2.1. Development and adoption of acts of the Union bodies on the creation and development of a cross-border space of trust in terms of establishing requirements for mechanisms for ensuring information interaction between economic entities and public authorities of the Member States.
- 5.2.2. Development of proposals for amending the Treaty in terms of clarifying the definition of a transboundary space of trust.
- 5.2.3. Development and adoption of an act of the Union body on the recognition of an electronic digital signature (electronic signature) in an electronic document and ensuring the legal force of electronic documents in cross-border information interaction in areas defined by the Member States.

Their implementation date is set in the draft plan **- 2025.**

5.3. Implementation options

To discuss possible options for implementing the mutual recognition of electronic digital signatures in cross-border interaction, it is necessary to highlight three possible approaches to implementation:

- establishment of legislation in the EAEU countries, taking into account and on the basis of the UNCITRAL Model Law "On Electronic Signatures";
- development of own cryptography in the EAEU member states and mutual recognition mechanisms.
- use of technologies of distributed registries or ledgers (Blockchain) within the framework of cross-country networks being created.

5.4. External context in the formation of legislation

In the laws of the EAEU countries, as well as in the laws of most modern states, where there are rules related to electronic document management, ensuring legal force as a property of electronic documents, which is based on guarantees of the authenticity and integrity of documents.

A significant number of countries, including many economic partners of the EAEU Member States, base their legislation in the field of the legal significance of electronic documents on the 2001 UNCITRAL Model Law "On Electronic Signatures", the technological basis of which is precisely a cryptographic electronic signature.

5.5. Own cryptography in the EAEU countries

A number of EAEU member states are successfully developing their own cryptography, have their own standards of cryptographic algorithms used to create and verify electronic digital signatures.

In the general case, these solutions are not compatible with each other, i.e., an electronic document signed with an electronic digital signature (EDS) based on cryptographic standards, for example, of the Republic of Belarus, cannot be verified using the EDS of the Republic of Kazakhstan and Russian EDS. Similarly, in the case of an electronic document signed on the basis of Russian and Kazakh means of cryptographic information protection, they cannot be verified using Belarussian EDS.

5.6. Possible technological solutions

Option 1:

- use of a common cryptographic standard for participants in information interaction for electronic digital signature procedures.

Option 2:

- approach based on import/export of partners' electronic signature means, their mutual legal exchange to equip national information systems and national users of foreign information systems.

Option 3:

- formation of a "space of trust" based on technologies of distributed registries/ledgers (Blockchain) and recognition of electronic signatures within the framework of cross-country networks being created.

Option 4:

- formation of a "space of trust" based on the mechanism of a trusted third party (an authorized TTP operator who certifies a "foreign" electronic document within the framework of national legislation), using each of the interacting parties of their own national cryptographic standards.

At the moment, the first, second and third options in the vast space of the EAEU countries have a number of significant limitations for their practical use in cross-border interaction between public authorities, business and citizens.

So, the use of the first option is limited by the fact that a significant number of countries in the world use cryptographic solution systems based on US cryptographic developments. As a result, when interacting with these countries, states that have their own cryptographic standards will either not be able to interact or will have to use the developments of other states. Yet this contradicts the principles of maintaining "digital sovereignty", which determines the rationality of using electronic means certified according to national standards for electronic signatures.

The second option is also limited in use, since electronic signature tools are encryption (cryptographic) tools. In a number of countries, the export and import of electronic signature means has a number of significant legal prohibitions. In addition to legal restrictions, it can be noted that the use of electronic signature tools requires their periodic maintenance by certification service providers that operate in accordance with the requirements of national laws, and it is difficult to obtain such services outside the country of presence.

The third option has a rather weak practical application on the territory of the EAEU countries and, as a result, the regulatory framework is not ready to implement such approaches.

Option 4 - a recognition mechanism based on a Trusted Third Party involves organizing a secure cross-border electronic legally significant exchange of documents based on national systems of cryptographic means and allowing to implement essentially equivalent (on both sides of the border) levels of cryptographic protection of information flows and sufficient legal grounds for recognizing the legal validity of

electronic documents in cross-border interaction. In this case, the confirmation of the electronic digital signature is provided by using the services of a trusted third party.

5.7. Pilot project based on the Trusted Third Party mechanism

This section provides an example of the practical application of trusted third party mechanisms in cross-border interaction.

In 2021, the Republic of Belarus and the Russian Federation conducted the first and second stages of a pilot project for the exchange of electronic commodity documents in cross-border trade between business entities **using the Trusted Third Party mechanism.**

The aim of this project was:
Testing the mechanism of electronic document management in the framework of cross-border trade between economic entities of the Russian Federation and the Republic of Belarus for the possibility of a phased introduction of the exchange of electronic shipping documents in cross-border trade and their recognition within the Eurasian Economic Union.

Participants of the pilot project:
The coordinators of this project were:
from the Russian Federation - the Federal Tax Service of the Russian Federation.
from the Republic of Belarus - the Ministry of Taxes and Duties of the Republic of Belarus.

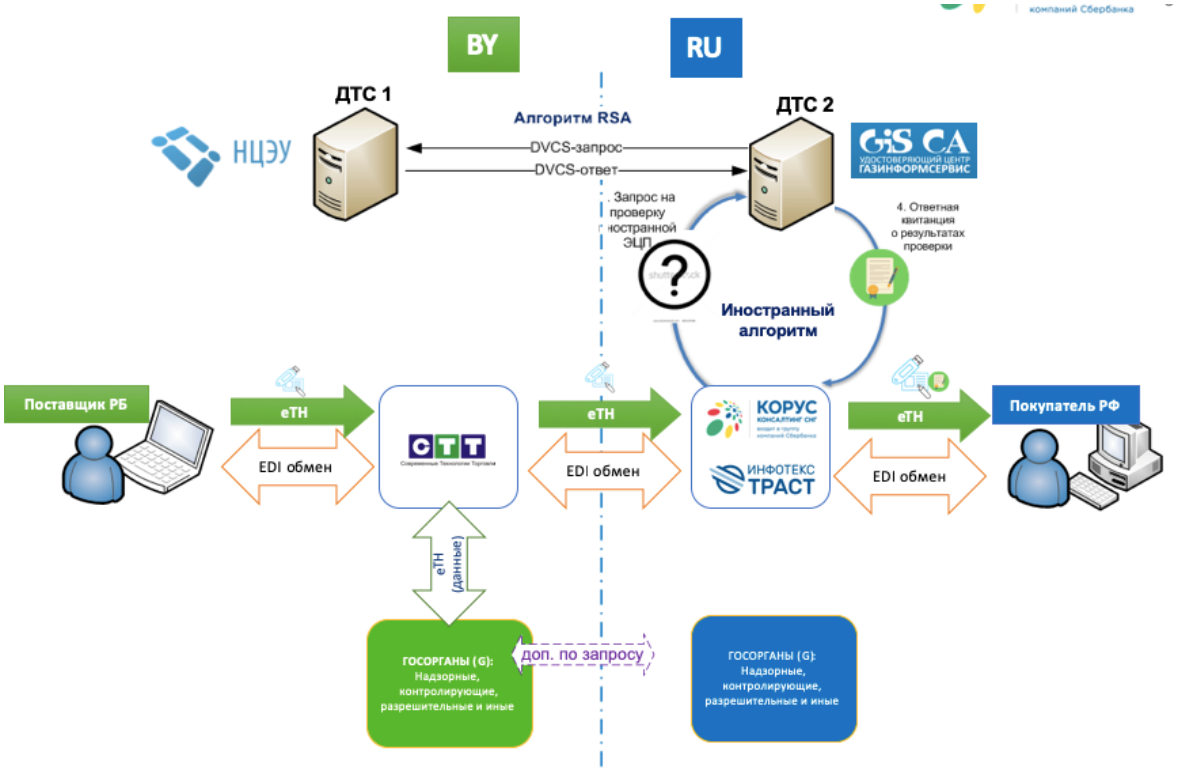
Trusted Third Party Operators (TTP):
from the Russian Federation - Certification Center Gazinformservis LLC.
from the Republic of Belarus - RUE "National Center for Electronic Services".

Operators of electronic document management (EDI-providers):
from the Russian Federation - Korus Consulting CIS LLC, Infotex Internet Trust OJSC.
from the Republic of Belarus - Modern Technologies of Trade LLC. (CTT)

Business entities from the Russian Federation and the Republic of Belarus.

Figure 9 shows an example of information exchange of electronic documents when moving goods from the Republic of Belarus to the Russian Federation:

Figure 9: Trade Document Information Exchange Scheme (Part 1)



Source: the author

As part of the pilot project, an exchange of shipping documents was carried out during 43 cross-border deliveries. 20 economic entities took part in the dense project (Republic of Belarus - 11, Russian Federation - 9).

The pilot project was evaluated **as promising for further development and introduction of the exchange of electronic documents in cross-border trade between the Republic of Belarus and the Russian Federation.**

Based on this pilot, the use of other shipping documents, in particular e-CMR, between the Republic of Belarus and the Russian Federation is currently being piloted. The results of these pilots will be distributed to all member countries of the Eurasian Economic Union.

6. Conclusions and recommendations

This document described the analysis of key electronic documents and related technologies in the logistics sector of the Baltic sea - Black sea route countries and presented a detailed overview of key electronic documents and related technologies in the logistics sector of Belarus.

In addition, a Concept note on the use of specific instruments (trusted third party, blockchain or other) ensuring acceptability of electronic equivalents of documents accompanying goods (e-CMR and other documents) in Belarus and EAEU countries was developed.

With regard to the e-CMR, an XSD-schema for e-CMR taking into account the realities of cargo transportation across the EAEU countries, as well as the prospect of using the e-CMR as a multimodal document for converting data into electronic documents for other modes of transport (for example, rail) was developed.

This report also demonstrates the activities of the author on implementing the developed e-CMR schemes in pilots in two directions:

1. piloting of e-CMR in the multimodal corridors Lithuania-Belarus-Ukraine,
2. piloting of e-CMR in cross-country deliveries Belarus-Russia.

At the same time, in these pilots it is planned to use different technological approaches[5] to recognize trust in the document. However, the presence of a nominal Belarusian group of experts **will allow to combine and pilot different approaches and ensure the unhindered use of the e-CMR electronic consignment note in various countries when making a delivery along the route Lithuania (EU)-Belarus (EAEU)-Russia (EAEU)-Ukraine (non-EU).**

This will be achieved by implementing the basic principles for the creation and transmission of e-CMR, laid down by the UNECE SC.1 working party on road transport in the CMR Additional Protocol on the e-CMR electronic consignment note[6]:

a) data integrity,
b) message/data immutability,
c) confidence of all stakeholders in each other and in a system that ensures mutual recognition of acts at the international level and by all stakeholders (contracting parties and the private sector),
d) trust in the system by all stakeholders (neutrality, hosting, 24/7 support, back-up mechanism, long-term storage, access, upgrade/maintenance/continuous improvement),
e) implementation of the CMR: a party holding rights arising from an electronic consignment note must be able to demonstrate the existence of such a right wherever the Convention and its e-CMR Protocol apply,
f) true facilitation (paperless/contactless/seamless process) of international transport in all geographic regions where the CMR/e-CMR Protocol is applied,
g) ensuring maximum protection of the interests of stakeholders (private sector: sender, carrier, recipient; official authorities: Customs, police, courts, banks, insurance companies),

[5] The Lithuania-Belarus-Ukraine pilot uses Blockchain technology, the Belarus-Russia pilot uses the Trusted Third Party mechanism

[6] Document on the implementation of the Additional Protocol to the CMR concerning the electronic consignment note (eCMR).

h) international coverage, i.e., taking into account the needs/requirements of all Contracting Parties to the CMR and possible Contracting Parties to the e-CMR Protocol around the world,
i) clear and consistent processes for authentication, electronic waybill creation and bill of lading changes, back-up procedure and proof of delivery.

At the same time, in the opinion of the author of this document, the e-CMR has great potential to eventually become part of a multimodal electronic transport document.

That is why it is further proposed:

1. To conduct a more complete analysis on the use of e-CMR as a single multimodal document.
2. Compare the capabilities of e-CMR and "FIATA Multimodal Transport Bill of Lading" as part of the Electronic FIATA Multimodal Transport Bill of Lading (eFBL) as a single multimodal document.
3. Compare the eight key FIATA forwarding documents with the UN/CEFACT Reference Data Model and develop electronic equivalents of these documents in the form of UN/CEFACT-aligned XML messages. Organize cooperation with FIATA, starting with participation in the pilot project "Electronic FIATA Multimodal Transport Bill of Lading" (eFBL)
4. Develop a software converter that provides the ability to unambiguously convert (recode) messages from UN/EDIFACT to UN/CEFACT standards-based XML messages and back to be used by participants in the transportation process, including multimodal transportation. Such a converter should be based on the UN/CEFACT MMT RDM as well as the schemas of the consignment note electronic document equivalents developed under this study.
5. Involve in the proposed experiment the maximum number of key participants in multimodal transport, including end-to-end operators and regional (national) forwarders, on the routes along the transport corridors Baltic Sea - Black Sea, GUAM and TRACECA. This will require the development and implementation, under the auspices of UN/CEFACT, of appropriate experimental integration platforms which shall be e-FTI certified.
   The practical implementation of this idea can be started with the establishment of working contacts between the developers of the Digital Transport Corridors ecosystem in the EAEU and the developers of relevant EU projects, taking into account the use of MMT – RDM.

7. ANNEXES (*other in electronic format*)

1 Отправитель (наименование, адрес, страна) / Absender (Name, Anschrift, Land)

ООО «Блэк Айс»
220049, г. Минск, пр-т Партизанский, д. 14, корп. 1, оф. 109
Республика Беларусь

Международная товарно-транспортная накладная
Internationaler Frachtbrief

CMR

Данная перевозка, несмотря на какие-либо прочие договоры, осуществляется в соответствии с условиями Конвенции о договоре международной дорожной перевозки грузов (КДПГ)

Diese Beförderung unterliegt trotz einer gegenteiligen Abmachung den Bestimmungen des Übereinkommens über den Beförderungsvertrag im internat. Straßengüterverkehr (CMR)

2 Получатель (наименование, адрес, страна) / Empfänger (Name, Anschrift, Land)

ООО «Фортуна»
110124, г. Москва, ул. Большая Ордынка, д. 74, стр. 1, оф. 24
Российская Федерация

16 Перевозчик (наименование, адрес, страна) / Frachtführer (Name, Anschrift, Land)

3 Место разгрузки груза / Auslieferungsort des Gutes

Место / Ort **г. Москва**
Страна / Land **Российская Федерация**

17 Последующий перевозчик (наименование, адрес, страна) / Nachfolgende Frachtführer (Name, Anschrift, Land)

4 Место и дата погрузки груза / Ort und Tag der Übernahme des Gutes

Место / Ort **г. Минск**
Страна / Land **Республика Беларусь**
Дата / Datum **23.07.2014**

18 Оговорки и заявления перевозчика / Vorbehalte und Bemerkungen der Frachtführer

5 Прилагаемые документы / Beigefügte Dokumente

Товарно-транспортная накладная № 0294290 серия НМ
Счет-фактура 1247

6 Знаки и номера / Kennzeichen und Nummern	**7** Количество мест / Anzahl der Packstücke	**8** Род упаковки / Art der Verpackung	**9** Наименование груза / Bezeichnung des Gutes	**10** Статист. № / Statistik - Nr	**11** Вес брутто, кг / Bruttogew. kg	**12** Объем, м³ / Umfang in m3
			Гидроцилиндры тормозные и сцепления. Ящики картонные – 32 шт.	**8412 21 800 8**	**397**	

Класс / Klasse | Цифра / Ziffer | Буква / Buchstabe | ДОПОГ / ADR

13 Указания отправителя (таможенная и прочая обработка) / Anweisungen des Absenders (Zoll- und sonstige amtliche Behandlung)

19 Подлежит оплате / Zu zahlen von:

	Отправитель / Absender	Валюта / Währung	Получатель / Empfänger
Ставка / Fracht			
Скидки / Ermäßigungen –			
Разность / Zwischensumme			
Надбавки / Zuschläge			
Дополнительные сборы / Nebengebühren			
Прочие / Sonstiges +			
Итого к оплате / Zu zahlende Ges.-Su.			

Объявленная стоимость груза / Angabe des Wertes des Gutes: **124 700,52 RUB**
(при превышении предела ответственности предусмотренного гл. IV, ст. 23, п. 3 указывается только после согласования дополнительной платы к фрахту)
(Wenn der Wert des Gutes der lt. Kap. IV, Art. 23, Ab. 3 bestimmten Höchstbetrag übersteigt, so wird er erst nach Vereinbarung des Zuschlages zur Fracht angewiesen)

14 Возврат / Rückerstattung

15 Условия оплаты / Frachtzahlungsanweisungen: **Согласно договора**
франко / Frei
нефранко / Unfrei

20 Особые согласованные условия / Besondere Vereinbarungen
Договор № 37514797-2013 от 21.12.2013 г.

21 Составлено в / Ausgefertigt in: **Г. Минск** Дата / am: **23.07.2014**

22
Прибытие под погрузку / Ankunft für Einladung: 9 час. Uhr 00 мин. Min.
Убытие / Abfahrt: 9 час. Uhr 30 мин. Min.
Подпись и штамп отправителя / Unterschrift und Stempel des Absenders

23
Путевой лист № _____ " _____ " _____ 19
Фамилия _____
водитель _____
Подпись и штамп перевозчика / Unterschrift und Stempel des Frachtführers

24 Груз получен / Gut empfangen — Дата / Datum
am " " 19
Прибытие под разгрузку / Ankunft für Ausladung: час. Uhr мин. Min.
Убытие / Abfahrt: час. Uhr мин. Min.
Подпись и штамп получателя / Unterschrift und Stempel des Empfängers

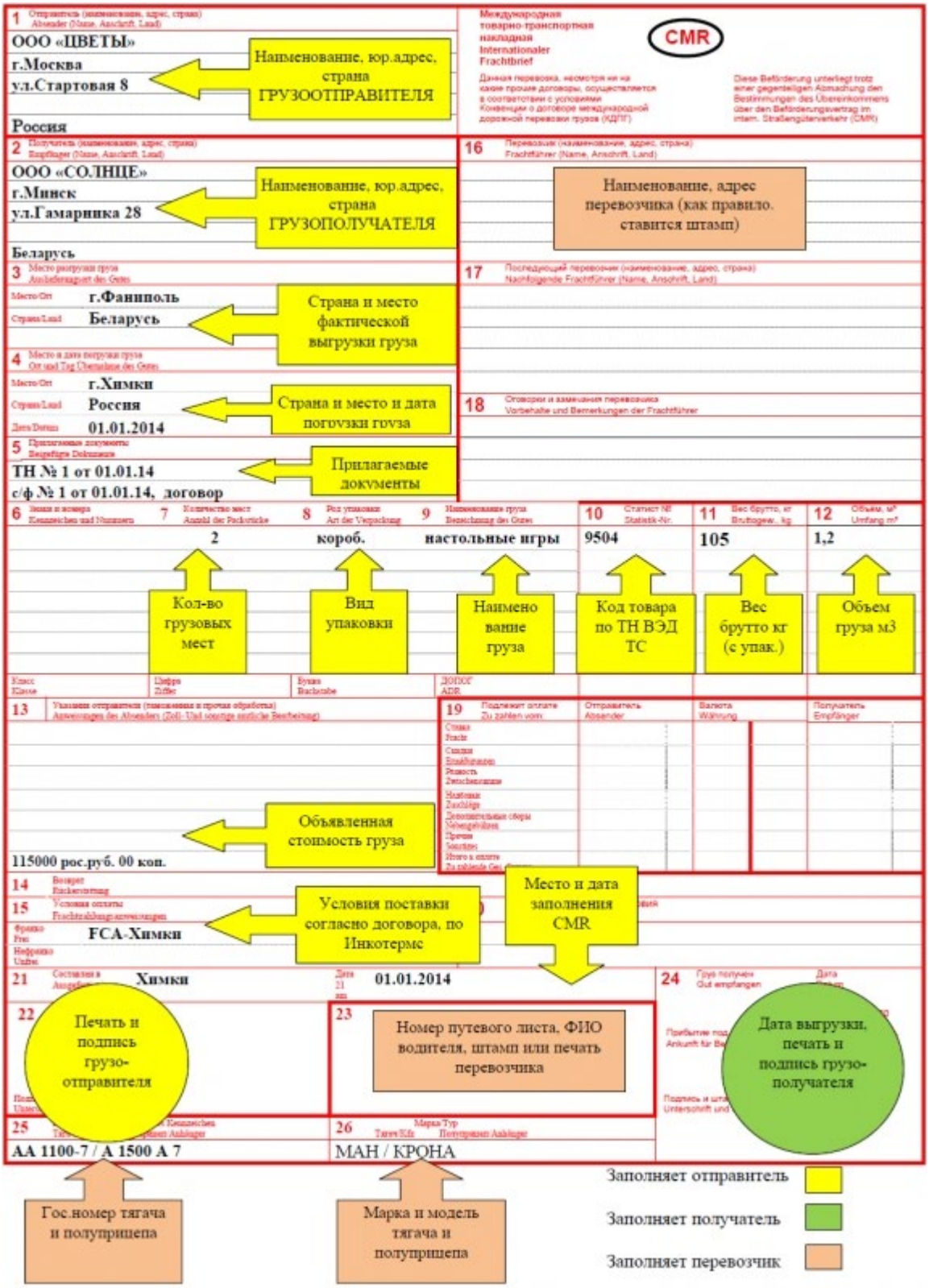
25 Регистрац. номер/Amtl. Kennzeichen Тягач/Kfz / Полуприцеп/Anhänger	**26** Тягач/Kfz Марка/Typ / Полуприцеп/Anhänger	**27** Тариф I за 1 км	Тарифное расстояние	% за измен. тягачей/пр.	Повышающ. коэфф.	Прочие доплаты	Сумма

28 Тариф II	Тарифное расстояние, км	Схема		Тариф за 1 т	Надбавки	Скидки	Прочие доплаты	К оплате

Отчисления
Оплачено заказчиком
К оплате

29 Тариф III

Валюта | Код плательщика


Международная товарно-транспортная накладная
Internationaler Frachtbrief
CMR
1 Отправитель (наименование, адрес, страна)
ООО «ЦВЕТЫ»
г.Москва
ул.Стартовая 8
Россия
Наименование, юр.адрес, страна ГРУЗООТПРАВИТЕЛЯ
2 Получатель (наименование, адрес, страна)
ООО «СОЛНЦЕ»
г.Минск
ул.Гамарника 28
Беларусь
Наименование, юр.адрес, страна ГРУЗОПОЛУЧАТЕЛЯ
16 Перевозчик (наименование, адрес, страна)
Наименование, адрес перевозчика (как правило, ставится штамп)
3 Место выгрузки груза
г.Фаниполь
Беларусь
Страна и место фактической выгрузки груза
4 Место и дата погрузки груза
г.Химки
Россия
01.01.2014
Страна и место и дата погрузки груза
5 Прилагаемые документы
ТН № 1 от 01.01.14
с/ф № 1 от 01.01.14, договор
Прилагаемые документы
17 Последующий перевозчик (наименование, адрес, страна)
18 Оговорки и замечания перевозчика
6 Знаки и номера
7 Количество мест
8 Род упаковки
9 Наименование груза
10 Статист. №
11 Вес брутто, кг
12 Объем, м³
2
короб.
настольные игры
9504
105
1,2
Кол-во грузовых мест
Вид упаковки
Наименование груза
Код товара по ТН ВЭД ТС
Вес брутто кг (с упак.)
Объем груза м3
13 Указания отправителя (таможенная и прочая обработка)
19 Подлежит оплате
Отправитель
Валюта
Получатель
Объявленная стоимость груза
115000 рос.руб. 00 коп.
14 Возврат
15 Условия оплаты
Франко
FCA-Химки
Условия поставки согласно договора, по Инкотермс
Место и дата заполнения CMR
21 Составлена в
Химки
Дата
01.01.2014
24 Груз получен
Дата
22
Печать и подпись грузо-отправителя
23
Номер путевого листа, ФИО водителя, штамп или печать перевозчика
Дата выгрузки, печать и подпись грузо-получателя
25
АА 1100-7 / А 1500 А 7
26
МАН / КРОНА
Гос.номер тягача и полуприцепа
Марка и модель тягача и полуприцепа
Заполняет отправитель
Заполняет получатель
Заполняет перевозчик