Document Title	Requirements on a Transport Layer for SAE J1939
Document Owner	AUTOSAR
Document Responsibility	AUTOSAR
Document Identification No	424
Document Classification	Auxiliary

Document Version	1.0.0
Document Status	Final
Part of Release	4.0
Revision	1

Document Change History			
Date	Version	Changed by	Change Description
30.11.2009	1.0.0	AUTOSAR Administration	Initial release

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1 Scope of Document

This document specifies the requirements for the following Basic Software Modules
(module names in brackets):

- J1939 Transport Layer (J1939TP)

2 Conventions used

- In requirements, the following specific semantics are used (based on the Internet Engineering Task Force IETF).

  The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as:

  - SHALL: This word means that the definition is an absolute requirement of the specification.
  - SHALL NOT: This phrase means that the definition is an absolute prohibition of the specification.
  - MUST: This word means that the definition is an absolute requirement of the specification due to legal issues.
  - MUST NOT: This phrase means that the definition is an absolute prohibition of the specification due to legal constraints.
  - SHOULD: This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
  - SHOULD NOT: This phrase, or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
  - MAY: This word, or the adjective „OPTIONAL", means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation, which does not include a particular option, MUST be prepared to interoperate with another implementation, which does include the option, though perhaps with reduced functionality. In the same vein an implementation, which does include a particular option, MUST be prepared to interoperate with another implementation, which does not include the option (except, of course, for the feature the option provides.)

2.1 Abbreviation List

Acronym:	Description:
CANIF L-SDU	This is the SDU of the CAN Interface module. It is idendical with the J1939Tp N-PDU but from the CAN Interface module point of view.
J1939TP N-PDU	This is the PDU of the J1939 Transport Layer. It contains a unique identifier, data length and data (the whole N-SDU or protocol control information plus or a part of the N-SDU).
J1939TP N-SDU	This is the SDU of the J1939 Transport Layer. In the AUTOSAR architecture, it is a set of data exchanged with the PDU Router.

3 Requirements Specification

3.1 Functional Overview

This chapter describes the requirements that shall be fulfilled by the AUTOSAR J1939 Transport Layer.

The basis software module generally bases on the SAE J1939-21(2006-12) specifications and in particular shall support both J1939 transport protocols:
- BAM (Broadcast Announce Message) for broadcast mode and
- CMDT (Connection Mode data Transfer) for point to point connection.

The following pictures show the parts of the complete AUTOSAR system and in particular the Communication Services in which the new BSW is situated.
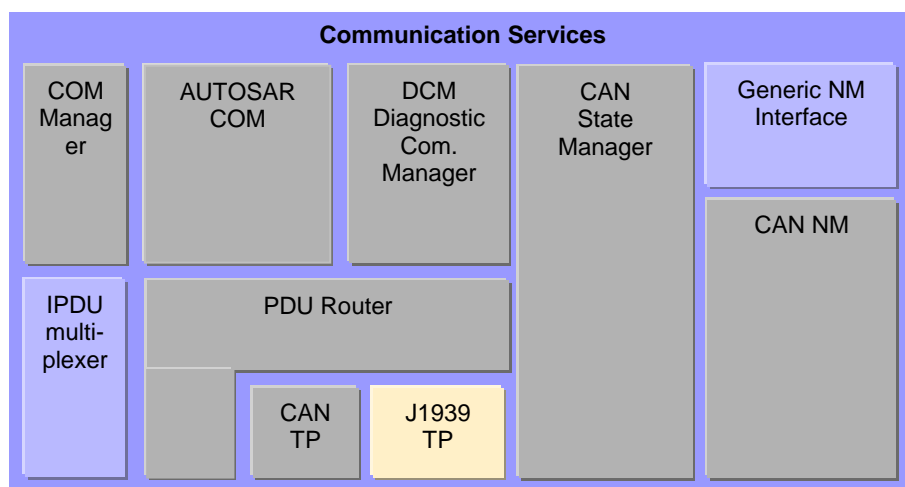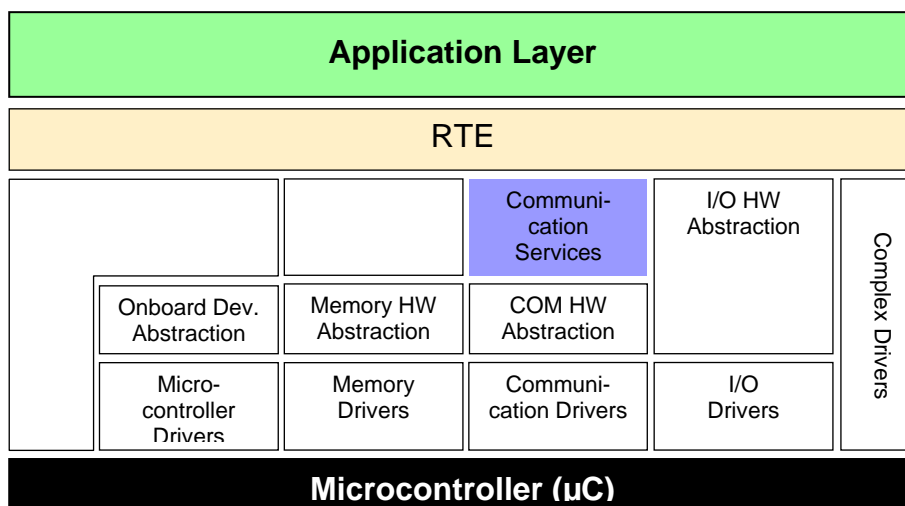
3.2 Functional Requirements

3.2.1 Configuration
This chapter describes the requirements on configurability of the module J1939 Transport Layer.

3.2.1.1 [BSW42400001] Used Transport Protocols

Initiator:	Vector
Date:	2008-06-25
Short Description:	Limitation of use of BAM and CMDT
Type:	New
Importance:	High
Description:	The J1939TP shall be configured to use if whished only BAM as Transport Protocol.
Rationale:	Some networks do not use CMDT as transport layer. Therefore no CMDT Transport Layer shall be implemented in the concerned ECU.
Use Case:	It is necessary to save resource if CMDT is not used in the concerned J1939 network. Two configurations shall be possible for the used transport protocol: - Only BAM - BAM and CMDT
Dependencies:	--
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.1.2 [BSW42400002] Unique identifier of N-SDU

Initiator:	Vector
Date:	2008-06-25
Short Description:	The J1939 Transport Layer shall identify each N-SDU with a unique identifier.
Type:	New
Importance:	High
Description:	The J1939 Transport Layer identifies each N-SDU with a unique identifier. So the upper layer can address an N-SDU without any assumption on the addressing mode configuration of the J1939TP. Furthermore, a symbolic name may be assigned for each N-SDU identifier value to simplify the API usage.
Rationale:	Independence of upper layer with the J1939-TP configuration.
Use Case:	The PDU-Router can manipulate all N-SDUs (FlexRay, CAN and LIN) regardless of addressing mode particularity of its underlying protocols.
Dependencies:	--
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.1.3 [BSW42400003] N-PDU identifier and N-SDU identifier mapping

Initiator:	Vector
Date:	2008-06-25
Short Description:	N-PDU identifier and N-SDU identifier mapping
Type:	New
Importance:	High

Description:	Each N-SDU identifier has for a given connection an 1: n statically configured association to N-PDU identifiers, where: - n=1 if the N-SDU Data Length<= 8 Bytes - n=2 for Flow Control of the BAM Transport Protocol – TP.CM / TP.DT and - n=3 for Flow Control of the CMDT Transport Protocol – TP.CM (Tx) / TP.CM (Rx) / TP.DT Each N-PDU identifier has for a given connection using a J1939TP an 1: m statically configured association to N-SDU identifiers, where: - m=number of different PGNs received from a given sender or - m=number of different PGNs sent to a given receiver .
Rationale:	N-SDU and N-PDUs are statically associated during configuration. A set of max. 3 distinct, transport related and connection specific N-PDU identifiers correspond to a given N-SDU identifier. The N-PDU Identifier of a frame using the J1939TP is directly related to the transport specific PGNs (e.g. TP.CM or TP.DT frames). It might contain for a given set of DA and SA different J1939-PGs in its payload. The J1939 TP shall associate each of the m possible J1939-PGs to a distinct N-SDU.
Use Case:	J1939 allows the transmission of Parameter Groups (PG) with variable length. Therefore each N-SDU shall contain as information the effective data length to be transmitted. Depending on this data length and the N-SDU Identifier the J1939 TP decides whether a Transport Protocol is required or not for the transmission of PGs with variable length. Which Transport Protocol shall be used for the given PDU (Transmit: N-SDU, Receive: N-PDU) is statically configured. In case distinct ECUs shall receive the same J1939 Parameter Group several distinct connections are used (FAN out) by the upper level of the transmitting ECU. Each connection has its own N-SDU Identifier.
Dependencies:	--
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.1.4 [BSW42400004] Unique identifier of N-PDU

Initiator:	Vector
Date:	2008-06-25
Short Description:	The J1939 Transport Layer shall identify each N-PDU (also called L-SDU) with a unique identifier.
Type:	New
Importance:	High
Description:	The J1939 Transport Layer identifies each N-PDU with a unique identifier. Because the J1939TP uses the CAN Interface for transmission and reception of N-PDUs, these handles shall be unique in both layers. So some common configuration check is needed. Furthermore, a symbolic name may be assigned for each identifier value to simplify the implementation.
Rationale:	Each CAN identifier corresponds to only one N-PDU identifier of the J1939 Transport Layer. So an N-PDU may be completely identified by an identifier.
Use Case:	For optimization reasons, the J1939TP N-PDU identifier may be different to

	the CAN identifier.
Dependencies:	--
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.1.5 [BSW42400006] Transport connection properties

Initiator:	Vector
Date:	2008-06-25
Short Description:	The Transport connection properties shall be statically configured.
Type:	New
Importance:	High
Description:	The J1939 Transport connection configuration shall statically assign properties of each N-SDU: - unique N-SDU identifier - Communication direction: sender or receiver - Maximum N-SDU length. - N-SDU Length Type: Variable/Fixed. - J1939 Parameter Group Number (PGN) contained in payload - Associated N-PDU identifiers (maximum 4 See 3.2.1.3)
Rationale:	At runtime the J1939 TP module must have all the needed information to manage a transport connection.
Use Case:	The properties are required for the runtime decision which N-PDU identifiers have to be used for the N-SDU and which Transport Protocol (BAM or CMDT) shall be used for the concerned PDU. The effective DLC of the Data to transmit shall be communicate to the the J1939TP at runtime.
Dependencies:	--
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.1.6 [BSW42400007] Only half-duplex communication is supported

Initiator:	Vector
Date:	2008-06-25
Short Description:	Only half-duplex communication is supported
Type:	New
Importance:	High
Description:	The J1939 Transport Layer shall only support half-duplex communication for each connection.
Rationale:	Only half duplex is supported by J1939/21
Use Case:	--
Dependencies:	--
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.2 Initialisation
This chapter describes the requirements on the initialisation phase of the module J1939 Transport Layer.

3.2.2.1 [BSW42400010] J1939 Transport Layer Initialization

Initiator:	Vector

Date:	2008-06-25
Short Description:	The J1939 Transport Layer shall implement an interface for initialization.
Type:	New
Importance:	High
Description:	The J1939 Transport Layer implements an interface for initialization. This service shall initialize all global variables of the module and set all transport protocol connections in a default state (Idle)
Rationale:	Basic functionality.
Use Case:	Set Transport Layer software to a defined state
Dependencies:	--
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.2.2 [BSW42400011] J1939 Transport Layer Availability

Initiator:	Vector
Date:	2008-06-25
Short Description:	The J1939 Transport Layer services shall not be operational before initializing the module.
Type:	New
Importance:	High
Description:	Before using the transmission capabilities of the J1939 Transport Layer, it shall be initialized. If it is not the case, the services have to return an error and a development error shall be reported
Rationale:	Basic functionality.
Use Case:	To avoid usage of the module without a complete initialization this could cause the transmission of corrupted frames.
Dependencies:	--
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.3 Normal Operation
This chapter describes the requirements on the "normal" functionality of the module J1939 Transport Layer.

3.2.3.1 [BSW42400018] Concurrent connections

Initiator:	Vector
Date:	2008-06-25
Short Description:	The AUTOSAR J1939 TP shall support concurrent connections.
Type:	New
Importance:	Medium
Description:	The number of concurrent connections supported by the AUTOSAR J1939 Transport Layer depends on the used transport protocol and the transmitting direction. In the sending direction: - if BAM is used: Only one connection shall be possible. - if CMDT is used: As many connections as communication partners (DA) shall be possible. In the receiving direction: - if BAM has been used: One connection for each node (SA) which send currently a J1939-PG shall be possible. - If CMDT has been used: As many connections as communication partners (DA) are necessary.

	These restrictions are imposed by the way J1939 models multi packet communication.
Rationale:	An ECU must support parallel reception of PDUs that are issued either from different ECUs or shall be sent to different ECUs. So the AUTOSAR J1939 Transport Layer shall allow concurrent connections.

Use Case:	A J1939 related Data Element corresponds to a J1939-Parameter Group (PG). According to J1939-21 a J1939-PG which is longer than 8 Bytes shall be fragmented. The fragments shall be transmitted through a J1939-network with a CAN-Identifier containing as information:
	      A J1939 TP specific Parameter Group Number (TPPGN)
	      The SA
	      The DA.
	TPPGNs are used to characterize the hand-shake transport frames There are 2 possible TPPGNs.-One for TP.CM frames and one for TP.DT frames. The Parameter Group Number (PGN) defining the J1939 PG transmitted is part of the payload.
	A BAM Transport protocol is used to broadcast (1:n) a J1939-PG.
	Therefore the CAN-identifier used for the transmission of the fragments is the same for a given SA and doesn't depend on the transmitted J1939-PG.

Dependencies:	--
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.3.2 [BSW42400019] Support the SAE J1939-21 Transport Protocols BAM

Initiator:	Vector
Date:	2008-06-25
Short Description:	The AUTOSAR J1939 Transport Layer shall support the SAE J1939-21(2006-12) transport protocol BAM for I-PDUs with large payload (DLC > 8 Bytes) or variable DLC.
Type:	New
Importance:	High
Description:	Depending on the data length (DLC) and the N-SDU Identifier the J1939 TP decides if the BAM Transport Protocol is required.
Rationale:	--
Use Case:	--
Dependencies:	Configuration [BSW42400002]
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.3.3 [BSW42400020] Support the SAE J1939-21 Transport Protocols CMDT

Initiator:	Vector
Date:	2008-06-25
Short Description:	The AUTOSAR J1939 Transport Layer shall support the SAE J1939-21(2006-12) transport protocol CMDT for I-PDUs with large payload (DLC > 8 Bytes) or variable DLC.
Type:	New
Importance:	High
Description:	Depending on the data length (DLC) and the N-SDU Identifier the J1939 TP decides if the CMDT Transport Protocol is required.
Rationale:	--
Use Case:	--
Dependencies:	Configuration [BSW42400002]
Conflicts:	--

Supporting Material:	[BRF00168]

3.2.3.4 [BSW42400021] Compliance with CAN Interface notifications

Initiator:	Vector
Date:	2008-06-25
Short Description:	The J1939 Transport Layer shall be compliant with the CAN Interface module notifications.
Type:	New
Importance:	High
Description:	The J1939 Transport Layer shall only implement the CAN Interface notification services concerning TP messages: - Reception notification - Tx confirmation
Rationale:	In AUTOSAR architecture, the J1939 Transport Layer is placed between the PDU Router and the CAN Interface.
Use Case:	The J1939 Transport Layer has to support the notification services called by the CAN Interface.
Dependencies:	Reception notification [BSW01003] Transmission confirmation [BSW01009]
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.3.5 [BSW42400022] Protocol specific timeout values

Initiator:	Vector
Date:	2008-06-25
Short Description:	The timeout values of the J1939 transport protocols shall be supervised according to the specification.
Type:	New
Importance:	High
Description:	All the timeout values of the J1939 transport protocols are specified in SAE J1939-21.
Rationale:	--
Use Case:	--
Dependencies:	--
Conflicts:	--
Supporting Material:	SAE J1939-21(2006-12) [BRF00168]

3.2.3.6 [BSW42400023] Error handling

Initiator:	Vector
Date:	2008-06-25
Short Description:	Error handling
Type:	New
Importance:	High
Description:	The handling of an unexpected received N-PDU by the J1939 Transport Layer depends on the configured N-PDU type: - Unexpected BAM-Frames shall be ignored by the J1939TP. - Unexpected CMDT Frames shall be signaled by the J1939

	TP with an abort (TP.CM/Abort) and the PDU Router shall be notified to free reserved resources.
Rationale:	To define the layer behavior on error.
Use Case:	What happens when receiving the third TP.DT frame instead of the second one?
Dependencies:	--
Conflicts:	--
Supporting Material:	SAE J1939-21(2006-12) [BRF00168]

3.2.3.7 [BSW42400024] Data padding value of unused bytes in N-PDU

Initiator:	Vector
Date:	2008-06-25
Short Description:	All unused bytes must be initialized to the value specified in SAE J1939-21 TP.DT PGN (0xFF).
Type:	New
Importance:	High
Description:	Setting unused data in the last frame is required by J1939-21
Rationale:	--
Use Case:	--
Dependencies:	--
Conflicts:	--
Supporting Material:	SAE J1939-21(2006-12) [BRF00168]

3.2.3.8 [BSW42400025] Usage of BAM and CMDT in parallel

Initiator:	Vector
Date:	2008-06-25
Short Description:	The AUTOSAR J1939 TP shall be able to manage both BAM and CMDT Transport Protocols in parallel.
Type:	New
Importance:	Medium
Description:	The J1939 Transport Layer is able to support more than one connection. Therefore it shall deal if configured (depending on the N-SDU configuration) with both BAM and CMDT Transport Protocols in parallel. In transmission direction, the use of BAM or CMDT depends on Parameter Group Number (part of the N-SDU configuration) of the concerned data to transmit. On reception, the code provided in the first frame (TP.CM) determines the used transport protocol, which must be identical to the protocol type derived from the PGN.
Rationale:	Simplification to accommodate static network layout of AUTOSAR.
Use Case:	A J1939 network supports the parallel transport of BAM and CMDT frames.
Dependencies:	BSW42400042
Conflicts:	--
Supporting Material:	[BRF00168]

3.2.4 Shutdown Operation
There is no shutdown operation necessary for the J1939 Transport Layer.

3.2.5 Fault Operation
There is no fault operation necessary for the J1939 Transport Layer.

3.3 Functional requirements for the application SW-Cs to support J1939

The following requirements are necessary to permit a complete AUTOSAR conform implementation of J1939.
AUTOSAR J1939TP is the only J1939 specific BSW planned within AUTOSAR. Therefore is the only document in which those requirements might be described for information.

However they shall be implemented on the application layer within the SW-Cs. To avoid traceability inconsistency of the AUTOSAR J1939 TP they are not referring a specific BSW number.

3.3.1.1 Message Request Handling

Initiator:	WP Architecture | Vector
Date:	2008-06-19
Short Description:	Unambiguous sets of COM Signals shall be defined for Message Request Handling.
Type:	new
Importance:	medium
Description:	The handling of Message Request as specified within J1939-21 requires CAN-Messages containing node addresses (SA and DA) and Parameter Group information (PGN) in the payload. To be able to unambiguously handle data elements for Message Request the concerned AUTOSAR nodes shall use unambiguous COM Signals.
Rationale:	Request messages as used within J1939 shall be integrated in the AUTOSAR system design. Unambiguous relation between all different possible J1939 Request Handling messages and COM-Signals is necessary because of the static configuration of the AUTOSAR J1939 Network. Within AUTOSAR each COM Signal is associated to a single CAN Identifier.

Use Case:	According to J1939-21 a Message Request is a specific PGN including the requesting node address in its 29 bit Identifier and the PGN of the Requested J1939 parameter as data. It needs therefore only one set of COM-Signals for each DA (connection). In an AUTOSAR J1939 ECU it can be either:
	
	    - broadcasted.
	or
	    - sent to a dedicated node.
	
	If two requests for the same PGN are issued from two different ECUs they are transmitted with two distinct 29 bit Identifiers due to the different SA. The receiving node shall associate them with two different sets of COM signals.
	
	Depending on the required PGN, the answer of the J1939 AUTOSAR SW-C to a J1939 Request Message shall be either:
	
	    - a J1939 Acknowledge message (always broadcasted) including the success status (PACK, NACK, …) as data. In this case a single COM Signal is sufficient.
	or
	    - the requested J1939 Parameter Group which is either broadcasted or sent to the requiring node.
	
	Within AUTOSAR the answer to a request is done with the transport protocol (CMDT/BAM) that is used in a non

	request context. This requirement is in contrast with the SAE standard which allows for instance to broadcast an answer to a BAM request, even though the PGN indicates that in a non request context the PGN shall be transmitted with a point to point connection (CMDT). When the reply to the request is broadcasted (Acknowledge message or broadcasted PGN) a single set of COM-Signal is sufficient. For point-to-point transmission of PGN the answering ECU shall send the required PGN to a defined ECU making the definition of several sets of COM signals per PGN necessary. Each set of COM signals is directly associated to the node which might require the PGN. If two different nodes shall be able to require the same PGN two different sets of COM signals shall be used by the ECU to answer to the request.
Dependencies:	--
Conflicts:	All PGNs of Format 2 which are more that 8 bits long shall be transmitted by the AUTOSAR J1939 TP with the BAM Transport Protocol. J1939 sees an exception to this rule if the PGN has been previously requested with a node specific Request Message. In this case the J1939 standard specifies that PGN of format 2 has to be transported with the CMDT transport protocol. This case shall not be supported.
Supporting Material:	047 Support of SAE J1939 Protocol features §3.6.1 [BRF00168]

3.3.1.2 Network Management Handling

Initiator:	WP Architecture | Vector
Date:	2008-06-19
Short Description:	An initial AddressClaim (containing according to J1939 the unique identifier of the ECU, its SA and priority) shall be sent by the SW-C if required by the network specification. If a Request for an AddressClaim is received, and support for requested AddressClaim is required by the network specification, the AddressClaim of the receiving ECU shall be sent. If another ECU has communicated an AddressClaim with the same SA but a higher priority, determined by the unique ECU identifier, an AddressClaimLost message shall be sent. Additionally, the loss of the address claim shall be signalled to the BSW Mode Manager and reported via the application interface (service ports) of DEM.
Type:	new
Importance:	medium

Description:	AUTOSAR allows only static network layout with fixed CAN Identifiers that have been defined at configuration time. No change of CAN-Identifiers due to changing node address is allowed at run time. This particularity makes dynamic address claiming as known within J1939 impossible to the AUTOSAR J1939 ECUs.
	If a communication with a non AUTOSAR J1939 node using the same node address as the one used by an AUTOSAR J1939 ECU is required, the address claiming procedure at the application level of the AUTOSAR ECU shall consider two possibilities:
	    - If the non AUTOSAR J1939 node loses the address claiming (because of lower priority) the J1939 Network still is operational. The non AUTOSAR J1939 node will go silent.
	    - If the non AUTOSAR J1939 node wins the address claiming

	(because of higher priority) the AUTOSAR J1939 ECU shall send a request to the BSW Mode Manager to stop the AUTOSAR ECU from sending any messages to the J1939 network and report via the application interface (service ports) to DEM about the loss of the address claim.
Rationale:	The integration of off-the-shelf J1939 ECUs or existing test devices requires AddressClaim handling and proper reaction in case a AUTOSAR ECU loses the address claim.
Use Case:	--
Dependencies:	--
Conflicts:	--
Supporting Material:	047 Support of SAE J1939 Protocol features, 3.6.3. [BRF00168] Usage SAE J1939-81

3.3.1.3 Diagnostic Message Handling

Initiator:	WP Architecture | Vector
Date:	2008-06-19
Short Description:	The J1939 Diagnostic Message Handling as described in SAE J1939-73(2006-09), Application layer - Diagnostics shall be implemented as a SW-C. The system design shall allow the use of the RTE to get necessary information from DEM or other J1939-SW-Cs.
Type:	new
Importance:	medium
Description:	The Diagnostic Message Handler as defined in J1939 shall be designed as an AUTOSAR SW-C. It produces the J1939 DMxx messages. - An error that the DEM has detected within the AUTOSAR ECU shall be accessed by the Diagnostic Message Handler SW-C using the service port API (RTE) of the DEM. - Cyclic J1939 diagnostic messages shall be directly sent by the Diagnostic Message Handler SW-C to be able to monitor the cycle times. Additional information that is required for the content of the DMxx message shall be collected from other SW-Cs via RTE server ports.
Rationale:	The requirement allows the transmission of DMxx messages based on the DTC information available from the DEM BSW via RTE service ports.
Use Case:	--
Dependencies:	--
Conflicts:	--
Supporting Material:	047 Support of SAE J1939 Protocol features, 3.6.2. [BRF00168]

3.4   Non-Functional Requirements (Qualities)

3.4.1 Timing Requirement
There is no non-functional Timing Requirement for the J1939 Transport Layer.
3.4.2 Resource Usage
There is no resource related requirement for the J1939 Transport Layer.

3.4.2.1 [BSW42400040] Usage of SAE J1939-21 specifications

Initiator:	Vector
Date:	2008-06-25
Short Description:	The AUTOSAR J1939 Transport Layer shall be based on SAE J1939-21(2006-12) specifications.
Type:	New
Importance:	High
Description:	If no requirement is explicitly added or excluded, the implementation of the AUTOSAR J1939 Transport Layer shall follow the SAE J1939-21(2006-12) specification for the transport protocol (section 5.10 of SAE J1939-21 of December 2006).
Rationale:	Reuse of existing standards for AUTOSAR BSW. The SAE J1939-21 specifications is the most used CAN related Transport Layer in Trucks.
Use Case:	Transport protocol on CAN according to SAE J1939: - Segmentation of data in transmit direction - Collection of data in receive direction - Control of data flow - Detection of errors (message loss/doubling/sequence)
Dependencies:	--
Conflicts:	--
Supporting Material:	SAE J1939-21(2006-12) [BRF00168]

3.4.2.2 [BSW42400041] J1939 Transport Layer Interfaces

Initiator:	Vector
Date:	2008-06-25
Short Description:	The J1939 Transport Layer shall be the interface layer between PDU Router and CAN Interface for J1939 messages needing transport protocol functionalities.
Type:	New
Importance:	High
Description:	The J1939 Transport Layer is used by the PDU Router to transmit and receive J1939 messages coming from the AUTOSAR COM Layer. Because the PDU Router communicates through both J1939 Transport and CAN Interface, their two interfaces shall be coherent (i.e. if they provide a similar primitive, for example Transmit, parameters of those primitives must be as similar as possible). To process transmission the J1939 Transport module uses services of the CAN Interface
Rationale:	Interfaces and interaction
Use Case:	By using coherent API (homogeneity of service parameters and so on) the readability and maintainability of source code are improved.
Dependencies:	--
Conflicts:	--
Supporting Material:	[BRF00168]

3.4.2.3 [BSW42400042] Independent interface

Initiator:	Vector
Date:	2008-06-25
Short Description:	The J1939 Transport Layer interface shall be independent of its internal

	communication configuration.
Type:	New
Importance:	High
Description:	The J1939 Transport Layer shall offer the PDU Router an interface that is completely independent to its internal communication configuration and implementation. The interface shall just deal with PDU identifiers and data unit (N-SDU) properties
Rationale:	Layered Software Architecture. Information hiding. Common interface for all applications
Use Case:	--
Dependencies:	
Conflicts:	--
Supporting Material:	[BRF00168]

4 References

4.1 Deliverables of AUTOSAR

[CanIf] Specification of CAN Interface
AUTOSAR_SWS_CANInterface.pdf

[PduR] Specification of PDU Router
AUTOSAR_SWS_PDURouter.pdf

[SrsGeneral] General Requirements on Basic Software Modules
AUTOSAR_SRS_BSWGeneral.pdf

4.2 Related standard and norms

4.2.1 SAE

SAE J1939-21(2006-12), Data Link Layer

SAE J1939-81(2003-05), Network Management

SAE J1939-73(2006-09), Application layer - Diagnostics