



**EULYNX Initiative**

## **EULYNX System Definition**

Document number: Eu.Doc.7  
Version: 4.2 (2.A)

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| ID             | Type | Requirement  | Interfaces | JIRA     | V 4.2 (2.A) > V 4.2 (0.A)  |
|----------------|------|--|------------|----------|--|
| Eu.SysDef.11   | Head | <b>1 Introduction</b>  |            |          |  |
| Eu.SysDef.12   | Head | <b>1.1 Release information</b>   |            |          |  |
| Eu.SysDef.13   | Info | [Eu.Doc.7]<br>EULYNX System definition<br>CENELEC Phase: 2<br>Version: 4.2 (2.A)<br>Approval date: 29.05.2024  |            |          | <b>Object Text:</b><br>[Eu.Doc.7]<br>EULYNX System definition<br>CENELEC Phase: 2<br>Version: 4.2 (0.2.A)<br>Approval date: <del>15</del> 29.0605.20232024   |
| Eu.SysDef.978  | Info | <b>Version history</b>   |            |          |  |
| Eu.SysDef.1116 | Info | version number: 4.0 (0.A)<br>date: 16.05.2022<br>author: Nico Hurman, Mirko Blazic<br>review: CCB<br>changes: EUAR-508, EUAR-509, EUAR-513, EUAR-526                       |            |          |  |
| Eu.SysDef.1120 | Info | version number: 4.1 (0.A)<br>date: 31.03.2023<br>author: Nico Hurman<br>review:<br>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)<br>date: 27.06.2023<br>author: Nico Hurman<br>review: CCB<br>changes: EUAR-600, EUAR-604, EUAR-606, EUAR-613                                     |            |          |  |
| Eu.SysDef.1141 | Info | version number: 4.2 (1.A)<br>date: 29.04.2024<br>author: Nico Hurman<br>review: cluster<br>changes: EUAR-225, EUAR-681, EUAR-692   |            |          | object created after baseline 4.2 (0.A)  |
| Eu.SysDef.1142 | Info | version number: 4.2 (2.A)<br>date: 18.06.2024<br>author: Nico Hurman<br>review: CCB<br>changes: EUAR-746   |            |          | object created after baseline 4.2 (0.A)  |
| Eu.SysDef.14   | Head | <b>1.2 Impressum</b>   |            |          |  |
| Eu.SysDef.15   | Info | Publisher:<br><b>EULYNX Initiative</b><br><br>A full list of the <b>EULYNX Partners</b> can be found on <a href="https://eulynx.eu/">https://eulynx.eu/</a> .              |            | EUAR-681 | <b>Object Text:</b><br>Publisher:<br>EULYNX Initiative<br><br>A full list of the EULYNX Partners can be found on <a href="https://eulynx.eu/index.php/members">www.https://eulynx.eu/index.php/members</a><br><b>a_JIRA_BL4R3:</b><br><a href="#">EUAR-681</a> |
| Eu.SysDef.16   | Info | Responsible for this document:<br>EULYNX Project Management Office<br><a href="http://www.eulynx.eu">www.eulynx.eu</a>   |            |          |  |
| Eu.SysDef.976  | Info | Copyright EULYNX Partners<br>All information included or disclosed in this document is licensed under the European Union Public Licence EUPL, Version 1.2 or later.        |            |          |  |

| ID            | Type | Requirement   | Interfaces | JIRA     | V 4.2 (2.A) > V 4.2 (0.A)  |
|---------------|------|---|------------|----------|--|
| Eu.SysDef.17  | Head | <b>1.3 Purpose</b>  |            |          |  |
| 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"> <li>functional description of the EULYNX System,</li> <li>classification of the EULYNX System within the railway system,</li> <li>system boundary of the EULYNX System,</li> <li>EULYNX System composition with corresponding subsystems,</li> <li>interfaces between the subsystems of the EULYNX System,</li> <li>interfaces from the EULYNX System to adjacent systems,</li> <li>descriptions of the functions in the subsystems,</li> <li>descriptions of the functions in the adjacent systems, required for the operation of the EULYNX System.</li> </ul> |            |          |  |
| 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 | <b>1.4 Applicable standards and regulations</b>   |            |          |  |
| 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 | <b>1.5 Applicable documents</b>   |            |          |  |
| 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 | <b>1.6 Appendices</b>   |            |          |  |
| Eu.SysDef.677 | Info | [Eu.Doc.7_A1]<br>Appendix A1 to [Eu.Doc.7]<br>EULYNX System architecture  |            | EUAR-746 | <b>Object Text:</b><br><del>[A1]</del><br>Eu.Doc.7_A1<br>Appendix A1 to [Eu.Doc.7]<br>EULYNX System architecture<br><b>a_JIRA_BL4R3:</b><br><a href="#">EUAR-746</a> |
| Eu.SysDef.24  | Head | <b>1.7 Terms and abbreviations</b>  |            |          |  |
| Eu.SysDef.25  | Info | The terms and abbreviations are listed in the EULYNX Glossary [Eu.Doc.9].   |            |          |  |
| Eu.SysDef.675 | Head | <b>1.8 Variability management</b>   |            |          |  |
| 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 | <b>1.9 Definition of object types</b>   |            |          |  |
| 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"> <li>"Req" - This denotes a mandatory requirement.</li> </ul>   |            |          |  |
| Eu.SysDef.688 | Info | <ul style="list-style-type: none"> <li>"Info" - This denotes additional information to help understand the specification. These objects do not specify any additional requirements.</li> </ul>  |            |          |  |

| ID             | Type | Requirement  | Interfaces | JIRA     | V 4.2 (2.A) > V 4.2 (0.A)   |
|----------------|------|--|------------|----------|---|
| Eu.SysDef.689  | Info | <ul style="list-style-type: none"> <li>"Head" - This denotes chapter headings.</li> </ul>  |            |          |   |
| 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"> <li>EIL1, SDI-EIL, SMI-EIL, SDI-DS</li> </ul>   |            | EUAR-225 | <b>Object Text:</b><br>This includes the following interfaces:<br>EIL1, SDI-EIL, SMI-EIL, <del>SCI-ACS</del> , SDI-DS<br><b>a_JIRA_BL4R3:</b><br><a href="#">EUAR-225</a> |
| 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 | <b>1.10 EULYNX System Definition development</b>   |            |          |   |
| Eu.SysDef.36   | Info | The preparation of the EULYNX System Definition is divided into multiple development steps: <ul style="list-style-type: none"> <li>Development of the goals and framework</li> <li>Determination of the corresponding subsystems and actors</li> <li>Definition of the logical and technical boundary to the adjacent systems</li> <li>Description of system functions and system actors</li> <li>Functional apportionment between subsystems, adjacent systems and actors</li> <li>Definition of the interfaces between subsystems, adjacent systems and actors</li> <li>Definition of the logical information objects of the interfaces</li> </ul> |            |          |   |
| 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 | <b>1.11 Development goals for the EULYNX System</b>  |            |          |   |
| Eu.SysDef.41   | Info | The development goals for the EULYNX System are:   |            |          |   |
| Eu.SysDef.42   | Info | <ul style="list-style-type: none"> <li>dedicated functional components (subsystems) shall be interchangeable (irrespective of the supplier)</li> </ul>   |            |          |   |
| Eu.SysDef.43   | Info | <ul style="list-style-type: none"> <li>reduced diversity of communication technology, energy supply and diagnostics</li> </ul>   |            |          |   |
| Eu.SysDef.44   | Info | <ul style="list-style-type: none"> <li>simplified maintainability</li> </ul>   |            |          |   |
| Eu.SysDef.45   | Info | <ul style="list-style-type: none"> <li>reduced LCC</li> </ul>  |            |          |   |
| Eu.SysDef.46   | Info | <ul style="list-style-type: none"> <li>meeting the RAMS-targets of existing conventional interlocking systems and systematic and harmonised allocation of RAM, safety and security requirements</li> </ul>   |            |          |   |
| 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 | <b>2 General requirements for the EULYNX System</b>  |            |          |   |
| 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 | <b>2.1 EULYNX System within the context of the railway system</b>  |            |          |   |
| 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".<br>"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  | Interfaces | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|---------------|------|--|------------|------|---------------------------|
| 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 | <b>2.2 Operational environment</b>   |            |      |                           |
| Eu.SysDef.60  | Head | <b>2.2.1 Operational conditions</b>  |            |      |                           |
| 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 | <b>2.2.2 Worker safety</b>   |            |      |                           |
| 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 | <b>2.2.3 Environmental conditions</b>  |            |      |                           |
| 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 | <b>2.2.4 Management of RAMS</b>  |            |      |                           |
| 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 | <b>2.2.5 Management of Security</b>  |            |      |                           |
| 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 | <b>3 System description and system boundary</b>  |            |      |                           |
| 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 | <b>3.1 System boundary</b>   |            |      |                           |
| Eu.SysDef.92  | Info | The EULYNX System architecture diagram in Appendix A1 displays the following: <ul style="list-style-type: none"><li>• System boundary</li><li>• Subsystems</li><li>• Adjacent systems</li><li>• Interfaces</li></ul> |            |      |                           |



| ID            | Type | Requirement  | Interfaces | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|---------------|------|--|------------|------|---------------------------|
| Eu.SysDef.90  | Info | The EULYNX System is composed of different subsystems: <ul style="list-style-type: none"> <li>• Subsystem Electronic Interlocking</li> <li>• Subsystem Light Signal</li> <li>• Subsystem Point</li> <li>• Subsystem Generic IO</li> <li>• Subsystem Train Detection System</li> <li>• Subsystem Level Crossing</li> <li>• Subsystem Maintenance and Data Management</li> <li>• Subsystem Security Services Platform</li> <li>• Subsystem Communication System</li> </ul>   |            |      |                           |
| 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.<br>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 | <b>3.2 System functions</b>  |            |      |                           |
| 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"> <li>• Route protection (route setting, supervision of the end position of moveable elements, route locking, route releasing, protection against moving occupied elements, route blocking)</li> <li>• Supervision of speed (indication of movement authority, route dependent permitted speed)</li> <li>• Indication of the route direction</li> <li>• Train separation (rear end protection, front end protection, flank protection)</li> <li>• Level crossing protection for rail and road traffic (by using subsystem)</li> <li>• Ensure correct functioning of the system (for example initialisation of interfaces)</li> <li>• Support maintenance activities</li> <li>• Support IT Security functions</li> </ul> |            |      |                           |
| Eu.SysDef.84  | Info | Interacting functions are grouped into the following function groups: <ul style="list-style-type: none"> <li>• Provide ETCS data</li> <li>• Monitoring and controlling train movements</li> <li>• Command and control (receive and process commands, process and send statuses and messages from subsystems and adjacent systems for display and registration)</li> <li>• Automation of operations</li> <li>• Level crossing protection for rail and road traffic (by using adjacent system)</li> <li>• Provide diagnostic data</li> <li>• Ensure correct functioning between the EULYNX System and the adjacent systems (for example initialisation of interfaces, provide system specific data)</li> <li>• Support maintenance activities</li> <li>• Support IT Security functions</li> </ul>                  |            |      |                           |
| Eu.SysDef.528 | Req  | Detailed IM-specific (national) requirements concerning the identified functions shall be defined by individual IMs.   |            |      |                           |

| ID             | Type | Requirement   | Interfaces | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|---|------------|------|---------------------------|
| 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 | <b>3.3 Interface definition</b>   |            |      |                           |
| Eu.SysDef.95   | Info | The following types of interfaces are defined:  |            |      |                           |
| Eu.SysDef.96   | Info | <ul style="list-style-type: none"> <li>• Process data interface:<br/>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.</li> </ul> |            |      |                           |
| Eu.SysDef.99   | Info | <ul style="list-style-type: none"> <li>• Diagnostic interface:<br/>The interface required for transmitting non-safety relevant diagnostic information.</li> </ul>   |            |      |                           |
| Eu.SysDef.101  | Info | <ul style="list-style-type: none"> <li>• Maintenance interface:<br/>The interface required for updating the engineering and configuration data, as well as software data of the subsystem.</li> </ul>   |            |      |                           |
| Eu.SysDef.1074 | Info | <ul style="list-style-type: none"> <li>• Security interface:<br/>The interface required for managing functionality related to IT security.</li> </ul>   |            |      |                           |
| Eu.SysDef.97   | Info | <ul style="list-style-type: none"> <li>• Control interface:<br/>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.).</li> </ul>   |            |      |                           |
| Eu.SysDef.98   | Info | <ul style="list-style-type: none"> <li>• Maintenance/Operation/Display interface:<br/>The interface required for interaction with a subsystem, in order to visualise or change the subsystem behaviour.</li> </ul>  |            |      |                           |
| Eu.SysDef.100  | Info | <ul style="list-style-type: none"> <li>• Power supply:<br/>The interface providing the electrical energy to the subsystem.</li> </ul>   |            |      |                           |
| Eu.SysDef.654  | Req  | Means of preventing unauthorised access to safety-critical software via the defined interfaces shall be provided.   |            |      |                           |
| Eu.SysDef.106  | Head | <b>4 Subsystems and corresponding functions</b>   |            |      |                           |
| 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 | <b>4.1 Subsystem Electronic Interlocking</b>  |            |      |                           |
| Eu.SysDef.110  | Head | <b>4.1.1 Description of the subsystem Electronic Interlocking</b>   |            |      |                           |
| 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.   |            |      |                           |

| ID             | Type | Requirement  | Interfaces          | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|--|---------------------|------|---------------------------|
| 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,<br>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                |      |                           |
| Eu.SysDef.753  | Req  | • Configuration data carrier   | EIL2                |      |                           |
| Eu.SysDef.113  | Head | <b>4.1.2 Functions of the subsystem Electronic Interlocking</b>  |                     |      |                           |
| 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                |      |                           |

| ID             | Type | Requirement   | Interfaces | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|---|------------|------|---------------------------|
| 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 | <b>4.1.3 Functions for the control and monitoring of the subsystem Light Signal</b>   |            |      |                           |
| 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 | <b>4.1.4 Functions for the control and monitoring of the subsystem Point</b>  |            |      |                           |
| 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 | <b>4.1.5 Functions for the control and monitoring of the subsystem Train Detection System</b>   |            |      |                           |
| 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 | <b>4.1.6 Functions for the control and monitoring of the subsystem Generic IO</b>   |            |      |                           |
| 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 | <b>4.1.7 Functions for the control and monitoring of the subsystem Level Crossing</b>   |            |      |                           |
| 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 | <b>4.1.8 Functions for adjacent systems</b>   |            |      |                           |
| 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    |      |                           |

| ID             | Type | Requirement   | Interfaces | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|---|------------|------|---------------------------|
| 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     |      |                           |
| Eu.SysDef.1050 | Req  | • the statuses from the adjacent system External Level Crossing System shall be processed   | SCI-LX     |      |                           |
| Eu.SysDef.208  | Head | <b>4.2 Subsystem Light Signal</b>   |            |      |                           |
| Eu.SysDef.209  | Head | <b>4.2.1 Description of the subsystem Light Signal</b>  |            |      |                           |
| 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   | Interfaces     | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|---|----------------|------|---------------------------|
| 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 | <b>4.2.2 Functions of the subsystem Light Signal</b>  |                |      |                           |
| 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            |      |                           |
| 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         |      |                           |

| ID             | Type | Requirement  | Interfaces   | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|--|--------------|------|---------------------------|
| Eu.SysDef.794  | Req  | • processing of basic configuration data of the subsystem Light Signal   | LS6          |      |                           |
| Eu.SysDef.236  | Head | <b>4.3 Subsystem Point</b>   |              |      |                           |
| Eu.SysDef.237  | Head | <b>4.3.1 Description of the subsystem Point</b>  |              |      |                           |
| 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.<br>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 | <b>4.3.2 Functions of the subsystem Point</b>  |              |      |                           |
| 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 | <b>4.4 Subsystem Train Detection System</b>  |              |      |                           |
| Eu.SysDef.257  | Head | <b>4.4.1 Description of the subsystem Train Detection System</b>   |              |      |                           |

| ID             | Type | Requirement  | Interfaces          | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|--|---------------------|------|---------------------------|
| 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,<br>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 | <b>4.4.2 Functions of the subsystem Train Detection System</b>   |                     |      |                           |
| 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             |      |                           |
| 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 | <b>4.5 Subsystem Generic IO</b>  |                     |      |                           |
| Eu.SysDef.274  | Head | <b>4.5.1 Description of the subsystem Generic IO</b>   |                     |      |                           |
| 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.   |                     |      |                           |



| ID             | Type | Requirement  | Interfaces     | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|--|----------------|------|---------------------------|
| 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.<br>For controlling, the subsystem Generic IO receives and processes the commands from the subsystem Electronic Interlocking to the Adjacent IO system.<br>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).<br>To maintain the flexibility, only generic application cases are described, which can be configured for project specific purpose.<br>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 | <b>4.5.2 Functions of the subsystem Generic IO</b>   |                |      |                           |
| 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            |      |                           |
| 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            |      |                           |

| ID             | Type | Requirement  | Interfaces     | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|--|----------------|------|---------------------------|
| Eu.SysDef.411  | Head | <b>4.6 Subsystem Level Crossing</b>  |                |      |                           |
| Eu.SysDef.1001 | Head | <b>4.6.1 Description of the subsystem Level Crossing</b>   |                |      |                           |
| 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.<br>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 | <b>4.6.2 Functions of the subsystem Level Crossing</b>   |                |      |                           |
| 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            |      |                           |

| ID             | Type | Requirement  | Interfaces                                     | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|--|--|------|---------------------------|
| Eu.SysDef.1011 | Req  | • processing of basic configuration data of the subsystem Level Crossing   | LC1  |      |                           |
| Eu.SysDef.294  | Head | <b>4.7 Subsystem Maintenance and Data Management</b>   |  |      |                           |
| Eu.SysDef.295  | Head | <b>4.7.1 Description of the subsystem Maintenance and Data Management</b>  |  |      |                           |
| 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 | <b>4.7.2 Functions of the subsystem Maintenance and Data Management</b>  |  |      |                           |
| Eu.SysDef.859  | Req  | The following functions shall be performed by the subsystem Maintenance and Data Management:   |  |      |                           |
| 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 |      |                           |

| ID             | Type | Requirement  | Interfaces                                     | JIRA     | V 4.2 (2.A) > V 4.2 (0.A)  |
|----------------|------|--|--|----------|--|
| 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  | <ul style="list-style-type: none"> <li>logging of the data traffic on SCI-XX</li> </ul> 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  | <ul style="list-style-type: none"> <li>provide time synchronisation for the subsystems and adjacent systems</li> </ul> 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 | EUAR-692 | <b>Object Text:</b><br>provide time synchronisation for the subsystems and adjacent systems<br><br><a href="#">Note: The time synchronisation can be provided by either the subsystem Maintenance and Data Management or the subsystem Security Services Platform.</a><br><b>a_JIRA_BL4R3:</b><br><a href="#">EUAR-692</a> |
| 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 | <b>4.8 Subsystem Security Services Platform</b>  |  |          |  |
| Eu.SysDef.1090 | Head | <b>4.8.1 Description of the subsystem Security Services Platform</b>   |  |          |  |
| 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   |          |  |

| ID             | Type | Requirement  | Interfaces   | JIRA     | V 4.2 (2.A) > V 4.2 (0.A)               |
|----------------|------|--|--|----------|---|
| 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 | <b>4.8.2 Functions of the subsystem Security Services Platform</b>   |  |          |   |
| 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<br><br>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 | EUAR-692 | object created after baseline 4.2 (0.A) |
| Eu.SysDef.307  | Head | <b>4.9 Subsystem Communication System</b>  |  |          |   |
| Eu.SysDef.308  | Head | <b>4.9.1 Description of the subsystem Communication System</b>   |  |          |   |
| 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 | <b>4.9.2 Functions of the subsystem Communication System</b>   |  |          |   |
| Eu.SysDef.312  | Req  | The following functions shall be performed by the subsystem Communication System:  |  |          |   |

| ID             | Type | Requirement   | Interfaces   | JIRA     | V 4.2 (2.A) > V 4.2 (0.A)   |
|----------------|------|---|--|----------|---|
| 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]   | EIL1   | EUAR-225 | <b>a_Interfaces:</b><br><del>SCI-ACS</del> , EIL1<br><b>a_JIRA_BL4R3:</b><br><a href="#">EUAR-225</a> |
| 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  |          |   |
| 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 | <b>5 Connections to adjacent systems and actors outside of the system boundary</b>  |  |          |   |
| 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 | <b>5.1 Command Control System</b>   |  |          |   |
| 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 | <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"> <li>• the Radio Block Centre</li> <li>• the Centralised ETCS L1 Controller</li> </ul> <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 Traffic Control System.</p> <p>Note: See also Domain Knowledge (Eu.DK.424) in [Eu.Doc.10].</p> |  |          |   |

| ID             | Type | Requirement   | Interfaces | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|---|------------|------|---------------------------|
| 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 | <b>5.2 Train Describer</b>  |            |      |                           |
| 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 | <ul style="list-style-type: none"> <li>the statuses from the subsystem Electronic Interlocking shall be processed</li> </ul>  | 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 | <b>5.3 Automatic Route Setting System</b>   |            |      |                           |
| 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 | <ul style="list-style-type: none"> <li>the statuses from the subsystem Electronic Interlocking shall be processed</li> </ul>  | SCI-CC     |      |                           |
| Eu.SysDef.875  | Info | <ul style="list-style-type: none"> <li>commands shall be sent to the subsystem Electronic Interlocking</li> </ul>   | 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 | <b>5.4 Documentation System</b>   |            |      |                           |
| 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 | <ul style="list-style-type: none"> <li>the statuses from the subsystem Electronic Interlocking shall be processed</li> </ul>  | EIL1       |      |                           |
| Eu.SysDef.357  | Head | <b>5.5 Radio Block Centre</b>   |            |      |                           |
| Eu.SysDef.358  | Info | <p>The Radio Block Centre is, in relation with the EULYNX System, responsible for the following functions:</p> <ul style="list-style-type: none"> <li>provide ETCS data</li> <li>signal movement authorities</li> <li>automate route setting</li> </ul> |            |      |                           |
| Eu.SysDef.877  | Info | The Radio Block Centre shall perform the following functions for connection with the EULYNX System:   |            |      |                           |
| Eu.SysDef.984  | Info | <ul style="list-style-type: none"> <li>the commands from the subsystem Electronic Interlocking shall be processed</li> </ul>  | SCI-RBC    |      |                           |
| Eu.SysDef.361  | Info | <ul style="list-style-type: none"> <li>the statuses from the subsystem Electronic Interlocking shall be processed</li> </ul>  | SCI-RBC    |      |                           |
| Eu.SysDef.878  | Info | <ul style="list-style-type: none"> <li>commands shall be sent to the subsystem Electronic Interlocking</li> </ul>   | SCI-RBC    |      |                           |
| Eu.SysDef.879  | Info | <ul style="list-style-type: none"> <li>statuses shall be sent to the subsystem Electronic Interlocking</li> </ul>   | 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 | <b>5.6 Adjacent Interlocking System</b>   |            |      |                           |

| ID             | Type | Requirement   | Interfaces   | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|---|--|------|---------------------------|
| 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"> <li>• line block operation</li> <li>• route operation</li> </ul>   |  |      |                           |
| 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 | <ul style="list-style-type: none"> <li>• commands shall be sent to the subsystem Electronic Interlocking</li> </ul>   | SCI-ILS  |      |                           |
| Eu.SysDef.883  | Info | <ul style="list-style-type: none"> <li>• the commands from the subsystem Electronic Interlocking shall be processed</li> </ul>  | SCI-ILS  |      |                           |
| Eu.SysDef.884  | Info | <ul style="list-style-type: none"> <li>• the statuses from the subsystem Electronic Interlocking shall be processed</li> </ul>  | SCI-ILS  |      |                           |
| Eu.SysDef.885  | Info | <ul style="list-style-type: none"> <li>• the statuses shall be sent to the subsystem Electronic Interlocking</li> </ul>   | SCI-ILS  |      |                           |
| Eu.SysDef.435  | Head | <b>5.7 Power supply</b>   |  |      |                           |
| Eu.SysDef.436  | Req  | The Power supply supplies the electrical energy for the operation of all subsystems of the EULYNX System.   | EIL3, IO4,<br>P2, TDS5,<br>LS8, LC3,<br>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 | <b>5.8 Trackworker Safety System</b>  |  |      |                           |
| 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 | <ul style="list-style-type: none"> <li>• commands shall be sent to the subsystem Electronic Interlocking</li> </ul>   | SCI-CC   |      |                           |
| Eu.SysDef.1034 | Info | <ul style="list-style-type: none"> <li>• the statuses from the subsystem Electronic Interlocking shall be processed</li> </ul>  | SCI-CC   |      |                           |
| Eu.SysDef.1036 | Info | <p>The SCI-CC interface specification can also be applied for connecting the Trackworker Safety System directly to the following adjacent systems:</p> <ul style="list-style-type: none"> <li>• the Radio Block Centre</li> </ul> <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.  |  |      |                           |
| Eu.SysDef.614  | Head | <b>5.9 Centralised ETCS L1 Controller</b>   |  |      |                           |
| 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:   |  |      |                           |



| ID             | Type | Requirement  | Interfaces                                     | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|--|--|------|---------------------------|
| 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 | <b>5.10 External Level Crossing System</b>   |  |      |                           |
| 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 | <b>5.11 Diagnostic System</b>  |  |      |                           |
| Eu.SysDef.427  | Info | The Diagnostic System is responsible for the following functions:<br>• 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 | <b>5.12 Maintainer</b>   |  |      |                           |
| 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 |      |                           |

| ID            | Type | Requirement   | Interfaces                   | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|---------------|------|---|------------------------------|------|---------------------------|
| Eu.SysDef.444 | Head | <b>5.13 Train driver</b>  |                              |      |                           |
| 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 | <b>5.14 Basic Data identifier</b>   |                              |      |                           |
| 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 | <b>5.15 Point machine</b>   |                              |      |                           |
| 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 | <b>5.16 Legacy train protection system</b>  |                              |      |                           |
| 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.<br>The Legacy train protection system is, in relation with the EULYNX System, responsible for the following functions: <ul style="list-style-type: none"> <li>• provide supervision data</li> </ul> |                              |      |                           |
| Eu.SysDef.897 | Info | The Legacy train protection system shall perform the following functions for connection with the EULYNX System:   |                              |      |                           |
| Eu.SysDef.456 | Info | <ul style="list-style-type: none"> <li>• transmit supervision data as controlled by the subsystem Light Signal.</li> </ul>  | LS5                          |      |                           |
| Eu.SysDef.458 | Head | <b>5.17 Eurobalise</b>  |                              |      |                           |
| 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: <ul style="list-style-type: none"> <li>• provide ETCS data</li> <li>• provide supervision data</li> </ul>   |                              |      |                           |
| Eu.SysDef.899 | Info | The Eurobalise shall perform the following functions for connection with the EULYNX System:   |                              |      |                           |
| Eu.SysDef.460 | Info | <ul style="list-style-type: none"> <li>• transmit ETCS data and supervision data as controlled by the subsystem Light Signal</li> </ul>   | LS4                          |      |                           |
| Eu.SysDef.462 | Head | <b>5.18 Indicator</b>   |                              |      |                           |
| 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 | <ul style="list-style-type: none"> <li>• activate or de-activate indications as controlled by the subsystem Light Signal</li> </ul>   | LS3                          |      |                           |
| Eu.SysDef.466 | Head | <b>5.19 Wheel</b>   |                              |      |                           |
| Eu.SysDef.467 | Info | The Wheel of a railway vehicle influences the activation points and the detection points.   | TDS2                         |      |                           |
| Eu.SysDef.469 | Head | <b>5.20 Adjacent IO system</b>  |                              |      |                           |
| 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   | Interfaces | JIRA | V 4.2 (2.A) > V 4.2 (0.A) |
|----------------|------|---|------------|------|---------------------------|
| 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 | <b>5.21 Configuration Data carrier</b>  |            |      |                           |
| 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 | <b>5.22 Security service interaction</b>  |            |      |                           |
| 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 | <b>5.23 Level crossing protection facility</b>  |            |      |                           |
| 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 | <b>5.24 Detection element</b>   |            |      |                           |
| 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 | <b>5.25 Local operator</b>  |            |      |                           |
| Eu.SysDef.1029 | Info | The Local operator is a person responsible for on-site operations in accordance with national regulations.  | LC6        |      |                           |