



EULYNX Initiative

EULYNX System Definition

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Contents

1	Introduction	1
1.1	Release information	1
1.2	Impressum	1
1.3	Purpose	2
1.4	Applicable standards and regulations	2
1.5	Applicable documents	2
1.6	Appendices	2
1.7	Terms and abbreviations	2
1.8	Variability management	2
1.9	Definition of object types	2
1.10	EULYNX System Definition development	3
1.11	Development goals for the EULYNX System	3
2	General requirements for the EULYNX System	3
2.1	EULYNX System within the context of the railway system	3
2.2	Operational environment	4
2.2.1	Operational conditions	4
2.2.2	Worker safety	4
2.2.3	Environmental conditions	4
2.2.4	Management of RAMS	4
2.2.5	Management of Security	4
3	System description and system boundary	4
3.1	System boundary	4
3.2	System functions	5
3.3	Interface definition	6
4	Subsystems and corresponding functions	6
4.1	Subsystem Electronic Interlocking	7
4.1.1	Description of the subsystem Electronic Interlocking	7
4.1.2	Functions of the subsystem Electronic Interlocking	8
4.1.3	Functions for the control and monitoring of the subsystem Light Signal	8
4.1.4	Functions for the control and monitoring of the subsystem Point	8
4.1.5	Functions for the control and monitoring of the subsystem Train Detection System	8
4.1.6	Functions for the control and monitoring of the subsystem Generic IO	8
4.1.7	Functions for the control and monitoring of the subsystem Level Crossing	8
4.1.8	Functions for adjacent systems	9
4.2	Subsystem Light Signal	10
4.2.1	Description of the subsystem Light Signal	10

4.2.2	Functions of the subsystem Light Signal	10
4.3	Subsystem Point	11
4.3.1	Description of the subsystem Point	11
4.3.2	Functions of the subsystem Point	11
4.4	Subsystem Train Detection System	12
4.4.1	Description of the subsystem Train Detection System	12
4.4.2	Functions of the subsystem Train Detection System	12
4.5	Subsystem Generic IO	13
4.5.1	Description of the subsystem Generic IO	13
4.5.2	Functions of the subsystem Generic IO	13
4.6	Subsystem Level Crossing	14
4.6.1	Description of the subsystem Level Crossing	14
4.6.2	Functions of the subsystem Level Crossing	14
4.7	Subsystem Maintenance and Data Management	15
4.7.1	Description of the subsystem Maintenance and Data Management	15
4.7.2	Functions of the subsystem Maintenance and Data Management	15
4.8	Subsystem Security Services Platform	16
4.8.1	Description of the subsystem Security Services Platform	16
4.8.2	Functions of the subsystem Security Services Platform	17
4.9	Subsystem Communication System	17
4.9.1	Description of the subsystem Communication System	17
4.9.2	Functions of the subsystem Communication System	18
5	Connections to adjacent systems and actors outside of the system boundary	18
5.1	Command Control System	18
5.2	Train Describer	19
5.3	Automatic Route Setting System	19
5.4	Documentation System	19
5.5	Radio Block Centre	19
5.6	Adjacent Interlocking System	20
5.7	Power supply	20
5.8	Trackworker Safety System	20
5.9	Centralised ETCS L1 Controller	21
5.10	External Level Crossing System	21
5.11	Diagnostic System	21
5.12	Maintainer	22
5.13	Train driver	22
5.14	Basic Data identifier	22
5.15	Point machine	22
5.16	Legacy train protection system	22
5.17	Eurobalise	22
5.18	Indicator	22

5.19	Wheel	22
5.20	Adjacent IO system	23
5.21	Configuration Data carrier	23
5.22	Security service interaction	23
5.23	Level crossing protection facility	23
5.24	Detection element	23
5.25	Local operator	23

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.11	Head	1 Introduction			
Eu.SysDef.12	Head	1.1 Release information			
Eu.SysDef.13	Info	[Eu.Doc.7] EULYNX System definition CENELEC Phase: 2 Version: 4.2 (4.A) Approval date: 02.06.2025			Object Text: [Eu.Doc.7] EULYNX System definition CENELEC Phase: 2 Version: 4.2 (4 .A) Approval date: 29 02 . 05 06 . 2024 <u>2025</u>
Eu.SysDef.978	Info	Version history			
Eu.SysDef.1116	Info	version number: 4.0 (0.A) date: 16.05.2022 author: Nico Hurman, Mirko Blazic review: CCB changes: EUAR-508, EUAR-509, EUAR-513, EUAR-526			
Eu.SysDef.1120	Info	version number: 4.1 (0.A) date: 31.03.2023 author: Nico Hurman review: changes: EUAR-548, EUAR-554, EUAR-558, EUAR-564, EUAR-574, EUAR-575, EUAR-579, EUAR-581			
Eu.SysDef.1137	Info	version number: 4.2 (0.A) date: 27.06.2023 author: Nico Hurman review: CCB changes: EUAR-600, EUAR-604, EUAR-606, EUAR-613			
Eu.SysDef.1141	Info	version number: 4.2 (1.A) date: 29.04.2024 author: Nico Hurman review: cluster changes: EUAR-225, EUAR-681, EUAR-692			
Eu.SysDef.1142	Info	version number: 4.2 (2.A) date: 18.06.2024 author: Nico Hurman review: CCB changes: EUAR-746			
Eu.SysDef.1143	Info	version number: 4.2 (3.A) date: 05.05.2025 author: Nico Hurman review: - changes: EUAR-758, EUAR-766			object created after baseline 4.2 (2.A)
Eu.SysDef.1144	Info	version number: 4.2 (4.A) date: 19.06.2025 author: Nico Hurman review: CCB changes: EUAR-791, EUAR-796			object created after baseline 4.2 (2.A)
Eu.SysDef.14	Head	1.2 Impressum			
Eu.SysDef.15	Info	Publisher: EULYNX Initiative A full list of the EULYNX Partners can be found on https://eulynx.eu/ .			

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.16	Info	Responsible for this document: EULYNX Project Management Office www.eulynx.eu			
Eu.SysDef.976	Info	Copyright EULYNX Partners All information included or disclosed in this document is licensed under the European Union Public Licence EUPL, Version 1.2 or later.			
Eu.SysDef.17	Head	1.3 Purpose			
Eu.SysDef.18	Info	The EULYNX System Definition described in this document defines a standard reference architecture with all subsystems and their interfaces as well as principal design paradigms of the signalling system. Together the interfaces and subsystems define the functionality of the signalling system.			
Eu.SysDef.19	Info	This document contains: <ul style="list-style-type: none"> functional description of the EULYNX System, classification of the EULYNX System within the railway system, system boundary of the EULYNX System, EULYNX System composition with corresponding subsystems, interfaces between the subsystems of the EULYNX System, interfaces from the EULYNX System to adjacent systems, descriptions of the functions in the subsystems, descriptions of the functions in the adjacent systems, required for the operation of the EULYNX System. 			
Eu.SysDef.20	Info	The EULYNX System Definition is a Phase 2 document according to [EN 50126].			
Eu.SysDef.21	Info	The EULYNX System Definition is prepared according to [CSM], Annex 1, ch. 2.1.2, and serves as an input document for the Phase 3 of [EN 50126] (Risk analysis).			
Eu.SysDef.22	Head	1.4 Applicable standards and regulations			
Eu.SysDef.23	Info	A list of applicable standards and regulations used in EULYNX is listed in the EULYNX Reference Document List [Eu.Doc.12].			
Eu.SysDef.26	Head	1.5 Applicable documents			
Eu.SysDef.995	Info	The current versions of documents used as input or related to this document are listed in the EULYNX Documentation Plan [Eu.Doc.11]. The relationships between the documents are displayed in the Appendix A1 Documentation plan and structure [Eu.Doc.11_A1].			
Eu.SysDef.676	Head	1.6 Appendices			
Eu.SysDef.677	Info	[Eu.Doc.7_A1] Appendix A1 to [Eu.Doc.7] EULYNX System architecture			
Eu.SysDef.24	Head	1.7 Terms and abbreviations			
Eu.SysDef.25	Info	The terms and abbreviations are listed in the EULYNX Glossary [Eu.Doc.9].			
Eu.SysDef.675	Head	1.8 Variability management			
Eu.SysDef.674	Info	This document is valid for the complete EULYNX System. Variability management is not used in this document. In implementation projects that apply the EULYNX specifications, it is possible to implement only parts of the architecture of the EULYNX System described in this document. The Infrastructure Manager initiating an implementation project, can use project documentation to indicate which parts of the architecture of the EULYNX System are applicable in a specific project.			
Eu.SysDef.685	Head	1.9 Definition of object types			
Eu.SysDef.686	Info	The following definition for object types is applied in this document:			
Eu.SysDef.687	Info	<ul style="list-style-type: none"> "Req" - This denotes a mandatory requirement. 			

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Eu.SysDef.688	Info	<ul style="list-style-type: none"> "Info" - This denotes additional information to help understand the specification. These objects do not specify any additional requirements. 			
Eu.SysDef.689	Info	<ul style="list-style-type: none"> "Head" - This denotes chapter headings. 			
Eu.SysDef.1067	Info	Interfaces that are part of the EULYNX System Definition but have not been specified in the current EULYNX Baseline set are marked with "Info".			
Eu.SysDef.1121	Info	This includes the following interfaces: <ul style="list-style-type: none"> EIL1, SDI-EIL, SMI-EIL, SDI-DS 			
Eu.SysDef.1122	Info	Interfaces that cross the EULYNX System Definition boundary are marked with 'Info' at the adjacent system or actor outside of the system boundary.			
Eu.SysDef.35	Head	1.10 EULYNX System Definition development			
Eu.SysDef.36	Info	The preparation of the EULYNX System Definition is divided into multiple development steps: <ul style="list-style-type: none"> Development of the goals and framework Determination of the corresponding subsystems and actors Definition of the logical and technical boundary to the adjacent systems Description of system functions and system actors Functional apportionment between subsystems, adjacent systems and actors Definition of the interfaces between subsystems, adjacent systems and actors Definition of the logical information objects of the interfaces 			
Eu.SysDef.39	Info	The technical requirements for the interfaces are specified in the document EULYNX System architecture specification [Eu.Doc.16].			
Eu.SysDef.40	Head	1.11 Development goals for the EULYNX System			
Eu.SysDef.41	Info	The development goals for the EULYNX System are:			
Eu.SysDef.42	Info	<ul style="list-style-type: none"> dedicated functional components (subsystems) shall be interchangeable (irrespective of the supplier) 			
Eu.SysDef.43	Info	<ul style="list-style-type: none"> reduced diversity of communication technology, energy supply and diagnostics 			
Eu.SysDef.44	Info	<ul style="list-style-type: none"> simplified maintainability 			
Eu.SysDef.45	Info	<ul style="list-style-type: none"> reduced LCC 			
Eu.SysDef.46	Info	<ul style="list-style-type: none"> meeting the RAMS-targets of existing conventional interlocking systems and systematic and harmonised allocation of RAM, safety and security requirements 			
Eu.SysDef.530	Info	The development goals for the EULYNX System are described in the document EULYNX Concept [Eu.Doc.6].			
Eu.SysDef.47	Head	2 General requirements for the EULYNX System			
Eu.SysDef.48	Info	This chapter describes the classification of the EULYNX System within the railway system regarding environmental, security, safety, RAM and worker safety requirements.			
Eu.SysDef.49	Head	2.1 EULYNX System within the context of the railway system			
Eu.SysDef.51	Info	Starting from a functional analysis, the EULYNX System will be embedded in the railway system and contribute to the process "rail operation". "Rail operation" shall be understood as train movements and shunting services on a railway infrastructure.			
Eu.SysDef.52	Info	Those functions related with rail operation that contribute to safety are considered to be rail system relevant functions.			
Eu.SysDef.53	Req	Based on failure of rail system relevant functions hazards shall be identified that form part of the risk analysis according to Phase 3 of EN 50126.			

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Eu.SysDef.632	Info	Safe rail operation is ensured by the Safety Management System (SMS) of the Infrastructure Manager in combination with the SMS of the railway undertakings operating on this infrastructure.			
Eu.SysDef.59	Head	2.2 Operational environment			
Eu.SysDef.60	Head	2.2.1 Operational conditions			
Eu.SysDef.61	Info	The authorisation for placing into service of the EULYNX System is subject to national regulations.			
Eu.SysDef.62	Info	The use of the EULYNX System is intended for national rail networks (national, regional...), but usage beyond that is dependent on national strategies.			
Eu.SysDef.65	Head	2.2.2 Worker safety			
Eu.SysDef.66	Info	The implementation of EULYNX specifications, and worker safety associated with any deployment, is to be considered by each IM in the context of their national rules and practices.			
Eu.SysDef.645	Req	Where it falls within the scope of EULYNX specifications, then measures will be taken to identify, eliminate, reduce or control foreseeable risks that may subsequently affect worker safety.			
Eu.SysDef.71	Head	2.2.3 Environmental conditions			
Eu.SysDef.72	Req	The EULYNX System shall comply with selected requirements within the [EN 50125-3]. Specific environmental conditions are subject to national specifications.		EUAR-791	Object Text: The EULYNX System shall comply with selected requirements within the [EN 50125-3]. Specific environmental conditions are subject to national specifications. a_JIRA_BL4R4: EUAR-791
Eu.SysDef.73	Head	2.2.4 Management of RAMS			
Eu.SysDef.74	Info	The RAMS requirement for the EULYNX System are specified in the document EULYNX Specification of RAMS requirements [Eu.Doc.13].			
Eu.SysDef.75	Head	2.2.5 Management of Security			
Eu.SysDef.76	Info	The EULYNX System will comply with the Network and Information Security (NIS) Directive.			
Eu.SysDef.646	Req	Security management is an integral part of system life cycle. Security shall be managed independently from safety. Security measures shall not compromise safety in the EULYNX system.			
Eu.SysDef.655	Info	The management of security is specified in the document EULYNX Security Concept [Eu.Doc.15].			
Eu.SysDef.77	Head	3 System description and system boundary			
Eu.SysDef.78	Info	This section lists the functions of the EULYNX System and defines the system boundary.			
Eu.SysDef.524	Info	The overall system architecture is a three layer architecture that can also be found in other complex and decentralised systems.			
Eu.SysDef.525	Info	The first layer is the command and control layer.			
Eu.SysDef.526	Info	The second layer is the core of the system where the interlocking logic is located.			
Eu.SysDef.527	Info	The third layer is where the wayside objects and object controllers are located.			
Eu.SysDef.88	Head	3.1 System boundary			

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Eu.SysDef.92	Info	The EULYNX System architecture diagram in Appendix A1 displays the following: <ul style="list-style-type: none"> • System boundary • Subsystems • Adjacent systems • Interfaces 			
Eu.SysDef.90	Info	The EULYNX System is composed of different subsystems: <ul style="list-style-type: none"> • Subsystem Electronic Interlocking • Subsystem Light Signal • Subsystem Point • Subsystem Generic IO • Subsystem Train Detection System • Subsystem Level Crossing • Subsystem Maintenance and Data Management • Subsystem Security Services Platform • Subsystem Communication System 			
Eu.SysDef.91	Info	Adjacent systems are located outside of the EULYNX System boundary.			
Eu.SysDef.93	Info	The EULYNX System is for this described system definition limited to the interlocking area of one subsystem Electronic Interlocking.			
Eu.SysDef.648	Info	The Communication System incorporates all functional requirements to ensure the transmission of information objects. The Communication System is considered as a subsystem in this system definition. Note: In the EULYNX System architecture diagram in Appendix A1, the Communication System is visualised differently than the other subsystems and the adjacent systems. If the transmission of data between two subsystems or between a subsystem and an adjacent system is ensured by the subsystem Communication System, the link between them is marked with a thick line.			
Eu.SysDef.79	Head	3.2 System functions			
Eu.SysDef.80	Info	The EULYNX System fulfils signalling, command and control related functions distributed across the layers described above.			
Eu.SysDef.81	Info	System functions are functions, that are executed exclusively by the EULYNX System.			
Eu.SysDef.82	Info	Interacting functions are functions, that are executed in cooperation by the EULYNX System and at least one adjacent system.			
Eu.SysDef.83	Info	System functions include the following function groups: <ul style="list-style-type: none"> • Route protection (route setting, supervision of the end position of moveable elements, route locking, route releasing, protection against moving occupied elements, route blocking) • Supervision of speed (indication of movement authority, route dependent permitted speed) • Indication of the route direction • Train separation (rear end protection, front end protection, flank protection) • Level crossing protection for rail and road traffic (by using subsystem) • Ensure correct functioning of the system (for example initialisation of interfaces) • Support maintenance activities • Support IT Security functions 			

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.84	Info	Interacting functions are grouped into the following function groups: <ul style="list-style-type: none"> • Provide ETCS data • Monitoring and controlling train movements • Command and control (receive and process commands, process and send statuses and messages from subsystems and adjacent systems for display and registration) • Automation of operations • Level crossing protection for rail and road traffic (by using adjacent system) • Provide diagnostic data • Ensure correct functioning between the EULYNX System and the adjacent systems (for example initialisation of interfaces, provide system specific data) • Support maintenance activities • Support IT Security functions 			
Eu.SysDef.528	Req	Detailed IM-specific (national) requirements concerning the identified functions shall be defined by individual IMs.			
Eu.SysDef.85	Info	The system functions and the interacting functions can be operated by systems or actors (outside of the EULYNX System boundary) over defined interfaces following operational rules and regulations. These interactions may be executed within the EULYNX System and are then considered as functional part of the EULYNX System.			
Eu.SysDef.86	Info	The interactions between humans and adjacent systems are not considered in this system definition of the EULYNX System.			
Eu.SysDef.87	Info	The interactions between adjacent systems are not considered in this system definition of the EULYNX System.			
Eu.SysDef.94	Head	3.3 Interface definition			
Eu.SysDef.95	Info	The following types of interfaces are defined:			
Eu.SysDef.96	Info	<ul style="list-style-type: none"> • Process data interface: The process data interface contains process and other information necessary for the exchange between the subsystem Electronic Interlocking and the subsystems as well as between the subsystem Electronic Interlocking and adjacent systems. The specification of the process data interface is supplier independent.			
Eu.SysDef.99	Info	<ul style="list-style-type: none"> • Diagnostic interface: The interface required for transmitting non-safety relevant diagnostic information.			
Eu.SysDef.101	Info	<ul style="list-style-type: none"> • Maintenance interface: The interface required for updating the engineering and configuration data, as well as software data of the subsystem.			
Eu.SysDef.1074	Info	<ul style="list-style-type: none"> • Security interface: The interface required for managing functionality related to IT security.			
Eu.SysDef.97	Info	<ul style="list-style-type: none"> • Control interface: The control interface is used for control and supervision of the external systems connected to the subsystems. The specification of the control interface is supplier dependent (the control interface may be a bus interface, DC interface etc.).			
Eu.SysDef.98	Info	<ul style="list-style-type: none"> • Maintenance/Operation/Display interface: The interface required for interaction with a subsystem, in order to visualise or change the subsystem behaviour.			
Eu.SysDef.100	Info	<ul style="list-style-type: none"> • Power supply: The interface providing the electrical energy to the subsystem.			
Eu.SysDef.654	Req	Means of preventing unauthorised access to safety-critical software via the defined interfaces shall be provided.			
Eu.SysDef.106	Head	4 Subsystems and corresponding functions			
Eu.SysDef.107	Info	This section describes the subsystems displayed in the EULYNX System architecture diagram.			
Eu.SysDef.108	Info	The functions are assigned to subsystems and adjacent systems (system functions and interacting functions). The functions, related to the EULYNX System, are described in section 4. The functions, required by the EULYNX System from adjacent systems, are described in section 5.			

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Eu.SysDef.644	Info	The subsystems, adjacent systems and actors defined in this document describe the generic EULYNX System architecture. The implemented parts may differ for each individual IM. The subsystems, adjacent systems and actors are defined as information only.			
Eu.SysDef.109	Head	4.1 Subsystem Electronic Interlocking			
Eu.SysDef.110	Head	4.1.1 Description of the subsystem Electronic Interlocking			
Eu.SysDef.111	Info	The subsystem Electronic Interlocking establishes the safety-related dependencies to the subsystems as well as the adjacent systems.			
Eu.SysDef.112	Info	The subsystem Electronic Interlocking receives and processes statuses from the subsystems and adjacent systems.			
Eu.SysDef.731	Info	The subsystem Electronic Interlocking receives and processes commands from adjacent systems (for example adjacent interlocking system, traffic control system).			
Eu.SysDef.732	Info	The subsystem Electronic Interlocking commands the change of state to the subsystems and adjacent systems according to defined functionality.			
Eu.SysDef.733	Info	The subsystem Electronic Interlocking transmits the current statuses to the adjacent systems (for example adjacent interlocking system, traffic control system).			
Eu.SysDef.734	Req	The subsystem Electronic Interlocking interfaces with the following subsystems:			
Eu.SysDef.735	Info	• Subsystem Maintenance and Data Management	SDI-EIL, SMI-EIL		
Eu.SysDef.1075	Req	• Subsystem Security Services Platform	SSI-EIL		
Eu.SysDef.736	Req	• Subsystem Light Signal	SCI-LS		
Eu.SysDef.737	Req	• Subsystem Point	SCI-P		
Eu.SysDef.738	Req	• Subsystem Train Detection System	SCI-TDS		
Eu.SysDef.739	Req	• Subsystem Generic IO	SCI-IO		
Eu.SysDef.748	Req	• Subsystem Level Crossing	SCI-LC		
Eu.SysDef.740	Req	The subsystem Electronic Interlocking interfaces with the following adjacent systems:			
Eu.SysDef.914	Req	• Traffic Control System	SCI-CC		
Eu.SysDef.744	Info	• Documentation System	EIL1		
Eu.SysDef.745	Req	• Radio Block Centre	SCI-RBC		
Eu.SysDef.747	Req	• Adjacent Interlocking System	SCI-ILS		
Eu.SysDef.749	Req	• Power Supply	EIL3		
Eu.SysDef.750	Req	• Trackworker Safety System	SCI-CC		
Eu.SysDef.915	Req	• Centralised ETCS L1 Controller	SCI-RBC		
Eu.SysDef.1045	Req	• External Level Crossing System	SCI-LX		
Eu.SysDef.751	Req	The subsystem Electronic Interlocking interfaces with the following actors:			
Eu.SysDef.752	Req	• Maintainer	EIL4		

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.753	Req	• Configuration data carrier	EIL2		
Eu.SysDef.113	Head	4.1.2 Functions of the subsystem Electronic Interlocking			
Eu.SysDef.115	Req	The following functions shall be performed by the subsystem Electronic Interlocking:			
Eu.SysDef.116	Req	• establishment of safety relevant dependencies with the subsystems and adjacent systems			
Eu.SysDef.130	Req	• determination of current statuses of the subsystem Electronic Interlocking			
Eu.SysDef.132	Info	• collection of diagnostic data and transmission to the subsystem Maintenance and Data Management	SDI-EIL		
Eu.SysDef.754	Req	• configuration and display of maintenance related information	EIL4		
Eu.SysDef.755	Info	• update of device specific data and software of the subsystem Electronic Interlocking	SMI-EIL		
Eu.SysDef.1076	Req	• execution of functionality related to IT security	SSI-EIL		
Eu.SysDef.756	Req	• processing of basic configuration data, device specific data and software of the subsystem Electronic Interlocking	EIL2		
Eu.SysDef.761	Req	The subsystem Electronic Interlocking shall be powered with the adjacent system Power Supply.	EIL3		
Eu.SysDef.134	Head	4.1.3 Functions for the control and monitoring of the subsystem Light Signal			
Eu.SysDef.135	Req	The following functions for control and monitoring of the subsystem Light Signal shall be performed by the subsystem Electronic Interlocking:	SCI-LS		
Eu.SysDef.136	Req	• commands shall be sent to the subsystem Light Signal	SCI-LS		
Eu.SysDef.138	Req	• messages from the subsystem Light Signal shall be processed	SCI-LS		
Eu.SysDef.141	Head	4.1.4 Functions for the control and monitoring of the subsystem Point			
Eu.SysDef.142	Req	The following functions for control and monitoring of the subsystem Point shall be performed by the subsystem Electronic Interlocking:	SCI-P		
Eu.SysDef.143	Req	• commands shall be sent to the subsystem Point	SCI-P		
Eu.SysDef.144	Req	• messages from the subsystem Point shall be processed	SCI-P		
Eu.SysDef.149	Head	4.1.5 Functions for the control and monitoring of the subsystem Train Detection System			
Eu.SysDef.150	Req	The following functions for control and monitoring of the subsystem Train Detection System shall be performed by the subsystem Electronic Interlocking:	SCI-TDS		
Eu.SysDef.151	Req	• commands shall be sent to the subsystem Train Detection System	SCI-TDS		
Eu.SysDef.152	Req	• messages from the subsystem Train Detection System shall be processed	SCI-TDS		
Eu.SysDef.155	Head	4.1.6 Functions for the control and monitoring of the subsystem Generic IO			
Eu.SysDef.156	Req	The following functions for control and monitoring of the subsystem Generic IO shall be performed by the subsystem Electronic Interlocking:	SCI-IO		
Eu.SysDef.157	Req	• commands shall be sent to the subsystem Generic IO	SCI-IO		
Eu.SysDef.158	Req	• messages from the subsystem Generic IO shall be processed	SCI-IO		
Eu.SysDef.999	Head	4.1.7 Functions for the control and monitoring of the subsystem Level Crossing			
Eu.SysDef.194	Req	The following functions for control and monitoring of the subsystem Level Crossing shall be performed by the subsystem Electronic Interlocking:	SCI-LC		

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Eu.SysDef.775	Req	• commands shall be sent to the subsystem Level Crossing	SCI-LC		
Eu.SysDef.776	Req	• messages from the subsystem Level Crossing shall be processed	SCI-LC		
Eu.SysDef.160	Head	4.1.8 Functions for adjacent systems			
Eu.SysDef.161	Req	The following functions for connection to the adjacent system Adjacent Interlocking System shall be provided by the subsystem Electronic Interlocking:	SCI-ILS		
Eu.SysDef.762	Req	• commands shall be sent to the adjacent system Adjacent Interlocking System	SCI-ILS		
Eu.SysDef.763	Req	• commands from the adjacent system Adjacent Interlocking System shall be processed	SCI-ILS		
Eu.SysDef.764	Req	• the current statuses shall be transmitted to the adjacent system Adjacent Interlocking System	SCI-ILS		
Eu.SysDef.765	Req	• the statuses from the adjacent system Adjacent Interlocking System shall be processed	SCI-ILS		
Eu.SysDef.179	Req	The following functions for connection to the adjacent systems Traffic Control System shall be provided by the subsystem Electronic Interlocking:			
Eu.SysDef.916	Req	• the current statuses shall be transmitted to the adjacent system Traffic Control System	SCI-CC		
Eu.SysDef.917	Req	• commands from the adjacent system Traffic Control System shall be processed	SCI-CC		
Eu.SysDef.1119	Req	The following functions for connection to the adjacent systems Documentation System shall be provided by the subsystem Electronic Interlocking:			
Eu.SysDef.768	Info	• the current statuses shall be transmitted to the adjacent system Documentation System	EIL1		
Eu.SysDef.187	Req	The following functions for connection to the adjacent system Radio Block Centre shall be provided by the subsystem Electronic Interlocking:	SCI-RBC		
Eu.SysDef.983	Req	• commands shall be sent to the adjacent system Radio Block Centre	SCI-RBC		
Eu.SysDef.770	Req	• commands from the adjacent system Radio Block Centre shall be processed	SCI-RBC		
Eu.SysDef.772	Req	• the current statuses shall be transmitted to the adjacent system Radio Block Centre	SCI-RBC		
Eu.SysDef.771	Req	• the statuses from the adjacent system Radio Block Centre shall be processed	SCI-RBC		
Eu.SysDef.203	Req	The following functions for connection to the adjacent system Trackworker Safety System shall be provided by the subsystem Electronic Interlocking:	SCI-CC		
Eu.SysDef.777	Req	• the current statuses shall be transmitted to the adjacent system Trackworker Safety System	SCI-CC		
Eu.SysDef.1035	Req	• commands from the adjacent system Trackworker Safety System shall be processed	SCI-CC		
Eu.SysDef.928	Req	The following functions for connection to the adjacent system Centralised ETCS L1 Controller shall be provided by the subsystem Electronic Interlocking:	SCI-RBC		
Eu.SysDef.1040	Req	• the current statuses shall be transmitted to the adjacent system Centralised ETCS L1 Controller	SCI-RBC		
Eu.SysDef.1041	Req	• commands from the adjacent system Centralised ETCS L1 Controller shall be processed	SCI-RBC		
Eu.SysDef.929	Req	• the statuses from the adjacent system Centralised ETCS L1 Controller shall be processed	SCI-RBC		
Eu.SysDef.1046	Req	The following functions for connection to the adjacent system External Level Crossing System shall be provided by the subsystem Electronic Interlocking:	SCI-LX		
Eu.SysDef.1047	Req	• commands shall be sent to the adjacent system External Level Crossing System	SCI-LX		

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.1050	Req	• the statuses from the adjacent system External Level Crossing System shall be processed	SCI-LX		
Eu.SysDef.208	Head	4.2 Subsystem Light Signal			
Eu.SysDef.209	Head	4.2.1 Description of the subsystem Light Signal			
Eu.SysDef.210	Info	The subsystem Light Signal transmits information to the Train driver through the signal aspects. The subsystem Light Signal includes stationary trackside signals, which can be set and display the visual signal aspect on the basis of a command by the subsystem Electronic Interlocking or on the basis of a safety-related reaction.			
Eu.SysDef.216	Info	In the context of system definition, the signal aspect may be composed of single or multiple signal aspects.			
Eu.SysDef.778	Info	The subsystem Light Signal receives and processes the commands on requested signal aspect and luminosity from the subsystem Electronic Interlocking. The subsystem Light Signal reports the current status information to the subsystem Electronic Interlocking. The change of a signal aspect is a safety relevant task of the subsystem Light Signal.			
Eu.SysDef.779	Req	The subsystem Light Signal interfaces with the following subsystems:			
Eu.SysDef.780	Req	• Subsystem Electronic Interlocking	SCI-LS		
Eu.SysDef.781	Req	• Subsystem Maintenance and Data Management	SDI-LS, SMI-LS		
Eu.SysDef.1077	Req	• Subsystem Security Services Platform	SSI-LS		
Eu.SysDef.211	Req	The subsystem Light Signal interfaces with the following adjacent systems:			
Eu.SysDef.212	Req	• Indicator	LS3		
Eu.SysDef.213	Req	• Legacy train protection system	LS5		
Eu.SysDef.214	Req	• Eurobalise	LS4		
Eu.SysDef.783	Req	• Power Supply	LS8		
Eu.SysDef.784	Req	The subsystem Light Signal interfaces with the following actors:			
Eu.SysDef.785	Req	• Train driver	LS2		
Eu.SysDef.786	Req	• Maintainer	LS7		
Eu.SysDef.787	Req	• Basic Data identifier	LS6		
Eu.SysDef.217	Req	The subsystem Light Signal shall be powered with the adjacent system Power Supply.	LS8		
Eu.SysDef.629	Info	Since signal aspects are different on European level, the aspects are managed on an abstract level and defined through the signal aspect table.			
Eu.SysDef.215	Info	The signal aspects are defined in the subsystem Light Signal documentation in the document Signal aspect table [Eu.Doc.37].			
Eu.SysDef.218	Head	4.2.2 Functions of the subsystem Light Signal			
Eu.SysDef.219	Req	The following functions shall be performed by the subsystem Light Signal:			
Eu.SysDef.220	Req	• commands from the subsystem Electronic Interlocking shall be processed	SCI-LS		
Eu.SysDef.230	Req	• the current statuses shall be transmitted to the subsystem Electronic Interlocking	SCI-LS		
Eu.SysDef.221	Req	• display of the signal aspects	LS2		

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.222	Req	• the adjacent system Legacy train protection system shall be controlled	LS5		
Eu.SysDef.788	Req	• the adjacent system Eurobalise shall be controlled	LS4		
Eu.SysDef.789	Req	• the adjacent system Indicator shall be controlled	LS3		
Eu.SysDef.226	Req	• collection of diagnostic data and transmission to the subsystem Maintenance and Data Management	SDI-LS		
Eu.SysDef.792	Req	• provision of maintenance related information	LS7		
Eu.SysDef.793	Req	• update of device specific data and software of the subsystem Light Signal	SMI-LS		
Eu.SysDef.1078	Req	• execution of functionality related to IT security	SSI-LS		
Eu.SysDef.794	Req	• processing of basic configuration data of the subsystem Light Signal	LS6		
Eu.SysDef.236	Head	4.3 Subsystem Point			
Eu.SysDef.237	Head	4.3.1 Description of the subsystem Point			
Eu.SysDef.238	Info	The subsystem Point integrates the moveable elements, that may be moved to a different position by a request from the subsystem Electronic Interlocking.			
Eu.SysDef.795	Info	The subsystem Point receives and processes the commands on requested point position from the subsystem Electronic Interlocking. The subsystem Point controls and supervises the adjacent system Point machine. The subsystem Point reports the current status information to the subsystem Electronic Interlocking.			
Eu.SysDef.240	Info	In the context of system definition, the subsystem Point is always considered with one point machine, regardless of how many point machines are controlled and monitored by the subsystem Point.			
Eu.SysDef.796	Req	The subsystem Point interfaces with the following subsystems:			
Eu.SysDef.797	Req	• Subsystem Electronic Interlocking	SCI-P		
Eu.SysDef.798	Req	• Subsystem Maintenance and Data Management	SDI-P, SMI-P		
Eu.SysDef.1079	Req	• Subsystem Security Services Platform	SSI-P		
Eu.SysDef.799	Req	The subsystem Point interfaces with the following adjacent systems:			
Eu.SysDef.800	Req	• Point machine	P3		
Eu.SysDef.801	Req	• Power Supply	P2		
Eu.SysDef.802	Req	The subsystem Point interfaces with the following actors:			
Eu.SysDef.803	Req	• Maintainer	P1		
Eu.SysDef.804	Req	• Basic Data identifier	P4		
Eu.SysDef.241	Req	The subsystem Point shall be powered with the adjacent system Power Supply.	P2		
Eu.SysDef.242	Head	4.3.2 Functions of the subsystem Point			
Eu.SysDef.243	Req	The following functions shall be performed by the subsystem Point:			
Eu.SysDef.244	Req	• commands from the subsystem Electronic Interlocking shall be processed	SCI-P		
Eu.SysDef.249	Req	• the current statuses shall be transmitted to the subsystem Electronic Interlocking	SCI-P		
Eu.SysDef.805	Req	• control and supervision of the adjacent system Point machine	P3		

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.245	Req	• collection of diagnostic data and transmission to the subsystem Maintenance and Data Management	SDI-P		
Eu.SysDef.806	Req	• provision of maintenance related information	P1		
Eu.SysDef.807	Req	• update of device specific data and software of the subsystem Point	SMI-P		
Eu.SysDef.1080	Req	• execution of functionality related to IT security	SSI-P		
Eu.SysDef.808	Req	• processing of basic configuration data of the subsystem Point	P4		
Eu.SysDef.256	Head	4.4 Subsystem Train Detection System			
Eu.SysDef.257	Head	4.4.1 Description of the subsystem Train Detection System			
Eu.SysDef.258	Info	The subsystem Train Detection System monitors the vacancy and occupancy status of TVP sections. The statuses of the TVP sections are sent to the subsystem Electronic Interlocking.			
Eu.SysDef.1115	Info	The subsystem Train Detection System monitors the passing status of Train Detection Points. The statuses of the Train Detection Points are sent to the subsystem Electronic Interlocking.			
Eu.SysDef.809	Info	The subsystem Train Detection System receives and processes the commands on forcing TVP sections to clear from the subsystem Electronic Interlocking. The subsystem Train Detection System reports the current TVPS and TDP status information to the subsystem Electronic Interlocking.			
Eu.SysDef.810	Req	The subsystem Train Detection System interfaces with the following subsystems:			
Eu.SysDef.811	Req	• Subsystem Electronic Interlocking	SCI-TDS		
Eu.SysDef.812	Req	• Subsystem Maintenance and Data Management	SDI-TDS, SMI-TDS		
Eu.SysDef.1081	Req	• Subsystem Security Services Platform	SSI-TDS		
Eu.SysDef.813	Req	The subsystem Train Detection System interfaces with the following adjacent systems:			
Eu.SysDef.816	Req	• Power Supply	TDS5		
Eu.SysDef.817	Req	The subsystem Train Detection System interfaces with the following actors:			
Eu.SysDef.819	Req	• Wheel	TDS2		
Eu.SysDef.820	Req	• Maintainer	TDS6		
Eu.SysDef.1021	Req	• Basic Data identifier	TDS1		
Eu.SysDef.259	Req	The subsystem Train Detection System shall be powered with the adjacent system Power Supply.	TDS5		
Eu.SysDef.260	Head	4.4.2 Functions of the subsystem Train Detection System			
Eu.SysDef.261	Req	The following functions shall be performed by the subsystem Train Detection System:			
Eu.SysDef.266	Req	• commands from the subsystem Electronic Interlocking shall be processed	SCI-TDS		
Eu.SysDef.268	Req	• the current TVPS and TDP statuses shall be transmitted to the subsystem Electronic Interlocking	SCI-TDS		
Eu.SysDef.262	Req	• indicate and evaluate associated TVP sections and TDP	TDS2		
Eu.SysDef.267	Req	• collection of diagnostic data and transmission to the subsystem Maintenance and Data Management	SDI-TDS		
Eu.SysDef.823	Req	• provision of maintenance related information	TDS6		
Eu.SysDef.824	Req	• update of device specific data and software of the subsystem Train Detection System	SMI-TDS		

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.1082	Req	• execution of functionality related to IT security	SSI-TDS		
Eu.SysDef.825	Req	• processing of basic configuration data of the subsystem Train Detection System	TDS1		
Eu.SysDef.273	Head	4.5 Subsystem Generic IO			
Eu.SysDef.274	Head	4.5.1 Description of the subsystem Generic IO			
Eu.SysDef.275	Info	The subsystem Generic IO is applicable for integration of individual signalling components, particularly in the track and platform area, which are controlled or monitored with discrete input and output information.			
Eu.SysDef.829	Info	The subsystem Generic IO is used for controlling and supervising Adjacent IO systems, with the purpose to simplify interfacing to objects that do not have a designated interface protocol. For controlling, the subsystem Generic IO receives and processes the commands from the subsystem Electronic Interlocking to the Adjacent IO system. For supervising, the subsystem Generic IO transmits the statuses of the Adjacent IO system to the subsystem Electronic Interlocking.			
Eu.SysDef.830	Req	The subsystem Generic IO interfaces with the following subsystems:			
Eu.SysDef.831	Req	• Subsystem Electronic Interlocking	SCI-IO		
Eu.SysDef.832	Req	• Subsystem Maintenance and Data Management	SDI-IO, SMI-IO		
Eu.SysDef.1083	Req	• Subsystem Security Services Platform	SSI-IO		
Eu.SysDef.833	Req	The subsystem Generic IO interfaces with the following adjacent systems:			
Eu.SysDef.277	Req	• Adjacent IO system	IO2, IO3		
Eu.SysDef.834	Req	• Power Supply	IO4		
Eu.SysDef.835	Req	The subsystem Generic IO interfaces with the following actors:			
Eu.SysDef.836	Req	• Basic Data identifier	IO1		
Eu.SysDef.837	Req	• Maintainer	IO5		
Eu.SysDef.281	Req	The subsystem Generic IO shall be powered with the adjacent system Power Supply.	IO4		
Eu.SysDef.276	Info	The subsystem Generic IO can be used to integrate standardised objects (for example key lock) to the EULYNX System. The subsystem Generic IO is flexible to integrate also non-standardised objects (for example moveable bridges, gates). To maintain the flexibility, only generic application cases are described, which can be configured for project specific purpose. The standardised application cases may be defined in order to avoid repeated acceptance process in each project.			
Eu.SysDef.593	Info	The number of ports is not limited to a few fixed number but addressed as n-input and n-output ports.			
Eu.SysDef.594	Req	The use of the SCI-IO interface as a replacement protocol for other defined interfaces may derive unwanted variations and incompatibility between systems and is thus not permitted.			
Eu.SysDef.282	Head	4.5.2 Functions of the subsystem Generic IO			
Eu.SysDef.283	Req	The following functions shall be performed by the subsystem Generic IO:			
Eu.SysDef.284	Req	• commands from the subsystem Electronic Interlocking shall be processed	SCI-IO		
Eu.SysDef.290	Req	• the current statuses shall be transmitted to the subsystem Electronic Interlocking	SCI-IO		
Eu.SysDef.838	Req	• transfer output information to the Adjacent IO system	IO2		
Eu.SysDef.839	Req	• collect input information from the Adjacent IO system	IO3		

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.286	Req	• collection of diagnostic data and transmission to the subsystem Maintenance and Data Management	SDI-IO		
Eu.SysDef.840	Req	• update of device specific data and software of the subsystem Generic IO	SMI-IO		
Eu.SysDef.1084	Req	• execution of functionality related to IT security	SSI-IO		
Eu.SysDef.841	Req	• provision of maintenance related information	IO5		
Eu.SysDef.842	Req	• processing of basic configuration data of the subsystem Generic IO	IO1		
Eu.SysDef.411	Head	4.6 Subsystem Level Crossing			
Eu.SysDef.1001	Head	4.6.1 Description of the subsystem Level Crossing			
Eu.SysDef.412	Info	The subsystem Level Crossing controls and monitors level crossing protection systems, employing e.g. lamps and barriers, in order to prevent collisions between trains and road users.			
Eu.SysDef.1019	Info	The subsystem Level Crossing receives and processes the commands on requested status of the level crossing protection facility from the subsystem Electronic Interlocking. The subsystem Level Crossing reports the current status information to the subsystem Electronic Interlocking. The subsystem Level Crossing controls and supervises the adjacent system level crossing protection facility. The subsystem Level Crossing doesn't have autonomous functions. The logic of activation and deactivation is performed by the subsystem Electronic Interlocking.			
Eu.SysDef.1013	Req	The subsystem Level Crossing interfaces with the following subsystems:			
Eu.SysDef.1017	Req	• Subsystem Electronic Interlocking	SCI-LC		
Eu.SysDef.1018	Req	• Subsystem Maintenance and Data Management	SDI-LC, SMI-LC		
Eu.SysDef.1085	Req	• Subsystem Security Services Platform	SSI-LC		
Eu.SysDef.1014	Req	The subsystem Level Crossing interfaces with the following adjacent systems:			
Eu.SysDef.1051	Req	• Level crossing protection facility	LC4		
Eu.SysDef.1009	Req	• Detection element	LC5		
Eu.SysDef.1003	Req	• Local operator	LC6		
Eu.SysDef.1000	Req	• Power supply	LC3		
Eu.SysDef.1015	Req	The subsystem Level Crossing interfaces with the following actors:			
Eu.SysDef.1004	Req	• Basic Data identifier	LC1		
Eu.SysDef.1005	Req	• Maintainer	LC2		
Eu.SysDef.1016	Req	The subsystem Level Crossing shall be powered with the adjacent system Power Supply.	LC3		
Eu.SysDef.1002	Head	4.6.2 Functions of the subsystem Level Crossing			
Eu.SysDef.889	Req	The following functions shall be performed by the subsystem Level Crossing:			
Eu.SysDef.414	Req	• commands from the subsystem Electronic Interlocking shall be processed	SCI-LC		
Eu.SysDef.890	Req	• the current statuses shall be transmitted to the subsystem Electronic Interlocking	SCI-LC		
Eu.SysDef.1052	Req	• control and supervision of the adjacent system Level crossing protection facility	LC4		
Eu.SysDef.1007	Req	• control and supervision of the adjacent system Detection element	LC5		

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.1012	Req	• interaction with the local operator	LC6		
Eu.SysDef.994	Req	• collection of diagnostic data and transmission to the subsystem Maintenance and Data Management	SDI-LC		
Eu.SysDef.993	Req	• update of device specific data and software of the subsystem Level Crossing	SMI-LC		
Eu.SysDef.1086	Req	• execution of functionality related to IT security	SSI-LC		
Eu.SysDef.1010	Req	• provision of maintenance related information	LC2		
Eu.SysDef.1011	Req	• processing of basic configuration data of the subsystem Level Crossing	LC1		
Eu.SysDef.294	Head	4.7 Subsystem Maintenance and Data Management			
Eu.SysDef.295	Head	4.7.1 Description of the subsystem Maintenance and Data Management			
Eu.SysDef.843	Info	The subsystem Maintenance and Data Management performs the services required for the operation of the EULYNX System. Service functions may be provided also to the adjacent systems.			
Eu.SysDef.844	Req	The subsystem Maintenance and Data Management interfaces with the following subsystems:			
Eu.SysDef.845	Info	• Subsystem Electronic Interlocking	SDI-EIL, SMI-EIL		
Eu.SysDef.846	Req	• Subsystem Light Signal	SDI-LS, SMI-LS		
Eu.SysDef.847	Req	• Subsystem Point	SDI-P, SMI-P		
Eu.SysDef.848	Req	• Subsystem Train Detection System	SDI-TDS, SMI-TDS		
Eu.SysDef.849	Req	• Subsystem Generic IO	SDI-IO, SMI-IO		
Eu.SysDef.992	Req	• Subsystem Level Crossing	SDI-LC, SMI-LC		
Eu.SysDef.1087	Req	• Subsystem Security Services Platform	SSI-MDM		
Eu.SysDef.850	Req	The subsystem Maintenance and Data Management interfaces with the following adjacent systems:			
Eu.SysDef.1134	Req	• External Level Crossing System	SDI-LX, SMI-LX		
Eu.SysDef.851	Info	• Diagnostic System	SDI-DS		
Eu.SysDef.852	Req	• Power Supply	MDM4		
Eu.SysDef.854	Req	The subsystem Maintenance and Data Management interfaces with the following actors:			
Eu.SysDef.855	Req	• Maintainer	MDM3		
Eu.SysDef.857	Req	• Configuration data carrier	MDM1		
Eu.SysDef.858	Req	The subsystem Maintenance and Data Management shall be powered with the adjacent system Power Supply.	MDM4		
Eu.SysDef.298	Head	4.7.2 Functions of the subsystem Maintenance and Data Management			
Eu.SysDef.859	Req	The following functions shall be performed by the subsystem Maintenance and Data Management:			

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.860	Req	• update of device specific data and software of the connected systems	SMI-LS, SMI-TDS, SMI-P, SMI-IO, SMI-LC, SMI-LX		
Eu.SysDef.990	Info	• update of device specific data and software of the connected systems	SMI-EIL		
Eu.SysDef.861	Req	• collection of diagnostic data from the connected systems	SDI-LS, SDI-TDS, SDI-P, SDI-IO, SDI-LC, SDI-LX		
Eu.SysDef.991	Info	• collection of diagnostic data from the connected systems	SDI-EIL		
Eu.SysDef.862	Req	• collection of diagnostic data of the subsystem Maintenance and Data Management			
Eu.SysDef.863	Info	• transmission of collected diagnostic data to the adjacent system Diagnostic System	SDI-DS		
Eu.SysDef.1123	Req	• logging of the data traffic on SCI-XX Note: There is no logical interface between the subsystem Maintenance and Data Management and other communication partners via SCI-XX. There is only a physical interface via a mirror port or Network Terminal Access Point at the central connection of the Electronic Interlocking to the PoS-Signalling. This connection is not shown on the EULYNX System architecture diagram.			
Eu.SysDef.865	Req	• configuration and display of maintenance related information	MDM3		
Eu.SysDef.866	Req	• processing of device specific data and software	MDM1		
Eu.SysDef.669	Req	• provide time synchronisation for the subsystems and adjacent systems Note: The time synchronisation can be provided by either the subsystem Maintenance and Data Management or the subsystem Security Services Platform.	SDI-LS, SDI-TDS, SDI-P, SDI-IO, SDI-LC, SDI-LX		
Eu.SysDef.303	Req	• the subsystem Maintenance and Data Management shall receive the configuration data sets from the Configuration Data carrier	MDM1		
Eu.SysDef.304	Req	• the subsystem Maintenance and Data Management shall manage different configuration data sets per each connected system	SMI-LS, SMI-TDS, SMI-P, SMI-IO, SMI-LC, SMI-LX		
Eu.SysDef.305	Req	• the valid configuration data set for each connected system shall be selected through operation of the subsystem Maintenance and Data Management	SMI-LS, SMI-TDS, SMI-P, SMI-IO, SMI-LC, SMI-LX		
Eu.SysDef.1088	Req	• execution of functionality related to IT security	SSI-MDM		
Eu.SysDef.1089	Head	4.8 Subsystem Security Services Platform			
Eu.SysDef.1090	Head	4.8.1 Description of the subsystem Security Services Platform			
Eu.SysDef.1091	Info	The subsystem Security Services Platform performs the services supporting secure operation of the EULYNX System. Service functions may be provided also to the adjacent systems.			
Eu.SysDef.1092	Req	The subsystem Security Services Platform interfaces with the following subsystems:			
Eu.SysDef.1093	Req	• Subsystem Electronic Interlocking	SSI-EIL		
Eu.SysDef.1099	Req	• Subsystem Maintenance and Data Management	SSI-MDM		

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.1094	Req	• Subsystem Light Signal	SSI-LS		
Eu.SysDef.1095	Req	• Subsystem Point	SSI-P		
Eu.SysDef.1096	Req	• Subsystem Train Detection System	SSI-TDS		
Eu.SysDef.1097	Req	• Subsystem Generic IO	SSI-IO		
Eu.SysDef.1098	Req	• Subsystem Level Crossing	SSI-LC		
Eu.SysDef.1117	Req	The subsystem Security Services Platform interfaces with the following adjacent systems:			
Eu.SysDef.1135	Req	• External Level Crossing System	SSI-LX		
Eu.SysDef.1118	Req	• Power Supply	SSP3		
Eu.SysDef.1100	Req	The subsystem Security Services Platform interfaces with the following actors:			
Eu.SysDef.1102	Req	• Maintainer	SSP2		
Eu.SysDef.1103	Req	• Security service interaction	SSP1		
Eu.SysDef.1101	Req	The subsystem Security Services Platform shall be powered with the adjacent system Power Supply.	SSP3		
Eu.SysDef.1104	Head	4.8.2 Functions of the subsystem Security Services Platform			
Eu.SysDef.1105	Req	The following functions shall be performed by the subsystem Security Services Platform:			
Eu.SysDef.1106	Req	• identity and access management of the connected systems	SSI-LS, SSI-TDS, SSI-P, SSI-IO, SSI-LC, SSI-EIL, SSI-MDM, SSI-LX		
Eu.SysDef.1107	Req	• public key infrastructure management of the connected systems	SSI-LS, SSI-TDS, SSI-P, SSI-IO, SSI-LC, SSI-EIL, SSI-MDM, SSI-LX		
Eu.SysDef.1108	Req	• collection of logging data for IT security from the connected systems	SSI-LS, SSI-TDS, SSI-P, SSI-IO, SSI-LC, SSI-EIL, SSI-MDM, SSI-LX		
Eu.SysDef.1110	Req	• backup of data from the connected systems for IT security	SSI-MDM		
Eu.SysDef.1111	Req	• provide time synchronisation for the subsystems and adjacent systems Note: The time synchronisation can be provided by either the subsystem Maintenance and Data Management or the subsystem Security Services Platform.	SSI-LS, SSI-TDS, SSI-P, SSI-IO, SSI-LC, SSI-EIL, SSI-MDM, SSI-LX		
Eu.SysDef.307	Head	4.9 Subsystem Communication System			
Eu.SysDef.308	Head	4.9.1 Description of the subsystem Communication System			

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.309	Info	The subsystem Communication System ensures the transmission of the information, which is exchanged over the process data interfaces, maintenance interfaces and diagnostic interfaces. The Communication System is considered as a subsystem of the EULYNX System in this system definition.			
Eu.SysDef.311	Head	4.9.2 Functions of the subsystem Communication System			
Eu.SysDef.312	Req	The following functions shall be performed by the subsystem Communication System:			
Eu.SysDef.313	Req	<ul style="list-style-type: none"> transmission of process data between communication partners according to [EN 50159] 	SCI-LS, SCI-TDS, SCI-P, SCI-IO, SCI-LC, SCI-RBC, SCI-CC, SCI-ILS, SCI-LX		
Eu.SysDef.1138	Info	<ul style="list-style-type: none"> transmission of process data between communication partners according to [EN 50159] 	EIL1		
Eu.SysDef.974	Req	<ul style="list-style-type: none"> transmission of diagnostic data between communication partners 	SDI-LS, SDI-TDS, SDI-P, SDI-IO, SDI-LC, SDI-LX		
Eu.SysDef.1139	Info	<ul style="list-style-type: none"> transmission of diagnostic data between communication partners 	SDI-DS, SDI-EIL		
Eu.SysDef.975	Req	<ul style="list-style-type: none"> transmission of system maintenance data between communication partners according to [EN 50159] 	SMI-LS, SMI-TDS, SMI-P, SMI-IO, SMI-LC, SMI-LX		
Eu.SysDef.1140	Info	<ul style="list-style-type: none"> transmission of system maintenance data between communication partners according to [EN 50159] 	SMI-EIL		
Eu.SysDef.1112	Req	<ul style="list-style-type: none"> transmission of security related data between communication partners according to [EN 50159] 	SSI-LS, SSI-TDS, SSI-P, SSI-IO, SSI-LC, SSI-EIL, SSI-MDM, SSI-LX		
Eu.SysDef.321	Head	5 Connections to adjacent systems and actors outside of the system boundary			
Eu.SysDef.322	Info	This section describes the adjacent systems and actors of the EULYNX System from the perspective of the EULYNX System.			
Eu.SysDef.325	Head	5.1 Command Control System			
Eu.SysDef.326	Info	The Command Control System serves as the human-machine-interface between the signaller and the connected systems.			
Eu.SysDef.870	Info	The Command Control System shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.871	Info	<ul style="list-style-type: none"> commands shall be sent to the subsystem Electronic Interlocking 	SCI-CC		
Eu.SysDef.332	Info	<ul style="list-style-type: none"> the statuses from the subsystem Electronic Interlocking shall be processed 	SCI-CC		
Eu.SysDef.549	Info	In EULYNX System architecture, the Command Control System is considered as part of the Traffic Control System, connected to the EULYNX System via the SCI-CC interface.			
Eu.SysDef.556	Info	<p>The SCI-CC interface specification can also be applied for connecting the Traffic Control System directly to the following adjacent systems:</p> <ul style="list-style-type: none"> the Radio Block Centre the Centralised ETCS L1 Controller <p>In such case the functional apportionment must be completed from the perspective of the adjacent system, similar to the</p>			

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
		functional apportionment between the EULYNX System and the Traffic Control System. Note: See also Domain Knowledge (Eu.DK.424) in [Eu.Doc.10].			
Eu.SysDef.1070	Info	The SCI-CC interface specification can also be applied for connecting the Trackworker Safety System to the subsystem Electronic Interlocking.			
Eu.SysDef.337	Head	5.2 Train Describer			
Eu.SysDef.338	Info	The Train Describer is responsible for the function of provision of the train number information.			
Eu.SysDef.872	Info	The Train Describer shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.873	Info	• the statuses from the subsystem Electronic Interlocking shall be processed	SCI-CC		
Eu.SysDef.548	Info	In EULYNX System reference architecture, the Train Describer is considered as part of the Traffic Control System, connected to the EULYNX System via the SCI-CC interface.			
Eu.SysDef.343	Head	5.3 Automatic Route Setting System			
Eu.SysDef.344	Info	The Automatic Route Setting System is responsible for the function of automation of route setting.			
Eu.SysDef.874	Info	The Automatic Route Setting System shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.347	Info	• the statuses from the subsystem Electronic Interlocking shall be processed	SCI-CC		
Eu.SysDef.875	Info	• commands shall be sent to the subsystem Electronic Interlocking	SCI-CC		
Eu.SysDef.550	Info	In EULYNX System reference architecture, the Automatic Route Setting System is considered as part of the Traffic Control System, connected to the EULYNX System via the SCI-CC interface.			
Eu.SysDef.351	Head	5.4 Documentation System			
Eu.SysDef.352	Info	The Documentation System is responsible for the function of recording juridical data.			
Eu.SysDef.876	Info	The Documentation System shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.354	Info	• the statuses from the subsystem Electronic Interlocking shall be processed	EIL1		
Eu.SysDef.357	Head	5.5 Radio Block Centre			
Eu.SysDef.358	Info	The Radio Block Centre is, in relation with the EULYNX System, responsible for the following functions: • provide ETCS data • signal movement authorities • automate route setting			
Eu.SysDef.877	Info	The Radio Block Centre shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.984	Info	• the commands from the subsystem Electronic Interlocking shall be processed	SCI-RBC		
Eu.SysDef.361	Info	• the statuses from the subsystem Electronic Interlocking shall be processed	SCI-RBC		
Eu.SysDef.878	Info	• commands shall be sent to the subsystem Electronic Interlocking	SCI-RBC		
Eu.SysDef.879	Info	• statuses shall be sent to the subsystem Electronic Interlocking	SCI-RBC		
Eu.SysDef.571	Info	The SCI-RBC interface supports the exchange of both route based and element based information.			
Eu.SysDef.533	Info	Integrated solutions may be provided where the Radio Block Centre will be on the same hardware platform as the subsystem Electronic Interlocking. Following that concept, the SCI-RBC becomes an internal interface, not specified by EULYNX.			

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.1065	Info	The SCI-RBC interface specification can also be applied for connecting the Centralised ETCS L1 Controller to the subsystem Electronic Interlocking.			
Eu.SysDef.385	Head	5.6 Adjacent Interlocking System			
Eu.SysDef.386	Info	The Adjacent Interlocking System is, in relation with the EULYNX System, responsible for the following functions: <ul style="list-style-type: none"> • line block operation • route operation 			
Eu.SysDef.1072	Info	The Adjacent Interlocking System can be implemented as the Subsystem - Electronic Interlocking of an adjacent interlocking area with EULYNX system architecture. The actors 'Subsystem - Electronic Interlocking' and 'Adjacent Interlocking System' are interchangeable, depending on which of the two EULYNX systems is taken as viewpoint.			
Eu.SysDef.1073	Info	The Adjacent Interlocking System can be implemented as ILS adapter to interface to a legacy adjacent interlocking or a legacy line block system.			
Eu.SysDef.882	Info	The Adjacent Interlocking System shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.388	Info	• commands shall be sent to the subsystem Electronic Interlocking	SCI-ILS		
Eu.SysDef.883	Info	• the commands from the subsystem Electronic Interlocking shall be processed	SCI-ILS		
Eu.SysDef.884	Info	• the statuses from the subsystem Electronic Interlocking shall be processed	SCI-ILS		
Eu.SysDef.885	Info	• the statuses shall be sent to the subsystem Electronic Interlocking	SCI-ILS		
Eu.SysDef.435	Head	5.7 Power supply			
Eu.SysDef.436	Req	The Power supply supplies the electrical energy for the operation of all subsystems of the EULYNX System.	EIL3, IO4, P2, TDS5, LS8, LC3, MDM4, SSP3		
Eu.SysDef.534	Info	The Power supply should be seen as a separate subsystem delivering a specified Point of Power with defined qualities regarding voltage, availability, autonomous operation etc. to the indoor components as well as to trackside components.			
Eu.SysDef.375	Head	5.8 Trackworker Safety System			
Eu.SysDef.376	Info	The Trackworker Safety System is used for protection of works on the tracks as a worker warning device. The signal dependant information is controlled from the subsystem Electronic Interlocking.			
Eu.SysDef.377	Info	The Trackworker Safety System shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.657	Info	• commands shall be sent to the subsystem Electronic Interlocking	SCI-CC		
Eu.SysDef.1034	Info	• the statuses from the subsystem Electronic Interlocking shall be processed	SCI-CC		
Eu.SysDef.1036	Info	The SCI-CC interface specification can also be applied for connecting the Trackworker Safety System directly to the following adjacent systems: <ul style="list-style-type: none"> • the Radio Block Centre <p>In such case the functional apportionment must be completed from the perspective of the adjacent system, similar to the functional apportionment between the EULYNX System and the Trackworker Safety System.</p> <p>Note: See also Domain Knowledge (Eu.DK.424) in [Eu.Doc.10].</p>			
Eu.SysDef.1071	Info	The SCI-CC interface specification can also be applied for connecting the Command Control System to the subsystem Electronic Interlocking.			

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.614	Head	5.9 Centralised ETCS L1 Controller			
Eu.SysDef.615	Info	The Centralised ETCS L1 Controller communicates variable signalling data to balise drivers, based on the information from the subsystem Electronic Interlocking. The balise driver controls switchable balises.			
Eu.SysDef.925	Info	The Centralised ETCS L1 Controller shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.1042	Info	• commands shall be sent to the subsystem Electronic Interlocking	SCI-RBC		
Eu.SysDef.1043	Info	• the statuses from the subsystem Electronic Interlocking shall be processed	SCI-RBC		
Eu.SysDef.927	Info	• statuses shall be sent to the subsystem Electronic Interlocking	SCI-RBC		
Eu.SysDef.1066	Info	The SCI-RBC interface specification can also be applied for connecting the Radio Block Centre to the subsystem Electronic Interlocking.			
Eu.SysDef.1053	Head	5.10 External Level Crossing System			
Eu.SysDef.1054	Info	The External Level Crossing System controls and monitors level crossing protection systems, employing e.g. lamps and barriers, in order to prevent collisions between trains and road users.			
Eu.SysDef.1055	Info	The External Level Crossing System controls the activation and deactivation process either autonomously or by receiving and processing commands from the subsystem Electronic Interlocking.			
Eu.SysDef.1124	Info	The External Level Crossing System interfaces with the following subsystems:			
Eu.SysDef.1125	Info	• Subsystem Electronic Interlocking	SCI-LX		
Eu.SysDef.1126	Info	• Subsystem Maintenance and Data Management	SDI-LX, SMI-LX		
Eu.SysDef.1127	Info	• Subsystem Security Services Platform	SSI-LX		
Eu.SysDef.1128	Info	The External Level Crossing System interfaces with the following actors:			
Eu.SysDef.1129	Info	• Basic Data identifier	LX1		
Eu.SysDef.1130	Info	• Maintainer	LX2		
Eu.SysDef.1056	Info	The External Level Crossing System shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.1057	Info	• commands from the subsystem Electronic Interlocking shall be processed	SCI-LX		
Eu.SysDef.1060	Info	• statuses shall be sent to the subsystem Electronic Interlocking	SCI-LX		
Eu.SysDef.1131	Info	• collection of diagnostic data and transmission to the subsystem Maintenance and Data Management	SDI-LX		
Eu.SysDef.1132	Info	• update of device specific data and software of the External Level Crossing System	SMI-LX		
Eu.SysDef.1133	Info	• execution of functionality related to IT security	SSI-LX		
Eu.SysDef.426	Head	5.11 Diagnostic System			
Eu.SysDef.427	Info	The Diagnostic System is responsible for the following functions: • provision of diagnostic data			
Eu.SysDef.893	Info	The Diagnostic System shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.431	Info	• the diagnostic data from the subsystem Maintenance and Data Management shall be processed	SDI-DS		

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.437	Head	5.12 Maintainer			
Eu.SysDef.440	Info	The Maintainer performs preventive and corrective maintenance on EULYNX System and adjacent systems.	LS7, TDS6, P1, LC2, IO5, EIL4, MDM3, SSP2, LX2		
Eu.SysDef.444	Head	5.13 Train driver			
Eu.SysDef.445	Info	The Train driver interfaces with the subsystem Light Signal by observing the signal aspect indicated by the subsystem Light Signal. The Train driver considers the indicated signal aspects for train operation according to the national requirements.	LS2		
Eu.SysDef.446	Head	5.14 Basic Data identifier			
Eu.SysDef.447	Info	The Basic Data identifier designates a storage device, providing the basis for booting the EULYNX field element subsystem and adjacent systems.	LS6, TDS1, P4, LC1, IO1, LX1		
Eu.SysDef.448	Head	5.15 Point machine			
Eu.SysDef.449	Info	The Point machine is a safety relevant signalling component, ensuring safe passage of railway vehicles over moveable elements.			
Eu.SysDef.450	Info	The Point machine realises the commands for movement requests on moveable elements.	P3		
Eu.SysDef.896	Info	The Point machine provides the supervision of the moveable elements.	P3		
Eu.SysDef.453	Head	5.16 Legacy train protection system			
Eu.SysDef.454	Info	The trackside equipment of the Legacy train protection system is used to trigger an emergency brake on vehicles passing signals at stop. The speed control equipment of the Legacy train protection system supervises the locally permitted speed limits as indicated by switchable or fixed signal aspects. It triggers an emergency brake of the vehicle. The Legacy train protection system is, in relation with the EULYNX System, responsible for the following functions: • provide supervision data			
Eu.SysDef.897	Info	The Legacy train protection system shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.456	Info	• transmit supervision data as controlled by the subsystem Light Signal.	LS5		
Eu.SysDef.458	Head	5.17 Eurobalise			
Eu.SysDef.459	Info	The Eurobalise performs the transmission of signal information to a railway vehicle in the application of ETCS.			
Eu.SysDef.898	Info	The Eurobalise is, in relation with the EULYNX System, responsible for the following functions: • provide ETCS data • provide supervision data			
Eu.SysDef.899	Info	The Eurobalise shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.460	Info	• transmit ETCS data and supervision data as controlled by the subsystem Light Signal	LS4		
Eu.SysDef.462	Head	5.18 Indicator			
Eu.SysDef.463	Info	The Indicator at the platform indicates to train staff the readiness of the route for the related platform edge.			
Eu.SysDef.900	Info	The Indicator shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.464	Info	• activate or de-activate indications as controlled by the subsystem Light Signal	LS3		
Eu.SysDef.466	Head	5.19 Wheel			
Eu.SysDef.467	Info	The Wheel of a railway vehicle influences the activation points and the detection points.	TDS2		

ID	Type	Requirement	Interfaces	JIRA	V 4.2 (4.A) > V 4.2 (2.A)
Eu.SysDef.469	Head	5.20 Adjacent IO system			
Eu.SysDef.470	Info	The Adjacent IO system are all elements, which are interfaced to the subsystem Generic IO and are controlled and/or supervised through inputs and outputs of the subsystem Electronic Interlocking.			
Eu.SysDef.902	Info	The Adjacent IO system shall perform the following functions for connection with the EULYNX System:			
Eu.SysDef.903	Info	• determine and provide statuses as input information to the subsystem Generic IO	IO3		
Eu.SysDef.904	Info	• process output information from the subsystem Generic IO and execute safety relevant functions	IO2		
Eu.SysDef.514	Info	During the life cycle of the signalling system, there shall be the possibility of interfacing further elements with the subsystem Generic IO as long as those elements meet the requirements of the subsystem Generic IO.			
Eu.SysDef.515	Head	5.21 Configuration Data carrier			
Eu.SysDef.516	Info	The Configuration Data carrier contains the device specific configuration data and, if applicable, system software for the subsystems.	EIL2, MDM1		
Eu.SysDef.1113	Head	5.22 Security service interaction			
Eu.SysDef.1114	Info	The Security service interaction contains the data exchange needed for security services outside of the EULYNX System.	SSP1		
Eu.SysDef.1061	Head	5.23 Level crossing protection facility			
Eu.SysDef.1062	Info	The Level crossing protection facility prevents collisions between trains and road users, employing e.g. lamps and barriers.	LC4		
Eu.SysDef.1023	Head	5.24 Detection element			
Eu.SysDef.1025	Info	The Detection element detects the passage of trains at the level crossing protection area (e.g. Inductive Detective Loops).	LC5		
Eu.SysDef.1028	Head	5.25 Local operator			
Eu.SysDef.1029	Info	The Local operator is a person responsible for on-site operations in accordance with national regulations.	LC6		