



EULYNX Initiative



Europe's Rail Joint Undertaking

Generic interface and subsystem requirements for SCI

Contents

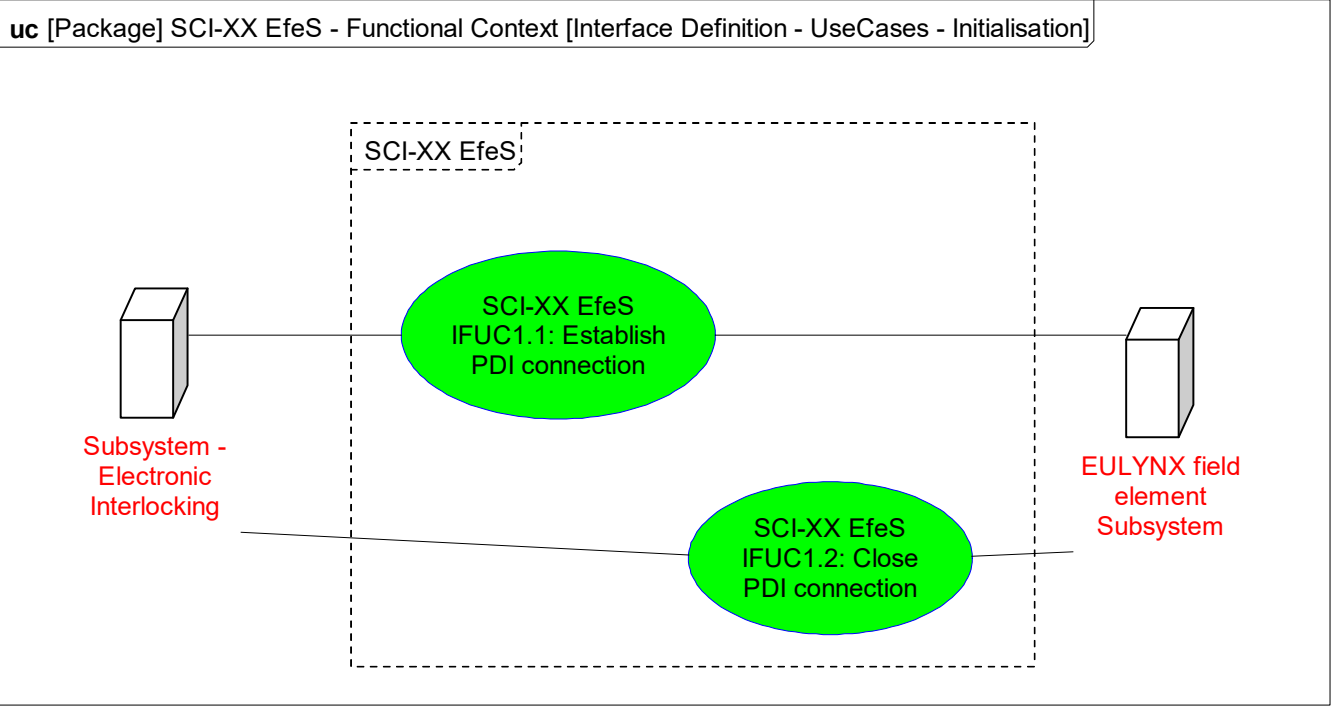
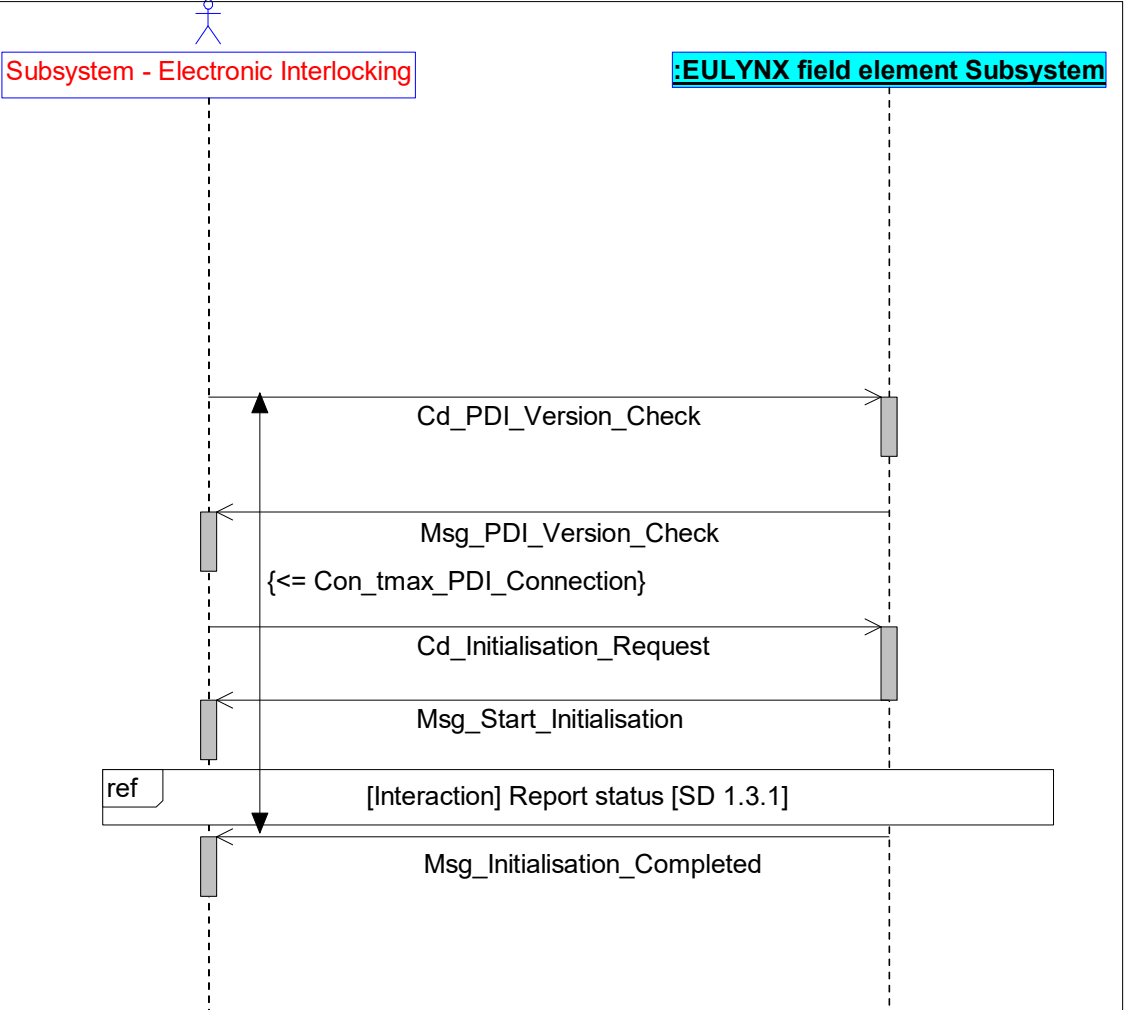
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ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.1	Head	1 Introduction			
Eu.Gen-SCI.2	Head	1.1 Release information			
Eu.Gen-SCI.3	Info	[Eu.Doc.119] EULYNX Generic interface and subsystem requirements for SCI CENELEC Phase: 4 Version: 1.1 (2.A) Approval date: 02.06.2025			Object Text: [Eu.Doc.119] EULYNX Generic interface and subsystem requirements for SCI CENELEC Phase: 4 Version: 1.1 (02 .A) Approval date: 2902.0506.20242025
Eu.Gen-SCI.4	Info	Version history			
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			object created after baseline 1.1 (0.A)
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			object created after baseline 1.1 (0.A)
Eu.Gen-SCI.6	Head	1.2 Impressum			
Eu.Gen-SCI.7	Info	Publishers: Europe's Rail Joint Undertaking https://rail-research.europa.eu EULYNX Initiative https://eulynx.eu/			

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.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	<p>This document is drafted by and belongs to EU Rail.</p> <p>EU Rail encourages the distribution and re-use of this document, the technical specifications and the information it contains. EU Rail holds several intellectual property rights, such as copyright and trade mark rights, which need to be considered when this document is used.</p> <p>EU Rail authorizes you to re-publish, re-use, copy and store this document without changing it, provided that you indicate its source and include the following mention [EU Rail trade mark, title of the document, year of publication, version of document].</p> <p>EU Rail makes no representation or warranty as to the accuracy or completeness of the information contained within these documents. EU Rail shall have no liability to any party as a result of the use of the information contained herein. EU Rail will have no liability whatsoever for any indirect or consequential loss or damage, and any such liability is expressly excluded.</p> <p>You may study, research, implement, adapt, improve and otherwise use the information, the content and the models in this document for your own purposes. If you decide to publish or disclose any adapted, modified or improved version of this document, any amended implementation or derivative work, then you must indicate that you have modified this document, with a reference to the document name and the terms of use of this document. You may not use EU Rail's trade marks or name in any way that may state or suggest, directly or indirectly, that EU Rail is the author of your adaptations. EU Rail cannot be held responsible for your product, even if you have used this document and its content. It is your responsibility to verify the quality, completeness and the accuracy of the information you use, for your own purposes.</p>			
Eu.Gen-SCI.10	Head	1.3 Purpose			
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">• generic functional requirements for the interface SCI-XX between an EULYNX field element Subsystem and the Subsystem - Electronic Interlocking• 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			
Eu.Gen-SCI.13	Info	<p>This document is intended for the following users:</p> <ul style="list-style-type: none">• safety authorities• infrastructure managers• safety assessors• signalling system suppliers• validators			
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	1.4 Applicable standards and regulations			
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	1.5 Applicable documents			
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	1.6 Terms and abbreviations			
Eu.Gen-SCI.20	Info	The terms and abbreviations are listed in the EULYNX Glossary [Eu.Doc.9].			
Eu.Gen-SCI.21	Head	1.7 Variability management			
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	1.8 Definition of object types			
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">• "Req" - This denotes a mandatory requirement.			
Eu.Gen-SCI.619	Info	<ul style="list-style-type: none">• "Def" - This denotes referenceable model elements that are used in the model-based creation of requirements			
Eu.Gen-SCI.26	Info	<ul style="list-style-type: none">• "Info" - This denotes additional information to help understand the specification. These objects do not specify any additional requirements.			
Eu.Gen-SCI.27	Info	<ul style="list-style-type: none">• "Head" - This denotes chapter headings.			
Eu.Gen-SCI.28	Head	1.9 Modelling			
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".			

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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	2 Conditions of use			
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.		EUAR-787	Object Text: All references to [Eu.Doc.20] refer to Generic interface and subsystem requirements version 4.0- (6-A) . a_JIRA_BL4R4: EUAR-787
Eu.Gen-SCI.686	Head	2.1 Primary and secondary communication partner			
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">• The Subsystem - Electronic Interlocking shall be the primary communication partner• The EULYNX field element subsystem shall be the secondary communication partner			
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">• The adjacent system shall be the primary communication partner• The Subsystem - Electronic Interlocking shall be the secondary communication partner			
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	3 Generic requirements for SCI			
Eu.Gen-SCI.220	Head	3.1 Field element interfaces			
Eu.Gen-SCI.221	Head	3.1.1 Interface between Subsystem - Electronic Interlocking and EfeS (SCI-XX EfeS)			
Eu.Gen-SCI.409	Head	3.1.1.1 SCI-XX EfeS - Logical Viewpoint			
Eu.Gen-SCI.410	Head	3.1.1.1.1 SCI-XX EfeS - Logical Context			
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>SCI-XX EfeS</div><div>1</div></div><div><div><div>«logical structural entity» EULYNX field element Subsystem</div></div><div><div>SCI-XX EfeS</div></div></div></div></div></div></div></div>			
Eu.Gen-SCI.401	Head	3.1.1.2 SCI-XX EfeS - Information Flows			
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	JIRA	V 1.1 (2.A) > V 1.1 (0.A)																											
Eu.Gen-SCI.403	Def	<div><div>[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_Reset_PDI</div></div><div><div>«information object» signal Cd_Initialisation_Request</div><div>«information object» signal Msg_PDI_Version_Check</div></div><div><div>«information object» signal Msg_Start_Initialisation</div><div>Result : String ChecksumData : String PDIVersion : String</div></div><div><div>«information object» signal Msg_Initialisation_Completed</div><div>«information object» signal Msg_PDI_Available</div></div><div><div>«information object» signal Cd_Release_PDI_for_Maintenance</div><div>«information object» signal Msg_PDI_Not_Available</div></div></div><div><div>ReportedResetReason : ResetReason</div><div>ReportedResetReason</div><div>«valueType (enumeration)» ResetReason ProtocolError FormalTelegramError ContentTelegramError</div><div>«information object» signal Cd_Close_PDI</div><div>RequestedCloseReason : CloseReason</div><div>RequestedCloseReason</div><div>«valueType (enumeration)» CloseReason NormalClose OtherVersionRequired Timeout ProtocolError FormalTelegramError ContentTelegramError ChecksumMismatch</div></div></div></div> <tr><td>Eu.Gen-SCI.404</td><td>Info</td><td>The shown information objects for this Interface can be found in SCI-XX - Information Flows.</td><td></td><td></td><td></td></tr> <tr><td>Eu.Gen-SCI.222</td><td>Head</td><td>3.1.1.3 SCI-XX EfeS - Functional Viewpoint</td><td></td><td></td><td></td></tr> <tr><td>Eu.Gen-SCI.437</td><td>Head</td><td>3.1.1.3.1 Definition of time values</td><td></td><td></td><td></td></tr> <tr><td>Eu.Gen-SCI.438</td><td>Def</td><td>Con_tmax_PDI_Connection</td><td>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.</td><td>EUAR-761 EUAR-783</td><td>art_Description: 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 safePDI communicationconnection is terminatedclosed.-A diagnostic messageThe establishment issued-of Thethe SafePDI communicationconection is then re-establishedinitiated. a_JIRA_BL4R4: EUAR-761 EUAR-783</td></tr> <tr><td>Eu.Gen-SCI.439</td><td>Head</td><td>3.1.1.3.2 SCI-XX EfeS - Functional Context</td><td></td><td></td><td></td></tr>	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.	EUAR-761 EUAR-783	art_Description: 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 safePDI communicationconnection is terminatedclosed.-A diagnostic messageThe establishment issued-of Thethe SafePDI communicationconection is then re-establishedinitiated. a_JIRA_BL4R4: EUAR-761 EUAR-783	Eu.Gen-SCI.439	Head	3.1.1.3.2 SCI-XX EfeS - Functional Context			
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Eu.Gen-SCI.222	Head	3.1.1.3 SCI-XX EfeS - Functional Viewpoint																														
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Eu.Gen-SCI.439	Head	3.1.1.3.2 SCI-XX EfeS - Functional Context																														

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.555	Info	<div><div>[Package] SCI-XX EfeS - Functional Context [Interface Definition - UseCases - Initialisation]</div><div>uc [Package] SCI-XX EfeS - Functional Context [Interface Definition - UseCases - Initialisation]</div><div></div></div>			
Eu.Gen-SCI.440	Info	SCI-XX EfeS IFUC1.1: Establish PDI connection	The Subsystem-UseCase SCI-XX EfeS IFUC1.1: Establish PDI connection defines the process to establish a PDI connection between Subsystem - Electronic Interlocking and EULYNX field element Subsystem.		
Eu.Gen-SCI.444	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.1 Establish PDI connection - Main Success Scenario [SCI-XX EfeS IF SD 1.1.1]</div><div>sd [Interaction] SCI-XX EfeS IFUC1.1 Establish PDI connection - Main Success Scenario [SCI-XX EfeS IF SD 1.1.1]</div><div><p>Main Success Scenario: Establish PDI connection</p><p>Precondition:</p><p>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.</p><p>Interaction 1.1.1.A:</p><p>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.</p><p>2. The PDIVer transmitted by the Subsystem - Electronic Interlocking matches the own PDIVer.</p><p>3. The EULYNX field element Subsystem reports to the Subsystem - Electronic Interlocking the used PDIVer and newly calculated CSS.</p><p>Interaction 1.1.1.B:</p><p>4. - The EULYNX field element Subsystem receives from the Subsystem - Electronic Interlocking the request to transmit the status.</p><p>5. The EULYNX field element Subsystem notifies the Subsystem - Electronic Interlocking of the transmission of the status information.</p><p>6. The EULYNX field element Subsystem reports the status information to Subsystem - Electronic Interlocking.</p><p>7. The EULYNX field element Subsystem notifies the Subsystem - Electronic Interlocking that the transmission of the status information is complete.</p><p>Postcondition:</p><p>The EULYNX field element Subsystem is in state OPERATIONAL. The PDI connection is ESTABLISHED.</p></div><div></div></div>	This use case scenario [Interaction] Report status [SD 1.3.1] is defined in the corresponding requirements specification of the specific field element.		

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.445	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.1 PDI version unequal, no retry - Alternative Scenario [SCI-XX EfeS IF SD 1.1.2]</div><div><div><div>sd [Interaction] SCI-XX EfeS IFUC1.1 PDI version unequal, no retry - Alternative Scenario [SCI-XX EfeS IF SD 1.1.2]</div><div><div><div><div><div><div></div><div>Subsystem - Electronic Interlocking</div></div><div><div><div><div><div></div><div>:EULYNX field element Subsystem</div></div></div></div><div><div><div><div><div></div><div>Cd_PDI_Version_Check</div></div><div><div><div></div><div>Msg_PDI_Version_Check</div></div><div><div><div></div><div>Cd_Release_PDI_for_Maintenance</div></div></div></div></div></div></div></div></div><div>Alternative Scenario: PDI version is unequal, no retry 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. Interaction 1.1.2.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 no other PDI version to request. 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, in substate WAITING_FOR_DATA_UPDATE. The PDI connection is SUSPENDED.</div></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_MAIN TENANCE_TIMEOUT instead.		
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><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><div><div><div></div><div>Subsystem - Electronic Interlocking</div></div><div><div><div><div><div></div><div>:EULYNX field element Subsystem</div></div></div></div><div><div><div><div><div></div><div>Cd_PDI_Version_Check</div></div><div><div><div></div><div>Msg_PDI_Version_Check</div></div><div><div><div></div><div>Cd_Close_PDI</div></div></div></div></div></div></div></div></div><div>Alternative Scenario: PDI version is unequal, retry 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. 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></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.	EUAR-783	art_Description: 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, or [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. a_JIRA_BL4R4: EUAR-783

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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>sd [Interaction] SCI-XX EfeS IFUC1.2 Close PDI connection Timeout - Alternative Scenario [SCI-XX EfeS IF SD 1.2.3]</div><div><div><div>Subsystem - Electronic Interlocking</div><div>:EULYNX field element Subsystem</div></div><div><div><div>Alternative Scenario: Close PDI connection - Timeout of PDI establishment</div><div>Precondition: The EULYNX field element Subsystem is in INITIALISING state, in substate WAITING_FOR_PDI and the PDI connection is in state ESTABLISHING.</div><div>Interaction 1.2.3.A: 1. - The Subsystem - Electronic Interlocking detects that the timer Con_tmax_PDI_Connection expires. 2. The EULYNX field element Subsystem receives from the Subsystem - Electronic Interlocking the request to close the PDI connection with reason Timeout.</div><div>Postcondition: The EULYNX field element Subsystem is in state INITIALISING, in substate WAITING_FOR_PDI_OR_MAINTENANCE. Ready to establish PDI connection.</div></div><div><div><div></div><div></div><div>Cd_Close_PDI</div></div></div></div></div></div></div>			
Eu.Gen-SCI.450	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.2 Communication Error detected by EfeS - Alternative Scenario [SCI-XX EfeS IF SD 1.2.4]</div><div><div>sd [Interaction] SCI-XX EfeS IFUC1.2 Communication Error detected by EfeS - Alternative Scenario [SCI-XX EfeS IF SD 1.2.4]</div><div><div><div>Subsystem - Electronic Interlocking</div><div>:EULYNX field element Subsystem</div></div><div><div><div>Alternative Scenario: Communication Error</div><div>Precondition: The EULYNX field element Subsystem is in OPERATIONAL state and the PDI connection is in state ESTABLISHED or the EULYNX field element Subsystem is in INITIALISING state, in substate WAITING_FOR_PDI and the PDI connection is in state ESTABLISHING.</div><div>Interaction 1.2.4.A: alt 1. - The EULYNX field element Subsystem detects a communication error of the type Formal Telegram Error. else alt 2. - The EULYNX field element Subsystem detects a communication error of the type Content Telegram Error. else alt 3. - The EULYNX field element Subsystem detects a communication error of the type Protocol Error. end alt 4. The EULYNX field element Subsystem reports a reset of the PDI connection to the Subsystem - Electronic Interlocking. The information includes the type of communication error.</div><div>Postcondition: The EULYNX field element Subsystem is in INITIALISING, in substate WAITING_FOR_PDI_OR_MAINTENANCE. Ready to establish PDI connection. The PDI connection is IMPERMISSIBLE.</div></div><div><div><div>alt</div><div><div>Formal Telegram Error Detected</div><div>Content Telegram Error</div><div>Protocol Error</div></div><div><div></div><div>Msg_Reset_PDI</div></div></div></div></div></div></div></div>			
Eu.Gen-SCI.451	Info	<div><div>[Interaction] SCI-XX EfeS IFUC1.2 Communication Error detected by EIL- Alternative Scenario [SCI-XX EfeS IF SD 1.2.5]</div><div><div>sd [Interaction] SCI-XX EfeS IFUC1.2 Communication Error detected by EIL- Alternative Scenario [SCI-XX EfeS IF SD 1.2.5]</div><div><div><div>Subsystem - Electronic Interlocking</div><div>:EULYNX field element Subsystem</div></div><div><div><div>Alternative Scenario: Communication Error</div><div>Precondition: The EULYNX field element Subsystem is in OPERATIONAL state and the PDI connection is in state ESTABLISHED or the EULYNX field element Subsystem is in INITIALISING state, in substate WAITING_FOR_PDI and the PDI connection is in state ESTABLISHING.</div><div>Interaction 1.2.5.A: 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 EULYNX field element Subsystem receives from the Subsystem - Electronic Interlocking the request to close the PDI connection.</div><div>Postcondition: The EULYNX field element Subsystem is in INITIALISING, in substate WAITING_FOR_PDI_OR_MAINTENANCE. Ready to establish PDI connection. The PDI connection is IMPERMISSIBLE.</div></div><div><div><div>alt</div><div><div>Formal Telegram Error Detected</div><div>Content Telegram Error</div><div>Protocol Error</div></div><div><div></div><div>Cd_Close_PDI</div></div></div></div></div></div></div></div>			

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.304	Req	<div>[Block] S_SCI_EfeS_Prim [Functional Viewpoint - Interface Requirements - Functional Entity]</div> <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><div><div>→ D2in_Con_tmax_PDI_Connection : Integer</div><div>d60out_PDI_Close_Reason : String</div><div>→</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><div><div>→ D3in_Con_PDI_Version : String</div><div>T6out_Establish_SCP_Connection : PulsedOut</div><div>→</div></div><div><div><div>→ D4in_Con_Checksum_Data : String</div><div>d50out_PDI_Connection_State : String</div><div>→</div></div><div><div><div>→ T47in_Con_Other_PDI_Version_Available : PulsedIn</div><div>T12out_Terminate_SCP_Connection : PulsedOut</div><div>→</div></div><div><div><div>→ T10in_SCP_Connection_Terminated : PulsedIn</div><div>P1inout : ~SCI_GEN</div><div></div></div><div><div><div>→ T5in_SCP_Connection_Established : PulsedIn</div><div></div><div></div></div><div><div><div>→ T20in_Protocol_Error : PulsedIn</div><div></div><div></div></div><div><div><div>→ T21in_Formal_Telegram_Error : PulsedIn</div><div></div><div></div></div><div><div><div>→ T22in_Content_Telegram_Error : PulsedIn</div><div></div><div></div></div><div><div><div>→ T44in_Initiate_Maintenance : PulsedIn</div><div></div><div></div></div><div><div><div>→ T45in_Reset_Severe_Error : PulsedIn</div><div></div><div></div></div><div><div><div>→ T48in_Disable_Or_Disconnect_PDI_EfeS : PulsedIn</div><div></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></div>			
Eu.Gen-SCI.305	Def	<div>/* cOp1_init */</div> <div>d60out_PDI_Close_Reason := "No Error";</div> <div>Mem_PDI_Version_Result := "unknown";</div> <div>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_Con</div>		

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
			nection. A retriggering of SCP connection is not in responsibility of SCI layer. In case of a successful established connection the trigger T5in_SCP_Connection_Est ablished is expected.		
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.		
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	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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></div>	<div>This state machine diagram describes the requirements for the following functionalities:</div> <div><ul style="list-style-type: none">- establishment and closure of PDI connection- reaction to communication errors- interaction with safe communication protocol</div>		

This state machine diagram describes the requirements for the following functionalities:

- establishment and closure of PDI connection

- reaction to communication errors

- interaction with safe communication protocol

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.328	Def	DISCONNECTED			
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}			

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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><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><div><div><div>→</div><div>D3in_Con_PDI_Version : String</div></div><div><div>→</div><div>d50out_PDI_Connection_State : String</div></div><div><div>→</div><div>d50out_PDI_Connection_State : String</div><div>→</div></div></div><div><div><div><div><div>→</div><div>D4in_Con_Checksum_Data : String</div></div><div><div>→</div><div>T12out_Terminate_SCP_Connection : PulsedOut</div></div><div><div>→</div><div>T12out_Terminate_SCP_Connection : PulsedOut</div><div>→</div></div></div><div><div><div><div><div>→</div><div>T20in_Protocol_Error : PulsedIn</div></div><div><div>→</div><div>d60out_PDI_Close_Reason : String</div></div><div><div>→</div><div>d60out_PDI_Close_Reason : String</div><div>→</div></div></div><div><div><div><div><div>→</div><div>T21in_Formal_Telegram_Error : PulsedIn</div></div><div><div>→</div><div>p2inout : EST_SCI_GEN</div></div><div><div>→</div><div>p2inout : EST_SCI_GEN</div><div>→</div></div></div><div><div><div><div><div>→</div><div>T22in_Content_Telegram_Error : PulsedIn</div></div><div><div>→</div><div>P1inout : SCI_GEN</div></div><div><div>→</div><div>P1inout : SCI_GEN</div><div>→</div></div></div><div><div><div><div><div>→</div><div>T5in_SCP_Connection_Established : PulsedIn</div></div><div><div>→</div><div>p3inout : ~F_SCI_Specific</div></div><div><div>→</div><div>p3inout : ~F_SCI_Specific</div><div>→</div></div></div><div><div><div><div><div>→</div><div>T10in_SCP_Connection_Terminated : PulsedIn</div></div><div><div>→</div><div></div></div><div><div>→</div><div></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.229	Def	/* cOp1_init */ Mem_PDI_Version := D3in_Con_PDI_Version;	cOp1_init		

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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 - Behaviour. 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' state contains an 'ESTABLISHING' sub-state. 'ESTABLISHING' starts at 'Junction0' and branches based on version checks. It includes states like 'VERSION_UNEQUAL', 'READY_FOR_INITIALISATION', 'SENDING_STATUS', and 'ESTABLISHED'. Transitions from 'ESTABLISHED' lead to 'SUSPENDED' on 'Cd_Release_PDI_for_Maintenance/' or back to 'ESTABLISHING' on 'Cd_PDI_Version_Check/'. 'SUSPENDED' can transition back to 'ESTABLISHING' on 'Ready_For_PDI_Connection/' or to 'NOT_READY_FOR_PDI' on 'Cd_PDI_Version_Check/'.</p></div>	<div>This state machine diagram describes the requirements for the following functionalities:</div> <div><ul style="list-style-type: none">- establishment and closure of PDI connection- reaction to communication errors- interaction with safe communication protocol</div>		
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			

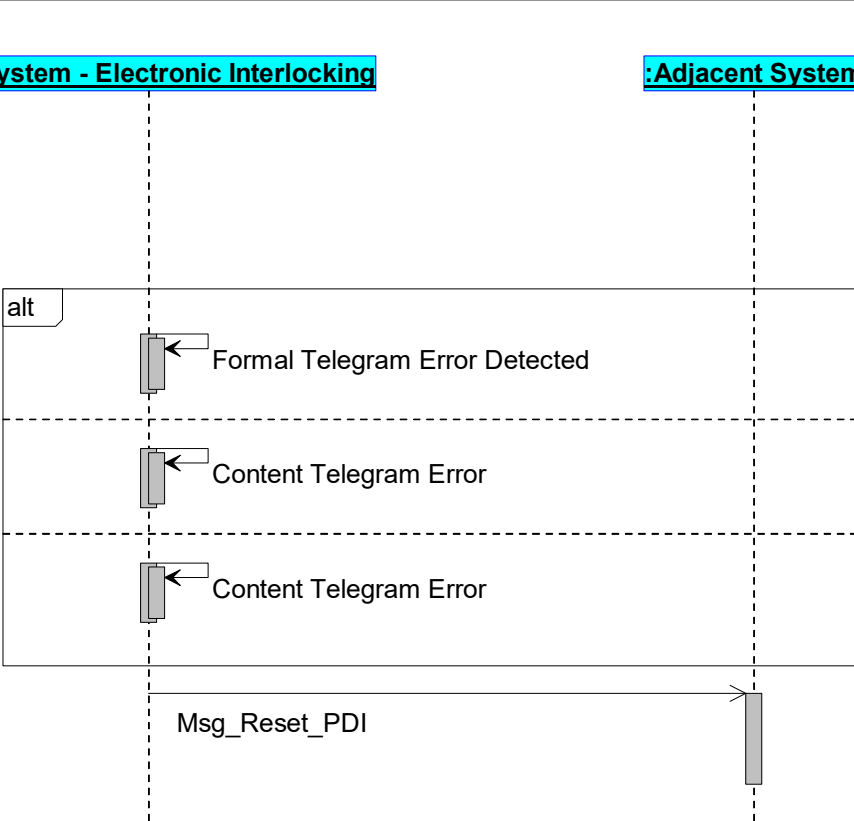
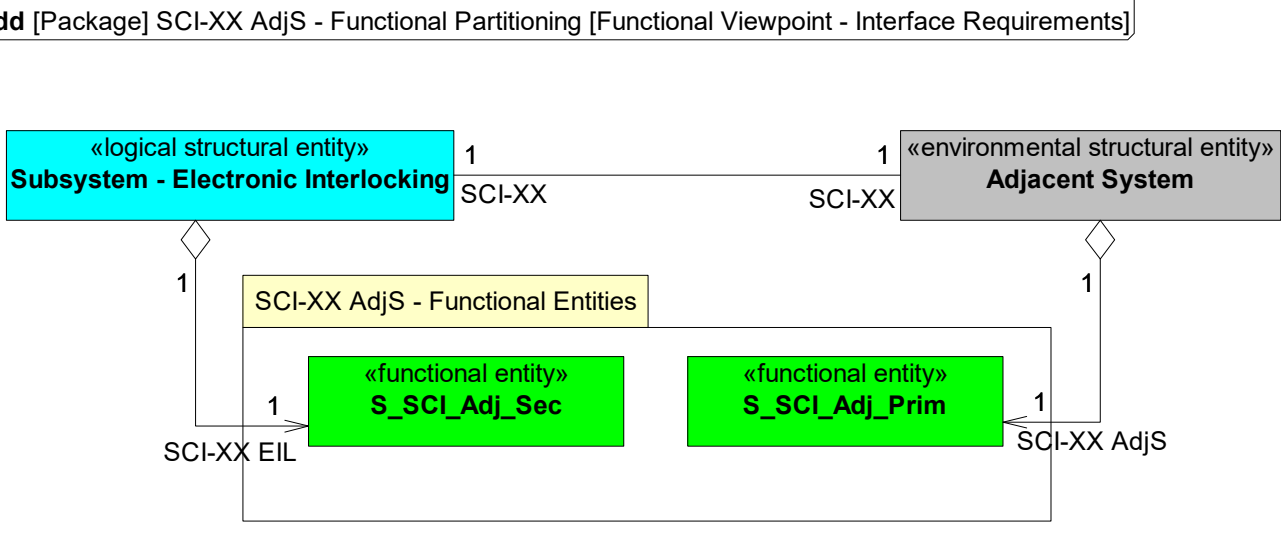
ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.247	Def	Cd_Close_PDI[RequestedCloseReason = NormalClose]/ send PDI_Connection_Closed to p2inout; d60out_PDI_Close_Reason := "PDI Normal Close";{ACTIVE - READY_FOR_PDI}			
Eu.Gen-SCI.248	Def	Cd_Release_PDI_for_Maintenance/{ACTIVE - 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}			

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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}			
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	3.1.1.4 SCI-XX EfeS - General Infos and Assumptions			
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	3.1.2 SCI-XX EfeS - Internal Behaviour of Subsystem - Electronic Interlocking			
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	3.1.3 SCI-XX EfeS - Internal Information Flows			
Eu.Gen-SCI.475	Def	<div><div>[Package] SCI-XX EfeS - Internal Information Flows [Internal Interface Requirements - Direction of Information Objects]</div><div><div><div><div>bdd [Package] SCI-XX EfeS - Internal Information Flows [Internal Interface Requirements - Direction of Information Objects]</div></div><div><div><div>«information flow» F_SCI_Specific</div><div><div>prov «signal» Start_Status_Report</div><div>reqd «signal» Status_Report_Completed</div></div></div></div></div></div></div>			
Eu.Gen-SCI.477	Def	Start_Status_Report			

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.478	Def	Status_Report_Completed			
Eu.Gen-SCI.39	Head	3.2 Adjacent systems interfaces			
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	3.2.1 Interface between Subsystem - Electronic Interlocking and AdjS (SCI-XX AdjS)			
Eu.Gen-SCI.217	Head	3.2.1.1 SCI-XX AdjS - Logical Viewpoint			
Eu.Gen-SCI.218	Head	3.2.1.1.1 SCI-XX AdjS - Logical Context			
Eu.Gen-SCI.219	Def	<div><div>[Package] SCI-XX AdjS - Logical Context [Logical Viewpoint - Interface Definition]</div><div><div><div><div>«logical structural entity» SCI-XX AdjS</div></div><div><div>«logical structural entity» Subsystem - Electronic Interlocking</div><div>«environmental structural entity» Adjacent System</div></div></div><div><div>1</div><div>SCI-XX</div><div>1</div><div>SCI-XX</div></div></div></div>			
Eu.Gen-SCI.200	Head	3.2.1.2 SCI-XX AdjS - Information Flows			
Eu.Gen-SCI.201	Def	<div><div>[Package] SCI-XX AdjS - Information Flows [Interface Requirements - Direction of Information Objects]</div><div><div><div><div>«information flow» PDI_GEN_ADJ</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_Reset_PDI provreqd «signal» Msg_Status_Report_Completed reqd «signal» Msg_Initialisation_Completed</div></div><div><div>«information flow» Adj SCI-XX AdjS</div><div>proxyPorts «ProxyPort» P1inout : PDI_GEN_ADJ</div></div><div><div>«information flow» Adj SCI-XX EIL</div><div>proxyPorts «ProxyPort» P1inout : PDI_GEN_ADJ</div></div></div></div></div>			
Eu.Gen-SCI.202	Def	<div><div>[Package] SCI-XX AdjS - Information Flows [Interface Requirements - Information Objects]</div><div><div><div><div>«information object» signal Cd_PDI_Version_Check</div><div>PDI_Version : String</div></div><div><div>«information object» signal Msg_Initialisation_Completed</div></div><div><div>«information object» signal Msg_Status_Report_Completed</div></div><div><div>«information object» signal Cd_Initialisation_Request</div></div><div><div>«information object» signal Msg_Start_Initialisation</div></div><div><div>«information object» signal Msg_Reset_PDI</div><div>ReportedResetReason : ResetReason</div></div><div><div>«information object» signal Cd_Close_PDI</div><div>RequestedCloseReason : CloseReason</div></div><div><div>«information object» signal Msg_PDI_Version_Check</div><div>Result : String ChecksumData : String PDIVersion : String</div></div><div><div>«valueType (enumeration)» ResetReason</div><div>ProtocolError FormalTelegramError ContentTelegramError</div></div><div><div>«valueType (enumeration)» CloseReason</div><div>NormalClose OtherVersionRequired Timeout ProtocolError FormalTelegramError ContentTelegramError ChecksumMismatch</div></div></div><div><div>ReportedResetReason</div><div>RequestedCloseReason</div></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	3.2.1.3 SCI-XX AdjS - Functional Viewpoint			
Eu.Gen-SCI.198	Head	3.2.1.3.1 Definition of time values			

ID	Type	Requirement Part 1		Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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.	EuAR-761 EuAR-783 art_Description: 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 safePDI communicationconnection is terminatedclosed.-A diagnostic messageThe isestablishment issued-of Thethe SafePDI communicationconnection is then re-establishedinitiated. a_JIRA_BL4R4: EuAR-761 EuAR-783
Eu.Gen-SCI.45	Head	3.2.1.3.2 SCI-XX AdjS - Functional Context				
Eu.Gen-SCI.550	Info	<div><div>[Package] SCI-XX AdjS - Functional Context [Interface Definition - UseCases - Initialisation]</div><div><div>uc [Package] SCI-XX AdjS - Functional Context [Interface Definition - UseCases - Initialisation]</div><div><p>The diagram illustrates the functional context of the SCI-XX AdjS. It features a dashed rectangular box labeled 'SCI-XX AdjS' at the top. Inside this box are two green ovals. The top oval is labeled 'SCI-XX AdjS IFUC1.1: Establish PDI connection' and the bottom oval is labeled 'SCI-XX AdjS IFUC1.2: Close PDI connection'. To the left of the box is a 3D rectangular block labeled 'Subsystem - Electronic Interlocking' in red text. To the right is another 3D rectangular block labeled 'Adjacent System' in red text. A horizontal line connects the 'Subsystem - Electronic Interlocking' block to the top oval, and another horizontal line connects the bottom oval to the 'Adjacent System' block. Additionally, a horizontal line connects the two ovals within the box. A diagonal line also connects the 'Subsystem - Electronic Interlocking' block to the bottom oval.</p></div></div></div>				
Eu.Gen-SCI.46	Info	SCI-XX AdjS IFUC1.1: Establish PDI connection			The UseCase SCI-XX AdjS IFUC1.1: Establish PDI connection defines the process to establish a PDI connection between Subsystem - Electronic Interlocking and Adjacent System.	

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.49	Info	<div>[Interaction] SCI-XX AdjS IFUC1.1 - Main Success Scenario [SCI-XX AdjS IF SD 1.1.1]</div> <div><div><div>sd [Interaction] SCI-XX AdjS IFUC1.1 - Main Success Scenario [SCI-XX AdjS IF SD 1.1.1]</div><div><div>:Subsystem - Electronic Interlocking</div><div>:Adjacent System</div></div></div><div><p>Main Success Scenario: Establish PDI connection</p><p>Precondition:</p><p>The SCP connection is established.</p><p>Interaction 1.1.1.A:</p><p>1. - Subsystem - Electronic Interlocking receives from Adjacent System the request to verify the match between the transmitted PDIVer and the PDIVer present in the Subsystem - Electronic Interlocking.</p><p>2. Subsystem - Electronic Interlocking evaluates that the PDI versions are equal.</p><p>3. Subsystem - Electronic Interlocking reports to Adjacent System the used PDIVer and newly calculated CSS.</p><p>4. Adjacent System evaluates that the received CSS is equal to the configured value for the communication partner.</p><p>5. Adjacent System sends the request to transmit the status to Subsystem - Electronic Interlocking.</p><p>6. Subsystem - Electronic Interlocking notifies Adjacent System about the transmission of the status information.</p><p>opt [Subsystem - Electronic Interlocking sends a status report if it is defined by the specific interface]</p><p>7. Subsystem - Electronic Interlocking reports the specific status information to Adjacent System.</p><p>end opt</p><p>8. Subsystem - Electronic Interlocking notifies Adjacent System about the completion of the status report.</p><p>opt [Adjacent System sends a status report if it is defined by the specific interface]</p><p>9. Adjacent System reports the specific status information to Subsystem - Electronic Interlocking.</p><p>end opt</p><p>10. Adjacent System notifies Subsystem - Electronic Interlocking about the completion of the status report.</p><p>11. Subsystem - Electronic Interlocking notifies Adjacent System that the initialisation is complete.</p><p>Postcondition:</p><p>The PDI connection is established.</p></div><div><pre>sequenceDiagram\n participant S as :Subsystem - Electronic Interlocking\n participant A as :Adjacent System\n Note over S: start\n S->>A: Cd_PDI_Version_Check\n Note right of A: {<= Con_tmax_PDI_Connection}\n activate A\n A->>S: Msg_PDI_Version_Check\n deactivate A\n A->>S: Cd_Initialisation_Request\n activate A\n A->>S: Msg_Start_Initialisation\n deactivate A\n opt S sends a status report if it is defined by the specific interface\n ref SCI-XX IF SD 1.3.1\n end\n S->>A: Msg_Status_Report_Completed\n activate S\n opt A sends a status report if it is defined by the specific interface\n ref SCI-XX IF SD 1.3.2\n end\n A->>S: Msg_Status_Report_Completed\n deactivate A\n S->>A: Msg_Initialisation_Completed\n deactivate S\n Note over A: end</pre></div></div>			
Eu.Gen-SCI.47	Info	<div>[Interaction] SCI-XX AdjS IFUC1.1 - Alternative Scenario [SCI-XX AdjS IF SD 1.1.2]</div> <div><div><div>sd [Interaction] SCI-XX AdjS IFUC1.1 - Alternative Scenario [SCI-XX AdjS IF SD 1.1.2]</div><div><div>:Subsystem - Electronic Interlocking</div><div>:Adjacent System</div></div></div><div><p>Alternative Scenario: PDI version is unequal</p><p>Precondition:</p><p>The SCP connection is established.</p><p>Interaction 1.1.2.A:</p><p>1. - Subsystem - Electronic Interlocking receives from Adjacent System the request to verify the match between the transmitted PDIVer and the PDIVer present in the Subsystem - Electronic Interlocking.</p><p>2. Subsystem - Electronic Interlocking evaluates that the PDI versions are unequal.</p><p>3. Subsystem - Electronic Interlocking reports to Adjacent System that PDIVer does not match.</p><p>4. Adjacent System requests from Subsystem - Electronic Interlocking to close the PDI connection.</p><p>Postcondition:</p><p>The PDI connection is impermissible.</p></div><div><pre>sequenceDiagram\n participant S as :Subsystem - Electronic Interlocking\n participant A as :Adjacent System\n Note over S: start\n A->>S: Cd_PDI_Version_Check\n activate A\n S->>A: Msg_PDI_Version_Check\n deactivate S\n A->>S: Cd_Close_PDI\n deactivate A\n Note over S: end</pre></div></div>			

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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] : Subsystem - Electronic Interlocking : Adjacent System Alternative Scenario: Communication Error Precondition: The PDI connection is in state ESTABLISHED or in state ESTABLISHING. Interaction 1.2.2.A: 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. Postcondition: The PDI connection is impermissible.  <pre>sequenceDiagram\n participant S as :Subsystem - Electronic Interlocking\n participant A as :Adjacent System\n alt alt\n S->>A: Formal Telegram Error Detected\n else alt\n S->>A: Content Telegram Error\n else alt\n S->>A: Content Telegram Error\n end\n S->>A: Msg_Reset_PDI</pre>			
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]  <pre>graph TD\n subgraph SCI_XX_AdjS [«logical structural entity» Subsystem - Electronic Interlocking]\n direction TB\n EIL[«functional entity» S_SCI_Adj_Sec]\n Prim[«functional entity» S_SCI_Adj_Prim]\n EIL --> Prim\n end\n subgraph SCI_XX_AdjS_FuncEnt [SCI-XX AdjS - Functional Entities]\n direction LR\n EIL\n Prim\n end\n AdjSys[«environmental structural entity» Adjacent System]\n SCI_XX_AdjS -- "1 SCI-XX" --- AdjSys\n AdjSys -- "1 SCI-XX AdjS" --- Prim</pre>			
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	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.44	Def	<div><div>[Block] SCI-XX AdjS [Functional Viewpoint - Interface Requirements - Functional Architecture]</div><div><div>ibd [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</div><div>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></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_Cohnection_Established T17out_PDI_Connection_Closed «functional entity» SCI-XX EIL : S_SCI_Adj_Sec T20in_Protocol_Error</div><div>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></div></div><div>AdjSX : Adj SCI-XX AdjS EILX : Adj SCI-XX EIL</div><div>P1inout : PDI_GEN_ADJ P1inout : ~PDI_GEN_ADJ</div><div>«equal» «equal»</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	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.55	Req	<div><div>[Block] S_SCI_Adj_Prim [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div>ibd [Block] S_SCI_Adj_Prim [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div><div>«functional entity» S_SCI_Adj_Prim</div><div>values «BlockProperty» Mem_PDI_Version_Check_Result : String «BlockProperty» Mem_PDI_Version_ChecksumData : String</div><div>Operation «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><div><div><div>→ D3in_Con_PDI_Version : String</div><div>d60out_PDI_Close_Reason : String</div><div>→</div></div><div><div><div>→ D4in_Con_Checksum_Data : String</div><div>T6out_Establish_SCP_Connection : PulsedOut</div><div>→</div></div><div><div><div></div><div>t27out_Check_Sec_Status : PulsedOut</div><div>→</div></div><div><div><div>→ T5in_SCP_Connection_Established : PulsedIn</div><div>P1inout : ~PDI_GEN_ADJ</div><div></div></div><div><div><div>→ T10in_SCP_Connection_Terminated : PulsedIn</div><div>p2inout : ~SCI_AdjS_Prim_Specific</div><div></div></div><div><div><div>→ T20in_Protocol_Error : PulsedIn</div><div></div><div></div></div><div><div><div>→ T21in_Formal_Telegram_Error : PulsedIn</div><div></div><div></div></div><div><div><div>→ T22in_Content_Telegram_Error : PulsedIn</div><div></div><div></div></div><div><div><div>→ t25in_Sec_Status_Report_Complete : PulsedIn</div><div></div><div></div></div><div><div><div>→ T45in_Reset_Severe_Error : PulsedIn</div><div></div><div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div>			
Eu.Gen-SCI.56	Def	<div>/* cOp1_init */ Mem_PDI_Version_Check_Result := "unknown"; 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_Con nection provides the time value Con_tmax_PDI_Connectio n.		
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_Est ablished represents the event of the established SCP connection.		

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.129	Def	T6out_Establish_SCP_Connection	<p>The port T6out_Establish_SCP_Connection represents the event for the SCP to establish the SCP connection.</p> <p>Note: It is assumed that the SCP layer 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.</p>		
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.		
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			

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.66	Req	<div>Functional Viewpoint - Interface Requirements - Functional Entity STD 3</div> <div>stm [State Machine] S_SCI_AdjS_Prim - Behaviour [Functional Viewpoint - Interface Requirements - Functional Entity STD 3]</div> <div><p>The diagram illustrates the state machine for the S_SCI_AdjS_Prim component. It starts at Initial0, leading to the REQUESTED_NO_SCP state. From there, it transitions to the ACTIVE state upon receiving T5in_SCP_Connection_Established. The ACTIVE state contains a sub-state machine starting at Initial1, which leads to the ESTABLISHING state. The ESTABLISHING state contains a sub-state machine starting at Initial2, which leads to the WAITING_FOR_VERSION_CHECK state. This state transitions to WAITING_FOR_INITIALISATION upon receiving a match in the PDI version check. The WAITING_FOR_INITIALISATION state transitions to RECEIVING_SEC_STATUS upon receiving a start of initialization. This is followed by CHECKING_SEC_STATUS, SENDING_PRIM_STATUS, and WAITING_FOR_INIT_COMPLETION. The WAITING_FOR_INIT_COMPLETION state transitions to ESTABLISHED upon completion of initialization. The ESTABLISHED state sends PDI_Connection_Established to p2inout and PDI_Connection_Closed to p2inout. The diagram also includes several error handling paths leading to the IMPERMISSIBLE state, such as T45in_Reset_Severe_Error, T22in_Content_Telegram_Error, T20in_Protocol_Error, T21in_Formal_Telegram_Error, and various reset conditions. The IMPERMISSIBLE state is a final state for the machine.</p></div> <div><p>This state machine diagram describes the requirements for the following functionalities:</p><ul style="list-style-type: none">- establishment and closure of PDI connection- reaction to communication errors- interaction with safe communication protocol</div>			

This state machine diagram describes the requirements for the following functionalities:

- establishment and closure of PDI connection
- reaction to communication errors
- interaction with safe communication protocol

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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>ibd [Block] S_SCI_Adj_Sec [Functional Viewpoint - Interface Requirements - Functional Entity]</div><div><div><div>«functional entity» 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><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></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><div><div>T22in_Content_Telegram_Error : PulsedIn</div><div></div></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.		

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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.		
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	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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><div><div><div><div>Initial0</div><div><div>REQUESTED_NO_SCP</div><div>Entry/D50out_PDI_Connection_State := "REQUESTED_NO_SCP";</div></div></div><div><div>ACTIVE</div><div><div>Initial1</div><div><div>ESTABLISHING</div><div><div><div>VERSION_UNEQUAL</div><div>Entry/D50out_PDI_Connection_State := "VERSION_UNEQUAL";</div></div><div><div>[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;</div><div><div>Initial2</div><div><div>Junction0</div></div></div><div><div>[Mem_PDI_Version = D3in_Con_PDI_Version] / send Msg_PDI_Version_Check ("match", D4in_Con_Checksum_Data, D3in_Con_PDI_Version) to P1inout;</div><div><div>READY_FOR_INITIALISATION</div><div>Entry/D50out_PDI_Connection_State := "READY_FOR_INITIALISATION";</div></div><div><div>Cd_Initialisation_Request / send Msg_Start_Initialisation to P1inout;</div><div><div>SENDING_SEC_STATUS</div><div>Entry/D50out_PDI_Connection_State := "SENDING_SEC_STATUS"; send Start_Sec_Status_Report to p2inout;</div></div><div><div>Sec_Status_Report_Completed /</div><div><div>RECEIVING_PRIM_STATUS</div><div>Entry/D50out_PDI_Connection_State := "RECEIVING_PRIM_STATUS"; send Msg_Status_Report_Completed to P1inout;</div></div><div><div>Msg_Status_Report_Completed /</div><div><div>CHECKING_PRIM_STATUS</div><div>Entry/D50out_PDI_Connection_State := "CHECKING_PRIM_STATUS"; t27out_Check_Prim_Status := TRUE;</div></div><div><div>when(t25in_Prim_Status_Report_Complete) / send Msg_Initialisation_Completed to P1inout;</div><div><div>ESTABLISHED</div><div>Entry/D50out_PDI_Connection_State := "ESTABLISHED"; send PDI_Connection_Established to p2inout; Exit/send PDI_Connection_Closed to p2inout;</div></div></div></div></div></div></div><div><div>when(T5in_SCP_Connection_Established) /</div><div>READY_FOR_PDI</div><div>Entry/D50out_PDI_Connection_State := "READY_FOR_PDI";</div><div>when(T10in_SCP_Connection_Terminated) /</div></div></div></div></div></div></div></div></div></div>	<div>This state machine diagram describes the requirements for the following functionalities:</div> <div><div>- establishment and closure of PDI connection</div><div>- reaction to communication errors</div><div>- interaction with safe communication protocol</div></div>		
Eu.Gen-SCI.139	Def	Initial0			
Eu.Gen-SCI.140	Def	/cOp1_init();{Initial0 - REQUESTED_NO_SCP}			

This state machine diagram describes the requirements for the following functionalities:

- establishment and closure of PDI connection
- reaction to communication errors
- interaction with safe communication protocol

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.141	Def	REQUESTED_NO_SCP			
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			

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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}			
Eu.Gen-SCI.184	Def	when(T10in_SCP_Connection_Terminated)/{READY_FOR_PDI - REQUESTED_NO_SCP}			
Eu.Gen-SCI.497	Head	3.2.1.4 SCI-XX AdjS - General Infos and Assumptions			
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	3.2.2 SCI-XX AdjS - Internal behaviour of Adjacent Systems			
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	3.2.3 SCI-XX AdjS - Internal Information Flows			
Eu.Gen-SCI.429	Def	<div><div>[Package] Adjacent Systems - Internal Information Flows [Internal Interface Requirements - Direction of Information Objects]</div><div><div>bdd [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	3.3 SCI-XX - Information Flows			
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.		

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
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.		
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			

ID	Type	Requirement Part 1	Requirement Part 2	JIRA	V 1.1 (2.A) > V 1.1 (0.A)
Eu.Gen-SCI.705	Req	Con_tmax_PDI_Connection 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	Con_tmax_PDI_Connection 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.			