

ECM SCOPE EXTENSION

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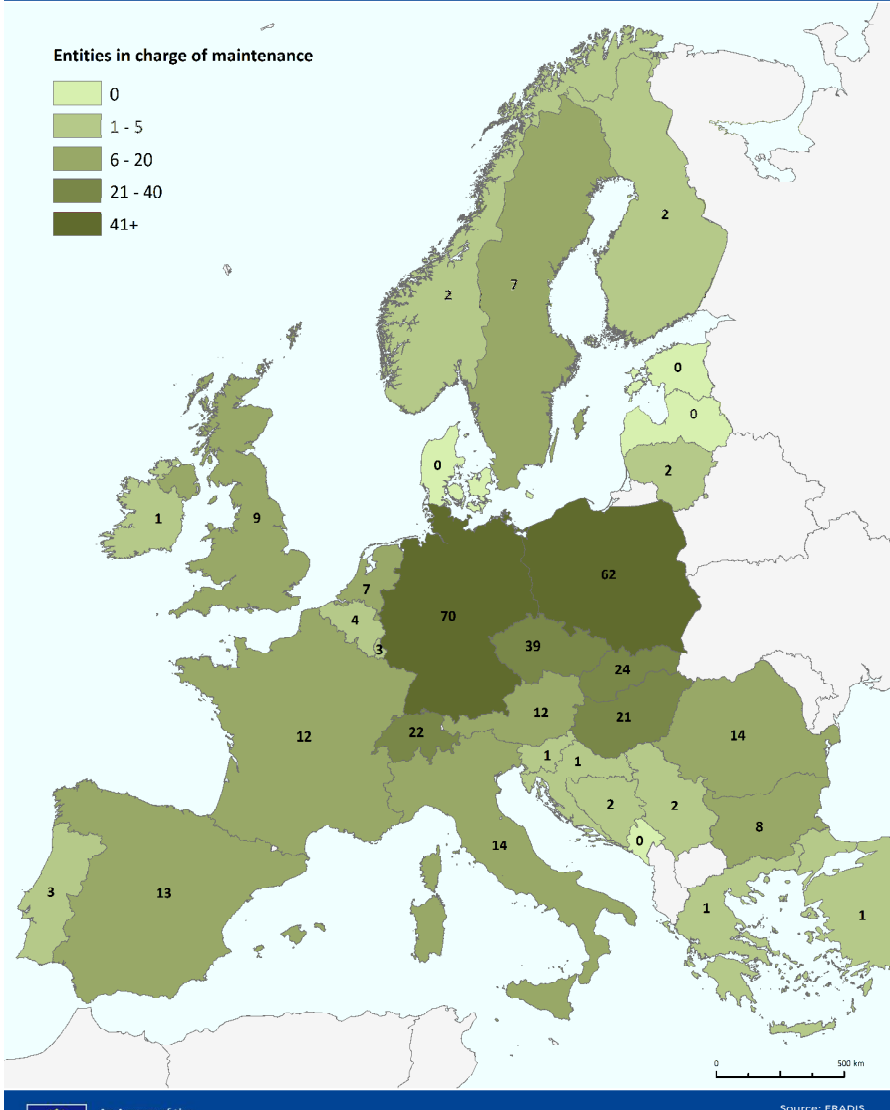
BeWag seminar

26 April 2017

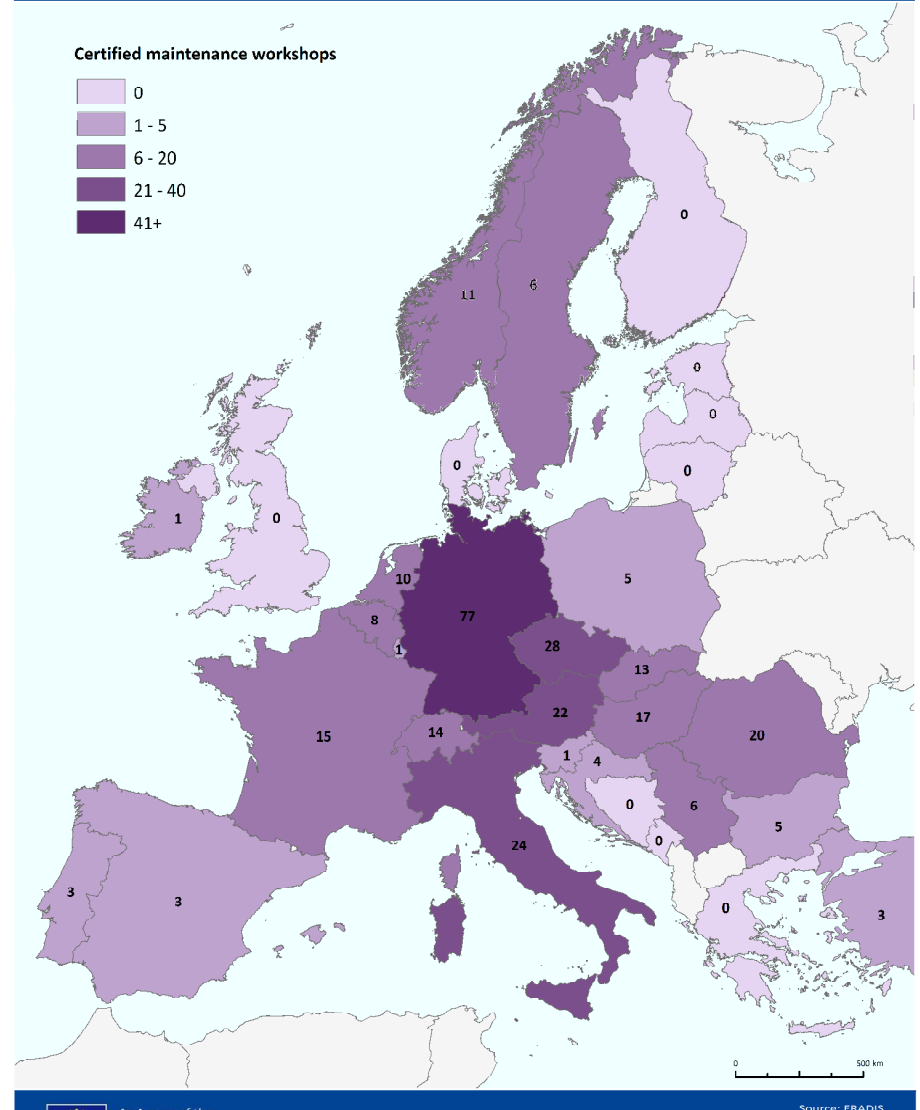
- › **Purpose on the presentation:** Inform on future developments concerning the ECM extension of scope

- › **Presentation main points**
 1. Current state (nbr of ECMs and MWs certified)
 2. Extension of scope
 1. Which method ?
 2. Timeline ?

Entities in Charge of Maintenance (ECM)



Certified Maintenance Workshops



Scope of the mandate

The mandate addressed to the Agency requests in particular to:

- examine the feasibility of extending the scope of the certification of the entities in charge of maintenance to all vehicles;
- examine the feasibility of extending the scope of the certification of maintenance workshops to all vehicles;
- Identify common mandatory principles for the maintenance of the safety critical components;
- Examine the feasibility of the certification of entities and workshops specialised in the maintenance of specific critical components;
- Making amendments to Regulation 445/2011 as necessary to ensure better understanding and avoid risks of misinterpretation; and
- Propose revision of articles 1,2,6,9 and 12 and annexes of Regulation 445/2011



- Issuing a recommendation to the European Commission
- Issuing a revised accreditation scheme after adoption of the implementing act mentioned in Article 14(8) of Directive 2016/798

Start Date	1 September 2016
	<p><u>Phase 1: Preliminary phase – Mai 2017</u></p> <ul style="list-style-type: none"> • Analysis on NSA questionnaires • Draft definition of safety critical components • Quick scan of national rules addressing maintenance of vehicles
	<p><u>Phase 2: Issuing recommendation to EC</u></p> <p>3 working party meetings (23 and 24 May 2017, 25 and 26 October 2017, March 2018)</p> <p>-> draft implementing act, explanatory note, guide, impact assessment end of May 2018</p>
	<p><u>Phase 3: Issue approved accreditation scheme</u></p> <p>June 2019</p>
Working party	NSAs and RBs , OTIF , ECM certification bodies ,CEN TC256 WG48
Timescale	36 months

Analysis of NSA concerns

- A report was issued in December 2016 on analysis of NSA concern.
- All NSAs answered to the questionnaire. Serbian and Swiss NSA answered too.
- 10 NSAs answered as National Safety Authority, 17 NSAs answered as ECM certification body and 2 NSAs answered twice, first as National Safety authority and secondly as ECM certification body.

Report

*Revision of the ECM certification
Preliminary Phase*

*Part 1: Analysis of NSA concerns
Part 2: Safety critical components*

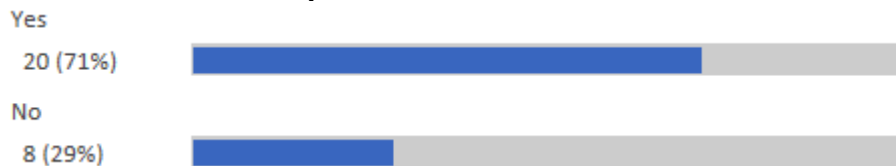
	<i>Drafted by</i>	<i>Validated by</i>	<i>Approved by</i>
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<i>Position</i>	Project officer	HoS	HoS
<i>Date</i>	13/12/2016	14/12/2016	20/12/2016
<i>Signature</i>	(signed)	(signed)	(signed)

The revision and scope extension of the regulation 445/2011

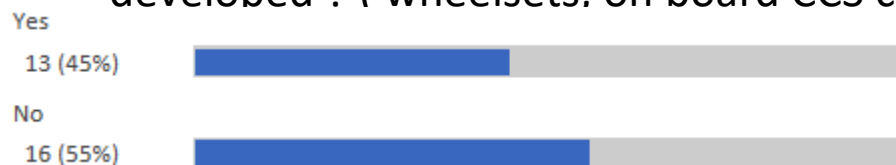
- Changes/adjustments to be done on the Regulation 445/2011:
 - Introduce the return of experience,
 - Clarify “safety activity in maintenance field”,
 - Include competencies for the qualification of maintenance staff,
 - Develop adapted certifications for small workshops.
- Do you consider a scope extension of the ECM scheme to other vehicles as an advantage?



Do you consider that certification of maintenance workshops should be mandatory?



Do you think that a certification of maintainers of components should be developed ? (wheelsets. on board CCS components)



Analysis of NSA concerns: Conclusions of the questionnaire.

- Revision of Regulation 445/2011: Necessary to clarify the annexes and to precise the responsibility of each railway stakeholder.
- Extension of scope to all vehicles: Big majority of NSAs in favour as ECM certification provides to NSAs more confidence on the ECM maintenance system. Mandatory aspects have to be discussed in the working party organised by the Agency.
- The NSAs want to continue their activities of ECM certification in case of scope extension but they are afraid on the increase of requests and workload. Keep the possibilities of third parties accredited for the ECM certification.
- Even if the business and sector made the certification of maintenance workshop for freight wagons mandatory, it could be more effective to have the mandatory certification to guarantee the same level of competencies in all the maintenance workshops and to guarantee the supervision by third party.
- There is no need to impose a certification of maintainers of safety critical or safety related components but it is strategic to define the list of these components.
- With the ECM certificates, some supervision activities from NSA relating to the maintenance of wagons have been reanalyzed. The ECM certificate is a presumption of conformity and must be taken into account.

- **Legal base**
 - Agency Regulation 2016/796: Art 19 (L)
Remark: Different but complementary to art 19(k) related to Interchangeable Spare parts.
 - Interoperability Directive 2016/797: annex III
 - Safety Directive 2016/798: Art 29 and annex III
- **First objective:** Propose a common definition or common understanding of ‘safety critical components’
- **Way the Agency proceeded**
 - Consultation of CEN/CENELEC, 1 voluntary IM, 1 voluntary ECM, NSAs
 - Comparison with civil aviation (CS 25 = Certification specifications and Acceptable Means of compliance for Large Aeroplanes (Amendment 18 of 22/06/2016) and PrEN50126:2015

Safety critical components. What could be a component?

- From technical literature:
 - **A technical system** may be composed of **technical subsystems** that are composed of **basic elements**: Components and connections
 - Technical system and basic components are considered regarding criticality
- For E/E/PE technical systems: Basic components may be chips (themselves composed of transistors), electrical devices (e.g. switch), electronic components (e.g. condensators), wires, cardboard and ... software. To assemble all those basic components: Complex architecture.
- When the architecture of technical systems become more complex, it becomes difficult to consider individually all the basic components
- **Proposal**: To cope with complexity aspects, the term ‘components’ in ‘safety critical components’ within the EU railway legal framework means either:
 - A technical system; or
 - A technical subsystem; or
 - an individual basic component when it is convenient for (mechanical) systems with low complexity.

Safety critical components. What could mean criticality? Several approaches.

- Criticality by danger: “A single failure of a technical system leads to a catastrophic accident”. Attention: This can lead to high increase of costs.
- Criticality based on risk: High frequency and low gravity effects or low frequency and high gravity effects.
- Approach FMECA (Failure Mode, Effects and Criticality Analysis) used, among other, in EN IEC 61508 and CS 25.

- $\text{Criticality} = D * F * G$

- D: Detection possibility of (precursors to) failure mode,
- F: Frequency of occurrence of a failure mode,
- G: Gravity of the effects (consequences)

Detection possibility may be defined in 4 levels:

- 1 evident: Automatic alarm or information system
 - 2 possible: Need intervention of a person (technical inspection, maintenance staff, driver, on-board staff)
 - 3 Probable: Needs a dismounting or a specific testing system (NDTs in maintenance))
 - 4 impossible: No possibility of any detection before failure.
- Criticality in maintenance: criticality depends on expertise for performing tasks and taking decisions and on use of tools kept under control (e.g. calibration)

Safety critical components. Further steps

This report will be used in the project of revision of ECM certification to get:

- Contributions from EC, NSAs and RBs
- Working paper (input) for revision of ECM certification and for comment agreement about 'safety critical components'.



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