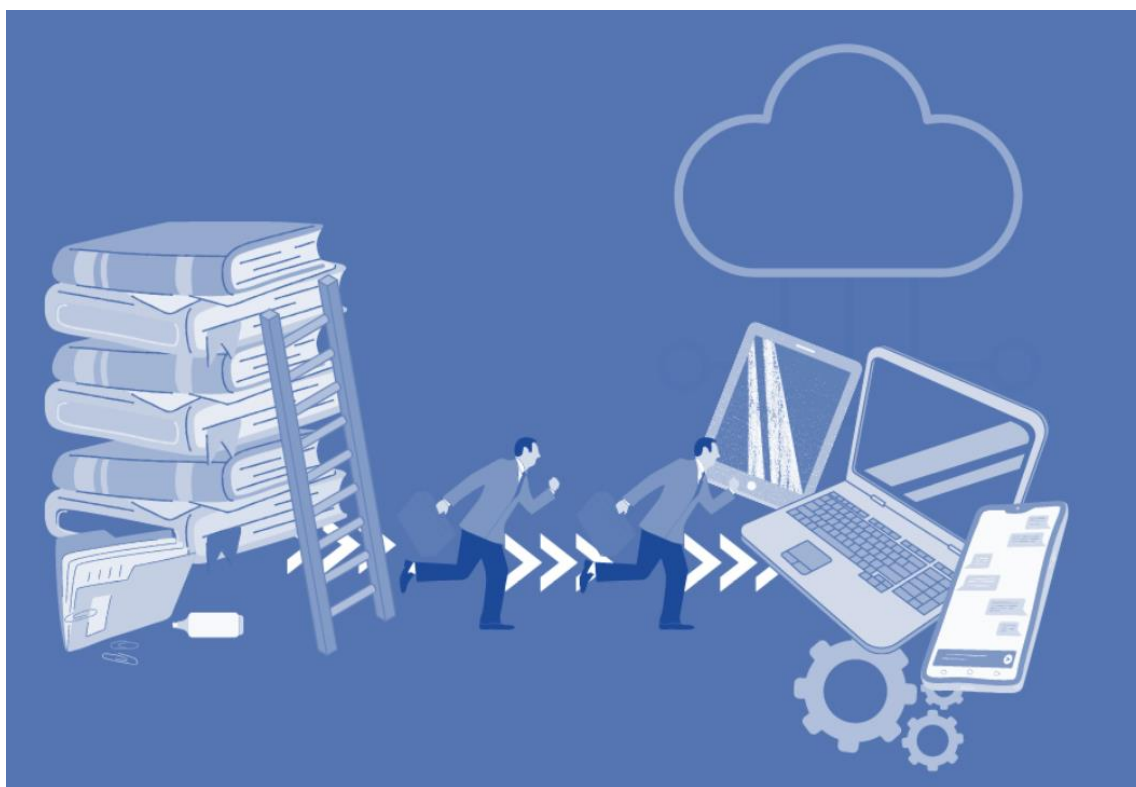


# ECTA Best Practice Guideline: Digital documents eCMR – eECD



**Version 1: 18 January 2021**

## Table of Contents

1. Introduction.....	4
2. Scope and definition of digital documents.....	5
2.1 The CMR document.....	5
2.1.1 Definition.....	5
2.1.2 eCMR Actor and Roles.....	6
2.1.3 eCMR implementation guideline.....	7
2.2 The eECD document.....	9
2.2.1 eECD definition.....	9
2.2.2 eECD Actors and Roles.....	10
2.2.3 eECD project implementation guideline .....	11
3. Challenges with e-freight documents .....	16
4. eCMR Use case example .....	20
5. eECD Use Case example and eECD Onboarding steps .....	21
6. Conclusion .....	24
7. Contact lists and WG participants .....	25
Annex 1: Additional Attachments for Clarification .....	26

## Table of Figures

Figure 1: Simplified CMR Process Overview (CMR Example in the Appendix).....	5
Figure 2: Transport Process and Tasks .....	7
Figure 3: The eECD data exchange process flow.....	12
Figure 4: The eECD subscribed companies.....	12
Figure 5: A specimen example of an EFTCO Cleaning document ( <a href="http://www.eftco.org">www.eftco.org</a> ) .....	26
Figure 6: A Paper CMR Example: .....	27
Figure 7: A simplified CMR Process with Police intervention .....	28

### Disclaimer

This document is intended for information only and sets out a best practice guideline for companies who want to implement the eCMR or eECD as digital freight documents. The information provided in these guidelines is provided in good faith and, while it is accurate as far as the authors are aware, no representations or warranties are made with regards to its completeness. It is not intended to be a comprehensive guide. Each company, based on their individual decision-making process, may apply these guidelines, in full or partly or apply any other adapted measures.

No responsibility will be assumed by ECTA relation to the information contained in these Guidelines.

Actor	A company exchanging eECD or eCMR data or other information along the logistics chain; The actors per document are described in the ECTA guideline
B2B	Business to Business : data exchanges between one or more business partners
B2A or B2G	Business to Authorities or Business to Government: Data exchanges between a business partners and a governmental authority (police, customs, tax,...)
Cefic	European Chemical Industry Council
ECTA	European Chemical Transport Association
eCMR	Electronic Convention relative « au contrat de transport international de Marchandises par Route. » Convention on the contract for the international carriage of goods by road.
ECD and eECD	ECD = EFTCO Cleaning Document existing on paper and owned by EFTCO. eECD=electronic EFTCO Cleaning Document
ECLIC	Is the name of the European Chemical Logistics Information Council, a “not for profit association” that overlooks the data governance & data sharing rules within the ECLIC community. ECLIC is founded by the associations ECTA, EFTCO and CEFIC-essenscia in 2018.
eECO	Electronic EFTCO Cleaning Order. EFTCO cleaning order templates can be found on EFTCO website
eFTI regulation	Electronic freight transport information regulation. Regulation (EU) 2020/1056 of the European Parliament and of the Council of 15 July 2020 on electronic freight transport information. <a href="https://eur-lex.europa.eu/eli/reg/2020/1056/oj">https://eur-lex.europa.eu/eli/reg/2020/1056/oj</a>
e-(freight) Documents	Electronic version of paper based freight documents with a digital workflow and/or data stream behind to be able to dematerialize and replace the paper/pdf versions.
EFTCO	European Federation of Tank Cleaning Organizations
ePPL	Electronic Proof Previous Load
essenscia	Federation of Chemical Industry and Life Sciences in Belgium
IoT	Internet of things (e.g. devices, sensors) real time connected to the worldwide web
LSP	Logistic Service Providers

## 1. Introduction

Digitalization in transport and logistics and especially the dematerializing logistics paper documents across the logistics chain creates new opportunities for business and has the potential to change the way cargo and traffic flows will be organized and managed in the future. Despite the value and benefits, the transition and adoption from paper to digital logistics documents is rather slow and complex because several internal and external challenges need to be addressed before digital documents can be accepted by all stakeholders and become the new normal.

More recently and given the chemical sector has typically higher level of standards in terms of safety, compliance and data reliability, there is an increasing need for paperless working amongst all actors and along the “end to end” chemical logistics chain. The general pressure to transition from paper to digital e-freight documents comes from the government (legislative pressure); the customer (efficiency, quality, compliance) and more recently also health (covid-19) and the need for contactless logistics.

One of the main problems with digitalization of e-freight documents is that you need to tackle different hurdles with different actors at the same time. First you need to adapt to work in a many-to-many relationships environment, also called digital ecosystems. Second you need to be ready and willing to invest and adapt to the new digital process as a company and third you should agree as a company to share data instead of papers and be prepared to digitally work together while ensuring that those who drive the paperless innovations forward are also those who benefit in economic terms. With most IT platforms this is today not the case because shared company data get re-monetized and re-used to serve other or even sometimes competing business models which require the set-up of platform governance rules.

In this guideline, we want to share some practical leanings and implementation expertise and zoom in on two digital e-freight documents being the electronic CMR (=eCMR) and the electronic EFTCO cleaning document (=eECD) where we can share the benefits and challenges. This new ECTA guideline, is a first ECTA guideline in a series of e-freight documents. Depending on the industry need, future ECTA guidelines will follow to address other important electronic transport and logistics documents.

After defining the use of each transport document in section 3, this new ECTA guideline describes for each document, eCMR and eECD, the new digital process, its internal and external actors and gives an overview of the practical implementation considerations to be taken into account when considering such e-freight document project. In section 4, the most important challenges and hurdles of e-freight document are being addressed so they can be taken into account when actors want to implement eCMR or eECD. This guideline ends with a practical eECD example and how companies are being “on boarded” to exchange data and make the transition from paper based processing to a full paperless and automated way of working.

## 2. Scope and definition of digital documents

The scope of this guideline is focused on the eCMR and eECD because these documents are most advanced in terms of development and implementation, while at the same time they are quite different. Whereas the eCMR is a legal document and is applied in a B2G or business to government, the eECD is applied as a B2B quality and compliance document which make the learnings even more interesting. As hypothesis for this document the e-freight Documents differ from paper based documents or simple PDFs by having a digital data stream or workflow in the backend.

### 2.1 The CMR document

In the following chapter, the CMR<sup>1</sup> document is briefly defined before the actors and their roles are described. Finally, a rough implementation guideline is presented to shed further light into practical application.

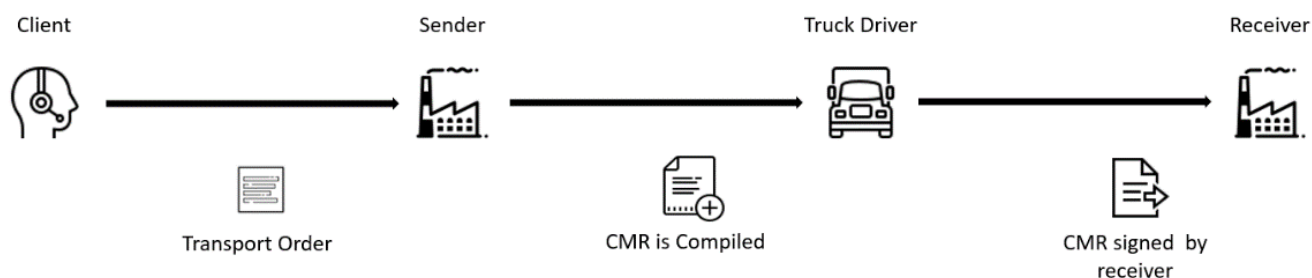
#### 2.1.1 Definition

The CMR is the document which is the legal proof that goods have left or arrived to a country/company/location based on a pre-defined form. Therewith it has several legal and tax relevant obligations. The CMR serves, at least in the European countries, as a proof of arrival which has to be kept in archive for different timeframes depending on the country (between 7 and 10 years).

The problem with the paper based CMR process is, that in order to get the copy from the driver to the client ordering the transport is a huge manual effort which could be provided also digital. As the paper-based document is easy to be manipulated by third parties a digital process furthermore provides the chance to redefine the reliability of the document. The timeline to transition from a paper CMR to a digital eCMR, is driven by EU regulations whereby both, the paper and digital process, will co-exist next to each other.

The Process and its stakeholders are well defined which is creating the possibility for a secure digital solution.

A high level CMR Process works as shown:



*Figure 1: Simplified CMR Process Overview  
(CMR Example in the Appendix)*

<sup>1</sup> The digital eCMR is supported by an additional protocol concerning the electronic consignment note. More info can be found at [Unece.org](http://Unece.org) homepage.

## 2.1.2 eCMR Actor and Roles

The eCMR actors are the same as within the paper driven CMR process. Within the CMR process there are several different actors that have different responsibilities and roles in the process. Some of the roles are not mandatory throughout the CMR process.

### **Transport Services Provider (Carrier)**

The provider of transport services. The entity or company, which is the employer of the driver and the legal responsible entity for the transport of the goods. The Carrier is responsible for providing the proof of delivery (signed CMR) after delivery to his Client. The carrier can work on behalf of another freight forwarder or Logistics Service Provider.

### **Carrier / Subsequent Carrier**

The party, which provides transport services as, stipulated in a contract of carriage by road (eCMR)

### **Driver**

The person in charge of bringing the goods from Point A to Point B, who signs the document and handles the paper in the current CMR process. The Driver also has the responsibility of collecting the CMR copies in the current process and forwards them to the Carrier.

### **Transport Service Buyer (Sender/Consignor or Consignee)**

The buyer of transport services. In other words, the company placing the Transport Order and providing the consignment instructions. This can be also the Sender or Receiver of the goods. This is the entity, which is mostly interested in the completed CMR at the end of the process in order to have a proof of delivery towards the authorities.

### **Sender/Consignor**

The party consigning goods as stipulated in a contract of carriage by road (eCMR) and referred as Sender in the CMR Convention. The Sender keeps one CMR copy and hands the other two CMR pages to the driver.

### **Receiver/Consignee**

The party receiving a consignment of goods as stipulated in a contract of carriage by road (eCMR). The Receiver hands one copy back to the driver and keeps one copy.

### **Delivery Party**

The (possible third-) party to which goods are delivered by the carrier. The Operational term is 'Place of Positioning' or 'Ship to'.

### **Authorities**

Police, Tax office and other Authorities, which may or may not request a proof of delivery/arrival of the goods in order to fulfill their obligations. The driver/carrier is providing most often the CMR information to the authorities.

## Logistics Service Provider (LSP)

An entity or organization, which in many cases is the intermediary between the Client/Customer and the Carrier. The LSP might also be a data provider for any party in the process, e.g. for visibility data. This role also needs a copy of the completed CMR in order to comply with regulations.

## Other Service Providers

Such organizations as Banks, Insurance Companies and other Service Providers that might be interested in the data provided on the CMR (such as damages, confirmed delivery). These organizations are not yet included in the paper-based process, which leads to an opportunity for a frictionless information flow through an electronic CMR process.

### 2.1.3 eCMR implementation guideline

In this chapter, some general hints are provided how the implementation of an eCMR initiative can be realized in corporation with other stakeholders. At first, a process mapping is presented followed by a section regarding legal compliancy. Thereafter, the issues of supplier selection and implementation of application interfaces are addressed before the roles and responsibilities of directly involved parties (all supply chain actors) as well as well indirectly involved stakeholders (insurance companies, financial institutions etc.) are further defined on high level.

#### I. Mapping internal process

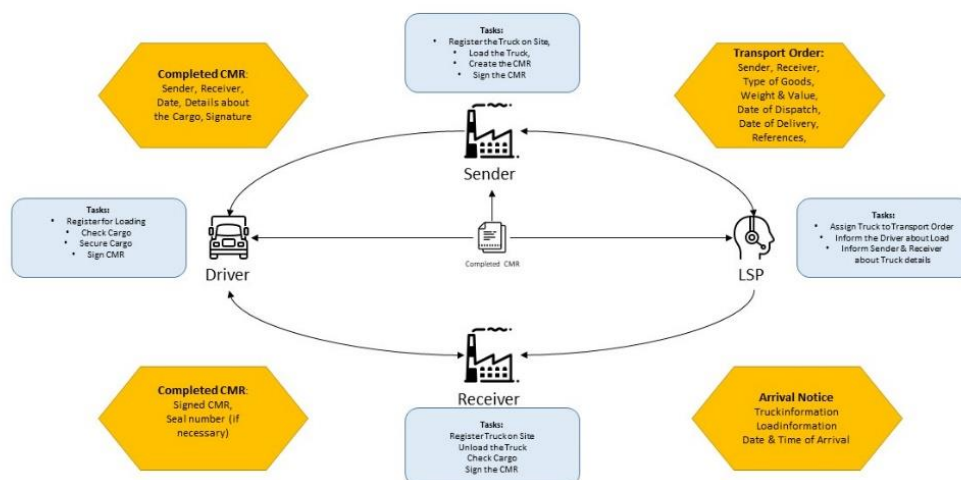


Figure 2: Transport Process and Tasks

## Transport Order

The Transport Order is sent from the Client/Sender (sometimes 2 different entities) to the Logistics Service Provider. The LSP processes the Order and assigns a Truck to the Order.

The Details on the Transport Order usually match most of the Information needed on the CMR:

- Date & Place of Pick up
- Date & Place of Delivery
- Type of Goods

- Weight

Therewith the CMR can be completed by mostly any party involved in the process, Driver, LSP or Sender.

After the registration of the Order, the driver is informed and the truck is dispatched.

### **Loading**

On the loading the truck is checked-in (after prior arrival notice), loaded and the CMR is signed by the Sender and then by the driver. The driver secures the Cargo and departs to the Destination.

### **Delivery**

Upon Delivery the truck is checked-in (after prior arrival notice), unloaded, the goods are checked and the CMR is signed by the Receiver. Eventual deviations are marked on the CMR.

In the paper-based process, the driver would get the final signed copy and take care that the LSP receives this copy. The LSP then distributes it to all interested parties.

In the digital process, all parties involved should get a notification about the completion of the CMR.

## **II. Legal compliancy**

The eCMR is accepted in many, but not all European Countries by now. The European Union's goal is to have the eCMR ratified in all Member States by 2026 latest. A list of the ratified countries can be find [here](#)

Up to Date information about the Status of eCMR acceptance can be found on the UN-Homepage.

Due to the newness of the eCMR, the topic of who is responsible for issuing the documents, as well as who is responsible for the correctness of the data is to be discussed. As from ECTA view, the Data should be aggregated from the source with keeping the responsibility on who is responsible for the data accuracy.

## **III. Supplier selection**

There is a vast range of suppliers on the eCMR, depending on your internal process you have to assess the best solution fit based on your individual requirements. Most providers are offering API Connection in order to guarantee a proper information flow.

## **IV. Build system interfaces**

To approach the eCMR within any organization there are 3 different Service setups. The eCMR is mainly designed to be used through an API Interface in order to communicate between systems. Anyhow, there are different ways to approach this.

- Electronic Interface: With internal or external IT Resources the electronic interface of the eCMR System can be connected to the providers either Transport Management or ERP System.



The implementation is of course using resources and has therewith to be internally evaluated if the implementation is feasible and making economic sense.

- **WEB Interface Use:** The web interface is designed to provide an interface for users that will not connect via API or due to lack of resources, know-how or no feasibility for the use case. All data has to be entered manually, but will be stored in the eCMR System in order to provide a smooth user experience.

## **V. Roles & responsibilities**

### **a. Internal (within the Supply Chain Actors)**

For the Stakeholders directly involved in the eCMR process (loading, unloading, and driver) it is necessary that all parties provide truthful information in a timely manner. The full CMR information has to be compiled during or after loading in order to guarantee the correct information on the document when signed. After the initial Signature no changes can be done as the information would not be in accordance to the loading party. All necessary data for a CMR is defined in the UN Charter reg. CMR and eCMR as mentioned above.

The data will be stored within the eCMR system and therewith serve as an Archive for the documents. Here it depends on which provider is chosen under which conditions and for which timeframe the data is stored.

### **b. External (outside the Supply Chain Actors)**

As the CMR and eCMR are the legal proof of delivery it is necessary to make the document available to third parties when needed. Such parties might be: Insurance Companies, Police or other Authorities. When Authorities, the process in place is to open the document and showing it on the device with an graphical User Interface. Insurances on the other hand could be triggered automatically when a damage occurs in order to share the data in real time and to smoothen the claim handling process. Therewith pictures, the document itself and other information might be shared.

## **VI. eCMR rollout at scale**

Within Chemical Logistics we have no interoperable “ready to use” eCMR solution. ECTA is open to Prototypes in order to give recommendations to its members.

## **2.2 The eECD document**

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In the following chapter, the ECD document is briefly defined before the actors and their roles are described. Finally, a rough implementation guideline is presented to provide further insights for practical application.

### **2.2.1 eECD definition**

Tank Cleaning is an essential part of the supply chain of chemicals, foodstuff and other products. The asset to be cleaned may be a tank trailer, tank container or any other receptacle previously used for

holding products that needs to be washed after it is emptied. A uniform EFTCO Cleaning Document (or ECD) has been developed back in 2005 by EFTCO, in co-operation with ECTA and Cefic, in order to satisfy the needs of cleaning stations, transport companies and chemical, feed and food manufacturing companies.

The EFTCO cleaning document or ECD is meanwhile widely used across Europe and more than 3.5 Million ECD paper documents are being issued every year by cleaning stations and shared with transport companies, loading places and customers. More details about the ECD paper process flow are available on the EFTCO website ([www.eftco.org](http://www.eftco.org)). In addition, a specimen of the EFTCO cleaning order document has been added in annex X.

With the support of ECTA, EFTCO, Cefic-essenscia, the paper based EFTCO cleaning document has been transformed into an electronic EFTCO Cleaning Document or eECD back in 2018. This digital eECD is supported by a digital eECD process and data exchange platform whereby the paper ECD document is completely dematerialized and is replaced with electronic data streams between the different eECD actors that are exchanging data in real time and via the internet cloud. Every actor is exchanging its own business data digitally and remains responsible for the data quality. For the sake of clarity in terms of eECD definition, turning a paper ECD into an ECD pdf print paper version is not what we mean with a digital eECD. Within a digital eECD process, the paper flow becomes optional and is 100% redundant.

### 2.2.2 eECD Actors and Roles

E-freight documents can only be dematerialized when the different actors agree to share data in a safe, secure and compliant way across a multi-lateral ecosystem. Within the digital eECD process flow, the following stakeholders or actors have been identified, each with a certain role and responsibility. A company can have different roles within the eECD process flow as for example: a Seller will often be a Loader and an equipment operator can also handle his own cleanings, etc.

#### **Seller**

The organization or legal entity which sells the product to the customer and instructs the transfer of goods by initiating the transport order. Such Seller can also be a Reseller who resells products of chemical companies under its own trade name.

The Seller defines the commercial or trade name of the products sold. The Seller owns the product registrations and is responsible for the product master data being exchanged while providing the right Safety Data Sheet information. In addition, the Seller provides the transport order information and maintains a list of permitted loading locations per product which can be his own loading locations or third party loading locations.

#### **Equipment Operator**

The organization or legal entity which is the operator of the equipment and organizes the actual transport of the goods. This is typically a Transport Company, but it might be a Chemical Company/Seller who operates his own dedicated tank fleet or a subcontractor of the Transport Company.

In the typical eECD process flow, the Equipment Operator receives the transport order from the Seller and issues a cleaning request to the cleaning station. In addition, The Equipment Operator assigns the

right equipment to a transport order reference and adds the previous product and loading information for the goods to be loaded.

The Equipment Operator is responsible to create and maintain the equipment master data. Next to that, the Equipment Operator is responsible to add/share the previous load information with the cleaning station prior a cleaning starts.

#### **Truck Driver**

The Truck Driver signs off the digital eECD for acceptance of the cleaning service at the cleaning station on behalf of the Equipment Operator or its subcontractor.

#### **Cleaner**

The organization or legal entity which performs the equipment cleaning activities as per cleaning instruction provided by the Equipment Operator. The Cleaner is responsible to issue the digital eECD and to apply the EFTCO cleaning codes. Besides, the Cleaner defines the cleaning locations within the cleaning organization while assigning cleaning operator/users to these cleaning locations.

#### **Loader**

The organization or legal entity which manages the loading of the goods. This can be the chemical company, a tank storage operator company or a third party producing tolling agent. This role checks the (e)ECD content, the equipment cleanliness and confirms the products being loaded per equipment compartment

### **2.2.3 eECD project implementation guideline**

This section gives an overview of the practical considerations to be taken into account when implementing the digital eECD process. While “on boarding” to a cloud application is by definition rather quick and “plug and play”, it remains important to understand how your company, your business process and company users would interact with this new digital eECD process. Besides, you want to assess the changes versus your current paper way working and how to set up the web interface with your current legacy process. This section ends with a description of the typical eECD “on boarding” steps as experienced by numerous companies who are already effectively using the eECD process .

#### **I. Mapping internal eECD process**

To work together digitally amongst different actors & roles in a digital eECD cloud enabled process, several predefined data fields need to be exchanged amongst the parties as defined above. Some of these data are pre-defined reference or master data (eg product data, equipment data) and other data are from a transactional nature (eg transport order, cleaning order data etcetera...). Because freight transactional data are already exchanged amongst actors (eg via EDI and/or existing message brokers for many years, the objective is to re-use these existing data sets as much as possible. We consider the first provider of a data field within the eECD process as the prime owner and source of these data. This to ensure data accuracy, quality and timeliness in case of changes and updates.

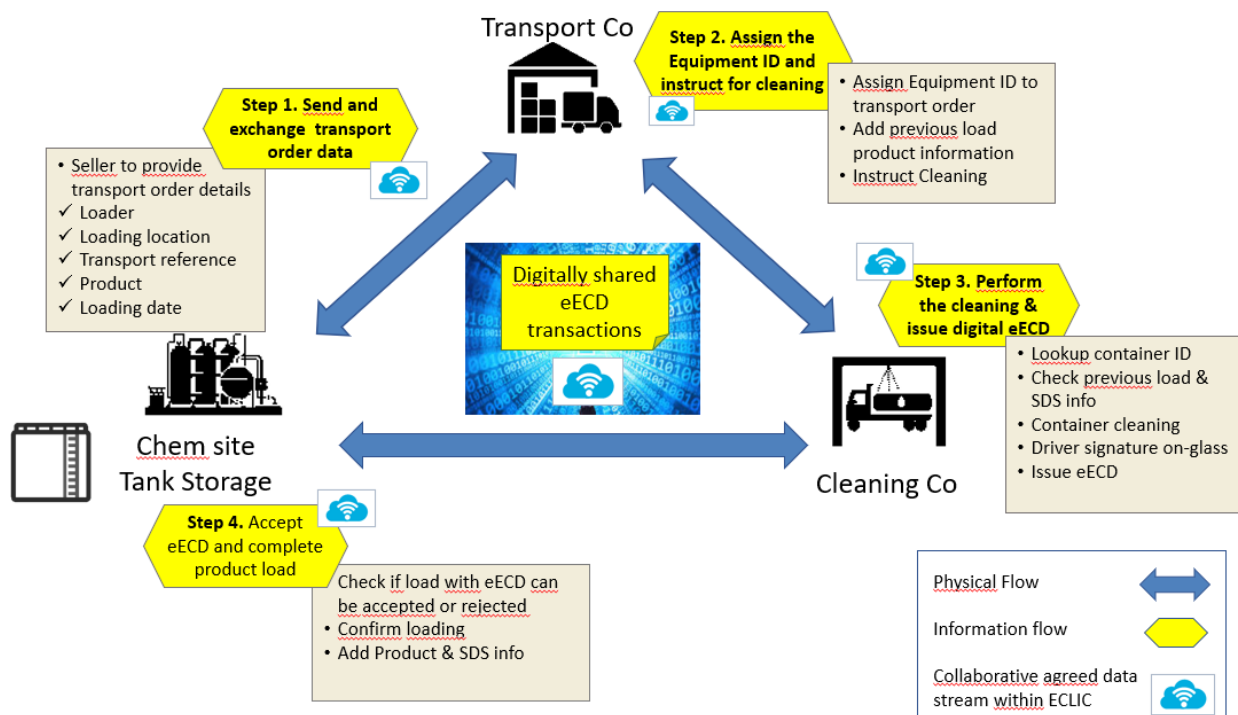


Figure 3: The eECD data exchange process flow

### Step 1: Send and exchange transport order data

The Chemical company (or Seller) sends a transport order towards an EquipmentOperator by any means (EDI, fax, email ...). The transport order info typically consists of a set of parameters:

- The Seller and Loader
- Delivery address
- Product(s) and its quantity
- Loader, loading place and loading date

This transport order info can also be shared directly with the ECLIC platform via a message broker or directly via SAP, so that the EquipmentOperator has direct access to the latest order info and does not need to retype any transport & loading data to save time and avoid errors.

### Step 2: Assign the equipment ID to the transport order and instruct for cleaning

Based upon the transport plan, the transport company (or EquipmentOperator as actor) assigns an equipment ID (e.g. a specific tank container number) to the transport order reference taking into account the equipment configuration and previous product load info. This equipment assignment can happen before or after the cleaning action and is done per equipment compartment. The cleaning status per equipment compartment is made visible to the EquipmentOperator.

In case the previous load info is missing - for instance when a new tank container is used for the first time within the digital eECD process - the EquipmentOperator adds the missing previous load info by creating a "Non-Registered Load" product record and can add any attachments (e.g. CMR with proof of previous load).

Furthermore, the EquipmentOperator selects the product and loading info. This manual step can be simplified and automated in case the Seller sends the transport order reference info upfront to the ECLIC platform. In that case, the product and load info is already pre-filled by selecting the right transport order reference.

The transport company has the option to submit an electronic EFTCO cleaning order document or eECO as cleaning order instruction.

### **Step 3: Perform the cleaning and issue digital EFTCO cleaning document.**

Once the empty, unclean container arrives at the cleaning station, the truck driver announces him/herself and the cleaning check-in process starts. The cleaning operator first looks up the right equipment ID and (optional) EFTCO cleaning instruction for that equipment ID and consult the previous load info as provided by the EquipmentOperator. In addition, the product safety data sheet of the previous load as shared by the Seller/Chemical Company can be verified by the Cleaner.

Once the cleaning is performed and completed, the cleaning supervisor digitally approves the eECD and any extra documents can be added to the digital cleaning as for instance a pdf with pressure test results. In addition, both the cleaner and driver can add any comments (eg validation of seals...)

Thereafter, the truck driver verifies physically the cleaning and, if checked and ok, signs off the eECD via a digital “sign on glass” where after the “cleaned” equipment can leave the cleaning station. No handover of ECD paper copies are required given the digital cleaning information can be consulted by all actors within the eECD data platform.

#### Notes:

The digital eECD process also functions in case of an “unaccompanied cleaning” and where the equipment is moved to a storage depot after cleaning. A cleaning station is able to provide the truck driver with an eECD printed pdf copy. Some truck drivers insist to still have an eECD paper copy with them. The functionality is foreseen to automatically and digitally check the EFTCO cleaning codes on the eECD in case of a polymer cleaning and as requested stipulated in the Cefic-ECTA best practice guideline for cleaning of dry bulk polymer transport tanks.

### **Step 4: Accept eECD and complete product Load**

When the truck driver with the “cleaned” equipment arrives at the site of the Loader, the gate check-in process starts. At the gate check-in, the loader checks the validity of the electronic eECD by accepting or rejecting the eECD based on the available eECD information shared on the eECD data platform.

Subsequently, the driver moves to the loading place where the loading operator loads the bulk products into the cleaned equipment. Once the loading operator confirms and completes the load within the digital eECD process, the equipment is no longer “clean” and the eECD certificate is no longer valid for future usage, indicating that the cleaning cycle process restarts once the products have been discharged at their destination.

## **II. eECD Supplier selection**

The digital eECD process is operated under the ECLIC vzw with an open API IT architecture and with a “not for profit” objective. ECLIC’s aim is to facilitate digitalization and is overseeing the community

by defining common data definition, data visibility and governance rules within the chemical logistics ecosystem. The eECD platform itself is powered by a PAAS (Platform as a service ) vendor who performs the platform services and ensures the eECD data are safe and securely stored and each party remains 100% owner of its shared data. Each IT vendor is pre-selected by ECLIC and ECLIC ensures that the selected IT vendors do respect data ownership and share the same data governance and sovereignty values. More info on the ECLIC community can be found on [www.eclic.eu](http://www.eclic.eu).

To ensure a respect of data ownership, to build trust with multi-lateral data sharing and to avoid any form of direct or indirect data monetization by any actor or IT company , an ECLIC governance model and central data governance role is established to agree which data fields are shared with who (which actors), when and for what purpose. Besides, this role defines the community Legal terms and conditions and overviews any compliancy deviations that are reported or might occur within the community. Also each IT vendor integrating the eECD API's is asked to accept the Terms and Conditions of ECLIC.

### **III. Build system interfaces**

Given the ECLIC platform has an open eECD API architecture, each actor, with a valid eECD licence, can decide how to best interface and set up the eECD solution. There are three options to integrate the eECD solution depending on the preference, role, size and volume of the eECD transactions being exchanged.

The eECD system interface options are:

- Using the standard web based eECD application as developed and centrally maintained by ECLIC. This option provides a human interface and works only when the daily eECD volume is limited (e.g. during project start-up phase)
- A custom-made system interface is built between the actor's legacy system and the eECD platform while making use of internal or external IT resources and for the specific eECD functionality required.
- Using an independent third party IT vendor that offers an eECD solution as a service for cleaning, transport or chemical companies. This approach is today most common in cleaning operations where different cleaning software vendors do offer the eECD solution to their customers.

In addition to the eECD system interfaces, chemical companies can also share their transport order info directly with the ECLIC platform via EDI or via existing message brokers. An eECD standardized XML data subset is available to maximize re-use of existing data and to avoid EquipmentOperators need to retype data. This data set is agreed between all actors through the ECLIC data governance model and the related associations avoiding the complexity of multiple IT designs and interfaces.

While building interfaces is a key factor to allow eECD process automation and to reap the full business benefits of such digitalized eECD process, every company usually starts small with a prototype project while processing first a few hundred of eECD transactions using the standard eECD web application. Only when a critical threshold of daily transactions is reached, the system integration is being considered in a second project phase. This phased approach allows to address the change management aspects that process automation typically brings.

#### **IV. Roles & responsibilities**

##### ***a. Towards Internal Stakeholders***

It is the responsibility of each actor to share its own eECD relevant data “on time and in full (= accurate, complete, timely...)” and to perform the required transactions in real time so the digital eECD process can support the physical flow. The system keeps track of each data input field including time-stamps so that non-compliances can be detected and traced back if required.

Each eECD actor is obliged to accept the ECLIC legal Terms and Conditions which have been pre-agreed at each association level (ECTA, EFTCO, Cefic-essenscia). The creation of this joint legal community framework, releases the individual companies to start negotiating their own legal terms and conditions with platform providers. This is a big advantage as many smaller companies do not have easy access to legal support and run the risk to not protect their shared business data good enough.

Given only limited data remain stored on the ECLIC platform for data security reasons and to avoid a data lake of business data, it remains the responsibility of each actor to keep a copy of the finalized digital eECD pdf documents. An eECD archive is provided to each actor through the eECD application to cope with any eECD document retention requirements.

##### ***b. Towards External Stakeholders***

The ECD document layout is defined and owned by EFTCO and is considered as an internal product quality & compliance document without involvement of any external or governmental stakeholders (e.g. customs, ADR controls or police controls).

An external stakeholder within the digital eECD process, is an insurance company in case of a product quality claim or cleaning incident. Thus far, each insurance company has accepted both the paper ECD and eECD pdf print and we recommend our actors to pre-inform their insurance company when starting with the digital eECD process.

As the ECD is also used for food, feed and pharma some extra external actors & stakeholders might get involved as soon as the digital eECD process is applied in these industry sectors.

### 3. Challenges with e-freight documents

Many industries and governments are talking for a decade about digitalization of freight documents. However the overall adoption and acceptance rate to e-documents remains very low and logistics paper documents remain today the norm when doing transport shipments. More specifically, despite several very good historical initiatives to digitalize the ECD document in 2008 and 2011, unfortunately these initiatives got all stopped after the pilot phase due to a lack of momentum, a lack of business interest and business value.

Therefore, it is important to list and re-iterate some of these challenges as they might re-appear in new digital use cases today. On the contrary, we should also consider that the digital technology innovations like cloud, IoT, blockchain, artificial intelligence and digital company mindsets are also evolving very quickly which can support the implementation of new digital solutions.

In general, we see the following challenges that need to be mitigated for successful implementations and which will be further explained in this chapter:

1. Clear view on all actors
2. Complexity and timeline of system interfaces
3. Business case
4. Acceptance by authorities
5. Process flow exception management
6. Legal Terms and Conditions – data ownership- data security
7. Neutral data governance to address data accuracy & non-compliance
8. Technology dependency

- Clear view on all actors

E-document projects operate in a many-to-many relationship environment, also called digital ecosystems, and are faced with multiple actors that need to digitally work together through a common process. Therefore, before digitizing an e- document, it is very important to map all your actors and bring them together to redefine the new digital freight process. Therefore, the help and full support of associations representing the different actors can become a critical success factor. If no data and process harmonization happens, there is a risk for increased IT complexity , system fragmentation and higher costs.

- Complexity and timeline of system interfaces

Interfacing the new digital process with existing legacy systems is crucial to scale up the digital process. Often interfacing is considered as “a chicken and egg” discussion amongst the actors because a minimum amount of human interface work can only be eliminated when a minimum amount of e-document transactions are being exchanged in the first place.

Besides, interface work with API cloud technologies is technically rather new, requires a two-sided view on the new digital process, needs Business-IT resource synchronization and prioritization with other IT projects and runs eventually the risk to be de-prioritized.

Therefore, it is important to think about interfacing when you start an e-document project.



- **Business case: Create a common purpose**

Each digitalization initiative requires a return of investment and business case which improves the bottom- or top line financial growth of any involved actor. Within a commercial business relationship, a typical challenge is that each actor is looking for the biggest gain and a multi-stakeholder project only gets traction if all actors agree on a win-win-win business case or common strategy. To justify a project, every actor looks in the first place individually after its own benefits without considering the bigger ecosystem value and without considering the “end to end” benefits picture. As a result, e-document projects do often get de-prioritized, remain in a “status-quo” for a long time except in case legal or commercial obligations start playing a matter or a group of associations (or companies) put their digital brains together and form an ecosystem.

From a transport company perspective, we recommend considering the following value drivers when evaluating the business value of an e-document initiative:

- Fulfill the request of the customer to work paperless and increase compliance level
- Simplify & reduce back-office administration work
- Move from paper archives to digital archives
- Integrate upstream and downstream with your suppliers and customers
- Find out new process automation opportunities and values
- No paper exchanges at gates (most recent covid-19 request)

- **Acceptance by authorities**

In case e-documents need to be exchanged with authorities (B2A), it is important that the IT service providers follow the new eFTI guidelines as being established on EU level.

- **Process flow exception management**

In logistics and especially with paper documents numerous historical paper workarounds and exceptions are created to cope with individual customer requests, regional specifics and corrective actions. In addition, paper documents are historically serving other purposes and the definition of data fields on documents is often tweaked and changed to cope with exceptions. As a result, an e-document project with multiple actors easily gets overly complex and runs the risk to derail as individual companies do not have the patience and terminate contribution during the project phase or in a worst case continue the project while installing an own local island solution.

For mitigation, a continuous monitoring shall be made and a small start with simple flows is recommended before tackling the complex flows and exceptions. Hence, it is wise to first map a “minimum viable process” (=MVP) which is a new “end to end” ecosystem process harmonized and agreed across all actors while starting with a pilot case and limited scope in terms of number of actors, geography, locations, products, people and assets. Ideally this is orchestrated by neutral multi-stakeholder groups who are willing to consider the bigger picture and “end to end” process and who understand the value of digital process harmonization.

- **Legal Terms and Conditions of Data Sharing – Data Ownership – Data security**

There are numerous different platforms, platform providers and consultancy companies who want to support companies to manage their business data. Out of the business to consumer market places and social media platforms, we learned from big tech companies what consumer data are worth in terms

of economic value up to a level where concerns are raised about data privacy and security. In addition, data transparency and traceability often promise great customer and community values however a simple commercial offer to provide company data for free to an IT platform provider in return of a service, is not necessarily seen as a good deal.

Consequently, as platforms typically manage and share business data between multi-actors and even other third party IT platforms, it is very important to investigate the legal terms and conditions of each vendor to better understand what might happen with your company data once they are shared; This is not only an important aspect during the contract period but also after termination of the contract in order to safeguard your business value. To support the evaluation, below some guiding questions for the involved actors are given:

<b>Contractual Platform Terms and Conditions</b>	<b>Possible questions</b>
<b>Data ownership</b>	Is it stipulated that your company remains owner of the data and data are not shared, re-used for other purposes?
<b>Data re-use</b>	Can your company data be re-used for other any e-freight solution or other Use Cases without you knowing? Who picks up the benefits of your data being shared?
<b>Data security</b>	Who is responsible for your data and what happens in case of data loss? Are there liabilities in case of data loss? Can you audit the IT platform provider? Any certifications in place? Are there ethical hacking reports available?
<b>Data analytics and monetization of data</b>	Is it clear if your data can be stored, analyzed and re-processed by the IT vendor? Can your data be re-used/shared/ sold to other parties? How can your IT vendor assure yourself he is not monetizing your data? Can you audit? Are penalty clauses foreseen for data abuse? Is there no conflict of interest with the business plan of your platform vendor? What's the IT vendors business plan?
<b>Data sharing &amp; visibility rules</b>	Do you know exactly which data fields you share for what purpose with who and when throughout the data sharing process and when the process transaction is completed? Has this been agreed in detail with all actors and who acts as neutral controller independent of the software vendor in case of abuse and non compliances?
<b>Data governance and non-compliances</b>	Who keeps the overview, Is there any central and preferably neutral data sovereignty body in case of conflicts? What happens if an actor regularly submits wrong data? Who has the liability?
<b>Contract termination</b>	What happens with your data after contract termination? Are your data removed? To which extent?
<b>Data &amp; Business Privacy</b>	Does the contract comply with GDPR? Any other compliance requirements in terms of data storage and retention
<b>Data removal</b>	As of when are your company data removed from the platform? Is there a e-document data retention period agreed and is it clear who is responsible to store data under which conditions? Are your data returned back after contract termination?
<b>Data liability</b>	Who takes the cost in case wrong or incorrect data are being shared.

- Neutral data governance to address data accuracy & non-compliance

In digital ecosystems, some of the provided data field inputs might result in downstream errors and non-compliances due to inaccurate data which hampers efficient process flows. Specifically, inaccuracy can mean wrong format, lack of real-timeliness or completely missing data..

Therefore, within such digital ecosystems, It is important to create a single version of the truth by obtaining the data from the source without re-typing or re-keying in existing data. Besides there is a need of an neutral agent who monitors data accuracy and intervenes with the data source or data provider in case of data failures. Such data governance role might be taken up by the platform providers as long as some level of neutrality is guaranteed. In other words, in a multi-actor ecosystem environment, it is recommended to leave that data governance to a neutral party who can set and define the data governance rules amongst all actors in the same way (e.g. remove a non-compliant actor from the platform).

- Technology dependency

Within a digital ecosystem where transactional data are being exchanged it is important to avoid dependency of one IT vendor or technology. The main goal is to have access to open source solutions, who are technology independent and avoid any lock-in situation in terms of IT vendor or technology. The intention is to give each actor within the ecosystem the freedom of choice on how and with which IT vendor to connect amongst themselves and share its own data within the ecosystem IT infrastructure or platforms.

Technology independence is obtained by mapping the ecosystem IT architecture and analyzing different options on how to interconnect and exchange data. These connectivity solutions might be different per company.

## 4. eCMR Use case example

As per today there are several eCMR Pilots in place. Those pilots are tested in several setups, mostly in intercompany lanes without a border crossing. Due to the legal insecurities, the eCMR is still facing, the international tests are held with the paper documents in place as a backup solution.

An example of an implementation of the eCMR on intercompany lanes without border crossing is the implementation at one of the Logistics Service Centers (LSC) of Den Hartogh Logistics in Rotterdam, the Netherlands. This successful implementation of the eCMR is in place for several years now, and since more than a year also including ADR transport. What should be noted here however is that the special characteristics of these logistic operations take away some of the complexities that are to be taken into account in regular (possibly international, intermodal) transport. Namely, as Den Hartogh Logistics performs the loading activities at the LSC, just as it takes care of the transport, there are less parties involved. Additionally, it provided the opportunity to integrate the eCMR process in the custom-made LSC application. Clearly, the integration of the eCMR process in that application was an important contributor to the success. Important to note as well is that since the implementation of the eCMR a lot of paper documents did not need to be created, which is a factor that should be taken into account within our joint journey towards more sustainable transport.

Even though the characteristics of the logistic operations that are performed at Den Hartogh Logistics' LSC are not fully comparable with regular transport, it did provide some learnings towards new ongoing pilots with regular transport lanes.

So far, the test-runs from "Blockchain Initiative Logistic (BIL)" led by LKW WALTER have shown that a digital process with CMR Papers is quite a challenge for most parties involved.

Intense exchange of all involved parties (Sender, Loading, Receiver, Unloading and Driver) is needed in order to guarantee a stable process. As in the BILs first prototype all messages are sent with email notifications which put a limit on the drivers that can be involved, as there is only limited possibility among drivers to access a email notification. Other issues, such as technical errors, notification messages running into Spam Mail and limited availability of up-to-date internet-browsers were encountered during testing.

In the tests done within the BIL Prototype, the learnings and the feedback are taken very serious and will be solved throughout the second phase of the project, which started in November 2020. The aim is to have a market-ready approach ready by Summer 2021. Which should then be evaluated in a second phase of testing.

As from a LSPs Point of view there is an urgent need to keep a close eye on the development of the eCMR landscape and to early involve clients as well as forwarders. The shift to digital is imminent and will not exclude the transport landscape.

## 5. eECD Use Case example and eECD Onboarding steps

The eECD project started in 2017 as a prototype and is meanwhile gradually scaling up across Europe with the aim to replace the paper ECD.

Some companies listed below are already active at different company locations and others are preparing the eECD project implementation according to the on boarding steps explained below.

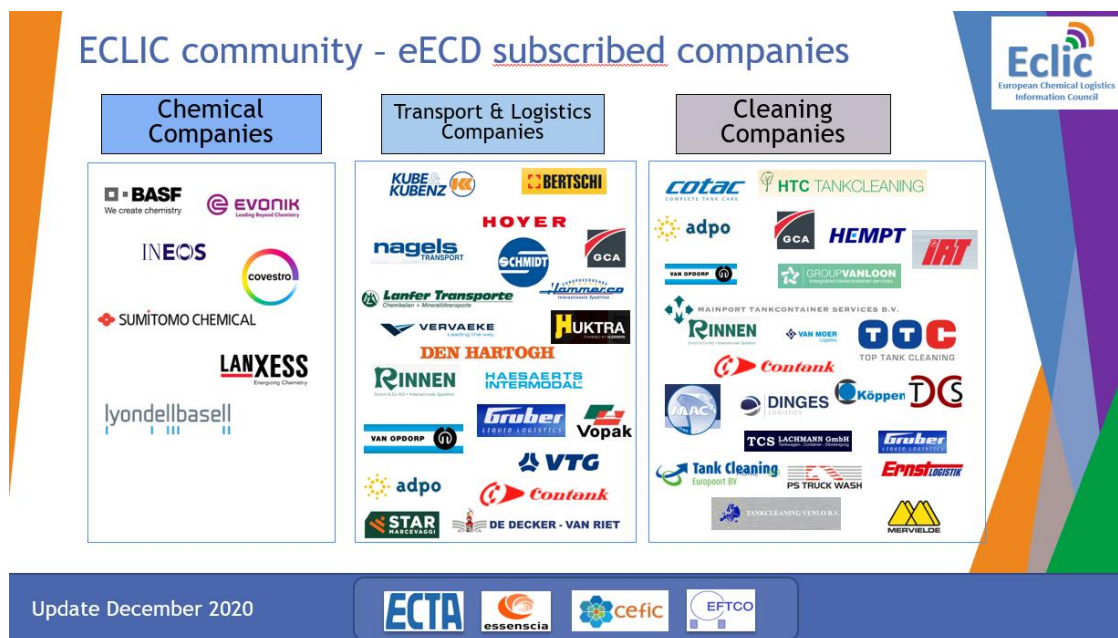
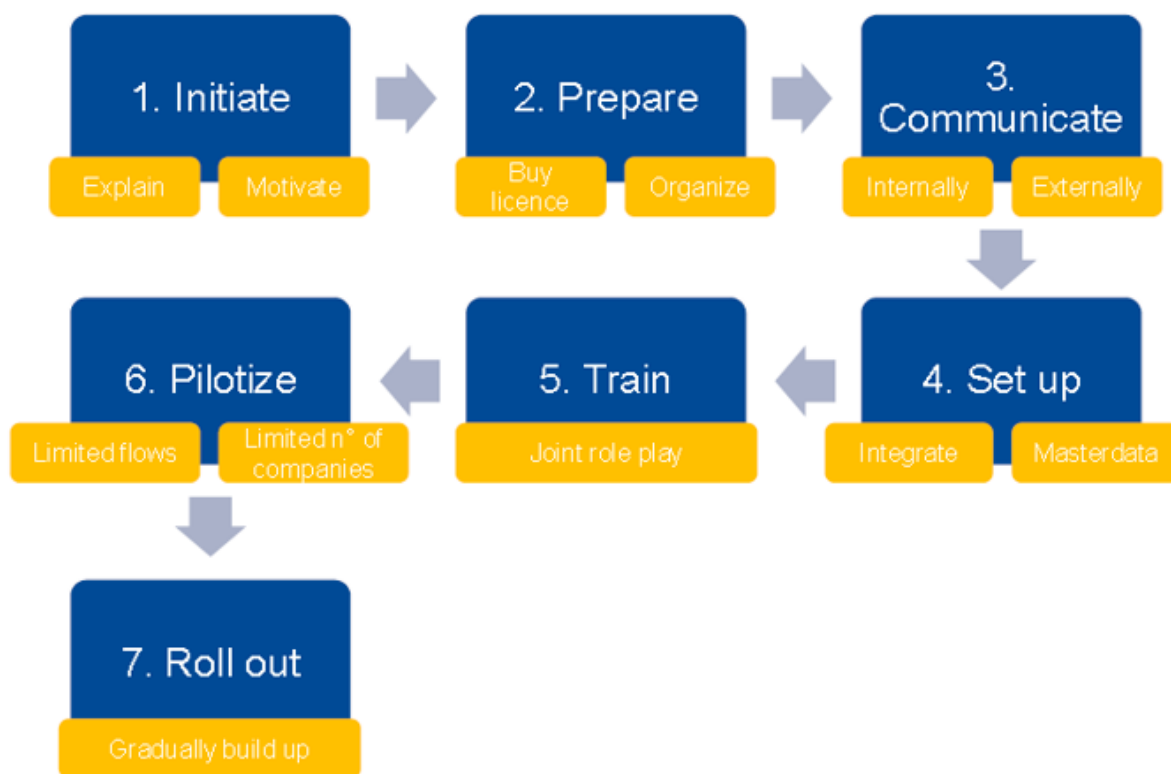


Figure 4: the eECD subscribed companies

Today, the ECLIC community counts more than 45 eECD subscribed companies and the ambition is to grow to more than 600 eECD subscribers in the coming years.

To implement the digital eECD process with multiple business actors, the following 7 implementation steps are being recommended. Depending on the scope, approach and exact eECD role(s), the steps might be slightly different..



*Figure 5 The eECD on boarding steps*

### **Step 1: Initiate the project: within your company.**

Hereby you need to define the eECD project scope and motivate internally why you want to do this project. You best familiarize yourself with the eECD process as described above and define for your company the project approach and return on investment.

### **Step 2: Prepare for eECD licence subscription**

To be able to participate as an actor within the digital eECD process, you will need to subscribe your company and complete the eECD subscription form. (see form on [www.eclic.eu](http://www.eclic.eu)) Once your eECD licence request is approved by ECLIC, you can set up and activate your eECD web licence.

As part of activating your eECD licence, you will need to accept the ECLIC community legal Terms and Conditions. These terms and conditions are very important and the key aspects of those terms are described in the next section under legal terms and conditions for data sharing.

In step 2, you might assign a project contact or project responsible as this person will most likely become the eECD admin user who can assign other users and roles within your company to start using the digital eECD process. .

### **Step 3: Communicate and prepare other eECD actors**

You cannot develop electronic freight documents like the eECD just on your own; you need data inputs from other actors and you need to pre-inform them. For eECD you might pre-inform your cleaning stations by explaining a digital eECD is requested for certain sellers or loaders.

#### **Step 4: Set up your eECD access, users and master data**

Before a digital process can work, you need to set up your organization, users and a minimum set up equipment master data that are required to perform a cleaning.

As these data might already exist in another legacy system, you need to define how you want to upload/integrate and maintain these data short term and longer term. Short term you might start small and simple. Longer term you might reflect whether you will integrate the eECD API's yourself or via a third party vendor.

#### **Step 5: Train some users and start a role play with other eECD actors**

As already explained above, you cannot develop e-freight documents like eECD just on your own so you will need to define some users to learn/train the new process and to reach out to users from other companies. You might need to consider first some test shipments or dry runs in the test environment before starting a real role play together with other actors (customers or vendors).

#### **Step 6 & 7: Pilotize and roll out**

Once you defined your pilot actors group and a first scope, you run a test with a limited number of shipments to start with and gradually extend the scope in terms of products, lanes, equipment, loading locations, cleaning stations, etcetera.

During the test shipment you best consider to use both the paper ECD and eECD and take note of some recommendations in terms of new way of workings. After a few weeks you can transition to the full digital process, provided all actors are on boarded.

the ECLIC community is considering other Use Cases to replace more logistics paper documents like the eECO (=electronic EFTCO Cleaning Order document), the ePPL (=electronic Proof Previous Load document) and the eCMR given there is a clear synergy on how common data fields are being exchanged amongst actors. Besides and as part of the scale up, this eECD process concepts can be easily applied to the food, feed and pharma sectors and at a global scale provided the extra food and pharma requirements and specific process investments are being considered.

## 6. Conclusion

As laid out within this document the adoption of e-Documents in many varieties will be a challenge for all LSPs to encounter over the next years. The approaches are very different and there will come even more e-document solutions on the market. The earlier one develops the necessary skills and prepares its organization, the better you are prepared for the next steps towards a Digital Supply Chain.

The momentum of the year 2020 has, due to covid-19, given a special drive towards the development of digital transport documents. With people trying to respect distance and trying to avoid handing over physical documents from one person to another, it questioned the current transport and logistics paper practices and might give a further boost to the digital documents development the coming years. Even though the legal boundaries are not yet all set, they are expected to be within 2026 (EU).

So as conclusion, it can be said, that the development of digital freight documents is still in progress, the need to collaborate with all parties involved in the transport process is needed in order to drive further adoption and to tackle the challenges of the digital Supply Chain and the increased need for digital Information on the market.



## 7. Contact lists and WG participants



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## Annex 1: Additional Attachments for Clarification

Figure 4: A specimen example of an EFTCO Cleaning document ([www.eftco.org](http://www.eftco.org))

 <b>EFTCO Cleaning Document</b> <small>www.eftco.org</small>		 <b>CTC</b> <small>vzw • ASBL</small> <small>Rue de l'Europe 5 A B-1050 Brussels • Bruxelles ☎ 0032 2 439 68 00</small>
1		
2 Referentie: Naam / Référence du client / Customer reference number*		3 Volgre: / N° de série / Serial number
4 Klant / Client / Customer		5 Identificatie: / N° d'identification / Identification numbers
		Voertuig / Véhicule / Vehicle
		Tank, Container, IBC / Citerne, Conteneur, GRV / Tank, Container
6 Productaart / Nature du produit / Nature of product*		7 Volgende lading / Prochain chargement / Next Load*
8 Comp	Laatste lading / Dernier Produit Transporté Previous load: Naam / Nom / Name	8 Reinigingsprocedures / Procédures de lavage Cleaning Procedures EFTCO Code / Omschrijving / Description / Description*
<div style="position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; bottom: 0; border: 1px dashed black; transform: rotate(90deg); transform-origin: left top; pointer-events: none;">             Original           </div> </div>		
Comp 10 Aanvullende werkzaamheden / Prestations complémentaires / Additional Services		
11 Opmerkingen / Observations / Comments		
12 Naam reiniger / Nom du laveur / Name cleaner*		13 Date / Time in* Date / Time Out
<p> <small>             Het tankreinigingsstation en de chauffeur bevestigen dat bovengenoemde diensten om de tank te reinigen werden uitgevoerd (zie EFTCO definitie van 'clean') / La station de lavage et le conducteur attestent que les moyens décrits ci-dessus ont effectivement été mis en œuvre pour nettoyer la citerne (voir la définition EFTCO de 'proper') / The cleaning station and the driver confirm that the above service(s) to clean the tank have been carried out (see EFTCO definition of 'clean')           </small> </p>		
14 Tankreinigingsstation / la station de lavage / Cleaning Station		15 Chauffeur / Conducteur / Driver*
Naam / Nom / Name		Naam / Nom / Name
Handtekening / Signature / Signature		Handtekening / Signature / Signature

Figure 5: A Paper CMR Example:

COPY FOR SENDER / EXEMPLAIRE DE L'EXPÉDITEUR																												
1. Sender / Expéditeur			<b>INTERNATIONAL CONSIGNMENT NOTE</b> <b>LETTRE DE VENTURE INTERNATIONALE</b> <div style="float: right; border: 2px solid black; border-radius: 50%; padding: 10px; text-align: center; width: 100px;"> <b>CMR</b> </div> <p style="font-size: small;">This consignment is subject to the Convention on the Contract for the International Carriage of Goods by Road (CMR) / Ce transport est soumis, indépendamment de son objet, à la Convention sur le CMR du transport international de marchandises par Route (CMR)</p>																									
2. Consignee / Destinataire			35. Carrier / Transporteur																									
3. Place of delivery of the goods / Lieu pour la livraison de la marchandise			37. Secondary Carrier / Transporteur accessoire																									
4. Loading place of the goods / Lieu de chargement de la marchandise			38. Carrier's interventions and observations / Interventions et observations du transporteur																									
5. Documents attached / Documents annexes																												
6. Marks and numbers / Marques et numéros	7. Number of packages / Nombre de colis	8. Method of loading / Mode d'emballage	9. Nature of the goods / Nature de la marchandise	10. Nature, No. and Serial /	11. Gross weight, kg / Poids brut, kg	12. Volume, m <sup>3</sup> / Volume, m <sup>3</sup>																						
13. Sender's instructions / Instructions de l'expéditeur			15. Special agent note / Conventions Particulières  <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <td style="width: 60%;">20. To be paid by / À payer par</td> <td style="width: 20%;">Sender / Expéditeur</td> <td style="width: 20%;">Consignee / Destinataire</td> </tr> <tr> <td>Carriage charges / Frais de transport</td> <td></td> <td></td> </tr> <tr> <td>Accessories / Accessoires</td> <td></td> <td></td> </tr> <tr> <td>Taxes / Taxes</td> <td></td> <td></td> </tr> <tr> <td>Insurance charges / Frais d'assurance</td> <td></td> <td></td> </tr> <tr> <td>Other charges / Autres charges</td> <td></td> <td></td> </tr> <tr> <td><b>TOTAL</b></td> <td></td> <td></td> </tr> </table>					20. To be paid by / À payer par	Sender / Expéditeur	Consignee / Destinataire	Carriage charges / Frais de transport			Accessories / Accessoires			Taxes / Taxes			Insurance charges / Frais d'assurance			Other charges / Autres charges			<b>TOTAL</b>		
20. To be paid by / À payer par	Sender / Expéditeur	Consignee / Destinataire																										
Carriage charges / Frais de transport																												
Accessories / Accessoires																												
Taxes / Taxes																												
Insurance charges / Frais d'assurance																												
Other charges / Autres charges																												
<b>TOTAL</b>																												
14. Instructions to consignee / Instructions de paiement pour le destinataire			16. Carriage charges / Frais de transport																									
17. Established in ... / Établi le ...			18. Carriage charges / Frais de transport																									
19. Signature and stamp of the sender / Signature et timbre de l'expéditeur	20. Signature and stamp of the carrier / Signature et timbre du transporteur		24. Goods received / Marchandises reçues  <table style="width: 100%; font-size: x-small;"> <tr> <td style="width: 60%;">Place / Lieu</td> <td style="width: 40%;">Date / Date</td> </tr> <tr> <td></td> <td></td> </tr> </table>					Place / Lieu	Date / Date																			
Place / Lieu	Date / Date																											

Figure 6: A simplified CMR Process with Police intervention

