The contribution of the manufacturing industry to the assurance of safety of the European railways system

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Railway Safety: The way forward

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UNIFE membership

- 65 direct members including
  - All major European locomotive and passenger rolling stock manufacturers, signalling companies and rolling stock sub-system suppliers
  - All European manufacturers of wheels and axles
  - Infrastructure builders and component manufacturers
- Membership largely involved in locomotives and passenger train maintenance
- Not so much involved in wagons maintenance
The safety of the European rail transport system is high in comparison with any other mode of transportation and has continuously improved during the last decade.

UNIFE strongly believes that a further safety improvement of an open interoperable system can only be based on harmonised rules and transparent processes of the safety authorities.

In the short term, any exceptional transitional change in rules should be risk based and controlled at European level by the ERA, so as to avoid any step back.

In the medium term the recent dramatic Viareggio accident should trigger new reflections on the role of the different actors in the assurance of safety during the whole product life, in particular for complex systems.
25 years ago, the historical incumbent operators acted as design authorities from the original design of the rolling stock up to the very end of the life cycle.

Today, manufacturers of complex rolling stock take full responsibility of the original design of their products and systems.

But it will become more difficult to identify who is the design authority, able to bring assurance of safety during the whole product life.
Original Equipment Manufacturers do not hold any responsibility in the safe operations of the European railways systems as per the safety Directive.

However the authorisation to put in service sub-systems or the certification of the Interoperability Constituents do not of course discharge the OEM of their liability.

As a result of the evolution of their role as system designers in the last decades, system integrators have had to develop in house safety management organisations and safety management systems.
The relations between actors during the products life is still very much a result of the historical distribution of roles

Manufacturers are generally not the Entities in Charge of Maintenance (ECM) of the products that they put on the market, even when they operate the maintenance workshops, under contracts based on reliability objectives.

Even though the manufacturers propose a preliminary maintenance documentation, the operators/ECM develop maintenance plans that result from their own operational experience.
Return of experience

- In most cases, after the end of the warranty period, the Original Equipment Manufacturer is not fully aware of the modifications that might have been brought to safety critical parts or sub-systems.

- The historical high safety level of the system is dependant upon the technical knowledge of the incumbent operators who also generally act as Entities in Charge of Maintenance.

- The OEM cannot in most cases take all the benefit of operational experience to modify their products or adjust their maintenance recommendations for better reliability and safety.
The system integrators can in general no longer provide safety assurance after the end of the warranty period.

Components manufacturers can in general only accept liability for faulty products in case of demonstrated hidden defects.

Hence, in an environment where the operators will progressively loose their technical expertise, the necessity of a certification system for the Entity in Charge of Maintenance that will ensure that:

- proper interfaces are put in place with the Safety Management System of a clearly identified design authority.
- proper information from the operator is given back to the manufacturers of safety critical sub-systems and parts, through the ECM.
■ Regular information on reliability figures and on events that could have led to accidents are necessary for a good return of experience

■ but also all relevant information on operational conditions, as well as on modifications that have been brought to the products.

■ The monitoring of the behaviour of critical components as well as the control of the modifications are key elements of the safety management

■ Who is the design authority at any moment of the product life should be made more explicit in the future at vehicle level as well as at the level of safety critical sub-systems and parts
Critical parts and Interoperability constituents

- The status of safety critical part does not exist in the European railways regulatory framework

- Interoperability Constituents are not selected in relation with their safety criticality and IC specification does not deal with maintenance rules

- A clear status for Safety Critical Parts should be developed that would clarify the responsibility of the actors in the life duration of the product

- The specification of Safety Critical Parts that are subject to ageing effects (e.g. axles) should also include harmonised maintenance rules
The UNIFE has been preparing for several months a research program proposal for the FP7 third call

- Design fatigue limit – innovative methods to determine the fatigue limit for existing and new steel grades including safety considerations. Improvement of the EU standards.
- Improved design of the axles for roughness including development of painting and coating innovative solutions with regard to environmental requirements.
- Simplified non destructive testing (NDT) techniques that will allow inspection under the train without any disassembly and train stopping for several days.

The project will involve all European wheels and axles manufacturers (UNIFE-ERWA members) as well as several key operators (SNCF, DB, Trenitalia…)

But European institutions have also to play their role in offering conditions for a better coordinated long term research plan for European railways
THANK YOU FOR YOUR ATTENTION!