EULYNX Initiative

EULYNX System Definition

Contents

ID	Type	Requirement	Interface
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 (0.A) Approval date: 15.06.2023	
Eu.SysDef.978	Info	**Version history**	
Eu.SysDef.1116	Info	version number: 4.0 (0.A) date: 16.05.2022 author: Nico Huurman, 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 Huurman 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 Huurman review: CCB changes: EUAR-600, EUAR-604, EUAR-606, EUAR-613	
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 www.eulynx.eu/index.php/members	
Eu.SysDef.16	Info	Responsible for this document: EULYNX Project Management Office www.eulynx.eu	

ID	Type	Requirement	Interface
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: • 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**	

ID	Type	Requirement	Interface
Eu.SysDef.677	Info	[A1] Eu.Doc.7_A1 Appendix A1 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	• "Req" - This denotes a mandatory requirement.	
Eu.SysDef.688	Info	• "Info" - This denotes additional information to help understand the specification. These objects do not specify any additional requirements.	
Eu.SysDef.689	Info	• "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: • EIL1, SDI-EIL, SMI-EIL, SCI-ACS, 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: • Development of the goals and framework • Determination of the corresponding subsystems and actors	

ID	Type	Requirement	Interface
		• 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	• dedicated functional components (subsystems) shall be interchangeable (irrespective of the supplier)	
Eu.SysDef.43	Info	• reduced diversity of communication technology, energy supply and diagnostics	
Eu.SysDef.44	Info	• simplified maintainability	
Eu.SysDef.45	Info	• reduced LCC	
Eu.SysDef.46	Info	• 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.	

ID	Type	Requirement	Interface
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.	
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**	

ID	Type	Requirement	Interface
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**	
Eu.SysDef.92	Info	The EULYNX System architecture diagram in Appendix A1 displays the following: • System boundary • Subsystems • Adjacent systems • Interfaces	
Eu.SysDef.90	Info	The EULYNX System is composed of different subsystems: • 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.	

ID	Type	Requirement	Interface
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: • 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	
Eu.SysDef.84	Info	Interacting functions are grouped into the following function groups: • 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	

ID	Type	Requirement	Interface
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	• 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	• Diagnostic interface: The interface required for transmitting non-safety relevant diagnostic information.	
Eu.SysDef.101	Info	• Maintenance interface: The interface required for updating the engineering and configuration data, as well as software data of the subsystem.	
Eu.SysDef.1074	Info	• Security interface: The interface required for managing functionality related to IT security.	
Eu.SysDef.97	Info	• 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	• 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	• 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.	

ID	Type	Requirement	Interface
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.	
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

ID	Type	Requirement	Interface
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
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

ID	Type	Requirement	Interface
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

ID	Type	Requirement	Interface
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
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

ID	Type	Requirement	Interface
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
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.	

ID	Type	Requirement	Interface
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:	

ID	Type	Requirement	Interface
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
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

ID	Type	Requirement	Interface
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
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**	

ID	Type	Requirement	Interface
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.814	Info	• Train Detection System in adjacent interlocking area	SCI-ACS
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:	

ID	Type	Requirement	Interface
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.264	Info	• the current statuses shall be transmitted to the adjacent system Train Detection System in adjacent interlocking area	SCI-ACS
Eu.SysDef.821	Info	• the statuses from the adjacent system Train Detection System in adjacent interlocking area shall be processed	SCI-ACS
Eu.SysDef.822	Info	• indicate and evaluate associated TVP sections using the statuses from the adjacent system Train Detection System in adjacent interlocking area	SCI-ACS
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
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

ID	Type	Requirement	Interface
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	Interface
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

ID	Type	Requirement	Interface
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
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.	

ID	Type	Requirement	Interface
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	Interface
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	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

ID	Type	Requirement	Interface
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
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:	

ID	Type	Requirement	Interface
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

ID	Type	Requirement	Interface
Eu.SysDef.307	Head	**4.9 Subsystem Communication System**	
Eu.SysDef.308	Head	**4.9.1 Description of the subsystem Communication System**	
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	• 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	• transmission of process data between communication partners according to [EN 50159]	SCI-ACS, EIL1
Eu.SysDef.974	Req	• transmission of diagnostic data between communication partners	SDI-LS, SDI-TDS, SDI-P, SDI-IO, SDI-LC, SDI-LX
Eu.SysDef.1139	Info	• transmission of diagnostic data between communication partners	SDI-DS, SDI-EIL
Eu.SysDef.975	Req	• 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	• transmission of system maintenance data between communication partners according to [EN 50159]	SMI-EIL

ID	Type	Requirement	Interface
Eu.SysDef.1112	Req	• 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	• commands shall be sent to the subsystem Electronic Interlocking	SCI-CC
Eu.SysDef.332	Info	• 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	The SCI-CC interface specification can also be applied for connecting the Traffic Control System directly to the following adjacent systems: • the Radio Block Centre • the Centralised ETCS L1 Controller 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 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	

ID	Type	Requirement	Interface
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

ID	Type	Requirement	Interface
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.	
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: • 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**	

ID	Type	Requirement	Interface
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: • the Radio Block Centre 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. Note: See also Domain Knowledge (Eu.DK.424) in [Eu.Doc.10].	
Eu.SysDef.1071	Info	The SCI-CC interface specification can also be applied for connecting the Command Control System to the subsystem Electronic Interlocking.	
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

ID	Type	Requirement	Interface
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

ID	Type	Requirement	Interface
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
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**	

ID	Type	Requirement	Interface
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
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:	

ID	Type	Requirement	Interface
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.908	Head	**5.23 Train Detection System in adjacent interlocking area**	
Eu.SysDef.909	Info	The Train Detection System in adjacent interlocking area monitors the vacancy and occupancy status of TVP sections.	
Eu.SysDef.910	Info	The Train Detection System in adjacent interlocking area shall perform the following functions for connection with the EULYNX System:	
Eu.SysDef.911	Info	• statuses from the subsystem Train Detection System shall be processed	SCI-ACS
Eu.SysDef.912	Info	• the current statuses shall be transmitted to the subsystem Train Detection System	SCI-ACS
Eu.SysDef.1061	Head	**5.24 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	**5.25 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	**5.26 Local operator**	
Eu.SysDef.1029	Info	The Local operator is a person responsible for on-site operations in accordance with national regulations.	LC6