



**EULYNX Initiative**



**Europe's Rail Joint Undertaking**

## **Generic interface and subsystem requirements for SCI**

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ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.1	Head	<b>1 Introduction</b>	
Eu.Gen-SCI.2	Head	<b>1.1 Release information</b>	
Eu.Gen-SCI.3	Info	[Eu.Doc.119] EULYNX Generic interface and subsystem requirements for SCI CENELEC Phase: 4 Version: 1.1 (2.A) Approval date: 02.06.2025	
Eu.Gen-SCI.4	Info	<b>Version history</b>	
Eu.Gen-SCI.532	Info	version number: 1.0 (0.A) date: 16.05.2022 author: Dennis Kunz, Filip Giering generic profile version: 18 review: CCB changes: EUAR-508, EUAR-510, EUAR-522, EUAR-523, EUAR-524, EUAR-526, EUAR-535, EUAR-536	
Eu.Gen-SCI.549	Info	version number: 1.0 (1.A) date: 31.03.2023 author: Filip Giering generic profile version: 21 review: changes: EUAR-546, EUAR-552, EUAR-553, EUAR-564, EUAR-582	
Eu.Gen-SCI.581	Info	version number: 1.0 (2.A) date: 11.05.2023 author: Dominik Smajgl, Filip Giering model version: 22 review: cluster changes: EUAR-589, EUAR-592	
Eu.Gen-SCI.591	Info	version number: 1.0 (3.A) date: 27.06.2023 author: Filip Giering model version: 22 review: TACS Mirror Group changes: EUAR-586, EUAR-600, EUAR-601, EUAR-612, EUAR-613	
Eu.Gen-SCI.618	Info	version number: 1.0 (4.A) date: 15.12.2023 author: Filip Giering model version: 25 review: M&T changes: EUAR-550, EUAR-662, EUAR-663, EUAR-664, EUAR-665, EUAR-666, EUAR-667, EUAR-668, EUAR-672, EUAR-675	
Eu.Gen-SCI.685	Info	version number: 1.0 (5.A) date: 22.03.2024 author: Filip Giering, Philipp Wolber model version: 26 review: cluster changes: EUAR-434, EUAR-608, EUAR-609, EUAR-638, EUAR-698, EUAR-703, EUAR-704, EUAR-705	
Eu.Gen-SCI.731	Info	version number: 1.1 (0.A) date: 18.06.2024 author: Filip Giering, Philipp Wolber model version: 26 review: TACS Mirror Group changes: EUAR-681, EUAR-701, EUAR-702, EUAR-708, EUAR-740, EUAR-745	
Eu.Gen-SCI.740	Info	version number: 1.1 (1.A) date: 06.05.2025 author: Nico Huurman, Philipp Wolber model version: 26 review: cluster changes: EUAR-761, EUAR-783	
Eu.Gen-SCI.750	Info	version number: 1.1 (2.A) date: 19.06.2025 author: Nico Huurman, Philipp Wolber model version: 29 review: TACS Mirror Group changes: EUAR-787	
Eu.Gen-SCI.6	Head	<b>1.2 Impressum</b>	
Eu.Gen-SCI.7	Info	Publishers: <b>Europe's Rail Joint Undertaking</b> <a href="https://rail-research.europa.eu">https://rail-research.europa.eu</a>  <b>EULYNX Initiative</b> <a href="https://eulynx.eu/">https://eulynx.eu/</a>	
Eu.Gen-SCI.8	Info	Responsible for this document: EU-Rail System Pillar Trackside Assets Control and Supervision domain	
Eu.Gen-SCI.9	Info	This document is drafted by and belongs to EU Rail.  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.	

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Eu.Gen-SCI.10	Head	<b>1.3 Purpose</b>	
Eu.Gen-SCI.11	Info	The purpose of the document is the specification of generic requirements for the development of the EULYNX System. The generic requirements complement the specific interface and subsystem requirements.	
Eu.Gen-SCI.12	Info	<p>This document describes:</p> <ul style="list-style-type: none"><li>• generic functional requirements for the interface SCI-XX between an EULYNX field element Subsystem and the Subsystem - Electronic Interlocking</li><li>• generic functional requirements for the interface SCI-XX between an adjacent system and the Subsystem - Electronic Interlocking which are describing only the interface parts of each communication partner</li></ul>	
Eu.Gen-SCI.13	Info	<p>This document is intended for the following users:</p> <ul style="list-style-type: none"><li>• safety authorities</li><li>• infrastructure managers</li><li>• safety assessors</li><li>• signalling system suppliers</li><li>• validators</li></ul>	
Eu.Gen-SCI.14	Info	This document is the basis for the implementation by the supplier and for approval by the infrastructure manager.	
Eu.Gen-SCI.590	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.Gen-SCI.15	Head	<b>1.4 Applicable standards and regulations</b>	
Eu.Gen-SCI.16	Info	A list of applicable standards and regulations used in EULYNX is listed in the EULYNX Reference Document List [Eu.Doc.12].	
Eu.Gen-SCI.17	Head	<b>1.5 Applicable documents</b>	
Eu.Gen-SCI.18	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.Gen-SCI.19	Head	<b>1.6 Terms and abbreviations</b>	
Eu.Gen-SCI.20	Info	The terms and abbreviations are listed in the EULYNX Glossary [Eu.Doc.9].	
Eu.Gen-SCI.21	Head	<b>1.7 Variability management</b>	
Eu.Gen-SCI.22	Info	This document describes harmonised requirements. Variability management is not applicable. The specific applicability of requirements is captured in individual interface specifications.	
Eu.Gen-SCI.23	Head	<b>1.8 Definition of object types</b>	
Eu.Gen-SCI.24	Info	The following definition for object types is applied in this document:	
Eu.Gen-SCI.25	Info	<ul style="list-style-type: none"><li>• "Req" - This denotes a mandatory requirement.</li></ul>	
Eu.Gen-SCI.619	Info	<ul style="list-style-type: none"><li>• "Def" - This denotes referenceable model elements that are used in the model-based creation of requirements</li></ul>	
Eu.Gen-SCI.26	Info	<ul style="list-style-type: none"><li>• "Info" - This denotes additional information to help understand the specification. These objects do not specify any additional requirements.</li></ul>	
Eu.Gen-SCI.27	Info	<ul style="list-style-type: none"><li>• "Head" - This denotes chapter headings.</li></ul>	
Eu.Gen-SCI.28	Head	<b>1.9 Modelling</b>	
Eu.Gen-SCI.29	Info	The section "Generic requirements for SCI" follows a model based systems engineering process using Systems Modelling Language (SysML) and defines the functional system requirements for the EULYNX field element Subsystem in stimulus-response form. Furthermore the information objects (stimuli and responses) exchanged over the interfaces of the EULYNX field element Subsystem, Subsystem - Electronic Interlocking and the adjacent systems are defined.	
Eu.Gen-SCI.30	Info	The diagrams presented in this document are modelled in SysML [SysML].	
Eu.Gen-SCI.31	Info	The rules for the interpretation of the model based parts of specification are defined in [Eu.Doc.29].	
Eu.Gen-SCI.32	Info	In chapter 3 "Generic requirements for SCI" 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.Gen-SCI.33	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.Gen-SCI.34	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”.	
Eu.Gen-SCI.35	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.Gen-SCI.620	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.Gen-SCI.36	Head	<b>2 Conditions of use</b>	
Eu.Gen-SCI.37	Info	The specifications defined in this document shall follow the requirements of the EULYNX System Architecture Specification [Eu.Doc.16].	
Eu.Gen-SCI.524	Req	All references to [Eu.Doc.20] refer to Generic interface and subsystem requirements version 4.0.	
Eu.Gen-SCI.686	Head	<b>2.1 Primary and secondary communication partner</b>	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.687	Req	For the PDI connection between the Subsystem - Electronic Interlocking and a EULYNX field element subsystem (including External Level Crossing System), the following shall be applied: <ul style="list-style-type: none"><li>• The Subsystem - Electronic Interlocking shall be the primary communication partner</li><li>• The EULYNX field element subsystem shall be the secondary communication partner</li></ul>	
Eu.Gen-SCI.688	Req	For the PDI connection between the Subsystem - Electronic Interlocking and an adjacent system (excluding Adjacent Interlocking System and External Level Crossing System), the following shall be applied: <ul style="list-style-type: none"><li>• The adjacent system shall be the primary communication partner</li><li>• The Subsystem - Electronic Interlocking shall be the secondary communication partner</li></ul>	
Eu.Gen-SCI.689	Req	For the PDI connection for SCI-ILS, with two equal communication partners, the primary and secondary communication partners shall be defined by configuration.	
Eu.Gen-SCI.690	Req	The Subsystem - Electronic Interlocking can be connected to more than one Adjacent Interlocking System. The designation of primary and secondary is independent for each instance of the connection.	
Eu.Gen-SCI.38	Head	<b>3 Generic requirements for SCI</b>	
Eu.Gen-SCI.220	Head	<b>3.1 Field element interfaces</b>	
Eu.Gen-SCI.221	Head	<b>3.1.1 Interface between Subsystem - Electronic Interlocking and EfeS (SCI-XX EfeS)</b>	
Eu.Gen-SCI.409	Head	<b>3.1.1.1 SCI-XX EfeS - Logical Viewpoint</b>	
Eu.Gen-SCI.410	Head	<b>3.1.1.1.1 SCI-XX EfeS - Logical Context</b>	
Eu.Gen-SCI.411	Def	<div><div>[Package] SCI-XX EfeS - Logical Context [Logical Viewpoint - Interface Definition]</div><div><div><div><div><div>«logical structural entity» SCI-XX EfeS</div></div><div><div><div>«logical structural entity» Subsystem - Electronic Interlocking</div><div>1</div></div><div><div><div>«logical structural entity» EULYNX field element Subsystem</div><div>1</div></div></div><div>SCI-XX EfeS</div><div>SCI-XX EfeS</div></div></div></div></div></div>	
Eu.Gen-SCI.401	Head	<b>3.1.1.2 SCI-XX EfeS - Information Flows</b>	
Eu.Gen-SCI.526	Info	The InformationFlows between F_EST_EfeS and F_SCI_EfeS_Sec are specified in [Eu.Doc.20].	
Eu.Gen-SCI.402	Def	<div><div>[Package] SCI-XX EfeS - Information Flows [Interface Requirements - Direction of Information Objects]</div><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>«information flow» SCI-XX EfeS EfeS</div><div>proxyPorts «ProxyPort» P1inout : SCI_GEN</div></div><div><div>«information flow» SCI-XX EfeS EIL</div><div>proxyPorts «ProxyPort» P1inout : SCI_GEN</div></div></div></div></div></div>	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.403	Def	<div><div>[Package] SCI-XX EfeS - Information Flows [Interface Requirements - Information Objects]</div><div><div>bdd [Package] SCI-XX EfeS - Information Flows [Interface Requirements - Information Objects]</div><div><div><div><div>«information object» signal Cd_PDI_Version_Check</div><div>«information object» signal Cd_Initialisation_Request</div><div>«information object» signal Msg_Start_Initialisation</div><div>«information object» signal Msg_Initialisation_Completed</div><div>«information object» signal Cd_Release_PDI_for_Maintenance</div></div><div><div>«information object» signal Msg_PDI_Version_Check</div><div>Result : String ChecksumData : String PDIVersion : String</div><div>«information object» signal Msg_PDI_Available</div><div>«information object» signal Msg_PDI_Not_Available</div></div><div><div>«information object» signal Msg_Reset_PDI ReportedResetReason : ResetReason</div><div>«valueType (enumeration)» ResetReason ProtocolError FormalTelegramError ContentTelegramError</div><div>«information object» signal Cd_Close_PDI RequestedCloseReason : CloseReason</div><div>«valueType (enumeration)» CloseReason NormalClose OtherVersionRequired Timeout ProtocolError FormalTelegramError ContentTelegramError ChecksumMismatch</div></div></div><div>ReportedResetReason</div><div>RequestedCloseReason</div></div></div></div>	
Eu.Gen-SCI.404	Info	The shown information objects for this Interface can be found in SCI-XX - Information Flows.	
Eu.Gen-SCI.222	Head	3.1.1.3 SCI-XX EfeS - Functional Viewpoint	
Eu.Gen-SCI.437	Head	3.1.1.3.1 Definition of time values	
Eu.Gen-SCI.438	Def	Con_tmax_PDI_Connection	If the establishment of the PDI connection, measured from the sending of Cd_PDI_Version_Check to the receipt of Msg_Initialisation_Completed, is not completed within this configured time period the PDI connection is closed. The establishment of the PDI connection is then re-initiated.
Eu.Gen-SCI.439	Head	3.1.1.3.2 SCI-XX EfeS - Functional Context	
Eu.Gen-SCI.555	Info	<div><div>[Package] SCI-XX EfeS - Functional Context [Interface Definition - UseCases - Initialisation]</div><div><div>uc [Package] SCI-XX EfeS - Functional Context [Interface Definition - UseCases - Initialisation]</div><div><div><div>SCI-XX EfeS</div><div><div>Subsystem - Electronic Interlocking</div><div>SCI-XX EfeS IFUC1.1: Establish PDI connection</div><div>SCI-XX EfeS IFUC1.2: Close PDI connection</div><div>EULYNX field element Subsystem</div></div></div></div></div></div>	





ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.446	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.1 PDI version unequal, retry - Alternative Scenario [SCI-XX EfeS IF SD 1.1.3]</div><div><div>sd [Interaction] SCI-XX EfeS IFUC1.1 PDI version unequal, retry - Alternative Scenario [SCI-XX EfeS IF SD 1.1.3]</div><div><div><div>Subsystem - Electronic Interlocking</div><div>:EULYNX field element Subsystem</div></div><div><div><div></div><div></div><div></div></div><div><div>Alternative Scenario: PDI version is unequal, retry</div><div>Precondition: The EULYNX field element Subsystem is in state INITIALISING, in substate WAITING_FOR_PDI_OR_MAINTENANCE. The SCP connection is established. Ready to establish PDI connection.</div><div>Interaction 1.1.3.A: 1. - The EULYNX field element Subsystem receives from the Subsystem - Electronic Interlocking the request to verify the match between the transmitted PDIVer and the PDIVer present in the EULYNX field element Subsystem. 2. The PDIVer transmitted by the Subsystem - Electronic Interlocking does not match the own PDIVer. 3. The EULYNX field element Subsystem notifies the Subsystem - Electronic Interlocking that the PDIVer does not match and send its own PDIVer. 4. The Subsystem - Electronic Interlocking has another PDI version to request. 5. The EULYNX field element Subsystem receives from the Subsystem - Electronic Interlocking the request to close the PDI connection. Postcondition: ---</div></div></div></div></div></div>	After this scenario is finished, Subsystem - Electronic Interlocking continues trying. This means that either [Interaction] SCI-XX EfeS IFUC1.1 Establish PDI connection - Main Success Scenario [SCI-XX EfeS IF SD 1.1.1] will occur, [Interaction] SCI-XX EfeS IFUC1.1 PDI version unequal, retry - Alternative Scenario [SCI-XX EfeS IF SD 1.1.3] will occur again, [Interaction] SCI-XX EfeS IFUC1.1 PDI version unequal, no retry - Alternative Scenario [SCI-XX EfeS IF SD 1.1.2] will occur, or [Interaction] SCI-XX EfeS IFUC1.1 CSS unequal - Alternative Scenario [SCI-XX EfeS IF SD 1.1.4] will occur.
Eu.Gen-SCI.441	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.1 CSS unequal - Alternative Scenario [SCI-XX EfeS IF SD 1.1.4]</div><div><div>sd [Interaction] SCI-XX EfeS IFUC1.1 CSS unequal - Alternative Scenario [SCI-XX EfeS IF SD 1.1.4]</div><div><div><div>Subsystem - Electronic Interlocking</div><div>:EULYNX field element Subsystem</div></div><div><div><div></div><div></div><div></div></div><div><div>Alternative Scenario: CSS is unequal</div><div>Precondition: The EULYNX field element Subsystem is in state INITIALISING, in substate WAITING_FOR_PDI_OR_MAINTENANCE. The SCP connection is established. Ready to establish PDI connection.</div><div>Interaction 1.1.4.A: 1. - The EULYNX field element Subsystem receives from the Subsystem - Electronic Interlocking the request to verify the match between the transmitted PDIVer and the PDIVer present in the EULYNX field element Subsystem. 2. The EULYNX field element Subsystem detects that the PDIVer transmitted by the Subsystem - Electronic Interlocking matches the own PDIVer. 3. The EULYNX field element Subsystem reports to the Subsystem - Electronic Interlocking the used PDIVer and newly calculated CSS. 4. The Subsystem - Electronic Interlocking detects that the newly calculated CSS does not match the own CSS. 5. The EULYNX field element Subsystem receives from the Subsystem - Electronic Interlocking the request to release the PDI connection for maintenance. Postcondition: The EULYNX field element Subsystem is in state INITIALISING, is in substate WAITING_FOR_DATA_UPDATE. The PDI connection is SUSPENDED.</div></div></div></div></div></div>	The postcondition is only valid in case the EULYNX field element Subsystem is configured to use MDM during initialisation. If the MDM is not used, the postcondition is the substate WAITING_FOR_NO_MAINTENANCE_TIMEO UT instead.



ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.443	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.1 EfeS unavailable - Alternative Scenario [SCI-XX EfeS IF SD 1.1.5]</div><div><div>sd [Interaction] SCI-XX EfeS IFUC1.1 EfeS unavailable - Alternative Scenario [SCI-XX EfeS IF SD 1.1.5]</div><div><div><div>Subsystem - Electronic Interlocking</div><div>:EULYNX field element Subsystem</div></div><div><div><div></div><div></div><div></div></div><div><div>Cd_PDI_Version_Check</div><div>Msg_PDI_Not_Available</div></div></div></div><div><p><b>Alternative Scenario: EfeS not available</b></p><p><b>Precondition:</b></p><p>The <a href="#">EULYNX field element Subsystem</a> is not ready to establish PDI connection. The SCP connection has been established.</p><p><b>Interaction 1.1.5.A:</b></p><p>1. - The <a href="#">EULYNX field element Subsystem</a> receives from the <a href="#">Subsystem - Electronic Interlocking</a> the request to verify the match between the transmitted <a href="#">PDIVer</a> and the <a href="#">PDIVer</a> present in the <a href="#">EULYNX field element Subsystem</a>.</p><p>2. The <a href="#">EULYNX field element Subsystem</a> notifies the <a href="#">Subsystem - Electronic Interlocking</a> that the <a href="#">EULYNX field element Subsystem</a> is not available.</p><p><b>Postcondition:</b></p><p>The PDI connection is SUSPENDED.</p></div></div></div>	<p>In this sequence it is assumed, that the PDI version check cannot be performed because the EULYNX field element Subsystem is not available for PDI connection.</p> <p>The precondition can correspond to several states of the EULYNX field element Subsystem:</p> <p>NO_OPERATING_VOLTAGE BOOTING FALLBACK_MODE INITIALISING, in substate WAITING_FOR_NO_MAINTENANCE_TIMEO UT INITIALISING, in substate WAITING_FOR_DATA_UPDATE</p> <p>The postcondition can correspond to several states of the EULYNX field element Subsystem:</p> <p>NO_OPERATING_VOLTAGE BOOTING FALLBACK_MODE INITIALISING, in substate WAITING_FOR_NO_MAINTENANCE_TIMEO UT INITIALISING, in substate WAITING_FOR_DATA_UPDATE</p>
Eu.Gen-SCI.442	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.1 EfeS PDI unavailability revoked - Alternative Scenario [SCI-XX EfeS IF SD 1.1.6]</div><div><div>sd [Interaction] SCI-XX EfeS IFUC1.1 EfeS PDI unavailability revoked - Alternative Scenario [SCI-XX EfeS IF SD 1.1.6]</div><div><div><div>Subsystem - Electronic Interlocking</div><div>:EULYNX field element Subsystem</div></div><div><div><div></div><div></div><div></div></div><div><div>Msg_PDI_Available</div></div></div></div><div><p><b>Alternative Scenario: PDI unavailability Revoked</b></p><p><b>Precondition:</b></p><p>The <a href="#">EULYNX field element Subsystem</a> is in state BOOTING or INITIALISING, in substate <a href="#">WAITING_FOR_DATA_UPDATE</a> or <a href="#">INITIALISING</a>, in substate <a href="#">WAITING_FOR_NO_MAINTENANCE_TIMEOUT</a>. The SCP connection is established. The PDI connection is SUSPENDED.</p><p><b>Interaction 1.1.6.A:</b></p><p>1. - The <a href="#">EULYNX field element Subsystem</a> enters substate <a href="#">WAITING_FOR_PDI_OR_MAINTENANCE</a>.</p><p>2. The <a href="#">EULYNX field element Subsystem</a> reports availability for PDI connection to the <a href="#">Subsystem - Electronic Interlocking</a>.</p><p><b>Postcondition:</b></p><p>The <a href="#">EULYNX field element Subsystem</a> is in state INITIALISING, in substate <a href="#">WAITING_FOR_PDI_OR_MAINTENANCE</a>. Ready to establish PDI connection.</p></div></div></div>	<p>In this sequence it is assumed, that the EULYNX field element Subsystem becomes ready for PDI connection again and reports its availability to Subsystem - Electronic Interlocking.</p>
Eu.Gen-SCI.447	Info	SCI-XX EfeS IFUC1.2: Close PDI connection	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.453	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.2 Planned maintenance - Alternative Scenario [SCI-XX EfeS IF SD 1.2.1]</div><div><div><div>sd [Interaction] SCI-XX EfeS IFUC1.2 Planned maintenance - Alternative Scenario [SCI-XX EfeS IF SD 1.2.1]</div><div><div>Subsystem - Electronic Interlocking</div><div>:EULYNX field element Subsystem</div></div></div><div><p><b>Alternative Scenario: Release field element for maintenance</b></p><p><b>Precondition:</b> The <a href="#">EULYNX field element Subsystem</a> is in OPERATIONAL state and the PDI connection is in state ESTABLISHED or the <a href="#">EULYNX field element Subsystem</a> is in <a href="#">INITIALISING</a> state, in substate <a href="#">WAITING_FOR_PDI</a> and the PDI connection is in state ESTABLISHING.</p><p><b>Interaction 1.2.1.A:</b></p><ol style="list-style-type: none"><li>- The <a href="#">Subsystem - Electronic Interlocking</a> detects that it is requested to release the <a href="#">EULYNX field element Subsystem</a> for maintenance.</li><li>- The <a href="#">EULYNX field element Subsystem</a> receives from the <a href="#">Subsystem - Electronic Interlocking</a> the request to release the PDI connection for maintenance.</li></ol><p><b>Postcondition:</b> The <a href="#">EULYNX field element Subsystem</a> is in state INITIALISING, is in <a href="#">substate WAITING_FOR_DATA_UPDATE</a>. The PDI connection is SUSPENDED.</p></div><div><pre>sequenceDiagram     actor User     participant S as Subsystem - Electronic Interlocking     participant E as :EULYNX field element Subsystem     S-&gt;&gt;S: Release for maintenance     S-&gt;&gt;E: Cd_Release_PDI_for_Maintenance</pre></div></div></div> <td><p>The postcondition is only valid in case the EULYNX field element Subsystem is configured to use MDM during initialisation. If the MDM is not used, the postcondition is the substate WAITING_FOR_NO_MAINTENANCE_TIMEO UT instead.</p></td>	<p>The postcondition is only valid in case the EULYNX field element Subsystem is configured to use MDM during initialisation. If the MDM is not used, the postcondition is the substate WAITING_FOR_NO_MAINTENANCE_TIMEO UT instead.</p>
Eu.Gen-SCI.448	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.2 Close PDI connection EIL request - Alternative Scenario [SCI-XX EfeS IF SD 1.2.2]</div><div><div><div>sd [Interaction] SCI-XX EfeS IFUC1.2 Close PDI connection EIL request - Alternative Scenario [SCI-XX EfeS IF SD 1.2.2]</div><div><div>Subsystem - Electronic Interlocking</div><div>:EULYNX field element Subsystem</div></div></div><div><p><b>Alternative Scenario: Close PDI connection - EIL request</b></p><p><b>Precondition:</b> The <a href="#">EULYNX field element Subsystem</a> is in OPERATIONAL state and the PDI connection is in state ESTABLISHED or the <a href="#">EULYNX field element Subsystem</a> is in <a href="#">INITIALISING</a> state, in substate <a href="#">WAITING_FOR_PDI</a> and the PDI connection is in state ESTABLISHING.</p><p><b>Interaction 1.2.2.A:</b></p><ol style="list-style-type: none"><li>- The <a href="#">Subsystem - Electronic Interlocking</a> detects that it is requested to disconnect the PDI connection with <a href="#">EULYNX field element Subsystem</a>.</li><li>The <a href="#">EULYNX field element Subsystem</a> receives from the <a href="#">Subsystem - Electronic Interlocking</a> the request to close the PDI connection with reason <a href="#">NormalClose</a>.</li></ol><p><b>Postcondition:</b> The <a href="#">EULYNX field element Subsystem</a> is in state INITIALISING, in substate <a href="#">WAITING_FOR_PDI_OR_MAINTENANCE</a>. Ready to establish PDI connection.</p></div><div><pre>sequenceDiagram     actor User     participant S as Subsystem - Electronic Interlocking     participant E as :EULYNX field element Subsystem     S-&gt;&gt;S: Disconnection requested     S-&gt;&gt;E: Cd_Close_PDI</pre></div></div></div> <td></td>	
Eu.Gen-SCI.449	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.2 Close PDI connection Timeout - Alternative Scenario [SCI-XX EfeS IF SD 1.2.3]</div><div><div><div>sd [Interaction] SCI-XX EfeS IFUC1.2 Close PDI connection Timeout - Alternative Scenario [SCI-XX EfeS IF SD 1.2.3]</div><div><div>Subsystem - Electronic Interlocking</div><div>:EULYNX field element Subsystem</div></div></div><div><p><b>Alternative Scenario: Close PDI connection - Timeout of PDI establishment</b></p><p><b>Precondition:</b> The <a href="#">EULYNX field element Subsystem</a> is in INITIALISING state, in substate <a href="#">WAITING_FOR_PDI</a> and the PDI connection is in state <a href="#">ESTABLISHING</a>.</p><p><b>Interaction 1.2.3.A:</b></p><ol style="list-style-type: none"><li>- The <a href="#">Subsystem - Electronic Interlocking</a> detects that the timer <a href="#">Con_tmax_PDI_Connection</a> expires.</li><li>The <a href="#">EULYNX field element Subsystem</a> receives from the <a href="#">Subsystem - Electronic Interlocking</a> the request to close the PDI connection with reason <a href="#">Timeout</a>.</li></ol><p><b>Postcondition:</b> The <a href="#">EULYNX field element Subsystem</a> is in state INITIALISING, in substate <a href="#">WAITING_FOR_PDI_OR_MAINTENANCE</a>. Ready to establish PDI connection.</p></div><div><pre>sequenceDiagram     actor User     participant S as Subsystem - Electronic Interlocking     participant E as :EULYNX field element Subsystem     S-&gt;&gt;E: Cd_Close_PDI</pre></div></div></div> <td></td>	



ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.399	Head	3.1.1.3.3 SCI-XX EfeS - Functional Partitioning	
Eu.Gen-SCI.400	Def	<div><div>[Package] SCI-XX EfeS - Functional Partitioning [Functional Viewpoint - Interface Requirements]</div><div><div><b>bdd</b> [Package] SCI-XX EfeS - Functional Partitioning [Functional Viewpoint - Interface Requirements]</div><div><p>The diagram illustrates the functional partitioning of SCI-XX EfeS. It features a package boundary labeled 'SCI-XX EfeS - Functional Entities'. Inside, there are four main components: 1. '«logical structural entity» SCI-XX EfeS' (cyan box) at the top, connected by a dashed line to 'Subsystem - Electronic Interlocking'. 2. '«logical structural entity» Subsystem - Electronic Interlocking' (cyan box) on the left, which has a composition relationship (diamond) with 'S_SCI_EfeS_Prim'. 3. '«logical structural entity» EULYNX field element Subsystem' (cyan box) on the right, which has a composition relationship (diamond) with 'F_SCI_EfeS_Sec'. 4. Two functional entities: '«functional entity» S_SCI_EfeS_Prim' (green box) and '«functional entity» F_SCI_EfeS_Sec' (green box). Relationships: - 'Subsystem - Electronic Interlocking' (1) is associated with 'EULYNX field element Subsystem' (1) via a solid line labeled 'SCI-XX EfeS'. - 'Subsystem - Electronic Interlocking' (1) is associated with 'S_SCI_EfeS_Prim' via a solid line labeled 'SCI-XX EfeS Prim'. - 'EULYNX field element Subsystem' (1) is associated with 'F_SCI_EfeS_Sec' via a solid line labeled 'SCI-XX EfeS Sec'. - 'S_SCI_EfeS_Prim' (1) is associated with 'F_SCI_EfeS_Sec' via a solid line labeled 'SCI-XX EfeS Sec'.</p></div></div></div>	
Eu.Gen-SCI.223	Head	3.1.1.3.4 SCI-XX EfeS - Functional Architecture	
Eu.Gen-SCI.224	Info	SCI-XX EfeS	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.225	Def	<div><div>[Block] SCI-XX EfeS [Functional Viewpoint - Interface Requirements - Functional Architecture]</div><div><div><b>ibd</b> [Block] SCI-XX EfeS [Functional Viewpoint - Interface Requirements - Functional Architecture]</div><div><div><div><div>«logical structural entity» SCI-XX EfeS</div><div><div><div><div>«participant» {end = SCI-XX EfeS} «logical structural entity» InLink : Subsystem - Electronic Interlocking</div><div><div><div><div><div>D2in_Con_tmax_PDI_Connection</div><div>D39in_Con_Last_PDI_Version</div><div>D3in_Con_PDI_Version</div><div>D4in_Con_Checksum_Data</div><div>T10in_SCP_Connection_Terminated</div><div>T20in_Protocol_Error</div><div>T21in_Formal_Telegram_Error</div><div>T22in_Content_Telegram_Error</div><div>T44in_Initiate_Maintenance</div><div>T45in_Reset_Severe_Error</div><div>«functional entity» SCI-XX EfeS Prim : S_SCI_EfeS_Prim</div><div>T5in_SCP_Connection_Established</div><div>d60out_PDI_Close_Reason</div><div>T6out_Establish_SCP_Connection</div><div>T46out_Con_Other_PDI_Version_Request</div><div>T12out_Terminate_SCP_Connection</div><div>d50out_PDI_Connection_State</div><div>T49in_Enable_Or_Connect_PDI_EfeS</div><div>T48in_Disable_Or_Disconnect_PDI_EfeS</div><div>T47in_Con_Other_PDI_Version_Available</div></div></div><div>P1inout : ~SCI_GEN</div></div><div><div>EILX : SCI-XX EfeS EIL</div><div>«equal»</div><div>P1inout : SCI_GEN</div><div>P1inout : ~SCI_GEN</div></div><div><div>EfeSX : SCI-XX EfeS EfeS</div><div>«equal»</div><div>P1inout : SCI_GEN</div></div><div><div>«participant» {end = SCI-XX EfeS} «logical structural entity» InLink : EULYNX field element Subsystem</div><div><div><div><div>D3in_Con_PDI_Version</div><div>D4in_Con_Checksum_Data</div><div>d50out_PDI_Connection_State</div><div>T10in_SCP_Connection_Terminated</div><div>T12out_Terminate_SCP_Connection</div><div>p2inout : EST_SCI_GEN</div><div>p3inout : ~F_SCI_Specific</div><div>«functional entity» SCI-XX EfeS Sec : F_SCI_EfeS_Sec</div><div>T20in_Protocol_Error</div><div>T21in_Formal_Telegram_Error</div><div>T22in_Content_Telegram_Error</div><div>T5in_SCP_Connection_Established</div><div>d60out_PDI_Close_Reason</div></div></div><div>P1inout : SCI_GEN</div></div></div></div></div></div></div></div></div></div></div></div>	
Eu.Gen-SCI.226	Head	<b>3.1.1.3.5 SCI-XX EfeS - Functional Entities</b>	
Eu.Gen-SCI.303	Info	S_SCI_EfeS_Prim	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.304	Req	<div><div>[Block] S_SCI_EfeS_Prim [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div>ibd [Block] S_SCI_EfeS_Prim [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div><div><div>«functional entity»</div><div>S_SCI_EfeS_Prim</div><div>values</div><div>«BlockProperty» Mem_Checksum_Data : String</div><div>«BlockProperty» Mem_PDI_Version_Result : String</div><div>Operation</div><div>«Operation» cOp1_init ()</div></div><div><div><div>D2in_Con_tmax_PDI_Connection : Integer</div><div>d60out_PDI_Close_Reason : String</div></div><div><div><div>D39in_Con_Last_PDI_Version : Boolean</div><div>T46out_Con_Other_PDI_Version_Request : PulsedOut</div></div><div><div><div>D3in_Con_PDI_Version : String</div><div>T6out_Establish_SCP_Connection : PulsedOut</div></div><div><div><div>D4in_Con_Checksum_Data : String</div><div>d50out_PDI_Connection_State : String</div></div><div><div><div>T47in_Con_Other_PDI_Version_Available : PulsedIn</div><div>T12out_Terminate_SCP_Connection : PulsedOut</div></div><div><div><div>T10in_SCP_Connection_Terminated : PulsedIn</div><div>P1inout : ~SCI_GEN</div></div><div><div><div>T5in_SCP_Connection_Established : PulsedIn</div><div></div></div><div><div><div>T20in_Protocol_Error : PulsedIn</div><div></div></div><div><div><div>T21in_Formal_Telegram_Error : PulsedIn</div><div></div></div><div><div><div>T22in_Content_Telegram_Error : PulsedIn</div><div></div></div><div><div><div>T44in_Initiate_Maintenance : PulsedIn</div><div></div></div><div><div><div>T45in_Reset_Severe_Error : PulsedIn</div><div></div></div><div><div><div>T48in_Disable_Or_Disconnect_PDI_EfeS : PulsedIn</div><div></div></div><div><div><div>T49in_Enable_Or_Connect_PDI_EfeS : PulsedIn</div><div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div>	
Eu.Gen-SCI.305	Def	<div>/* cOp1_init */  d60out_PDI_Close_Reason := "No Error"; Mem_PDI_Version_Result := "unknown"; Mem_Checksum_Data := D4in_Con_Checksum_Data;</div>	cOp1_init
Eu.Gen-SCI.308	Def	D2in_Con_tmax_PDI_Connection	The port D2in_Con_tmax_PDI_Connection provides the time value Con_tmax_PDI_Connection.
Eu.Gen-SCI.310	Def	D3in_Con_PDI_Version	The port D3in_Con_PDI_Version provides the configured PDIVer.
Eu.Gen-SCI.311	Def	D4in_Con_Checksum_Data	The port D4in_Con_Checksum_Data provides the configured CSS.
Eu.Gen-SCI.306	Def	T5in_SCP_Connection_Established	The port T5in_SCP_Connection_Established represents the event of the established SCP connection.
Eu.Gen-SCI.326	Def	T6out_Establish_SCP_Connection	<div>The port T6out_Establish_SCP_Connection represents the event for the SCP to establish the SCP connection.</div> <div>Note: It is assumed that the implementation of the SCP connection handle each connection error by itself after sending the trigger on T6out_Establish_SCP_Connection. A retriggering of SCP connection is not in responsibility of SCI layer. In case of a successful established connection the trigger T5in_SCP_Connection_Established is expected.</div>
Eu.Gen-SCI.315	Def	T10in_SCP_Connection_Terminated	The port T10in_SCP_Connection_Terminated represents the event of the terminated SCP connection.
Eu.Gen-SCI.316	Def	T12out_Terminate_SCP_Connection	The port T12out_Terminate_SCP_Connection represents the event to terminate the SCP connection.



ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.317	Def	T20in_Protocol_Error	The port T20in_Protocol_Error represents the event of a protocol error.
Eu.Gen-SCI.318	Def	T21in_Formal_Telegram_Error	The port T21in_Formal_Telegram_Error represents the event of a formal telegram error.
Eu.Gen-SCI.319	Def	T22in_Content_Telegram_Error	The port T22in_Content_Telegram_Error represents the event of a content telegram error.
Eu.Gen-SCI.309	Def	D39in_Con_Last_PDI_Version	The port D39in_Con_Last_PDI_Version indicates if this was the last possible PDI version for a new version check cycle.
Eu.Gen-SCI.320	Def	T44in_Initiate_Maintenance	
Eu.Gen-SCI.321	Def	T45in_Reset_Severe_Error	
Eu.Gen-SCI.322	Def	T46out_Con_Other_PDI_Version_Request	
Eu.Gen-SCI.323	Def	T47in_Con_Other_PDI_Version_Available	
Eu.Gen-SCI.324	Def	T48in_Disable_Or_Disconnect_PDI_EfeS	
Eu.Gen-SCI.325	Def	T49in_Enable_Or_Connect_PDI_EfeS	
Eu.Gen-SCI.312	Def	d50out_PDI_Connection_State	The port d50out_PDI_Connection_State provides the status of the PDI connection.
Eu.Gen-SCI.313	Def	d60out_PDI_Close_Reason	
Eu.Gen-SCI.314	Def	P1inout	The port P1inout exchanges information objects according to SCI_GEN.
Eu.Gen-SCI.327	Info	S_SCI_EfeS_Prim - Behaviour	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.344	Req	<div>Functional Viewpoint - Subsystem Requirements - Functional Entity STD 1</div> <div>stm [State Machine] S_SCI_EfeS_Prim - Behaviour [Functional Viewpoint - Subsystem Requirements - Functional Entity STD 1]</div> <div><pre>stateDiagram-v2     [*] --&gt; DISCONNECTED_NO_SCP : /cOp1_init()     DISCONNECTED_NO_SCP --&gt; REQUESTED_NO_SCP : when( T48in_Disable_Or_Disconnect_PDI_EfeS ) /     REQUESTED_NO_SCP --&gt; DISCONNECTED_NO_SCP : when( T49in_Enable_Or_Connect_PDI_EfeS ) /     DISCONNECTED_NO_SCP --&gt; DISCONNECTED : when( T10in_SCP_Connection_Terminated ) /     DISCONNECTED --&gt; DISCONNECTED_NO_SCP : when( T5in_SCP_Connection_Established ) /     DISCONNECTED --&gt; REQUESTED_NO_SCP : when( T5in_SCP_Connection_Established ) /     DISCONNECTED --&gt; IMPERMISSIBLE_NO_SCP : when( T48in_Disable_Or_Disconnect_PDI_EfeS ) /     DISCONNECTED --&gt; ACTIVE : when( T49in_Enable_Or_Connect_PDI_EfeS ) /     IMPERMISSIBLE_NO_SCP --&gt; REQUESTED_NO_SCP : when( T45in_Reset_Severe_Error ) /     IMPERMISSIBLE_NO_SCP --&gt; IMPERMISSIBLE : when( T5in_SCP_Connection_Established ) /     IMPERMISSIBLE --&gt; IMPERMISSIBLE_NO_SCP : when( T10in_SCP_Connection_Terminated ) /     IMPERMISSIBLE --&gt; ACTIVE : when( T45in_Reset_Severe_Error ) /     ACTIVE --&gt; ESTABLISHING : after( D2in_Con_tmax_PDI_Connection ) /     ESTABLISHING --&gt; WAITING_FOR_VERSION_CHECK : /send Cd_PDI_Version_Check (D3in_Con_PDI_Version) to P1inout;     ESTABLISHING --&gt; OTHER_VERSION_REQUIRED : when( T47in_Con_Other_PDI_Version_Available ) /     WAITING_FOR_VERSION_CHECK --&gt; Junction0 : Msg_PDI_Version_Check/Mem_PDI_Version_Result := Result; Mem_Checksum_Data := ChecksumData;     Junction0 --&gt; WAITING_FOR_VERSION_CHECK : [Result = "not match" ] /     Junction0 --&gt; Junction3 : [Result = "match" ] /     Junction3 --&gt; OTHER_VERSION_REQUIRED : [D39in_Con_Last_PDI_Version = TRUE] /     Junction3 --&gt; Junction2 : send Cd_Release_PDI_for_Maintenance to P1inout;     OTHER_VERSION_REQUIRED --&gt; Junction3 : [D39in_Con_Last_PDI_Version = FALSE] / T46out_Con_Other_PDI_Version_Request := TRUE; send Cd_Close_PDI(OtherVersionRequired) to P1inout; d60out_PDI_Close_Reason := "PDI Other Version Required";     Junction2 --&gt; WAITING_FOR_INITIALISATION : [ChecksumData = D4in_Con_Checksum_Data] / send Cd_Initiation_Request to P1inout;     Junction2 --&gt; Junction3 : [NOT (ChecksumData = D4in_Con_Checksum_Data)] / send Cd_Release_PDI_for_Maintenance to P1inout;     WAITING_FOR_INITIALISATION --&gt; RECEIVING_STATUS : Msg_Start_Initialisation /     RECEIVING_STATUS --&gt; ESTABLISHED : Msg_Initialisation_Completed /     ESTABLISHED --&gt; SUSPENDED : Msg_PDI_Not_Available /     SUSPENDED --&gt; ESTABLISHED : Msg_PDI_Available /     SUSPENDED --&gt; SUSPENDED : when( T44in_Initiate_Maintenance ) /     SUSPENDED --&gt; SUSPENDED : send Cd_Release_PDI_for_Maintenance to P1inout;     SUSPENDED --&gt; DISCONNECTED_NO_SCP : when( T10in_SCP_Connection_Terminated ) /</pre></div>	<p>This state machine diagram describes the requirements for the following functionalities:</p> <ul style="list-style-type: none"><li>- establishment and closure of PDI connection</li><li>- reaction to communication errors</li><li>- interaction with safe communication protocol</li></ul>
Eu.Gen-SCI.328	Def	DISCONNECTED	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.329	Def	entry/d50out_PDI_Connection_State := "DISCONNECTED";{State-internal in DISCONNECTED}	
Eu.Gen-SCI.330	Def	when(T10in_SCP_Connection_Terminated)/{DISCONNECTED - DISCONNECTED_NO_SCP}	
Eu.Gen-SCI.331	Def	when(T49in_Enable_Or_Connect_PDI_EfeS)/{DISCONNECTED - ACTIVE}	
Eu.Gen-SCI.332	Def	DISCONNECTED_NO_SCP	
Eu.Gen-SCI.333	Def	entry/d50out_PDI_Connection_State := "DISCONNECTED_NO_SCP";{State-internal in DISCONNECTED_NO_SCP}	
Eu.Gen-SCI.334	Def	when(T5in_SCP_Connection_Established)/{DISCONNECTED_NO_SCP - DISCONNECTED}	
Eu.Gen-SCI.335	Def	when(T49in_Enable_Or_Connect_PDI_EfeS)/{DISCONNECTED_NO_SCP - REQUESTED_NO_SCP}	
Eu.Gen-SCI.336	Def	IMPERMISSIBLE	
Eu.Gen-SCI.337	Def	entry/d50out_PDI_Connection_State := "IMPERMISSIBLE";{State-internal in IMPERMISSIBLE}	
Eu.Gen-SCI.338	Def	when(T10in_SCP_Connection_Terminated)/{IMPERMISSIBLE - IMPERMISSIBLE_NO_SCP}	
Eu.Gen-SCI.339	Def	when(T45in_Reset_Severe_Error)/{IMPERMISSIBLE - ACTIVE}	
Eu.Gen-SCI.340	Def	IMPERMISSIBLE_NO_SCP	
Eu.Gen-SCI.341	Def	entry/d50out_PDI_Connection_State := "IMPERMISSIBLE_NO_SCP";{State-internal in IMPERMISSIBLE_NO_SCP}	
Eu.Gen-SCI.342	Def	when(T5in_SCP_Connection_Established)/{IMPERMISSIBLE_NO_SCP - IMPERMISSIBLE}	
Eu.Gen-SCI.343	Def	when(T45in_Reset_Severe_Error)/{IMPERMISSIBLE_NO_SCP - REQUESTED_NO_SCP}	
Eu.Gen-SCI.345	Def	Initial0	
Eu.Gen-SCI.346	Def	/cOp1_init();{Initial0 - DISCONNECTED_NO_SCP}	
Eu.Gen-SCI.347	Def	REQUESTED_NO_SCP	
Eu.Gen-SCI.348	Def	entry/d50out_PDI_Connection_State := "REQUESTED_NO_SCP"; T6out_Establish_SCP_Connection := TRUE;{State-internal in REQUESTED_NO_SCP}	
Eu.Gen-SCI.349	Def	when(T5in_SCP_Connection_Established)/{REQUESTED_NO_SCP - ACTIVE}	
Eu.Gen-SCI.350	Def	when(T48in_Disable_Or_Disconnect_PDI_EfeS)/{REQUESTED_NO_SCP - DISCONNECTED_NO_SCP}	
Eu.Gen-SCI.360	Def	ACTIVE	
Eu.Gen-SCI.361	Def	ESTABLISHED	
Eu.Gen-SCI.362	Def	entry/d50out_PDI_Connection_State := "ESTABLISHED";{State-internal in ESTABLISHED}	
Eu.Gen-SCI.363	Def	ESTABLISHING	
Eu.Gen-SCI.364	Def	after(D2in_Con_tmax_PDI_Connection)/ send Cd_Close_PDI(Timeout) to P1inout; d60out_PDI_Close_Reason := "PDI Timeout";{ESTABLISHING - ESTABLISHING}	
Eu.Gen-SCI.365	Def	Initial2	
Eu.Gen-SCI.366	Def	/send Cd_PDI_Version_Check(D3in_Con_PDI_Version) to P1inout;{Initial2 - WAITING_FOR_VERSION_CHECK}	
Eu.Gen-SCI.367	Def	Junction0	
Eu.Gen-SCI.368	Def	[Result = "match" ]/{Junction0 - Junction2}	
Eu.Gen-SCI.369	Def	[Result = "not match" ]/{Junction0 - Junction3}	
Eu.Gen-SCI.373	Def	Junction2	
Eu.Gen-SCI.374	Def	[NOT (ChecksumData = D4in_Con_Checksum_Data)]/ send Cd_Release_PDI_for_Maintenance to P1inout;{Junction2 - SUSPENDED}	
Eu.Gen-SCI.375	Def	[ChecksumData = D4in_Con_Checksum_Data]/ send Cd_Initialisation_Request to P1inout;{Junction2 - WAITING_FOR_INITIALISATION}	
Eu.Gen-SCI.376	Def	RECEIVING_STATUS	
Eu.Gen-SCI.377	Def	Msg_Initialisation_Completed/{RECEIVING_STATUS - ESTABLISHED}	
Eu.Gen-SCI.378	Def	entry/d50out_PDI_Connection_State := "RECEIVING_STATUS";{State-internal in RECEIVING_STATUS}	
Eu.Gen-SCI.379	Def	WAITING_FOR_INITIALISATION	
Eu.Gen-SCI.380	Def	Msg_Start_Initialisation/{WAITING_FOR_INITIALISATION - RECEIVING_STATUS}	
Eu.Gen-SCI.381	Def	entry/d50out_PDI_Connection_State := "WAITING_FOR_INITIALISATION";{State-internal in WAITING_FOR_INITIALISATION}	
Eu.Gen-SCI.382	Def	WAITING_FOR_VERSION_CHECK	
Eu.Gen-SCI.383	Def	Msg_PDI_Version_Check/Mem_PDI_Version_Result := Result; Mem_Checksum_Data := ChecksumData;{WAITING_FOR_VERSION_CHECK - Junction0}	
Eu.Gen-SCI.384	Def	entry/d50out_PDI_Connection_State := "WAITING_FOR_VERSION_CHECK";{State-internal in WAITING_FOR_VERSION_CHECK}	
Eu.Gen-SCI.357	Def	Junction3	
Eu.Gen-SCI.358	Def	[D39in_Con_Last_PDI_Version = TRUE]/ send Cd_Release_PDI_for_Maintenance to P1inout;{Junction3 - SUSPENDED}	

Generic interface and subsystem requirements for SCI			
ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.359	Def	[D39in_Con_Last_PDI_Version = FALSE]/ T46out_Con_Other_PDI_Version_Request := TRUE; send Cd_Close_PDI(OtherVersionRequired) to P1inout; d60out_PDI_Close_Reason := "PDI Other Version Required";{Junction3 - OTHER_VERSION_REQUIRED}	
Eu.Gen-SCI.396	Def	OTHER_VERSION_REQUIRED	
Eu.Gen-SCI.397	Def	when(T47in_Con_Other_PDI_Version_Available)/{OTHER_VERSION_REQUIRED - ESTABLISHING}	
Eu.Gen-SCI.471	Def	entry/d50out_PDI_Connection_State := "OTHER_VERSION_REQUIRED";{State-internal in OTHER_VERSION_REQUIRED}	
Eu.Gen-SCI.385	Def	Initial1	
Eu.Gen-SCI.386	Def	/ {Initial1 - ESTABLISHING}	
Eu.Gen-SCI.387	Def	Msg_PDI_Not_Available/{ACTIVE - SUSPENDED}	
Eu.Gen-SCI.388	Def	Msg_Reset_PDI[ReportedResetReason = ProtocolError]/ d60out_PDI_Close_Reason := "EfeS Protocol Error";{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.389	Def	Msg_Reset_PDI[ReportedResetReason = ContentTelegramError]/ d60out_PDI_Close_Reason := "EfeS Content Telegram Error";{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.390	Def	Msg_Reset_PDI[ReportedResetReason = FormalTelegramError]/ d60out_PDI_Close_Reason := "EfeS Formal Telegram Error";{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.391	Def	when(T20in_Protocol_Error)/ d60out_PDI_Close_Reason := "EIL Protocol Error"; send Cd_Close_PDI(ProtocolError) to P1inout;{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.392	Def	when(T21in_Formal_Telegram_Error)/ d60out_PDI_Close_Reason := "EIL Formal Telegram Error"; send Cd_Close_PDI(FormalTelegramError) to P1inout;{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.393	Def	when(T22in_Content_Telegram_Error)/ d60out_PDI_Close_Reason := "EIL Content Telegram Error"; send Cd_Close_PDI(ContentTelegramError) to P1inout;{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.394	Def	when(T44in_Initiate_Maintenance)/ send Cd_Release_PDI_for_Maintenance to P1inout;{ACTIVE - SUSPENDED}	
Eu.Gen-SCI.395	Def	when(T48in_Disable_Or_Disconnect_PDI_EfeS)/ send Cd_Close_PDI(NormalClose) to P1inout; d60out_PDI_Close_Reason := "PDI Normal Close";{ACTIVE - DISCONNECTED}	
Eu.Gen-SCI.398	Def	when(T10in_SCP_Connection_Terminated)/{ACTIVE - REQUESTED_NO_SCP}	
Eu.Gen-SCI.352	Def	SUSPENDED	
Eu.Gen-SCI.353	Def	Msg_PDI_Available/{SUSPENDED - ACTIVE}	
Eu.Gen-SCI.354	Def	entry/d50out_PDI_Connection_State := "SUSPENDED";{State-internal in SUSPENDED}	
Eu.Gen-SCI.472	Def	when(T10in_SCP_Connection_Terminated)/{SUSPENDED - REQUESTED_NO_SCP}	
Eu.Gen-SCI.473	Def	when(T48in_Disable_Or_Disconnect_PDI_EfeS)/{SUSPENDED - DISCONNECTED}	
Eu.Gen-SCI.227	Info	F_SCI_EfeS_Sec	
Eu.Gen-SCI.228	Req	<div><div>[Block] F_SCI_EfeS_Sec [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div><div><div>«functional entity»</div><div>F_SCI_EfeS_Sec</div><div>values</div><div>«BlockProperty» Mem_PDI_Version : String</div><div>Operation</div><div>«Operation» cOp1_init ()</div></div><div><div><div>D3in_Con_PDI_Version : String</div><div>d50out_PDI_Connection_State : String</div><div>D4in_Con_Checksum_Data : String</div><div>T12out_Terminate_SCP_Connection : PulsedOut</div><div>T20in_Protocol_Error : PulsedIn</div><div>d60out_PDI_Close_Reason : String</div><div>T21in_Formal_Telegram_Error : PulsedIn</div><div>p2inout : EST_SCI_GEN</div><div>T22in_Content_Telegram_Error : PulsedIn</div><div>P1inout : SCI_GEN</div><div>T5in_SCP_Connection_Established : PulsedIn</div><div>p3inout : ~F_SCI_Specific</div><div>T10in_SCP_Connection_Terminated : PulsedIn</div></div></div></div></div></div>	
Eu.Gen-SCI.229	Def	/* cOp1_init */  Mem_PDI_Version := D3in_Con_PDI_Version;	cOp1_init

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.231	Def	D3in_Con_PDI_Version	The port D3in_Con_PDI_Version provides the configured PDIVer.
Eu.Gen-SCI.232	Def	D4in_Con_Checksum_Data	The port D4in_Con_Checksum_Data provides the configured CSS.
Eu.Gen-SCI.302	Def	T5in_SCP_Connection_Established	The port T5in_SCP_Connection_Established represents the event of the established SCP connection.
Eu.Gen-SCI.297	Def	T10in_SCP_Connection_Terminated	The port T10in_SCP_Connection_Terminated represents the event of the terminated SCP connection.
Eu.Gen-SCI.298	Def	T12out_Terminate_SCP_Connection	The port T12out_Terminate_SCP_Connection represents the event to terminate the SCP connection.
Eu.Gen-SCI.299	Def	T20in_Protocol_Error	The port T20in_Protocol_Error represents the event of a protocol error.
Eu.Gen-SCI.300	Def	T21in_Formal_Telegram_Error	The port T21in_Formal_Telegram_Error represents the event of a formal telegram error.
Eu.Gen-SCI.301	Def	T22in_Content_Telegram_Error	The port T22in_Content_Telegram_Error represents the event of a content telegram error.
Eu.Gen-SCI.233	Def	d50out_PDI_Connection_State	The port d50out_PDI_Connection_State provides the status of the PDI connection.
Eu.Gen-SCI.505	Def	d60out_PDI_Close_Reason	
Eu.Gen-SCI.294	Def	p2inout	
Eu.Gen-SCI.295	Def	P1inout	The port P1inout exchanges information objects according to SCI_GEN.
Eu.Gen-SCI.296	Def	p3inout	
Eu.Gen-SCI.234	Info	F_SCI_EfeS_Sec - Behaviour	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.239	Req	<div>Functional Viewpoint - Subsystem Requirements - Functional Entity STD 2</div> <div>stm [State Machine] F_SCI_EfeS_Sec - Behaviour [Functional Viewpoint - Subsystem Requirements - Functional Entity STD 2]</div> <div><p>The diagram illustrates the state machine for the F_SCI_EfeS_Sec subsystem. It starts with an initial state 'Initial0' leading to 'NOT_READY_FOR_PDI_NO_SCP'. Transitions include 'Ready_For_PDI_Connection/' to 'READY_FOR_PDI_NO_SCP' and 'NotReady_For_PDI_Connection/' back. A 'when' block handles 'T10in_SCP_Connection_Terminated' and 'T5in_SCP_Connection_Established' events, leading to 'NOT_READY_FOR_PDI' and 'READY_FOR_PDI' states respectively. The 'ACTIVE' region contains an 'ESTABLISHING' sub-state with a junction 'Junction0' that checks 'Mem_PDI_Version' against 'D3in_Con_PDI_Version'. If not matching, it sends 'Msg_PDI_Version_Check' with 'not match' and enters 'VERSION_UNEQUAL'. If matching, it sends 'Msg_PDI_Version_Check' with 'match' and enters 'READY_FOR_INITIALISATION'. This leads to 'SENDING_STATUS' and then 'ESTABLISHED' upon 'Status_Report_Completed/'. From 'ESTABLISHED', 'Cd_Release_PDI_for_Maintenance/' leads to 'SUSPENDED', while 'NotReady_For_PDI_Connection/' leads to 'Msg_PDI_Not_Available' and back to 'SUSPENDED'. 'SUSPENDED' has two outgoing transitions: 'Ready_For_PDI_Connection/send Msg_PDI_Available to P1inout;' back to 'ESTABLISHED' and 'Cd_PDI_Version_Check/send Msg_PDI_Not_Available to P1inout;' back to 'SUSPENDED'. A large 'when' block on the right lists various 'Cd_Close_PDI' actions with specific 'RequestedCloseReason' values (NormalClose, OtherVersionRequired, Timeout, ProtocolError, FormalTelegramError, ContentTelegramError) and their corresponding 'send' and 'd60out_PDI_Close_Reason' outputs.</p></div>	<p>This state machine diagram describes the requirements for the following functionalities:</p> <ul style="list-style-type: none"><li>- establishment and closure of PDI connection</li><li>- reaction to communication errors</li><li>- interaction with safe communication protocol</li></ul>
Eu.Gen-SCI.240	Def	Initial0	
Eu.Gen-SCI.557	Def	/cOp1_init();{Initial0 - NOT_READY_FOR_PDI_NO_SCP}	
Eu.Gen-SCI.246	Def	ACTIVE	



ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.247	Def	Cd_Close_PDI[RequestedCloseReason = NormalClose]/ send PDI_Connection_Closed to p2inout; d60out_PDI_Close_Reason := "PDI Normal Close";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.248	Def	Cd_Release_PDI_for_Maintenance/{ACTIVE - SUSPENDED}	
Eu.Gen-SCI.249	Def	ESTABLISHING	
Eu.Gen-SCI.250	Def	Initial2	
Eu.Gen-SCI.251	Def	/{Initial2 - Junction0}	
Eu.Gen-SCI.252	Def	Junction0	
Eu.Gen-SCI.254	Def	[Mem_PDI_Version = D3in_Con_PDI_Version]/ send Msg_PDI_Version_Check("match", D4in_Con_Checksum_Data,D3in_Con_PDI_Version) to P1inout;{Junction0 - READY_FOR_INITIALISATION}	
Eu.Gen-SCI.257	Def	[NOT (Mem_PDI_Version = D3in_Con_PDI_Version)]/ send Msg_PDI_Version_Check("not match",D4in_Con_Checksum_Data,D3in_Con_PDI_Version) to P1inout;{Junction0 - VERSION_UNEQUAL}	
Eu.Gen-SCI.261	Def	VERSION_UNEQUAL	
Eu.Gen-SCI.262	Def	entry/d50out_PDI_Connection_State := "VERSION_UNEQUAL";{State-internal in VERSION_UNEQUAL}	
Eu.Gen-SCI.263	Def	READY_FOR_INITIALISATION	
Eu.Gen-SCI.264	Def	Cd_Initialisation_Request/ send Msg_Start_Initialisation to P1inout;{READY_FOR_INITIALISATION - SENDING_STATUS}	
Eu.Gen-SCI.265	Def	entry/d50out_PDI_Connection_State := "READY_FOR_INITIALISATION";{State-internal in READY_FOR_INITIALISATION}	
Eu.Gen-SCI.266	Def	SENDING_STATUS	
Eu.Gen-SCI.267	Def	Status_Report_Completed/ send Msg_Initialisation_Completed to P1inout;{SENDING_STATUS - ESTABLISHED}	
Eu.Gen-SCI.268	Def	entry/d50out_PDI_Connection_State := "SENDING_STATUS"; send Start_Status_Report to p3inout;{State-internal in SENDING_STATUS}	
Eu.Gen-SCI.269	Def	Initial1	
Eu.Gen-SCI.270	Def	/{Initial1 - ESTABLISHING}	
Eu.Gen-SCI.271	Def	NotReady_For_PDI_Connection/ send Msg_PDI_Not_Available to P1inout;{ACTIVE - SUSPENDED}	Note: If it is technically not possible to send the telegram Msg_PDI_Not_Available, the secondary communication partner must terminate the safe communication protocol. This will cause a transition to the state 'NOT_READY_FOR_PDI_NO_SCP'.
Eu.Gen-SCI.272	Def	ESTABLISHED	
Eu.Gen-SCI.273	Def	entry/d50out_PDI_Connection_State := "ESTABLISHED"; send PDI_Connection_Established to p2inout;{State-internal in ESTABLISHED}	
Eu.Gen-SCI.276	Def	when(T20in_Protocol_Error)/ send Msg_Reset_PDI(ProtocolError) to P1inout; send PDI_Connection_Closed to p2inout; d60out_PDI_Close_Reason := "EfeS Protocol Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.277	Def	when(T21in_Formal_Telegram_Error)/ send Msg_Reset_PDI(FormalTelegramError) to P1inout; send PDI_Connection_Closed to p2inout; d60out_PDI_Close_Reason := "EfeS Formal Telegram Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.278	Def	when(T22in_Content_Telegram_Error)/ send Msg_Reset_PDI(ContentTelegramError) to P1inout; send PDI_Connection_Closed to p2inout; d60out_PDI_Close_Reason := "EfeS Content Telegram Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.506	Def	Cd_Close_PDI[RequestedCloseReason = OtherVersionRequired]/ send PDI_Connection_Closed to p2inout; d60out_PDI_Close_Reason := "PDI Other Version Required";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.507	Def	Cd_Close_PDI[RequestedCloseReason = Timeout]/ send PDI_Connection_Closed to p2inout; d60out_PDI_Close_Reason := "PDI Timeout";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.508	Def	Cd_Close_PDI[RequestedCloseReason = FormalTelegramError]/ send PDI_Connection_Closed to p2inout; d60out_PDI_Close_Reason := "EIL Formal Telegram Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.509	Def	Cd_Close_PDI[RequestedCloseReason = ContentTelegramError]/ send PDI_Connection_Closed to p2inout; d60out_PDI_Close_Reason := "EIL Content Telegram Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.510	Def	Cd_Close_PDI[RequestedCloseReason = ProtocolError]/ send PDI_Connection_Closed to p2inout; d60out_PDI_Close_Reason := "EIL Protocol Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.556	Def	when(T10in_SCP_Connection_Terminated)/ send PDI_Connection_Closed to p2inout;{ACTIVE - READY_FOR_PDI_NO_SCP}	
Eu.Gen-SCI.279	Def	SUSPENDED	
Eu.Gen-SCI.280	Def	Ready_For_PDI_Connection/send Msg_PDI_Available to P1inout;{SUSPENDED - READY_FOR_PDI}	
Eu.Gen-SCI.281	Def	entry/d50out_PDI_Connection_State := "SUSPENDED"; send PDI_Released_For_Maintenance to p2inout;{State-internal in SUSPENDED}	

Generic interface and subsystem requirements for SCI			
ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.568	Def	when(T10in_SCP_Connection_Terminated)/{{SUSPENDED - NOT_READY_FOR_PDI_NO_SCP}}	
Eu.Gen-SCI.283	Def	READY_FOR_PDI	
Eu.Gen-SCI.284	Def	Cd_PDI_Version_Check/ Mem_PDI_Version := PDI_Version; send PDI_Connection_Started to p2inout;{READY_FOR_PDI - ACTIVE}	
Eu.Gen-SCI.285	Def	NotReady_For_PDI_Connection/{READY_FOR_PDI - NOT_READY_FOR_PDI}	
Eu.Gen-SCI.286	Def	entry/d50out_PDI_Connection_State := "READY_FOR_PDI";{State-internal in READY_FOR_PDI}	
Eu.Gen-SCI.563	Def	when(T10in_SCP_Connection_Terminated)/{READY_FOR_PDI - READY_FOR_PDI_NO_SCP}	
Eu.Gen-SCI.288	Def	NOT_READY_FOR_PDI	
Eu.Gen-SCI.289	Def	Cd_PDI_Version_Check/send Msg_PDI_Not_Available to P1inout;{NOT_READY_FOR_PDI - SUSPENDED}	
Eu.Gen-SCI.290	Def	Ready_For_PDI_Connection/{NOT_READY_FOR_PDI - READY_FOR_PDI}	
Eu.Gen-SCI.291	Def	entry/d50out_PDI_Connection_State := "NOT_READY_FOR_PDI";{State-internal in NOT_READY_FOR_PDI}	
Eu.Gen-SCI.558	Def	when(T10in_SCP_Connection_Terminated)/{NOT_READY_FOR_PDI - NOT_READY_FOR_PDI_NO_SCP}	
Eu.Gen-SCI.559	Def	NOT_READY_FOR_PDI_NO_SCP	
Eu.Gen-SCI.560	Def	Ready_For_PDI_Connection/{NOT_READY_FOR_PDI_NO_SCP - READY_FOR_PDI_NO_SCP}	
Eu.Gen-SCI.561	Def	entry/d50out_PDI_Connection_State := "NOT_READY_FOR_PDI_NO_SCP";{State-internal in NOT_READY_FOR_PDI_NO_SCP}	
Eu.Gen-SCI.562	Def	when(T5in_SCP_Connection_Established)/{NOT_READY_FOR_PDI_NO_SCP - NOT_READY_FOR_PDI}	
Eu.Gen-SCI.564	Def	READY_FOR_PDI_NO_SCP	
Eu.Gen-SCI.565	Def	NotReady_For_PDI_Connection/{READY_FOR_PDI_NO_SCP - NOT_READY_FOR_PDI_NO_SCP}	
Eu.Gen-SCI.566	Def	entry/d50out_PDI_Connection_State := "READY_FOR_PDI_NO_SCP";{State-internal in READY_FOR_PDI_NO_SCP}	
Eu.Gen-SCI.567	Def	when(T5in_SCP_Connection_Established)/{READY_FOR_PDI_NO_SCP - READY_FOR_PDI}	
Eu.Gen-SCI.512	Head	<b>3.1.1.4 SCI-XX EfeS - General Infos and Assumptions</b>	
Eu.Gen-SCI.455	Info	When a termination of the SCP connection occurs while the PDI connection is suspended, the PDI connection is no longer considered suspended.	
Eu.Gen-SCI.456	Info	The termination or establishment of the SCP connection does not change the impermissibility of the PDI Connection to a specific EULYNX field element Subsystem.	
Eu.Gen-SCI.459	Info	The termination or establishment of the SCP connection does not change the disconnection of the PDI Connection to a specific EULYNX field element Subsystem.	
Eu.Gen-SCI.461	Info	The termination or establishment of the SCP connection does not change the availability of the EULYNX field element Subsystem for PDI Connection.	
Eu.Gen-SCI.513	Info	When the impermissibility of the PDI connection to a specific EULYNX field element Subsystem is reset while the SCP connection is available, the PDI connection will be re-established.	
Eu.Gen-SCI.514	Info	When the impermissibility of the PDI connection to a specific EULYNX field element Subsystem is reset while no SCP connection is available, the PDI connection will be re-established when the SCP connection becomes available.	
Eu.Gen-SCI.515	Info	When the PDI connection to a specific EULYNX field element Subsystem is enabled while the SCP connection is available, the PDI connection will be established.	
Eu.Gen-SCI.516	Info	When the PDI connection to a specific EULYNX field element Subsystem is enabled while no SCP connection is available, the PDI connection will be established when the SCP connection becomes available.	
Eu.Gen-SCI.517	Info	If the PDI connection to a specific EULYNX field element Subsystem is not disconnected nor impermissible, and no SCP connection is available, the primary communication partner establishes the SCP connection.	
Eu.Gen-SCI.454	Head	<b>3.1.2 SCI-XX EfeS - Internal Behaviour of Subsystem - Electronic Interlocking</b>	
Eu.Gen-SCI.457	Req	It shall be possible to reset the impermissibility of the PDI connection to a specific EULYNX field element Subsystem by a trigger to the Subsystem - Electronic Interlocking.	
Eu.Gen-SCI.458	Req	It shall be possible to disable or disconnect the PDI connection to a specific EULYNX field element Subsystem by a trigger to the Subsystem - Electronic Interlocking. Note: The SCP connection is not affected when PDI connection is disconnected.	
Eu.Gen-SCI.460	Req	It shall be possible to enable or connect the PDI connection to a specific EULYNX field element Subsystem by a trigger to the Subsystem - Electronic Interlocking.	
Eu.Gen-SCI.474	Head	<b>3.1.3 SCI-XX EfeS - Internal Information Flows</b>	
Eu.Gen-SCI.475	Def	<div><div>[Package] SCI-XX EfeS - Internal Information Flows [Internal Interface Requirements - Direction of Information Objects]</div><div><div><b>bdd</b> [Package] SCI-XX EfeS - Internal Information Flows [Internal Interface Requirements - Direction of Information Objects]</div><div><div><div>«information flow» <b>F_SCI_Specific</b></div><div>prov «signal» Start_Status_Report reqd «signal» Status_Report_Completed</div></div></div></div></div>	
Eu.Gen-SCI.477	Def	Start_Status_Report	
Eu.Gen-SCI.478	Def	Status_Report_Completed	
Eu.Gen-SCI.39	Head	<b>3.2 Adjacent systems interfaces</b>	
Eu.Gen-SCI.601	Info	This chapter is not part of the EU-Rail System Pillar scope in the current release.	
Eu.Gen-SCI.40	Head	<b>3.2.1 Interface between Subsystem - Electronic Interlocking and AdjS (SCI-XX AdjS)</b>	

Generic interface and subsystem requirements for SCI			
ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.217	Head	<b>3.2.1.1 SCI-XX AdjS - Logical Viewpoint</b>	
Eu.Gen-SCI.218	Head	<b>3.2.1.1.1 SCI-XX AdjS - Logical Context</b>	
Eu.Gen-SCI.219	Def	<div> <div>[Package] SCI-XX AdjS - Logical Context [Logical Viewpoint - Interface Definition]</div> <div> <div>bdd [Package] SCI-XX AdjS - Logical Context [Logical Viewpoint - Interface Definition]</div> </div> </div>	
Eu.Gen-SCI.200	Head	<b>3.2.1.2 SCI-XX AdjS - Information Flows</b>	
Eu.Gen-SCI.201	Def	<div> <div>[Package] SCI-XX AdjS - Information Flows [Interface Requirements - Direction of Information Objects]</div> <div> <div>bdd [Package] SCI-XX AdjS - Information Flows [Interface Requirements - Direction of Information Objects]</div> </div> </div>	
Eu.Gen-SCI.202	Def	<div> <div>[Package] SCI-XX AdjS - Information Flows [Interface Requirements - Information Objects]</div> <div> <div>bdd [Package] SCI-XX AdjS - Information Flows [Interface Requirements - Information Objects]</div> </div> </div>	
Eu.Gen-SCI.216	Info	The referenced information objects for this Interface can be found in SCI-XX - Information Flows.	
Eu.Gen-SCI.41	Head	<b>3.2.1.3 SCI-XX AdjS - Functional Viewpoint</b>	
Eu.Gen-SCI.198	Head	<b>3.2.1.3.1 Definition of time values</b>	
Eu.Gen-SCI.199	Def	Con_tmax_PDI_Connection	If the establishment of the PDI connection, measured from the sending of Cd_PDI_Version_Check to the receipt of Msg_Initialisation_Completed, is not completed within this configured time period the PDI connection is closed. The establishment of the PDI connection is then re-initiated.



ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.47	Info	<div><div>[Interaction] SCI-XX AdjS IFUC1.1 - Alternative Scenario [SCI-XX AdjS IF SD 1.1.2]</div><div><div>sd [Interaction] SCI-XX AdjS IFUC1.1 - Alternative Scenario [SCI-XX AdjS IF SD 1.1.2]</div><div><div><div>:Subsystem - Electronic Interlocking</div><div><div>:Adjacent System</div></div></div></div><div><p><b>Alternative Scenario: PDI version is unequal</b></p><p><b>Precondition:</b></p><p>The SCP connection is established.</p><p><b>Interaction 1.1.2.A:</b></p><p>1. - <a href="#">Subsystem - Electronic Interlocking</a> receives from <a href="#">Adjacent System</a> the request to verify the match between the transmitted <a href="#">PDIVer</a> and the <a href="#">PDIVer</a> present in the <a href="#">Subsystem - Electronic Interlocking</a>.</p><p>2. <a href="#">Subsystem - Electronic Interlocking</a> evaluates that the <a href="#">PDI</a> versions are unequal.</p><p>3. <a href="#">Subsystem - Electronic Interlocking</a> reports to <a href="#">Adjacent System</a> that <a href="#">PDIVer</a> does not match.</p><p>4. <a href="#">Adjacent System</a> requests from <a href="#">Subsystem - Electronic Interlocking</a> to close the PDI connection.</p><p><b>Postcondition:</b></p><p>The <a href="#">PDI</a> connection is impermissible.</p></div></div></div>	
Eu.Gen-SCI.48	Info	<div><div>[Interaction] SCI-XX AdjS IFUC1.1 - Alternative Scenario [SCI-XX AdjS IF SD 1.1.3]</div><div><div>sd [Interaction] SCI-XX AdjS IFUC1.1 - Alternative Scenario [SCI-XX AdjS IF SD 1.1.3]</div><div><div><div>:Subsystem - Electronic Interlocking</div><div><div>:Adjacent System</div></div></div></div><div><p><b>Alternative Scenario: CSS is unequal</b></p><p><b>Precondition:</b></p><p>The SCP connection is established.</p><p><b>Interaction 1.1.3.A:</b></p><p>1. - <a href="#">Subsystem - Electronic Interlocking</a> receives from <a href="#">Adjacent System</a> the request to verify the match between the transmitted <a href="#">PDIVer</a> and the <a href="#">PDIVer</a> present in the <a href="#">Subsystem - Electronic Interlocking</a>.</p><p>2. <a href="#">Subsystem - Electronic Interlocking</a> evaluates that the <a href="#">PDI</a> versions are equal.</p><p>3. <a href="#">Subsystem - Electronic Interlocking</a> reports to <a href="#">Adjacent System</a> the used <a href="#">PDIVer</a> and newly calculated <a href="#">CSS</a>.</p><p>4. <a href="#">Adjacent System</a> evaluates that the received <a href="#">CSS</a> is unequal to the configured value for the communication partner.</p><p>5. <a href="#">Adjacent System</a> requests from <a href="#">Subsystem - Electronic Interlocking</a> to close the PDI connection.</p><p><b>Postcondition:</b></p><p>The <a href="#">PDI</a> connection is impermissible.</p></div></div></div>	
Eu.Gen-SCI.50	Info	SCI-XX AdjS IFUC1.2: Close PDI connection	The UseCase SCI-XX AdjS IFUC1.2: Close PDI connection defines the process to close a PDI connection between Subsystem - Electronic Interlocking and Adjacent System.
Eu.Gen-SCI.51	Info	<div><div>[Interaction] SCI-XX AdjS IFUC1.2 - Alternative Scenario [SCI-XX AdjS IF SD 1.2.1]</div><div><div>sd [Interaction] SCI-XX AdjS IFUC1.2 - Alternative Scenario [SCI-XX AdjS IF SD 1.2.1]</div><div><div><div>:Subsystem - Electronic Interlocking</div><div><div>:Adjacent System</div></div></div></div><div><p><b>Alternative Scenario: Communication Error</b></p><p><b>Precondition:</b></p><p>The <a href="#">PDI</a> connection is in state ESTABLISHED or in state ESTABLISHING.</p><p><b>Interaction 1.2.1.A:</b></p><p>alt</p><div><div>alt</div><div><div>1. - The <a href="#">Adjacent System</a> detects a communication error of the type Formal Telegram Error.</div><div><div>2. - The <a href="#">Adjacent System</a> detects a communication error of the type Content Telegram Error.</div><div><div>3. - The <a href="#">Adjacent System</a> detects a communication error of the type Protocol Error.</div></div></div></div><p>end alt</p><p>4. The <a href="#">Adjacent System</a> requests from <a href="#">Subsystem - Electronic Interlocking</a> to close the PDI connection.</p><p><b>Postcondition:</b></p><p>The <a href="#">PDI</a> connection is impermissible.</p></div></div></div></div>	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.52	Info	[Interaction] SCI-XX AdjS IFUC1.2 - Alternative Scenario [SCI-XX AdjS IF SD 1.2.2]  sd [Interaction] SCI-XX AdjS IFUC1.2 - Alternative Scenario [SCI-XX AdjS IF SD 1.2.2]  : <b>Subsystem - Electronic Interlocking</b>  <b>Alternative Scenario: Communication Error</b> <b>Precondition:</b> The PDI connection is in state ESTABLISHED or in state ESTABLISHING. <b>Interaction 1.2.2.A:</b> alt 1. - The Subsystem - Electronic Interlocking detects a communication error of the type Formal Telegram Error. else alt 2. - The Subsystem - Electronic Interlocking detects a communication error of the type Content Telegram Error. else alt 3. - The Subsystem - Electronic Interlocking detects a communication error of the type Protocol Error. end alt  4. The Subsystem - Electronic Interlocking reports a reset of the PDI connection to the Adjacent System. The information includes the type of communication error.  <b>Postcondition:</b> The PDI connection is impermissible.	
Eu.Gen-SCI.196	Head	3.2.1.3.3 SCI-XX AdjS - Functional Partitioning	
Eu.Gen-SCI.197	Def	[Package] SCI-XX AdjS - Functional Partitioning [Functional Viewpoint - Interface Requirements]  bdd [Package] SCI-XX AdjS - Functional Partitioning [Functional Viewpoint - Interface Requirements]  	
Eu.Gen-SCI.42	Head	3.2.1.3.4 SCI-XX AdjS - Functional Architecture	
Eu.Gen-SCI.43	Info	SCI-XX AdjS	



ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.44	Def	<div><div>[Block] SCI-XX AdjS [Functional Viewpoint - Interface Requirements - Functional Architecture]</div><div><div>ibb [Block] SCI-XX AdjS [Functional Viewpoint - Interface Requirements - Functional Architecture]</div><div><div>«logical structural entity» SCI-XX AdjS</div><div><div><div>«participant» {end = SCI-XX} «logical structural entity» InLink : Adjacent System</div><div><div><div>D2in_Con_tmax_PDI_Connection D3in_Con_PDI_Version D4in_Con_Checksum_Data T5in_SCP_Connection_Established T6out_Establish_SCP_Connection T10in_SCP_Connection_Terminated P1inout : ~PDI_GEN_ADJ T20in_Protocol_Error T21in_Formal_Telegram_Error «functional entity» SCI-XX AdjS : S_SCI_Adj_Prim T22in_Content_Telegram_Error  t25in_Sec_Status_Report_Complete t27out_Check_Sec_Status T45in_Reset_Severe_Error d60out_PDI_Close_Reason D50out_PDI_Connection_State p2inout : ~SCI_AdjS_Prim_Specific</div><div>AdjSX : Adj SCI-XX AdjS</div></div><div><div>«participant» {end = SCI-XX} «logical structural entity» InLink : Subsystem - Electronic Interlocking</div><div><div><div>D3in_Con_PDI_Version D4in_Con_Checksum_Data T5in_SCP_Connection_Established d60_PDI_Close_Reason : String T10in_SCP_Connection_Terminated P1inout : PDI_GEN_ADJ T11out_PDI_Connection_Established T17out_PDI_Connection_Closed «functional entity» SCI-XX EIL : S_SCI_Adj_Sec T20in_Protocol_Error  T21in_Formal_Telegram_Error T22in_Content_Telegram_Error t25in_Prim_Status_Report_Complete t27out_Check_Prim_Status D50out_PDI_Connection_State p2inout : ~SCI_AdjS_Sec_Specific</div><div>EILX : Adj SCI-XX EIL</div></div></div><div><div>P1inout : PDI_GEN_ADJ P1inout : ~PDI_GEN_ADJ</div><div>«equal»</div><div>P1inout : PDI_GEN_ADJ P1inout : ~PDI_GEN_ADJ</div><div>«equal»</div></div></div></div></div></div></div></div></div>	
Eu.Gen-SCI.53	Head	3.2.1.3.5 SCI-XX AdjS - Functional Entities	
Eu.Gen-SCI.54	Info	S_SCI_Adj_Prim	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.55	Req	<div><div>[Block] S_SCI_Adj_Prim [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div>ibdd [Block] S_SCI_Adj_Prim [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div><div><div>«functional entity» S_SCI_Adj_Prim</div><div>values</div><div>«BlockProperty» Mem_PDI_Version_Check_Result : String</div><div>«BlockProperty» Mem_PDI_Version_ChecksumData : String</div><div>Operation</div><div>«Operation» cOp1_init ()</div></div></div><div><div><div>D2in_Con_tmax_PDI_Connection : Integer</div><div>D50out_PDI_Connection_State : String</div></div><div><div>D3in_Con_PDI_Version : String</div><div>d60out_PDI_Close_Reason : String</div></div><div><div>D4in_Con_Checksum_Data : String</div><div>T6out_Establish_SCP_Connection : PulsedOut</div></div><div><div></div><div>t27out_Check_Sec_Status : PulsedOut</div></div><div><div>T5in_SCP_Connection_Established : PulsedIn</div><div>P1inout : ~PDI_GEN_ADJ</div></div><div><div>T10in_SCP_Connection_Terminated : PulsedIn</div><div>p2inout : ~SCI_AdjS_Prim_Specific</div></div><div><div>T20in_Protocol_Error : PulsedIn</div><div></div></div><div><div>T21in_Formal_Telegram_Error : PulsedIn</div><div></div></div><div><div>T22in_Content_Telegram_Error : PulsedIn</div><div></div></div><div><div>t25in_Sec_Status_Report_Complete : PulsedIn</div><div></div></div><div><div>T45in_Reset_Severe_Error : PulsedIn</div><div></div></div></div></div></div></div>	
Eu.Gen-SCI.56	Def	<div>/* cOp1_init */</div> <div>Mem_PDI_Version_Check_Result := "unknown";</div> <div>Mem_PDI_Version_ChecksumData := D4in_Con_Checksum_Data;</div>	cOp1_init
Eu.Gen-SCI.58	Def	D2in_Con_tmax_PDI_Connection	The port D2in_Con_tmax_PDI_Connection provides the time value Con_tmax_PDI_Connection.
Eu.Gen-SCI.59	Def	D3in_Con_PDI_Version	The port D3in_Con_PDI_Version provides the configured PDIVer.
Eu.Gen-SCI.60	Def	D4in_Con_Checksum_Data	The port D4in_Con_Checksum_Data provides the configured or calculated CSS.
Eu.Gen-SCI.128	Def	T5in_SCP_Connection_Established	The port T5in_SCP_Connection_Established represents the event of the established SCP connection.
Eu.Gen-SCI.129	Def	T6out_Establish_SCP_Connection	<div>The port T6out_Establish_SCP_Connection represents the event for the SCP to establish the SCP connection.</div> <div>Note: It is assumed that the SCP layer handle each connection error by itself after sending the trigger on T6out_Establish_SCP_Connection. A retrigerring of SCP connection is not in responsibility of SCI layer. In case of a successful established connection the trigger T5in_SCP_Connection_Established is expected.</div>
Eu.Gen-SCI.121	Def	T10in_SCP_Connection_Terminated	The port T10in_SCP_Connection_Terminated represents the event of the terminated SCP connection.
Eu.Gen-SCI.122	Def	T20in_Protocol_Error	The port T20in_Protocol_Error represents the event of a protocol error. Definition can be found in Eu.SAS.1567.
Eu.Gen-SCI.123	Def	T21in_Formal_Telegram_Error	The port T21in_Formal_Telegram_Error represents the event of a formal telegram error. Definition can be found in Eu.SAS.1567.

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.124	Def	T22in_Content_Telegram_Error	The port T22in_Content_Telegram_Error represents the event of a content telegram error. Definition can be found in Eu.SAS.1567.
Eu.Gen-SCI.125	Def	t25in_Sec_Status_Report_Complete	
Eu.Gen-SCI.126	Def	t27out_Check_Sec_Status	
Eu.Gen-SCI.127	Def	T45in_Reset_Severe_Error	The port T45in_Reset_Severe_Error represents the event of a reset of severe errors.
Eu.Gen-SCI.61	Def	D50out_PDI_Connection_State	The port D50out_PDI_Connection_State provides the status of the PDI connection.
Eu.Gen-SCI.62	Def	d60out_PDI_Close_Reason	
Eu.Gen-SCI.63	Def	P1inout	The port P1inout exchanges information objects according to PDI_GEN_ADJ.
Eu.Gen-SCI.64	Def	p2inout	
Eu.Gen-SCI.65	Info	S_SCI_AdjS_Prim - Behaviour	



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ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.67	Def	Initial0	
Eu.Gen-SCI.68	Def	/cOp1_init();{Initial0 - REQUESTED_NO_SCP}	
Eu.Gen-SCI.69	Def	REQUESTED_NO_SCP	
Eu.Gen-SCI.70	Def	entry/D50out_PDI_Connection_State := "REQUESTED_NO_SCP"; T6out_Establish_SCP_Connection := TRUE;{State-internal in REQUESTED_NO_SCP}	
Eu.Gen-SCI.71	Def	when(T5in_SCP_Connection_Established)/{REQUESTED_NO_SCP - ACTIVE}	
Eu.Gen-SCI.72	Def	IMPERMISSIBLE	
Eu.Gen-SCI.73	Def	entry/D50out_PDI_Connection_State := "IMPERMISSIBLE";{State-internal in IMPERMISSIBLE}	
Eu.Gen-SCI.74	Def	when(T10in_SCP_Connection_Terminated)/{IMPERMISSIBLE - IMPERMISSIBLE_NO_SCP}	
Eu.Gen-SCI.75	Def	when(T45in_Reset_Severe_Error)/{IMPERMISSIBLE - ACTIVE}	
Eu.Gen-SCI.76	Def	IMPERMISSIBLE_NO_SCP	
Eu.Gen-SCI.77	Def	entry/D50out_PDI_Connection_State := "IMPERMISSIBLE_NO_SCP";{State-internal in IMPERMISSIBLE_NO_SCP}	
Eu.Gen-SCI.78	Def	when(T45in_Reset_Severe_Error)/{IMPERMISSIBLE_NO_SCP - REQUESTED_NO_SCP}	
Eu.Gen-SCI.79	Def	when(T5in_SCP_Connection_Established)/{IMPERMISSIBLE_NO_SCP - IMPERMISSIBLE}	
Eu.Gen-SCI.83	Def	ACTIVE	
Eu.Gen-SCI.84	Def	ESTABLISHING	
Eu.Gen-SCI.85	Def	after(D2in_Con_tmax_PDI_Connection)/ send PDI_Connection_Closed to p2inout; send Cd_Close_PDI(Timeout) to P1inout; d60out_PDI_Close_Reason := "PDI Timeout";{ESTABLISHING - ESTABLISHING}	
Eu.Gen-SCI.86	Def	CHECKING_SEC_STATUS	
Eu.Gen-SCI.87	Def	entry/t27out_Check_Sec_Status := TRUE; D50out_PDI_Connection_State := "CHECKING_SEC_STATUS";{State-internal in CHECKING_SEC_STATUS}	
Eu.Gen-SCI.88	Def	when(t25in_Sec_Status_Report_Complete)/{CHECKING_SEC_STATUS - SENDING_PRIM_STATUS}	
Eu.Gen-SCI.89	Def	Initial2	
Eu.Gen-SCI.90	Def	/send Establishing_PDI_Connection to p2inout; send Cd_PDI_Version_Check(D3in_Con_PDI_Version) to P1inout;{Initial2 - WAITING_FOR_VERSION_CHECK}	
Eu.Gen-SCI.91	Def	RECEIVING_SEC_STATUS	
Eu.Gen-SCI.92	Def	Msg_Status_Report_Completed/{RECEIVING_SEC_STATUS - CHECKING_SEC_STATUS}	
Eu.Gen-SCI.93	Def	entry/D50out_PDI_Connection_State := "RECEIVING_SEC_STATUS";{State-internal in RECEIVING_SEC_STATUS}	
Eu.Gen-SCI.94	Def	SENDING_PRIM_STATUS	
Eu.Gen-SCI.95	Def	Prim_Status_Report_Completed/{SENDING_PRIM_STATUS - WAITING_FOR_INIT_COMPLETION}	
Eu.Gen-SCI.96	Def	entry/send Start_Prim_Status_Report to p2inout; D50out_PDI_Connection_State := "SENDING_PRIM_STATUS";{State-internal in SENDING_PRIM_STATUS}	
Eu.Gen-SCI.97	Def	WAITING_FOR_INIT_COMPLETION	
Eu.Gen-SCI.98	Def	Msg_Initialisation_Completed/{WAITING_FOR_INIT_COMPLETION - ESTABLISHED}	
Eu.Gen-SCI.99	Def	entry/send Msg_Status_Report_Completed to P1inout; D50out_PDI_Connection_State := "WAITING_FOR_INIT_COMPLETION";{State-internal in WAITING_FOR_INIT_COMPLETION}	
Eu.Gen-SCI.100	Def	WAITING_FOR_INITIALISATION	
Eu.Gen-SCI.101	Def	Msg_Start_Initialisation/{WAITING_FOR_INITIALISATION - RECEIVING_SEC_STATUS}	
Eu.Gen-SCI.102	Def	entry/D50out_PDI_Connection_State := "WAITING_FOR_INITIALISATION";{State-internal in WAITING_FOR_INITIALISATION}	
Eu.Gen-SCI.103	Def	WAITING_FOR_VERSION_CHECK	
Eu.Gen-SCI.105	Def	Msg_PDI_Version_Check[Result = "not match"]/ d60out_PDI_Close_Reason := "PDI Other Version Required"; send Cd_Close_PDI(OtherVersionRequired) to P1inout;{WAITING_FOR_VERSION_CHECK - IMPERMISSIBLE}	
Eu.Gen-SCI.106	Def	Msg_PDI_Version_Check[Result = "match" AND ChecksumData = D4in_Con_Checksum_Data]/ send Cd_Initialisation_Request to P1inout;{WAITING_FOR_VERSION_CHECK - WAITING_FOR_INITIALISATION}	
Eu.Gen-SCI.107	Def	Msg_PDI_Version_Check[Result = "match" AND NOT (ChecksumData = D4in_Con_Checksum_Data)]/ d60out_PDI_Close_Reason := "PDI Checksum Mismatch"; send Cd_Close_PDI(ChecksumMismatch) to P1inout;{WAITING_FOR_VERSION_CHECK - IMPERMISSIBLE}	
Eu.Gen-SCI.108	Def	entry/D50out_PDI_Connection_State := "WAITING_FOR_VERSION_CHECK";{State-internal in WAITING_FOR_VERSION_CHECK}	
Eu.Gen-SCI.109	Def	Initial1	
Eu.Gen-SCI.110	Def	/ {Initial1 - ESTABLISHING}	
Eu.Gen-SCI.111	Def	Msg_Reset_PDI[ReportedResetReason = ProtocolError]/ d60out_PDI_Close_Reason := "Sec Protocol Error";{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.112	Def	Msg_Reset_PDI[ReportedResetReason = FormalTelegramError]/ d60out_PDI_Close_Reason := "Sec Formal Telegram Error";{ACTIVE - IMPERMISSIBLE}	

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ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.113	Def	Msg_Reset_PDI[ReportedResetReason = ContentTelegramError]/ d60out_PDI_Close_Reason := "Sec Content Telegram Error";{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.114	Def	ESTABLISHED	
Eu.Gen-SCI.115	Def	entry/D50out_PDI_Connection_State := "ESTABLISHED"; send PDI_Connection_Established to p2inout;{State-internal in ESTABLISHED}	
Eu.Gen-SCI.491	Def	exit/send PDI_Connection_Closed to p2inout;{State-internal in ESTABLISHED}	
Eu.Gen-SCI.116	Def	when(T20in_Protocol_Error)/ d60out_PDI_Close_Reason := "Prim Protocol Error"; send Cd_Close_PDI(ProtocolError) to P1inout;{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.117	Def	when(T21in_Formal_Telegram_Error)/ d60out_PDI_Close_Reason := "Prim Formal Telegram Error"; send Cd_Close_PDI(FormalTelegramError) to P1inout;{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.118	Def	when(T22in_Content_Telegram_Error)/ d60out_PDI_Close_Reason := "Prim Content Telegram Error"; send Cd_Close_PDI(ContentTelegramError) to P1inout;{ACTIVE - IMPERMISSIBLE}	
Eu.Gen-SCI.120	Def	when(T10in_SCP_Connection_Terminated)/{ACTIVE - REQUESTED_NO_SCP}	
Eu.Gen-SCI.130	Info	S_SCI_Adj_Sec	
Eu.Gen-SCI.131	Req	<div><div>[Block] S_SCI_Adj_Sec [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div><div><div>«functional entity»</div><div>S_SCI_Adj_Sec</div><div>values</div><div>«BlockProperty» Mem_PDI_Version : String</div><div>Operation</div><div>«Operation» cOp1_init ()</div></div><div><div><div>T10in_SCP_Connection_Terminated : PulsedIn</div><div>T11out_PDI_Connection_Established : PulsedOut</div></div><div><div>T5in_SCP_Connection_Established : PulsedIn</div><div>T17out_PDI_Connection_Closed : PulsedOut</div></div><div><div>t25in_Prim_Status_Report_Complete : PulsedIn</div><div>t27out_Check_Prim_Status : PulsedOut</div></div><div><div>D3in_Con_PDI_Version : String</div><div>D50out_PDI_Connection_State : String</div></div><div><div>D4in_Con_Checksum_Data : String</div><div>P1inout : PDI_GEN_ADJ</div></div><div><div>p2inout : ~SCI_AdjS_Sec_Specific</div></div><div><div>T20in_Protocol_Error : PulsedIn</div><div>d60_PDI_Close_Reason : String</div></div><div><div>T21in_Formal_Telegram_Error : PulsedIn</div></div><div><div>T22in_Content_Telegram_Error : PulsedIn</div></div></div></div></div></div>	
Eu.Gen-SCI.132	Def	/* cOp1_init */  Mem_PDI_Version := D3in_Con_PDI_Version;	cOp1_init
Eu.Gen-SCI.134	Def	D3in_Con_PDI_Version	The port D3in_Con_PDI_Version provides the configured PDIVer.
Eu.Gen-SCI.135	Def	D4in_Con_Checksum_Data	The port D4in_Con_Checksum_Data provides the configured CSS.
Eu.Gen-SCI.194	Def	T5in_SCP_Connection_Established	The port T5in_SCP_Connection_Established represents the event of the established SCP connection.
Eu.Gen-SCI.195	Def	t25in_Prim_Status_Report_Complete	
Eu.Gen-SCI.187	Def	T10in_SCP_Connection_Terminated	The port T10in_SCP_Connection_Terminated represents the event of the terminated SCP connection.
Eu.Gen-SCI.188	Def	T11out_PDI_Connection_Established	The port T11out_PDI_Connection_Established represents the event of the established PDI connection.
Eu.Gen-SCI.189	Def	T17out_PDI_Connection_Closed	The port T11out_PDI_Connection_Established represents the event of the closed PDI connection.
Eu.Gen-SCI.190	Def	T20in_Protocol_Error	The port T20in_Protocol_Error represents the event of a protocol error.



ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.191	Def	T21in_Formal_Telegram_Error	The port T21in_Formal_Telegram_Error represents the event of a formal telegram error.
Eu.Gen-SCI.192	Def	T22in_Content_Telegram_Error	The port T22in_Content_Telegram_Error represents the event of a content telegram error.
Eu.Gen-SCI.193	Def	t27out_Check_Prim_Status	
Eu.Gen-SCI.136	Def	D50out_PDI_Connection_State	The port d50out_PDI_Connection_State provides the status of the PDI connection.
Eu.Gen-SCI.525	Def	d60_PDI_Close_Reason	
Eu.Gen-SCI.185	Def	P1inout	The port P1inout exchanges information objects according to PDI_GEN_ADJ.
Eu.Gen-SCI.186	Def	p2inout	
Eu.Gen-SCI.137	Info	S_SCI_AdjS_Sec - Behaviour	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.138	Req	<div>Functional Viewpoint - Interface Requirements - Functional Entity STD 4</div> <div>stm [State Machine] S_SCI_AdjS_Sec - Behaviour [Functional Viewpoint - Interface Requirements - Functional Entity STD 4]</div> <div><p>The diagram illustrates the state machine for the S_SCI_AdjS_Sec - Behaviour. It starts with an initial state 'REQUESTED_NO_SCP' (Entry/D50out_PDI_Connection_State := "REQUESTED_NO_SCP"). A transition 'Initial0 /cOp1_init()' leads to 'REQUESTED_NO_SCP'. From 'REQUESTED_NO_SCP', a transition 'when( T5in_SCP_Connection_Established )/' leads to 'READY_FOR_PDI' (Entry/D50out_PDI_Connection_State := "READY_FOR_PDI"). A transition 'when( T10in_SCP_Connection_Terminated )/' leads back to 'REQUESTED_NO_SCP'. A transition 'when( T10in_SCP_Connection_Terminated )/'' leads to 'ACTIVE'. The 'ACTIVE' state contains a sub-state 'ESTABLISHING'. 'ESTABLISHING' starts with 'Initial1' and 'VERSION_UNEQUAL' (Entry/D50out_PDI_Connection_State := "VERSION_UNEQUAL"). A transition 'Initial2' leads to a junction 'Junction0'. From 'Junction0', a transition '[NOT (Mem_PDI_Version = D3in_Con_PDI_Version)]/' leads to 'VERSION_UNEQUAL', and another transition '[Mem_PDI_Version = D3in_Con_PDI_Version]/' leads to 'READY_FOR_INITIALISATION' (Entry/D50out_PDI_Connection_State := "READY_FOR_INITIALISATION"). From 'READY_FOR_INITIALISATION', a transition 'Cd_Initialisation_Request/ send Msg_Start_Initialisation to P1inout;' leads to 'SENDING_SEC_STATUS' (Entry/D50out_PDI_Connection_State := "SENDING_SEC_STATUS"; send Start_Sec_Status_Report to p2inout;). From 'SENDING_SEC_STATUS', a transition 'Sec_Status_Report_Completed/' leads to 'RECEIVING_PRIM_STATUS' (Entry/D50out_PDI_Connection_State := "RECEIVING_PRIM_STATUS"; send Msg_Status_Report_Completed to P1inout;). From 'RECEIVING_PRIM_STATUS', a transition 'Msg_Status_Report_Completed/' leads to 'CHECKING_PRIM_STATUS' (Entry/D50out_PDI_Connection_State := "CHECKING_PRIM_STATUS"; t27out_Check_Prim_Status := TRUE;). From 'CHECKING_PRIM_STATUS', a transition 'when( t25in_Prim_Status_Report_Complete )/ send Msg_Initialisation_Completed to P1inout;' leads to 'ESTABLISHED' (Entry/D50out_PDI_Connection_State := "ESTABLISHED"; send PDI_Connection_Established to p2inout; Exit/send PDI_Connection_Closed to p2inout;). The 'ESTABLISHED' state has a transition 'Cd_Close_PDI[RequestedCloseReason = Timeout]/ d60_PDI_Close_Reason := "PDI Timeout";' leading to 'READY_FOR_PDI'. The 'READY_FOR_PDI' state has a transition 'Cd_Close_PDI[RequestedCloseReason = ChecksumMismatch]/ d60_PDI_Close_Reason := "PDI Checksum Mismatch";' leading to 'READY_FOR_PDI'. The 'READY_FOR_PDI' state has a transition 'Cd_Close_PDI[RequestedCloseReason = OtherVersionRequired]/ d60_PDI_Close_Reason := "PDI Other Version Required";' leading to 'READY_FOR_PDI'. The 'READY_FOR_PDI' state has a transition 'Cd_Close_PDI[RequestedCloseReason = ProtocolError]/ d60_PDI_Close_Reason := "Prim Protocol Error";' leading to 'READY_FOR_PDI'. The 'READY_FOR_PDI' state has a transition 'Cd_Close_PDI[RequestedCloseReason = FormalTelegramError]/ d60_PDI_Close_Reason := "Prim Formal Telegram Error";' leading to 'READY_FOR_PDI'. The 'READY_FOR_PDI' state has a transition 'Cd_Close_PDI[RequestedCloseReason = ContentTelegramError]/ d60_PDI_Close_Reason := "Prim Content Telegram Error";' leading to 'READY_FOR_PDI'. The 'READY_FOR_PDI' state has a transition 'Cd_PDI_Version_Check/Mem_PDI_Version := PDI_Version;' leading to 'READY_FOR_PDI'. The 'READY_FOR_PDI' state has a transition 'when( T22in_Content_Telegram_Error )/ send Msg_Reset_PDI (ContentTelegramError) to P1inout; d60_PDI_Close_Reason := "Sec Content Telegram Error";' leading to 'READY_FOR_PDI'. The 'READY_FOR_PDI' state has a transition 'when( T21in_Formal_Telegram_Error )/ send Msg_Reset_PDI (FormalTelegramError) to P1inout; d60_PDI_Close_Reason := "Sec Formal Telegram Error";' leading to 'READY_FOR_PDI'. The 'READY_FOR_PDI' state has a transition 'when( T20in_Protocol_Error )/ send Msg_Reset_PDI (ProtocolError) to P1inout; d60_PDI_Close_Reason := "Sec Protocol Error";' leading to 'READY_FOR_PDI'.</p></div>	<p>This state machine diagram describes the requirements for the following functionalities:</p> <ul style="list-style-type: none"><li>- establishment and closure of PDI connection</li><li>- reaction to communication errors</li><li>- interaction with safe communication protocol</li></ul>
Eu.Gen-SCI.139	Def	Initial0	
Eu.Gen-SCI.140	Def	/cOp1_init();{Initial0 - REQUESTED_NO_SCP}	
Eu.Gen-SCI.141	Def	REQUESTED_NO_SCP	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.142	Def	entry/D50out_PDI_Connection_State := "REQUESTED_NO_SCP";{State-internal in REQUESTED_NO_SCP}	
Eu.Gen-SCI.143	Def	when(T5in_SCP_Connection_Established)/{REQUESTED_NO_SCP - READY_FOR_PDI}	
Eu.Gen-SCI.144	Def	ACTIVE	
Eu.Gen-SCI.145	Def	Cd_Close_PDI[RequestedCloseReason = Timeout]/ d60_PDI_Close_Reason := "PDI Timeout";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.146	Def	ESTABLISHING	
Eu.Gen-SCI.147	Def	CHECKING_PRIM_STATUS	
Eu.Gen-SCI.148	Def	entry/D50out_PDI_Connection_State := "CHECKING_PRIM_STATUS"; t27out_Check_Prim_Status := TRUE;{State-internal in CHECKING_PRIM_STATUS}	
Eu.Gen-SCI.149	Def	when(t25in_Prim_Status_Report_Complete)/ send Msg_Initialisation_Completed to P1inout;{CHECKING_PRIM_STATUS - ESTABLISHED}	
Eu.Gen-SCI.150	Def	Initial2	
Eu.Gen-SCI.151	Def	/[Initial2 - Junction0}	
Eu.Gen-SCI.152	Def	Junction0	
Eu.Gen-SCI.153	Def	[NOT (Mem_PDI_Version = D3in_Con_PDI_Version)]/ send Msg_PDI_Version_Check("not match", D4in_Con_Checksum_Data, D3in_Con_PDI_Version) to P1inout;{Junction0 - VERSION_UNEQUAL}	
Eu.Gen-SCI.154	Def	[Mem_PDI_Version = D3in_Con_PDI_Version]/ send Msg_PDI_Version_Check("match", D4in_Con_Checksum_Data, D3in_Con_PDI_Version) to P1inout;{Junction0 - READY_FOR_INITIALISATION}	
Eu.Gen-SCI.161	Def	VERSION_UNEQUAL	
Eu.Gen-SCI.162	Def	entry/D50out_PDI_Connection_State := "VERSION_UNEQUAL";{State-internal in VERSION_UNEQUAL}	
Eu.Gen-SCI.163	Def	READY_FOR_INITIALISATION	
Eu.Gen-SCI.164	Def	Cd_Initialisation_Request/ send Msg_Start_Initialisation to P1inout;{READY_FOR_INITIALISATION - SENDING_SEC_STATUS}	
Eu.Gen-SCI.165	Def	entry/D50out_PDI_Connection_State := "READY_FOR_INITIALISATION";{State-internal in READY_FOR_INITIALISATION}	
Eu.Gen-SCI.166	Def	RECEIVING_PRIM_STATUS	
Eu.Gen-SCI.167	Def	Msg_Status_Report_Completed/{RECEIVING_PRIM_STATUS - CHECKING_PRIM_STATUS}	
Eu.Gen-SCI.168	Def	entry/D50out_PDI_Connection_State := "RECEIVING_PRIM_STATUS"; send Msg_Status_Report_Completed to P1inout;{State-internal in RECEIVING_PRIM_STATUS}	
Eu.Gen-SCI.169	Def	SENDING_SEC_STATUS	
Eu.Gen-SCI.170	Def	Sec_Status_Report_Completed/{SENDING_SEC_STATUS - RECEIVING_PRIM_STATUS}	
Eu.Gen-SCI.171	Def	entry/D50out_PDI_Connection_State := "SENDING_SEC_STATUS"; send Start_Sec_Status_Report to p2inout;{State-internal in SENDING_SEC_STATUS}	
Eu.Gen-SCI.172	Def	Initial1	
Eu.Gen-SCI.173	Def	/send Establishing_PDI_Connection to p2inout;{Initial1 - ESTABLISHING}	
Eu.Gen-SCI.174	Def	ESTABLISHED	
Eu.Gen-SCI.175	Def	entry/D50out_PDI_Connection_State := "ESTABLISHED"; send PDI_Connection_Established to p2inout;{State-internal in ESTABLISHED}	
Eu.Gen-SCI.176	Def	exit/send PDI_Connection_Closed to p2inout;{State-internal in ESTABLISHED}	
Eu.Gen-SCI.177	Def	when(T10in_SCP_Connection_Terminated)/{ACTIVE - REQUESTED_NO_SCP}	
Eu.Gen-SCI.178	Def	when(T20in_Protocol_Error)/ send Msg_Reset_PDI (ProtocolError) to P1inout; d60_PDI_Close_Reason := "Sec Protocol Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.179	Def	when(T21in_Formal_Telegram_Error)/ send Msg_Reset_PDI (FormalTelegramError) to P1inout; d60_PDI_Close_Reason := "Sec Formal Telegram Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.180	Def	when(T22in_Content_Telegram_Error)/ send Msg_Reset_PDI (ContentTelegramError) to P1inout; d60_PDI_Close_Reason := "Sec Content Telegram Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.492	Def	Cd_Close_PDI[RequestedCloseReason = ContentTelegramError]/ d60_PDI_Close_Reason := "Prim Content Telegram Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.493	Def	Cd_Close_PDI[RequestedCloseReason = FormalTelegramError]/ d60_PDI_Close_Reason := "Prim Formal Telegram Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.494	Def	Cd_Close_PDI[RequestedCloseReason = ProtocolError]/ d60_PDI_Close_Reason := "Prim Protocol Error";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.495	Def	Cd_Close_PDI[RequestedCloseReason = OtherVersionRequired]/ d60_PDI_Close_Reason := "PDI Other Version Required";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.496	Def	Cd_Close_PDI[RequestedCloseReason = ChecksumMismatch]/ d60_PDI_Close_Reason := "PDI Checksum Mismatch";{ACTIVE - READY_FOR_PDI}	
Eu.Gen-SCI.181	Def	READY_FOR_PDI	
Eu.Gen-SCI.182	Def	Cd_PDI_Version_Check/Mem_PDI_Version := PDI_Version;{READY_FOR_PDI - ACTIVE}	
Eu.Gen-SCI.183	Def	entry/D50out_PDI_Connection_State := "READY_FOR_PDI";{State-internal in READY_FOR_PDI}	

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.184	Def	when(T10in_SCP_Connection_Terminated)/{READY_FOR_PDI - REQUESTED_NO_SCP}	
Eu.Gen-SCI.497	Head	<b>3.2.1.4 SCI-XX AdjS - General Infos and Assumptions</b>	
Eu.Gen-SCI.426	Info	The termination or establishment of the SCP connection does not change the impermissibility of the PDI Connection to a specific EULYNX field element Subsystem.	
Eu.Gen-SCI.498	Info	When the impermissibility of the PDI connection is reset while the SCP connection is available, the PDI connection will be re-established.	
Eu.Gen-SCI.499	Info	When the impermissibility of the PDI connection is reset while no SCP connection is available, the PDI connection will be re-established when the SCP connection becomes available.	
Eu.Gen-SCI.500	Info	If the PDI connection is not disconnected nor impermissible, and no SCP connection is available, the primary communication partner re-establishes the SCP connection.	
Eu.Gen-SCI.425	Head	<b>3.2.2 SCI-XX AdjS - Internal behaviour of Adjacent Systems</b>	
Eu.Gen-SCI.427	Req	It shall be possible to reset the impermissibility of the PDI connection to the Subsystem - Electronic Interlocking by a trigger to the Adjacent system.	
Eu.Gen-SCI.428	Head	<b>3.2.3 SCI-XX AdjS - Internal Information Flows</b>	
Eu.Gen-SCI.429	Def	<div><div>[Package] Adjacent Systems - Internal Information Flows [Internal Interface Requirements - Direction of Information Objects]</div><div><div><b>bdd</b> [Package] Adjacent Systems - Internal Information Flows [Internal Interface Requirements - Direction of Information Objects]</div><div><div><div><div>«information flow» SCI_AdjS_Prim_Specific</div><div>prov «signal» Start_Prim_Status_Report reqd «signal» Prim_Status_Report_Completed prov «signal» PDI_Connection_Closed prov «signal» PDI_Connection_Established prov «signal» Establishing_PDI_Connection</div></div><div><div>«information flow» SCI_AdjS_Sec_Specific</div><div>prov «signal» Start_Sec_Status_Report reqd «signal» Sec_Status_Report_Completed prov «signal» PDI_Connection_Closed prov «signal» PDI_Connection_Established prov «signal» Establishing_PDI_Connection</div></div></div></div></div></div>	
Eu.Gen-SCI.463	Def	Establishing_PDI_Connection	
Eu.Gen-SCI.464	Def	PDI_Connection_Closed	
Eu.Gen-SCI.465	Def	PDI_Connection_Established	
Eu.Gen-SCI.466	Def	Prim_Status_Report_Completed	
Eu.Gen-SCI.467	Def	Sec_Status_Report_Completed	
Eu.Gen-SCI.468	Def	Start_Prim_Status_Report	
Eu.Gen-SCI.469	Def	Start_Sec_Status_Report	
Eu.Gen-SCI.412	Head	<b>3.3 SCI-XX - Information Flows</b>	
Eu.Gen-SCI.479	Def	Cd_Close_PDI	Command (Cd) from primary communication partner to secondary communication partner to close the PDI connection.
Eu.Gen-SCI.480	Def	Cd_Initialisation_Request	Command (Cd) from primary communication partner to secondary communication partner to to transmit the status information of the secondary communication partner.
Eu.Gen-SCI.481	Def	Cd_PDI_Version_Check	Command (Cd) from primary communication partner to secondary communication partner to check the compatibility of parameter PDIVer.
Eu.Gen-SCI.482	Def	Cd_Release_PDI_for_Maintenance	Command (Cd) from primary communication partner to secondary communication partner to release the PDI connection for maintenance. This is only applicable to field element interfaces.
Eu.Gen-SCI.483	Def	Msg_Initialisation_Completed	Message (Msg) from secondary communication partner to primary communication partner that transmission of status information is complete.
Eu.Gen-SCI.484	Def	Msg_PDI_Available	Message (Msg) from secondary communication partner to primary communication partner that the PDI connection is available. This is only applicable to field element interfaces.
Eu.Gen-SCI.485	Def	Msg_PDI_Not_Available	Message (Msg) from secondary communication partner to primary communication partner that the PDI connection is not available. This is only applicable to field element interfaces.

ID	Type	Requirement Part 1	Requirement Part 2
Eu.Gen-SCI.486	Def	Msg_PDI_Version_Check	Message (Msg) from secondary communication partner to primary communication partner that the transmitted PDIVer is either equal or unequal. In case of equality the secondary communication partner additionally sends the configured value PDIVer and the newly calculated CSS. Otherwise, only the configured value PDIVer is sent.
Eu.Gen-SCI.487	Def	Msg_Reset_PDI	Message (Msg) from secondary communication partner to primary communication partner to inform about a detected communication error to reset the PDI connection.
Eu.Gen-SCI.488	Def	Msg_Start_Initialisation	Message (Msg) from secondary communication partner to primary communication partner that transmission of status information will start.
Eu.Gen-SCI.489	Def	Msg_Status_Report_Completed	Message (Msg) from secondary communication partner to primary communication partner or from primary communication partner to secondary communication partner that status message transmission of one partner is completed. This is only applicable to adjacent system interfaces.
Eu.Gen-SCI.695	Head	4 Technical requirements	
Eu.Gen-SCI.696	Head	4.1 SCI PDI checksum mechanism	
Eu.Gen-SCI.697	Req	The primary communication partner shall determine the validity of the configuration and engineering data of the secondary communication partner using the checksum method.	
Eu.Gen-SCI.700	Req	The configuration data for a primary communication partner shall contain the checksum data for each PDI connection with a secondary communication partner separately.	
Eu.Gen-SCI.699	Req	The secondary communication partner shall calculate the checksum data based on its configuration and engineering data for each PDI connection separately.	
Eu.Gen-SCI.698	Info	The calculation method of the CSS may be chosen by the supplier of the secondary communication partner, if it can provide the corresponding checksum data that must be available in the primary communication partner.	
Eu.Gen-SCI.701	Req	The security and integrity level of the chosen calculation method of the CSS shall be at least equivalent to [MD5] (16 Bytes).	
Eu.Gen-SCI.702	Head	4.2 Configuration and engineering data	
Eu.Gen-SCI.703	Head	4.2.1 SCI-XX EfeS - Value configuration	
Eu.Gen-SCI.705	Req	<b>Con_tmax_PDI_Connection</b>  The time value shall be configured in accordance with:  Resolution of configuration: 1 s Configurable range: between 1 and 60 s The default value for the configurable period Con_tmax_PDI_Connection is 20 s.  Con_tmax_PDI_Connection is defined in Eu.Gen-SCI.438.	
Eu.Gen-SCI.704	Head	4.2.2 SCI-XX AdjS - Value configuration	
Eu.Gen-SCI.706	Req	<b>Con_tmax_PDI_Connection</b>  The time value shall be configured in accordance with:  Resolution of configuration: 1 s Configurable range: between 1 and 60 s. The default value for the configurable period Con_tmax_PDI_Connection is 20 s.  Con_tmax_PDI_Connection is defined in Eu.Gen-SCI.199.	