



SAFETY MANAGEMENT



Ardanuy

SAFETY EVALUATION OF RAILWAY SYSTEMS AND COMPONENTS
IN ACCORDANCE WITH REGULATIONS CENELEC. RAMS ENGINEERING



The de regulation of railway transport in the European Union requires the creation of a new harmonized regulation framework, supported by European community directives, which implies a new challenge for the companies and the governing bodies in the sector

The Technical Specification for Interoperability (TSI) identifies the main requirements to be met, through the various subsystems and elements, the fulfilment of these requirements and so guarantees the technical, qualitative and safety compatibility of the railway systems.

The CENELEC safety regulations are a reference point for analysing and demonstrating the safety of the systems.

CENELEC Regulations

EN50123. Specification and demonstration of RAMS

EN50128. Software for the protection and control systems of the railway system

EN50129 Electronic systems related to the safety of the railway line

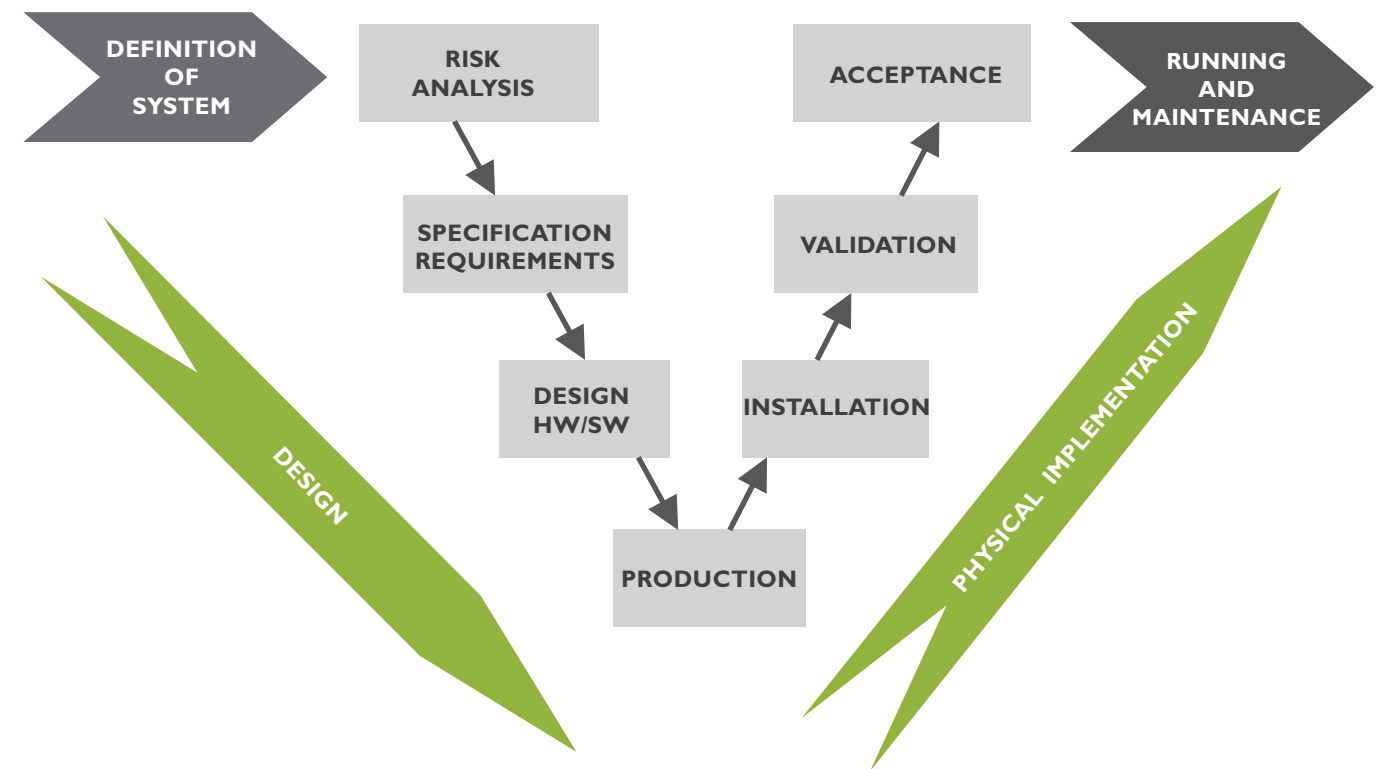
APPLICATION

These regulations are to be applied directly to the safety and control railway installations. Nevertheless, they provide robustness to any system, for this reason their application is widening both at a railway system level and for subsystems within the railway track (communications and electrical installations).

SAFETY CASE OR SAFETY DOSSIER

There is documented evidence that a product, subsystem or system fulfils the specified safety requirements for which the functions have been conceived.

- **GENERIC PRODUCT:** It demonstrates the safety of a equipment that can be used in different applications (signs, axle monitor, track circuit, interlocking, etc.) It is carried out in the design phase.
- **GENERIC APPLICATION:** It demonstrates the safety of a product that can be used for a type of application or applications with common functions.
- **SPECIFIC APPLICATION:** It demonstrates the safety of a specific application (Madrid - Valladolid high speed train signalling system, Line 2 Alicante tram signalling system, etc.), using the SC of the installed teams. This is carried out during the implementation of a project or construction work.
- **ISA:** Independent evaluator of the SAFETY CASE carried out by the manufacturer or technician. It should be a company recognised by the Infrastructure Manager.
- **LIFE CYCLE:** The life cycle provides a structure for the planning, management, control and the supervision of all aspects of the system. It is the basis for the development of the Safety Dossier.



SERVICES OFFERED BY ARDANUY ENGINEERING

- Implementation of the Safety Dossier, the generic product, generic and specific application (support to the manufacturer, technician).
- Independent Safety Evaluator (ISA), both for products and generic applications for manufacturers as for specific applications for contractors and railway administrators.
- RAM and Safety Assessments in the design phase of the different subsystems comprising the railway line: Infrastructure, power, command-control and signalling.



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