

ECM and overview of maintenance of Railway vehicles

21 January | Warsaw

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EUROPEAN
UNION
AGENCY
FOR RAILWAYS

Agenda

- EU legislative and regulatory framework
- Maintenance system and maintenance functions
- ECM certification system
- Implementation of the ECM certification system
- Application guide and resources
- Questions and answers



- EU legislative and regulatory framework



Legislative
framework



Regulatory
framework



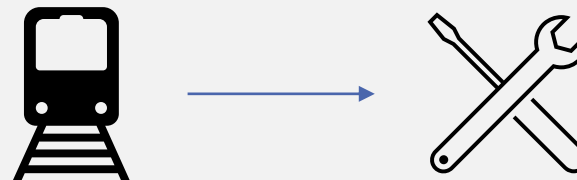
ECM regulation
and related
requirements



Directive (UE) 2016/798 on railway safety

Article 14 Maintenance of vehicles

- 14(1): Each vehicle, before it is being used on the network, shall have an entity in charge of maintenance assigned to it and this entity shall be registered in the vehicle register in accordance with Article 47 of Directive (EU) 2016/797
- 14(2): the entity in charge of maintenance shall establish a maintenance system
- 14(3): the maintenance system shall be composed on 4 functions:
 - a) Management function
 - b) Maintenance development function
 - c) Fleet-maintenance management function
 - d) Maintenance delivery function



Commission Implementing Regulation (EU) 2019/779 of 16 May 2019 laying down detailed provisions on a system of certification of entities in charge of maintenance of vehicles pursuant to Directive (EU) 2016/798 of the European Parliament and of the Council and repealing Commission Regulation (EU) No 445/2011

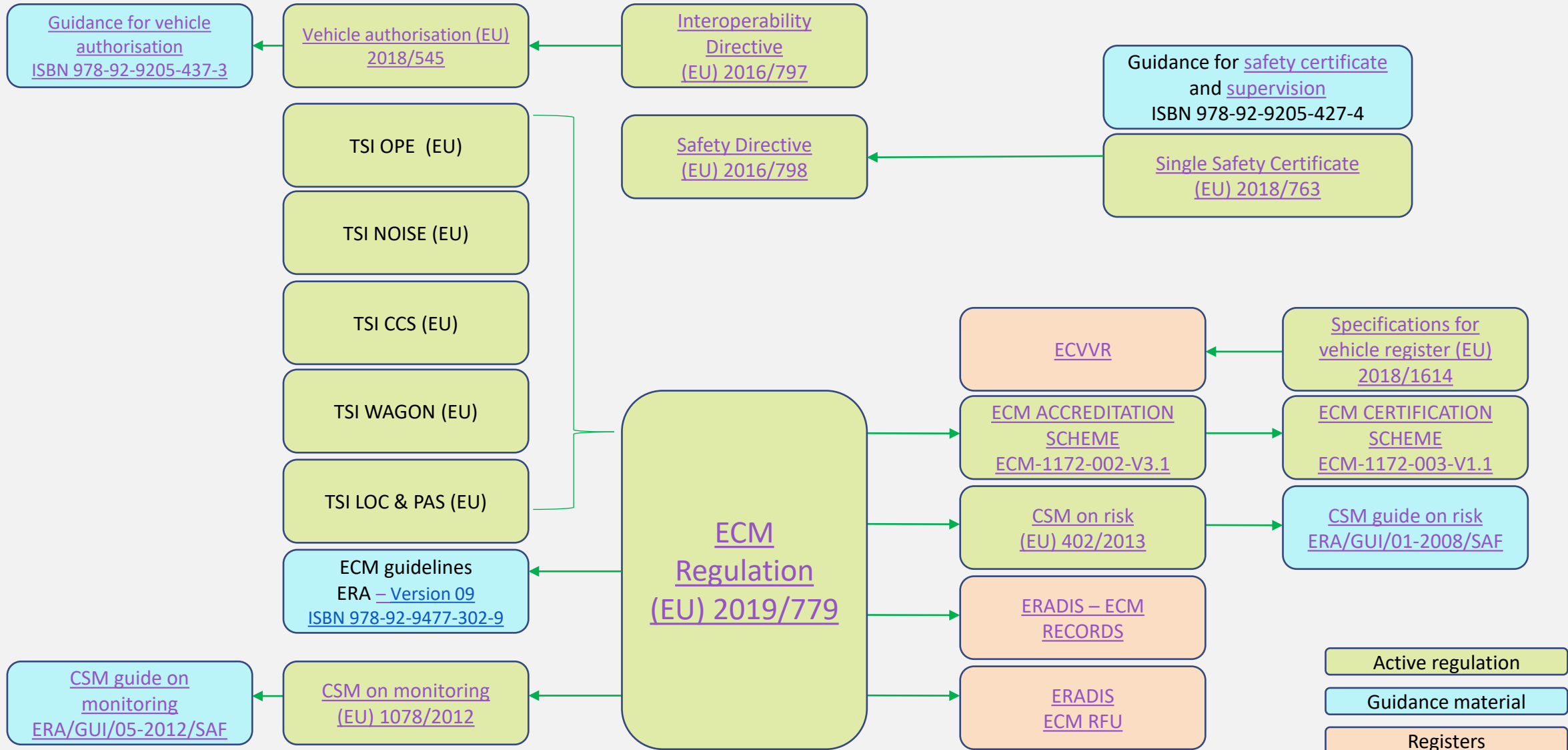
Article 3 System of Certification

- 3(1): Without prejudice to Article 15(1) of Directive (EU) 2016/798, any entity in charge of maintenance shall satisfy the requirements of Annex II, in respect of all vehicles subject to Directive (EU) 2016/798.
- 3(4) Compliance with Annex II shall be demonstrated either through an ECM certification or, without prejudice to paragraph 2, in case of railway undertakings through the process of safety certification or in case of infrastructure managers through the process of safety authorisation.

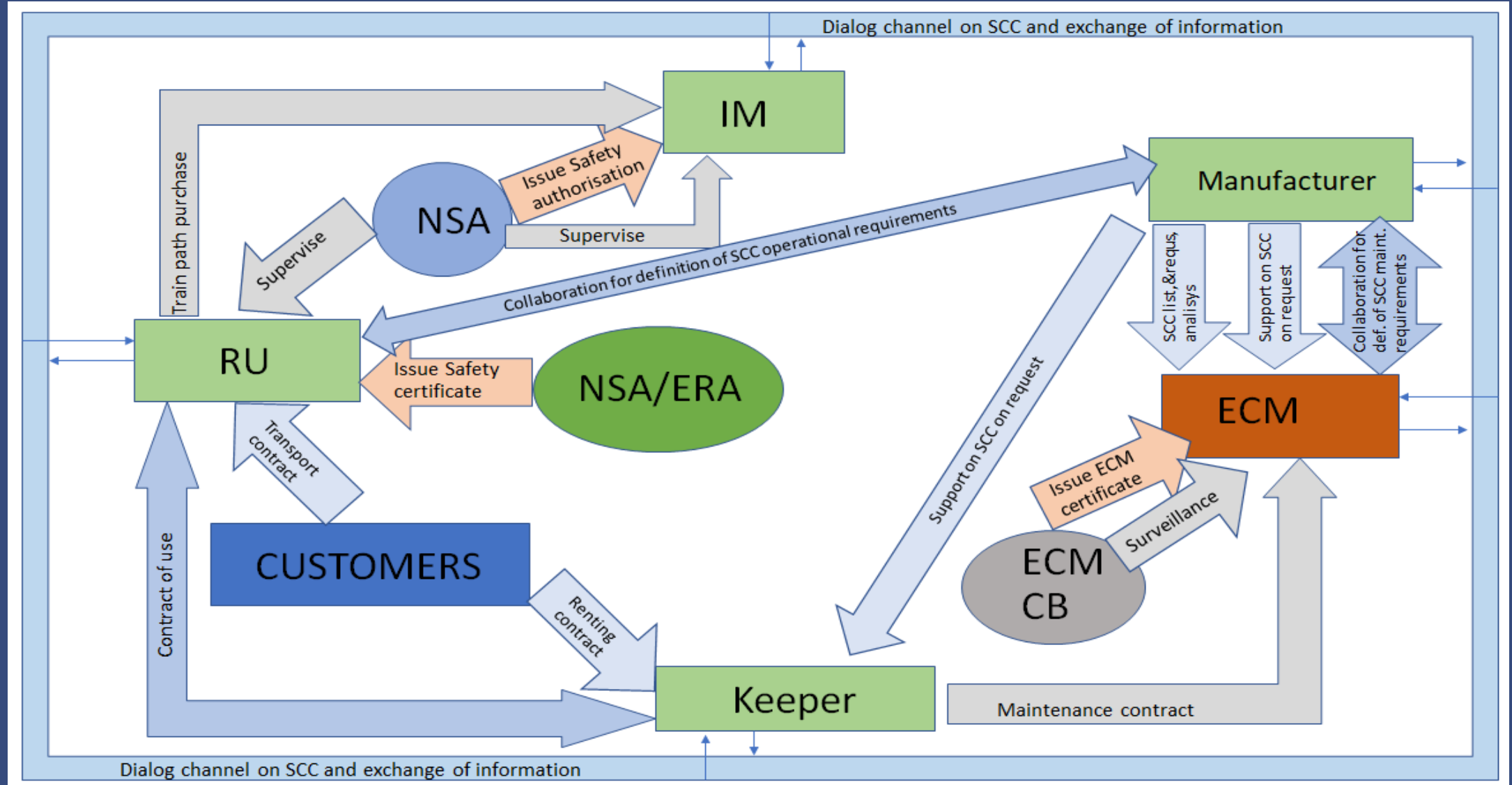
New provisions

- Extension of scope to all vehicles
- Introduction of safety-critical components
 - Safety critical components are components for which a single failure has a credible potential to lead directly to a serious accident as defined in Article 3(12) of Directive (EU) 2016/798
- Reinforcement of exchange of information
 - The ECMs shall use the safety alert IT tool to inform the rail sector about new or unexpected safety relevant findings concerning the maintenance activities (article 4 shall apply from 16 June 2021)
- Annual report from ECM to Certification Body

ECM regulations and related requirements



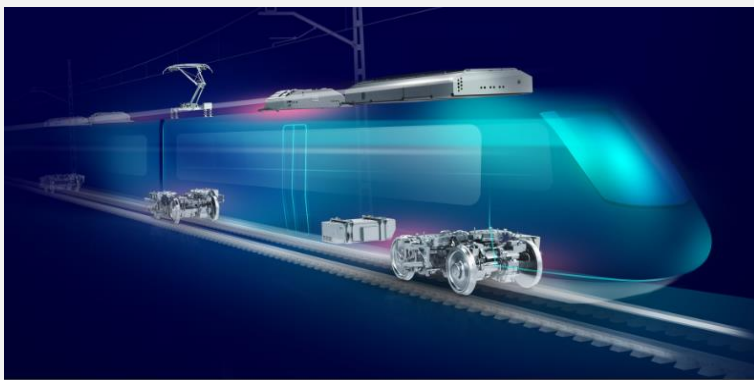
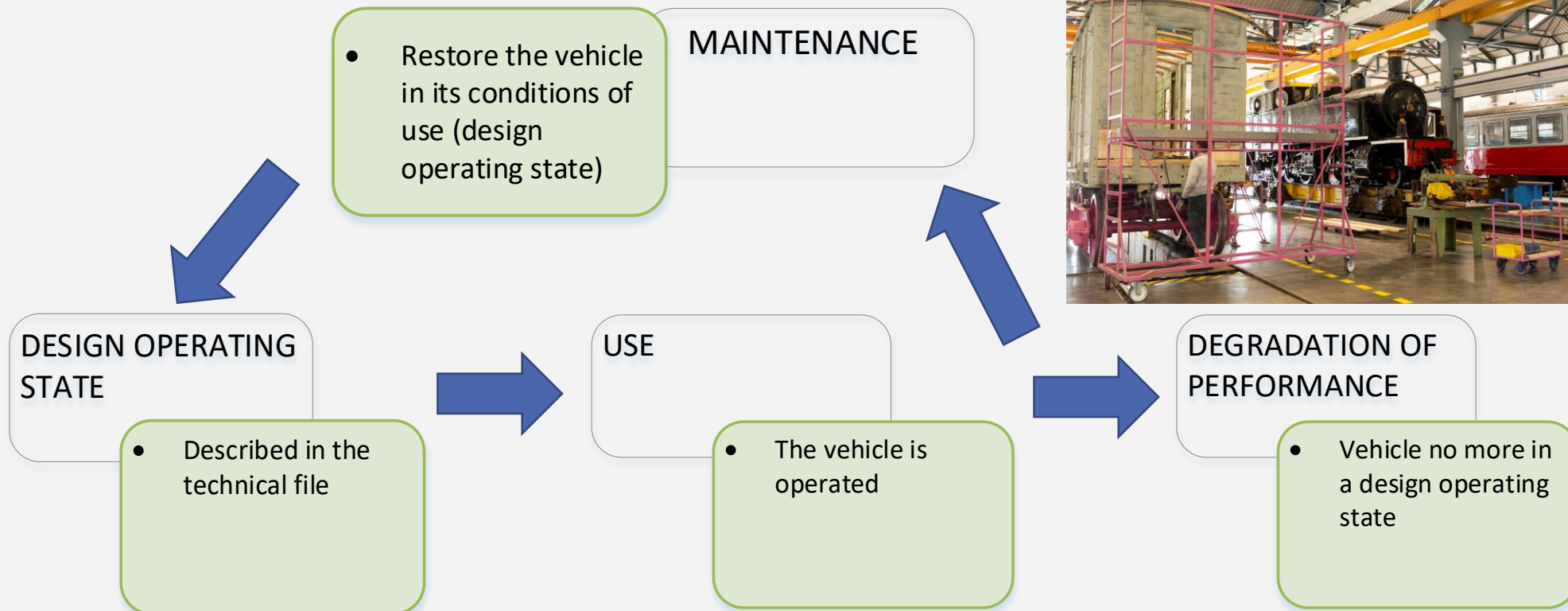
The different railway stakeholders



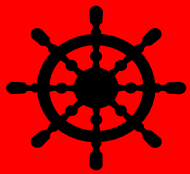
MAINTENANCE SYSTEM and maintenance functions



Maintenance of vehicles



Maintenance management



Maintenance
development



Fleet
management



Maintenance
delivery



Maintenance system

Maintenance management function - ECM 1

The Management Function ECM-F1 shall supervise and coordinate the functions ECM-F2, ECM-F3 and ECM-F4 of the ECM and ensure the safe state of vehicle.

Main TASKS

Coordination of the functions ECM-F2, ECM-F3 and ECM-F4, as defined in the article 14(3) of Directive (EU) 2016/798, allowing the organization to **achieve the maintenance targets** defined in the Maintenance System (e.g. in the Maintenance Policy);

Monitoring of the functions ECM-F2, ECM-F3 and ECM-F4 as defined in the article 14(3) of Directive (EU) 2016/798, granting the **conformity against legislation and standards** and allowing the organization to improve its Maintenance System

Maintenance system processes and procedures

Contractors

Responsibility

Information
management

Developing a strategy

Maintenance system
policy

Maintenance
objectives

Implementing and monitoring strategy

Performance
monitoring

Change
management

Common safety methods (CSM)

CSM Monitoring
(EU) 1078/2012

CSM Risk Assessment
(EU) 402/2013

Maintenance system

Maintenance development function (ECM-F2)

The maintenance development function (ECM-F2) covers the management of the maintenance documentation, including the configuration management, based on design and operational data as well as on required performance and return on experience. It also covers the **compliance with interoperability rules** and the establishment and continuous update of the maintenance file

At the start of operational activities

INPUT

- Initial technical documentation (in particular interoperability limit values)
- Information on operation planned to be performed
- Performance targets
- Information on Safety critical components



OUTPUT

- (First) Maintenance file

During the lifecycle of the vehicle

INPUT

- Maintenance file
- Interoperability limit values
- Information on operation
- Records on maintenance performed and return on experience
- Technological survey
- Legislation (changes)
- Performance targets
- Information on Safety critical components



OUTPUT

- Maintenance file updated

Maintenance system

Fleet Maintenance Management (ECM –F3)

The Fleet Maintenance Management (ECM-F3) covers the removal from/return to operation before/after maintenance and the management of relations with ECM internal/external entities delivering maintenance (ECMs-F4)

Responsibility

Applying the maintenance file to the vehicles through maintenance orders addressed to maintenance delivery.

Collecting and transferring, to maintenance development, information on maintenance performed and operations performed, including at least defects, incidents, accidents, mileage

Management process (Inputs)

Maintenance file

Performance targets

check the availability of the maintenance delivery

Checking that maintenance orders are addressed to qualified ECM F4

Outputs

Maintenance orders

Return to operation

Internal procedures

Contractual agreements

Responsible for declaring the vehicle fit for purpose and fit for its return to operation after the maintenance work has been completed by the ECM-F4

Sharing information from ECM4 with interested parties (RUs, holders, etc.)

Maintenance system

Maintenance delivery (ECM-F4)

The Maintenance Delivery (ECM-F4) is the technical execution of the ordered technical maintenance tasks. The ECM F4 task may be done in Maintenance Workshops. The ECM-F4 covers the management of maintenance orders issued by the ECM-F3, the management of the supply chain, the management of facilities, industrial equipment and tools and the management of maintenance technical works.

Performing maintenance activities

INPUT

- Maintenance orders
- Rolling stock that has to be maintained



Maintenance
delivery

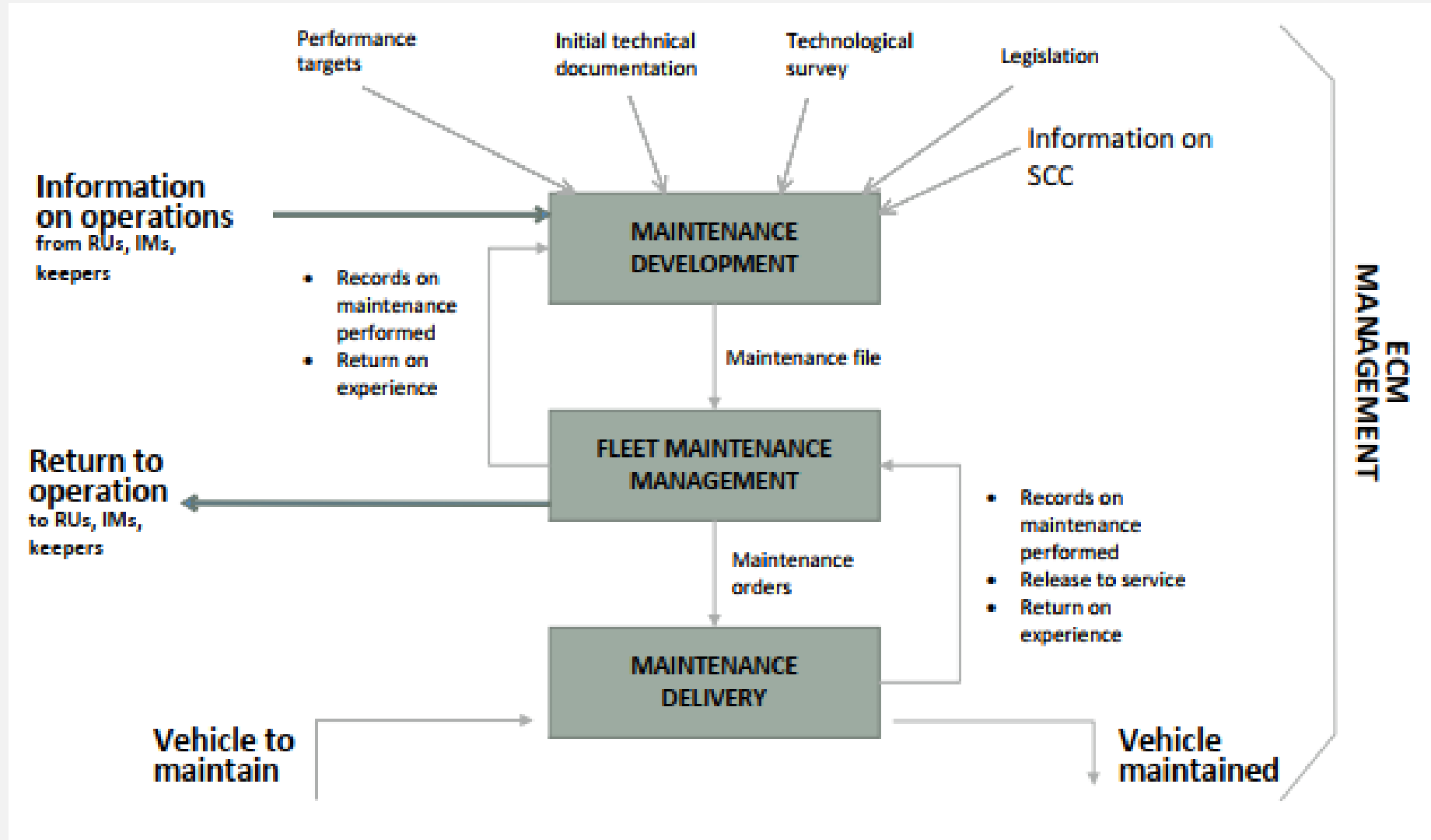


OUTPUT

- Records on maintenance performed including the release to service
- Return on experience if requested
- Rolling stock maintained
 - SCC: exceptional maintenance findings beyond wear and tear if necessary

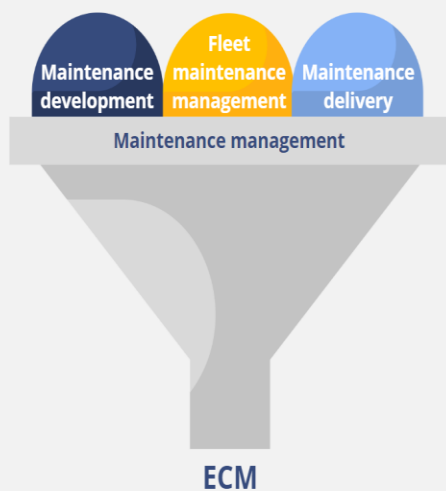
Maintenance system

Articulation of the different functions

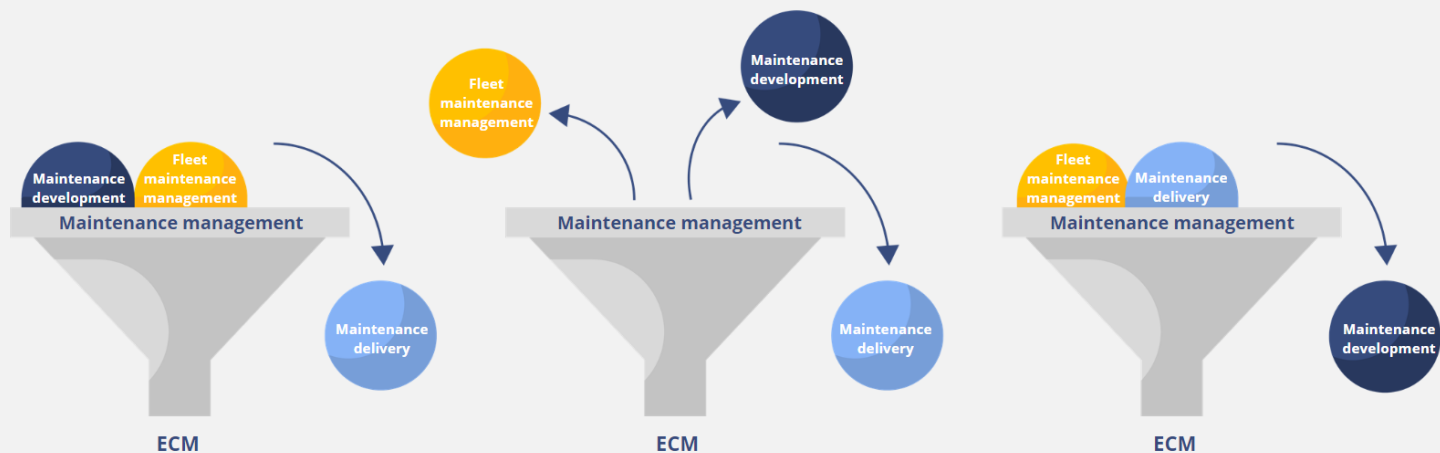


ECM structure

ECM Organisation



ECM Organisation – Other Possible Set up



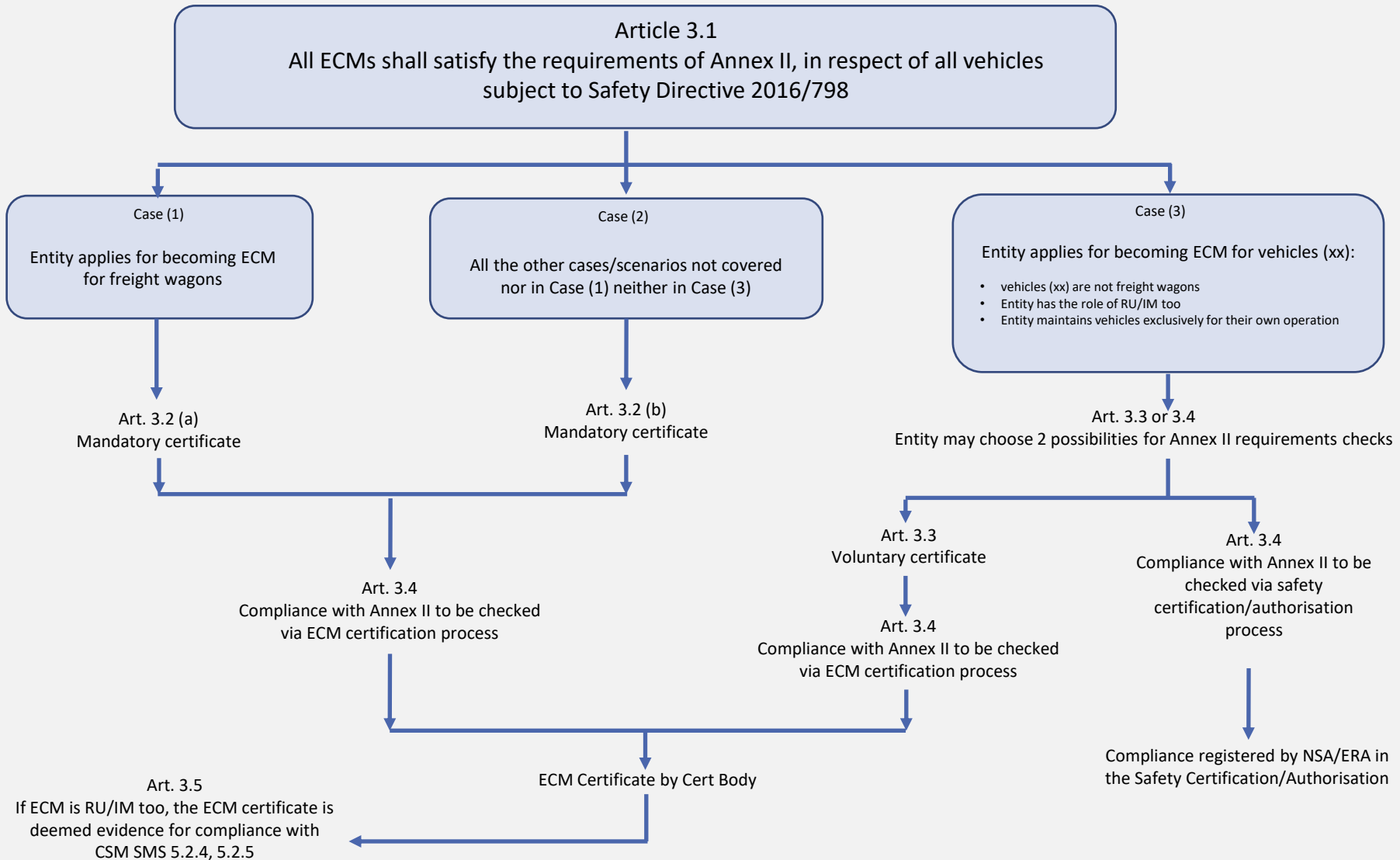
The ECM may outsource a function but not the responsibility!

CERTIFICATION SYSTEM



System of ECM certification

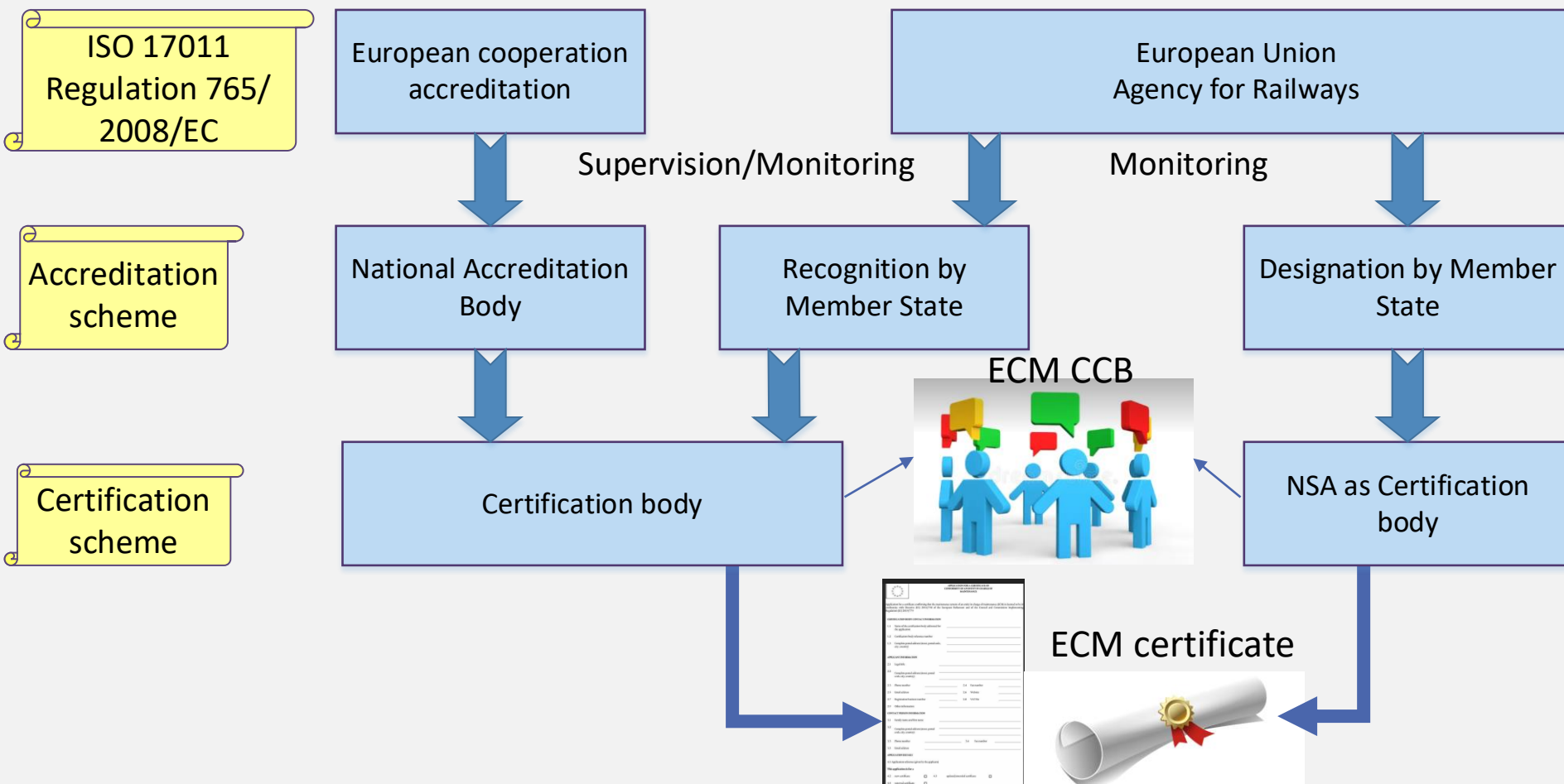
Regulation (EU) 2019/779 and system of ECM certification



Differences with ECM certification

- The assessment done during the SSC assessment is not an ECM certificate
- No indication of the ECM assessment on the safety certificate
- It is only for RU/IM operating exclusively their vehicles

ECM certification process



Conformity assessment Certification of Entities in Charge of Maintenance

Accreditation:
Attestation issued
by a third party to
a conformity
assessment body.
Formal recognition
of the body's
competence to
carry out specific
conformity
assessment
activities.

Certification:
Attestation issued
by a third party
relating to
products,
processes, systems
or people.

EC
2019/779
Article 6 (3)

European Union Agency for Railways
Making the railway system work better for society

Sectorial scheme for accreditation and recognition of ECM certification bodies under Regulation (EU) 2019/779

Version	Changed Section	Date	Description of Change
1.0	All	28/10/2011	Final document after consultation
1.1	3.4	26/02/2012	Integration of EA comment: ERA internal document only. Not for dissemination
1.2	3.4	23/02/2012	Integration of EA comment
2.0	All	11/02/2018	Amendments for the extension of scope
2.1	All	26/04/2018	Amendments for the extension of scope
2.2	All	23/07/2018	Revision before presentation to EA
3	All	11/06/2020	Integration of EA comments
3.1	2.13.1	15/06/2020	Amendment c of 2.13.1
3.2	3.2		Add reference of the certification scheme

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Tel.: 01 55 27 07 10 45 00 / 01 55 27 07 10 46

European Union Agency for Railways
Making the railway system work better for society

Certification scheme for ECM and outsourced maintenance functions under Regulation (EU) 2019/779

130 Rue Muel-Laffont, 1 - BP 20000 - FR-93007 Saint-Denis Cedex
Tel.: 01 55 27 07 10 45 00 / 01 55 27 07 10 46

European Union Agency for Railways
Making the railway system work better for society

COMMISSION IMPLEMENTING REGULATION (EU) 2019/779 of 16 May 2019
laying down detailed provisions on a system of certification of entities in charge of maintenance of vehicles pursuant to Directive (EU) 2016/798 of the European Parliament and of the Council and repealing Commission Regulation (EU) No 445/2011
(Text with EEA relevance)

THE EUROPEAN COMMISSION,
Having regard to the Treaty on the Functioning of the European Union,
Having regard to Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (1), and in particular Article 1(4)(a) and (d) thereof,
Whereas:
(1) Directive (EU) 2016/798 aims to improve access to the market for rail transport services by defining common principles for the management, regulation and supervision of railway safety. Directive (EU) 2016/798 also provides for a framework to be put in place to ensure equal conditions for all entities in charge of maintenance for vehicles through application of the same certification requirements and conditions across the Union.
(2) The purpose of the certification system is to provide a framework for harmonising requirements and methods to assess the ability of entities in charge of maintenance across the Union.
(3) Following the positive evaluation of the current system of certification of entities in charge of maintenance for freight wagons adopted by the Commission on 11 March 2015 by the European Union Agency for Railway Safety, on 27 September 2018, the Agency issued Recommendation REC/REC/18/01 on the review of Commission Regulation (EU) No 445/2011 (2).
(4) Annex II to Directive (EU) 2016/798 sets out the requirements and assessment criteria for organisations applying for a certificate for entities in charge of maintenance (ECM certificate) to be a certificate in respect of maintenance functions performed by an entity in charge of maintenance. In order to be fully applicable these requirements need to be further detailed and specified for the different maintenance functions as referred to in points (a) to (d) of Article 1(4)(b) of that Directive.
(5) Taking into account the wide variety of design and maintenance methods, that system of maintenance should be more oriented on the management requirements, such as the organisation of the entity in charge of maintenance, rather than a specific technical requirements.
(6) Safety-critical components require particular attention and priority in maintenance procedures. However, the reliability aspects of any component are related to the particular design of the vehicle and to the particular functions of the component. It is therefore not possible to establish an exhaustive list of safety-critical components. The essential elements of safety-critical components should be set out.
(7) When designing a new type of vehicle, the manufacturer should determine the criticality of the functions and components of that product by a risk-based analysis and record them in the technical file referred to in Article 1(4)(b) of Directive (EU) 2016/798 of the European Parliament and of the Council (3). The determination of the criticality should take into account how the component is intended to be used and the environment in which it will be used. The entity in charge of maintenance should have access to the relevant parts of the technical file to ensure a full assessment of the criticality of the components for each type of vehicle under its responsibility. The entity in charge of maintenance should identify criticalities by observing and analysing the following and taking all its measurements, and be obliged to provide information as to the safety-critical components identified as such by the manufacturer.
(8) The Commission should be empowered to adopt implementing measures in order to ensure the uniform application of this Regulation.
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The accreditation scheme contains requirements to be used by National Accreditation Bodies or by recognition bodies when assessing certification bodies performing ECM certification. It shall be also used by Members States when designating the NSAs to act as **ECM certification body**

The certification scheme shall be used by the all ECM certification bodies

**Stage 1****Initial application review**

- Review of the application collected to ensure that:
 - Information is sufficient
 - Certification activities can be prepared

Document review

- Assessment of maintenance documentation
- Evaluate presence of necessary processes (requirements)

**Stage 2****On-site audits**

- Evaluate implementation of maintenance system
- Interview of ECM personnel

On-site inspections

- Evaluate appropriateness of competences in place
- Coherence in application of processes(b,c,d) and sampling
- Activities affecting safety annex II

Surveillance activities

- Regular monitoring of representative areas and functions covered by the scope of maintenance system
- Minimum one audit every 12 months

Starting of
certification process

4 months

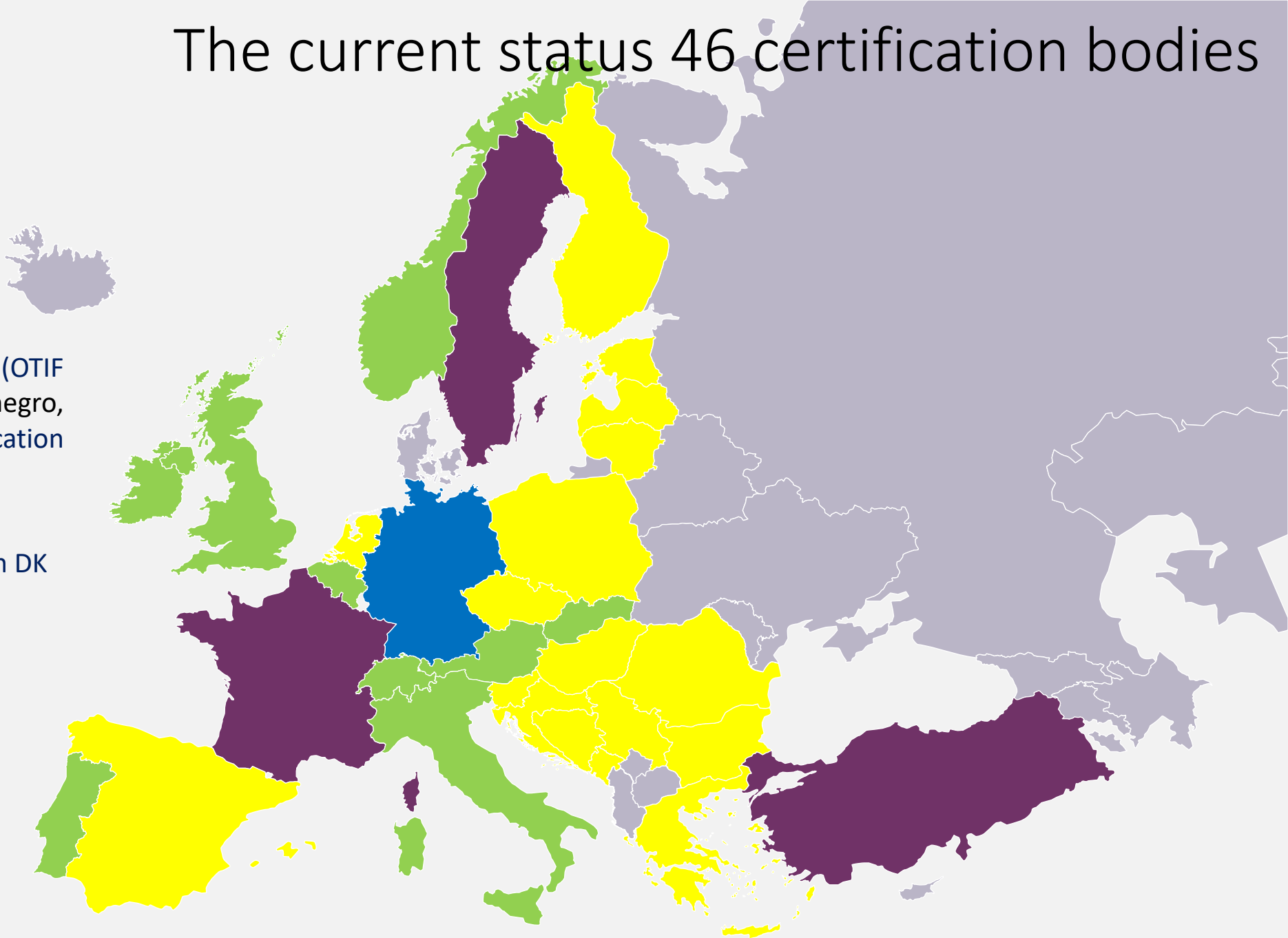
DECISION
Granting of
ECM Certificate

Current situation Implementation of the ECM certification system



The current status 46 certification bodies

-  NSA or Safety authority (OTIF, Serbia, Bosnia, Montenegro, Turkey) acting as certification body 20 NSAs – 20 CB
-  Accreditation 9 MS, Norway, Switzerland, 23 ACBs no CB in DK
-  NSA + accreditation 3 MS
-  Recognition 1 MS 3 RCBs



ECM Certificates

	May 2021	October 2021	June 2022	November 2022	May 2023	October 2023	May 2024	December 2024
ECM certificates valid	488	518	812	851	881	913	940	954
ECM certificates freight wagons	429	439	548	543	547	558	584	584
ECM certificates locomotives	82	127	440	509	559	606	640	655
ECM certificates multiple units	42	67	197	218	241	253	262	272
ECM certificates high speed train	16	20	36	41	44	47	48	49
ECM certificates for passenger carriages	38	59	172	195	221	231	246	256
ECM certificates for OTMs	40	58	207	242	276	309	327	334

Maintenance function certificates

	May 2021	October 2021	June 2022	November 2022	May 2023	October 2023	May 2024	December 2024
MF certificates valid	572	635	970	1013	1052	1122	1170	1190
MF certificates freight wagons	489	516	659	650	651	691	728	728
MF certificates locomotives	100	165	424	485	557	620	672	689
MF certificates multiple units	73	111	260	293	337	373	394	403
MF certificates high speed train	61	41	73	79	89	98	100	99
MF certificates for passenger carriages	31	92	218	244	284	318	336	344
MF certificates for OTMs	68	99	282	328	366	411	450	466

ECM Certification Body schema in Poland

EU ID number	Certification Body Name	Category	Scope
PL/30/0021/0001	Urząd Transportu Kolejowego (UTK)	Freight wagon, Locomotives, Multiple units, Passenger carriages, High-speed vehicles, OTMs, Other	ECM Maintenance development Fleet maintenance management, Maintenance delivery/workshops

- 136 ECMs (10 delivered by Slovakia VIACARE s.r.o.-1 delivered by Bureau Veritas Italia S.p.A- 5 delivered by Quality Austria Certification GmbH)
 - 75 Rus
 - 11 lms
 - 77 keepers
 - 9 manufacturers
 - 61 maintenance suppliers
- 51 maintenance functions
 - 12 maintenance development (0 only for maintenance development)
 - 10 fleet management (0 only for fleet management function)
 - 50 maintenance workshop (34 only for maintenance workshop)

Application guide and resources



The ECM guide

DOMAINS > Trains > Certification of Entities in Charge of Maintenance

Certification of Entities in Charge of Maintenance

Page content

[Related guidance](#)

[Legal framework](#)

[Related documents](#)

An Entity in Charge of Maintenance (ECM) plays an important safety role in the European railway system by ensuring that the vehicles for which it is in charge are in a safe state of running by means of a system of maintenance.

This European system of certification for ECMs has been set up in Regulation 2019/779.

This regulation sets out:

- The criteria to be applied for the accreditation or recognition of ECM's and maintenance functions' certification bodies;
- The requirements and assessment criteria applicable for the certification of ECMs and the certification of maintenance functions.

The system of certification provides evidence of responsibility and traceability of the maintenance undertaken on vehicles. It sets out also a certification process that ensures a transparent and structured management system for maintenance functions described in article 14(3) of Directive (EU) 2016/798 and will help to reduce the burden and duplication of controls and/or audits across the rail sector.

Driving these certification processes, mandatory certification scheme for ECMs and maintenance functions is available for the sector and form the reference to conduct the certification activities.

ERA publishes the list of accredited and recognised certification bodies, as well as the ECM certificates in the [ERADIS database](#).

Related guidance



Guidance on ECM certification process

English (4.35 MB - PDF)

[View document](#)



Guidance for entities in charge of maintenance for the use of SAIT

English (1.06 MB - PDF)

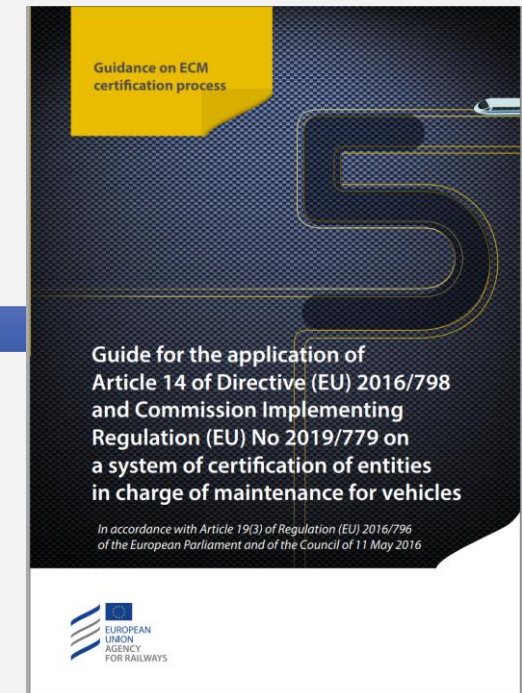
[View document](#)


Legal framework

Commission Implementing Regulation (EU) 2019/779 of 16 May 2019 laying down det...

ERA 1172/002 V3.1 : Sectorial scheme for accreditation and recognition of ECM c...

ERA 1172/003 V1.1 : Certification scheme for ECM and outsourced maintenance fun...






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and safe railway system without frontiers.

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Events & Training
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2024 Railway Safety and Interoperability

The Agency is pleased to introduce the 2024 edition of this report, a key element of our continuous effort to better understand the safety and interoperability of European railways and their development over time.

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EVENTS & TRAINING > ERA Training Catalogue



ERA Training Catalogue

To support its stakeholders with the implementation of the EU legislation and enhance railway safety across the Union, ERA is building an ambitious training portfolio open to rail professionals and safety specialists.


[Click here to find all the Events & Training organised by the Agency.](#)

Page content

Training


e-learning and interactive materials

Training




Organisational Just Culture

28-30 October, 8 November 2024. Online. Registration closed.




Safety Leadership Training

28 November 2024, Valenciennes, France. Register now!



Safety Leadership Training


21 January 2025, Valenciennes, France. Register now!



HOF in SMS Training


25-27 March 2025, Valenciennes, France. Register now!

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Introduction



1. Some elements of the ECM history



2. Vehicle types under Regulation (EU) 2019_779



3. Entity in charge of maintenance



4. The maintenance system



5. Release to service and return to operation

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