

# Spotlight Session: Inside the OLF-eCMR solution

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# Agenda



1

## Introduction

What is the Open Logistics Foundation?

2

## What is the OLF-eCMR?

Why and how was OLF-eCMR developed?

3

## Using the OLF-eCMR

How can your organisation implement and use the OLF-eCMR standard?

4

## Live Q&A

Get your questions ready!

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## About us

Established in **2021**

Non-profit and common benefit **foundation**

**50+** members and network partners

**Neutral partner** for cooperation

Focusing on **joint implementations**



# The value of open source is enormous

Without open source, organisations would spend significantly more on software development

**\$8.8T**

## Cumulative Value

Total demand side value of open source software

**3.5x**

## Efficiency Factor

Additional spending required without open source

**96%**

## Open Source in Software

Of all codebases worldwide contain at least one open source component

Hoffmann, Nagle and Zhou, The Value of Open Source Software  
<http://dx.doi.org/10.2139/ssrn.4693148>

**Market  
Differentiation**



Collaborate where possible –  
compete where it matters.



**Non-Market  
Differentiation**

**It's better to use your resources for differentiation and develop commodities collaboratively!**

- We need to step away from silo thinking.
- Complex supply chains require efficient organisation.
- Full digitalisation of logistics demands collaboration between all stakeholders.
- Individual efforts alone cannot meet industry-wide challenges.

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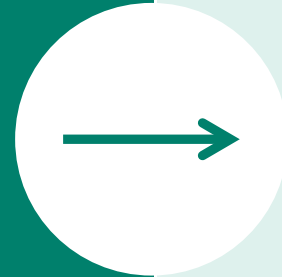
# Why use digital transport documents?

## Industry pain points

When paper-based, freight documents like the CMR lead to:

- High administrative costs
- Cross-channel breaks
- Increased errors

But, electronic formats that exist from providers often lack compatibility



## OLF-eCMR as a solution

With a de facto standard for the digital consignment note:

- Paper becomes digital → less effort, lower costs, fewer errors
- Cross-channel breaks now flow → seamless exchange across platforms
- Real-time data → faster processes, better visibility, and quicker invoicing
- Fully interoperable and legally compliant through advanced electronic seals.

# What makes the OLF-eCMR special?

## ✓ Open and free

Available for any company to download, use, and adapt – no costs, no restrictions, and vendor-free.

## ✓ Collaboratively developed

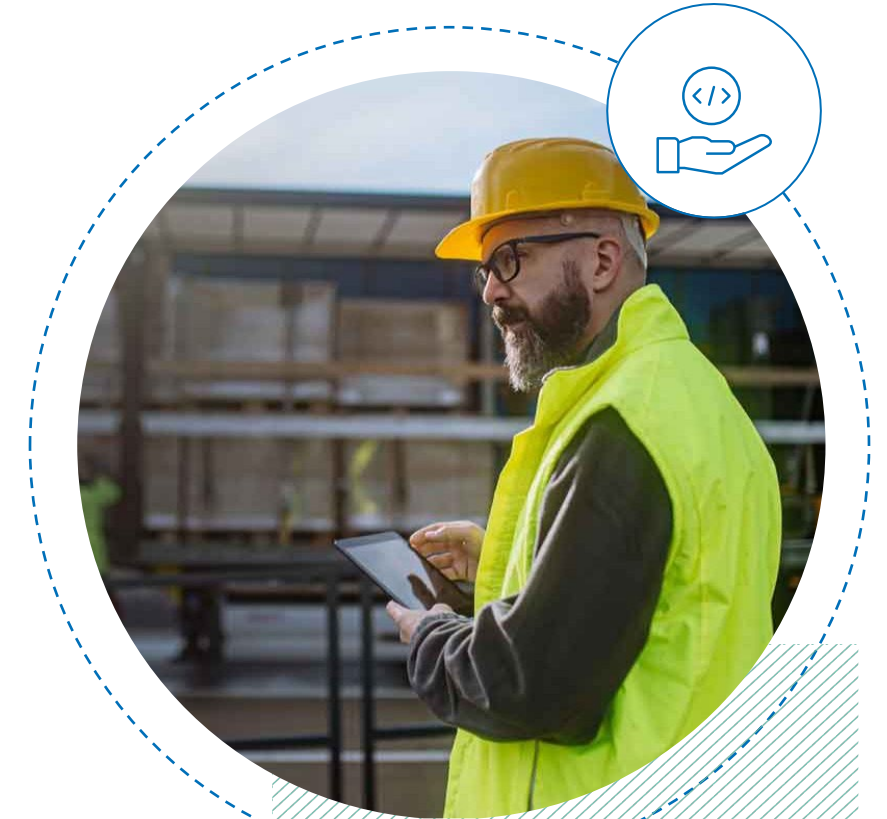
Built with 25+ logistics and IT partners of all sizes, ensuring compatibility and the evolution of a de facto standard.

## ✓ Industry-ready and easy to implement

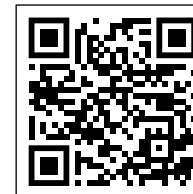
Can be integrated into existing IT systems, and external IT support is available if needed.

## ✓ Continuously improved

Regular updates and community feedback help long-term reliability.



Topic deep dive:  
Explore the  
OLF-eCMR





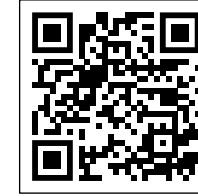
Working Group

# Electronic Transport Documents

## Joint work of 25+ companies



# eCMR vs. eFTI



Topic deep dive: Getting ready for eFTI

Criteria	Electronic consignment note (eCMR)	Electronic Freight Transport Information (eFTI) regulation
Information exchange/interaction type	Business-to-Business (B2B)	Business-to-Authorities (B2A)
Legal basis	Supplement of the 1956 Convention on the International Carriage of Goods by Road (CMR) by the eCMR Protocol in 2008	Adoption of EU Regulation 2020/1056 in 2020
Content	Legal equality of the electronic consignment note to the paper-based consignment note	Acceptance of digital transport information by authorities
Category	Document	Data model
Scope of application	International, CMR member states	EU (all member states)
Mode of transport	Cross-border freight transport, road	(Cross-border) freight transport, all modes of transport
Exchange of...	Information under private law (contract between sender and carrier); often used by authorities	Information required by EU and national law for authorities in the transport of goods

**eCMR will not become superfluous with eFTI!**

# Adaptable to fit your needs

## The Spanish DCA example

From October 2026, a digital DCA will be required in Spain.

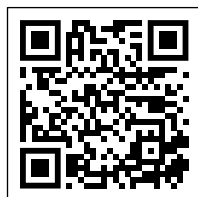
The good news: for transport in and out of Spain, eCMR can replace DCA if certain requirements are met.

**OLF-eCMR can be adapted to fulfill these requirements, enabling one solution instead of parallel systems.**

### For more information



Spotlight Session:  
Prepare for Spain's  
digital DCA [YouTube]



Topic deep dive: Meeting  
the new DCA requirements  
with the OLF-eCMR



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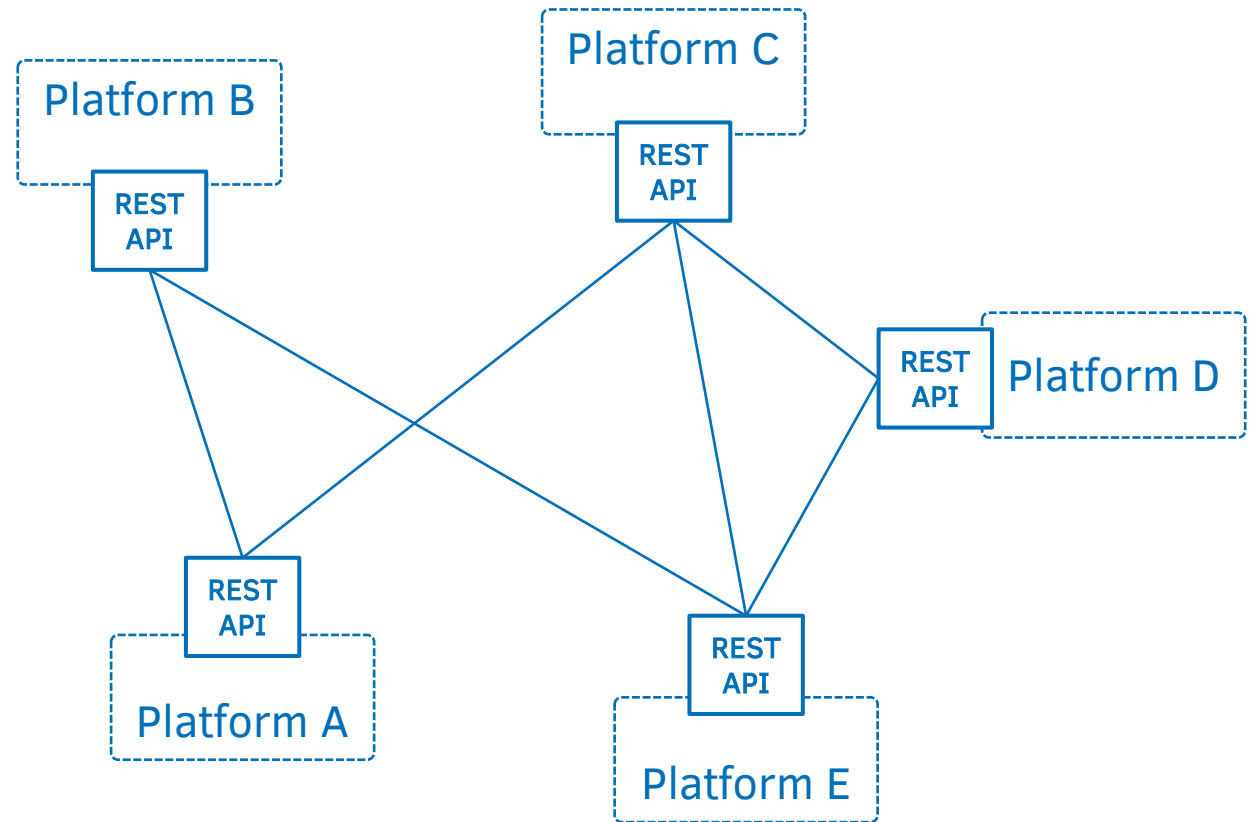
4

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# eCMR across a network of federated platforms

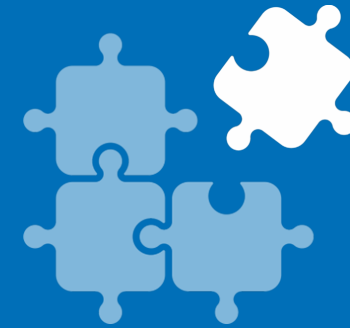
- Broad usage of eCMR can only be achieved by maximising compatibility
- Today, eCMR can be exchanged across different platforms, regardless of the platform
  - This ensures interoperability through a shared data model
- There is **no central system**. Platforms remain independent, yet able to work together
- Competition is NOT through differentiation at data and compatibility levels but through usability, price, etc.



# Two options for eCMR usage



**Deployable and fully operational instance**



**Individually usable components and API**



## eCMR variant - instance

### Deployable and fully operational instance

- Included eCMR process implementation
- Service for execution in a productive environment incl. interfaces for integration of IT systems, such as TMS/ERP
- The basis is the eCMR data model, the eCMR API, and the eSEAL implementation
- includes a backend and a frontend
- The instance can be adapted to your own IT-infrastructure, UI/UX-design, and/or internal processes. **The public API must not be changed** as this could affect compatibility with other eCMR instances.

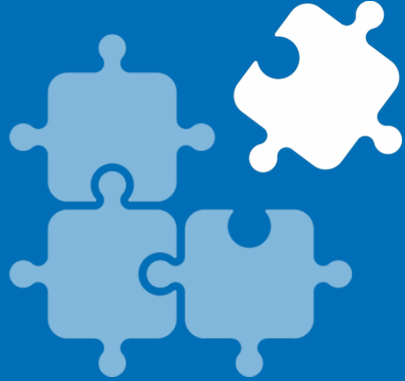
# The fully operational variant includes a web frontend

The frontend is optional and can be adjusted for your company



The screenshot displays the 'eCMR Service' web frontend. At the top, there is a navigation bar with a hamburger menu, the text 'eCMR Service', and user profile icons for 'NG'. Below this is a header section for 'ECMR OVERVIEW' with a filter 'overview.group\_filter Rhenus Group - Root Gr' and buttons for 'Create new +' and 'Import'. The main content is a table with columns for 'Status', 'Reference ID', 'Transport Type', 'Last Edit Date', and 'Creation Date'. The table contains eight rows of data, each with a checkbox, a status icon, and a status label.

<input type="checkbox"/>	Status ↑	Reference ID	Transport Type	Last Edit Date	Creation Date
<input type="checkbox"/>	 New	Test Prod 12.02	International		03/05/2026, 09:06:34 AM
<input type="checkbox"/>	 New	LS:37087977	National		03/06/2026, 04:30:19 PM
<input type="checkbox"/>	 New	LS:37088008	National		03/06/2026, 06:40:31 PM
<input type="checkbox"/>	 New	LS:37088992	National		03/11/2026, 10:22:12 AM
<input type="checkbox"/>	 New	LS:37089028	National		03/11/2026, 12:38:12 PM
<input type="checkbox"/>	 Loading	LS:37087924	National	03/10/2026, 08:52:41 AM	03/06/2026, 12:21:46 PM
<input type="checkbox"/>	 Loading	LS:37087949	National	03/10/2026, 08:54:18 AM	03/06/2026, 02:30:11 PM
<input type="checkbox"/>	 In transport	LS:37087898	National	03/09/2026, 09:58:13 AM	03/06/2026, 10:35:06 AM



## eCMR variant - API

### Individually usable components and API

- Defines the structure of the eCMR (data model) and the interfaces (API) for processing and exchanging eCMRs between transport partners
- The API must be implemented
- Advanced electronic seals must be supported for integration capability with other eCMR instances. The eCMR eSEAL implementation can be used for this purpose.
- This version can be used to **extend existing IT systems**, such as eCMR platforms, with interfaces that are **compatible** with the open source eCMR / the full instance variant.

# Why advanced electronic seals

And not personal signatures?

With eSeals, legal entities sign a document to replace individual signatures → this document is legally binding for companies, not people

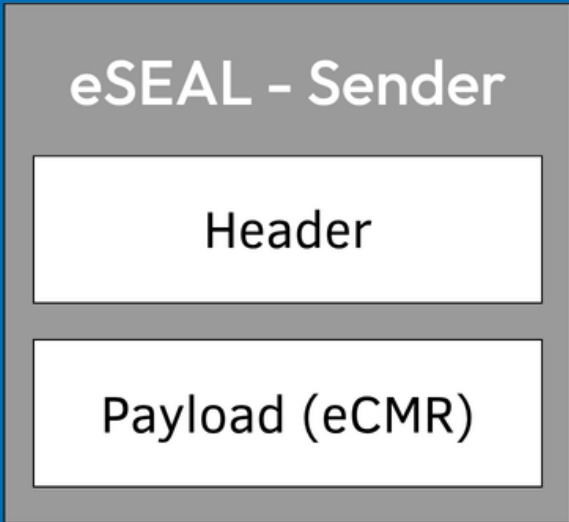
eSEALS are:

- ✓ **Cryptographically linked** to eCMR data + company identity
- ✓ Covered by the **EU eIDAS regulation** → authenticity, integrity, and non-repudiation
- ✓ **Traceable** to the employee who triggered the seal, if needed

In our open source implementation, json documents are signed.



Developed as open source and independent of OLF-eCMR, the eSEAL can be adapted and used in a wide range of use cases requiring a legal entity's signature.



# eSEAL Structure

## Header

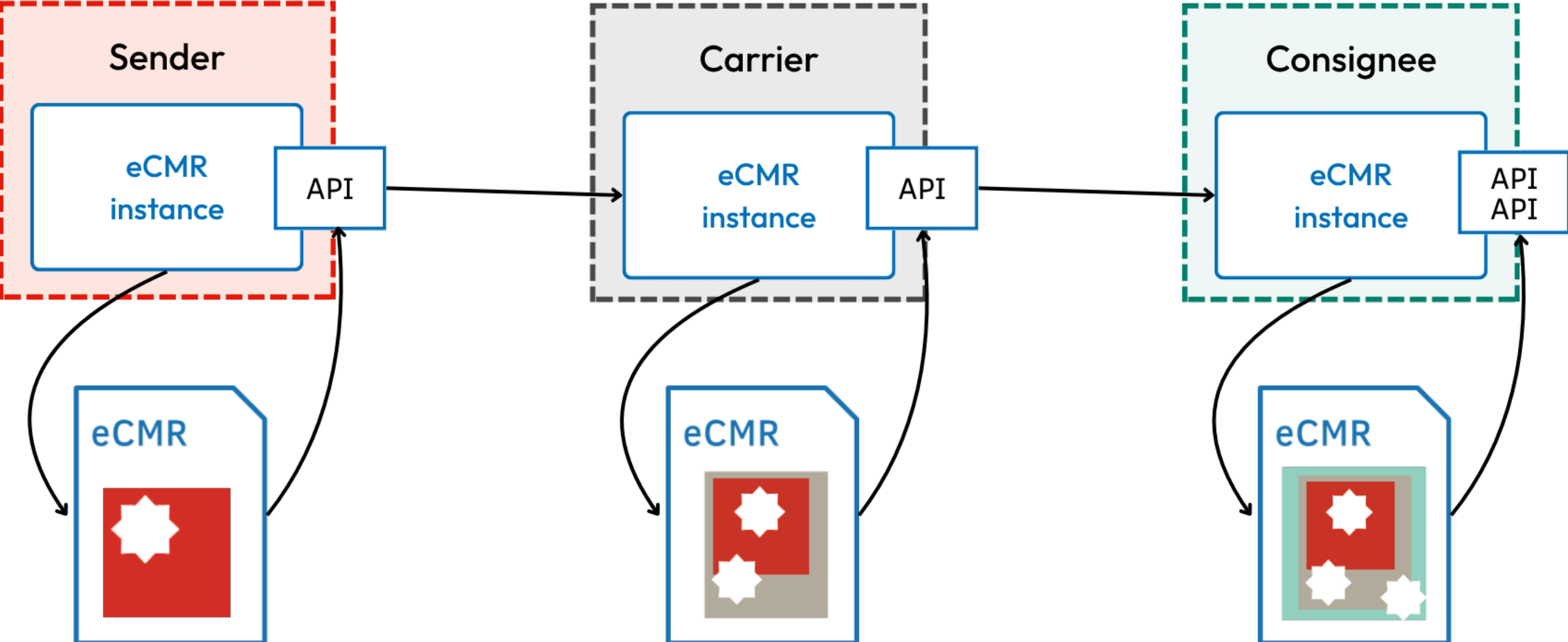
Contains metadata and signature details

- Algorithm
- Certificate information
- PublicKey (X.509)

## Payload (SealedDocument)

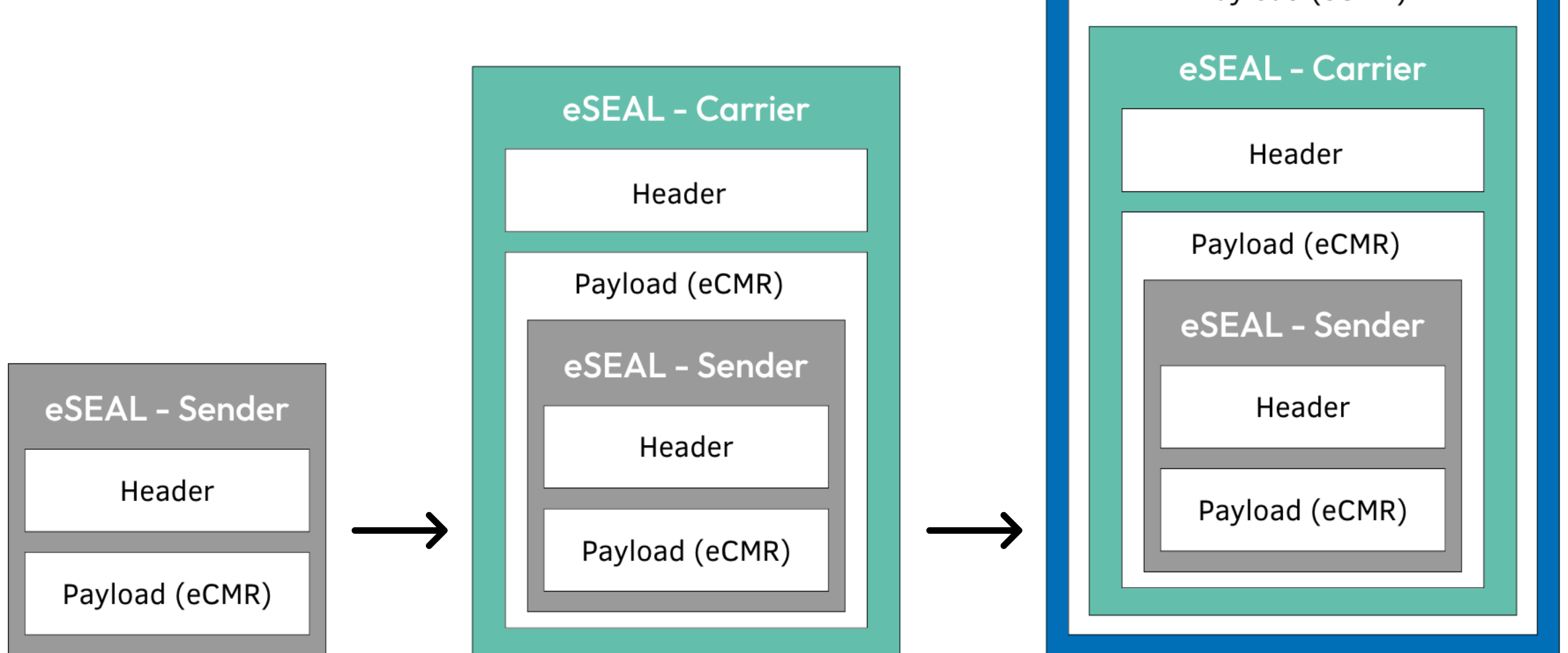
- SealMetadata: Sealing Person, Role (Sender | Carrier | Consignee), Timestamp
- eCMR

# The Sender creates and seals the eCMR before sending it to the Carrier



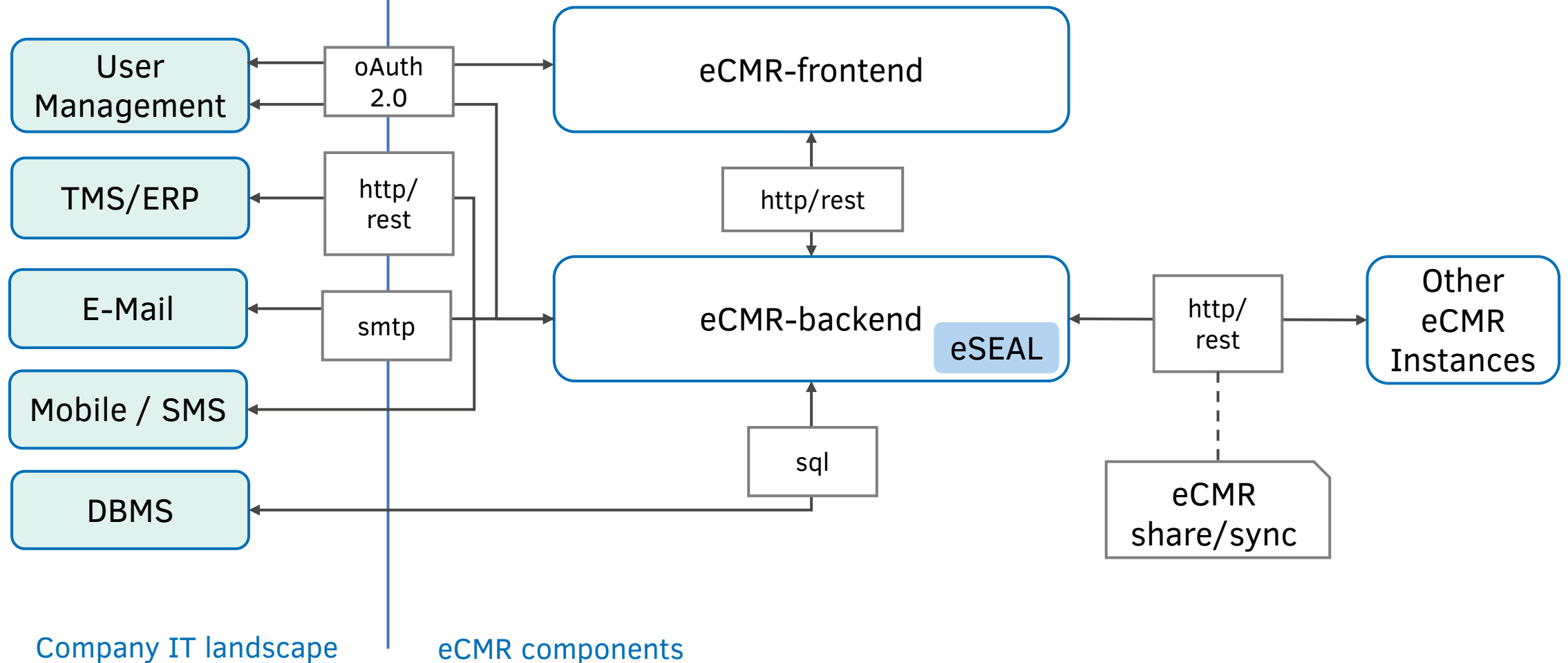
# The chain of eSEALs

This eSEAL chain builds trust and ensures traceability.



# Internal architecture of an eCMR service

Core components and APIs enabling eCMR creation, exchange and verification

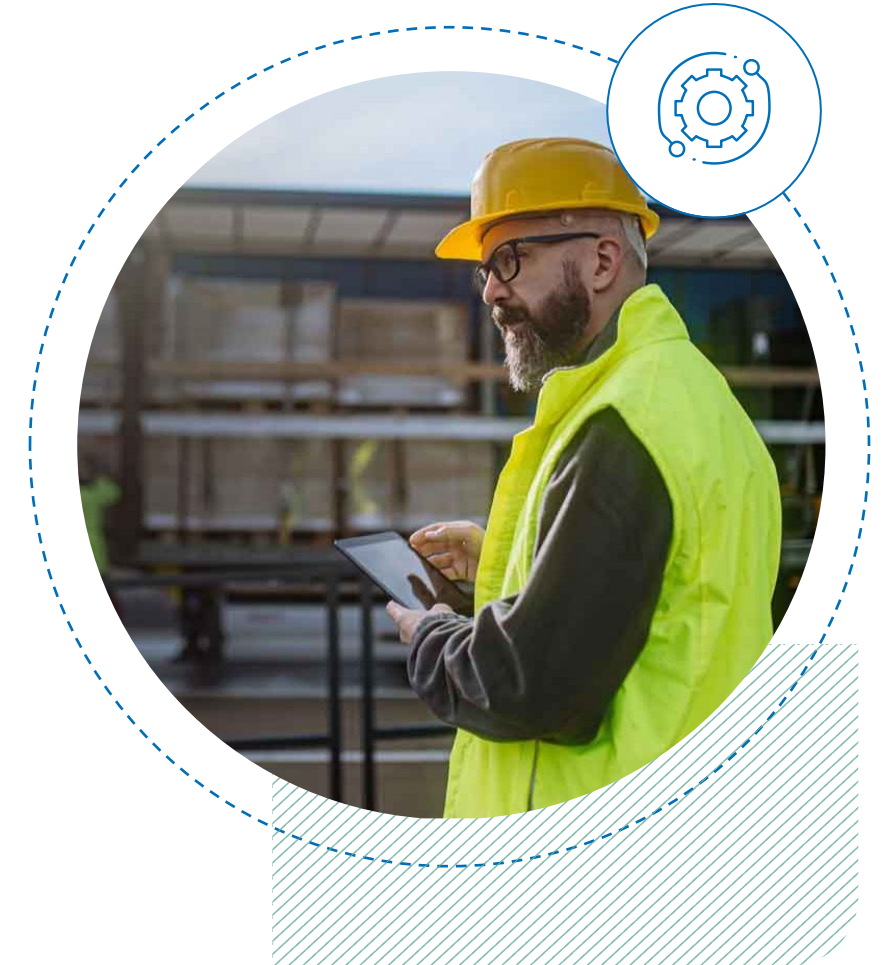


# Preparing your systems

Engage with your IT departments for guidance

Essential details to understand and prepare regarding your systems include:

- Support for containerized environments compatible with **Docker**
- Authentication and access management utilizing **oAuth 2.0** protocols (e.g., Keycloak, Active Directory)
- Use of **SQL databases** such as PostgreSQL or Microsoft SQL Server
  
- Integration capabilities with internal TMS/ERP systems
- Provision of external API access for sharing eCMRs with transport partners
- eSeal configuration requires a custom certificate and key pair to activate eSeal functionality



# Accessing the OLF-eCMR solution



## Public Repository

- All OLF-eCMR software components are published in the Open Logistics Repository under [git.openlogisticsfoundation.org](https://git.openlogisticsfoundation.org).



## Permissive Licenses

- The Open Logistics Foundation License (OLFL-1.3) is a permissive license (free license, no copyleft, granting of rights by all authors) approved by the Open Source Initiative to meet existing community norms and expectations for open source.
- The Contributor License Agreement (CLA) clarifies the transfer of rights from the contributors to the Foundation.

# Project eCMR

## Published results

- ✓ eCMR data model
- ✓ eCMR instance
  - ✓ Frontend (optional and can be adjusted for your company)
  - ✓ Backend
    - ✓ APIs for the import/export of data
    - ✓ APIs for the authentication of users
    - ✓ Project documentation
- ✓ eCMR eSeal (Electronic seals)

## E eCMR

Under the WG ETD, eCMR allows companies to create, edit, save, forward, and archive shipping documents in a human- and international standards. Learn more: <https://openlogisticsfoundation.org/project/ecmr/>

Subgroups and projects Shared projects Shared groups Inactive

Search (3 character minimum)

- E eCMR Backend**  
*Starting point for new developers*  
A backend application for eCMR, designed to manage and send digital transport documents (eCMR) for road transport, ...  
[Show more](#)
- E eCMR data model**  
This project contains the eCMR model as java classes for public eCMR interfaces.
- E eCMR eSeal**  
The eCMR eSeal consists of a signing and a verification service for eCMR eSeals.
- E eCMR eSeal Public Key Store**  
To share sealed eCMRs with other instances, the public keys can be retrieved here for verification on the receiver side.
- E eCMR Frontend**  
This is the frontend application of the eCMR service. It uses the Angular framework to create, manage, archive, sign, and send an eCMR in road transport, including cross-border cases.
- E eCMR knowledge base**

# **We are only able to improve OLF-eCMR through your feedback!**

Download the software, integrate it into your systems, and let us know what you find.

# Roadmap

## OLF-eCMR and Working Group Electronic Transport Documents (ETD)

2026



### What is our focus this year?

- Continue:
  - Rolling out eCMR across multiple routes and partners
  - Testing eCMR sharing process
  - Gathering feedback and updating the data model, API and services based on feedback
- Focus on Spain's new digital DCA regulation
- Focus on additional documents (e.g., Delivery note)

## 2026 & beyond

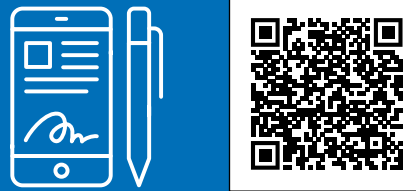
## What will come in the following years?

- Integrate eCMR with eFTI, ~2027
- Improve partner readiness: Interoperability with shippers, carriers and authorities (via eFTI)
- Focus on additional documents

## The general scope

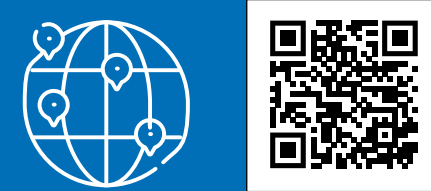
- Monitor evolving regulations and standards.
- Upgrade digital signature mechanisms as needed.
- Share best practices with industry consortia.

# Join our work and create open source solutions



## Electronic Transport Documents

The Working Group Electronic Transport Documents is developing open source solutions for standardised and digitalised handling for all transport modes.



Be part of a community that's driving change.

Become a member of the Open Logistics Foundation to collaborate on more open, interoperable solutions that benefit your company and the logistics industry.



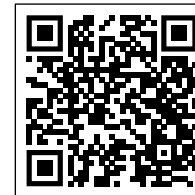
open logistics  
foundation

**Thank you for your  
attention!**

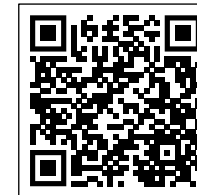
**Feel free to contact us for  
more information**



**Jens Leveling**  
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openlogisticsfoundation.org



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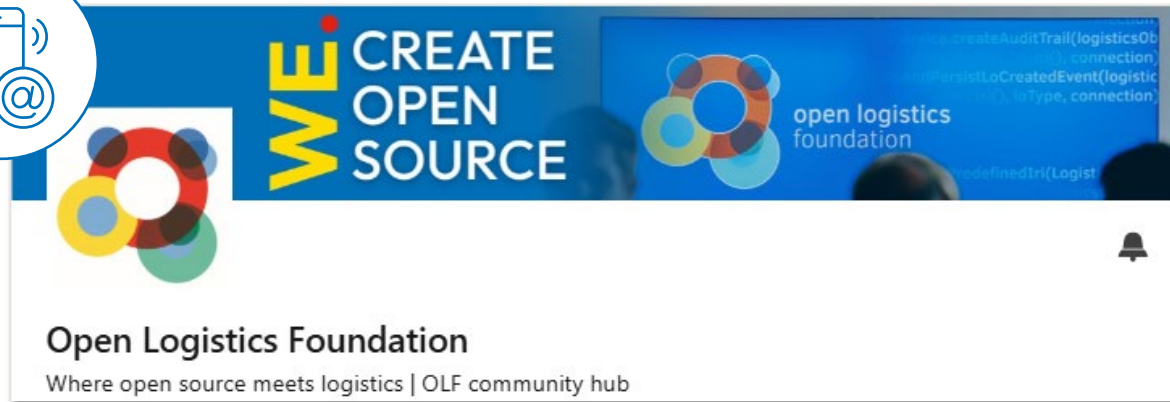
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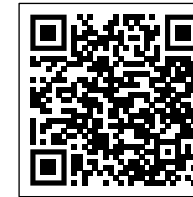
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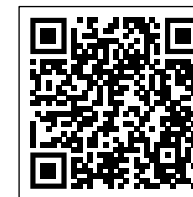
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# **Please write your questions in the chat!**

If we run out of time, Jens or Danielle will do their best to respond to your question in the following days.



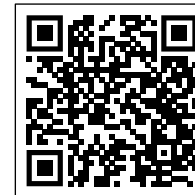
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