


PRAMS Log - Main Hazard Database

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Abstract	This document details the European Railway Harmonized Hazards Database to be used for risk assessment by ERJU SP Domains in accordance with ERJU PRAMS Plan and guidelines.
Config Item	PRAMS Log
Document ID	European Railway Hazard Database/PRAMS_Log_Main_Hazard_Database#596660  PRAMS Log - Main Hazard Database
Classification	Public
Status	Open
Version	1.0
Revision	596660
Last Change Date	28.05.2025

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1 Introduction

1.1 Purpose and audience

SPPRAMSS-7063 - Purpose and audience

This document details the ERJU Hazard Database to be used by ERJU SP Domain Safety Managers following the ERJU PRAMS Plan and SEMP Process.

The ERJU Hazard Database covers the need of having a common set of accidents and hazards that shall be used by all SP Domains to perform their safety analyses.

This is due to the fact that today there are no common sets of accidents or hazards in Europe, although they are mostly common among the different countries. Today, suppliers/RU/IM shall dig into each NSA documentation, if existing (in case a project involves several countries) to find a potential list of accidents / hazards or have to create their own list in case nothing is publicly available.


The ERJU Hazard Database represents a centralized, standardized and harmonized hazards database combining all railway accidents categories, top-level hazards and refined ones and is a key part of the general safety methodology proposed by the PRAMS team to be applied within the SP domains and for future projects.

Please consider that at this stage the ERJU Hazard Database contains current state of knowledge and it is focusing only on Safety. The ERJU Hazard Database is intended to be extended to report both safety hazards and RAM equivalents in future revisions.

[✓ Done / To be decided]

1.2 Input for ERJU Hazard Database

SPPRAMSS-7067 - Main Input: CSM-ASLP




According to the ERA Recommendation of future CSM-ASLP  SPPRAMSS-6866 - [\[ERA-REC-1219-CSM-ASLP\]](#) the category A events are used to categories accidents that may happen when a hazard occurred.


[✓ Done / To be decided]

SPPRAMSS-7074 - Further Inputs

Further inputs were used to check coverage and completeness of the list are reported in the below list:

-  SPPRAMSS-4469 - [\[RSSB2023\]](#)
-  SPPRAMSS-7052 - [\[ESPF - Arrêté du 4 janvier 2016 relatif à la nomenclature de classification des événements de sécurité ferroviaire\]](#)
-  SPPRAMSS-7093 - [\[VDE V 0831-103\]](#)



-  SPPRAMSS-7094 - [AB-EBV]
-  SPPRAMSS-11039 - [SUBSET-091]
-  SPPRAMSS-11040 - [SUBSET-113]

 Content to be approved]


1.3 Terms and Abbreviations

SPPRAMSS-346 - accident

'accident' means an unwanted or unintended sudden event or a specific chain of such events which have harmful consequences; accidents are divided into the following categories: collisions; derailments; level crossing accidents; accidents to persons involving rolling stock in motion; fires and others;

[SOURCE:  SPPRAMSS-337 - [Directive (EU) 2016/798] Article 3 Definitions (11)]  Content to be approved, [Abbreviation], [Directive (EU) 2016/798] Article 3 Definitions (11)]


SPPRAMSS-3552 - ERJU Hazard Database

ERJU Hazard Database. A collection existing hazard lists of known hazards and accidents which is initiated and maintained by ERJU's PRAMS domain with the aim to provide a harmonized set of hazards/accidents.  Done / To be decided, [Abbreviation], [Source Reference]]


SPPRAMSS-4044 - Hazard

Condition that could lead to an accident


Note 1 to entry: The equivalent definition in [IEC 60050-903:2013, 903-01-02] refers to "harm" instead of "accident".

Note 2 to entry: A Hazard sits at the boundary of the system under consideration. [ERA-REC-116-2015-GUI]  Content to be approved, [Abbreviation], [Source Reference]]

SPPRAMSS-7602 - Operational Hazard

Hazard whose cause is related to a failure in the application of an operational scenario/procedure (e.g. hazard due to operator or signaller or driver error) and/or to external events. These hazards are managed by means of "Operational Hazard" Work Item.  Content to be approved, [Abbreviation], [Source Reference]]

SPPRAMSS-7603 - System Hazard

Hazard whose cause is related to a failure of one of the system functions/components. These hazards are managed by means of the "Hazard" Work Item.  To be approved completely, [Abbreviation], [Source Reference]]

1.4 List of References

SPPRAMSS-6866 - [ERA-REC-1219-CSM-ASLP]

RECOMMENDATION ERA1219 OF THE EUROPEAN UNION AGENCY FOR RAILWAYS on Common Safety Methods for assessing the safety level and the safety performance of railway operators at national and Union level [🔒 Content to be approved, [Attachments], external reference - https://www.era.europa.eu/content/recommendation-era1219_en]

SPPRAMSS-4469 - [RSSB2023]

Rail Safety and Standards Board Ltd.: Research and Development Common Hazards for the Management Of Industry Safety (CHAMOIIS). T1194, 2023. [🔒 Content to be approved, [Attachments], external reference - <https://www.rs.sb.co.uk/>]

SPPRAMSS-7052 - [ESPF - Arrêté du 4 janvier 2016 relatif à la nomenclature de classification des événements de sécurité ferroviaire]

[🔒 Content to be approved, [Attachments], external reference - <https://www.securite-ferroviaire.fr/reglementation/arrete-relatif-la-nomenclature-de-classification-des-evenements-de-securite-ferroviaire>]

SPPRAMSS-7093 - [VDE V 0831-103]

DIN VDE V 0831-103 VDE V 0831-103:2020-09
Elektrische Bahn-Signalanlagen
Teil 103: Ermittlung von Sicherheitsanforderungen an technische Funktionen in der Eisenbahnsignaltechnik [🔒 Content to be approved, [Attachments], external reference - <https://www.vde-verlag.de/normen/0800686/din-vde-v-0831-103-vde-v-0831-103-2020-09.html>]

SPPRAMSS-7094 - [AB-EBV]

Ausführungsbestimmungen zur EBV (AB-EBV) [🔒 Content to be approved, [Attachments], external reference - <https://www.bav.admin.ch/bav/de/home/rechtliches/rechtsgrundlagen-vorschriften/ab-ebv.html>]

SPPRAMSS-11039 - [SUBSET-091]

Safety Requirements for the Technical Interoperability of ETCS in Levels 1 & 2
[🔒 Content to be approved, SUBSET-091_v400.pdf, external reference - https://www.era.europa.eu/system/files/2023-09/index027_-_SUBSET-091_v400.pdf]

SPPRAMSS-11040 - [SUBSET-113]

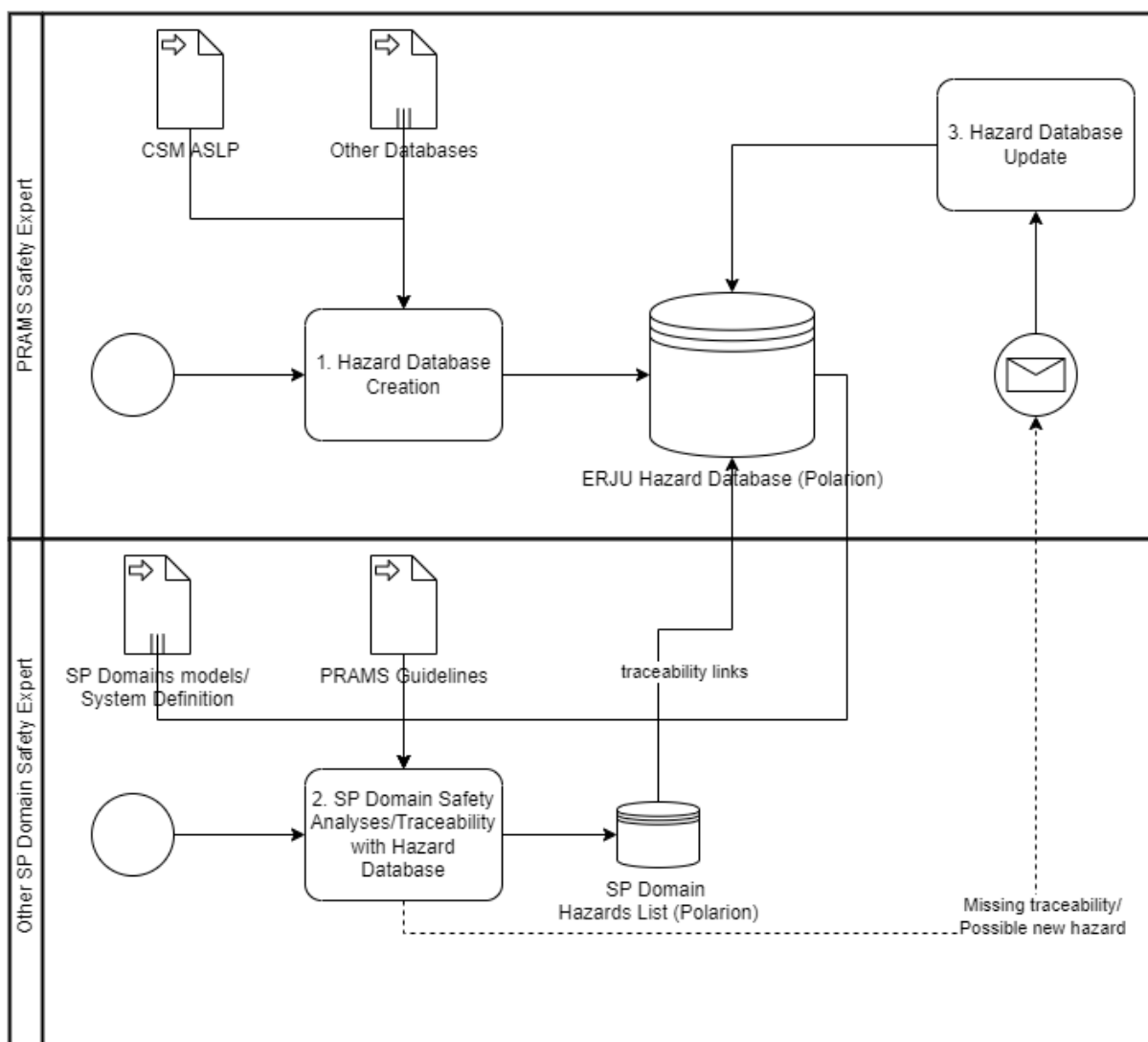
ETCS Hazard Log
[✅ Done / To be decided, subset_113.pdf, external reference - https://www.era.europa.eu/system/files/2022-11/subset_113_1.pdf]

2 ERJU Hazard Database Management

SPPRAMSS-7064 - General approach used for ERJU Hazard Database

The general procedure for the definition and subsequent use of the ERJU Hazard Database is shown in the following diagram. [🔒 Content to be approved]




SPPRAMSS-10318 - ERJU Hazard Database creation process and linking with other SP domains safety activities




[🔒 Content to be approved]

SPPRAMSS-11050 - ERJU Hazard Database process description

The Business Process Modeling Notation diagram above shows the process for the management of ERJU Hazard database within System Pillar. More specifically:


1. *PRAMS Safety Experts* defines the ERJU Hazard Database starting from the analysis of different inputs (i.e. CSM ASLP and other available national databases). ERJU Hazard Database is structured as depicted in  [SPPRAMSS-11049](#) and it is maintained in Polarion.
2. *Other SP Domains Safety Experts* carry out safety analyses within their domain based on the SP Domain models/system definition in accordance with the defined PRAMS guidelines. The more refined hazards identified within each SP domain are stored in the SP Domain Hazard List and traced to the top-level ones identified in the PRAMS domain stored within the ERJU Hazard Database.
3. In case no traceability can be established for some hazards, information listed in  [SPPRAMSS-11108](#) are reported in form of an issue via this ERJU Hazard Database hazard reporting page ( [ERJU SP - Hazard Report](#)) or via the PRAMS Functional Team meeting with PRAMS Safety Experts that analyze them and update the ERJU Hazard Database introducing new top-level hazards if required.

 Content to be approved]

SPPRAMSS-11108 - Information to be shared with PRAMS Safety Expert in case no traceability can be established

The following information need to be shared with PRAMS Safety Expert for the hazards that are identified that cannot be linked to any hazard in the ERJU Hazard Database:

Headline	Description
Polarion ID + Title	Unique identifier of the Work Item + Title
Hazard Synopsis	Short synopsis (useful to promptly recall or sort out the hazard and its content)
Hazard Description	Detailed description of the hazard (You can also use drawings, if useful) As much as necessary, as little as possible.
Hazard Source	Source of the hazard: How the hazard was identified? E.g. standard, observed case on the field, related hazard analyses, risk sheet, Hazard Log of <...>
Related (sub)system	(Sub)system under consideration
Related Accident(s)	Possible accidents from ERJU Hazard Database linked to the hazard
Proposed mitigation(s)	Proposal for mitigation of this hazard e.g. apply code-of-practice, NFR, etc.
Comments	Other useful information to report

 Content to be approved]

3 ERJU Hazard Database Structure

SPPRAMSS-7081 - ERJU Hazard Database Work items and linking

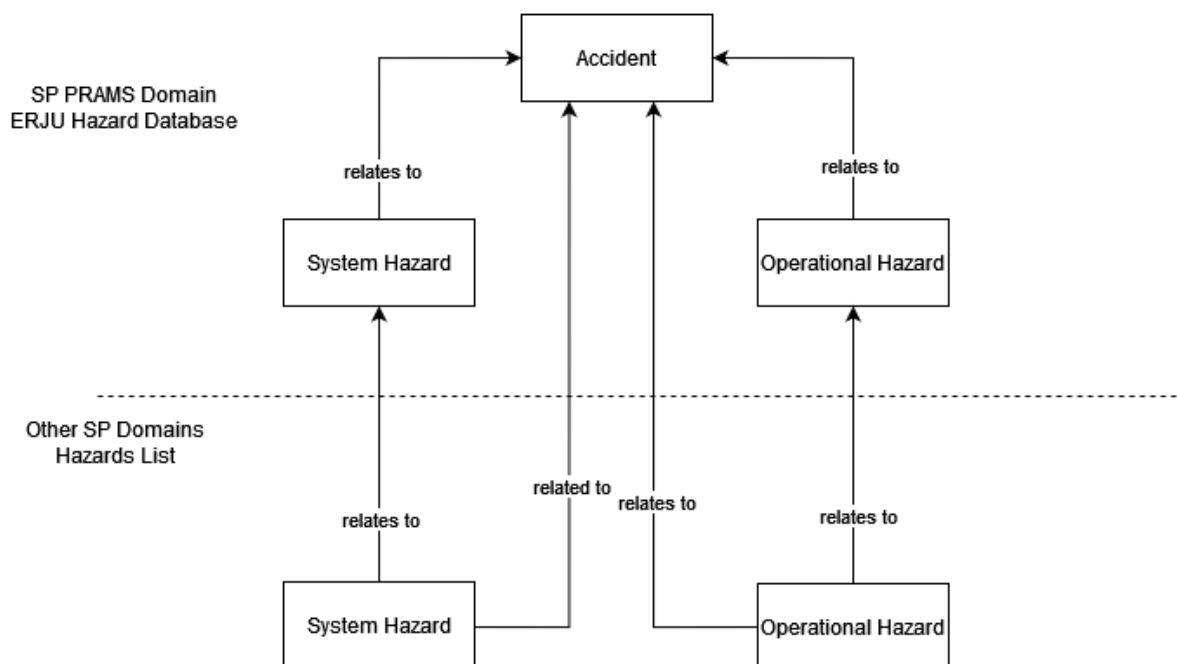
ERJU Hazard Database structure in terms of Work Item types and possible links among them is depicted in the diagram below. More in detail, the ERJU Hazard Database is composed by:

1. **Operational Hazards** reporting the hazardous scenarios caused by operational failures
2. **Hazards** reporting the hazardous scenarios caused by technical failures of systems
3. **Accidents** reporting events having harmful consequences

System hazards or operational hazards, when occurring, may lead to accidents. The diagram also reports how both Operational Hazard and System Hazard may be linked to an Accident by means of the "relates to" relation. Moreover, it also shows how the more refined hazards identified in the context of the safety analysis from the other SP domains may be linked with the ones of the ERJU Hazard Database.

[✓ Done / To be decided]

SPPRAMSS-11049 - ERJU Hazard Database Structure and linking relationships



[🔒 Content to be approved]

SPPRAMSS-7080 - Hazard and accident attributes

The work items for Operational hazards, Hazards and Accidents are characterized by the following main attributes:

- **ID:** unique identifier

- **Title:** reports the title of the hazard
- **Description:** reports a description of the hazard
- **old ID:** reporting the mapping with the considered input source (i.e. Name of the source and ID in the source document, with multiple values separated with ";")
- **Risk Acceptance Principle:** reports the Risk Acceptance Principle applicable for the hazards (i.e. Explicit Risk Estimation or Code of Practice/Reference System). Note: a suggested Risk Acceptance Principle has been defined in order to specify for which hazard it is expected to have an Explicit Risk Estimation and for which one a Code of practice or reference system may be used (in future revision of the document it will be detailed the suggested code of practice or reference system).
- **Rationale:** reports details about the defined risk acceptance principle, as an example the information about the Code of Practice or Reference system for the hazard having Code of Practice/Reference System as Risk Acceptance Principle or proposed mitigation/s, if already identified.

[✓ Done / To be decided]

4 Appendices

SPPRAMSS-7601 - In the following subsections are reported the links to the documents containing...

In the following subsections are reported the links to the documents containing the different lists composing the ERJU Hazard Database. [🗑️ Content to be approved]

4.1 Operational Hazards List

For the Operational Hazards List refer to  [PRAMS Log - Part 2 Operational Hazards](#)


4.2 System Hazards List

For the System Hazard List refer to  [PRAMS Log - Part 3 System Hazards](#)

4.3 Accidents List

For the Accidents List refer to  [PRAMS Log - Part 1 Accidents](#)

4.4 Traceability between accidents and hazards

For the traceability between accidents and hazards refer to  [ERJU Hazard Database Traceability Report](#)