



EULYNX Initiative



Europe's Rail Joint Undertaking

Requirements specification for subsystem Light Signal

Contents

1	Introduction	1
1.1	Release information	1
1.2	Impressum	1
1.3	Purpose	2
1.4	Applicable standards and regulations	2
1.5	Applicable documents	2
1.6	Terms and abbreviations	2
1.7	Variability management	2
1.8	Definition of object types	2
1.9	Modelling	2
2	Conditions of use	3
2.1	Functional packages	3
3	Functional requirements specification	3
3.1	Subsystem - Light Signal - General Infos and Assumptions	3
3.2	Subsystem - Light Signal - Logical Viewpoint	3
3.2.1	Subsystem - Light Signal - Logical Context	3
3.3	Subsystem - Light Signal - Functional Viewpoint	4
3.3.1	Definition of time values	4
3.3.2	Subsystem - Light Signal - Functional Context	4
3.3.3	Subsystem - Light Signal - Functional Partitioning	21
3.3.4	Subsystem - Light Signal - Functional Architecture	21
3.3.5	Subsystem - Light Signal - Functional Entities	23
3.4	Subsystem - Light Signal - Interfaces	31
3.4.1	SCI-LS (Subsystem - Electronic Interlocking)	31
3.4.1.1	SCI-LS - Logical Viewpoint	31
3.4.1.1.1	SCI-LS - Logical Context	31
3.4.1.2	SCI-LS - Information Flows	32
3.4.1.3	SCI-LS - Functional Viewpoint	33
3.4.1.3.1	SCI-LS - Functional Partitioning	33
3.4.1.3.2	SCI-LS - Functional Architecture	34
3.4.1.3.3	SCI-LS - Functional Entities	34
3.4.2	SMI-LS (Subsystem - Maintenance and Data Management)	40
3.4.3	SDI-LS (Subsystem - Maintenance and Data Management)	40
3.4.4	SSI-LS (Subsystem - Security Services Platform)	40
3.4.5	LS2 (Train driver)	40
3.4.6	LS3 (Indicator)	40
3.4.7	LS4 (Eurobalise)	40
3.4.8	LS5 (Legacy train protection system)	41
3.4.9	LS6 (Basic Data Identifier)	41
3.4.10	LS7 (Maintainer)	41
4	RAMSS requirements	41
5	Technical requirements	41
5.1	Specific technical interface requirements	41
5.1.1	Interface to the Point of Service Signalling (PoS-Signalling)	41
5.1.2	Interface to the Legacy train protection system	41
5.1.3	Interface to the Eurobalise	41
5.1.4	Interface to the Indicator	41
5.2	Time behaviour	42
5.2.1	Response times	42
5.2.2	Flashing cycle	42
5.3	Configuration and engineering data	42
5.3.1	Specific data	42

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.12	Head	1 Introduction		
Eu.LS.13	Head	1.1 Release information		
Eu.LS.14	Info	[Eu.Doc.32] Requirements specification for subsystem Light Signal CENELEC Phase: 4 Version: 4.3 (0.A) Approval date: 29.05.2024		
Eu.LS.5725	Info	Version history		
Eu.LS.7627	Info	version number: 4.0 (0.A) date: 16.05.2022 author: Filip Giering model version: 18 Generic interface and subsystem requirements version: 4.0 (0.A) Generic interface and subsystem requirements for SCI version: 1.0 (0.A) review: CCB changes: EULS-384, EULS-388, EULS-389, EULS-391		
Eu.LS.7628	Info	version number: 4.1 (0.A) date: 24.03.2023 author: Filip Giering model version: 21 Generic interface and subsystem requirements version: 4.0 (1.A) Generic interface and subsystem requirements for SCI version: 1.0 (1.A) review: changes: EULS-396, EULS-405		
Eu.LS.7749	Info	version number: 4.1 (1.A) date: 11.05.2023 author: Filip Giering, Dominik Smajgl model version: 22 Generic interface and subsystem requirements version: 4.0 (1.A) Generic interface and subsystem requirements for SCI version: 1.0 (1.A) review: cluster changes: EULS-406, EULS-408, EULS-410, EULS-412, EULS-413, EULS-414, EULS-418		
Eu.LS.7791	Info	version number: 4.2 (0.A) date: 27.06.2023 author: Filip Giering model version: 22 Generic interface and subsystem requirements version: 4.0 (3.A) Generic interface and subsystem requirements for SCI version: 1.0 (3.A) review: TACS Mirror Group changes: EULS-409, EULS-419, EULS-421, EULS-422, EULS-423, EULS-424		
Eu.LS.7808	Info	version number: 4.2 (1.A) date: 15.12.2023 author: Filip Giering model version: 22 Generic interface and subsystem requirements version: 4.0 (4.A) Generic interface and subsystem requirements for SCI version: 1.0 (4.A) review: M&T changes: EULS-397, EULS-430, EULS-438, EULS-440, EULS-441, EULS-442, EULS-443, EULS-444		
Eu.LS.7875	Info	version number: 4.2 (2.A) date: 21.02.2024 author: Filip Giering model version: 25 Generic interface and subsystem requirements version: 4.0 (4.A) Generic interface and subsystem requirements for SCI version: 1.0 (4.A) review: changes: EULS-415, EULS-450, EULS-451, EULS-452		
Eu.LS.8041	Info	version number: 4.2 (3.A) date: 20.03.2024 author: Filip Giering model version: 26 Generic interface and subsystem requirements version: 4.0 (4.A) Generic interface and subsystem requirements for SCI version: 1.0 (4.A) review: cluster changes: EULS-427, EULS-448, EULS-449, EULS-453, EULS-454, EULS-458		
Eu.LS.8071	Info	version number: 4.3 (0.A) date: 18.06.2024 author: Filip Giering, Ricky Holz model version: 26 Generic interface and subsystem requirements version: 4.0 (6.A) Generic interface and subsystem requirements for SCI version: 1.1 (0.A) review: TACS Mirror Group changes: EULS-460, EULS-464, EULS-465, EULS-466, EULS-467, EULS-468, EULS-469, EULS-470, EULS-471, EULS-474, EULS-475		
Eu.LS.15	Head	1.2 Impressum		

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.16	Info	<div>Publishers: Europe's Rail Joint Undertaking https://rail-research.europa.eu</div> <div>EULYNX Initiative https://eulynx.eu/</div>		
Eu.LS.5683	Info	Responsible for this document: EU-Rail System Pillar Trackside Assets Control and Supervision domain		
Eu.LS.5719	Info	<p>This document is drafted by and belongs to EU Rail.</p> <p>EU Rail encourages the distribution and re-use of this document, the technical specifications and the information it contains. EU Rail holds several intellectual property rights, such as copyright and trade mark rights, which need to be considered when this document is used.</p> <p>EU Rail authorizes you to re-publish, re-use, copy and store this document without changing it, provided that you indicate its source and include the following mention [EU Rail trade mark, title of the document, year of publication, version of document].</p> <p>EU Rail makes no representation or warranty as to the accuracy or completeness of the information contained within these documents. EU Rail shall have no liability to any party as a result of the use of the information contained herein. EU Rail will have no liability whatsoever for any indirect or consequential loss or damage, and any such liability is expressly excluded.</p> <p>You may study, research, implement, adapt, improve and otherwise use the information, the content and the models in this document for your own purposes. If you decide to publish or disclose any adapted, modified or improved version of this document, any amended implementation or derivative work, then you must indicate that you have modified this document, with a reference to the document name and the terms of use of this document. You may not use EU Rail’s trade marks or name in any way that may state or suggest, directly or indirectly, that EU Rail is the author of your adaptations. EU Rail cannot be held responsible for your product, even if you have used this document and its content. It is your responsibility to verify the quality, completeness and the accuracy of the information you use, for your own purposes.</p>		
Eu.LS.18	Head	1.3 Purpose		
Eu.LS.19	Info	The purpose of the document is the specification of requirements for the Subsystem - Light Signal.		
Eu.LS.20	Info	This document describes functional, non-functional and technical requirements for the Subsystem - Light Signal and functional requirements for interface SCI-LS.		
Eu.LS.21	Info	<div>This document is intended for the following users:</div> <ul style="list-style-type: none">• safety authorities• infrastructure managers• safety assessors• signalling system suppliers• validators		
Eu.LS.22	Info	This document is the basis for the implementation by the supplier and for approval by the infrastructure manager.		
Eu.LS.7790	Info	This document is applicable for both the EU-Rail System Pillar target architecture and the EULYNX architecture. The document is delivered as a single specification fitting both the System Pillar documentation sets and the EULYNX documentation sets. EU-Rail System Pillar is the technical authority for this document.		
Eu.LS.23	Head	1.4 Applicable standards and regulations		
Eu.LS.24	Info	A list of applicable standards and regulations used in EULYNX is listed in the EULYNX Reference Document List [Eu.Doc.12].		
Eu.LS.36	Head	1.5 Applicable documents		
Eu.LS.37	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.LS.67	Head	1.6 Terms and abbreviations		
Eu.LS.68	Info	The terms and abbreviations are listed in the EULYNX Glossary [Eu.Doc.9].		
Eu.LS.103	Head	1.7 Variability management		
Eu.LS.104	Info	This document describes harmonised requirements. Variability management is not applicable.		
Eu.LS.105	Head	1.8 Definition of object types		
Eu.LS.106	Info	The following definition for object types is applied in this document:		
Eu.LS.107	Info	<ul style="list-style-type: none">• "Req" - This denotes a mandatory requirement.		
Eu.LS.7809	Info	<ul style="list-style-type: none">• "Def" - This denotes referenceable model elements that are used in the model-based creation of requirements		
Eu.LS.108	Info	<ul style="list-style-type: none">• "Info" - This denotes additional information to help understand the specification. These objects do not specify any additional requirements.		
Eu.LS.109	Info	<ul style="list-style-type: none">• "Head" - This denotes chapter headings.		
Eu.LS.70	Head	1.9 Modelling		
Eu.LS.71	Info	The section "Functional requirements specification" follows a model based systems engineering process using Systems Modelling Language (SysML) and defines the functional system requirements for the Subsystem - Light Signal operational in stimulus-response form. Furthermore the information objects (stimuli and responses) exchanged over the interfaces of the Subsystem - Light Signal are defined.		
Eu.LS.73	Info	The diagrams presented in this document are modelled in SysML [SysML].		
Eu.LS.6034	Info	The rules for the interpretation of the model based parts of specification are defined in [Eu.Doc.29].		
Eu.LS.5733	Info	In chapter 3 "Functional requirements specification" the functional system requirements, defined in the form of a SysML model in the PTC Integrity Modeler are depicted as a surrogate of this model in the form of DOORS-objects.		
Eu.LS.5732	Info	A requirement thereby consists of the respective SysML model element, for instance a SysML diagram, and if necessary an additional extension of the requirement.		
Eu.LS.5731	Info	In the column “Requirement Part 1” the particular SysML model element is depicted and in the column “Requirement Part 2” the corresponding extension of the definition is given. The stated object type normally applies both to “Requirement Part 1” and to “Requirement Part 2”.		

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.6035	Info	There are requirements with type "Req" given, where the column "Requirement Part 2" or a part of it is provided with the heading "Information". In this case, the defined type only applies to the column "Requirement Part 1" and the part of "Requirement Part 2", which is not labelled as "Information".		
Eu.LS.7810	Info	State machines or several state machines linked together in a Functional Architecture define the totality of all functional requirements of an SUS or an SIUS in a coherent and consistent manner. State diagrams of a corresponding state machine are marked with the object type "Req". For the later design and implementation, it is not the description language SysML that is binding, but the domain-specific meaning expressed by it. The specified behaviour can be converted into a vendor specific language but must retain the domain specific meaning describing the functional requirements. The specific model elements are additionally specified and defined by object type "Def" to allow for traceability to supplier designs or test cases. The compliance of products to the specifications must be demonstrated by testing against EULYNX test cases, which are derived from the functionality specified by the models.		
Eu.LS.120	Head	2 Conditions of use		
Eu.LS.6839	Req	All references to [Eu.Doc.20] refer to version 4.0 (6.A) of that document.		
Eu.LS.7622	Req	All references to [Eu.Doc.119] refer to version 1.1 (0.A) of that document.		
Eu.LS.7623	Info	References to [Eu.Doc.120] do not refer to a concrete version of that document. The applicable version shall be defined by national specifications. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.		
Eu.LS.121	Info	The specifications defined in this document shall follow the requirements of the EULYNX System Architecture Specification [Eu.Doc.16].		
Eu.LS.7504	Head	2.1 Functional packages		
Eu.LS.7505	Info	The specifications in this document are divided into functional packages. There are two types of packages related to the product capabilities.		
Eu.LS.7506	Info	'Basic packages': One or more packages, at least one of them must be implemented. It is allowed to combine and implement more than one 'basic package' in a product.		
Eu.LS.7507	Info	'Optional package': One or more packages that can be optionally implemented in addition to one or more basic packages.		
Eu.LS.7508	Info	The specifications of the Subsystem – Light Signal are divided into the following functional packages:		
Eu.LS.7509	Info	Basic Light Signal functionality (basic package) [Basic LS]		
Eu.LS.7510	Info	Interface to Eurobalise (optional package) [Option LS4]		
Eu.LS.7511	Info	Interface to Legacy train protection system (optional package) [Option LS5]		
Eu.LS.4629	Head	3 Functional requirements specification		
Eu.LS.7484	Head	3.1 Subsystem - Light Signal - General Infos and Assumptions		
Eu.LS.6818	Info	The defined model elements represent the Subsystem - Light Signal in a general way. This refers to: -The defined number of Signal Aspects in the state diagrams and IBDs is limited to Signal Aspect 1, Signal Aspect 2 and most restrictive Signal Aspect. For complete implementation the Signal Aspect table [Eu.Doc.37] shall be taken into account. -The downgrading of the Signal Aspect modelled in sequence from Signal Aspect 1 down to Signal Aspect 2 down to most restrictive Signal Aspect.		Basic LS
Eu.LS.7493	Head	3.2 Subsystem - Light Signal - Logical Viewpoint		
Eu.LS.7598	Head	3.2.1 Subsystem - Light Signal - Logical Context		
Eu.LS.4772	Def	<div><div>[Package] Subsystem - Light Signal - Logical Context [Logical Viewpoint - Subsystem Definition]</div><div><div><div><div><div><div>«logical structural entity» Subsystem - Light Signal</div></div></div><div><div><div><div><div>«logical structural entity» Subsystem - Electronic Interlocking</div><div>1SCI-LS</div></div><div><div><div>1SCI-LS</div><div>1</div></div></div><div><div><div>«environmental structural entity» Train driver</div><div>LS2</div></div><div><div><div>LS2</div><div>*</div></div></div></div><div><div><div><div>«logical structural entity» Subsystem - Maintenance and Data Management</div><div>1SMI-LS</div></div><div><div><div>1SMI-LS</div><div>1</div></div></div><div><div><div>1SDI-LS</div><div>1</div></div><div><div><div>«environmental structural entity» Eurobalise</div><div>LS4</div></div><div><div><div>LS4</div><div>4..8</div></div></div></div><div><div><div><div>«logical structural entity» Subsystem - Security Services Platform</div><div>1SSI-LS</div></div><div><div><div>1SSI-LS</div><div>1</div></div></div><div><div><div>«environmental structural entity» Indicator</div><div>LS3</div></div><div><div><div>LS3</div><div>4..8</div></div></div></div><div><div><div><div>«environmental structural entity» Basic Data Identifier</div><div>1LS6</div></div><div><div><div>1LS6</div><div>1</div></div></div><div><div><div>«environmental structural entity» Legacy train protection system</div><div>LS5</div></div><div><div><div>LS5</div><div>4..8</div></div></div></div><div><div><div><div>«environmental structural entity» Maintainer</div><div>1LS7</div></div><div><div><div>1LS7</div><div>1</div></div></div><div><div><div>«environmental structural entity» Power Supply</div><div>LS8</div></div><div><div><div>LS8</div><div>1</div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div>		Basic LS Option LS4 Option LS5
Eu.LS.8082	Req	The Subsystem - Light Signal shall provide a logical interface SCI-LS to exactly one Subsystem - Electronic Interlocking.		

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.8085	Req	The Subsystem - Light Signal shall provide a logical interface SMI-LS to exactly one Subsystem - Maintenance and Data Management.		
Eu.LS.8086	Req	The Subsystem - Light Signal shall provide a logical interface SDI-LS to exactly one Subsystem - Maintenance and Data Management.		
Eu.LS.8087	Req	The Subsystem - Light Signal shall provide a logical interface SSI-LS to exactly one Subsystem - Security Services Platform.		
Eu.LS.8088	Req	The Subsystem - Light Signal shall provide a logical interface LS6 to exactly one Basic Data identifier.		
Eu.LS.8089	Req	The Subsystem - Light Signal shall provide a logical interface LS7 to exactly one Maintainer.		
Eu.LS.8090	Req	The Subsystem - Light Signal shall provide a logical interface LS2 to each Train driver.		
Eu.LS.8091	Req	The Subsystem - Light Signal shall provide a logical interface LS4 to greater than or equal to 4 and less than or equal to 8 Eurobalises.		
Eu.LS.8092	Req	The Subsystem - Light Signal shall provide a logical interface LS3 to greater than or equal to 4 and less than or equal to 8 Indicators.		
Eu.LS.8083	Req	The Subsystem - Light Signal shall provide a logical interface LS5 to greater than or equal to 4 and less than or equal to 8 Legacy train protection systems.		
Eu.LS.8084	Req	The Subsystem - Light Signal shall provide a logical interface LS8 to exactly one Power Supply.		
Eu.LS.4784	Head	3.3 Subsystem - Light Signal - Functional Viewpoint		
Eu.LS.5674	Head	3.3.1 Definition of time values		
Eu.LS.6106	Info	The generic time values for SCI are specified in [Eu.Doc.119].		Basic LS
Eu.LS.7625	Info	The generic time values for SMI are specified in [Eu.Doc.120].		Basic LS
Eu.LS.4843	Head	3.3.2 Subsystem - Light Signal - Functional Context		
Eu.LS.5088	Info	<div><div>[Package] Subsystem - Light Signal - Functional Context [Functional Viewpoint - Subsystem Definition - Initialisation]</div><div><div>uc [Package] Subsystem - Light Signal - Functional Context [Functional Viewpoint - Subsystem Definition - Initialisation]</div><div><p>The diagram shows the functional context of the Subsystem - Light Signal. It is enclosed in a dashed box labeled 'Subsystem - Light Signal'. External actors include 'Subsystem - Electronic Interlocking' (represented by a 3D box), 'Subsystem - Maintenance and Data Management' (represented by a 3D box), and 'Train driver' (represented by a stick figure). Inside the subsystem boundary, there are several use cases: 'SCI-XX EfeS IFUC1.1: Establish PDI connection', 'SCI-XX EfeS IFUC1.2: Close PDI connection', 'LS_UC1.3: Report status', 'LS_UC1.4: Establish initial state of outputs', 'SMI-XX IFUC 1.1: Establish SMI connection', 'SMI-XX IFUC 1.2: Synchronous loading and activation of data', 'SMI-XX IFUC 1.3: Asynchronous preloading of data', 'SMI-XX IFUC 1.4: Reset EfeS', and 'SMI-XX IFUC 1.5: Initiate maintenance'. Relationships are shown as follows: 'Subsystem - Electronic Interlocking' is connected to 'SCI-XX EfeS IFUC1.1' and 'SCI-XX EfeS IFUC1.2'. 'Subsystem - Maintenance and Data Management' is connected to 'SMI-XX IFUC 1.1', 'SMI-XX IFUC 1.2', 'SMI-XX IFUC 1.3', and 'SMI-XX IFUC 1.5'. 'Train driver' is connected to 'LS_UC1.4'. An 'include' relationship is shown from 'SCI-XX EfeS IFUC1.1' to 'LS_UC1.3'.</p></div></div></div>	Basic LS	
Eu.LS.6108	Info	The generic UseCases SCI-XX EfeS IFUC1.1: Establish PDI connection and SCI-XX EfeS IFUC1.2: Close PDI connection are specified in [Eu.Doc.119]. The generic UseCases SMI-XX IFUC 1.1: Establish SMI connection, SMI-XX IFUC 1.2: Synchronous loading and activation of data, SMI-XX IFUC 1.3: Asynchronous preloading of data, SMI-XX IFUC 1.4: Reset EfeS and SMI-XX IFUC 1.5: Initiate maintenance are specified in [Eu.Doc.120].		Basic LS
Eu.LS.4974	Info	LS_UC1.3: Report status	The Subsystem-UseCase LS_UC1.3: Report status defines a scenario about the transmission of status data of the Subsystem - Light Signal to the Subsystem - Electronic Interlocking, while Process Data Interface protocol connection is establishing.	Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.4975	Info	<div><p>Main Success Scenario: Report status [LS SD 1.3.1]</p><p>LS UC1.3: Report status</p><p>Main Success Scenario: Report status [LS SD 1.3.1]</p><p>par</p><div><div><p>1.a1 The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the indicated Signal Aspect.</p></div><div><p>1.b1 The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the set Luminosity.</p></div></div><p>also par</p><div><div><p>1.b1 The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the set Luminosity.</p></div></div><p>end par</p><pre>sequenceDiagram actor Actor participant SEI as Subsystem - Electronic Interlocking participant LSI as Subsystem - Light Signal par Actor->>SEI: Msg_Indicated_Signal_Aspect LSI->>Actor: Msg_Set_Luminosity and LSI->>Actor: Msg_Set_Luminosity end end par</pre></div>	<p>If a change of state occurs whilst establishing the PDI connection and the corresponding status message for the previous state has already been sent, a new status message shall be sent to the Subsystem - Electronic Interlocking as soon as the connection has been fully established.</p> <p>This SD is part of [SCI-XX EfeS IF SD 1.1.1] in [Eu.Doc.119].</p>	Basic LS
Eu.LS.4979	Info	LS_UC1.4: Establish initial state of outputs	The Subsystem-UseCase LS_UC1.4: Establish initial state of outputs state defines the main success scenario and the alternative scenario for establishing the initial state of outputs of the Subsystem - Light Signal.	Basic LS
Eu.LS.5079	Info	<div><p>Main Success Scenario: Establish initial state of outputs [LS SD 1.4.1]</p><p>LS UC1.4: Establish initial state of outputs</p><p>Main Success Scenario: Establish initial state of outputs [LS SD 1.4.1]</p><p>Precondition:</p><p>The Subsystem - Light Signal is in the state BOOTING or INITIALISING.</p><p>Interaction 1.4.1.A:</p><ol style="list-style-type: none">- The Subsystem - Light Signal detects the readiness to establish the initial state of outputs.The Signal Aspect most restrictive Signal Aspect is not yet indicated in conformity with the current configuration and can be indicated uniformly across all Lamps in the configured default Luminosity for the entire Signal Aspect.The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the configured default Luminosity.<p>Postcondition:</p><p>The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the configured default Luminosity.</p><p>Initial state of outputs established.</p><pre>sequenceDiagram participant TD as Train driver participant LSI as Subsystem - Light Signal LSI->>TD: Signal_Aspect</pre></div>		Basic LS
Eu.LS.4980	Info	<div><p>Alternative Scenario: Initial state of outputs already established [LS SD 1.4.2]</p><p>LS UC1.4: Establish initial state of outputs</p><p>Alternative Scenario: Initial state of outputs already established [LS SD 1.4.2]</p><p>Precondition:</p><p>The Subsystem - Light Signal is in the state BOOTING or INITIALISING.</p><p>Initial state of outputs established.</p><p>Interaction 1.4.2.A:</p><ol style="list-style-type: none">- The Subsystem - Light Signal detects the readiness to establish the initial state of outputs.The Signal Aspect most restrictive Signal Aspect is already indicated in conformity with the current configuration.<p>Postcondition:</p><p>---</p><pre>sequenceDiagram participant LSI as Subsystem - Light Signal participant LSI as Subsystem - Light Signal</pre></div>		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.4996	Info	<div><p>Alternative Scenario: Luminosity failure during signal aspect activation - case 1 [LS SD 1.4.3]</p><p>LS UC1.4: Establish initial state of outputs</p><pre>sequenceDiagram participant TD as Train driver participant SS as :Subsystem - Light Signal SS->>TD: Signal_Aspect</pre><p>Alternative Scenario: Luminosity failure during signal aspect activation - case 1 [LS SD 1.4.3]</p><p>Precondition:</p><p>The Subsystem - Light Signal is in the state BOOTING or INITIALISING.</p><p>Interaction 1.4.3.A:</p><ol style="list-style-type: none">- The Subsystem - Light Signal detects the readiness to establish the initial state of outputs.The Signal Aspect most restrictive Signal Aspect is not yet indicated in conformity with the current configuration and cannot be indicated uniformly across all Lamps in the configured default Luminosity for the entire Signal Aspect due to a fault of the Luminosity.The Signal Aspect can be indicated uniformly across all Lamps in the alternative Luminosity for the entire Signal Aspect.The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the alternative Luminosity.<p>Postcondition:</p><p>The Subsystem - Light Signal indicates the signal aspect most restrictive Signal Aspect in the alternative Luminosity.</p><p>Initial state of outputs established.</p></div>		Basic LS
Eu.LS.5006	Info	<div><p>Alternative Scenario: Luminosity failure during signal aspect activation - case 2 [LS SD 1.4.4]</p><p>LS UC1.4: Establish initial state of outputs</p><pre>sequenceDiagram participant TD as Train driver participant SS as :Subsystem - Light Signal ref box Alternative Scenario: Perform fallback operation [LS SD 2.3.1] end</pre><p>Alternative Scenario: Luminosity failure during signal aspect activation - case 2 [LS SD 1.4.4]</p><p>Precondition:</p><p>The Subsystem - Light Signal is in the state BOOTING or INITIALISING.</p><p>Interaction 1.4.4.A:</p><ol style="list-style-type: none">- The Subsystem - Light Signal detects the readiness to establish the initial state of outputs.The Signal Aspect most restrictive Signal Aspect is not yet indicated in conformity with the current configuration and cannot be indicated uniformly across all Lamps in the configured default Luminosity for the entire Signal Aspect due to a fault of the Luminosity.The Signal Aspect most restrictive Signal Aspect cannot be indicated uniformly across all Lamps in the alternative Luminosity for the entire Signal Aspect due to a fault of the Luminosity or an unchangeable set Luminosity.The Subsystem - Light Signal generates the event T5_SIL_Not_Fulfilled.The Subsystem - Light Signal performs fallback operation.<p>Postcondition:</p><p>The Subsystem - Light Signal is in the state FALLBACK_MODE.</p><p>The Subsystem - Light Signal indicates the Signal Aspect according to the national requirements.</p></div>	Note: The signal aspect indicated to the Train driver as defined in Alternative Scenario: Perform fallback operation [LS SD 2.3.1].	Basic LS
Eu.LS.4988	Info	<div><p>Alternative Scenario: Lamp failure during signal aspect activation [LS SD 1.4.5]</p><p>LS UC1.4: Establish initial state of outputs</p><pre>sequenceDiagram participant SS as :Subsystem - Light Signal</pre><p>Alternative Scenario: Lamp failure during signal aspect activation [LS SD 1.4.5]</p><p>Precondition:</p><p>The Subsystem - Light Signal is in the state BOOTING or INITIALISING.</p><p>Interaction 1.4.5.A:</p><ol style="list-style-type: none">- The Subsystem - Light Signal detects the readiness to establish the initial state of outputs.The Signal Aspect most restrictive Signal Aspect is not yet indicated in conformity with the current configuration and cannot be indicated due to the failure of required lamps (No Signal Aspect - lamp failure).<p>Postcondition:</p><p>Initial state of outputs established.</p></div>		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.5052	Info	<div><div><div>Alternative Scenario: Spontaneous Luminosity failure during an existing lamp failure [LS SD 1.4.9]</div><div><div><div><div>LS UC1.4: Establish initial state of outputs</div></div></div><div><div><div>Alternative Scenario: Spontaneous Luminosity failure during an existing lamp failure [LS SD 1.4.9]</div><div>Precondition: The Subsystem - Light Signal is in the state BOOTING or INITIALISING. The Subsystem - Light Signal indicates No Signal Aspect - lamp failure. Initial state of outputs established.</div><div>Interaction 1.4.9.A: 1. - The Subsystem - Light Signal detects a fault in the activation of the configured default Luminosity and the alternative Luminosity. 2. - The Subsystem - Light Signal generates the event T5_SIL_Not_Fulfilled. 3. The Subsystem - Light Signal performs fallback operation.</div><div>Postcondition: The Subsystem - Light Signal is in the state FALLBACK_MODE. The Subsystem - Light Signal indicates the Signal Aspect according to the national requirements.</div></div></div></div><div><div><div>Train driver</div><div>:Subsystem - Light Signal</div></div><div><div>ref</div><div>Alternative Scenario: Perform fallback operation [LS SD 2.3.1]</div></div></div></div></div>	Note: The signal aspect indicated to the Train driver as defined in Alternative Scenario: Perform fallback operation [LS SD 2.3.1].	Basic LS
Eu.LS.5016	Info	<div><div><div>Alternative Scenario: Revocation of lamp failure - case 1 [LS SD 1.4.10]</div><div><div><div>LS UC1.4: Establish initial state of outputs</div></div></div><div><div><div>Alternative Scenario: Revocation of lamp failure - case 1 [LS SD 1.4.10]</div><div>Precondition: The Subsystem - Light Signal is in the state BOOTING or INITIALISING. The Subsystem - Light Signal indicates No Signal Aspect - lamp failure. Initial state of outputs established.</div><div>Interaction 1.4.10.A: 1. - The Subsystem - Light Signal detects that the Signal Aspect most restrictive Signal Aspect can be indicated for the entire Signal Aspect uniformly across all Lamps in the set Luminosity due to the revocation of the lamp failure. 2. The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the set Luminosity.</div><div>Postcondition: The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the set Luminosity.</div></div></div></div><div><div><div>Train driver</div><div>:Subsystem - Light Signal</div></div><div><div>Signal_Aspect</div></div></div></div>		Basic LS
Eu.LS.5024	Info	<div><div><div>Alternative Scenario: Revocation of lamp failure - case 2 [LS SD 1.4.11]</div><div><div><div>LS UC1.4: Establish initial state of outputs</div></div></div><div><div><div>Alternative Scenario: Revocation of lamp failure - case 2 [LS SD 1.4.11]</div><div>Precondition: The Subsystem - Light Signal is in the state BOOTING or INITIALISING. The Subsystem - Light Signal indicates No Signal Aspect - lamp failure. Initial state of outputs established.</div><div>Interaction 1.4.11.A: 1. - The Subsystem - Light Signal detects that the Signal Aspect most restrictive Signal Aspect can be indicated again due to the revocation of the lamp failure. 2. The Signal Aspect most restrictive Signal Aspect cannot be indicated uniformly across all Lamps in the set Luminosity for the entire Signal Aspect due to a fault of the Luminosity. 3. The Signal Aspect can be indicated uniformly across all Lamps with the alternative Luminosity for the entire Signal Aspect. 4. The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the alternative Luminosity.</div><div>Postcondition: The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the alternative Luminosity.</div></div></div></div><div><div><div>Train driver</div><div>:Subsystem - Light Signal</div></div><div><div>Signal_Aspect</div></div></div></div>		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.5034	Info	<div><div>Alternative Scenario: Revocation of lamp failure - case 3 [LS SD 1.4.12]</div><div>LS_UC1.4: Establish initial state of outputs</div><div><div><div>Alternative Scenario: Revocation of lamp failure - case 3 [LS SD 1.4.12]</div><div>Precondition:</div><div>The Subsystem - Light Signal is in the state BOOTING or INITIALISING. The Subsystem - Light Signal indicates No Signal Aspect - lamp failure. Initial state of outputs established.</div><div>Interaction 1.4.12.A:</div><div><div>1. - The Subsystem - Light Signal detects that the Signal Aspect most restrictive Signal Aspect can be indicated again due to the revocation of the lamp failure.</div><div>2. The Signal Aspect most restrictive Signal Aspect cannot be indicated uniformly across all Lamps in the set Luminosity for the entire Signal Aspect due to a fault of the Luminosity.</div><div>3. The Signal Aspect most restrictive Signal Aspect cannot be indicated uniformly across all Lamps in the alternative Luminosity for the entire Signal Aspect due to a fault of the Luminosity or due to an unchangeable set Luminosity.</div><div>4. The Subsystem - Light Signal generates the event T5_SIL_Not_Fulfilled.</div><div>5. The Subsystem - Light Signal performs fallback operation.</div></div><div>Postcondition:</div><div>The Subsystem - Light Signal is in the state FALLBACK_MODE. The Subsystem - Light Signal indicates the Signal Aspect according to the national requirements.</div></div></div><div><div><div><div>Train driver</div><div>:Subsystem - Light Signal</div></div><div><div>ref</div><div>Alternative Scenario: Perform fallback operation [LS SD 2.3.1]</div></div></div></div></div> <div>Note: The signal aspect indicated to the Train driver as defined in Alternative Scenario: Perform fallback operation [LS SD 2.3.1].</div>	Basic LS	
Eu.LS.5582	Info	<div><div>[Package] Subsystem - Light Signal - Functional Context [Functional Viewpoint - Subsystem Definition - Operation]</div><div><div>uc [Package] Subsystem - Light Signal - Functional Context [Functional Viewpoint - Subsystem Definition - Operation]</div><div><div><div><div>Subsystem - Light Signal</div><div><div>LS_UC2.1: Indicate signal aspect</div><div>LS_UC2.2: Set Luminosity</div><div>LS_UC2.3: Handle irregularities</div></div><div><div>Subsystem - Electronic Interlocking</div><div>Train driver</div></div></div></div></div></div></div>		Basic LS
Eu.LS.5096	Info	LS_UC2.1: Indicate signal aspect	<div>The Subsystem-UseCase "LS_UC2.1: Indicate signal aspect" defines the Main Success Scenario and the Alternative Scenarios for indicating a Signal Aspect commanded by the Subsystem - Electronic Interlocking to the Subsystem - Light Signal. Degradation rules are subject to national specification. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.</div>	Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.5272	Info	<div><p>Main Success Scenario: Indicate signal aspect [LS SD 2.1.1]</p><p>LS UC2.1: Indicate signal aspect</p><p>Main Success Scenario: Indicate signal aspect [LS SD 2.1.1]</p><p>Precondition:</p><p>The Subsystem - Light Signal is in the state OPERATIONAL.</p><p>Interaction 2.1.1.A:</p><p>1. - The Subsystem - Light Signal receives from the Subsystem - Electronic Interlocking the Signal Aspect to be indicated.</p><p>2. The commanded Signal Aspect can be indicated uniformly across all Lamps in the currently set luminosity for the entire Signal Aspect.</p><p>3. The Subsystem - Light Signal indicates the commanded Signal Aspect in the currently set Luminosity.</p><p>4. The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the indicated Signal Aspect.</p><p>Postcondition:</p><p>The Subsystem - Light Signal indicates the commanded Signal Aspect in the currently set Luminosity.</p></div> <pre>sequenceDiagram participant E as Subsystem - Electronic Interlocking participant T as Train driver participant L as :Subsystem - Light Signal E->>L: Cd_Indicate_Signal_Aspect activate L L->>T: Signal_Aspect deactivate L T->>E: Msg_Indicated_Signal_Aspect deactivate T</pre>	Degradation rules are subject to national specification. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.	Basic LS
Eu.LS.5147	Info	<div><p>Alternative Scenario: Lamp failure during signal aspect activation - case 1 [LS SD 2.1.2]</p><p>LS UC2.1: Indicate signal aspect</p><p>Alternative Scenario: Lamp failure during signal aspect activation - case 1 [LS SD 2.1.2]</p><p>Precondition:</p><p>The Subsystem - Light Signal is in the state OPERATIONAL.</p><p>Interaction 2.1.2.A:</p><p>1. - The Subsystem - Light Signal receives from the Subsystem - Electronic Interlocking the Signal Aspect to be indicated.</p><p>2. The commanded Signal Aspect cannot be indicated due to the failure of the required Lamp.</p><p>3. The Subsystem - Light Signal indicates the Signal Aspect to be determined for the respective case according to national requirements specification (configured as per degradation table).</p><p>4. The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the indicated Signal Aspect.</p><p>Postcondition:</p><p>The Subsystem - Light Signal indicates the Signal Aspect defined for the respective case in the set Luminosity.</p></div> <pre>sequenceDiagram participant E as Subsystem - Electronic Interlocking participant T as Train driver participant L as :Subsystem - Light Signal E->>L: Cd_Indicate_Signal_Aspect activate L L->>T: Signal_Aspect deactivate L T->>E: Msg_Indicated_Signal_Aspect deactivate T</pre>	Degradation rules are subject to national specification. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.	Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.5157	Info	<div><div>Alternative Scenario: Lamp failure during signal aspect activation - case 2 [LS SD 2.1.3]</div><div><div><div>LS UC2.1: Indicate signal aspect</div><div>Alternative Scenario: Lamp failure during signal aspect activation - case 2 [LS SD 2.1.3]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL.</div><div>Interaction 2.1.3.A:</div><div><div>1. - The Subsystem - Light Signal receives from the Subsystem - Electronic Interlocking the Signal Aspect to be indicated.</div><div>2. The commanded Signal Aspect cannot be indicated due to the failure of the required lamps.</div><div>3. The Subsystem - Light Signal determines in accordance with national requirements specification that the Signal Aspect defined for this case is the Signal Aspect most restrictive Signal Aspect.</div><div>4. The Signal Aspect most restrictive Signal Aspect cannot be indicated due to the failure of the required lamps.</div><div>5. The Subsystem - Light Signal indicates No Signal Aspect - lamp failure.</div><div>6. The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking, that all required lamps for indication are dark.</div></div><div>Postcondition: The Subsystem - Light Signal indicates No Signal Aspect - lamp failure.</div></div></div><div><pre>sequenceDiagram participant EI as Subsystem - Electronic Interlocking participant TD as Train driver participant LS as :Subsystem - Light Signal EI->>LS: Cd_Indicate_Signal_Aspect activate LS LS->>TD: No_Signal_Aspect deactivate LS LS->>EI: Msg_Indicated_Signal_Aspect deactivate LS</pre></div></div>	Degradation rules are subject to national specification. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.	Basic LS
Eu.LS.5251	Info	<div><div>Alternative Scenario: Spontaneous lamp failure during the indication of a signal aspect - case 1 [LS SD 2.1.4]</div><div><div><div>LS UC2.1: Indicate signal aspect</div><div>Alternative Scenario: Spontaneous lamp failure during the indication of a signal aspect - case 1 [LS SD 2.1.4]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL.</div><div>Interaction 2.1.4.A:</div><div><div>1. - The Subsystem - Light Signal detects that the indicated Signal Aspect can no longer be indicated due to the failure of the required lamps.</div><div>2. The Subsystem - Light Signal determines in accordance with national requirements specification the Signal Aspect defined for the respective case (e.g. configured as most restrictive Signal Aspect).</div><div>3. The Subsystem - Light Signal indicates the determined Signal Aspect in the set Luminosity.</div><div>4. The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the indicated Signal Aspect.</div></div><div>Postcondition: The Subsystem - Light Signal indicates the Signal Aspect defined for the respective case in the set Luminosity.</div></div></div><div><pre>sequenceDiagram participant EI as Subsystem - Electronic Interlocking participant TD as Train driver participant LS as :Subsystem - Light Signal LS->>TD: Signal_Aspect activate LS LS->>EI: Msg_Indicated_Signal_Aspect deactivate LS</pre></div></div>	Degradation rules are subject to national specification. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.	Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.5261	Info	<div><p>Alternative Scenario: Spontaneous lamp failure during the indication of a signal aspect - case 2 [LS SD 2.1.5]</p><p>LS UC2.1: Indicate signal aspect</p><p>Alternative Scenario: Spontaneous lamp failure during the indication of a signal aspect - case 2 [LS SD 2.1.5]</p><p>Precondition:</p><p>The Subsystem - Light Signal is in the state OPERATIONAL.</p><p>Interaction 2.1.5.A:</p><ol style="list-style-type: none">- The Subsystem - Light Signal detects that the indicated Signal Aspect can no longer be indicated due to the failure of the required lamps.The Subsystem - Light Signal determines in accordance with national requirements specification that the Signal Aspect defined for this case is the Signal Aspect most restrictive Signal Aspect.The Signal Aspect most restrictive Signal Aspect cannot be indicated due to the failure of the required lamps.The Subsystem - Light Signal indicates No Signal Aspect - lamp failure.The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking, that all required lamps for indication are dark.<p>Postcondition:</p><p>The Subsystem - Light Signal indicates No Signal Aspect - lamp failure.</p></div> <pre>sequenceDiagram participant E as Subsystem - Electronic Interlocking participant T as Train driver participant L as :Subsystem - Light Signal L->>T: No_Signal_Aspect T->>E: Msg_Indicated_Signal_Aspect</pre>	Degradation rules are subject to national specification. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.	Basic LS
Eu.LS.5207	Info	<div><p>Alternative Scenario: Revocation of lamp failure [LS SD 2.1.6]</p><p>LS UC2.1: Indicate signal aspect</p><p>Alternative Scenario: Revocation of lamp failure [LS SD 2.1.6]</p><p>Precondition:</p><p>The Subsystem - Light Signal is in the state OPERATIONAL. The Subsystem - Light Signal indicates No Signal Aspect - lamp failure.</p><p>Interaction 2.1.6.A:</p><ol style="list-style-type: none">- The Subsystem - Light Signal detects that the Signal Aspect most restrictive Signal Aspect can be indicated for the entire Signal Aspect uniformly across all Lamps in the set Luminosity due to the revocation of a lamp failure.The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the set Luminosity.The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the indicated Signal Aspect.<p>Postcondition:</p><p>The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the set Luminosity.</p></div> <pre>sequenceDiagram participant E as Subsystem - Electronic Interlocking participant T as Train driver participant L as :Subsystem - Light Signal L->>T: Signal_Aspect T->>E: Msg_Indicated_Signal_Aspect</pre>		Basic LS
Eu.LS.5241	Info	<div><p>Alternative Scenario: Signal aspect is commanded intentionally dark [LS SD 2.1.7]</p><p>LS UC2.1: Indicate signal aspect</p><p>Alternative Scenario: Signal aspect is commanded intentionally dark [LS SD 2.1.7]</p><p>Precondition:</p><p>The Subsystem - Light Signal is in the state OPERATIONAL. The Subsystem - Light Signal is configured as switchable to intentionally dark.</p><p>Interaction 2.1.7.A:</p><ol style="list-style-type: none">- The Subsystem - Light Signal receives from the Subsystem - Electronic Interlocking the Signal Aspect to be indicated and the command to turn it intentionally dark.The commanded Signal Aspect can be indicated and intentionally dark.The Subsystem - Light Signal indicates No Signal Aspect - intentionally dark.The Subsystem - Light Signal reports to the Subsystem - Electronic Interlocking the commanded Signal Aspect and that it is intentionally dark.<p>Postcondition:</p><p>The Subsystem - Light Signal indicates No Signal Aspect - intentionally dark.</p></div> <pre>sequenceDiagram participant E as Subsystem - Electronic Interlocking participant T as Train driver participant L as :Subsystem - Light Signal E->>L: Cd_Indicate_Signal_Aspect L->>T: No_Signal_Aspect T->>E: Msg_Indicated_Signal_Aspect</pre>		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.5128	Info	<div><div>Alternative Scenario: Indicated signal aspect is subsequently intentionally dark [LS SD 2.1.8]</div><div>LS UC2.1: Indicate signal aspect</div><div><div><div>Subsystem - Electronic Interlocking</div><div>Train driver</div><div></div><div>:Subsystem - Light Signal</div></div></div><div>Alternative Scenario: Indicated signal aspect is subsequently intentionally dark [LS SD 2.1.8]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL. The Subsystem - Light Signal is configured as switchable to intentionally dark.</div><div>Interaction 2.1.8.A: 1. - The Subsystem - Light Signal receives from the Subsystem - Electronic Interlocking the already indicated Signal Aspect and the command to turn it intentionally dark. 2. The already indicated Signal Aspect can be intentionally dark. 3. The Subsystem - Light Signal indicates No Signal Aspect - intentionally dark. 4. The Subsystem - Light Signal reports to the Subsystem - Electronic Interlocking the already indicated Signal Aspect and that it is intentionally dark.</div><div>Postcondition: The Subsystem - Light Signal indicates No Signal Aspect - intentionally dark.</div></div>		Basic LS
Eu.LS.5138	Info	<div><div>Alternative Scenario: Intentionally turned dark signal aspect is modified [LS SD 2.1.9]</div><div>LS UC2.1: Indicate signal aspect</div><div><div><div>Subsystem - Electronic Interlocking</div><div></div><div></div><div>:Subsystem - Light Signal</div></div></div><div>Alternative Scenario: Intentionally turned dark signal aspect is modified [LS SD 2.1.9]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL. The Subsystem - Light Signal indicates a Signal Aspect, that is intentionally dark. The Subsystem - Light Signal is configured as switchable to intentionally dark.</div><div>Interaction 2.1.9.A: 1. - The Subsystem - Light Signal receives from the Subsystem - Electronic Interlocking the Signal Aspect to be indicated and the command to turn it intentionally dark. 2. The commanded Signal Aspect can be indicated and intentionally dark. 3. The Subsystem - Light Signal reports to the Subsystem - Electronic Interlocking the indicated Signal Aspect and that it is intentionally dark.</div><div>Postcondition: The Subsystem - Light Signal indicates No Signal Aspect - intentionally dark.</div></div>		Basic LS
Eu.LS.5097	Info	<div><div>Alternative Scenario: Cancellation of the intentionally turning dark of a signal aspect [LS SD 2.1.10]</div><div>LS UC2.1: Indicate signal aspect</div><div><div><div>Subsystem - Electronic Interlocking</div><div>Train driver</div><div></div><div>:Subsystem - Light Signal</div></div></div><div>Alternative Scenario: Cancellation of the intentionally turning dark of a signal aspect [LS SD 2.1.10]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL. The Subsystem - Light Signal indicates a Signal Aspect, that is intentionally dark. The Subsystem - Light Signal is configured as switchable to intentionally dark.</div><div>Interaction 2.1.10.A: 1. - The Subsystem - Light Signal receives from the Subsystem - Electronic Interlocking the Signal Aspect to be indicated and the command to indicate it not intentionally dark. 2. The commanded Signal Aspect can be indicated uniformly across all Lamps in the currently set Luminosity for the entire Signal Aspect. 3. The Subsystem - Light Signal indicates the commanded Signal Aspect in the currently set Luminosity. 4. The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the indicated Signal Aspect.</div><div>Postcondition: The Subsystem - Light Signal indicates the commanded Signal Aspect in the currently set Luminosity.</div></div>		Basic LS

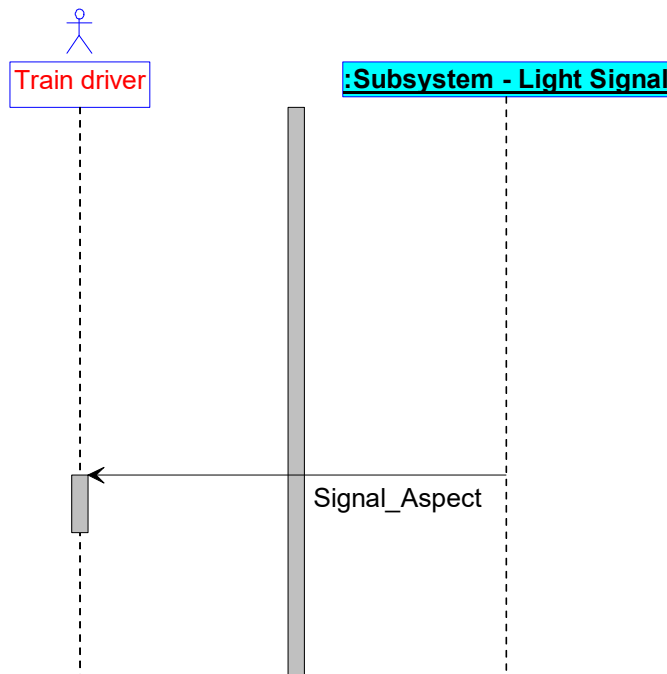
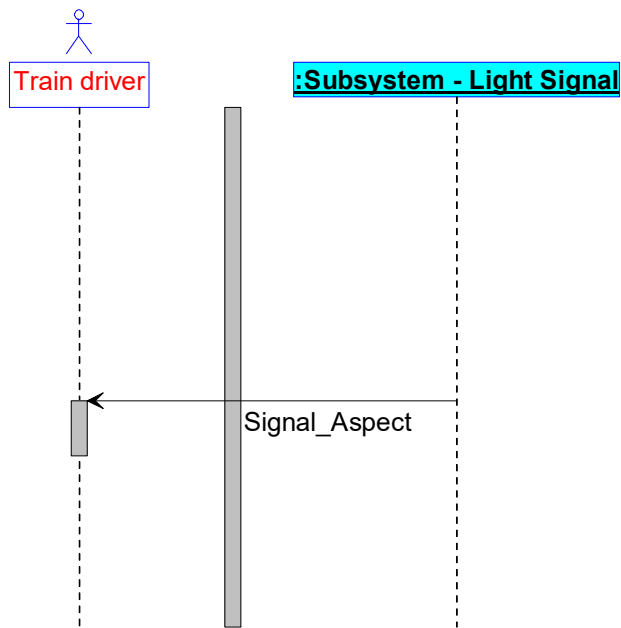
ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7776	Info	<div><div>Alternative Scenario: Receive already indicated signal aspect [LS SD 2.1.11]</div><div>LS UC2.1: Indicate signal aspect</div><div><div>Alternative Scenario: Receive already indicated signal aspect [LS SD 2.1.11]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL.</div><div>Interaction 2.1.11.A: 1. - The Subsystem - Light Signal receives from the Subsystem - Electronic Interlocking the Signal Aspect to be indicated. 2. The commanded Signal Aspect is already indicated.</div><div>Postcondition: ---</div></div></div> <div><pre>sequenceDiagram actor Interlocking as Subsystem - Electronic Interlocking actor Driver as Train driver participant LightSignal as :Subsystem - Light Signal Interlocking->>LightSignal: Cd_Indicate_Signal_Aspect activate LightSignal</pre></div>	Degradation rules are subject to national specification. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.	Basic LS
Eu.LS.7775	Info	<div><div>Alternative Scenario: Degrade to already indicated signal aspect [LS SD 2.1.12]</div><div>LS UC2.1: Indicate signal aspect</div><div><div>Alternative Scenario: Degrade to already indicated signal aspect [LS SD 2.1.12]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL.</div><div>Interaction 2.1.12.A: 1. - The Subsystem - Light Signal receives from the Subsystem - Electronic Interlocking the Signal Aspect to be indicated. 2. The commanded Signal Aspect cannot be indicated due to the failure of the required Lamp. 3. The Subsystem - Light Signal determines in accordance with national requirements specification that the Signal Aspect defined for this case is the currently indicated Signal Aspect.</div><div>Postcondition: ---</div></div></div> <div><pre>sequenceDiagram actor Interlocking as Subsystem - Electronic Interlocking actor Driver as Train driver participant LightSignal as :Subsystem - Light Signal Interlocking->>LightSignal: Cd_Indicate_Signal_Aspect activate LightSignal</pre></div>	Degradation rules are subject to national specification. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.	Basic LS
Eu.LS.5282	Info	LS_UC2.2: Set Luminosity	The Subsystem-UseCase "LS_UC2.2: Set Luminosity" defines the Main Success Scenario and the Alternative Scenarios for configuring a Luminosity commanded by the Subsystem - Electronic Interlocking to the Subsystem - Light Signal.	Basic LS
Eu.LS.5351	Info	<div><div>Main Success Scenario: Set Luminosity [LS SD 2.2.1]</div><div>LS UC2.2: Set Luminosity</div><div><div>Main Success Scenario: Set Luminosity [LS SD 2.2.1]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL.</div><div>Interaction 2.2.1.A: 1. - The Subsystem - Light Signal receives the Luminosity to be set from the Subsystem - Electronic Interlocking. 2. The commanded Luminosity can be set uniformly across all Lamps for the entire Signal Aspect. 3. The Subsystem - Light Signal indicates the current Signal Aspect in the commanded Luminosity. 4. The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the set Luminosity.</div><div>Postcondition: The Subsystem - Light Signal indicates the current Signal Aspect in the commanded Luminosity.</div></div></div> <div><pre>sequenceDiagram actor Interlocking as Subsystem - Electronic Interlocking actor Driver as Train driver participant LightSignal as :Subsystem - Light Signal Interlocking->>LightSignal: Cd_Set_Luminosity activate LightSignal LightSignal->>Interlocking: Signal_Aspect deactivate LightSignal LightSignal->>Interlocking: Msg_Set_Luminosity activate LightSignal</pre></div>		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.5341	Info	<div><div><div>Alternative Scenario: Spontaneous Luminosity failure during indication - case 2 [LS SD 2.2.5]</div><div>LS UC2.2: Set Luminosity</div><div>Alternative Scenario: Spontaneous Luminosity failure during indication - case 2 [LS SD 2.2.5]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL.</div><div>Interaction 2.2.5.A: 1. - The Subsystem - Light Signal detects that the indicated Signal Aspect can no longer be indicated for the entire Signal Aspect uniformly across all Lamps in the currently set Luminosity due to a fault of the Luminosity. 2. The Subsystem - Light Signal detects that the indicated Signal Aspect cannot be indicated for the entire Signal Aspect uniformly across all Lamps in the alternative Luminosity due to a fault of the Luminosity. 3. - The Subsystem - Light Signal indicates No Signal Aspect - luminosity failure. 4. The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking, that all required lamps for indication are dark. Postcondition: The Subsystem - Light Signal indicates No Signal Aspect - luminosity failure.</div></div></div> <div><pre>sequenceDiagram participant E as Subsystem - Electronic Interlocking participant T as Train driver participant L as :Subsystem - Light Signal L->>T: No_Signal_Aspect T->>E: Msg_Indicated_Signal_Aspect</pre></div>		Basic LS
Eu.LS.5322	Info	<div><div><div>Alternative Scenario: Spontaneous failure of the unchangeable set Luminosity [LS SD 2.2.6]</div><div>LS UC2.2: Set Luminosity</div><div>Alternative Scenario: Spontaneous failure of the unchangeable set Luminosity [LS SD 2.2.6]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL.</div><div>Interaction 2.2.6.A: 1. - The Subsystem - Light Signal detects that the indicated Signal Aspect can no longer be indicated uniformly across all Lamps for the entire Signal Aspect in the unchangeable set Luminosity (e.g. tunnel signal) due to a fault of the Luminosity. 2. The Subsystem - Light Signal indicates No Signal Aspect - luminosity failure. 3. The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking, that all required lamps for indication are dark. Postcondition: The Subsystem - Light Signal indicates No Signal Aspect - luminosity failure.</div></div></div> <div><pre>sequenceDiagram participant E as Subsystem - Electronic Interlocking participant T as Train driver participant L as :Subsystem - Light Signal L->>T: No_Signal_Aspect T->>E: Msg_Indicated_Signal_Aspect</pre></div>		Basic LS
Eu.LS.7778	Info	<div><div><div>Alternative Scenario: Receive already set Luminosity [LS SD 2.2.7]</div><div>LS UC2.2: Set Luminosity</div><div>Alternative Scenario: Receive already set Luminosity [LS SD 2.2.7]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL.</div><div>Interaction 2.2.7.A: 1. - The Subsystem - Light Signal receives the Luminosity to be set from the Subsystem - Electronic Interlocking. 2. The commanded Luminosity is already set. Postcondition: ---</div></div></div> <div><pre>sequenceDiagram participant E as Subsystem - Electronic Interlocking participant L as :Subsystem - Light Signal E->>L: Cd_Set_Luminosity</pre></div>		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7777	Info	<div><div><div>Alternative Scenario: Degrade to already set Luminosity [LS SD 2.2.8]</div><div>LS UC2.2: Set Luminosity</div><div>Alternative Scenario: Degrade to already set Luminosity [LS SD 2.2.8]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL.</div><div>Interaction 2.2.8.A: 1. - The Subsystem - Light Signal receives the Luminosity to be set from the Subsystem - Electronic Interlocking. 2. The indicated Signal Aspect cannot be indicated uniformly across all Lamps in the commanded Luminosity for the entire Signal Aspect due to a fault of the Luminosity. 3. The Signal Aspect can be indicated uniformly across all Lamps in the currently set Luminosity for the entire Signal Aspect. Postcondition: ---</div></div><div></div></div>		Basic LS
Eu.LS.7951	Info	<div><div><div>Alternative Scenario: Revocation of luminosity failure (case 1) with last commanded luminosity [LS SD 2.2.9]</div><div>LS UC2.2: Set Luminosity</div><div>Alternative Scenario: Revocation of luminosity failure (case 1) with last commanded luminosity [LS SD 2.2.9]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL. The Subsystem - Light Signal indicates No Signal Aspect - luminosity failure.</div><div>Interaction 2.2.9.A: 1. - The Subsystem - Light Signal detects that the Signal Aspect most restrictive Signal Aspect can be indicated for the entire Signal Aspect uniformly across all Lamps in the last commanded Luminosity due to the revocation of a luminosity failure. 2. The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the last commanded Luminosity. par 3.a1 The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the indicated Signal Aspect. also par opt[The Luminosity differs from the last reported Luminosity] 3.b1.a1 The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the set Luminosity. end opt end par Postcondition: The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the last commanded Luminosity.</div></div><div></div></div>		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7952	Info	<div><div><div>Alternative Scenario: Revocation of luminosity failure (case 2) with alternative luminosity [LS SD 2.2.10]</div><div>LS_UC2.2: Set Luminosity</div><div>Alternative Scenario: Revocation of luminosity failure (case 2) with alternative luminosity [LS SD 2.2.10]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL. The Subsystem - Light Signal indicates No Signal Aspect - luminosity failure.</div><div>Interaction 2.2.10.A: 1. - The Subsystem - Light Signal detects that the Signal Aspect most restrictive Signal Aspect can be indicated for the entire Signal Aspect uniformly across all Lamps in the alternative Luminosity due to the revocation of a luminosity failure. 2. The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the alternative Luminosity.</div><div>par 3.a1 The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the indicated Signal Aspect.</div><div>also par opt[The Luminosity differs from the last reported Luminosity] 3.b1.a1 The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the set Luminosity. end opt</div><div>end par</div><div>Postcondition: The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the alternative Luminosity.</div></div><div></div></div> <td></td> <td>Basic LS</td>		Basic LS
Eu.LS.7953	Info	<div><div><div>Alternative Scenario: Revocation of luminosity failure (case 3) with unchangeable luminosity [LS SD 2.2.11]</div><div>LS_UC2.2: Set Luminosity</div><div>Alternative Scenario: Revocation of luminosity failure (case 3) with unchangeable luminosity [LS SD 2.2.11]</div><div>Precondition: The Subsystem - Light Signal is in the state OPERATIONAL. The Subsystem - Light Signal indicates No Signal Aspect - luminosity failure. The Luminosity is configured as unchangeable.</div><div>Interaction 2.2.11.A: 1. - The Subsystem - Light Signal detects that the Signal Aspect most restrictive Signal Aspect can be indicated for the entire Signal Aspect uniformly across all Lamps in the unchangeable set Luminosity due to the revocation of a luminosity failure. 2. The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the unchangeable set Luminosity. 3. The Subsystem - Light Signal notifies the Subsystem - Electronic Interlocking of the indicated Signal Aspect.</div><div>Postcondition: The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the unchangeable set Luminosity.</div></div><div></div></div> <td></td> <td>Basic LS</td>		Basic LS
Eu.LS.5477	Info	LS_UC2.3: Handle irregularities	The Subsystem-UseCase "LS_UC2.3: Handle irregularities" defines the behaviour of the Subsystem - Light Signal when an irregularity occurs.	Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.5573	Info	<div><div><div>Alternative Scenario: Perform fallback operation [LS SD 2.3.1]</div><div><div><div>LS UC2.3: Handle irregularities</div><div><div><div>Train driver</div><div><div>:Subsystem - Light Signal</div></div></div><div><div><div>Signal_Aspect</div></div></div></div><div><div><div>Alternative Scenario: Perform fallback operation [LS SD 2.3.1]</div><div><div>Precondition:</div><div>---</div><div>Interaction 2.3.1.A:</div><div><div>1. - The Subsystem - Light Signal enters the state FALLBACK_MODE.</div><div>2. The Subsystem - Light Signal is capable of indicating the Signal Aspect according to the national requirements.</div><div>3. The Subsystem - Light Signal indicates the Signal Aspect according to the national requirements.</div></div><div><div>Postcondition:</div><div>The Subsystem - Light Signal is in the state FALLBACK_MODE.</div><div>The Subsystem - Light Signal indicates the Signal Aspect according to the national requirements.</div></div></div></div></div></div></div><div></div><div></div></div></div>		Basic LS
Eu.LS.5508	Info	<div><div><div>Alternative Scenario: Handling of interrupted PDI connection [LS SD 2.3.2]</div><div><div><div>Train driver</div><div><div>:Subsystem - Light Signal</div></div></div><div><div><div>Signal_Aspect</div></div></div></div><div><div><div>Alternative Scenario: Handling of interrupted PDI connection [LS SD 2.3.2]</div><div><div>Precondition:</div><div>The Subsystem - Light Signal is in the state OPERATIONAL.</div><div>Interaction 2.3.2.A:</div><div><div>1. - The PDI connection has been terminated.</div><div>2. The Subsystem - Light Signal is capable of indicating the Signal Aspect most restrictive Signal Aspect in the configured default Luminosity uniformly across all Lamps for the entire Signal Aspect.</div><div>3. The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the configured default Luminosity.</div></div><div><div>Postcondition:</div><div>The Subsystem - Light Signal is in the state INITIALISING.</div><div>The Process Data Interface protocol connection is terminated.</div><div>The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the configured default Luminosity.</div></div></div></div></div></div><div></div><div></div></div>	<div>The following functionality remains available within the state INITIALISING after the termination of the PDI connection:</div> <div><div><div>• Degradation from the Signal Aspect most restrictive Signal Aspect to No Signal Aspect - lamp failure (for example as in Alternative Scenario: Spontaneous lamp failure during the indication of a signal aspect - case 2 [LS SD 2.1.5])</div><div>• Recovery from No Signal Aspect - lamp failure to the Signal Aspect most restrictive Signal Aspect (for example as in Alternative Scenario: Revocation of lamp failure [LS SD 2.1.6])</div><div>• Handling of spontaneous Luminosity failures during indication of the Signal Aspect most restrictive Signal Aspect (for example as in Alternative Scenario: Spontaneous Luminosity failure during indication - case 1 [LS SD 2.2.4], Alternative Scenario: Spontaneous Luminosity failure during indication - case 2 [LS SD 2.2.5], Alternative Scenario: Spontaneous failure of the unchangeable set Luminosity [LS SD 2.2.6])</div><div>• All functionality related to the maintainer interface LS7 (for example as in LS_UC3.1: Display status of Subsystem - Light Signal)</div></div></div>	Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.6128	Info	<div>Alternative Scenario: Reset occurs [LS SD 2.3.3]</div> <div>LS_UC2.3: Handle irregularities</div> <div><div>Alternative Scenario: Reset occurs [LS SD 2.3.3]</div><div>Precondition:</div><div>The Subsystem - Light Signal is in the state INITIALISING or OPERATIONAL.</div><div>Interaction 2.3.3.A:</div><div><div>1. - A reset has occurred.</div><div>2. The Subsystem - Light Signal is capable of indicating the Signal Aspect most restrictive Signal Aspect in the configured default Luminosity uniformly across all Lamps for the entire Signal Aspect.</div><div>3. The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the configured default Luminosity.</div></div><div>Postcondition:</div><div>The Subsystem - Light Signal is in the state BOOTING.</div><div>The Subsystem - Light Signal indicates the Signal Aspect most restrictive Signal Aspect in the configured default Luminosity.</div></div> <div></div>		Basic LS
Eu.LS.5994	Info	<div>Alternative Scenario: Supply voltage of the Subsystem has gone outside the required range for operation [LS SD 2.3.4]</div> <div>LS_UC2.3: Handle irregularities</div> <div><div>Alternative Scenario: Supply voltage of the Subsystem has gone outside the required range for operation [LS SD 2.3.4]</div><div>Precondition:</div><div>---</div><div>Interaction 2.3.4.A:</div><div><div>1. - The Subsystem - Light Signal enters the state NO_OPERATING_VOLTAGE.</div><div>2. The Subsystem - Light Signal indicates the Signal Aspect according to the national requirements.</div></div><div>Postcondition:</div><div>The Subsystem - Light Signal is in the state NO_OPERATING_VOLTAGE.</div><div>The Subsystem - Light Signal indicates the Signal Aspect according to the national requirements.</div></div> <div></div>		Basic LS
Eu.LS.5094	Info	<div>[Package] Subsystem - Light Signal - Functional Context [Functional Viewpoint - Subsystem Definition - Maintenance]</div> <div>uc [Package] Subsystem - Light Signal - Functional Context [Functional Viewpoint - Subsystem Definition - Maintenance]</div> <div><div>Subsystem - Light Signal</div><div><div><div>LS_UC3.1: Display status of Subsystem - Light Signal</div><div>LS_UC3.2: Collect and provide event driven diagnostic data</div><div>LS_UC3.3: Collect and provide preventive diagnostic data</div><div>LS_UC3.4: Update specific software</div></div><div><div>Maintainer</div><div>Subsystem - Maintenance and Data Management</div></div></div></div>		Basic LS
Eu.LS.5090	Info	LS_UC3.1: Display status of Subsystem - Light Signal	<div>Information:</div> <div>The Subsystem-UseCase "LS_UC3.1: Display status of Subsystem - Light Signal" defines the local display of the EULYNX field element Subsystem. See ID EU.LS.4678</div>	Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.5091	Info	LS_UC3.2: Collect and provide event driven diagnostic data	Information: The Subsystem-UseCase "LS_UC3.2: Collect and provide event driven diagnostic data" defines the event driven collection and provision of diagnostic data in case of irregularities. See ID EU.LS.4696	Basic LS
Eu.LS.5092	Info	LS_UC3.3: Collect and provide preventive diagnostic data	Information: The Subsystem-UseCase "LS_UC3.3: Collect and provide preventive diagnostic data" defines the continuous collection and provision of diagnostic data for preventive maintenance. See ID EU.LS.4696	Basic LS
Eu.LS.5093	Info	LS_UC3.4: Update specific software	Information: The Subsystem-UseCase "LS_UC3.4: Update specific software" defines the process of updating the specific software between Subsystem - Maintenance and Data Management and the Subsystem.	Basic LS
Eu.LS.7568	Head	3.3.3 Subsystem - Light Signal - Functional Partitioning		
Eu.LS.6486	Def	<div><div>[Package] Subsystem - Light Signal - Functional Partitioning [Functional Viewpoint - Subsystem Requirements]</div><div><div><div><div>bdd [Package] Subsystem - Light Signal - Functional Partitioning [Functional Viewpoint - Subsystem Requirements]</div><div><div>SCI-LS - Functional Viewpoint</div><div><div>«functional entity» F_SCI_LS_Receive</div><div>1</div></div><div><div>«functional entity» F_SCI_LS_Report</div><div>1</div></div></div><div><div>Generic requirements for subsystems</div><div><div>«functional entity» F_SCI_EfeS_Sec</div><div>1</div></div><div><div>«functional entity» F_EST_EfeS</div><div>1</div></div></div><div><div>Subsystem - Light Signal - Functional Entities</div><div><div>«functional entity» F_Control_Signal_Aspect</div><div>1</div></div><div><div>«functional entity» F_Control_Luminosity</div><div>1</div></div><div><div>«functional entity» F_Observe_Signal_Aspect</div><div>1</div></div><div><div>«functional entity» F_Observe_Luminosity</div><div>1</div></div></div></div></div><div><div>Subsystem - Light Signal - Functional Architecture</div><div><div>«logical structural entity» Subsystem - Light Signal</div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div></div></div></div></div>		Basic LS
Eu.LS.4757	Head	3.3.4 Subsystem - Light Signal - Functional Architecture		
Eu.LS.6476	Info	Subsystem - Light Signal		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7601	Def	LS5	The functional Control interface to the Legacy train protection system. The InformationFlow through the interface is defined by "Legacy_train_protection_system".	Option LS5
Eu.LS.7602	Def	LS6	The functional System Data interface to the Basic Data identifier. The InformationFlow through the interface is defined by "Basic_Data_Identifier".	Basic LS
Eu.LS.7603	Def	LS7	The functional Maintenance/Operation/Display interface to the Maintainer. The InformationFlow through the interface is defined by "Maintainer".	Basic LS
Eu.LS.7604	Def	SDI-LS	The functional Diagnostic interface to the Subsystem - Maintenance and Data Management for the InformationFlow through the interface, which is defined by "Subsystem_MDM_D".	Basic LS
Eu.LS.7605	Def	SMI-LS	The functional Maintenance Interface to the Subsystem - Maintenance and Data Management for the InformationFlow through the interface, which is defined by "Subsystem_MDM_M".	Basic LS
Eu.LS.7626	Def	SSI-LS	The Security Service Interface to the Subsystem - Security Services Platform. The InformationFlow through the interface is further defined in SSI-LS (Subsystem - Security Services Platform).	Basic LS
Eu.LS.6487	Head	3.3.5 Subsystem - Light Signal - Functional Entities		
Eu.LS.6488	Info	F_Control_Signal_Aspect		Basic LS
Eu.LS.6583	Req	<div><div>[Block] F_Control_Signal_Aspect [Functional Viewpoint - Subsystem Requirements - Functional Entity]</div><div><div><div><div>ibd [Block] F_Control_Signal_Aspect [Functional Viewpoint - Subsystem Requirements - Functional Entity]</div><div><div><div>«functional entity» F_Control_Signal_Aspect</div><div>values</div><div>«BlockProperty» Mem_Set_Aspect : String</div></div><div><div><div>d2in_Required_Signal_Aspect : String</div><div>D7out_Set_Signal_Aspect : String</div></div><div><div><div>d3in_Required_Intentionally_Dark : Boolean</div><div>D8out_Set_Intentionally_Dark : Boolean</div></div><div><div><div>D4in_Fault_Lamps_Aspect_1 : Boolean</div><div>D5in_Fault_Lamps_Aspect_2 : Boolean</div><div>D6in_Fault_Lamps_Most_Restrict : Boolean</div><div>d9in_Set_Luminosity : String</div><div>D10in_Con_Downgrade_Most_Restrict : Boolean</div><div>d51in_EST_EfeS_State : String</div></div></div></div></div></div></div></div></div></div>		Basic LS
Eu.LS.6504	Def	d2in_Required_Signal_Aspect		Basic LS
Eu.LS.6503	Def	d3in_Required_Intentionally_Dark		Basic LS
Eu.LS.6498	Def	D4in_Fault_Lamps_Aspect_1	The port D4in_Fault_Lamps_Aspect_1 represents a Fault of the Lamps for Signal Aspect 1.	Basic LS
Eu.LS.6499	Def	D5in_Fault_Lamps_Aspect_2	The port D5in_Fault_Lamps_Aspect_2 represents a Fault of the Lamps for Signal Aspect 2.	Basic LS
Eu.LS.6500	Def	D6in_Fault_Lamps_Most_Restrict	The port D6in_Fault_Lamps_Most_Restrict represents a Fault of the Lamps for most restrictive Signal Aspect.	Basic LS
Eu.LS.6502	Def	D7out_Set_Signal_Aspect	The port D7out_Set_Signal_Aspect refines the FlowProperty Signal_Aspect at the interface LS2.	Basic LS
Eu.LS.6590	Def	D8out_Set_Intentionally_Dark	The port D8out_Set_Intentionally_Dark refines the FlowProperty Signal_Aspect at the interface LS2.	Basic LS
Eu.LS.6588	Def	d9in_Set_Luminosity		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.6508	Def	Initial0		Basic LS
Eu.LS.6509	Def	/{Initial0 - NATIONAL_ASPECT}		Basic LS
Eu.LS.6511	Def	NATIONAL_ASPECT		Basic LS
Eu.LS.6786	Def	entry/D7out_Set_Signal_Aspect := "National Aspect"; Mem_Set_Aspect := "";{State-internal in NATIONAL_ASPECT}		Basic LS
Eu.LS.6512	Def	when(d51in_EST_EfeS_State = "BOOTING")/{NATIONAL_ASPECT - OPERATING_VOLTAGE}		Basic LS
Eu.LS.6853	Def	OPERATING_VOLTAGE		Basic LS
Eu.LS.6855	Def	Initial1		Basic LS
Eu.LS.6856	Def	/{Initial1 - CONTROLLING_SIGNAL_ASPECT}		Basic LS
Eu.LS.6518	Def	CONTROLLING_SIGNAL_ASPECT		Basic LS
Eu.LS.6563	Def	Initial2		Basic LS
Eu.LS.6564	Def	/{Initial2 - Junction0}		Basic LS
Eu.LS.6857	Def	Junction0		Basic LS
Eu.LS.6858	Def	[NOT D6in_Fault_Lamps_Most_Restrict]/{Junction0 - MOST_RESTRICTIVE_ASPECT}		Basic LS
Eu.LS.6859	Def	[else]/{Junction0 - NO_SIGNAL_ASPECT_LAMP_FAILURE}		Basic LS
Eu.LS.6554	Def	MOST_RESTRICTIVE_ASPECT		Basic LS
Eu.LS.6788	Def	entry/D7out_Set_Signal_Aspect := "Most Restrict Aspect"; D8out_Set_Intentionally_Dark := d3in_Required_Intentionally_Dark; Mem_Set_Aspect := "Most Restrict Aspect";{State-internal in MOST_RESTRICTIVE_ASPECT}		Basic LS
Eu.LS.6556	Def	when(D6in_Fault_Lamps_Most_Restrict)/{MOST_RESTRICTIVE_ASPECT - NO_SIGNAL_ASPECT_LAMP_FAILURE}		Basic LS
Eu.LS.6578	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 1")[NOT D4in_Fault_Lamps_Aspect_1]/{MOST_RESTRICTIVE_ASPECT - SIGNAL_ASPECT_1}		Basic LS
Eu.LS.6860	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 2")[NOT D5in_Fault_Lamps_Aspect_2]/{MOST_RESTRICTIVE_ASPECT - SIGNAL_ASPECT_2}		Basic LS
Eu.LS.7181	Def	when(d3in_Required_Intentionally_Dark)/ D8out_Set_Intentionally_Dark := TRUE;{State-internal in MOST_RESTRICTIVE_ASPECT}		Basic LS
Eu.LS.7480	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 1")[D4in_Fault_Lamps_Aspect_1 AND NOT D5in_Fault_Lamps_Aspect_2 AND NOT D10in_Con_Downgrade_Most_Restrict]/{MOST_RESTRICTIVE_ASPECT - SIGNAL_ASPECT_2}		Basic LS
Eu.LS.7554	Def	when(NOT d3in_Required_Intentionally_Dark)/ D8out_Set_Intentionally_Dark := FALSE;{State-internal in MOST_RESTRICTIVE_ASPECT}		Basic LS
Eu.LS.6557	Def	NO_SIGNAL_ASPECT_LAMP_FAILURE		Basic LS
Eu.LS.6789	Def	entry/D7out_Set_Signal_Aspect := "No Signal Aspect - lamp failure"; Mem_Set_Aspect := "No Signal Aspect - lamp failure";{State-internal in NO_SIGNAL_ASPECT_LAMP_FAILURE}		Basic LS
Eu.LS.6558	Def	when(NOT D6in_Fault_Lamps_Most_Restrict)/{NO_SIGNAL_ASPECT_LAMP_FAILURE - MOST_RESTRICTIVE_ASPECT}		Basic LS
Eu.LS.7615	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 1")[NOT D4in_Fault_Lamps_Aspect_1]/{NO_SIGNAL_ASPECT_LAMP_FAILURE - SIGNAL_ASPECT_1}		Basic LS
Eu.LS.7616	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 2")[NOT D5in_Fault_Lamps_Aspect_2]/{NO_SIGNAL_ASPECT_LAMP_FAILURE - SIGNAL_ASPECT_2}		Basic LS
Eu.LS.7617	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 1")[D4in_Fault_Lamps_Aspect_1 AND NOT D5in_Fault_Lamps_Aspect_2 AND NOT D10in_Con_Downgrade_Most_Restrict]/{NO_SIGNAL_ASPECT_LAMP_FAILURE - SIGNAL_ASPECT_2}		Basic LS
Eu.LS.6551	Def	SIGNAL_ASPECT_1		Basic LS
Eu.LS.6892	Def	entry/D7out_Set_Signal_Aspect := "Signal Aspect 1"; D8out_Set_Intentionally_Dark := d3in_Required_Intentionally_Dark; Mem_Set_Aspect := "Signal Aspect 1";{State-internal in SIGNAL_ASPECT_1}		Basic LS
Eu.LS.7182	Def	when(d3in_Required_Intentionally_Dark)/ D8out_Set_Intentionally_Dark := TRUE;{State-internal in SIGNAL_ASPECT_1}		Basic LS
Eu.LS.6861	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 2")[NOT D5in_Fault_Lamps_Aspect_2]/{SIGNAL_ASPECT_1 - SIGNAL_ASPECT_2}		Basic LS
Eu.LS.6862	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 2")[D5in_Fault_Lamps_Aspect_2 AND D6in_Fault_Lamps_Most_Restrict]/{SIGNAL_ASPECT_1 - NO_SIGNAL_ASPECT_LAMP_FAILURE}		Basic LS
Eu.LS.6863	Def	when(D4in_Fault_Lamps_Aspect_1)[NOT D5in_Fault_Lamps_Aspect_2 AND NOT D10in_Con_Downgrade_Most_Restrict]/{SIGNAL_ASPECT_1 - SIGNAL_ASPECT_2}		Basic LS
Eu.LS.6864	Def	when(D4in_Fault_Lamps_Aspect_1)[D6in_Fault_Lamps_Most_Restrict AND (D5in_Fault_Lamps_Aspect_2 OR D10in_Con_Downgrade_Most_Restrict)]/{SIGNAL_ASPECT_1 - NO_SIGNAL_ASPECT_LAMP_FAILURE}		Basic LS
Eu.LS.7183	Def	when(d2in_Required_Signal_Aspect = "Most Restrict Aspect")[NOT D6in_Fault_Lamps_Most_Restrict]/{SIGNAL_ASPECT_1 - MOST_RESTRICTIVE_ASPECT}		Basic LS
Eu.LS.7184	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 2")[D5in_Fault_Lamps_Aspect_2 AND NOT D6in_Fault_Lamps_Most_Restrict]/{SIGNAL_ASPECT_1 - MOST_RESTRICTIVE_ASPECT}		Basic LS
Eu.LS.7482	Def	when(D4in_Fault_Lamps_Aspect_1)[NOT D6in_Fault_Lamps_Most_Restrict AND (D5in_Fault_Lamps_Aspect_2 OR D10in_Con_Downgrade_Most_Restrict)]/{SIGNAL_ASPECT_1 - MOST_RESTRICTIVE_ASPECT}		Basic LS
Eu.LS.7555	Def	when(NOT d3in_Required_Intentionally_Dark)/ D8out_Set_Intentionally_Dark := FALSE;{State-internal in SIGNAL_ASPECT_1}		Basic LS
Eu.LS.7618	Def	when(d2in_Required_Signal_Aspect = "Most Restrict Aspect")[D6in_Fault_Lamps_Most_Restrict]/{SIGNAL_ASPECT_1 - NO_SIGNAL_ASPECT_LAMP_FAILURE}		Basic LS
Eu.LS.6565	Def	SIGNAL_ASPECT_2		Basic LS
Eu.LS.6893	Def	entry/D7out_Set_Signal_Aspect := "Signal Aspect 2"; D8out_Set_Intentionally_Dark := d3in_Required_Intentionally_Dark; Mem_Set_Aspect := "Signal Aspect 2";{State-internal in SIGNAL_ASPECT_2}		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7185	Def	when(d3in_Required_Intentionally_Dark)/ D8out_Set_Intentionally_Dark := TRUE;{State-internal in SIGNAL_ASPECT_2}		Basic LS
Eu.LS.6866	Def	when(d2in_Required_Signal_Aspect = "Most Restrict Aspect" OR D5in_Fault_Lamps_Aspect_2)[D6in_Fault_Lamps_Most_Restrict]/{SIGNAL_ASPECT_2 - NO_SIGNAL_ASPECT_LAMP_FAILURE}		Basic LS
Eu.LS.6867	Def	when(d2in_Required_Signal_Aspect = "Most Restrict Aspect" OR D5in_Fault_Lamps_Aspect_2)[NOT D6in_Fault_Lamps_Most_Restrict]/{SIGNAL_ASPECT_2 - MOST_RESTRICTIVE_ASPECT}		Basic LS
Eu.LS.6868	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 1")[D4in_Fault_Lamps_Aspect_1 AND NOT D6in_Fault_Lamps_Most_Restrict AND (D5in_Fault_Lamps_Aspect_2 OR D10in_Con_Downgrade_Most_Restrict)]/{SIGNAL_ASPECT_2 - MOST_RESTRICTIVE_ASPECT}		Basic LS
Eu.LS.6869	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 1")[D4in_Fault_Lamps_Aspect_1 AND D6in_Fault_Lamps_Most_Restrict AND (D5in_Fault_Lamps_Aspect_2 OR D10in_Con_Downgrade_Most_Restrict)]/{SIGNAL_ASPECT_2 - NO_SIGNAL_ASPECT_LAMP_FAILURE}		Basic LS
Eu.LS.6870	Def	when(d2in_Required_Signal_Aspect = "Signal Aspect 1")[NOT D4in_Fault_Lamps_Aspect_1]/{SIGNAL_ASPECT_2 - SIGNAL_ASPECT_1}		Basic LS
Eu.LS.7556	Def	when(NOT d3in_Required_Intentionally_Dark)/ D8out_Set_Intentionally_Dark := FALSE;{State-internal in SIGNAL_ASPECT_2}		Basic LS
Eu.LS.6871	Def	when(d9in_Set_Luminosity = "Undefined")/{CONTROLLING_SIGNAL_ASPECT - SET_NO_SIGNAL_ASPECT_LUMINOSITY_FAILURE}		Basic LS
Eu.LS.6579	Def	SET_NO_SIGNAL_ASPECT_LUMINOSITY_FAILURE		Basic LS
Eu.LS.6791	Def	entry/D7out_Set_Signal_Aspect := "No Signal Aspect - luminosity failure";{State-internal in SET_NO_SIGNAL_ASPECT_LUMINOSITY_FAILURE}		Basic LS
Eu.LS.7956	Def	when(d9in_Set_Luminosity <> "Undefined")/{SET_NO_SIGNAL_ASPECT_LUMINOSITY_FAILURE - CONTROLLING_SIGNAL_ASPECT}		Basic LS
Eu.LS.6580	Def	when(d51in_EST_EfeS_State = "BOOTING" OR d51in_EST_EfeS_State = "INITIALISING")/Mem_Set_Aspect := "";{OPERATING_VOLTAGE - OPERATING_VOLTAGE}		Basic LS
Eu.LS.6582	Def	when(d51in_EST_EfeS_State = "NO_OPERATING_VOLTAGE" OR d51in_EST_EfeS_State = "FALLBACK_MODE")/{OPERATING_VOLTAGE - NATIONAL_ASPECT}		Basic LS
Eu.LS.7217	Info	F_Observe_Signal_Aspect		Basic LS
Eu.LS.7218	Req	<div>[Block] F_Observe_Signal_Aspect [Functional Viewpoint - Subsystem Requirements - Functional Entity]<div><div>ibdd [Block] F_Observe_Signal_Aspect [Functional Viewpoint - Subsystem Requirements - Functional Entity]</div><div><div>«functional entity» F_Observe_Signal_Aspect</div><div><div><div>D7in_Sensed_Signal_Aspect : Stringd20out_Observed_Intentionally_Dark : Boolean</div><div><div>D8in_Sensed_Intentionally_Dark : Booleand19out_Observed_Signal_Aspect : String</div><div><div>d51in_EST_EfeS_State : String</div></div></div></div></div></div></div></div>		Basic LS
Eu.LS.7221	Def	d19out_Observed_Signal_Aspect		Basic LS
Eu.LS.7220	Def	d20out_Observed_Intentionally_Dark		Basic LS
Eu.LS.7222	Def	D7in_Sensed_Signal_Aspect	The port D7in_Sensed_Signal_Aspect represents the sensed state of the Signal Aspect.	Basic LS
Eu.LS.7224	Def	D8in_Sensed_Intentionally_Dark	The port D8in_Sensed_Intentionally_Dark represents the sensed state of intentionally dark.	Basic LS
Eu.LS.7223	Def	d51in_EST_EfeS_State		Basic LS
Eu.LS.7225	Info	F_Observe_Signal_Aspect - Behaviour		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7226	Req	<div>Functional Viewpoint - Subsystem Requirements - Functional Entity STD 2</div> <div>stm [State Machine] F_Observe_Signal_Aspect - Behaviour [Functional Viewpoint - Subsystem Requirements - Functional Entity STD 2]</div> <div><pre>stateDiagram-v2 [*] --> NATIONAL_ASPECT : Initial0 NATIONAL_ASPECT --> OBSERVING_SIGNAL_ASPECT : when(d51in_EST_EfeS_State = "BOOTING") NATIONAL_ASPECT --> NATIONAL_ASPECT : when(d51in_EST_EfeS_State = "NO_OPERATING_VOLTAGE" OR d51in_EST_EfeS_State = "FALLBACK_MODE") NATIONAL_ASPECT --> NATIONAL_ASPECT : when(d51in_EST_EfeS_State = "BOOTING" OR d51in_EST_EfeS_State = "INITIALISING") state OBSERVING_SIGNAL_ASPECT { [*] --> J1 : Initial1 J1 --> WAITING : [D7in_Sensed_Signal_Aspect = "Most Restrict Aspect"] J1 --> NO_SIGNAL_ASPECT : [D7in_Sensed_Signal_Aspect = "No Signal Aspect - lamp failure" OR D7in_Sensed_Signal_Aspect = "No Signal Aspect - luminosity failure"] WAITING --> NO_SIGNAL_ASPECT : when(D7in_Sensed_Signal_Aspect = "No Signal Aspect - lamp failure" OR D7in_Sensed_Signal_Aspect = "No Signal Aspect - luminosity failure") NO_SIGNAL_ASPECT --> NO_SIGNAL_ASPECT : when(D7in_Sensed_Signal_Aspect = "Signal Aspect 2") NO_SIGNAL_ASPECT --> SIGNAL_ASPECT_2 : when(D7in_Sensed_Signal_Aspect = "Signal Aspect 2") NO_SIGNAL_ASPECT --> SIGNAL_ASPECT_1 : when(D7in_Sensed_Signal_Aspect = "Signal Aspect 1") NO_SIGNAL_ASPECT --> WAITING : when(D7in_Sensed_Signal_Aspect = "Most Restrict Aspect") NO_SIGNAL_ASPECT --> NO_SIGNAL_ASPECT : when(D7in_Sensed_Signal_Aspect = "No Signal Aspect - lamp failure" OR D7in_Sensed_Signal_Aspect = "No Signal Aspect - luminosity failure") SIGNAL_ASPECT_1 --> SIGNAL_ASPECT_1 : when(D7in_Sensed_Signal_Aspect = "Signal Aspect 1") SIGNAL_ASPECT_1 --> SIGNAL_ASPECT_2 : when(D7in_Sensed_Signal_Aspect = "Signal Aspect 2") SIGNAL_ASPECT_1 --> WAITING : when(D7in_Sensed_Signal_Aspect = "Most Restrict Aspect") SIGNAL_ASPECT_1 --> SIGNAL_ASPECT_1 : when(D7in_Sensed_Signal_Aspect = "No Signal Aspect - lamp failure" OR D7in_Sensed_Signal_Aspect = "No Signal Aspect - luminosity failure") SIGNAL_ASPECT_2 --> SIGNAL_ASPECT_2 : when(D7in_Sensed_Signal_Aspect = "Signal Aspect 2") SIGNAL_ASPECT_2 --> SIGNAL_ASPECT_1 : when(D7in_Sensed_Signal_Aspect = "Signal Aspect 1") SIGNAL_ASPECT_2 --> WAITING : when(D7in_Sensed_Signal_Aspect = "Most Restrict Aspect") SIGNAL_ASPECT_2 --> SIGNAL_ASPECT_2 : when(D7in_Sensed_Signal_Aspect = "No Signal Aspect - lamp failure" OR D7in_Sensed_Signal_Aspect = "No Signal Aspect - luminosity failure") } state WAITING { [*] --> WAITING : when(D7in_Sensed_Signal_Aspect = "Most Restrict Aspect") } state MOST_RESTRICT_ASPECT { [*] --> MOST_RESTRICT_ASPECT : when(D7in_Sensed_Signal_Aspect = "Most Restrict Aspect") MOST_RESTRICT_ASPECT --> MOST_RESTRICT_ASPECT : when(D8in_Sensed_Intentionally_Dark) MOST_RESTRICT_ASPECT --> MOST_RESTRICT_ASPECT : when(NOT D8in_Sensed_Intentionally_Dark) } state NO_SIGNAL_ASPECT { [*] --> NO_SIGNAL_ASPECT : when(D7in_Sensed_Signal_Aspect = "No Signal Aspect") } state SIGNAL_ASPECT_1 { [*] --> SIGNAL_ASPECT_1 : when(D7in_Sensed_Signal_Aspect = "Signal Aspect 1") SIGNAL_ASPECT_1 --> SIGNAL_ASPECT_1 : when(D8in_Sensed_Intentionally_Dark) SIGNAL_ASPECT_1 --> SIGNAL_ASPECT_1 : when(NOT D8in_Sensed_Intentionally_Dark) } state SIGNAL_ASPECT_2 { [*] --> SIGNAL_ASPECT_2 : when(D7in_Sensed_Signal_Aspect = "Signal Aspect 2") SIGNAL_ASPECT_2 --> SIGNAL_ASPECT_2 : when(D8in_Sensed_Intentionally_Dark) SIGNAL_ASPECT_2 --> SIGNAL_ASPECT_2 : when(NOT D8in_Sensed_Intentionally_Dark) }</pre></div>	<div>This state machine diagram describes the requirements for the following functionalities:</div> <div><ul style="list-style-type: none">- observe the currently set Signal Aspect- observe the currently set state of intentionally dark- forward the observed Luminosity to the interfacing block</div>	Basic LS
Eu.LS.7227	Def	Initial0		Basic LS
Eu.LS.7228	Def	/ {Initial0 - NATIONAL_ASPECT}		Basic LS
Eu.LS.7229	Def	NATIONAL_ASPECT		Basic LS
Eu.LS.7230	Def	when(d51in_EST_EfeS_State = "BOOTING") / {NATIONAL_ASPECT - OBSERVING_SIGNAL_ASPECT}		Basic LS
Eu.LS.7231	Def	OBSERVING_SIGNAL_ASPECT		Basic LS
Eu.LS.7260	Def	when(d51in_EST_EfeS_State = "BOOTING" OR d51in_EST_EfeS_State = "INITIALISING") / {OBSERVING_SIGNAL_ASPECT - OBSERVING_SIGNAL_ASPECT}		Basic LS
Eu.LS.7261	Def	when(d51in_EST_EfeS_State = "NO_OPERATING_VOLTAGE" OR d51in_EST_EfeS_State = "FALLBACK_MODE") / {OBSERVING_SIGNAL_ASPECT - NATIONAL_ASPECT}		Basic LS
Eu.LS.7233	Def	Initial1		Basic LS
Eu.LS.7234	Def	/ {Initial1 - Junction}		Basic LS
Eu.LS.8042	Def	Junction		Basic LS
Eu.LS.8043	Def	[D7in_Sensed_Signal_Aspect = "Most Restrict Aspect"] / {Junction - MOST_RESTRICT_ASPECT}		Basic LS
Eu.LS.8044	Def	[D7in_Sensed_Signal_Aspect = "No Signal Aspect - lamp failure" OR D7in_Sensed_Signal_Aspect = "No Signal Aspect - luminosity failure"] / {Junction - NO_SIGNAL_ASPECT}		Basic LS
Eu.LS.8045	Def	[else] / {Junction - WAITING}		Basic LS
Eu.LS.7238	Def	MOST_RESTRICT_ASPECT		Basic LS
Eu.LS.7239	Def	entry/d19out_Observed_Signal_Aspect := "Most Restrict Aspect"; d20out_Observed_Intentionally_Dark := D8in_Sensed_Intentionally_Dark; {State-internal in MOST_RESTRICT_ASPECT}		Basic LS
Eu.LS.7240	Def	when(D8in_Sensed_Intentionally_Dark) / d20out_Observed_Intentionally_Dark := TRUE; {State-internal in MOST_RESTRICT_ASPECT}		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7241	Def	when(D7in_Sensed_Signal_Aspect = "No Signal Aspect - lamp failure" OR D7in_Sensed_Signal_Aspect = "No Signal Aspect - luminosity failure"))/{MOST_RESTRICT_ASPECT - NO_SIGNAL_ASPECT}		Basic LS
Eu.LS.7242	Def	when(D7in_Sensed_Signal_Aspect = "Signal Aspect 2"))/{MOST_RESTRICT_ASPECT - SIGNAL_ASPECT_2}		Basic LS
Eu.LS.7243	Def	when(D7in_Sensed_Signal_Aspect = "Signal Aspect 1"))/{MOST_RESTRICT_ASPECT - SIGNAL_ASPECT_1}		Basic LS
Eu.LS.7565	Def	when(NOT D8in_Sensed_Intentionally_Dark)/ d20out_Observed_Intentionally_Dark := FALSE;{State-internal in MOST_RESTRICT_ASPECT}		Basic LS
Eu.LS.7244	Def	NO_SIGNAL_ASPECT		Basic LS
Eu.LS.7245	Def	entry/d19out_Observed_Signal_Aspect := "No Signal Aspect";{State-internal in NO_SIGNAL_ASPECT}		Basic LS
Eu.LS.7246	Def	when(D7in_Sensed_Signal_Aspect = "Most Restrict Aspect"))/{NO_SIGNAL_ASPECT - MOST_RESTRICT_ASPECT}		Basic LS
Eu.LS.7619	Def	when(D7in_Sensed_Signal_Aspect = "Signal Aspect 1"))/{NO_SIGNAL_ASPECT - SIGNAL_ASPECT_1}		Basic LS
Eu.LS.7620	Def	when(D7in_Sensed_Signal_Aspect = "Signal Aspect 2"))/{NO_SIGNAL_ASPECT - SIGNAL_ASPECT_2}		Basic LS
Eu.LS.7248	Def	SIGNAL_ASPECT_1		Basic LS
Eu.LS.7249	Def	entry/d19out_Observed_Signal_Aspect := "Signal Aspect 1"; d20out_Observed_Intentionally_Dark := D8in_Sensed_Intentionally_Dark;{State-internal in SIGNAL_ASPECT_1}		Basic LS
Eu.LS.7250	Def	when(D8in_Sensed_Intentionally_Dark)/ d20out_Observed_Intentionally_Dark := TRUE;{State-internal in SIGNAL_ASPECT_1}		Basic LS
Eu.LS.7251	Def	when(D7in_Sensed_Signal_Aspect = "Most Restrict Aspect"))/{SIGNAL_ASPECT_1 - MOST_RESTRICT_ASPECT}		Basic LS
Eu.LS.7252	Def	when(D7in_Sensed_Signal_Aspect = "No Signal Aspect - lamp failure" OR D7in_Sensed_Signal_Aspect = "No Signal Aspect - luminosity failure"))/{SIGNAL_ASPECT_1 - NO_SIGNAL_ASPECT}		Basic LS
Eu.LS.7253	Def	when(D7in_Sensed_Signal_Aspect = "Signal Aspect 2"))/{SIGNAL_ASPECT_1 - SIGNAL_ASPECT_2}		Basic LS
Eu.LS.7566	Def	when(NOT D8in_Sensed_Intentionally_Dark)/ d20out_Observed_Intentionally_Dark := FALSE;{State-internal in SIGNAL_ASPECT_1}		Basic LS
Eu.LS.7254	Def	SIGNAL_ASPECT_2		Basic LS
Eu.LS.7255	Def	entry/d19out_Observed_Signal_Aspect := "Signal Aspect 2"; d20out_Observed_Intentionally_Dark := D8in_Sensed_Intentionally_Dark;{State-internal in SIGNAL_ASPECT_2}		Basic LS
Eu.LS.7256	Def	when(D8in_Sensed_Intentionally_Dark)/ d20out_Observed_Intentionally_Dark := TRUE;{State-internal in SIGNAL_ASPECT_2}		Basic LS
Eu.LS.7257	Def	when(D7in_Sensed_Signal_Aspect = "Most Restrict Aspect"))/{SIGNAL_ASPECT_2 - MOST_RESTRICT_ASPECT}		Basic LS
Eu.LS.7258	Def	when(D7in_Sensed_Signal_Aspect = "No Signal Aspect - lamp failure" OR D7in_Sensed_Signal_Aspect = "No Signal Aspect - luminosity failure"))/{SIGNAL_ASPECT_2 - NO_SIGNAL_ASPECT}		Basic LS
Eu.LS.7259	Def	when(D7in_Sensed_Signal_Aspect = "Signal Aspect 1"))/{SIGNAL_ASPECT_2 - SIGNAL_ASPECT_1}		Basic LS
Eu.LS.7567	Def	when(NOT D8in_Sensed_Intentionally_Dark)/ d20out_Observed_Intentionally_Dark := FALSE;{State-internal in SIGNAL_ASPECT_2}		Basic LS
Eu.LS.7483	Def	WAITING		Basic LS
Eu.LS.7236	Def	when(D7in_Sensed_Signal_Aspect = "Most Restrict Aspect"))/{WAITING - MOST_RESTRICT_ASPECT}		Basic LS
Eu.LS.7237	Def	when(D7in_Sensed_Signal_Aspect = "No Signal Aspect - lamp failure" OR D7in_Sensed_Signal_Aspect = "No Signal Aspect - luminosity failure"))/{WAITING - NO_SIGNAL_ASPECT}		Basic LS
Eu.LS.6655	Info	F_Control_Luminosity		Basic LS
Eu.LS.6734	Req	<div><div>[Block] F_Control_Luminosity [Functional Viewpoint - Subsystem Requirements - Functional Entity]</div><div><div><div><div>«functional entity» F_Control_Luminosity</div><div><div><div><div>D12in_Con_Luminosity : Boolean</div><div>D13in_Luminosity_Day_Fault : Boolean</div><div>D14in_Luminosity_Night_Fault : Boolean</div><div>D16in_Luminosity_Set_Unchangeable : Boolean</div><div>d11in_Required_Luminosity : String</div><div>d51in_EST_EfeS_State : String</div></div></div><div><div>T5out_SIL_Not_Fulfilled : PulsedOut</div><div>D9out_Set_Luminosity : String</div></div></div></div></div></div></div>		Basic LS
Eu.LS.6664	Def	d11in_Required_Luminosity		Basic LS
Eu.LS.6659	Def	D12in_Con_Luminosity	The port D12in_Con_Luminosity provides configuration values for the default Luminosity. - True: Day - False: Night	Basic LS
Eu.LS.6660	Def	D13in_Luminosity_Day_Fault	The port D13in_Luminosity_Day_Fault represents a Fault of the Day Luminosity.	Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.6676	Def	/{Initial1 - CONTROLLING_LUMINOSITY}		Basic LS
Eu.LS.6677	Def	CONTROLLING_LUMINOSITY		Basic LS
Eu.LS.6701	Def	Initial2		Basic LS
Eu.LS.6702	Def	/{Initial2 - Junction0}		Basic LS
Eu.LS.6885	Def	Junction0		Basic LS
Eu.LS.6886	Def	[(D12in_Con_Luminosity = TRUE AND NOT D13in_Luminosity_Day_Fault) OR (D14in_Luminosity_Night_Fault AND D12in_Con_Luminosity = FALSE AND NOT D13in_Luminosity_Day_Fault AND NOT D16in_Luminosity_Set_Unchangeable)]/{Junction0 - DAY}		Basic LS
Eu.LS.6887	Def	[(D12in_Con_Luminosity = FALSE AND NOT D14in_Luminosity_Night_Fault) OR (D13in_Luminosity_Day_Fault AND D12in_Con_Luminosity = TRUE AND NOT D14in_Luminosity_Night_Fault AND NOT D16in_Luminosity_Set_Unchangeable)]/{Junction0 - NIGHT}		Basic LS
Eu.LS.6888	Def	[else]/T5out_SIL_Not_Fulfilled := TRUE;{Junction0 - UNDEFINED}		Basic LS
Eu.LS.6725	Def	DAY		Basic LS
Eu.LS.6898	Def	entry/D9out_Set_Luminosity := "Day";{State-internal in DAY}		Basic LS
Eu.LS.6712	Def	when(D13in_Luminosity_Day_Fault)[d51in_EST_EfeS_State <> "OPERATIONAL" AND (D16in_Luminosity_Set_Unchangeable OR D14in_Luminosity_Night_Fault)]/T5out_SIL_Not_Fulfilled := TRUE;{DAY - UNDEFINED}		Basic LS
Eu.LS.6724	Def	when(D13in_Luminosity_Day_Fault)[d51in_EST_EfeS_State = "OPERATIONAL" AND (D16in_Luminosity_Set_Unchangeable OR D14in_Luminosity_Night_Fault)]/{DAY - UNDEFINED}		Basic LS
Eu.LS.6728	Def	when(D13in_Luminosity_Day_Fault OR d11in_Required_Luminosity = "Night")[NOT D14in_Luminosity_Night_Fault AND NOT D16in_Luminosity_Set_Unchangeable]/{DAY - NIGHT}		Basic LS
Eu.LS.6713	Def	NIGHT		Basic LS
Eu.LS.6899	Def	entry/D9out_Set_Luminosity := "Night";{State-internal in NIGHT}		Basic LS
Eu.LS.6705	Def	when(D14in_Luminosity_Night_Fault)[d51in_EST_EfeS_State <> "OPERATIONAL" AND (D16in_Luminosity_Set_Unchangeable OR D13in_Luminosity_Day_Fault)]/T5out_SIL_Not_Fulfilled := TRUE;{NIGHT - UNDEFINED}		Basic LS
Eu.LS.6704	Def	when(D14in_Luminosity_Night_Fault)[d51in_EST_EfeS_State = "OPERATIONAL" AND (D16in_Luminosity_Set_Unchangeable OR D13in_Luminosity_Day_Fault)]/{NIGHT - UNDEFINED}		Basic LS
Eu.LS.6727	Def	when(D14in_Luminosity_Night_Fault OR d11in_Required_Luminosity = "Day")[NOT D13in_Luminosity_Day_Fault AND NOT D16in_Luminosity_Set_Unchangeable]/{NIGHT - DAY}		Basic LS
Eu.LS.6707	Def	UNDEFINED		Basic LS
Eu.LS.6900	Def	entry/D9out_Set_Luminosity := "Undefined";{State-internal in UNDEFINED}		Basic LS
Eu.LS.7954	Def	when(NOT D13in_Luminosity_Day_Fault)[d51in_EST_EfeS_State = "OPERATIONAL" AND (NOT D16in_Luminosity_Set_Unchangeable OR(D16in_Luminosity_Set_Unchangeable AND (d11in_Required_Luminosity = "Day" OR D12in_Con_Luminosity))))]/{UNDEFINED - DAY}		Basic LS
Eu.LS.7955	Def	when(NOT D14in_Luminosity_Night_Fault)[d51in_EST_EfeS_State = "OPERATIONAL" AND (NOT D16in_Luminosity_Set_Unchangeable OR (D16in_Luminosity_Set_Unchangeable AND (d11in_Required_Luminosity = "Night" OR NOT D12in_Con_Luminosity))))]/{UNDEFINED - NIGHT}		Basic LS
Eu.LS.6674	Def	when(d51in_EST_EfeS_State = "BOOTING" OR d51in_EST_EfeS_State = "INITIALISING")/{CONTROLLING_LUMINOSITY - CONTROLLING_LUMINOSITY}		Basic LS
Eu.LS.6733	Def	when(d51in_EST_EfeS_State = "NO_OPERATING_VOLTAGE")/{OPERATING_VOLTAGE - NO_OPERATING_VOLTAGE}		Basic LS
Eu.LS.7186	Info	F_Observe_Luminosity		Basic LS
Eu.LS.7187	Req	<div><div>[Block] F_Observe_Luminosity [Functional Viewpoint - Subsystem Requirements - Functional Entity]</div><div><div><div><div>ibd [Block] F_Observe_Luminosity [Functional Viewpoint - Subsystem Requirements - Functional Entity]</div><div><div><div>«functional entity» F_Observe_Luminosity</div><div><div><div><div><div><div></div><div>D9in_Sensed_Luminosity : String</div><div></div></div><div><div><div>d21out_Observed_Luminosity : String</div><div></div></div></div><div><div><div>d51in_EST_EfeS_State : String</div><div></div></div></div></div></div></div></div></div></div></div></div></div></div>		Basic LS
Eu.LS.7189	Def	D9in_Sensed_Luminosity	The port D9in_Sensed_Luminosity represents the sensed state of the Luminosity.	Basic LS
Eu.LS.7190	Def	d21out_Observed_Luminosity		Basic LS
Eu.LS.7191	Def	d51in_EST_EfeS_State		Basic LS
Eu.LS.7192	Info	F_Observe_Luminosity - Behaviour		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7193	Req	<div>Functional Viewpoint - Subsystem Requirements - Functional Entity STD 4</div> <div>stm [State Machine] F_Observe_Luminosity - Behaviour [Functional Viewpoint - Subsystem Requirements - Functional Entity STD 4]</div> <div><p>The diagram illustrates the state machine for the F_Observe_Luminosity - Behaviour functional entity. It starts with an initial state 'Initial0' leading to the 'NO_OPERATING_VOLTAGE' state. A transition occurs to the 'OBSERVING_LUMINOSITY' state when 'd51in_EST_EfeS_State' is 'BOOTING' or 'INITIALISING'. Within 'OBSERVING_LUMINOSITY', there is an internal state 'Initial1' leading to the 'WAITING' state. From 'WAITING', a transition to the 'DAY' state occurs when 'D9in_Sensed_Luminosity' is 'Day', and a transition to the 'NIGHT' state occurs when it is 'Night'. Both 'DAY' and 'NIGHT' states have an entry action 'd21out_Observed_Luminosity := "Day"' and 'NIGHT' also has 'd21out_Observed_Luminosity := "Night"'. Transitions from 'DAY' to 'NIGHT' and back to 'DAY' occur when 'D9in_Sensed_Luminosity' is 'Night' and 'Day' respectively. A final transition returns from 'NIGHT' to 'NO_OPERATING_VOLTAGE' when 'd51in_EST_EfeS_State' is 'NO_OPERATING_VOLTAGE'.</p></div>	<div>This state machine diagram describes the requirements for the following functionalities:</div> <div>- observe the currently set Luminosity</div> <div>- forward the observed Luminosity to the interfacing block</div>	Basic LS
Eu.LS.7194	Def	Initial0		Basic LS
Eu.LS.7195	Def	/{Initial0 - NO_OPERATING_VOLTAGE}		Basic LS
Eu.LS.7196	Def	NO_OPERATING_VOLTAGE		Basic LS
Eu.LS.7197	Def	when(d51in_EST_EfeS_State = "BOOTING")/{NO_OPERATING_VOLTAGE - OBSERVING_LUMINOSITY}		Basic LS
Eu.LS.7201	Def	OBSERVING_LUMINOSITY		Basic LS
Eu.LS.7206	Def	Initial1		Basic LS
Eu.LS.7207	Def	/{Initial1 - WAITING}		Basic LS
Eu.LS.7203	Def	DAY		Basic LS
Eu.LS.7204	Def	entry/d21out_Observed_Luminosity := "Day";{State-internal in DAY}		Basic LS
Eu.LS.7205	Def	when(D9in_Sensed_Luminosity = "Night")/{DAY - NIGHT}		Basic LS
Eu.LS.7211	Def	NIGHT		Basic LS
Eu.LS.7212	Def	entry/d21out_Observed_Luminosity := "Night";{State-internal in NIGHT}		Basic LS
Eu.LS.7213	Def	when(D9in_Sensed_Luminosity = "Day")/{NIGHT - DAY}		Basic LS
Eu.LS.7215	Def	when(d51in_EST_EfeS_State = "BOOTING" OR d51in_EST_EfeS_State = "INITIALISING")/{OBSERVING_LUMINOSITY - OBSERVING_LUMINOSITY}		Basic LS
Eu.LS.7564	Def	WAITING		Basic LS
Eu.LS.7209	Def	when(D9in_Sensed_Luminosity = "Day")/{WAITING - DAY}		Basic LS
Eu.LS.7210	Def	when(D9in_Sensed_Luminosity = "Night")/{WAITING - NIGHT}		Basic LS
Eu.LS.7216	Def	when(d51in_EST_EfeS_State = "NO_OPERATING_VOLTAGE")/{OBSERVING_LUMINOSITY - NO_OPERATING_VOLTAGE}		Basic LS
Eu.LS.7485	Head	3.4 Subsystem - Light Signal - Interfaces		
Eu.LS.4685	Head	3.4.1 SCI-LS (Subsystem - Electronic Interlocking)		
Eu.LS.6465	Head	3.4.1.1 SCI-LS - Logical Viewpoint		
Eu.LS.7597	Head	3.4.1.1.1 SCI-LS - Logical Context		

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7492	Def	<div><div>[Package] SCI-LS - Logical Context [Logical Viewpoint - Interface Definition]</div><div><div><div><div><div>«logical structural entity» SCI-LS</div></div><div><div>Subsystem - Electronic Interlocking</div><div><div>«logical structural entity» Subsystem - Electronic Interlocking</div></div></div><div><div>1</div><div>SCI-LS</div></div></div><div><div>Subsystem - Light Signal - Functional Architecture</div><div><div>«logical structural entity» Subsystem - Light Signal</div></div></div><div><div>1</div><div>SCI-LS</div></div></div><div>SCI-LS</div></div></div>		Basic LS
Eu.LS.7486	Head	3.4.1.2 SCI-LS - Information Flows		
Eu.LS.6102	Info	The generic commands and messages through the SCI_LS_Subsystem_EIL are specified in [Eu.Doc.119].		Basic LS
Eu.LS.7178	Def	<div><div>[Package] SCI-LS - Information Flows [Interface Requirements - Direction of Information Objects]</div><div><div><div><div>«information flow» SCI_LS_Subsystem_EIL</div><div><div>proxyPorts</div><div>«ProxyPort» P1inout : SCI_GEN «ProxyPort» P1out : SCI_LS_2 «ProxyPort» P2in : SCI_LS_1</div></div></div><div><div>«information flow» SCI_LS_Subsystem_LS</div><div><div>proxyPorts</div><div>«ProxyPort» P1in : SCI_LS_2 «ProxyPort» P1inout : SCI_GEN «ProxyPort» P2out : SCI_LS_1</div></div></div></div><div><div><div>«information flow» SCI_LS_2</div><div>prov «signal» Cd_Indicate_Signal_Aspect prov «signal» Cd_Set_Luminosity</div></div><div><div>«information flow» SCI_LS_1</div><div>reqd «signal» Msg_Indicated_Signal_Aspect reqd «signal» Msg_Set_Luminosity</div></div></div><div><div>«information flow» SCI_GEN</div><div>prov «signal» Cd_PDI_Version_Check reqd «signal» Msg_PDI_Version_Check prov «signal» Cd_Close_PDI prov «signal» Cd_Initialisation_Request reqd «signal» Msg_Start_Initialisation reqd «signal» Msg_Initialisation_Completed prov «signal» Cd_Release_PDI_for_Maintenance reqd «signal» Msg_PDI_Available reqd «signal» Msg_PDI_Not_Available reqd «signal» Msg_Reset_PDI</div></div></div></div>		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7180	Def	<div><div>[Package] SCI-LS - Information Flows [Interface Requirements - Information Objects]</div><div><div><div><div><div>«information object» signal Cd_Indicate_Signal_Aspect</div><div>CommandedSignalAspectState : SignalAspectControlableState CommandedDarkState : Boolean</div></div><div><div>«information object» signal Msg_Indicated_Signal_Aspect</div><div>ReportedSignalAspectState : SignalAspectState ReportedDarkState : Boolean</div></div><div><div>«information object» signal Cd_Set_Luminosity</div><div>CommandedLuminosityState : LuminosityState</div></div><div><div>«information object» signal Msg_Set_Luminosity</div><div>ReportedLuminosityState : LuminosityState</div></div></div><div><div>«valueType (enumeration)» SignalAspectControlableState Signal_Aspect_1 Signal_Aspect_2 Most_Restrict_Aspect</div><div>«valueType (enumeration)» SignalAspectState Signal_Aspect_1 Signal_Aspect_2 Most_Restrict_Aspect No_Signal_Aspect</div><div>«valueType (enumeration)» LuminosityState Day Night</div></div><div><div>CommandedSignalAspectState</div><div>ReportedSignalAspectState</div><div>CommandedLuminosityState</div><div>ReportedLuminosityState</div></div></div></div></div>		Basic LS
Eu.LS.7586	Def	Cd_Indicate_Signal_Aspect	Command (Cd) from the Subsystem - Electronic Interlocking to the Subsystem - Light Signal to indicate the transmitted Signal Aspect.	Basic LS
Eu.LS.7587	Def	Cd_Set_Luminosity	Command (Cd) from the Subsystem - Electronic Interlocking to the Subsystem - Light Signal to set the transmitted Luminosity.	Basic LS
Eu.LS.7588	Def	Msg_Indicated_Signal_Aspect	Message (Msg) from the Subsystem - Light Signal to the Subsystem - Electronic Interlocking of the indicated Signal Aspect.	Basic LS
Eu.LS.7589	Def	Msg_Set_Luminosity	Message (Msg) from the Subsystem - Light Signal to the Subsystem - Electronic Interlocking of the set Luminosity.	Basic LS
Eu.LS.7489	Head	3.4.1.3 SCI-LS - Functional Viewpoint		
Eu.LS.7585	Head	3.4.1.3.1 SCI-LS - Functional Partitioning		
Eu.LS.6474	Def	<div><div>[Package] SCI-LS - Functional Partitioning [Functional Viewpoint - Interface Requirements]</div><div><div><div><div><div><div>«logical structural entity» SCI-LS</div></div></div><div><div>Subsystem - Electronic Interlocking</div><div><div><div>«logical structural entity» Subsystem - Electronic Interlocking</div><div>1 SCI-LS</div></div><div><div>1 1 1</div></div></div><div><div>Subsystem - Light Signal - Functional Architecture</div><div><div><div>«logical structural entity» Subsystem - Light Signal</div><div>1 SCI-LS</div></div><div><div>1 1 1</div></div></div></div><div><div>SCI-XX EfeS - Functional Entities</div><div><div><div>«functional entity» S_SCI_EfeS_Prim</div><div>«functional entity» F_SCI_EfeS_Sec</div></div><div>1 1</div></div><div><div>SCI-LS - Functional Entities</div><div><div><div>«functional entity» S_SCI_LS_Command</div><div>«functional entity» F_SCI_LS_Receive</div></div><div><div>«functional entity» S_SCI_LS_Receive</div><div>«functional entity» F_SCI_LS_Report</div></div><div>1 1 1 1 1</div></div></div></div></div></div></div></div></div>		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7569	Head	3.4.1.3.2 SCI-LS - Functional Architecture		
Eu.LS.6466	Info	SCI-LS		Basic LS
Eu.LS.6471	Def	<div><div>[Package] SCI-LS - Functional Architecture [Functional Viewpoint - Interface Requirements]</div><div><div>ibd [Package] SCI-LS - Functional Architecture [Functional Viewpoint - Interface Requirements]</div><div><div>«logical structural entity» SCI-LS</div><div><div><div>«participant» {end = SCI-LS} «logical structural entity» InLink : Subsystem - Electronic Interlocking</div><div><div>«functional entity» : S_SCI_EfeS_Prims P1inout : ~SCI_GEN d50out_PDI_Connection_State : String</div><div>«functional entity» : S_SCI_LS_Command P1out : ~SCI_LS_2 d9_PDI_Connection_State : String</div><div>«functional entity» : S_SCI_LS_Receive P2in : ~SCI_LS_1 d9_PDI_Connection_State : String</div></div><div><div>SCI-LS : SCI_LS_Subsystem_EIL</div><div>P1inout : ~SCI_GEN «equal» P1out : ~SCI_LS_2 «equal» P2in : ~SCI_LS_1 «equal»</div></div><div><div>«participant» {end = SCI-LS} «logical structural entity» InLink : Subsystem - Light Signal</div><div><div>«functional entity» : F_SCI_EfeS_Secs P1inout : SCI_GEN p3inout : ~F_SCI_Specific d50out_PDI_Connection_State : String</div><div>«functional entity» : F_SCI_LS_Receive P1in : SCI_LS_2 d50in_PDI_Connection_State : String</div><div>«functional entity» : F_SCI_LS_Report d50in_PDI_Connection_State : String P2out : SCI_LS_1 p3inout : F_SCI_Specific</div></div><div><div>SCI-LS : SCI_LS_Subsystem_LS</div><div>P1inout : SCI_GEN «equal» P1in : SCI_LS_2 «equal» P2out : SCI_LS_1 «equal»</div></div><div><div>P1inout : ~SCI_GEN «equal» P1inout : SCI_GEN «equal» P1in : SCI_LS_2 «equal» P1in : SCI_LS_2 «equal» P2out : SCI_LS_1 «equal»</div><div><div>d50out_PDI_Connection_State : String</div><div>d50out_PDI_Connection_State : String</div><div>d50in_PDI_Connection_State : String</div><div>d50in_PDI_Connection_State : String</div></div></div></div></div></div></div></div></div>		Basic LS
Eu.LS.7570	Head	3.4.1.3.3 SCI-LS - Functional Entities		
Eu.LS.6593	Info	F_SCI_LS_Receive		Basic LS
Eu.LS.6639	Req	<div><div>[Block] F_SCI_LS_Receive [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div>ibd [Block] F_SCI_LS_Receive [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div>«functional entity» F_SCI_LS_Receive</div><div><div>P1in : SCI_LS_2 d2out_Required_Signal_Aspect : String</div><div>D4in_Con_Intentionally_Dark : Boolean d3out_Required_Intentionally_Dark : Boolean</div><div>D4in_Fault_Lamps_Aspect_1 : Boolean d11out_Required_Luminosity : String</div><div>D5in_Fault_Lamps_Aspect_2 : Boolean</div><div>D6in_Fault_Lamps_Most_Restrict : Boolean</div><div>D13in_Luminosity_Day_Fault : Boolean</div><div>D14in_Luminosity_Night_Fault : Boolean</div><div>d50in_PDI_Connection_State : String</div></div></div></div></div>		Basic LS
Eu.LS.7466	Def	P1in	The port P1in exchanges information objects according to SCI_LS_2.	Basic LS
Eu.LS.6601	Def	d2out_Required_Signal_Aspect		Basic LS
Eu.LS.6600	Def	d3out_Required_Intentionally_Dark		Basic LS
Eu.LS.7514	Def	D4in_Fault_Lamps_Aspect_1	The port D4in_Fault_Lamps_Aspect_1 represents a Fault of the Lamps for Signal Aspect 1.	Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7515	Def	D5in_Fault_Lamps_Aspect_2	The port D5in_Fault_Lamps_Aspect_2 represents a Fault of the Lamps for Signal Aspect 2.	Basic LS
Eu.LS.7516	Def	D6in_Fault_Lamps_Most_Restrict	The port D6in_Fault_Lamps_Most_Restrict represents a Fault of the Lamps for most restrictive Signal Aspect.	Basic LS
Eu.LS.6602	Def	d11out_Required_Luminosity		Basic LS
Eu.LS.7512	Def	D13in_Luminosity_Day_Fault	The port D13in_Luminosity_Day_Fault represents a Fault of the Day Luminosity.	Basic LS
Eu.LS.7513	Def	D14in_Luminosity_Night_Fault	The port D14in_Luminosity_Night_Fault represents a Fault of the Night Luminosity.	Basic LS
Eu.LS.6596	Def	d50in_PDI_Connection_State		Basic LS
Eu.LS.6595	Def	D4in_Con_Intentionally_Dark	The port D4in_Con_Intentionally_Dark provides the configuration value whether the Subsystem - Light Signal is switchable to intentionally dark or not.	Basic LS
Eu.LS.6609	Info	F_SCI_LS_Receive - Behaviour		Basic LS
Eu.LS.6635	Req	<div>Functional Viewpoint - Interface Requirements - Functional Entity STD 3</div> <div>stm [State Machine] F_SCI_LS_Receive - Behaviour [Functional Viewpoint - Interface Requirements - Functional Entity STD 3]</div> <div><div><div><div>Initial0</div><div>RECEIVING_LIGHT_SIGNAL_COMMANDS</div></div><div><div>RECEIVING_SIGNAL_ASPECT</div><div><div>Initial1</div><div>RECEIVING_SIGNAL_ASPECTS</div><div><div>Cd_Indicate_Signal_Aspect[CommandedSignalAspectState = Signal_Aspect_1]/d2out_Required_Signal_Aspect := "Signal Aspect 1";</div><div>Cd_Indicate_Signal_Aspect[CommandedSignalAspectState = Signal_Aspect_2]/d2out_Required_Signal_Aspect := "Signal Aspect 2";</div><div>Cd_Indicate_Signal_Aspect[CommandedSignalAspectState = Most_Restrict_Aspect]/d2out_Required_Signal_Aspect := "Most Restrict Aspect";</div><div>Entry/d2out_Required_Signal_Aspect := "Unknown";</div><div><div>when(NOT D4in_Fault_Lamps_Aspect_1) /</div><div>when(NOT D5in_Fault_Lamps_Aspect_2) /</div><div>when(NOT D6in_Fault_Lamps_Most_Restrict) /</div></div></div><div><div>when(d50in_PDI_Connection_State = "READY_FOR_PDI_NO_SCP" OR d50in_PDI_Connection_State = "READY_FOR_PDI" OR d50in_PDI_Connection_State = "SUSPENDED") /</div></div></div><div><div>RECEIVING_INTENTIONALLY_DARK</div><div><div>Initial2</div><div>RECEIVING_INTENTIONALLY_DARK</div><div><div>Entry/d3out_Required_Intentionally_Dark := FALSE;</div><div>Cd_Indicate_Signal_Aspect[CommandedDarkState = TRUE AND D4in_Con_Intentionally_Dark]/d3out_Required_Intentionally_Dark := TRUE;</div><div>Cd_Indicate_Signal_Aspect[CommandedDarkState = FALSE]/d3out_Required_Intentionally_Dark := FALSE;</div></div></div><div><div>RECEIVING_LUMINOSITY</div><div><div>Initial3</div><div>RECEIVING_LUMINOSITY</div><div><div>Entry/d11out_Required_Luminosity := "Unknown";</div><div>Cd_Set_Luminosity[CommandedLuminosityState = Day]/d11out_Required_Luminosity := "Day";</div><div>Cd_Set_Luminosity[CommandedLuminosityState = Night]/d11out_Required_Luminosity := "Night";</div><div><div>when(NOT D13in_Luminosity_Day_Fault) /</div><div>when(NOT D14in_Luminosity_Night_Fault) /</div></div><div><div>when(D13in_Luminosity_Day_Fault OR D14in_Luminosity_Night_Fault) /</div></div></div></div></div></div><div>This state machine diagram describes the requirements for the following functionalities:</div><div><div>- receives the commanded Signal Aspect and forwards it as the required Signal Aspect to the internal logic</div><div>- receives the commanded intentionally dark state and forwards it as the required intentionally dark state to the internal logic</div><div>- receives the commanded Luminosity and forwards it as the required Luminosity to the internal logic</div></div></div><div>Basic LS</div></div></div>		
Eu.LS.6610	Def	Initial0		Basic LS
Eu.LS.6611	Def	/{Initial0 - RECEIVING_LIGHT_SIGNAL_COMMANDS}		Basic LS
Eu.LS.6636	Def	RECEIVING_LIGHT_SIGNAL_COMMANDS		Basic LS
Eu.LS.7279	Def	RECEIVING_SIGNAL_ASPECT		Basic LS
Eu.LS.7280	Def	Initial1		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7281	Def	/{Initial1 - RECEIVING_SIGNAL_ASPECTS}		Basic LS
Eu.LS.7282	Def	RECEIVING_SIGNAL_ASPECTS		Basic LS
Eu.LS.7283	Def	Cd_Indicate_Signal_Aspect[CommandedSignalAspectState = Signal_Aspect_1]/d2out_Required_Signal_Aspect := "Signal Aspect 1";{State-internal in RECEIVING_SIGNAL_ASPECTS}		Basic LS
Eu.LS.6614	Def	when(D4in_Fault_Lamps_Aspect_1 OR D5in_Fault_Lamps_Aspect_2 OR D6in_Fault_Lamps_Most_Restrict)/{RECEIVING_SIGNAL_ASPECTS - RECEIVING_SIGNAL_ASPECTS}		Basic LS
Eu.LS.7525	Def	Cd_Indicate_Signal_Aspect[CommandedSignalAspectState = Signal_Aspect_2]/d2out_Required_Signal_Aspect := "Signal Aspect 2";{State-internal in RECEIVING_SIGNAL_ASPECTS}		Basic LS
Eu.LS.7526	Def	Cd_Indicate_Signal_Aspect[CommandedSignalAspectState = Most_Restrict_Aspect]/d2out_Required_Signal_Aspect := "Most Restrict Aspect";{State-internal in RECEIVING_SIGNAL_ASPECTS}		Basic LS
Eu.LS.7527	Def	entry/d2out_Required_Signal_Aspect := "Unknown";{State-internal in RECEIVING_SIGNAL_ASPECTS}		Basic LS
Eu.LS.7573	Def	when(NOT D4in_Fault_Lamps_Aspect_1)/{RECEIVING_SIGNAL_ASPECTS - RECEIVING_SIGNAL_ASPECTS}		Basic LS
Eu.LS.7574	Def	when(NOT D5in_Fault_Lamps_Aspect_2)/{RECEIVING_SIGNAL_ASPECTS - RECEIVING_SIGNAL_ASPECTS}		Basic LS
Eu.LS.7575	Def	when(NOT D6in_Fault_Lamps_Most_Restrict)/{RECEIVING_SIGNAL_ASPECTS - RECEIVING_SIGNAL_ASPECTS}		Basic LS
Eu.LS.7262	Def	RECEIVING_INTENTIONALLY_DARK		Basic LS
Eu.LS.7265	Def	Initial2		Basic LS
Eu.LS.6619	Def	/{Initial2 - RECEIVING_INTENTIONALLY_DARK}		Basic LS
Eu.LS.6618	Def	RECEIVING_INTENTIONALLY_DARK		Basic LS
Eu.LS.7266	Def	entry/d3out_Required_Intentionally_Dark := FALSE;{State-internal in RECEIVING_INTENTIONALLY_DARK}		Basic LS
Eu.LS.7521	Def	Cd_Indicate_Signal_Aspect[CommandedDarkState = TRUE AND D4in_Con_Intentionally_Dark]/d3out_Required_Intentionally_Dark := TRUE;{State-internal in RECEIVING_INTENTIONALLY_DARK}		Basic LS
Eu.LS.7522	Def	Cd_Indicate_Signal_Aspect[CommandedDarkState = FALSE]/d3out_Required_Intentionally_Dark := FALSE;{State-internal in RECEIVING_INTENTIONALLY_DARK}		Basic LS
Eu.LS.7267	Def	RECEIVING_LUMINOSITY		Basic LS
Eu.LS.7271	Def	Initial3		Basic LS
Eu.LS.7272	Def	/{Initial3 - RECEIVING_LUMINOSITY}		Basic LS
Eu.LS.7268	Def	RECEIVING_LUMINOSITY		Basic LS
Eu.LS.7270	Def	entry/d11out_Required_Luminosity := "Unknown";{State-internal in RECEIVING_LUMINOSITY}		Basic LS
Eu.LS.7269	Def	when(D13in_Luminosity_Day_Fault OR D14in_Luminosity_Night_Fault)/{RECEIVING_LUMINOSITY - RECEIVING_LUMINOSITY}		Basic LS
Eu.LS.7523	Def	Cd_Set_Luminosity[CommandedLuminosityState = Day]/d11out_Required_Luminosity := "Day";{State-internal in RECEIVING_LUMINOSITY}		Basic LS
Eu.LS.7524	Def	Cd_Set_Luminosity[CommandedLuminosityState = Night]/d11out_Required_Luminosity := "Night";{State-internal in RECEIVING_LUMINOSITY}		Basic LS
Eu.LS.7571	Def	when(NOT D13in_Luminosity_Day_Fault)/{RECEIVING_LUMINOSITY - RECEIVING_LUMINOSITY}		Basic LS
Eu.LS.7572	Def	when(NOT D14in_Luminosity_Night_Fault)/{RECEIVING_LUMINOSITY - RECEIVING_LUMINOSITY}		Basic LS
Eu.LS.7291	Def	when(d50in_PDI_Connection_State = "READY_FOR_PDI_NO_SCP" OR d50in_PDI_Connection_State = "READY_FOR_PDI" OR d50in_PDI_Connection_State = "SUSPENDED")/{RECEIVING_LIGHT_SIGNAL_COMMANDS - RECEIVING_LIGHT_SIGNAL_COMMANDS}		Basic LS
Eu.LS.7292	Info	F_SCI_LS_Report		Basic LS
Eu.LS.7293	Req	<div><div>[Block] F_SCI_LS_Report [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div>ibd [Block] F_SCI_LS_Report [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div><div>«functional entity» F_SCI_LS_Report</div><div>Operation «Operation» cOp1_Initial_Report_Status ()</div><div><div>P2out : SCI_LS_1</div><div>p3inout : F_SCI_Specific</div><div>d50in_PDI_Connection_State : String</div><div>d19in_Observed_Signal_Aspect : String</div><div>d20in_Observed_Intentionally_Dark : Boolean</div><div>d21in_Observed_Luminosity : String</div></div></div></div></div></div>		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7957	Def	<div>/* cOp1_Initial_Report_Status */ if d19in_Observed_Signal_Aspect = "Most Restrict Aspect" then send Msg_Indicated_Signal_Aspect(SignalAspectState.Most_Restrict_Aspect, d20in_Observed_Intentionally_Dark) to P2out; elseif d19in_Observed_Signal_Aspect = "No Signal Aspect" then send Msg_Indicated_Signal_Aspect(SignalAspectState.No_Signal_Aspect, d20in_Observed_Intentionally_Dark) to P2out; end if if d21in_Observed_Luminosity = "Day" then send Msg_Set_Luminosity(LuminosityState.Day) to P2out; elseif d21in_Observed_Luminosity = "Night" then send Msg_Set_Luminosity(LuminosityState.Night) to P2out; end if</div>	cOp1_Initial_Report_Status	Basic LS
Eu.LS.7467	Def	P2out	The port P2out exchanges information objects according to SCI_LS_1.	Basic LS
Eu.LS.7294	Def	d19in_Observed_Signal_Aspect		Basic LS
Eu.LS.7295	Def	d20in_Observed_Intentionally_Dark		Basic LS
Eu.LS.7296	Def	d21in_Observed_Luminosity		Basic LS
Eu.LS.7297	Def	d50in_PDI_Connection_State		Basic LS
Eu.LS.7584	Def	p3inout		Basic LS
Eu.LS.7298	Info	F_SCI_LS_Report - Behaviour		Basic LS
Eu.LS.7299	Req	<div>Functional Viewpoint - Interface Requirements - Functional Entity STD 4 stm [State Machine] F_SCI_LS_Report - Behaviour [Functional Viewpoint - Interface Requirements - Functional Entity STD 4]</div> <div><p>The diagram is a state machine for the functional entity F_SCI_LS_Report - Behaviour. It starts at an initial state 'Initial0' which leads to a state 'INTERFACE_CONNECTION_NOT_ESTABLISHED'. From this state, an event 'Start_Status_Report/cOp1_Initial_Report_Status()' leads to a state 'SENDING_LIGHT_SIGNAL_REPORTS'. This state has an entry action 'send Status_Report_Completed to p3inout;' and contains two sub-states: 'REPORTING SIGNAL ASPECT' and 'REPORTING LUMINOSITY'. 'REPORTING SIGNAL ASPECT' contains a sub-state 'SENDING_SIGNAL_ASPECT_REPORTS' with a complex set of when-clauses leading to 'send Msg_Indicated_Signal_Aspect' actions. 'REPORTING LUMINOSITY' contains a sub-state 'SENDING_LUMINOSITY_REPORTS' with when-clauses leading to 'send Msg_Set_Luminosity' actions. A return path from the sub-states leads back to 'INTERFACE_CONNECTION_NOT_ESTABLISHED' based on a when-clause involving 'd50in_PDI_Connection_State'.</p></div>	<div>This state machine diagram describes the requirements for the following functionalities:</div> <div><div>- receives the observed Signal Aspect and reports this to the Subsystem - Electronic Interlocking</div><div>- receives the observed intentionally dark state and reports this to the Subsystem - Electronic Interlocking</div><div>- receives the observed Luminosity and reports this to the Subsystem - Electronic Interlocking</div></div>	Basic LS
Eu.LS.7300	Def	Initial0		Basic LS
Eu.LS.8023	Def	{Initial0 - INTERFACE_CONNECTION_NOT_ESTABLISHED}		Basic LS
Eu.LS.7302	Def	SENDING_LIGHT_SIGNAL_REPORTS		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7315	Def	REPORTING SIGNAL ASPECT		Basic LS
Eu.LS.7316	Def	Initial1		Basic LS
Eu.LS.7966	Def	/({Initial1 - SENDING_SIGNAL_ASPECT_REPORTS})		Basic LS
Eu.LS.7318	Def	SENDING_SIGNAL_ASPECT_REPORTS		Basic LS
Eu.LS.7967	Def	when(d19in_Observed_Signal_Aspect = "Most Restrict Aspect")[d50in_PDI_Connection_State = "ESTABLISHED"]/send Msg_Indicated_Signal_Aspect(Most_Restrict_Aspect,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7968	Def	when(NOT d20in_Observed_Intentionally_Dark)[d19in_Observed_Signal_Aspect = "Signal Aspect 1"]/send Msg_Indicated_Signal_Aspect(Signal_Aspect_1,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7969	Def	when(NOT d20in_Observed_Intentionally_Dark)[d19in_Observed_Signal_Aspect = "Signal Aspect 2"]/send Msg_Indicated_Signal_Aspect(Signal_Aspect_2,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7970	Def	when(NOT d20in_Observed_Intentionally_Dark)[d19in_Observed_Signal_Aspect = "Most Restrict Aspect"]/send Msg_Indicated_Signal_Aspect(Most_Restrict_Aspect,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7971	Def	when(d19in_Observed_Signal_Aspect = "No Signal Aspect")[d50in_PDI_Connection_State = "ESTABLISHED"]/send Msg_Indicated_Signal_Aspect(No_Signal_Aspect,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7972	Def	when(d19in_Observed_Signal_Aspect = "Signal Aspect 1")[d50in_PDI_Connection_State = "ESTABLISHED"]/send Msg_Indicated_Signal_Aspect(Signal_Aspect_1,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7973	Def	when(d19in_Observed_Signal_Aspect = "Signal Aspect 2")[d50in_PDI_Connection_State = "ESTABLISHED"]/send Msg_Indicated_Signal_Aspect(Signal_Aspect_2,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7974	Def	when(d20in_Observed_Intentionally_Dark)[d19in_Observed_Signal_Aspect = "Signal Aspect 1"]/send Msg_Indicated_Signal_Aspect(Signal_Aspect_1,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7975	Def	when(d20in_Observed_Intentionally_Dark)[d19in_Observed_Signal_Aspect = "Signal Aspect 2"]/send Msg_Indicated_Signal_Aspect(Signal_Aspect_2,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7976	Def	when(d20in_Observed_Intentionally_Dark)[d19in_Observed_Signal_Aspect = "Most Restrict Aspect"]/send Msg_Indicated_Signal_Aspect(Most_Restrict_Aspect,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7977	Def	when(d50in_PDI_Connection_State = "ESTABLISHED")[d19in_Observed_Signal_Aspect = "No Signal Aspect"]/send Msg_Indicated_Signal_Aspect(No_Signal_Aspect,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7978	Def	when(d50in_PDI_Connection_State = "ESTABLISHED")[d19in_Observed_Signal_Aspect = "Most Restrict Aspect"]/send Msg_Indicated_Signal_Aspect(Most_Restrict_Aspect,d20in_Observed_Intentionally_Dark) to P2out;{State-internal in SENDING_SIGNAL_ASPECT_REPORTS}		Basic LS
Eu.LS.7303	Def	REPORTING LUMINOSITY		Basic LS
Eu.LS.7307	Def	Initial2		Basic LS
Eu.LS.7961	Def	/({Initial2 - SENDING_LUMINOSITY_REPORTS})		Basic LS
Eu.LS.7304	Def	SENDING_LUMINOSITY_REPORTS		Basic LS
Eu.LS.7962	Def	when(d21in_Observed_Luminosity = "Day")[d50in_PDI_Connection_State = "ESTABLISHED"]/send Msg_Set_Luminosity(Day) to P2out;{State-internal in SENDING_LUMINOSITY_REPORTS}		Basic LS
Eu.LS.7963	Def	when(d21in_Observed_Luminosity = "Night")[d50in_PDI_Connection_State = "ESTABLISHED"]/send Msg_Set_Luminosity(Night) to P2out;{State-internal in SENDING_LUMINOSITY_REPORTS}		Basic LS
Eu.LS.7964	Def	when(d50in_PDI_Connection_State = "ESTABLISHED")[d21in_Observed_Luminosity = "Night"]/send Msg_Set_Luminosity(Night) to P2out;{State-internal in SENDING_LUMINOSITY_REPORTS}		Basic LS
Eu.LS.7965	Def	when(d50in_PDI_Connection_State = "ESTABLISHED")[d21in_Observed_Luminosity = "Day"]/send Msg_Set_Luminosity(Day) to P2out;{State-internal in SENDING_LUMINOSITY_REPORTS}		Basic LS
Eu.LS.7979	Def	entry/send Status_Report_Completed to p3inout;{State-internal in SENDING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.7344	Def	when(d50in_PDI_Connection_State = "READY_FOR_PDI_NO_SCP" OR d50in_PDI_Connection_State = "READY_FOR_PDI" OR d50in_PDI_Connection_State = "SUSPENDED")/({SENDING_LIGHT_SIGNAL_REPORTS - INTERFACE_CONNECTION_NOT_ESTABLISHED})		Basic LS
Eu.LS.7959	Def	INTERFACE_CONNECTION_NOT_ESTABLISHED		Basic LS
Eu.LS.8024	Def	Start_Status_Report/cOp1_Initial_Report_Status();{INTERFACE_CONNECTION_NOT_ESTABLISHED - SENDING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.6744	Info	S_SCI_LS_Command		Basic LS
Eu.LS.6774	Req	<div>[Block] S_SCI_LS_Command_SR [Functional Viewpoint - Interface Requirements - Functional Entity]<div><div><div><div>«functional entity» S_SCI_LS_Command</div><div><div>P1out : ~SCI_LS_2</div><div><div><div>t23in_Signal_Aspect : PulsedIn</div><div>d23in_Signal_Aspect : String</div><div>d24in_Intentionally_Dark : Boolean</div><div>t25in_Luminosity : PulsedIn</div><div>d25in_Luminosity : String</div><div>d9_PDI_Connection_State : String</div></div></div></div></div></div></div></div>		Basic LS
Eu.LS.7468	Def	P1out	The port P1out exchanges information objects according to SCI_LS_2.	Basic LS
Eu.LS.7517	Def	t23in_Signal_Aspect		Basic LS
Eu.LS.6753	Def	d23in_Signal_Aspect		Basic LS
Eu.LS.6752	Def	d24in_Intentionally_Dark		Basic LS
Eu.LS.7518	Def	t25in_Luminosity		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.6754	Def	d25in_Luminosity		Basic LS
Eu.LS.6745	Def	d9_PDI_Connection_State		Basic LS
Eu.LS.6758	Info	S_SCI_LS_Command - Behaviour		Basic LS
Eu.LS.6773	Req	<div>Functional Viewpoint - Interface Requirements - Functional Entity STD 1</div> <div>stm [State Machine] S_SCI_LS_Command - Behaviour [Functional Viewpoint - Interface Requirements - Functional Entity STD 1]</div> <div><div>Initial0</div><div><div>SENDING_COMMANDS</div><div>when(t23in_Signal_Aspect) [d23in_Signal_Aspect = "Signal Aspect 1" AND d9_PDI_Connection_State = "ESTABLISHED"]/ send Cd_Indicate_Signal_Aspect (Signal_Aspect_1, d24in_Intentionally_Dark) to P1out; when(t23in_Signal_Aspect) [d23in_Signal_Aspect = "Signal Aspect 2" AND d9_PDI_Connection_State = "ESTABLISHED"]/ send Cd_Indicate_Signal_Aspect (Signal_Aspect_2, d24in_Intentionally_Dark) to P1out; when(t23in_Signal_Aspect) [d23in_Signal_Aspect = "Most Restrict Aspect" AND d9_PDI_Connection_State = "ESTABLISHED"]/ send Cd_Indicate_Signal_Aspect (Most_Restrict_Aspect, d24in_Intentionally_Dark) to P1out; when(t25in_Luminosity) [d25in_Luminosity = "Day" AND d9_PDI_Connection_State = "ESTABLISHED"]/ send Cd_Set_Luminosity (Day) to P1out; when(t25in_Luminosity) [d25in_Luminosity = "Night" AND d9_PDI_Connection_State = "ESTABLISHED"]/ send Cd_Set_Luminosity (Night) to P1out;</div></div></div>	<div>This state machine diagram describes the requirements for the following functionalities:</div> <div>- receives the Signal Aspect to be set from internal logic and commands this to the Subsystem - Light Signal</div> <div>- receives the intentionally dark state to be set from internal logic and commands this to the Subsystem - Light Signal</div> <div>- receives the Luminosity to be set from internal logic and commands this to the Subsystem - Light Signal</div>	Basic LS
Eu.LS.6759	Def	Initial0		Basic LS
Eu.LS.6760	Def	/{Initial0 - SENDING_COMMANDS}		Basic LS
Eu.LS.6771	Def	SENDING_COMMANDS		Basic LS
Eu.LS.7530	Def	when(t23in_Signal_Aspect)[d23in_Signal_Aspect = "Signal Aspect 2" AND d9_PDI_Connection_State = "ESTABLISHED"]/ send Cd_Indicate_Signal_Aspect(Signal_Aspect_2,d24in_Intentionally_Dark) to P1out;{State-internal in SENDING_COMMANDS}		Basic LS
Eu.LS.7531	Def	when(t23in_Signal_Aspect)[d23in_Signal_Aspect = "Most Restrict Aspect" AND d9_PDI_Connection_State = "ESTABLISHED"]/ send Cd_Indicate_Signal_Aspect(Most_Restrict_Aspect,d24in_Intentionally_Dark) to P1out;{State-internal in SENDING_COMMANDS}		Basic LS
Eu.LS.7532	Def	when(t23in_Signal_Aspect)[d23in_Signal_Aspect = "Signal Aspect 1" AND d9_PDI_Connection_State = "ESTABLISHED"]/ send Cd_Indicate_Signal_Aspect(Signal_Aspect_1,d24in_Intentionally_Dark) to P1out;{State-internal in SENDING_COMMANDS}		Basic LS
Eu.LS.7533	Def	when(t25in_Luminosity)[d25in_Luminosity = "Night" AND d9_PDI_Connection_State = "ESTABLISHED"]/ send Cd_Set_Luminosity(Night) to P1out;{State-internal in SENDING_COMMANDS}		Basic LS
Eu.LS.7534	Def	when(t25in_Luminosity)[d25in_Luminosity = "Day" AND d9_PDI_Connection_State = "ESTABLISHED"]/ send Cd_Set_Luminosity(Day) to P1out;{State-internal in SENDING_COMMANDS}		Basic LS
Eu.LS.7379	Info	S_SCI_LS_Receive		Basic LS
Eu.LS.7380	Req	<div>[Block] S_SCI_LS_Receive [Functional Viewpoint - Interface Requirements - Functional Entity]</div> <div>ibbd [Block] S_SCI_LS_Receive [Functional Viewpoint - Interface Requirements - Functional Entity]</div> <div><div>«functional entity» S_SCI_LS_Receive</div><div><div>P2in : ~SCI_LS_1</div><div>d26out_Signal_Aspect : String</div><div>d9_PDI_Connection_State : String</div><div>d27out_Intentionally_Dark : Boolean</div><div>d28out_Luminosity : String</div></div></div>		Basic LS
Eu.LS.7469	Def	P2in	The port P2in exchanges information objects according to SCI_LS_1.	Basic LS
Eu.LS.7382	Def	d26out_Signal_Aspect		Basic LS
Eu.LS.7383	Def	d27out_Intentionally_Dark		Basic LS
Eu.LS.7384	Def	d28out_Luminosity		Basic LS
Eu.LS.7385	Def	d9_PDI_Connection_State		Basic LS
Eu.LS.7386	Info	S_SCI_LS_Receive - Behaviour		Basic LS

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.7387	Req	<div>Functional Viewpoint - Interface Requirements - Functional Entity STD 2</div> <div>stm [State Machine] S_SCI_LS_Receive - Behaviour [Functional Viewpoint - Interface Requirements - Functional Entity STD 2]</div> <div><div><div>●</div><div>Initial0</div><div>↓</div></div><div>RECEIVING_LIGHT_SIGNAL_REPORTS</div><div>Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Signal_Aspect_1 AND NOT ReportedDarkState]/d26out_Signal_Aspect := "Signal Aspect 1"; d27out_Intentionally_Dark := FALSE;</div><div>Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Signal_Aspect_1 AND ReportedDarkState]/d26out_Signal_Aspect := "Signal Aspect 1"; d27out_Intentionally_Dark := TRUE;</div><div>Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Signal_Aspect_2 AND NOT ReportedDarkState]/d26out_Signal_Aspect := "Signal Aspect 2"; d27out_Intentionally_Dark := FALSE;</div><div>Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Signal_Aspect_2 AND ReportedDarkState]/d26out_Signal_Aspect := "Signal Aspect 2"; d27out_Intentionally_Dark := TRUE;</div><div>Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Most_Restrict_Aspect AND NOT ReportedDarkState]/d26out_Signal_Aspect := "Most Restrict Aspect"; d27out_Intentionally_Dark := FALSE;</div><div>Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Most_Restrict_Aspect AND ReportedDarkState]/d26out_Signal_Aspect := "Most Restrict Aspect"; d27out_Intentionally_Dark := TRUE;</div><div>Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = No_Signal_Aspect]/d26out_Signal_Aspect := "No Signal Aspect";</div><div>Msg_Set_Luminosity[ReportedLuminosityState = Day]/d28out_Luminosity := "Day";</div><div>Msg_Set_Luminosity[ReportedLuminosityState = Night]/d28out_Luminosity := "Night";</div></div> <div>This state machine diagram describes the requirements for the following functionalities:</div> <div>- receives the reported Signal Aspect and forwards it to the internal logic</div> <div>- receives the reported intentionally dark state and forwards it to the internal logic</div> <div>- receives the reported Luminosity and forwards it to the internal logic</div>	Basic LS	
Eu.LS.7388	Def	Initial0		Basic LS
Eu.LS.7389	Def	/{Initial0 - RECEIVING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.7435	Def	RECEIVING_LIGHT_SIGNAL_REPORTS		Basic LS
Eu.LS.7535	Def	Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Signal_Aspect_1 AND NOT ReportedDarkState]/d26out_Signal_Aspect := "Signal Aspect 1"; d27out_Intentionally_Dark := FALSE;{State-internal in RECEIVING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.7536	Def	Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Signal_Aspect_1 AND ReportedDarkState]/d26out_Signal_Aspect := "Signal Aspect 1"; d27out_Intentionally_Dark := TRUE;{State-internal in RECEIVING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.7537	Def	Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Signal_Aspect_2 AND NOT ReportedDarkState]/d26out_Signal_Aspect := "Signal Aspect 2"; d27out_Intentionally_Dark := FALSE;{State-internal in RECEIVING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.7538	Def	Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Signal_Aspect_2 AND ReportedDarkState]/d26out_Signal_Aspect := "Signal Aspect 2"; d27out_Intentionally_Dark := TRUE;{State-internal in RECEIVING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.7539	Def	Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Most_Restrict_Aspect AND NOT ReportedDarkState]/d26out_Signal_Aspect := "Most Restrict Aspect"; d27out_Intentionally_Dark := FALSE;{State-internal in RECEIVING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.7540	Def	Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = Most_Restrict_Aspect AND ReportedDarkState]/d26out_Signal_Aspect := "Most Restrict Aspect"; d27out_Intentionally_Dark := TRUE;{State-internal in RECEIVING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.7541	Def	Msg_Indicated_Signal_Aspect[ReportedSignalAspectState = No_Signal_Aspect]/d26out_Signal_Aspect := "No Signal Aspect";{State-internal in RECEIVING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.7542	Def	Msg_Set_Luminosity[ReportedLuminosityState = Night]/d28out_Luminosity := "Night";{State-internal in RECEIVING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.7543	Def	Msg_Set_Luminosity[ReportedLuminosityState = Day]/d28out_Luminosity := "Day";{State-internal in RECEIVING_LIGHT_SIGNAL_REPORTS}		Basic LS
Eu.LS.4747	Head	3.4.2 SMI-LS (Subsystem - Maintenance and Data Management)		
Eu.LS.6104	Info	The generic FlowSpecification and the related FlowProperties through SMI-LS are specified in [Eu.Doc.120].		Basic LS
Eu.LS.4696	Head	3.4.3 SDI-LS (Subsystem - Maintenance and Data Management)		
Eu.LS.6103	Info	The generic data points through the SDI-LS are specified in [Eu.Doc.94]. The specific data points through the SDI-LS are specified in [Eu.Doc.78].		Basic LS
Eu.LS.7519	Head	3.4.4 SSI-LS (Subsystem - Security Services Platform)		
Eu.LS.7520	Info	The generic content through SSI-LS is specified in [Eu.Doc.117]. Note: In future phases, the EULYNX security specifications will be replaced by harmonised specifications published by the EU-Rail System Pillar Cyber Security domain.		Basic LS
Eu.LS.4662	Head	3.4.5 LS2 (Train driver)		
Eu.LS.4663	Info	Train_driver	Definition of the InformationFlow for the visual interface LS2 (Train driver).	Basic LS
Eu.LS.4664	Def	No_Signal_Aspect	Change of the indication of the Signal Aspect visually perceivable by the Train driver to a state in which all required Lamps are dark.	Basic LS
Eu.LS.4665	Def	Signal_Aspect	Change of the indication of the Signal Aspect visually perceivable by the Train driver to another valid Signal Aspect in the set Luminosity.	Basic LS
Eu.LS.4666	Head	3.4.6 LS3 (Indicator)		
Eu.LS.4667	Info	Indicator	Definition of the InformationFlow for the control interface LS3 (Indicator).	Basic LS
Eu.LS.4668	Def	Output_Channel_State	State of the output channel to the Indicator. State: "Output channel activated", "Output channel deactivated"	Basic LS
Eu.LS.4669	Head	3.4.7 LS4 (Eurobalise)		

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.4670	Info	Eurobalise	Definition of the InformationFlow for the control interface LS4 (Eurobalise).	Option LS4
Eu.LS.4671	Def	Balise_telegram	The Balise_telegram contains the control information for the Eurobalise generated by the Subsystem - Light Signal (C1 interface according to [SUBSET-036]).	Option LS4
Eu.LS.4672	Head	3.4.8 LS5 (Legacy train protection system)		
Eu.LS.4673	Info	Legacy_train_protection_system	Definition of the InformationFlow for the visual interface LS5 (Legacy train protection system).	Option LS5
Eu.LS.4674	Def	Output_Channel_State	State of the output channel to the Legacy train protection system. State: "Output channel activated", "Output channel deactivated"	Option LS5
Eu.LS.4675	Head	3.4.9 LS6 (Basic Data Identifier)		
Eu.LS.6101	Info	The generic InformationFlow and the related FlowProperties through LS6 are specified in [Eu.Doc.20].		Basic LS
Eu.LS.4678	Head	3.4.10 LS7 (Maintainer)		
Eu.LS.6141	Info	The generic FlowProperties through LS7 are specified in [Eu.Doc.20].		Basic LS
Eu.LS.7177	Info	The defined FlowProperties through LS7 are mandatory only when the physical interfaces related to the specific maintainer information are available on the Subsystem - Light Signal. Example: The FlowProperty Output_Channel_Legacy_train_protection_systemX is only mandatory when the Subsystem - Light Signal is equipped with an interface to a legacy train protection system.		Basic LS
Eu.LS.4679	Info	Maintainer	Definition of the InformationFlow for the visual interface LS7 (Maintainer).	Basic LS
Eu.LS.4683	Def	Output_Channel_Legacy_train_protection_systemX	Display of the status of the Output_Channel_Legacy_train_protection_systemX of the Subsystem - Light Signal at the local status display. The status is displayed for every output channel X of the Legacy train protection system.	Basic LS
Eu.LS.4684	Def	Output_Channel_IndicatorX	Display of the status of the Output_Channel_IndicatorX of the Subsystem - Light Signal at the local status display. The status is displayed for every output channel X of the Indicator.	Basic LS
Eu.LS.5726	Def	Light_Point_Status	Display of the status of the light point at the local status display.	Basic LS
Eu.LS.591	Head	4 RAMSS requirements		
Eu.LS.5718	Info	The requirements for reliability, availability, maintainability, safety and security are specified in [Eu.Doc.20].		Basic LS
Eu.LS.637	Head	5 Technical requirements		
Eu.LS.5686	Info	The generic technical requirements are specified in [Eu.Doc.20].		Basic LS
Eu.LS.639	Head	5.1 Specific technical interface requirements		
Eu.LS.6852	Req	It shall be possible to operate a Subsystem - Light Signal in a configuration in which no configurable signal optics is present but only a Eurobalise is controlled. In this configuration the Subsystem - Light Signal shall report all commanded signal aspects and luminosities as activated. Note: this configuration is required for the control of the emergency stop balises in the ETCS operating mode "ETCS L2 without signal".		Option LS4
Eu.LS.640	Head	5.1.1 Interface to the Point of Service Signalling (PoS-Signalling)		
Eu.LS.641	Req	Via the technical interface PoS-Signalling the data of the functional interface "SCI-LS" shall be exchanged with the Subsystem - Electronic Interlocking as specified in [EU.Doc.92].		Basic LS
Eu.LS.642	Req	Via the technical interface PoS-Signalling the data of the functional interface "SMI-LS" shall be exchanged with the Subsystem - Maintenance and Data Management as specified in [Eu.Doc.76].		Basic LS
Eu.LS.643	Req	Via the technical interface PoS-Signalling the data of the functional interface "SDI-LS" shall be exchanged with the Subsystem - Maintenance and Data Management as specified in [Eu.Doc.77].		Basic LS
Eu.LS.7624	Req	Via the technical interface PoS-Signalling the data of the functional interface "SSI-LS" shall be exchanged with the Subsystem - Security Services Platform as specified in [Eu.Doc.117]. Note: In future phases, the EULYNX security specifications will be replaced by harmonised specifications published by the EU-Rail System Pillar Cyber Security domain.		Basic LS
Eu.LS.6099	Head	5.1.2 Interface to the Legacy train protection system		
Eu.LS.6100	Info	These requirements shall be defined by national specifications. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.		Option LS5
Eu.LS.6122	Head	5.1.3 Interface to the Eurobalise		
Eu.LS.6123	Info	These requirements shall be defined in detail by national specifications. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.		Option LS4
Eu.LS.6124	Req	The Subsystem - Light Signal repeatedly transmits, dependent on the indicated Signal Aspect and/or on any available Track information, a balise telegram to the Eurobalise, which semantically matches the deactivated or activated output channels to the Legacy train protection system.		Option LS4
Eu.LS.6125	Head	5.1.4 Interface to the Indicator		

ID	Type	Requirement Part 1	Requirement Part 2	Func. Pkg.
Eu.LS.6126	Info	These requirements shall be defined in detail by national specifications. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.		Basic LS
Eu.LS.6127	Req	The Subsystem - Light Signal deactivates or activates the configured output channels for the Indicator dependent on the indicated Signal Aspect and/or on any available route information.		Basic LS
Eu.LS.731	Head	5.2 Time behaviour		
Eu.LS.732	Req	The time values defined in the chapter Functional requirements specification shall be configured for the operation of the Subsystem - Light Signal.		Basic LS
Eu.LS.733	Head	5.2.1 Response times		
Eu.LS.734	Req	The Subsystem - Light Signal shall send the corresponding message telegram to the Subsystem - Electronic Interlocking within 800 ms after successful change of state, according to the specified UseCases.		Basic LS
Eu.LS.735	Req	The Subsystem - Light Signal shall indicate the commanded Signal Aspect (other than the Most Restrictive Signal Aspect) or set the commanded luminosity within 1000 ms after receipt of a command telegram.		Basic LS
Eu.LS.6120	Req	The Subsystem - Light Signal shall indicate a commanded Most Restrictive Signal Aspect within 500 ms after receipt of the command telegram.		Basic LS
Eu.LS.736	Req	The Subsystem - Light Signal shall switch the output channels to the subsystem peripheral systems Legacy train protection system within 300 ms after a successful change of state of the indicated aspect.		Option LS5
Eu.LS.8072	Req	The Subsystem - Light Signal shall switch the output channels to the Indicator within 300 ms after a successful change of state of the indicated aspect.		Basic LS
Eu.LS.737	Req	The Subsystem - Light Signal shall send a balise telegram to the subsystem peripheral system Eurobalise within 300 ms after a successful change of state of the indicated aspect.		Option LS4
Eu.LS.738	Head	5.2.2 Flashing cycle		
Eu.LS.6098	Info	These requirements shall be defined by national specifications. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.		Basic LS
Eu.LS.744	Head	5.3 Configuration and engineering data		
Eu.LS.745	Head	5.3.1 Specific data		
Eu.LS.746	Req	The specific configuration and engineering data for the Subsystem – Light Signal shall include as a minimum the following information:		Basic LS
Eu.LS.6090	Req	<ul style="list-style-type: none">Adjacent LS systems, connected to the Subsystem - Light Signal (Legacy train protection system, Eurobalise, Indicator).		Basic LS
Eu.LS.6091	Req	<ul style="list-style-type: none">Signal Aspects the particular Subsystem - Light Signal is capable of indicating, downgrade specific information and the most restrictive Signal Aspect.		Basic LS
Eu.LS.6092	Req	<ul style="list-style-type: none">The Luminosities that can be set up at the particular Subsystem - Light Signal (daytime Luminosity, nighttime Luminosity, or both) and the default Luminosity.		Basic LS
Eu.LS.6093	Req	<ul style="list-style-type: none">Instructions for processing the route information transmitted from the Subsystem - Electronic Interlocking. Note: These instructions are required to control Adjacent LS systems like e.g. Legacy train protection system depending on the set up route.		Basic LS
Eu.LS.753	Info	Two different data sections can be loaded which are the safety-relevant data and the non safety-relevant data. The following definitions apply to the assignment of the sections:		Basic LS
Eu.LS.755	Req	<ul style="list-style-type: none">Configuration data, such as the IP addresses of the Subsystem - Electronic Interlocking, the value of the diagnostic data points with attribute type 'configuration', is non safety-relevant. This data shall be used to calculate the CSNS.		Basic LS
Eu.LS.756	Req	<ul style="list-style-type: none">The remaining configuration data is currently categorised as safety-relevant. This data shall be used to calculate the CSS.		Basic LS
Eu.LS.757	Req	<ul style="list-style-type: none">The engineering data is safety-relevant. This data shall be used to calculate the CSS.		Basic LS