

The Europe's Rail Joint Undertaking (EU-Rail) has published the first draft PRAMS Collection following SC2.3. PRAMS documentation refers to Performance, Reliability, Availability, Maintainability, Safety and HOF (Human and Organizational Factors).

This set of documents enables the deployment of modular and interoperable safety-related systems (called building blocks) in the context of ERTMS throughout their whole lifecycle from EN 50126; phases 1 to 10 for the building blocks development cycle and phase 11 for the management of evolutions of such systems during their operational and maintenance phase.

The documentation intends to improve the time and costs related to PRAMS management and assessment/authorization (e.g. AsBo, NoBo) using the current EU regulations and directives (e.g. TSI CCS (EU) 2023/1695, CSM-RA (EU) No 402/2013) and European standards (CENELEC 50126, 50128/50716, 50129). It must be noticed that several adaptations regarding safety management will be required in the above existing regulations to fully benefit from the Standardized Reference Architecture defined by the System Pillar domains. These changes have been identified in the STIP (Standardized TSI Input Plan).

The PRAMS Collection for SC2.3 is composed of the following documents:

- PRAM documentation:
 - **System Concept - Performance KPI definition:** this document defines the Performance KPIs and Performance Targets for a modular railway architecture and analyses the RAM Performance needed to reach overall Performance Targets
 - **System Requirements Specification - Condition Based Maintenance Deployment:** this document specifies a set of CBM requirements and related inputs for STIP, including examples and use cases, taking into consideration the scope, the concept and the limitations of CBM.
- HOF documentation:
 - **PRAMS Plan - Human and Organizational Factors:** this document establishes a process for integrating the HOF into the train/wayside specifications and, in general, to provide guidance to railway companies managers and engineers regarding HOF principles and their practical application.
- Safety documentation:
 - **European Railway Hazard Database:** this document presents a collection of harmonized accidents, safety hazards inherited from different national or international databases (e.g. from ERA, RSSB, EPSF, EBE, AB-EVE, TSI CCS Subsets V4.0.0) to ease the realization of PRAMS hazards identification during project implementation. The document is divided into four parts:
 - PRAMS Log - Main Hazard Database
 - PRAMS Log - Part 1 Accidents
 - PRAMS Log - Part 2 Operational Hazards
 - PRAMS Log - Part 3 System Hazards
 - **Generic Design Safety Case – Strategy:** this document defines the management of safety cases (according to EN 50129) in a Standardized Reference Architecture defined by the System Pillar domains. This strategy intends to ease the realization of the safety cases and assembly of the different generic modular systems and applications into specific applications by standardizing the integration activities and mastering the safe handling of the control loops (e.g. exported constraints) at all levels of the railway system.
 - **Evolution management of safety-related modular systems - Process and organization:** this document focuses on phase 11 of EN 50126 dealing with operational and maintenance activities. The goal is to take benefits of the Standardized Reference Architecture defined by the System Pillar domains to improve the management of evolutions of the building blocks in a modular architecture from impact analyses of the changes (including software development and testing aspects) until their final re-assessment/authorization.

The set of documents has received endorsement from the railway sector (industry and operators). It is expected that they will help with improving the TCO (Total Cost of Ownership) and time to market of future modular railway systems and evolutions.