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**RAILWAY APPLICATIONS - THE
SPECIFICATION AND DEMONSTRATION OF
RELIABILITY, AVAILABILITY,
MAINTAINABILITY AND SAFETY (RAMS)**

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Údarás um Chaighdeán Náisiúnta na hÉireann

Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 9X, Electrical and electronic applications in railways.

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The following dates were fixed:

- latest date by which the EN has to be implemented
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with the EN have to be withdrawn (dow) 2000-04-01

Annexes designated “normative” are part of the body of the standard.

Annexes designated “informative” are given for information only.

In this standard, annexes A to E are informative.

Content

	Page
Introduction	5
1 Scope.....	6
2 Normative references	7
3 Definitions	8
4 Railway RAMS	11
4.1 Introduction	11
4.2 Railway RAMS and quality of service.....	11
4.3 Elements of railway RAMS	12
4.4 Factors influencing railway RAMS.....	14
4.4.1 General	14
4.4.2 Categories of factors.....	14
4.4.3 Management of factors.....	18
4.5 The means to achieve railway RAMS requirements	19
4.5.1 General	19
4.5.2 RAMS specification:.....	19
4.6 Risk.....	20
4.6.1 Risk concept:	20
4.6.2 Risk analysis:.....	20
4.6.3 Risk evaluation and acceptance.....	21
4.7 Safety integrity	22
4.8 Fail-safe concept	24
5 Management of railway RAMS	25
5.1 General	25
5.2 System lifecycle	25
5.3 Application of this standard	31
6 RAMS lifecycle.....	34
6.1 Phase 1: Concept	34
6.2 Phase 2: System definition and application conditions	36
6.3 Phase 3: Risk analysis	39
6.4 Phase 4: System requirements	41
6.5 Phase 5: Apportionment of system requirements	45
6.6 Phase 6: Design and implementation.....	47
6.7 Phase 7: Manufacturing.....	50
6.8 Phase 8: Installation	52
6.9 Phase 9: System validation (including safety acceptance and commissioning)	54
6.10 Phase 10: System acceptance	56
6.11 Phase 11: Operation and maintenance.....	57
6.12 Phase 12: Performance monitoring.....	58
6.13 Phase 13: Modification and retrofit.....	59
6.14 Phase 14: Decommissioning and disposal.....	60
Annex A (informative) Outline of RAMS specification - example	61
Annex B (informative) RAMS programme.....	65
Annex C (informative) Examples of parameters for railway	70
Annex D (informative) Examples of some risk acceptance principles	72
Annex E (informative) Responsibilities within the RAMS process throughout the lifecycle	75

Figures

Figure 1: Quality of Service and Railway RAMS.....	12
Figure 2: Inter-relation of Railway RAMS elements	12
Figure 3: Effects of Failures Within a System	13
Figure 4: Influences on RAMS	14
Figure 5: Factors Influencing Railway RAMS	16
Figure 6: Example of a Cause/Effect Diagram.....	18
Figure 7: Certified Products in Safety Systems	23
Figure 8: System Lifecycle.....	26
Figure 9: Project Phase Related Tasks (Sheet 1 of 2).....	27
Figure 9: Project Phase Related Tasks (Sheet 2 of 2).....	28
Figure 10: The V Representation.....	30
Figure 11: Verification and Validation	31
Figure 12:RAMS Eng. and Manag't Implemented within a System Realisation Process.....	33

Tables

Table 1: RAM Failure Categories.....	19
Table 2: Frequency of Occurrence of Hazardous Events	20
Table 3: Hazard Severity Level.....	21
Table 4: Frequency - Consequence Matrix.....	21
Table 5: Qualitative Risk Categories.....	22
Table 6: Typical Example of Risk Evaluation and Acceptance	22
Table B.1: Example of a Basic RAMS Programme Outline	66
Table C.1: Examples of Reliability Parameters.....	70
Table C.2: Examples of Maintainability Parameters	70
Table C.3: Examples of Availability Parameters	70
Table C.4: Examples of Logistic Support Parameters	71
Table C.5: Examples of Safety Performance Parameters	71

Introduction

This European Standard provides Railway Authorities and the railway support industry, throughout the European Union, with a process which will enable the implementation of a consistent approach to the management of reliability, availability, maintainability and safety, denoted by the acronym RAMS. Processes for the specification and demonstration of RAMS requirements are cornerstones of this standard. This European Standard aims to promote a common understanding and approach to the management of RAMS.

This European Standard can be applied systematically by a railway authority and railway support industry, throughout all phases of the lifecycle of a railway application, to develop railway specific RAMS requirements and to achieve compliance with these requirements. The systems-level approach defined by this European Standard facilitates assessment of the RAMS interactions between elements of complex railway applications.

This European Standard promotes co-operation between a railway authority and railway support industry, within a variety of procurement strategies, in the achievement of an optimal combination of RAMS and cost for railway applications. Adoption of this European Standard will support the principles of the European Single Market and facilitate European railway inter-operability.

The process defined by this European Standard assumes that railway authorities and railway support industry have business-level policies addressing Quality, Performance and Safety. The approach defined in this standard is consistent with the application of quality management requirements contained within the ISO 9000 series of International standards.

1 Scope

1.1 This European Standard:

- defines RAMS in terms of reliability, availability, maintainability and safety and their interaction;
- defines a process, based on the system lifecycle and tasks within it, for managing RAMS;
- enables conflicts between RAMS elements to be controlled and managed effectively;
- defines a systematic process for specifying requirements for RAMS and demonstrating that these requirements are achieved;
- addresses railway specifics;
- does not define RAMS targets, quantities, requirements or solutions for specific railway applications;
- does not specify requirements for ensuring system security;
- does not define rules or processes pertaining to the certification of railway products against the requirements of this standard;
- does not define an approval process by the safety regulatory authority.

1.2. This European Standard is applicable:

- to the specification and demonstration of RAMS for all railway applications and at all levels of such an application, as appropriate, from complete railway routes to major systems within a railway route, and to individual and combined sub-systems and components within these major systems, including those containing software; in particular:
 - to new systems;
 - to new systems integrated into existing systems in operation prior to the creation of this standard, although it is not generally applicable to other aspects of the existing system;
 - to modifications of existing systems in operation prior to the creation of this standard, although it is not generally applicable to other aspects of the existing system.
- at all relevant phases of the lifecycle of an application;
- for use by Railway Authorities and the railway support industry.

NOTE: Guidance on the applicability is given in the requirements of this standard.

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