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Inland Transport Instruments: Convention on the Contract for the International Carriage of Goods by Road (CMR)- Additional Protocol to the CMR concerning the Electronic Consignment Note (eCMR)

Additional Protocol to the CMR concerning the Electronic Consignment Note (eCMR)

High level architecture of future eCMR system

Submitted by the Secretariat

SC.1 will be invited to consider and endorse, if possible, the proposal made by the secretariat on the high-level architecture of future eCMR operations with the development of an international eCMR registry/system in the framework of UNECE.

I. Mandate and background

1. Article 5 of the eCMR protocol mentions “The parties interested in the performance of the contract of carriage shall agree on the procedures and their implementation in order to comply with the requirements of this Protocol and the Convention, in particular as regards:

(a) The method for the issuance and the delivery of the electronic consignment note to the entitled party;

(b) An assurance that the electronic consignment note retains its integrity;

(c) The manner in which the party entitled to the rights arising out of the electronic consignment note is able to demonstrate that entitlement;

(d) The way in which confirmation is given that delivery to the consignee has been effected;

(e) The procedures for supplementing or amending the electronic consignment note; and

(f) The procedures for the possible replacement of the electronic consignment note by a consignment note issued by different means.

2. At its eighty-first session in February 2019, the Inland Transport Committee (ITC) foresaw an increased interest in the international conventions with a digital theme administered by its working parties, including the Additional Protocol to the CMR concerning the electronic Consignment Note (e-CMR). Noting the number of accessions and ratifications to Convention on the Contract for the International Carriage of Goods by Road (CMR) and e-CMR, it encouraged the Working Party for Road Transport (SC.1) to increase its efforts to advocate and raise awareness of the benefits of being a contracting party to CMR, Protocol to CMR, and e-CMR.

3. ITC also expressed its support for SC.1 being the main platform for multilateral dialogue and the exchange of best/emerging practices by contracting parties implementing e-CMR, and requested SC.1, with the support of the secretariat, to prepare a paper detailing the research and other actions needed and/or recommended for the operationalization of e-CMR, to be tabled at a future ITC session.

4. The secretariat invited interested volunteers from SC.1 to form an informal group. Accordingly, an informal group of experts comprising of Slovenia, Latvia, Turkey, Russian Federation and Germany, the European Commission and IRU, was formed in October 2019 with Slovenia as chair.

5. This informal Group met several times and prepared a final report which is contained in ECE/TRANS/SC.1/2021/1. The informal group identified among other issues that “the pilots adopted different business and technological approaches reflects that the stakeholders involved in the different pilot projects to date have not discussed nor considered the possibility of coordinating their approach with others” as article 5 of the protocol stipulates. Furthermore, concluded that “the SC.1 secretariat may wish to consider appropriate future actions based on the content of group’s final report”.

6. The current document constitutes secretariat’s follow up on informal group’s conclusion and it should be read and considered in conjunction with document ECE/TRANS/SC.1/2021/1. The document provides an analysis of the current users of the CMR Convention, the lessons learned from the digitalization of other UN legal instruments such as the TIR Convention and suggests four different options regarding the high-level architecture of the future eCMR system.

II. Users of CMR Convention

A. Direct users of CMR Convention

7. The convention applies to every contract for the carriage of goods by road in vehicles for reward if the origin and the destination are situated in two different countries, at least one of them is a contracting party to CMR, and the consignment note states that CMR applies to that contract for carriage.

8. CMR was drafted to provide a uniform legal framework to the contract for the international carriage of goods by road. It lays down mutual rights and obligations of private parties (consignor/sender/exporter – carrier – / consignee / receiver / importer) when performing a contract of carriage of goods.

9. It is one of very few conventions at ECE that relates to private law rather than public law.

10. The CMR consignment note is considered a proof of the contract of carriage but the absence, irregularity, or loss of the consignment note does not affect the existence or the validity of the contract of carriage, which shall remain subject to the provisions of the CMR Convention (Article 4). In other words, the taking over of goods by a carrier from the sender without drawing up a written contract or CMR consignment note does not mean that a contract of carriage has not been concluded. The CMR consignment note serves also as proof of the reception of the goods by the carrier.

B. Indirect users of CMR Convention

11. The CMR consignment note serves both as an evidential document (at a civil level) and a control document (at an administrative level, its absence may lead to an administrative or criminal sanction). Most countries consider that the CMR consignment note is a control document that must be in the vehicle whilst carrying goods.

12. The following table lists indirect users of the CMR consignment note and their interests regarding the implementation of e-CMR.

Table 1
Indirect users of CMR consignment note and their interests regarding the implementation of e-CMR

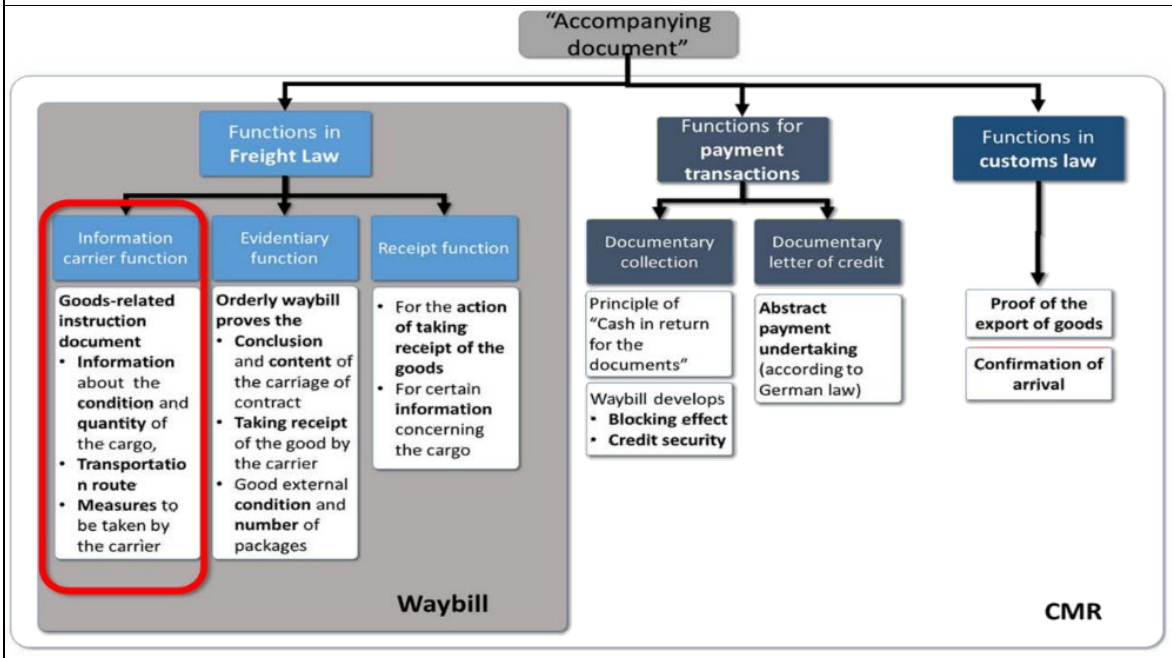
Trade / Shipping Economy	*Freight Forwarders*
Gain in security through clear identification of the participants	Gain in security through clear identification of the participants
Simplification in the document run	Safety gain through clear identification of all carriers (sub-contractors)
Highest evidence in court	Fast documentation and preservation of evidence in case of damage to the cargo
	Simplification in the document run
States Authorities	Banks / Insurances
CMR is a customs document: proof of actual export and domestic delivery (“Customs Entry Certificate")	Use as a documentary letter of credit
	Effective protection against fake documentary credits
Halting the practice of illegal VAT refunds	Gain in security through clear identification of the participants
Police	
National courts	Simplification in the document run

Trade / Shipping Economy	*Freight Forwarders*
	Highest evidence in court when using qeS

Source: Bundesverband Güterkraftverkehr Logistik und Entsorgung (BGL) e.V.

13. The illustration below shows differences between any waybill and the CMR consignment note. The CMR consignment note is used not only regarding freight law but also payments transactions and customs law.

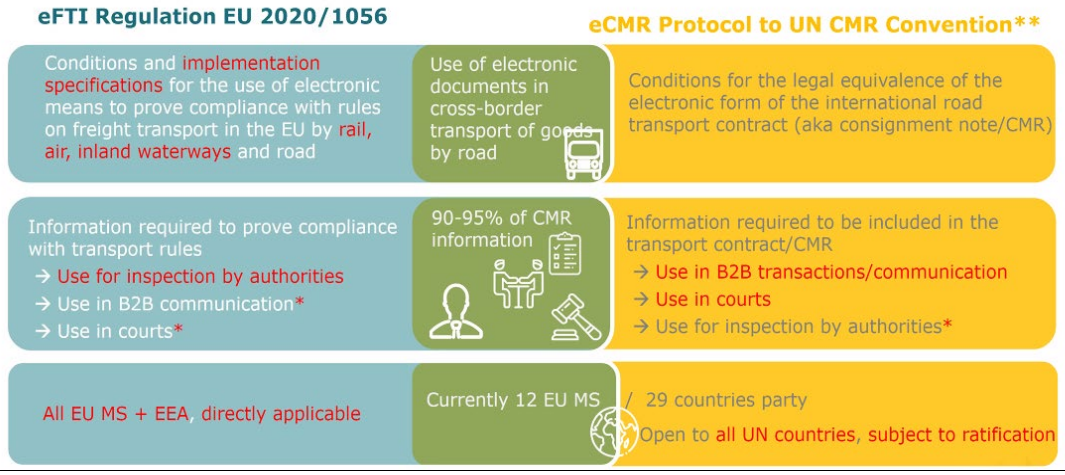
Figure 1
Functions of CMR in freight law, payments transactions, and customs law



Source: CMR / eCMR experts

14. The following figure illustrates how the European Commission sees the functions of the CMR consignment note compared to the eFTI regulation to come into force in 2024.

Figure 2
eFTI regulation and the international conventions on transport contracts – an illustration for road transport



Source: European Commission

15. As opposed to the paper version, the digital version of the consignment note has no internationally agreed procedures and operations for the electronic signature. All electronic

procedures should be carefully designed and described, and the integrity of data should be ensured by all means. Otherwise, trust to the electronic system(s) will be lost and then market would have to return to the paper consignment note.

16. The CMR Convention incredibly facilitated the international carriage of goods by road transport. The fact that the users of the CMR consignment note are not only the ones that the contract refers to, but many others underlines the great success of the Convention. Any eCMR system proposed should guarantee and ensure the principles based on which the CMR convention was built on and promoted throughout the years. It should create trust by and among the users, ensure mutual recognition between the users (especially regarding authentication), and ensure the integrity of data and inalterability of the messages.

III. Lessons learned – practices followed in the development of eTIR International System

17. On 25th May 2021, the new legal framework for the full digitalisation of the TIR system (the so-called eTIR) entered into force, opening eTIR to 77 countries across five continents. This landmark change allows for completely paperless cross-border transit of goods, under the customs guarantee of the TIR system.

18. The eTIR international system (customs to customs) ensures the secure exchange of data on the international transit of goods, vehicles, or containers according to the provisions of the TIR Convention between national customs systems and allows customs to manage the data on guarantees issued by guarantee chain to holders authorized to use the TIR system. The TIR system counts more than 30,000 authorised operators and is accepted at more than 3,500 customs offices worldwide.

19. The legal framework for digitalisation – the new Annex 11 of the United Nations TIR Convention – will reinforce and expand TIR benefits for global multimodal trade.

20. The lessons learned from the negotiation process of the new Annex 11 among the Governments and the private sector as well as the practices shared and the discussions and agreements on the conceptual, functional, and technical specifications of the eTIR international System could be summarized as follows:

(a) The term "eTIR procedure" shall mean the TIR procedure, implemented by means of electronic exchange of data, providing the functional equivalent to the TIR Carnet. Whereas the provisions of the TIR Convention apply, the specifics of the eTIR procedure are defined in Annex 11;

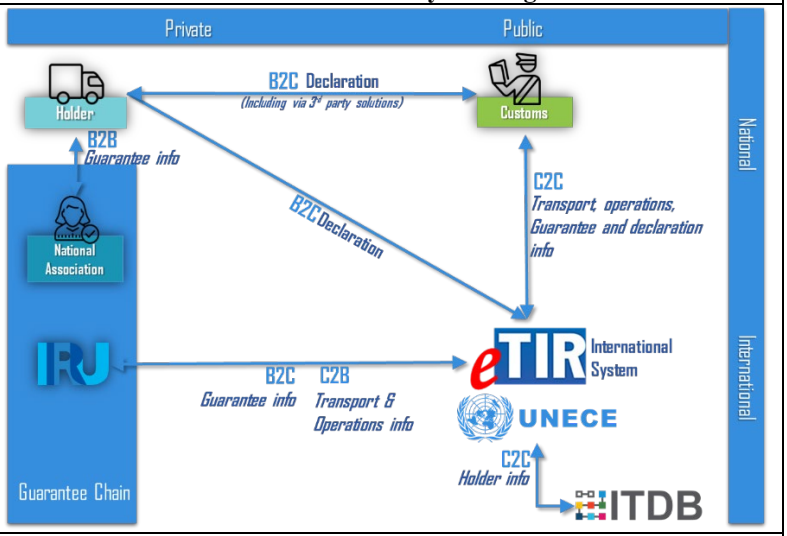
(b) Technical Implementation Body. A Technical Implementation Body shall be established. The Technical Implementation Body shall monitor the technical and functional aspects of implementing the eTIR procedure, as well as coordinate and foster the exchange of information on matters falling within its competence;

(c) The term "eTIR international system" shall mean the Information and Communication Technology (ICT) system devised to enable the exchange of electronic information between the actors involved in the eTIR procedure;

(d) Advance TIR data and advance amendment data shall be submitted by the holder to the competent authorities (Customs) of the country of departure and of the country in which an amendment to the declaration data is requested. This data may be submitted either directly to the competent authorities or via the eTIR international system;

(e) Authentication. While accepting the declaration in the country of departure or an amendment to the declaration data in any country along the itinerary, competent authorities shall authenticate the advance TIR data, or the advance amendment data, and the holder, in accordance with national law;

Figure 3
The eTIR International System high level architecture



Source: TIR Secretariat

(f) Integrity of data: The eTIR international system ensures, by means described in the eTIR specifications, the integrity of the advance TIR data, or the advance amendment data, and that the data were sent by the holder;

(g) Mutual recognition:The authentication of the holder performed by the competent authorities of the Contracting Parties bound by Annex 11 which accept the declaration, or changes to the declaration data, shall be recognized by the competent authorities of all subsequent Contracting Parties bound by Annex 11 throughout the TIR transport;

(h) Fallback procedure: Where the eTIR procedure cannot be started for technical reasons at the customs office of departure, the TIR Carnet holder may revert to the TIR procedure. Where an eTIR procedure has started but its continuation is impeded for technical reasons, the competent authorities shall accept the accompanying document and process it in line with the procedure described in the eTIR specifications, subject to the availability of additional information from alternative electronic systems as described in the functional and technical specifications;

(i) Hosting of the eTIR international system: The eTIR international system shall be hosted and administered under the auspices of the United Nations Economic Commission for Europe (ECE). ECE shall assist countries in connecting their customs systems to the eTIR international system, including by means of conformance tests to ensure their proper functioning prior to the operational connection. If necessary, Contracting Parties may decide to finance the operational costs of the eTIR international system through an amount per TIR transport;

(j) Administration of the eTIR international system: ECE shall make the appropriate arrangements for the storage and archiving of the data in the eTIR international system for a minimum period of 10 years. All data stored in the eTIR international system may be used by ECE on behalf of the competent bodies of this Convention for the purpose of extracting aggregated statistics. The competent authorities of Contracting Parties in whose territory a TIR transport is carried out under the eTIR procedure which becomes the subject of administrative or legal proceedings concerning the payment obligation of the person or persons directly liable or of the national guaranteeing association, may request ECE and obtain information stored in the eTIR international system pertaining to the claim in dispute for verification purposes. This information may be produced as evidence in national administrative or legal proceedings. In cases other than those specified in this Article, the dissemination or disclosure of information stored in the eTIR international system to non-authorized persons or entities shall be prohibited.

IV. eCMR high level architecture

21. Based on the findings and facts of the analysis provided above, this chapter attempts to provide the options concerning the high-level architecture of eCMR operations that could be the possible system of eCMR in the future.

22. The options provided consider the following principles stipulated in the eCMR protocol and any digitalization process that is the subject of a UN international legal instrument:

(a) Integrity of data;

(b) Inalterability of messages / data;

(c) Trust among all stakeholders and to the system which ensures mutual recognition of acts internationally and by all stakeholders (Contracting parties and private sector);

(d) Trust to the system by all stakeholders (neutrality, hosting, 24/7 services, backup, long term storage, access, upgrade / maintenance / continuous improvement);

(e) Implementation of the CMR Convention: the party entitled to the rights arising out of the electronic consignment note should be able to demonstrate that entitlement wherever the convention and its eCMR protocol applies;

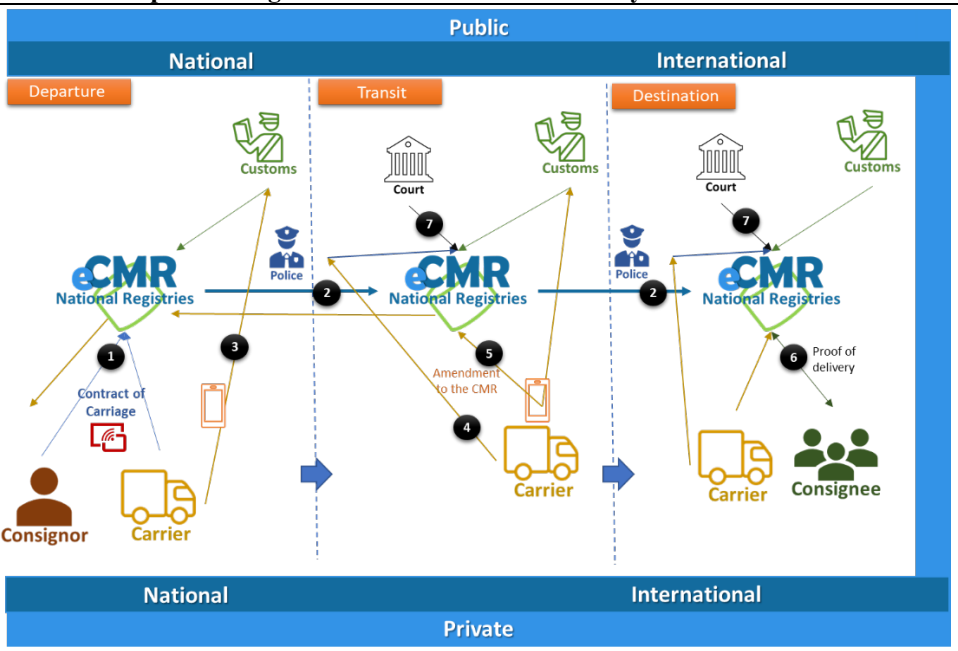
(f) Real facilitation (paperless / contactless / seamless) of international transport in all geographical regions where CMR/eCMR applies;

(g) Ensuring the interests of involved stakeholders (private sector: sender, carrier, consignee / public authorities: customs, police, courts, banks, insurance) are protected as much as possible;

(h) International coverage, meaning coverage of the needs / requirements of all contracting parties to the CMR convention and possible contracting parties to the eCMR protocol across borders;

(i) Clear and commonly agreed processes on authentication, production of the electronic consignment note, amendment of the consignment note, fallback procedure, and proof of delivery.

Figure 4
First option of high-level architecture of eCMR system -



Source: SC.1 Secretariat

(a) The architecture foresees the development by each country of a **national eCMR registry**;

(b) These national eCMR registries should be interconnected between each other ensuring real time secure exchange of data regarding electronic CMR consignment notes;

(c) Both the consignor and the carriers in each country, including freight forwarders, agents, and other relevant users should be registered in these national eCMR registries if they wish to use the e-CMR service. The registration should include some financial data ensuring the authentication by the national eCMR registry of each user;

(d) The registry should provide and ensure authentication of each user based on national laws;

1. One of the users (either the consignor or the carrier) would **initiate the contract of carriage**. To do so, they would use the unique code (provided by the registry) of their partner for the contract (carrier or consignor). The other partner would receive a notification (via email or mobile phone) that a new contract of carriage has been initiated requesting their confirmation while providing all information that the CMR consignment note stipulates. The issuing of the new electronic contract of carriage would be performed by one of several means:

First By using the application of the national eCMR registry;

Second By using an application within their own system connected to the national eCMR registry;

Third By using a third-party solution application knowing that this third-party solution has already established a proper interconnection (web services) with the national eCMR registry.

2. The national eCMR registry should forward the relevant information from the electronic consignment note to all national eCMR registries identified in the itinerary described in the electronic consignment note.

3. The carrier should use a mobile application where they have received the electronic consignment note (QR code / pdf file / coded file, etc). While crossing borders, the customs authorities would be able to scan the QR code / insert unique code of the pdf file with their mobile application and check the correctness/ integrity of the data automatically in relation to the data visible via their national eCMR registry.

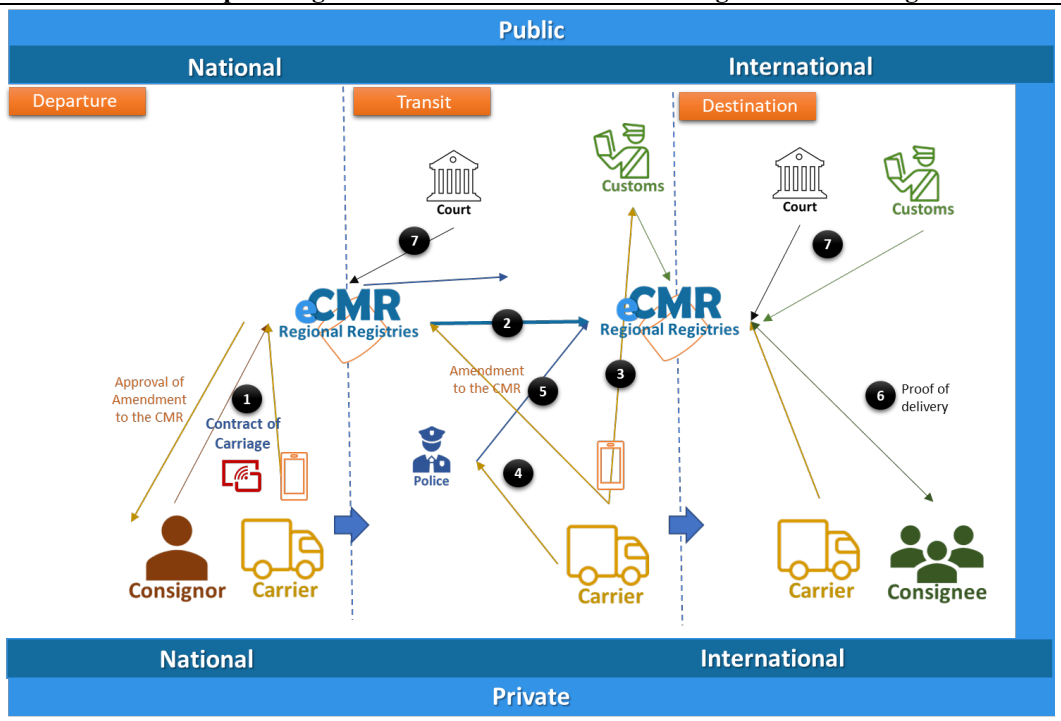
4. The same process as in point 3 can happen when police stops the carriers in order to check their electronic consignment note.

5. If there is a need during the trip by the carrier to change the consignment note, then they would be able to change it by sending the amendment data for the approval of the consignor. When approved, the consignment note has been amended and the new data set is updated in the national eCMR registry associated to where the amendment took place, and from there it is forwarded to all other national eCMR registries identified in the itinerary.

6. The same process as in point 5 would happen with the proof of delivery. The consignee should have been registered in the national eCMR registry of their country and they should have already received all relevant data. When cargo arrived, they should be able to take photos of the cargo and upload them in the registry through their mobile application, approve the delivery with or without comments, reservations, etc. This information will then be sent to the consignor through the national eCMR registry of the country of destination and the contract will be finalized.

7. The relevant data should be kept by all registries for at least 10 years ensuring their integrity and storage in case any authority in the future (courts, banks, etc) would like to have access to this information.

Figure 5
second option high level architecture of eCMR - Regional eCMR Registries



Source: SC.1 Secretariat

(a) The architecture foresees the development by a number of countries of **Regional eCMR registries**;

(b) These regional eCMR registries should be interconnected with each other by secure means ensuring real time, secured exchange of data regarding electronic CMR consignment notes;

(c) Both the Consignor and the Carriers in each country, including freight forwarders, agents etc should be registered in these regional eCMR registries based on which registry their country belong to, if they wish to use the service. This registration should include some financial data ensuring the authentication from the part of the regional eCMR registry of each user. The countries that participate to this regional eCMR registries should have agree on the ways of authentication of the users and on how these regional registries will be developed (funds, operations and maintenance costs etc);

1. One of the users (either the consignor or the carrier) **initiates a contract of carriage**. In order to do so and to involve the other partner, he/she should know and use the unique code (provided by the registry) of the other partner of the contract (carrier or consignor). The other partner will receive a notification (email, mobile phone) that a new contract of carriage has been initiated requesting his confirmation while providing all information that the CMR consignment note stipulates. The submission of the new electronic contract of carriage would be possible to be performed by several means:

First By using the application of the regional eCMR registry;

Second By using an application in their systems ensuring the proper interconnection (web services) has been provided with the regional eCMR registry;

Third By using a third-party solution application knowing that this third-party solution has already established a proper interconnection (web services) with the regional eCMR registry.

2. The national eCMR registry forwards the relevant information (electronic consignment note) to all regional eCMR registries identified in the itinerary, if any, described in the eCMR consignment note.

3 The carrier uses a mobile application where he/she has received the eCMR (QR code / pdf file / coded file etc). While crossing borders the customs authorities will be able with their mobile application to scan the QR code / insert unique code of the pdf file and check automatically with the regional eCMR registry the correctness/integrity of the data.

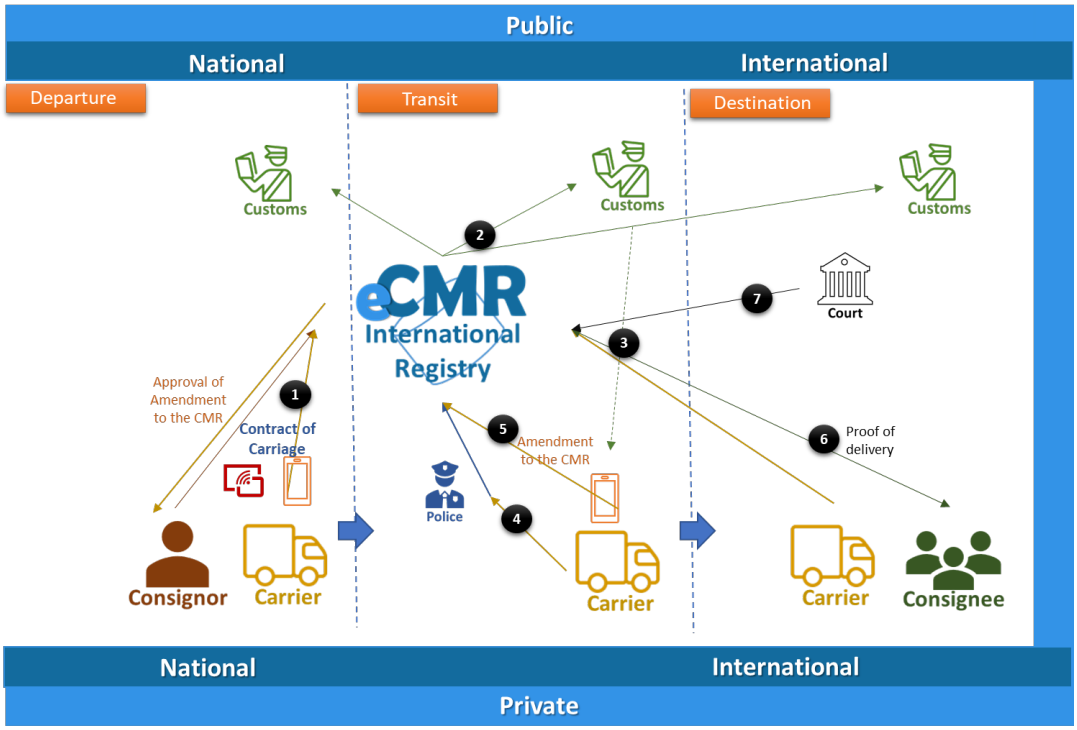
4. The same can happen when police stops the Carriers in order to check their CMR.

5. If there is a need during the trip by the Carrier to change the Consignment note then he/she will be able to do so by sending the advanced amendment data through the regional eCMR registry where the amendment takes place to the Consignor seeking for his/her approval. When approved then the consignment note has been amended and the new data set is being forwarded by the regional eCMR registry where the amendment took place, if needed, to all other regional eCMR registries identified in the itinerary.

6. The same will happen with the proof of delivery. The consignee should have been registered in the regional eCMR registry where his/her country participates, and he/she should have already received all relevant data. When cargo arrived, he/she should be able while using his/her mobile application to take photos of the cargo and upload them in the registry, approve the delivery with or without comments, reservations etc. This information then will be sent to the Consignor through the regional eCMR registry where the country of destination participates and the contract will be finalized.

7. The relevant data should be kept by all registries for at least 10 years ensuring their integrity and storage in case any authority in the future (Courts, Banks etc) would like to have access to this information.

Figure 6
Third option high level architecture of eCMR - International eCMR Registry



Source: SC.1 Secretariat

(a) The architecture foresees the development of one **International eCMR registry**;

(b) This international eCMR registry should be interconnected with the customs authorities of each contracting party ensuring real time secure exchange of data regarding electronic CMR consignment notes;

(c) Both the Consignor and the Carriers in each country, including freight forwarders, agents etc should be registered in this international eCMR registry if they wish to use the service. The countries that participate to this international eCMR registry should have agree on the ways of authentication of the users and on how this international eCMR registry will be developed (funds, operations and maintenance costs etc).

1. One of the users (either the consignor or the carrier) **initiates a contract of carriage**. In order to do so and to involve the other partner, he/she should know and use the unique code (provided by the registry) of the other partner of the contract (carrier or consignor). The other partner will receive a notification (email, mobile phone) that a new contract of carriage has been initiated requesting his confirmation while providing all information that the CMR consignment note stipulates. The submission of the new electronic contract of carriage would be possible to be performed by several means:

First By using the application of the international eCMR registry;

Second By using an application in their systems ensuring the proper interconnection (web services) has been provided with the international eCMR registry;

Third By using a third-party solution application knowing that this third-party solution has already established a proper interconnection (web services) with the international eCMR registry.

The international eCMR registry forwards the relevant information (eCMR consignment note) to all customs en route and destination identified in the itinerary described in the eCMR consignment note.

2. The Carrier uses a mobile application where he/she has received the eCMR (QR code / pdf file / coded file etc). While crossing borders the customs authorities will know already who is coming with what cargo etc and based on the risk analysis will decide if they have to check or not the truck. The Customs officer then will be able with his / her mobile application to scan the QR code / insert unique code of the pdf file provided by the driver and check automatically the correctness/integrity of the data.

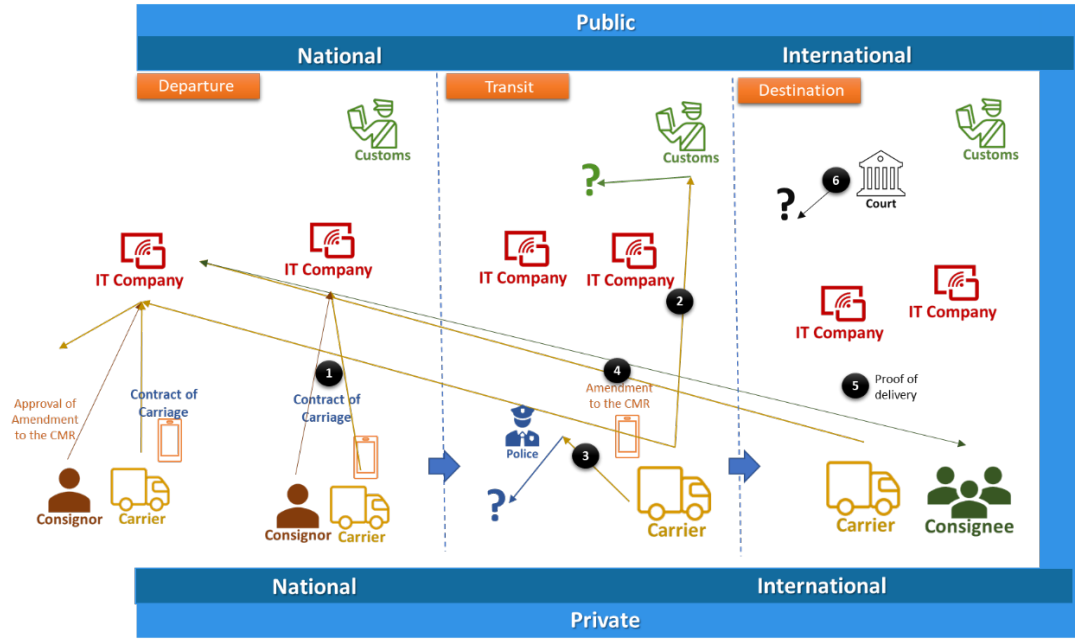
3. The same can happen when police stops the Carriers in order to check their CMR.

4. If there is a need during the trip by the Carrier to change the Consignment note then he/she will be able to do so by sending the advanced amendment data through the international eCMR registry where the amendment takes place to the Consignor seeking for his/her approval. When approved then the consignment note has been amended and the new data set is being forwarded by the international eCMR registry where the amendment took place, to all other regional eCMR registries identified in the itinerary.

5. The same will happen with the proof of delivery. The consignee should have been registered in the international eCMR registry and he/she should have already received all relevant data. When cargo arrived, he/she should be able while using his/her mobile application to take photos of the cargo and upload them in the registry, approve the delivery with or without comments, reservations etc. This information then will be sent to the Consignor through the international eCMR registry and the contract will be finalized.

6. The relevant data should be kept by the international eCMR registry for at least 10 years ensuring their integrity and storage in case any authority in the future (Courts, Banks etc) would like to have access to this information.

Figure 7
Fourth option high level architecture of eCMR - Private Sector IT Companies



Source: SC.1 Secretariat

(a) The architecture does not foresee the development of any eCMR registry but the electronic consignment notes would be generated by private IT companies in each country, authorised or not, following the UN/CEFACT standards or not;

(b) All these private sector companies cannot be interconnected, at least in international level neither with other IT companies in other countries not with customs authorities;

(c) Both the Consignor and the Carriers in each country, including freight forwarders, agents, etc should be registered in one of the private companies if they wish to use the service. The authentication will be set by the private company – electronic signature etc -.

1. One of the users (either the consignor or the carrier) **initiates a contract of carriage**. In order to do so and to involve the other partner, he/she should know and use the unique code (provided by the registry) of the other partner of the contract (carrier or consignor). The other partner will receive a notification (email, mobile phone) that a new contract of carriage has been initiated requesting his confirmation while providing all information that the CMR consignment note stipulates. The submission of the new electronic contract of carriage would be possible to be performed by only using the platform that the private company offers.

2. The Carrier uses a mobile application where he/she has received the eCMR (QR code / pdf file / coded file etc). While crossing borders the customs authorities should check his eCMR QR code. It is not clear how national Customs Authorities will have access to the database of the private companies and how they will trust their database and data (which could potentially lead them to ask for a paper consignment note).

3. The same as in point 2 can happen when police stops the carriers in order to check their electronic consignment note.

4. If there is a need during the trip by the carrier to change the consignment note they will be able to change it by changing the data themselves while informing the

consignor. The capacity and process to make changes would depend on the services provided by the IT company.

5. The same will happen with the proof of delivery. The consignee should somehow have been registered in the private company platform and he/she should have already received all relevant data. When cargo arrived, he/she should be able while using his/her mobile application to take photos of the cargo and upload them in the private company platform, approve the delivery with or without comments, reservations etc. This information then will be sent to the Consignor through the private company platform and the contract will be finalized.

6. The relevant data should be kept by the private company platform for at least 10 years ensuring their integrity and storage in case any authority in the future (Courts, Banks etc) would like to have access to this information. Courts would likely also require information from the IT company about how they keep this data, how to have access to this data (based on which law), etc.

23. To facilitate the deliberations among the stakeholders on which option is the best for CMR future operation, the following table summarizes advantages and disadvantages of each option.

Table Advantages and disadvantages of each high-level architecture options

Options	*Advantages*	*Disadvantages*
First Option - National CMR registries	Integrity of data / inalterability of messages / long term storage of data are ensured Protection of the interests of all stakeholders Very good facilitation of international transport since customs can always check electronically, ad hoc when truck arrives First time statistical reports for e-CMR will be provided but on national level; Processes are well defined and structured	Each country should develop their own national registry Each country should ensure interconnection of their registry with those of other countries Each country should ensure the interconnection of their registry with their customs systems and police in order to receive maximum benefits and use of the registry Each registry has certain maintenance and upgrading costs that must be covered Upgrading process must be agreed by all registries (decision, design, implementation), which could be time-consuming.
Second Option - Regional CMR registries	Integrity of data / inalterability of messages / long term storage of data are ensured Protection of the interests of all stakeholders Very good facilitation of international transport since customs can always check electronically, ad hoc when truck arrives First time statistical reports for e-CMR will be provided but on regional level; Processes are well defined and structured	Each country should decide to participate in one regional registry Each country should financially and operationally participate in the development of their regional registry and then to the interconnection efforts of their regional registry with other regional registries; Countries in one regional registry should agree on the authentication process that applies in the region; Each country should ensure interconnection of their regional registry with their customs systems and police to receive maximum benefits and use of the registry Each registry has certain maintenance and upgrading costs that must be covered Upgrading process must be agreed by all countries first participating in the regional registry and then with the other regional registries (decision, design,

Options	*Advantages*	*Disadvantages*
		implementation), which could be time-consuming;
Third Option - International CMR registry	Integrity of data / inalterability of messages / long term storage of data are ensured No need for several interconnections among different registries / countries and then customs and police; Protection of the interests of all stakeholders Excellent facilitation of international transport since customs are directly connected to the international registry and no other interconnections are required; Processes are well defined and structured There would be only one central, international system / database for eCMR trusted and used by all contracting parties and the private sector; Upgrade and improvement of only one central system Preparation for first time of statical report on e-CMR globally generated by only one source; All public authorities worldwide would have only one point of reference regarding access to eCMR data;	An international authentication process must be agreed by the involved parties Registration of all users around the world could be cumbersome The costs for the development of the international registry should be covered by the users, The maintenance and operations of the registry require funds that should be covered either by the contracting parties or by the use of the system, A mechanism must be established to ensure a smooth decision process regarding the improvements in the system and its long-term sustainability, which could be time-consuming
Fourth Option Private IT Companies	Flexibility and speed in the development of services Quick adaptation to client needs *Quick interconnection if required with other platforms / services.*	Hundreds of private companies might be established offering the same services / no control, no trust by all shareholders No neutral partner that all parties interested in the electronic consignment notes could trust; Long-term sustainability cannot be guaranteed / private companies can go bankrupt Authentication / mutual recognition / and integrity of data therefore trust to the system(s) that required while transporting internationally (from China to

Options	*Advantages*	*Disadvantages*
		Europe) cannot be achieved / warranted; Other parties rather the private sector such as customs, courts, banks and insurance companies would not be able to know after a while when hundreds of IT companies will start providing the same services who produced the eCMRs, where are stored etc and when found they were not be able to trust this information.

V. Conclusions and Recommendations

24. The main conclusions that can be drawn from this analysis are as follows:

(a) The eCMR protocol sets a very good framework describing what eCMR could be. However, it does not describe and specify the processes to be followed for its implementation. It stipulates in article 5 that all interested parties should agree on such implementation processes;

(b) The CMR convention is not only one of the flagships Conventions of ECE, but because of its great success, it has also become a Convention that serves as the model for the preparation of other international agreements and conventions;

(c) The transition from the paper CMR consignment note to the electronic one is a challenging and demanding task It is not about technology. It is about ensuring that the principles of the CMR Convention are met. The electronic solution should create trust for all stakeholders involved, because otherwise parties will return to the paper consignment note;

(d) CMR Convention and its eCMR protocol are international agreements. Therefore, any proposed solution should be accepted and agreed by all contracting parties and should be applicable to all regions. Regional solutions on eCMR only, do not fully cover the scope of eCMR, which is broader;

(e) Stakeholders interested in eCMR have a great opportunity to create paperless, seamless, and contactless international freight transport, which the COVID 19 pandemic has shown is of high relevance. Customs authorities have a major role to play in this regard, here. If customs authorities are not automatically and electronically informed about the departure of the truck then we will never have seamless border crossing operations and international freight transport. Then truck drivers will always have to stop again but instead of showing a paper CMR convention that will have to present a QR code or an equivalent and the customs again will have to check with their systems;

(f) The digitalization of a transport / customs / trade document connected to an international convention is a long and, in most of the cases, challenging process due to the negotiations and agreements that must take place between the interested stakeholders regarding the conceptual, functional, and technical specifications needed in the electronic solution. This was not the case so far for the operations of eCMR;

25. The secretariat recommends that an international eCMR registry / system should be developed in the framework of UNECE. This solution is the most sustainable one since it covers and ensures all principles required while dematerializing an international convention:

(a) Integrity of data;

(b) Inalterability of message;

(c) International solution;

(d) Protection of the interests of all stakeholders;

(e) Neutral and sustainable operator;

(f) Ensuring trust in the system and mutual recognition among countries; and

(g) Implementation of the CMR Convention that is being administered by UNECE;

26. At the next session, the secretariat will prepare the conceptual and functional specifications of the system for consideration by the parties.

VI. Guidance by the Working Party

27. The Working Party is invited to consider and endorse, if possible, the proposal made by the secretariat on the high level architecture of future eCMR operations with the development of an international eCMR registry /system in the framework of UNECE.