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Disclaimer

Contents

1 Introduction and functional overview

This document specifies the functionality, API and the configuration of the AUTOSAR Basic Software module Chinese Vehicle-2-X Message (CnV2xMsg).
The Chinese Vehicle-2-X Message together with the Chinese Vehicle-2-X Network (CnV2xNet), Chinese Vehicle-2-X Management (CnV2xM), Chinese Vehicle-2-X Security (CnV2xSec), Vehicle-2-X Data Manager (V2xDm) and the communication driver layer forms the Chinese V2X stack within the AUTOSAR architecture.
The CnV2xMsg module is designed to be hardware independent. The CnV2xMsg module is dependent on services of Chinese V2X entities in the application layer and on lower CnV2xNet module, and provides services to the V2xDm module.

1.1 Architecture Overview

Positioning of the CnV2xMsg module within the AUTOSAR BSW and the Layered Software architecture is shown in Figure 1.

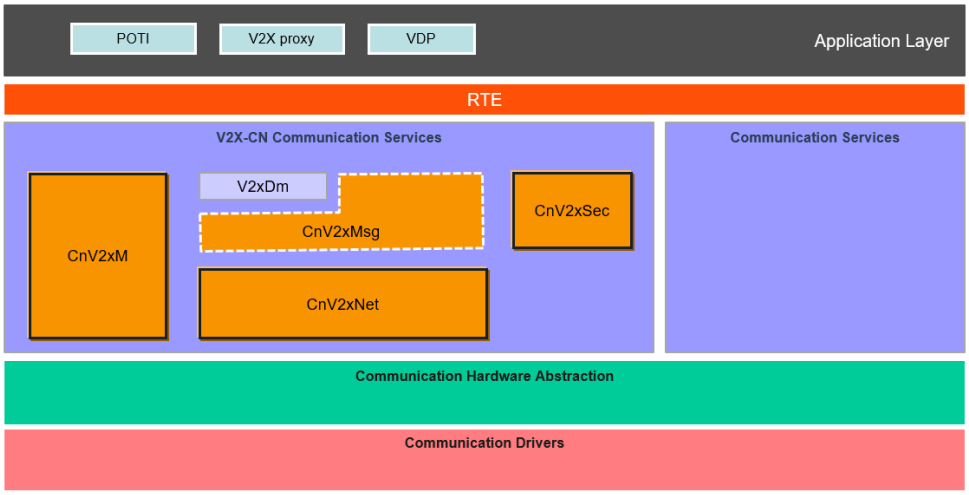

Figure 1.1: AUTOSAR BSW software architecture - CnV2xMsg scope

The CnV2xMsg module provides basic services of Basic Safety Message (BSM) and supports related management functions for BSM exchange.

1.2 Functional Overview

The CnV2xMsg module implements the basic service of BSM sending and receiving, and RSI/RSM/SPAT/MAP receiving. Besides that, management functions including Frequency Management, POTI management and ID management related to BSM sending are also implemented in current CnV2xMsg module.

1.2.1 Basic Safety Message (BSM)

The BSM basic service is a message layer entity that operates the BSM protocol. It provides two services: sending and receiving of BSMs. The BSM basic service generates and sends BSMs to other Vehicles/RSUs or it receives BSMs from Vehicles and provides them to the applications. It may interface with the AUTOSAR application layer in order to collect relevant information for BSM generation. The BSM basic service uses the services provided by the protocol entities of the lower layers of the Chinese V2X stack to disseminate the BSM. Upon receiving a BSM, the BSM basic service makes the content of the BSM available to the V2X applications. Received BSMs can be given to the upper application layer via their standardized AUTOSAR service interface CnV2xApplRxIndicationBsm or via V2xDm.

For sending and receiving BSMs, the BSM basic service part of the CnV2xMsg shall provide the following sub-functions:

- Encode BSM
- Decode BSM
- BSM transmission management
- BSM reception management

For details see [1] chapter 6.

1.2.2 Road Side Information (RSI)

The RSI service is a message layer entity that provides receiving of RSI messages. The RSI service receives RSIs from RSU and provides them to applications. Received RSIs can be given to the upper application layer via standardized AUTOSAR service interface CnV2xApplRxIndicationRsi or via V2xDm.

1.2.3 Road Side Message (RSM)

The RSM service is a Message layer entity that provides receiving of RSM messages. The RSM service receives RSMs from RSU and provides them to V2X applications. Received RSMs can be given to the upper application layer via standardized AUTOSAR service interface CnV2xApplRxIndicationRsm or via V2xDm.

1.2.4 Signal Phase and Time (SPAT)

The SPAT service is a Message layer entity that provides receiving of SPAT messages. The SPAT service receives SPATs from RSU and provides them to V2X appli-

cations. Received SPATs can be given to the upper application layer via standardized AUTOSAR service interface CnV2xApplRxIndicationSpat or via V2xDm.

1.2.5 MAP

The MAP service is a Message layer entity that provides receiving of MAP messages. The MAP service receives MAPs from RSU and provides them to V2X applications. Received MAPs can be given to the upper application layer via standardized AUTOSAR service interface CnV2xApplRxIndicationMap or via V2xDm.

1.2.6 Position and Time Management(POTI)

POTI management in CnV2xMsg module gets position and time information from application layer and makes is available to itself, and also provides distances to CnV2xSec module.

1.2.7 Identity Management

CnV2xMsg shall implement of identity management including Vehicle ID and Message Count. From security and privacy perspective, these identities shall be changed when pseudonym certificate updated.

1.2.8 Frequency Management

CnV2xMsg shall control message sending frequency to lower layers according to channel state, vehicle state, Message Type, etc.

1.2.9 Messages Reception Service Via V2xDm

If the received V2X messages are sent to application layer or PDUR via V2xDm module, the CnV2xMsg shall provides interface to V2xDm module. Upon receiving a message (BSM/RSI/RSM/SPAT/MAP), the CnV2xMsg makes the content of the message available to the V2xDm module. The received messages are given to the upper application layer by the V2xDm module via the standardized AUTOSAR service interface.

2 Acronyms and Abbreviations

Abbreviation / Acronym:	Description:
API	Application programming Interface
BS	Basic Service
BSW	Basic Software
BSM	Basic safety Message
C-V2X	Cellular based Vehicle to Everything
CCSA	China Communications Standards Association
CnV2xMsg	Chinese Vehicle-2-X Message
CnV2xNet	Chinese Vehicle-2-X Network
CnV2xSec	Chinese Vehicle-2-X Security
DE	Data Element
DEM	Diagnostic Event Manager
DET	Default Error Tracer
DF	Data Frame
EcuM	Electronic Control Unit Manager
IF	Interface
NTCAS	National Technical Committee of Auto Standardization
NVM	Non-Volatile Memory
PH	Path History
POTI	Position and Time
RSI	Road Side Information
RSM	Road Side Message
RSU	Roadside Unit
SPAT	Signal Phase And Time
VDP	Vehicle Data provider

3 Related documentation

3.1 Input documents & related standards and norms

[1] GB/T: Technical requirements and test methods of vehicular communication system based on LTE-V2X direct communication (Draft Edition: 2022-04-01)
http://www.catarc.org.cn/

[2] General Specification of Basic Software Modules
AUTOSAR_CP_SWS_BSWGeneral

[3] Specification of Default Error Tracer
AUTOSAR_CP_SWS_DefaultErrorTracer

[4] Specification of ECU State Manager
AUTOSAR_CP_SWS_ECUStateManager

[5] Specification of Chinese Vehicle-2-X Network
AUTOSAR_CP_SWS_ChineseV2XNetwork

[6] Requirements on Chinese Vehicle-2-X Communication
AUTOSAR_CP_RS_ChineseV2XCommunication

[7] YD/T 3709-2020:Technical requirements of Message layer of LTE-based vehicular communication
http://www.ccsa.org.cn/

[8] Specification of Vehicle-2-X Facilities
AUTOSAR_CP_SWS_V2XFacilities

3.2 Related specification

AUTOSAR provides a General Specification on Basic Software modules [2, SWS BSW General], which is also valid for CnV2xMsg.

Thus, the specification SWS BSW General shall be considered as additional and required specification for CnV2xMsg.

4 Constraints and assumptions

4.1 Limitations

The Chinese V2X modules follow the technical requirements regarding the Day-1 scenarios defined by CCSA and NTCAS. Data types of RSI, RSM, SPAT and MAP messages, which are used in service interfaces, are also planed to develop in future release.
The current version does not yet support Messages Reception Service Via V2xDm because V2xDm is not currently available. This function will be supported in subsequent releases.

4.2 Applicability to car domains

This specification is applicable to all car domains.

5 Dependencies to other modules

5.1 AUTOSAR Default Error Tracer (DET)

In development mode, CnV2xMsg module reports errors through the Det_ReportError function of DET Module [3].

5.2 AUTOSAR Ecu State Manager (EcuM)

The EcuM [4] initializes the CnV2xMsg module by calling CnV2xMsg_Init specified in 8.3.1 in this document.

5.3 V2X Vehicle Data Provider

The CnV2xMsg module retrieves vehicle relevant data from the VDP application by using the Sender-Receiver-Interface CnV2xMsgVdp (see [CP_SWS_CnV2xMsg_01101]).

5.4 V2X Proxy

The V2x Proxy is an Application that listens to every BSM via the Sender-Receiver-Interface CnV2xApplRxIndicationBsm (See [CP_SWS_CnV2xMsg_01103]) and transmits it to one or more ECU's via in-vehicle networks.

The CnV2xMsg module delivers received RSI data to the V2x Proxy by using the Sender-Receiver-Interface CnV2xApplRxIndicationRsi (see [CP_SWS_CnV2xMsg_01105]).

The CnV2xMsg module delivers received RSM data to the V2x Proxy by using the Sender-Receiver-Interface CnV2xApplRxIndicationRsm (see [CP_SWS_CnV2xMsg_01107]).

The CnV2xMsg module delivers received SPAT data to the V2x Proxy by using the Sender-Receiver-Interface CnV2xApplRxIndicationSpat (see [CP_SWS_CnV2xMsg_01109]).

The CnV2xMsg module delivers received MAP data to the V2x Proxy by using the Sender-Receiver-Interface CnV2xApplRxIndicationMap (see [CP_SWS_CnV2xMsg_01111]).

5.5 AUTOSAR CnV2xNet

The CnV2xMsg module assumes a transmit request primitive (CnV2xNet_Transmit [5], see CnV2xSec_ReqEncap, CnV2xSec_ReqDecap, and CnV2xSec_VehicleEventFlagsIndication, [CP_SWS_CnV2xMsg_01049]) to be provided by the CnV2xNet.

5.6 AUTOSAR CnV2xSec

Security mechanisms are configured by the CnV2xSec and are used by CnV2xMsg.The CnV2xMsg module assumes a request primitive (see [CP_SWS_CnV2xMsg_01049]) to be provided by the CnV2xSec module.

5.7 AUTOSAR V2xDm

If the received V2X messages are sent to application layer or PDUR via V2xDm module, the CnV2xMsg module shall delivers the received messages to the V2xDm module. The CnV2xMsg module assumes a request primitive to be provided by the Vehicle-2-X Data Manager (V2xDm) module.

6 Requirements Tracing

The following tables reference the requirements specified in [6] and links to the fulfillment of these.

Requirement	Description	Satisfied by
[CP_SRS_CnV2X_-00100]	The implementation of Chinese V2X communication shall follow technical requirements given by CCSA and NTCAS	[CP_SWS_CnV2xMsg_00105] [CP_SWS_CnV2xMsg_00106] [CP_SWS_CnV2xMsg_00107] [CP_SWS_CnV2xMsg_00108] [CP_SWS_CnV2xMsg_00109] [CP_SWS_CnV2xMsg_00110] [CP_SWS_CnV2xMsg_00111] [CP_SWS_CnV2xMsg_00201] [CP_SWS_CnV2xMsg_00403] [CP_SWS_CnV2xMsg_00405] [CP_SWS_CnV2xMsg_00406] [SWS_CnV2xMsg_00202]
[CP_SRS_CnV2X_-00201]	The Chinese V2X communication shall use UTC time as the reference clock	[CP_SWS_CnV2xMsg_00404]
[CP_SRS_CnV2X_-00203]	The Chinese V2X communication shall use GCJ-02 coordinate system as the reference coordinate	[CP_SWS_CnV2xMsg_00401] [CP_SWS_CnV2xMsg_00402]
[CP_SRS_CnV2X_-00501]	BSM basic service of Chinese V2X message layer shall be compliant to CCSA Specification of Message layer of LTE-based vehicular communication	[CP_SWS_CnV2xMsg_00100] [CP_SWS_CnV2xMsg_00204] [CP_SWS_CnV2xMsg_01002] [CP_SWS_CnV2xMsg_01003] [CP_SWS_CnV2xMsg_01004] [CP_SWS_CnV2xMsg_01009] [CP_SWS_CnV2xMsg_01012] [CP_SWS_CnV2xMsg_01014] [CP_SWS_CnV2xMsg_01018] [CP_SWS_CnV2xMsg_01024] [CP_SWS_CnV2xMsg_01026] [CP_SWS_CnV2xMsg_01030] [CP_SWS_CnV2xMsg_01033] [CP_SWS_CnV2xMsg_01036] [CP_SWS_CnV2xMsg_01038] [CP_SWS_CnV2xMsg_01041] [CP_SWS_CnV2xMsg_01043] [CP_SWS_CnV2xMsg_01045] [CP_SWS_CnV2xMsg_01047] [CP_SWS_CnV2xMsg_01049] [CP_SWS_CnV2xMsg_01050] [CP_SWS_CnV2xMsg_01056] [CP_SWS_CnV2xMsg_01061] [CP_SWS_CnV2xMsg_01102] [CP_SWS_CnV2xMsg_01104] [CP_SWS_CnV2xMsg_01106] [CP_SWS_CnV2xMsg_01108] [CP_SWS_CnV2xMsg_01110] [CP_SWS_CnV2xMsg_01112] [CP_SWS_CnV2xMsg_01201] [CP_SWS_CnV2xMsg_02001] [CP_SWS_CnV2xMsg_02002] [CP_SWS_CnV2xMsg_02003] [CP_SWS_CnV2xMsg_02004] [CP_SWS_CnV2xMsg_02005] [CP_SWS_CnV2xMsg_02006] [CP_SWS_CnV2xMsg_02007] [CP_SWS_CnV2xMsg_02008]

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Requirement	Description	Satisfied by
		△ [CP_SWS_CnV2xMsg_02009] [CP_SWS_CnV2xMsg_02010] [CP_SWS_CnV2xMsg_02011] [CP_SWS_CnV2xMsg_02012] [CP_SWS_CnV2xMsg_02013] [CP_SWS_CnV2xMsg_02014] [CP_SWS_CnV2xMsg_02015] [CP_SWS_CnV2xMsg_02016] [CP_SWS_CnV2xMsg_02017] [CP_SWS_CnV2xMsg_02018] [CP_SWS_CnV2xMsg_02019] [CP_SWS_CnV2xMsg_02020] [CP_SWS_CnV2xMsg_02021] [CP_SWS_CnV2xMsg_02022] [CP_SWS_CnV2xMsg_02023] [CP_SWS_CnV2xMsg_02024] [CP_SWS_CnV2xMsg_02025] [CP_SWS_CnV2xMsg_02026] [CP_SWS_CnV2xMsg_02027] [CP_SWS_CnV2xMsg_02028] [CP_SWS_CnV2xMsg_02029] [CP_SWS_CnV2xMsg_02030] [CP_SWS_CnV2xMsg_02031] [CP_SWS_CnV2xMsg_02032] [CP_SWS_CnV2xMsg_02033] [CP_SWS_CnV2xMsg_02034] [CP_SWS_CnV2xMsg_02035] [CP_SWS_CnV2xMsg_02036] [CP_SWS_CnV2xMsg_02037] [CP_SWS_CnV2xMsg_02038] [CP_SWS_CnV2xMsg_02101] [CP_SWS_CnV2xMsg_02102] [CP_SWS_CnV2xMsg_02103] [CP_SWS_CnV2xMsg_02104] [CP_SWS_CnV2xMsg_02105] [CP_SWS_CnV2xMsg_02106] [CP_SWS_CnV2xMsg_02107] [CP_SWS_CnV2xMsg_02108] [CP_SWS_CnV2xMsg_02109] [CP_SWS_CnV2xMsg_02110] [CP_SWS_CnV2xMsg_02111] [CP_SWS_CnV2xMsg_02112] [CP_SWS_CnV2xMsg_02113] [CP_SWS_CnV2xMsg_02114] [CP_SWS_CnV2xMsg_02115] [CP_SWS_CnV2xMsg_02116] [CP_SWS_CnV2xMsg_02117] [CP_SWS_CnV2xMsg_02118] [CP_SWS_CnV2xMsg_02119] [CP_SWS_CnV2xMsg_02120] [CP_SWS_CnV2xMsg_02121] [CP_SWS_CnV2xMsg_02122] [CP_SWS_CnV2xMsg_02123] [CP_SWS_CnV2xMsg_02124] [CP_SWS_CnV2xMsg_02125] [CP_SWS_CnV2xMsg_02126] [CP_SWS_CnV2xMsg_02127] [CP_SWS_CnV2xMsg_02128] [CP_SWS_CnV2xMsg_02129] [CP_SWS_CnV2xMsg_02130] [CP_SWS_CnV2xMsg_02131] [CP_SWS_CnV2xMsg_02132] ▽

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Requirement	Description	Satisfied by
		△ [CP_SWS_CnV2xMsg_02133] [CP_SWS_CnV2xMsg_02134] [CP_SWS_CnV2xMsg_02135] [CP_SWS_CnV2xMsg_02136] [CP_SWS_CnV2xMsg_02137] [CP_SWS_CnV2xMsg_02138] [CP_SWS_CnV2xMsg_02139] [CP_SWS_CnV2xMsg_02140] [CP_SWS_CnV2xMsg_02141] [CP_SWS_CnV2xMsg_02142] [CP_SWS_CnV2xMsg_02143] [CP_SWS_CnV2xMsg_02144] [CP_SWS_CnV2xMsg_07001] [CP_SWS_CnV2xMsg_07002] [CP_SWS_CnV2xMsg_07003] [CP_SWS_CnV2xMsg_07004] [CP_SWS_CnV2xMsg_07005] [CP_SWS_CnV2xMsg_07006] [CP_SWS_CnV2xMsg_07007] [CP_SWS_CnV2xMsg_10057] [SWS_CnV2xMsg_00205]
[CP_SRS_CnV2X_-00502]	The message layer of Chinese V2X communication shall meet the minimum criteria for data transmission when sending BSM messages	[CP_SWS_CnV2xMsg_00206]
[CP_SRS_CnV2X_-00503]	The message layer of Chinese V2X communication shall support critical BSM messages	[CP_SWS_CnV2xMsg_00209] [CP_SWS_CnV2xMsg_00210]
[CP_SRS_CnV2X_-00504]	The message layer of Chinese V2X communication shall support priority setting for different types of BSMs	[CP_SWS_CnV2xMsg_00213]
[CP_SRS_CnV2X_-00506]	The message layer of Chinese V2X communication shall generate and send path histories in BSMs	[CP_SWS_CnV2xMsg_00211] [CP_SWS_CnV2xMsg_00214] [CP_SWS_CnV2xMsg_00215] [CP_SWS_CnV2xMsg_00216] [CP_SWS_CnV2xMsg_00217] [CP_SWS_CnV2xMsg_00218] [CP_SWS_CnV2xMsg_00219] [CP_SWS_CnV2xMsg_00220] [CP_SWS_CnV2xMsg_00221] [CP_SWS_CnV2xMsg_00222] [CP_SWS_CnV2xMsg_00223]
[CP_SRS_CnV2X_-00507]	The message layer of Chinese V2X communication shall manage BSM transmission in such a way that no outdated BSM will be transmitted	[CP_SWS_CnV2xMsg_00208] [CP_SWS_CnV2xMsg_00212] [CP_SWS_CnV2xMsg_00306] [CP_SWS_CnV2xMsg_00307]
[CP_SRS_CnV2X_-00508]	The message layer of Chinese V2X communication shall support receiving RSI messages	[CP_SWS_CnV2xMsg_00101] [CP_SWS_CnV2xMsg_00203] [CP_SWS_CnV2xMsg_00301] [CP_SWS_CnV2xMsg_00306] [CP_SWS_CnV2xMsg_00307]
[CP_SRS_CnV2X_-00509]	The message layer of Chinese V2X communication shall support receiving RSM messages	[CP_SWS_CnV2xMsg_00102] [CP_SWS_CnV2xMsg_00302] [CP_SWS_CnV2xMsg_00306] [CP_SWS_CnV2xMsg_00307]

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Requirement	Description	Satisfied by
[CP_SRS_CnV2X_-00510]	The message layer of Chinese V2X communication shall support receiving SPAT messages	[CP_SWS_CnV2xMsg_00103] [CP_SWS_CnV2xMsg_00303] [CP_SWS_CnV2xMsg_00306] [CP_SWS_CnV2xMsg_00307]
[CP_SRS_CnV2X_-00511]	The message layer of Chinese V2X communication shall support receiving MAP messages	[CP_SWS_CnV2xMsg_00104] [CP_SWS_CnV2xMsg_00304] [CP_SWS_CnV2xMsg_00306] [CP_SWS_CnV2xMsg_00307]
[CP_SRS_CnV2X_-00604]	The Chinese V2X communication shall not transmit BSMs when it has no valid certificates	[CP_SWS_CnV2xMsg_00230]
[CP_SRS_CnV2X_-00605]	The Chinese V2X communication shall randomize the identifiers related to BSM to in order to support privacy	[CP_SWS_CnV2xMsg_00410] [CP_SWS_CnV2xMsg_00411] [CP_SWS_CnV2xMsg_00413] [CP_SWS_CnV2xMsg_00414] [CP_SWS_CnV2xMsg_00415] [CP_SWS_CnV2xMsg_00416] [CP_SWS_CnV2xMsg_00417] [CP_SWS_CnV2xMsg_00418]
[SRS_BSW_00345]	BSW Modules shall support pre-compile configuration	[SWS_CnV2xMsg_08001]
[SRS_V2X_00711]	The V2X system's CA basic service shall be compliant to ETSI Specification of Cooperative Awareness Basic Service	[CP_SWS_CnV2xMsg_00305]
[SRS_V2X_00741]	The V2X system's DEN basic service shall be compliant to ETSI Specifications of Decentralized Environmental Notification Basic Service	[CP_SWS_CnV2xMsg_00305]
[SRS_V2X_10001]	The V2X system's Facility layer shall support receiving IVI messages	[CP_SWS_CnV2xMsg_00305] [CP_SWS_CnV2xMsg_01051]
[SRS_V2X_10003]	The V2X system's Facility layer shall support receiving MAPEM messages	[CP_SWS_CnV2xMsg_00305]
[SRS_V2X_10004]	The V2X system's Facility layer shall support receiving SPAT extended messages	[CP_SWS_CnV2xMsg_00305]

Table 6.1: Requirements Tracing

7 Functional Specification

The CnV2xMsg module operates the basic services of BSM, RSI, RSM, SPAT and MAP.

[CP_SWS_CnV2xMsg_00100]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈The CnV2xMsg module shall implement the BSM Basic Service following technical requirements specified in [1] [7].⌋

[CP_SWS_CnV2xMsg_00101]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00508

⌈The CnV2xMsg module shall implement the RSI Basic Service following technical requirements specified in [7].⌋

[CP_SWS_CnV2xMsg_00102]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00509

⌈The CnV2xMsg module shall implement the RSM Basic Service following technical requirements specified in [7].⌋

[CP_SWS_CnV2xMsg_00103]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00510

⌈The CnV2xMsg module shall implement the SPAT Basic Service following technical requirements specified in [7].⌋

[CP_SWS_CnV2xMsg_00104]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00511

⌈The CnV2xMsg module shall implement the MAP Basic Service following technical requirements specified in [7].⌋

7.1 Startup Behavior

[CP_SWS_CnV2xMsg_00105]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈The function CnV2xMsg_Init (see Chapter 8.3.1) of the CnV2xMsg shall initialize the internal states of the CnV2xMsg module.⌋

[CP_SWS_CnV2xMsg_00106]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈The function CnV2xMsg_Init shall initialize the basic services of BSM, RSI, RSM, SPAT and MAP if the received V2X messages are directly sent to application layer via RTE.⌋

[CP_SWS_CnV2xMsg_00111]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈The function CnV2xMsg_Init shall initialize message reception service (see chapter 8.5.7) if the received V2X messages are sent to application layer or PDUR via V2xDm module.⌋

[CP_SWS_CnV2xMsg_00107]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈When system start-up, the CnV2xMsg shall read the heading value from NvM as the initial value.⌋

7.2 Shutdown Behavior

[CP_SWS_CnV2xMsg_00110]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈When system shutdown, the CnV2xMsg shall store the last known heading value in NvM.⌋

7.3 General Format Specification

[CP_SWS_CnV2xMsg_00108]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈The data elements which constitute the content of the BSM shall be compliant to [1] [7].⌋

[CP_SWS_CnV2xMsg_00109]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈The data elements which constitute the content of the RSI, RSM, SPAT and MAP shall be compliant to [7].⌋

7.4 BSM Functional Specification

7.4.1 BSM Initialization

[CP_SWS_CnV2xMsg_00201]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈BSM basic service initialization shall enable the transmission of BSMs.⌋

[SWS_CnV2xMsg_00202]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈The function CnV2xMsg_Init shall initialize the generation interval of BSM to default value (100ms) according to chapter 6.3.4 [1].⌋

[CP_SWS_CnV2xMsg_00230]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00604

⌈CnV2xMsg module shall begin to compose and send BSM messages when CnV2xMsg_CommitPseudonymChange is first received.⌋

7.4.2 BSM Generation, Sending and Receiving, Frequency Management

[CP_SWS_CnV2xMsg_00203]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00508

⌈The BSM basic service shall periodically generate BSMs controlled by the frequency management (For details see chapter 6.3.4 [1]).⌋

[CP_SWS_CnV2xMsg_00204]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈The generated BSMs shall be transmitted by the CnV2xNet using the API function CnV2xNet_Transmit (see chapter 8.6.1)⌋

[SWS_CnV2xMsg_00205]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈The BSM basic service shall receive BSMs via the callback function CnV2xMsg_RxIndication (see chapter 8.4.2)⌋

[CP_SWS_CnV2xMsg_00206]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00502

⌈The BSM basic service shall transmit a BSM only if the BSM meets the minimum criteria for BSM transmission specified in chapter 6.3.2 [1]. If at any time the BSM basic service cannot formulate a BSM that meets the minimum transmission criteria, the BSM basic service shall stop transmitting BSMs until the criteria is met.⌋

[CP_SWS_CnV2xMsg_00208]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00507

⌈For the first regular BSM to be transmitted after the vehicle startup, the CnV2xMsg module shall generate this message within [0,100] ms since the minimum transmission criteria is met.⌋

[CP_SWS_CnV2xMsg_00209]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00503

⌈When a critical-event trigger condition (for details see chapter 6.3.3 [1]) is first satisfied, the CnV2xMsg module shall cancel the next BSM transmission, and generate a critical BSM immediately and sent it out as soon as possible. CnV2xMsg module shall

include all valid critical event flags (up to the time of BSM composition) into this BSM. During the time that the trigger condition is valid, the CnV2xMsg module shall generate critical BSM with a default period of 100 ms starting at the time of the above critical BSM is generated.⌋

[CP_SWS_CnV2xMsg_00210]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00503

⌈When a specific trigger condition is invalid, the corresponding critical key event flag carried in the BSM message shall be canceled.⌋

[CP_SWS_CnV2xMsg_00211]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈The path history information shall be carried in the first BSM after the time elapsed since the last BSM carries path history information is equal to or greater than 500 ms.⌋

7.4.3 BSM Time Requirement

[CP_SWS_CnV2xMsg_00212]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00507

⌈The CnV2xMsg module shall make sure the time deviation between the value indicated by DSecond in BSM and the UTC time generating the BSM less than 150 ms.⌋

7.4.4 BSM Format Specification

For details about BSM data format refer to the following documents:
See [7] chapter 5
See [1] chapter 6.3.1 and chapter 6.3.2

[CP_SWS_CnV2xMsg_00213]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00504

⌈The priority value of a regular BSM message (without carrying critical flags) shall be set to 112 . The priority value of a critical BSM message (carrying critical flags) shall be set to 208 .⌋

7.4.5 Path History

[CP_SWS_CnV2xMsg_00214]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈The CnV2xMsg module shall clear path history cache when the security entity changes its pseudonym certificate.⌋

[CP_SWS_CnV2xMsg_00215]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈For the seting of DF_PathHistoryPoint included in DF_PathHistoryPointList for a BSM that includes path history information, The CnV2xMsg module shall select the corresponding data frame format according to the actual size of the data to be sent, and the larger data frame format shall not be used to send the smaller size data.⌋

[CP_SWS_CnV2xMsg_00216]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈CnV2xMsg_PathHistoryType shall not include any additional data that already exist in other part of the BSM.⌋

[CP_SWS_CnV2xMsg_00217]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈The CnV2xMsg module shall include path history point in DF_PathHistory for a BSM that includes path history information, and the length of path history (i.e. the distance between the first path history point and last path history point) shall equal to or greater than vMinPHistDistance (200 m) and no more than vMaxPHistDistance (400 m), unless the following conditions:

- After the vehicle selects a new pseudonym certificate, the physical distance between the current vehicle's position and the position that the vehicles starting to use the current pseudonym certificate is less than vMinPHistDistance (200 m);
- The position information is unavailable, and the length of path history is less than vMinPHistDistance(200 m);
- The number of path history points included in BSM is greater than vMaxPHistPoints, and the length of path history is still less than vMinPHistDistance (200 m).

⌋

Note: path history related parameter setting is listed in [1], Appendix B.

[CP_SWS_CnV2xMsg_00218]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈The CnV2xMsg module shall maintain a vehicle path comprised of data elements derived from the Positioning Subsystem sampled at a periodic time interval (typically the same as the rate of BSM transmissions) representing the vehicle's recent movement over a corresponding distance.⌋

[CP_SWS_CnV2xMsg_00219]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈The CnV2xMsg module shall populate CnV2xMsg_PathHistoryType with path history points such that the perpendicular distance between any point on the vehicle path and the straight line connecting its two adjacent path history points is less than vPathPerpendicularDist (1 m). (For details, see [1] appendix B)⌋

[CP_SWS_CnV2xMsg_00220]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈The CnV2xMsg module shall populate CnV2xMsg_PathHistoryType with the minimum number of path history points, which are selected from a subset of the available vehicle position data.⌋

[CP_SWS_CnV2xMsg_00221]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈The CnV2xMsg module shall populate CnV2xMsg_PathHistoryType with path history points in chronological time-ordered path history points, with the The first path history point being generating time is the closest in time to the current UTC time.⌋

Note: Time-ordered path history points are not required to be spaced equally in time.

[CP_SWS_CnV2xMsg_00222]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈The CnV2xMsg module shall populate CnV2xMsg_PathHistoryType with not more than vMaxPHistPoints points(15) from the computed set of points.⌋

[CP_SWS_CnV2xMsg_00223]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00506

⌈The offset value of each path history point shall be based on CnV2xMsg_Position3DType in the BSM.⌋

7.5 RSI Functional Specification

7.5.1 RSI Reception Management

[CP_SWS_CnV2xMsg_00301]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00508

⌈Upon receiving a RSI, the RSI service makes the content of the RSI available to the V2X applications (for details see [7] chapter 5). Received RSIs can be sent to the upper application layer via standardized AUTOSAR service interface CnV2xAppRxIndicationRsi or via V2xDm. It can be configured by CnV2xMsgV2xDmServiceConfig (See chapter 10.1.5).⌋

7.5.2 RSI Format Specification

For details about RSI data format refer to CCSA standards: [7] chapter 5.

7.6 RSM Functional Specification

7.6.1 RSM Reception Management

[CP_SWS_CnV2xMsg_00302]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00509

⌈Upon receiving a RSM, the RSM service makes the content of the RSM available to the V2X applications (for details see [7] chapter 5). Received RSMs can be sent to the upper application layer via standardized AUTOSAR service interface CnV2xAppRxIndicationRsm or via V2xDm. It can be configured by CnV2xMsgV2xDmServiceConfig (See chapter 10.1.5).⌋

7.6.2 RSM Format Specification

For details about RSM data format refer to CCSA standards: [7] chapter 5.

7.7 SPAT Functional Specification

7.7.1 SPAT Reception Management

[CP_SWS_CnV2xMsg_00303]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00510

⌈Upon receiving a SPAT, the SPAT service makes the content of the SPAT available to the V2X applications (for details see [7] chapter 5). Received SPATs can be sent to the upper application layer via standardized AUTOSAR service interface CnV2xAppRxIndicationSpat or via V2xDm. It can be configured by CnV2xMsgV2xDmServiceConfig (See chapter 10.1.5).⌋

7.7.2 SPAT Format Specification

For details about SPAT data format refer to CCSA standards: [7] chapter 5.

7.8 MAP Functional Specification

7.8.1 MAP Reception Management

[CP_SWS_CnV2xMsg_00304]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00511

⌈Upon receiving a MAP, the MAP service makes the content of the MAP available to the V2X applications (for details see [7] chapter 5). Received MAPs can be sent to the upper application layer via standardized AUTOSAR service interface CnV2xAppRxIndicationMap or via V2xDm. It can be configured by CnV2xMsgV2xDmServiceConfig (See chapter 10.1.5).⌋

7.8.2 MAP Format Specification

For details about MAP data format refer to CCSA standards: [7] chapter 5.

7.9 Position and Time

[CP_SWS_CnV2xMsg_00401]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00203

⌈GCJ-02 shall be used as the reference coordinate system as defined in [1].⌋

[CP_SWS_CnV2xMsg_00402]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00203

⌈Heading shall describe the direction of the vehicle reference point, and its value increases clockwise from north as defined in [7].⌋

[CP_SWS_CnV2xMsg_00403]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈The function CnV2xMsg_CheckDistance shall provide the currently distance between current position and the position where the current Pseudonym beginning to be used.⌋

[CP_SWS_CnV2xMsg_00404]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00201

⌈The function CnV2xMsg_GetRefTimePtr shall provide an address pointer to 32 bit data containing the current UTC Time.⌋

[CP_SWS_CnV2xMsg_00405]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈The function CnV2xMsg_CalcDistance shall calculate the distance between two geographical points.⌋

[CP_SWS_CnV2xMsg_00406]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00100

⌈CnV2xMsg module shall update and record the vehicle position when received CnV2xMsg_CommitPseudonymChange, which is used for calculating the distance by the function CnV2xMsg_CheckDistance.⌋

7.10 ID Management

[CP_SWS_CnV2xMsg_00410]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00605

⌈The CnV2xMsg module shall implement the identity management. Specific modules shall be notified with the current identity to ensure a consistent value is used in each layer of Chinese V2X stack.⌋

[CP_SWS_CnV2xMsg_00411]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00605

⌈When received the pseudonym certificate change from CnV2xSec, CnV2xMsg module shall change application identifiers (Vehicle ID and Message count), and inform the CnV2xNet module the changes. Those changes are necessary to ensure the privacy of the vehicle.⌋

[CP_SWS_CnV2xMsg_00413]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00605

⌈The CnV2xMsg_Mgt_MainFunction shall be used to manage identifier changes.⌋

[CP_SWS_CnV2xMsg_00414]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00605

⌈The CnV2xMsg shall initiate a change of the identifiers within two phases. A first prepare phase and a second commit or abort phase. The second phase depends on the result of all called modules within the first phase. If the first phase was successful, the commit phase shall be initiated, if the first phase was unsuccessful, the abort phase shall be initiated.⌋

[CP_SWS_CnV2xMsg_00415]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00605

⌈In the prepare phase, the API CnV2xMsg_PreparePseudonymChange() shall be called by CnV2xSec and then CnV2xNet_PrepareAppLayerIdChange() shall be called by CnV2xMsg.⌋

[CP_SWS_CnV2xMsg_00416]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00605

⌈In the commit phase, the API CnV2xMsg_CommitPseudonymChange() shall be called by CnV2xSec and then CnV2xNet_CommitAppLayerIdChange() shall be called by CnV2xMsg. After that new Pseudonym certificate and Pseudonym Count value shall take effect, V2X Message with old Pseudonym count value shall be discarded.⌋

[CP_SWS_CnV2xMsg_00417]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00605

⌈In the abort phase, the API CnV2xMsg_CommitPseudonymChange() shall be called by CnV2xSec and then CnV2xNet_AbortAppLayerIdChange() shall be called.⌋

[CP_SWS_CnV2xMsg_00418]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00605

⌈When the vehicle Event Flags are changed to the status that all bits are unset or from the status that all bits are unset to the status that any bit is set, the function CnV2xMsg_GetVehicleEventFlagsStatus shall be called by CnV2xSec to initiate a change of the pseudonym certificate.⌋

7.11 Messages Reception Service Via V2xDm

[CP_SWS_CnV2xMsg_00305]
Status: DRAFT
Upstream requirements: SRS_V2X_00711, SRS_V2X_00741, SRS_V2X_10001, SRS_V2X_10003, SRS_V2X_10004

⌈If the received V2X messages are configured to be sent to V2xDm module, the received messages shall be sent via the callback function V2xDm_RxIndication (see chapter 8.6.2).⌋

[CP_SWS_CnV2xMsg_00306]
Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00507, CP_SRS_CnV2X_00508, CP_SRS_CnV2X_00509, CP_SRS_CnV2X_00510, CP_SRS_CnV2X_00511

⌈

AIDs need to be assigned to the corresponding instance of the configuration container of CnV2xMsgConfig (see Chapter 10.1.5). The CnV2xMsg module shall check

whether the AID of the received message matches the configuration as specified in [SWS_CnV2xMsg_00307]. If not, the message shall be discarded.⌋

[CP_SWS_CnV2xMsg_00307]

Status: DRAFT

Upstream requirements: CP_SRS_CnV2X_00507, CP_SRS_CnV2X_00508, CP_SRS_CnV2X_-00509, CP_SRS_CnV2X_00510, CP_SRS_CnV2X_00511

⌈

Message Type	*AID*	*Rx/Tx*
BSM	111(Non-Emergeny vehicle,regular BSM) 112 (Non-Emergency vehicle, event-triggered BSM) 113(Emergency vehicle, regular BSM) 114(Emergency vehicle, event-triggered BSM) 3617(for V2X terminal installed after market)	Rx and Tx
RSI	3620(Static roadside information) 3621(Semi-dynamic roadside information) 3622(Dynamic roadside information)	Rx only
RSM	3623	Rx only
SPAT	3619	Rx only
MAP	3618	Rx only

⌋

7.12 Error Classification

7.12.1 Development Errors

[CP_SWS_CnV2xMsg_00501] Definiton of development errors in module CnV2x Msg ⌈

Type of error	*Related error code*	*Error value*
API service called with wrong parameter	CNV2XMSG_E_PARAM	0x01
API service called with invalid pointer	CNV2XMSG_E_PARAM_POINTER	0x02
CnV2xMsg initialization failed	CNV2XMSG_E_INIT_FAILED	0x03
API function called before the CnV2xMsg module has been fully initialized	CNV2XMSG_E_UNINIT	0x04

⌋

7.12.2 Runtime Errors

There is no runtime errors.

7.12.3 Production Errors

There is no production errors.

7.12.4 Extended Production Errors

There is no extended production errors.

8 API specification

8.1 Imported types

In this chapter all types included from the following files are listed.

[CP_SWS_CnV2xMsg_01001] Definition of imported datatypes of module CnV2x Msg ⌈

Module	*Header File*	*Imported Type*
CnV2xNet	CnV2x_GeneralTypes.h	CnV2xNet_TxParamsPresenceType (draft)
	CnV2x_GeneralTypes.h	CnV2x_CbrType (draft)
	CnV2x_GeneralTypes.h	CnV2x_Layer2IdType (draft)
	CnV2x_GeneralTypes.h	CnV2x_MaxDataRateType (draft)
	CnV2x_GeneralTypes.h	CnV2x_NetTxResultType (draft)
	CnV2x_GeneralTypes.h	CnV2x_NetworkProtocolType (draft)
	CnV2x_GeneralTypes.h	CnV2x_TrafficPeriodType (draft)
	CnV2xNet.h	CnV2xNet_TxParamsType (draft)
CnV2xSec	CnV2x_GeneralTypes.h	CnV2xSec_SecReportType (draft)
	CnV2x_Sec.h	CnV2xSec_SecProfileType (draft)
	CnV2x_Sec.h	CnV2xSec_SecReturnType (draft)
Std	Std_Types.h	Std_ReturnType
	Std_Types.h	Std_VersionInfoType

⌋

8.2 Type definitions

8.2.1 CnV2xMsg_RxParamsType

[CP_SWS_CnV2xMsg_01002] Definition of ImplementationDataType CnV2xMsg_RxParamsType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_RxParamsType (draft)	
Kind	Structure	
Elements	presence	
	Type	CnV2xMsg_RxParamsPresenceType

▽

△

	Comment	Mark optional child present or not
	DsmpVersion	
	Type	uint8
	Comment	DSMP protocol version type. Range: 0..7
	Aid	
	Type	uint64
	Comment	The value of the AID (Application Identifier)
	SourceLayer2Id	
	Type	CnV2x_Layer2IdType
	Comment	Source MAC address of V2X-CN packet
	DestinationLayer2Id	
	Type	CnV2x_Layer2IdType
	Comment	Destination MAC address of V2X-CN packet
	Priority	
	Type	uint8
	Comment	Specify the priority of V2X-CN message
	Cbr	
	Type	CnV2x_CbrType
	Comment	Indication of Channel busy ratio
	MaxDataRate	
	Type	CnV2x_MaxDataRateType
	Comment	Indication of Max data rate
Description	Wraps Network layer parameters from CnV2xNet **Tags:** atp.Status=draft	
Variation	–	
Available via	CnV2xMsg.h	

⌋

8.2.2 CnV2xMsg_RxParamsPresenceType

[CP_SWS_CnV2xMsg_01056] Definition of ImplementationDataType CnV2xMsg_RxParamsPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_RxParamsPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***

▽

△

	bit	SourceMACAddr	0x08	Bit 3: Optional child present
	bit	DestinationLayer2Id	0x04	Bit 2: Optional child present
	bit	Cbr	0x02	Bit 1: Optional child present
	bit	MaxdataRate	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_RxParamsType **Tags:** atp.Status=draft			
Variation	–			
Available via	CnV2xMsg.h			

⌋

8.3 Function definitions

8.3.1 CnV2xMsg_Init

[CP_SWS_CnV2xMsg_01003] Definition of API function CnV2xMsg_Init

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_Init (draft)	
Syntax	`void CnV2xMsg_Init ( void* CfgPtr )`	
Service ID [hex]	0x1	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (in)	CfgPtr	Points to a null pointer
Parameters (inout)	None	
Parameters (out)	None	
Return value	None	
Description	Initialize the CnV2xMsg module **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01053]

Status: DRAFT

⌈If development error detection is enabled: the function shall check the parameter CfgPtr for containing a valid configuration. If the check fails, the function shall raise the development error CNV2XMSG_E_INIT_FAILED.⌋

8.3.2 CnV2xMsg_GetVersionInfo

[CP_SWS_CnV2xMsg_01004] Definition of API function CnV2xMsg_GetVersion Info

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_GetVersionInfo (draft)	
Syntax	`void CnV2xMsg_GetVersionInfo ( Std_VersionInfoType* VersionInfoPtr )`	
Service ID [hex]	0x2	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (in)	None	
Parameters (inout)	None	
Parameters (out)	VersionInfoPtr	Pointer to where to store the version information of this module.
Return value	None	
Description	Returns the version information of this module. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01005]

Status: DRAFT

⌈If CnV2xMsgDevErrorDetect (for details see Chapter 10.1.3) is enabled: If the VersionInfoPtr pointer parameter is invalid (e.g. NULL), the error-code CNV2XMSG_E_PARAM_POINTER shall be reported to the DET module.⌋

8.3.3 CnV2xMsg_GetRefTimePtr

[CP_SWS_CnV2xMsg_01009] Definition of API function CnV2xMsg_GetRefTimePtr

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_GetRefTimePtr (draft)	
Syntax	`Std_ReturnType CnV2xMsg_GetRefTimePtr ( const uint32** RefTimePtr )`	
Service ID [hex]	0x3	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (in)	None	
Parameters (inout)	None	
Parameters (out)	RefTimePtr	Pointer to the current time information.
Return value	Std_ReturnType	`E_OK`: request successful `E_NOT_OK`: request failed
Description	Provides a pointer to the time reference of the Chinese V2X Stack. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01010]

Status: DRAFT

⌈If development error detection is enabled: the function shall check that the service CnV2xMsg_Init was previously called. If the check fails, the function shall raise the development error CNV2XMSG_E_UNINIT.⌋

[CP_SWS_CnV2xMsg_01011]

Status: DRAFT

⌈If development error detection is enabled: the function shall check the parameter RefTimePtr for being valid. If the check fails, the function shall raise the development error CNV2XMSG_E_PARAM_POINTER.⌋

8.3.4 CnV2xMsg_CheckDistance

[CP_SWS_CnV2xMsg_01012] Definition of API function CnV2xMsg_CheckDistance

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_CheckDistance (draft)	
Syntax	`Std_ReturnType CnV2xMsg_CheckDistance ( float32* Distance )`	
Service ID [hex]	0x4	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (in)	None	
Parameters (inout)	None	
Parameters (out)	Distance	Distance between geographical points A and B [m]
Return value	Std_ReturnType	`E_OK`: operation successful `E_NOT_OK`: pseudonym certificate change rejected
Description	Check the distance between the current geographical point and the point when the CnV2xSec commit the pseudonym certificate change on elevation 0. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01013]

Status: DRAFT

⌈If development error detection is enabled: the function shall check the parameter Distance for being valid. If the check fails, the function shall raise the development error CNV2XMSG_E_PARAM_POINTER.⌋

8.3.5 CnV2xMsg_GetVehickeEventFlagsStatus

[CP_SWS_CnV2xMsg_01061] Definition of API function CnV2xMsg_GetVehickeEventFlagsStatus

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_GetVehickeEventFlagsStatus (draft)	
Syntax	`Std_ReturnType CnV2xMsg_GetVehickeEventFlagsStatus ( CnV2xMsg_VehicleEventFlagsType** vehicleEventFlagsPtr )`	
Service ID [hex]	0x5	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (in)	None	
Parameters (inout)	None	
Parameters (out)	vehicleEventFlagsPtr	Pointer to the current Event flags status.
Return value	Std_ReturnType	`E_OK`: operation successful `E_NOT_OK`: pseudonym certificate change rejected
Description	Provides a pointer to the current vehicle event status. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01062]

Status: DRAFT

⌈If development error detection is enabled: the function shall check the parameter vehicleEventFlagsPtr for being valid. If the check fails, the function shall raise the development error CNV2XMSG_E_PARAM_POINTER⌋

8.3.6 CnV2xMsg_PreparePseudonymChange

[CP_SWS_CnV2xMsg_01014] Definition of API function CnV2xMsg_Prepare PseudonymChange

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_PreparePseudonymChange (draft)	
Syntax	`void CnV2xMsg_PreparePseudonymChange ( uint16 msgClass, uint16 pseudonymCount16 )`	
Service ID [hex]	0x6	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (in)	msgClass	Indicate message Class
	pseudonymCount16	Oder of the Pseudonym certificate change correspond to specific message type . This count value is created in the CnV2xSec module.
Parameters (inout)	None	
Parameters (out)	None	
Return value	None	
Description	By this API primitive the CnV2xMsg module gets an indication that the given Pseudonym certificate and hereby the Msg count and Vehicle ID is about to be changed. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01015]

Status: DRAFT

⌈The function CnV2xMsg_PreparePseudonymChange shall prepare the setting of message count and vehicle ID used for packet transmission.⌋

[CP_SWS_CnV2xMsg_01016]

Status: DRAFT

⌈If development error detection is enabled: the function shall check that the service CnV2xMsg_Init was previously called. If the check fails, the function shall raise the development error CNV2XMSG_E_UNINIT.⌋

8.3.7 CnV2xMsg_CommitPseudonymChange

[CP_SWS_CnV2xMsg_01018] Definition of API function CnV2xMsg_Commit PseudonymChange

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_CommitPseudonymChange (draft)	
Syntax	`Std_ReturnType CnV2xMsg_CommitPseudonymChange ( uint16 msgClass, uint16 pseudonymCount16 )`	
Service ID [hex]	0x7	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (in)	msgClass	Indicate message Class
	pseudonymCount16	Oder of the Pseudonym certificate change correspond to specific message type . This count value is created in the CnV2xSec module.
Parameters (inout)	None	
Parameters (out)	None	
Return value	Std_ReturnType	`E_OK`: operation successful `E_NOT_OK`: pseudonym certificate change rejected
Description	This function is called by the CnV2xSec module when all modules are OK with the pseudonym certificate change and the change is to be committed. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01019]

Status: DRAFT

⌈The function CnV2xMsg_CommitPseudonymChange shall set the message count and vehicle ID used for packet transmission and clean the path history.⌋

[CP_SWS_CnV2xMsg_01020]

Status: DRAFT

⌈If development error detection is enabled: the function shall check that the service CnV2xMsg_Init was previously called. If the check fails, the function shall raise the development error CNV2XMSG_E_UNINIT.⌋

Note: The function requires previous preparation of the pseudonym certificate via an API call to CnV2xMsg_PreparePseudonymChange.

8.3.8 CnV2xMsg_AbortPseudonymChange

[CP_SWS_CnV2xMsg_01021] Definition of API function CnV2xMsg_AbortPseudonymChange

Status: DRAFT

⌈

Service Name	CnV2xMsg_AbortPseudonymChange (draft)	
Syntax	`Std_ReturnType CnV2xMsg_AbortPseudonymChange ( uint16 msgClass, uint16 pseudonymCount16 )`	
Service ID [hex]	0x8	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (in)	msgClass	Indicate message Class
	pseudonymCount16	Oder of the Pseudonym certificate change correspond to specific message type . This count value is created in the CnV2xSec module.
Parameters (inout)	None	
Parameters (out)	None	
Return value	Std_ReturnType	`E_OK`: operation successful `E_NOT_OK`: pseudonym certificate change rejected
Description	This function is called by the CnV2xSec module when not all modules are OK with the pseudonym certificate change and the change is to be rolled back. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01022]

Status: DRAFT

⌈The function CnV2xMsg_AbortPseudonymChange shall roll back the prepared pseudonym certificate change.⌋

[CP_SWS_CnV2xMsg_01023]

Status: DRAFT

⌈If development error detection is enabled: the function shall check that the service CnV2xMsg_Init was previously called. If the check fails, the function shall raise the development error CNV2XMSG_E_UNINIT.⌋

Note: The function requires previous preparation of the pseudonym certificate via an API call to CnV2xMsg_PreparePseudonymChange.

8.3.9 CnV2xMsg_GetTime32

[CP_SWS_CnV2xMsg_01063] Definition of API function CnV2xMsg_GetTime32 ⌈

Service Name	CnV2xMsg_GetTime32	

Syntax	`void CnV2xMsg_GetTime32 (`
	`  uint32 Time32`
	`)`	

Service ID [hex]	0x14	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (in)	None	
Parameters (inout)	None	
Parameters (out)	Time32	UTC reference time, Timestamp [1 ms]
Return value	None	
Description	Service to get the current reference time	
Available via		

⌋

8.3.10 CnV2xMsg_SetPositionAndTime

[CP_SWS_CnV2xMsg_01064] Definition of API function CnV2xMsg_SetPosition AndTime ⌈

Service Name	CnV2xMsg_SetPositionAndTime	

Syntax	`void CnV2xMsg_SetPositionAndTime (`
	`  CnV2xMsg_PositionAndTimeType PositionAndTime`
	`)`	

Service ID [hex]	0x13	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (in)	PositionAndTime	–
Parameters (inout)	None	
Parameters (out)	None	
Return value	None	
Description	Service for setting positional and time information relevant for the V2X-Stack	
Available via		

⌋

8.4 Callback notifications

This is a list of functions provided for other modules.

8.4.1 CnV2xMsg_TxConfirmation

[CP_SWS_CnV2xMsg_01024] Definition of callback function CnV2xMsg_TxConfirmation

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_TxConfirmation (draft)	
Syntax	`void CnV2xMsg_TxConfirmation ( uint16 TransactionId16 )`	
Service ID [hex]	0x9	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (in)	TransactionId16	TransactionId of the packet that has been transmitted
Parameters (inout)	None	
Parameters (out)	None	
Return value	None	
Description	By this API primitive, the CnV2xMsg module gets a confirmation that the V2X message with a certain ID was send successfully. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01025]

Status: DRAFT

⌈If development error detection is enabled: the function shall check that the service CnV2xMsg_Init was previously called. If the check fails, the function shall raise the development error CNV2XMSG_E_UNINIT.⌋

8.4.2 CnV2xMsg_RxIndication

[CP_SWS_CnV2xMsg_01026] Definition of callback function CnV2xMsg_RxIndication

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_RxIndication (draft)	

Syntax	`void CnV2xMsg_RxIndication (`
	`  uint32 TransactionId32,`
	`  CnV2xMsg_RxParamsType* ReceiveParams,`
	`  uint16 Length,`
	`  const uint8* DataPtr`
	`)`	

Service ID [hex]	0xa	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (in)	TransactionId32	ID of the received packet. This ID is created in the CnV2xNet module and handed up in the protocol stack to be used for verification on demand.
	ReceiveParams	Wraps RxIndication parameters.
	Length	Length of the data pointed by DataPtr.
	DataPtr	Payload of the received Network packet.
Parameters (inout)	None	
Parameters (out)	None	
Return value	None	
Description	By this API primitive the CnV2xMsg module gets a confirmation that the V2X message with a certain ID was send successfully. This API primitive is called by the CnV2xNet module providing the data and the Network parameters of a received DSMP packet to CnV2xMsg module. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01027]

Status: DRAFT

⌈If development error detection is enabled: the function shall check that the service CnV2xMsg_Init was previously called. If the check fails, the function shall raise the development error CNV2XMSG_E_UNINIT.⌋

[CP_SWS_CnV2xMsg_01028]

Status: DRAFT

⌈If development error detection is enabled: the function shall check the parameter ReceiveParams for being valid. If the check fails, the function shall raise the development error CNV2XMSG_E_PARAM_POINTER.⌋

[CP_SWS_CnV2xMsg_01029]

Status: DRAFT

⌈If development error detection is enabled: the function shall check the parameter DataPtr for being valid. If the check fails, the function shall raise the development error CNV2XMSG_E_PARAM_POINTER.⌋

8.4.3 CnV2xMsg_EncapConfirmation

[CP_SWS_CnV2xMsg_01030] Definition of callback function CnV2xMsg_Encap Confirmation

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_EncapConfirmation (draft)	
Syntax	`void CnV2xMsg_EncapConfirmation ( uint16 TransactionId16, uint16* SecuredDataLength, uint8* SecuredDataPtr )`	
Service ID [hex]	0xb	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (in)	TransactionId16	TransactionId of the encapsulated packet
	SecuredDataLength	lenght of Secured Data
	SecuredDataPtr	Pointer of Secured Data
Parameters (inout)	None	
Parameters (out)	None	
Return value	None	
Description	This function is called by the V2xSecCN module when an encapsulation has been finished. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01031]

Status: DRAFT

⌈The function CnV2xMsg_EncapConfirmation shall finalize the packet transmission by transmitting the packet to the lower layer.⌋

[CP_SWS_CnV2xMsg_01032]

Status: DRAFT

⌈If development error detection is enabled: the function shall check that the service CnV2xMsg_Init was previously called. If the check fails, the function shall raise the development error CNV2XMSG_E_UNINIT.⌋

8.4.4 CnV2xMsg_DecapConfirmation

[CP_SWS_CnV2xMsg_01033] Definition of callback function CnV2xMsg_Decap Confirmation

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_DecapConfirmation (draft)	
Syntax	`void CnV2xMsg_DecapConfirmation ( uint32 TransactionId32, CnV2x_SecReportType SecReport, uint64 CertificateId, uint64 Aid )`	
Service ID [hex]	0xc	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (in)	TransactionId32	ID of the decapsulated packet
	SecReport	The security report.
	CertificateId	The identification of the used for verification (by certificate hash)
	Aid	The numerical value of the AID
Parameters (inout)	None	
Parameters (out)	None	
Return value	None	
Description	This function is called by the CnV2xSec module when a decapsulation has been finished. **Tags:** atp.Status=draft	
Available via	CnV2xMsg.h	

⌋

[CP_SWS_CnV2xMsg_01034]

Status: DRAFT

⌈The function CnV2xMsg_DecapConfirmation shall continue the processing of a received packet by proceeding with CnV2xMsg operations.⌋

[CP_SWS_CnV2xMsg_01035]

Status: DRAFT

⌈If development error detection is enabled: the function shall check that the service CnV2xMsg_Init was previously called. If the check fails, the function shall raise the development error CNV2XMSG_E_UNINIT.⌋

8.5 Scheduled functions

These functions are directly called by Basic Software Scheduler. The following functions shall have no return value and no parameter. All functions shall be non reentrant.

8.5.1 CnV2xMsg_BsmBs_MainFunction

[CP_SWS_CnV2xMsg_01036] Definition of scheduled function CnV2xMsg_BsmBs_MainFunction

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_BsmBs_MainFunction (draft)
Syntax	`void CnV2xMsg_BsmBs_MainFunction ( void )`
Service ID [hex]	0x0d
Description	This is the main processing function of the BSM basic service **Tags:** atp.Status=draft
Available via	SchM_CnV2xMsg.h

⌋

[CP_SWS_CnV2xMsg_01037]

Status: DRAFT

⌈The function shall process the BSMs as described in chapter 7.4.⌋

8.5.2 CnV2xMsg_Mgt_MainFunction

[CP_SWS_CnV2xMsg_01038] Definition of scheduled function CnV2xMsg_Mgt_MainFunction

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_Mgt_MainFunction (draft)
Syntax	`void CnV2xMsg_Mgt_MainFunction ( void )`
Service ID [hex]	0x0e
Description	Scheduled Management Function of CnV2xMsg **Tags:** atp.Status=draft
Available via	SchM_CnV2xMsg.h

⌋

[CP_SWS_CnV2xMsg_01039]

Status: DRAFT

⌈The function shall handle sending frequency management, ID management, Position and Time management and Path History Generation.⌋

8.5.3 CnV2xMsg_RsiS_MainFunction

[CP_SWS_CnV2xMsg_01041] Definition of scheduled function CnV2xMsg_RsiS_MainFunction

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_RsiS_MainFunction (draft)
Syntax	`void CnV2xMsg_RsiS_MainFunction ( void )`
Service ID [hex]	0x0f
Description	This is the main processing function of the RSI service **Tags:** atp.Status=draft
Available via	SchM_CnV2xMsg.h

⌋

[CP_SWS_CnV2xMsg_01042]

Status: DRAFT

⌈The function shall process the received RSIs as described in chapter 7.5.⌋

8.5.4 CnV2xMsg_RsmS_MainFunction

[CP_SWS_CnV2xMsg_01043] Definition of scheduled function CnV2xMsg_RsmS_MainFunction

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_RsmS_MainFunction (draft)
Syntax	`void CnV2xMsg_RsmS_MainFunction ( void )`
Service ID [hex]	0x10
Description	This is the main processing function of the RSM service **Tags:** atp.Status=draft
Available via	SchM_CnV2xMsg.h

⌋

[CP_SWS_CnV2xMsg_01044]

Status: DRAFT

⌈The function shall process the received RSMs as described in chapter 7.6.⌋

8.5.5 CnV2xMsg_SpatS_MainFunction

[CP_SWS_CnV2xMsg_01045] Definition of scheduled function CnV2xMsg_SpatS_MainFunction

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_SpatS_MainFunction (draft)
Syntax	`void CnV2xMsg_SpatS_MainFunction ( void )`
Service ID [hex]	0x11
Description	This is the main processing function of the SPAT service **Tags:** atp.Status=draft
Available via	SchM_CnV2xMsg.h

⌋

[CP_SWS_CnV2xMsg_01046]

Status: DRAFT

⌈The function shall process the received SPATs as described in chapter 7.7.⌋

8.5.6 CnV2xMsg_MapS_MainFunction

[CP_SWS_CnV2xMsg_01047] Definition of scheduled function CnV2xMsg_MapS_MainFunction

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Service Name	CnV2xMsg_MapS_MainFunction (draft)
Syntax	`void CnV2xMsg_MapS_MainFunction ( void )`
Service ID [hex]	0x12
Description	This is the main processing function of the MAP service **Tags:** atp.Status=draft
Available via	SchM_CnV2xMsg.h

⌋

[CP_SWS_CnV2xMsg_01048]

Status: DRAFT

⌈The function shall process the received MAPs as described in chapter 7.8.⌋

8.5.7 CnV2xMsg_RxS_MainFunction

[CP_SWS_CnV2xMsg_01051] Definition of scheduled function CnV2xMsg_RxS_MainFunction

Status: DRAFT
Upstream requirements: SRS_V2X_10001

⌈

Service Name	CnV2xMsg_RxS_MainFunction (draft)
Syntax	`void CnV2xMsg_RxS_MainFunction ( void )`
Service ID [hex]	0x15
Description	This is the main processing function of the message reception service when the received V2X messages are sent to application layer or PDUR via V2xDm module. **Tags:** atp.Status=draft
Available via	SchM_CnV2xMsg.h

⌋

[CP_SWS_CnV2xMsg_01052]

Status: DRAFT

⌈When the received V2X messages are sent to application layer or PDUR via V2xDm module, the function shall process the message reception service as described in chapter 7.11.⌋

8.6 Expected interfaces

In this chapter all interfaces required from other modules are listed.

8.6.1 Mandatory interfaces

This section defines all interfaces, which are required to fulfill the core functionality of the module.

[CP_SWS_CnV2xMsg_01049] Definition of mandatory interfaces required by module CnV2xMsg

Upstream requirements: CP_SRS_CnV2X_00501

⌈

API Function	Header File	Description
CnV2xNet_AbortAppLayerIdChange (draft)	CnV2xNet.h	The CnV2xMsg module calls this function when not all modules are OK with the pseudonym certificate change and the change is to be rolled back. **Tags:** atp.Status=draft
CnV2xNet_CommitAppLayerIdChange (draft)	CnV2xNet.h	The CnV2xMsg module calls this function when all modules are OK with the pseudonym certificate change and the change is to be committed. **Tags:** atp.Status=draft
CnV2xNet_PrepareAppLayerIdChange (draft)	CnV2xNet.h	By this API primitive the CnV2xNet module gets an indication that Application Layer Id is about to change and hereby source Layer-2 ID is about to be changed. **Tags:** atp.Status=draft
CnV2xNet_Transmit (draft)	CnV2xNet.h	This API is called by the CvxMsgCN module to request sending a Network Layer V2X PDU to the peer Network entity. **Tags:** atp.Status=draft
CnV2xSec_ReqDecap (draft)	CnV2xSec.h	This function is called by the CnV2xMsg to decapsulate the SPDU. An asynchronous CnV2x Msg_DecapConfirmation call will be used to notify CnV2xMsg of the result. **Tags:** atp.Status=draft
CnV2xSec_ReqEncap (draft)	CnV2xSec.h	This function is called by the CnV2xMsg to generate the SPDU, which includes the V2X message, the signature and pseudonym. An asynchronous CnV2x Msg_EncapConfirmation call will be used to notify CnV2xMsg of the result. **Tags:** atp.Status=draft

⌋

8.6.2 Optional interfaces

This section defines all interfaces, which are required to fulfill an optional functionality of the module.

[CP_SWS_CnV2xMsg_01050] Definition of optional interfaces requested by module CnV2xMsg

Upstream requirements: CP_SRS_CnV2X_00501

⌈

API Function	Header File	Description
Det_ReportError	Det.h	Service to report development errors.

⌋

8.7 Service Interfaces

8.7.1 Sender-Receiver-Interfaces

8.7.1.1 CnV2xMsgVdp

[CP_SWS_CnV2xMsg_01101]

Status: DRAFT

⌈The CnV2xMsg requires an interface CnV2xMsgVdp as defined below to get data from the VDP application.⌋

[CP_SWS_CnV2xMsg_01102] Definition of SenderReceiverInterface CnV2xMsgVdp

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsgVdp (draft)	
Comment	Interface to receive data from VDP application **Tags:** atp.Status=draft	
IsService	false	
Variation	–	
Data Elements	VdpData	
	Type	CnV2xMsg_BsmType
	Variation	–

⌋

8.7.1.2 CnV2xApplRxIndicationBsm

[CP_SWS_CnV2xMsg_01103]

Status: DRAFT

⌈For the CnV2xMsg, an interface CnV2xApplRxIndicationBsm shall be provided as defined below to provide the capability of delivering received BSMs to applications.⌋

[CP_SWS_CnV2xMsg_01104] Definition of SenderReceiverInterface CnV2xApplRxIndicationBsm

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xApplRxIndicationBsm (draft)	
Comment	Deliver received BSMs to Applications **Tags:** atp.Status=draft	
IsService	true	
Variation	–	
Data Elements	BsmData	
	Type	CnV2xMsg_BsmRootType
	Variation	–

⌋

8.7.1.3 CnV2xApplRxIndicationzRsi

[CP_SWS_CnV2xMsg_01105]

Status: DRAFT

⌈For the CnV2xMsg, an interface CnV2xApplRxIndicationRsi shall be provided as defined below to provide the capability of delivering received RSIs to applications.⌋

[CP_SWS_CnV2xMsg_01106] Definition of SenderReceiverInterface CnV2xApplRxIndicationRsi

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xApplRxIndicationRsi (draft)	
Comment	Deliver received RSIs to Applications **Tags:** atp.Status=draft	
IsService	true	
Variation	–	
Data Elements	RsiData	
	Type	CnV2xMsg_RsiRootType
	Variation	–

⌋

8.7.1.4 CnV2xApplRxIndicationRsm

[CP_SWS_CnV2xMsg_01107]

Status: DRAFT

⌈For the CnV2xMsg, an interface CnV2xApplRxIndicationRsm shall be provided as defined below to provide the capability of delivering received RSMs to applications.⌋

[CP_SWS_CnV2xMsg_01108] Definition of SenderReceiverInterface CnV2xApplRxIndicationRsm

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xApplRxIndicationRsm (draft)	
Comment	Deliver received RSMs to Applications **Tags:** atp.Status=draft	
IsService	true	
Variation	–	
Data Elements	RsmData	
	Type	CnV2xMsg_RsmRootType
	Variation	–

⌋

8.7.1.5 CnV2xApplRxIndicationSpat

[CP_SWS_CnV2xMsg_01109]

Status: DRAFT

⌈For the CnV2xMsg, an interface CnV2xApplRxIndicationSpat shall be provided as defined below to provide the capability of delivering received SPATs to applications.⌋

[CP_SWS_CnV2xMsg_01110] Definition of SenderReceiverInterface CnV2xApplRxIndicationSpat

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xApplRxIndicationSpat (draft)	
Comment	Deliver received SPATs to Applications **Tags:** atp.Status=draft	
IsService	true	
Variation	–	
Data Elements	SpatData	
	Type	CnV2xMsg_SpatRootType
	Variation	–

⌋

8.7.1.6 CnV2xApplRxIndicationMap

[CP_SWS_CnV2xMsg_01111]

Status: DRAFT

⌈For the CnV2xMsg, an interface CnV2xApplRxIndicationMap shall be provided as defined below to provide the capability of delivering received MAPs to applications.⌋

[CP_SWS_CnV2xMsg_01112] Definition of SenderReceiverInterface CnV2xApplRxIndicationMap

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xApplRxIndicationMap (draft)	
Comment	Deliver received MAPs to Applications **Tags:** atp.Status=draft	
IsService	true	
Variation	–	
Data Elements	MapData	
	Type	CnV2xMsg_MapRootType
	Variation	–

⌋

8.7.2 Client-Server-Interfaces

8.7.2.1 CnV2xMsgPoti

[CP_SWS_CnV2xMsg_01201] Definition of ClientServerInterface CnV2xMsgPoti

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsgPoti (draft)		
Comment	Interfaces for CnV2xMsg to get and set Position and time in the BSW CNV2X-Stack **Tags:** atp.Status=draft		
IsService	true		
Variation	–		
Possible Errors	0	E_OK	Operation successful
	1	E_NOT_OK	Operation failed

Operation	GetTime32	
Comment	Service to get the current reference time	
Mapped to API	CnV2xMsg_GetTime32	
Variation	–	
Parameters	Time32	
	Type	uint32
	Direction	OUT
	Comment	UTC reference time, Timestamp [1 ms]
	Variation	–
Possible Errors	E_OK E_NOT_OK	

Operation	SetPositionAndTime	
Comment	Service for setting positional and time information relevant for the V2X-Stack	
Mapped to API	CnV2xMsg_SetPositionAndTime	
Variation	–	
Parameters	PositionAndTime	
	Type	CnV2xMsg_PositionAndTimeType
	Direction	IN
	Comment	–
	Variation	–
Possible Errors	E_OK E_NOT_OK	

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8.7.3 Implementation Data Types

8.7.3.1 BSM Data Element Types

8.7.3.1.1 CnV2xMsg_BrakePedalStatusType

[CP_SWS_CnV2xMsg_02001] Definition of ImplementationDataType CnV2xMsg_BrakePedalStatusType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_BrakePedalStatusType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_BRAKEPEDALSTATUS_UNAVAILABLE	0x00	Vehicle brake pedal detector is unavailable
	CNV2XMSG_BRAKEPEDALSTATUS_OFF	0x01	Vehicle's brake pedal is not pressed
	CNV2XMSG_BRAKEPEDALSTATUS_ON	0x02	Vehicle's brake pedal is pressed
Description	Enumeration of DE_BrakePedalStatus as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.2 CnV2xMsg_BrakeAppliedStatusType

[CP_SWS_CnV2xMsg_02002] Definition of ImplementationDataType CnV2xMsg_BrakeAppliedStatusType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_BrakeAppliedStatusType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***
	bit	Unavailable	0x10	Bit 4: When set, the brake applied status is unavailable

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	bit	Leftfront	0x08	Bit 3: left front active
	bit	LeftRear	0x04	Bit 2: left rear active
	bit	RightFront	0x02	Bit 1: right front active
	bit	RightRear	0x01	Bit 0: right rear active
Description	BitString DE_AccelerationControl as defined in CCSA YD/T 3709-2020 **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

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8.7.3.1.3 CnV2xMsg_TractionControlStatusType

[CP_SWS_CnV2xMsg_02003] Definition of ImplementationDataType CnV2xMsg_TractionControlStatusType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_TractionControlStatusType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_TRACTION-CONTROLSTATUS_UNAVAILABLE	0x00	Not equipped or unavailable
	CNV2XMSG_TRACTION-CONTROLSTATUS_OFF	0x01	Traction control is off
	CNV2XMSG_TRACTION-CONTROLSTATUS_ON	0x02	Traction control is on
	CNV2XMSG_TRACTION-CONTROLSTATUS_ENGAGED	0x03	Traction control is engaged
Description	Enumeration of DE_TractionControlStatus as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.4 CnV2xMsg_AntiLockBrakeStatusType

[CP_SWS_CnV2xMsg_02004] Definition of ImplementationDataType CnV2xMsg_AntiLockBrakeStatusType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_AntiLockBrakeStatusType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_ANTILOCK-BRAKESTATUS_ UNAVAILABLE	0x00	Not equipped or unavailable
	CNV2XMSG_ANTILOCK-BRAKESTATUS_ OFF	0x01	Vehicle's ABS is off
	CNV2XMSG_ANTILOCK-BRAKESTATUS_ ON	0x02	Vehicle's ABS is on
	CNV2XMSG_ANTILOCK-BRAKESTATUS_ ENGAGED	0x03	Vehicle's ABS is engaged
Description	Enumeration of DE_AntiLockBrakeStatus as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.5 CnV2xMsg_StabilityControlStatusType

[CP_SWS_CnV2xMsg_02005] Definition of ImplementationDataType CnV2xMsg_StabilityControlStatusType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_StabilityControlStatusType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_STABILITY-CONTROLSTATUS_ UNAVAILABLE	0x00	Not equipped or unavailable

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	CNV2XMSG_STABILITY-CONTROLSTATUS_OFF	0x01	Vehicle's stability control is off
	CNV2XMSG_STABILITY-CONTROLSTATUS_ON	0x02	Vehicle's stability control is on
	CNV2XMSG_STABILITY-CONTROLSTATUS_ENGAGED	0x03	Vehicle's stability control is engaged
Description	Enumeration of DE_StabilityControlStatus as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.6 CnV2xMsg_BrakeBoostAppliedType

[CP_SWS_CnV2xMsg_02006] Definition of ImplementationDataType CnV2xMsg_BrakeBoostAppliedType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_BrakeBoostAppliedType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_BRAKEBOOSTAPPLIED_UNAVAILABLE	0x00	Not equipped or unavailable
	CNV2XMSG_BRAKEBOOSTAPPLIED_OFF	0x01	Vehicle's brake boost is off
	CNV2XMSG_BRAKEBOOSTAPPLIED_ON	0x02	Vehicle's brake boost is on
Description	Enumeration of DE_BrakeBoostApplied as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

⌋

8.7.3.1.7 CnV2xMsg_AuxiliaryBrakeStatusType

[CP_SWS_CnV2xMsg_02007] Definition of ImplementationDataType CnV2xMsg_AuxiliaryBrakeStatusType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_AuxiliaryBrakeStatusType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_AUXILIARY-BRAKESTATUS_UNAVAILABLE	0x00	Not equipped or unavailable
	CNV2XMSG_AUXILIARY-BRAKESTATUS_OFF	0x01	Vehicle's AUX brakes is off
	CNV2XMSG_AUXILIARY-BRAKESTATUS_ON	0x02	Vehicle's AUX brakes is on
	CNV2XMSG_AUXILIARY-BRAKESTATUS_RESERVED	0x03	reserved
Description	Enumeration of DE_AuxiliaryBrakeStatus as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.8 CnV2xMsg_TransmissionStateType

[CP_SWS_CnV2xMsg_02008] Definition of ImplementationDataType CnV2xMsg_TransmissionStateType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_TransmissionStateType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_TRANSMISSIONSTATE_NEUTRAL	0x00	Neutral

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	CNV2XMSG_ TRANSMISSIONSTATE_ PARK	0x01	Park
	CNV2XMSG_ TRANSMISSIONSTATE_ FORWARDGEARS	0x02	Forward gears
	CNV2XMSG_ TRANSMISSIONSTATE_ REVERSEGEARS	0x03	Reverse gears
	CNV2XMSG_ TRANSMISSIONSTATE_ RESERVED1	0x04	Reserved
	CNV2XMSG_ TRANSMISSIONSTATE_ RESERVED2	0x05	Reserved
	CNV2XMSG_ TRANSMISSIONSTATE_ RESERVED3	0x06	Reserved
	CNV2XMSG_ TRANSMISSIONSTATE_ UNAVAILABLE	0x07	not-equipped or unavailable value
Description	Enumeration of DE_TransmissionState as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.9 CnV2xMsg_TimeConfidenceType

[CP_SWS_CnV2xMsg_02009] Definition of ImplementationDataType CnV2xMsg_ TimeConfidenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_TimeConfidenceType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_ TIMECONFIDENCE_ UNAVAILABLE	0x00	Not Equipped or unavailable
	CNV2XMSG_TIMECONFI-DENCE_100_000	0x01	Better than 100 Seconds
	CNV2XMSG_TIMECONFI-DENCE_050_000	0x02	Better than 50 Seconds
	CNV2XMSG_TIMECONFI-DENCE_020_000	0x03	Better than 20 Seconds

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	CNV2XMSG_TIMECONFIDENCE_010_000	0x04	Better than 10 Seconds
	CNV2XMSG_TIMECONFIDENCE_002_000	0x05	Better than 2 Seconds
	CNV2XMSG_TIMECONFIDENCE_001_000	0x06	Better than 1 Second
	CNV2XMSG_TIMECONFIDENCE_000_500	0x07	Better than 0.5 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_200	0x08	Better than 0.2 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_100	0x09	Better than 0.1 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_050	0x0a	Better than 0.05 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_020	0x0b	Better than 0.02 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_010	0x0c	Better than 0.01 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_005	0x0d	Better than 0.005 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_002	0x0e	Better than 0.002 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_001	0x0f	Better than 0.001 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_5	0x10	Better than 0.000,5 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_2	0x11	Better than 0.000,2 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_1	0x12	Better than 0.000,1 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_05	0x13	Better than 0.000,05 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_02	0x14	Better than 0.000,02 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_01	0x15	Better than 0.000,01 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_005	0x16	Better than 0.000,005 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_002	0x17	Better than 0.000,002 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_001	0x18	Better than 0.000,001 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_5	0x19	Better than 0.000,000,5 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_2	0x1a	Better than 0.000,000,2 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_1	0x1b	Better than 0.000,000,1 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_05	0x1c	Better than 0.000,000,05 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_02	0x1d	Better than 0.000,000,02 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_01	0x1e	Better than 0.000,000,01 Seconds

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	CNV2XMSG_TIMECONFIDENCE_000_000_000_005	0x1f	Better than 0.000,000,005 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_002	0x20	Better than 0.000,000,002 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_001	0x21	Better than 0.000,000,001 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_000_5	0x22	Better than 0.000,000,000,5 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_000_2	0x23	Better than 0.000,000,000,2 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_000_1	0x24	Better than 0.000,000,000,1 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_000_05	0x25	Better than 0.000,000,000,05 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_000_02	0x26	Better than 0.000,000,000,02 Seconds
	CNV2XMSG_TIMECONFIDENCE_000_000_000_000_01	0x27	Better than 0.000,000,000,01 Seconds
Description	Enumeration of DE_TimeConfidence as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.10 CnV2xMsg_GNSSStatusType

[CP_SWS_CnV2xMsg_02010] Definition of ImplementationDataType CnV2xMsg_GNSSStatusType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_GNSSStatusType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***
	bit	Unavailable	0x80	Bit 7: Not Equipped or unavailable
	bit	isHealthy	0x40	Bit 6: When set, GNSS is healthy
	bit	isMonitored	0x20	Bit 5: When set, GNSS is monitored
	bit	baseStationType	0x10	Bit 4: Set to zero if a moving base station
	bit	aPDOPofUnder5	0x08	Bit 3: A dilution of precision greater than 5

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	bit	inViewOfUnder5	0x04	Bit 2: Less than 5 satellites in view
	bit	localCorrectionsPresent	0x02	Bit 1: DGPS type corrections used
	bit	networkCorrectionsPresent	0x01	Bit 0: RTK type corrections used
Description	BitString DE_GNSSStatus as defined in CCSA YD/T 3709-2020 **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

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8.7.3.1.11 CnV2xMsg_OffsetLLB12Type

[CP_SWS_CnV2xMsg_02011] Definition of datatype CnV2xMsg_OffsetLLB12Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_OffsetLLB12Type (draft)		
Kind	Type		
Derived from	sint16		
Range	-2048..2047	–	–
Description	DE_OffsetLL-B12 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.12 CnV2xMsg_OffsetLLB14Type

[CP_SWS_CnV2xMsg_02012] Definition of datatype CnV2xMsg_OffsetLLB14Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_OffsetLLB14Type (draft)		
Kind	Type		
Derived from	sint16		
Range	-8192..8191	–	–
Description	DE_OffsetLL-B14 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.13 CnV2xMsg_OffsetLLB16Type

[CP_SWS_CnV2xMsg_02013] Definition of datatype CnV2xMsg_OffsetLLB16Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_OffsetLLB16Type (draft)		
Kind	Type		
Derived from	sint16		
Range	-32768..32767	–	–
Description	DE_OffsetLL-B16 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.14 CnV2xMsg_OffsetLLB18Type

[CP_SWS_CnV2xMsg_02014] Definition of datatype CnV2xMsg_OffsetLLB18Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_OffsetLLB18Type (draft)		
Kind	Type		
Derived from	sint32		
Range	-131072..131071	–	–
Description	DE_OffsetLL-B18 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

⌋

8.7.3.1.15 CnV2xMsg_OffsetLLB22Type

[CP_SWS_CnV2xMsg_02015] Definition of datatype CnV2xMsg_OffsetLLB22Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_OffsetLLB22Type (draft)		
Kind	Type		
Derived from	sint32		
Range	-2097152..2097151	–	–
Description	DE_OffsetLL-B22 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.16 CnV2xMsg_OffsetLLB24Type

[CP_SWS_CnV2xMsg_02016] Definition of datatype CnV2xMsg_OffsetLLB24Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_OffsetLLB24Type (draft)		
Kind	Type		
Derived from	sint32		
Range	-8388608..8388607	–	–
Description	DE_OffsetLL-B24 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.17 CnV2xMsg_LongitudeType

[CP_SWS_CnV2xMsg_02017] Definition of datatype CnV2xMsg_LongtitudeType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_LongtitudeType (draft)		
Kind	Type		
Derived from	sint32		
Range	-1799999999..1800000001	–	–
Description	1/10 micro degree; The value 1800000001 shall be used for invalid; DE_Longtitude as defined in CCSA YD/T 3709-2020; **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.18 CnV2xMsg_LatitudeType

[CP_SWS_CnV2xMsg_02018] Definition of datatype CnV2xMsg_LatitudeType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_LatitudeType (draft)		
Kind	Type		
Derived from	sint32		
Range	-900000000..900000001	–	–
Description	1/10 micro degree. The value 900000001 shall be used for invalid; DE_Latitude as defined in CCSA YD/T 3709-2020 **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.19 CnV2xMsg_VerOffsetB07Type

[CP_SWS_CnV2xMsg_02019] Definition of datatype CnV2xMsg_VerOffset B07Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VerOffsetB07Type (draft)		
Kind	Type		
Derived from	sint8		
Range	-64..63	–	–
Description	DE_VertOffset-B07 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.20 CnV2xMsg_VerOffsetB08Type

[CP_SWS_CnV2xMsg_02020] Definition of datatype CnV2xMsg_VerOffsetB08Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VerOffsetB08Type (draft)		
Kind	Type		
Derived from	sint8		
Range	-128..127	–	–
Description	DE_VertOffset-B08 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

⌋

8.7.3.1.21 CnV2xMsg_VerOffsetB09Type

[CP_SWS_CnV2xMsg_02021] Definition of datatype CnV2xMsg_VerOffsetB09Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VerOffsetB09Type (draft)		
Kind	Type		
Derived from	sint16		
Range	-256..255	–	–
Description	DE_VertOffset-B09 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

⌋

8.7.3.1.22 CnV2xMsg_VerOffsetB10Type

[CP_SWS_CnV2xMsg_02022] Definition of datatype CnV2xMsg_VerOffsetB10Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VerOffsetB10Type (draft)		
Kind	Type		
Derived from	sint16		
Range	-512..511	–	–
Description	DE_VertOffset-B10 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.23 CnV2xMsg_VerOffsetB11Type

[CP_SWS_CnV2xMsg_02023] Definition of datatype CnV2xMsg_VerOffsetB11Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VerOffsetB11Type (draft)		
Kind	Type		
Derived from	sint16		
Range	-1024..1023	–	–
Description	DE_VertOffset-B11 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

⌋

8.7.3.1.24 CnV2xMsg_VerOffsetB12Type

[CP_SWS_CnV2xMsg_02024] Definition of datatype CnV2xMsg_VerOffsetB12Type

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VerOffsetB12Type (draft)		
Kind	Type		
Derived from	sint16		
Range	-2048..2047	–	–
Description	DE_VertOffset-B12 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Available via	Rte_CnV2xMsg_Type.h		

⌋

8.7.3.1.25 CnV2xMsg_ResponseTypeType

[CP_SWS_CnV2xMsg_02025] Definition of ImplementationDataType CnV2xMsg_ResponseTypeType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_ResponseTypeType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_ RESPONSETYPE_ UNAVAILABLE	0x00	Not In Use Or Not Equipped
	CNV2XMSG_ RESPONSETYPE_ EMERGENCY	0x01	active service call at emergency level
	CNV2XMSG_ RESPONSETYPE_ NONEMERGENCY	0x02	also used when returning from service call
	CNV2XMSG_ RESPONSETYPE_ PURSUIT	0x03	sender driving may be erratic
	CNV2XMSG_ RESPONSETYPE_ STATIONARY	0x04	sender is not moving, stopped along roadside

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	CNV2XMSG_ RESPONSETYPE_ SLOWMOVING	0x05	such as a litter trucks, etc
	CNV2XMSG_ RESPONSETYPE_ STOPANDGOMOVEMENT	0x06	such as school bus or garbage truck
Description	Enumeration of DE_ResponseType as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

⌋

8.7.3.1.26 CnV2xMsg_SirenInUseType

[CP_SWS_CnV2xMsg_02026] Definition of ImplementationDataType CnV2xMsg_SirenInUseType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_SirenInUseType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_ SIRENINUSE_ UNAVAILABLE	0x00	Unavailable or not equipped
	CNV2XMSG_ SIRENINUSE_NOTINUSE	0x01	Not in use
	CNV2XMSG_ SIRENINUSE_INUSE	0x02	In use
	CNV2XMSG_ SIRENINUSE_RESERVED	0x03	For future use
Description	Enumeration of DE_SirenInUse as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.27 CnV2xMsg_LightbarInUseType

[CP_SWS_CnV2xMsg_02027] Definition of ImplementationDataType CnV2xMsg_LightbarInUseType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_LightbarInUseType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_ LIGHTBARINUSE_ UNAVAILABLE	0x00	Unavailable or not equipped
	CNV2XMSG_ LIGHTBARINUSE_ NOTINUSE	0x01	None active
	CNV2XMSG_ LIGHTBARINUSE_INUSE	0x02	In use
	CNV2XMSG_ LIGHTBARINUSE_ YELLOWCAUTIONLIGHTS	0x03	Yellow caution lights
	CNV2XMSG_ LIGHTBARINUSE_ SCHOOLBUSLIGHTS	0x04	School bus lights
	CNV2XMSG_ LIGHTBARINUSE_ ARROWSIGNSACTIVE	0x05	Arrow signs active
	CNV2XMSG_ LIGHTBARINUSE_ SLOWMOVINGVEHICLE	0x06	Slow moving vehicle
	CNV2XMSG_ LIGHTBARINUSE_ FREQSTOPS	0x07	Frequent stops
Description	Enumeration of DE_LightbarInUse as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.28 CnV2xMsg_VehicleEventFlagsType

[CP_SWS_CnV2xMsg_02028] Definition of ImplementationDataType CnV2xMsg_VehicleEventFlagsType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VehicleEventFlagsType (draft)			
Kind	Bitfield			
Derived from	uint16			
Elements	***Kind***	***Name***	***Mask***	***Description***
	bit	eventHazardLights	0x1000	Bit 12: Hazard Lights
	bit	eventStopLineViolation	0x800	Bit 11: Stop Line Violation
	bit	eventABSactivated	0x400	Bit 10: ABS activated
	bit	eventTractionControlLoss	0x200	Bit 9: Traction Control
	bit	eventStabilityControlactivated	0x100	Bit 8: Stability Control
	bit	eventHazardousMaterials	0x80	Bit 7: Hazardous Materials
	bit	eventReserved1	0x40	Bit 6: Reserved
	bit	eventHardBraking	0x20	Bit 5: Hard Braking
	bit	eventLightsChanged	0x10	Bit 4: Lights Changed
	bit	eventWipersChanged	0x08	Bit 3: Wipers Changed
	bit	eventFlatTire	0x04	Bit 2: Flat tire
	bit	eventDisabledVehicle	0x02	Bit 1: Disabled Vehicle
	bit	eventAirBagDeployment	0x01	Bit 0: Air Bag Deploymen
Description	BitString DE_VehicleEventFlags as defined in CCSA YD/T 3709-2020 **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

⌋

8.7.3.1.29 CnV2xMsg_ExteriorLightsType

[CP_SWS_CnV2xMsg_02029] Definition of ImplementationDataType CnV2xMsg_ExteriorLightsType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_ExteriorLightsType (draft)			
Kind	Bitfield			
Derived from	uint16			
Elements	**Kind**	**Name**	**Mask**	**Description**
	bit	lowBeamHeadlightsOn	0x100	Bit 8: lowBeamHeadlightsOn
	bit	highBeamHeadlightsOn	0x80	Bit 7: highBeamHeadlightsOn
	bit	leftTurnSignalOn	0x40	Bit 6: leftTurnSignalOn
	bit	rightTurnSignalOn	0x20	Bit 5: rightTurnSignalOn
	bit	hazardSignalOn	0x10	Bit 4: hazardSignalOn
	bit	automaticLightControlOn	0x08	Bit 3: automaticLightControlOn
	bit	daytimeRunningLightsOn	0x04	Bit 2: daytimeRunningLightsOn
	bit	fogLightOn	0x02	Bit 1: fogLightOn
	bit	parkingLightsOn	0x01	Bit 0: parkingLightsOn
Description	BitString DE_ExteriorLights as defined in CCSA YD/T 3709-2020 **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

⌋

8.7.3.1.30 CnV2xMsg_BasicVehicleClassType

[CP_SWS_CnV2xMsg_02030] Definition of ImplementationDataType CnV2xMsg_BasicVehicleClassType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_BasicVehicleClassType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_VC_UNKOWN	0x0	Not known or unavailable

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	CNV2XMSG_VC_SPECIAL	0x01	Special Vehicle including specical bus, special purpose passenger car, motor caravan, armoured passenger car, hearse, special operating vehicle, special goods vehicle.
	CNV2XMSG_VC_ PASSENGER	0x0A	Passenger cars,including saloon, convertible sallon, pullman saloon, coupe, convertible, hatchback, station wagon, multipurpose passenger car, forward control passenger car and off-road passenger car
	CNV2XMSG_VC_GOODS_ LIGHT	0x14	Light goods vehicle
	CNV2XMSG_VC_GOODS_ SEMITRAILER	0x19	Semi-trailer towing vehicle
	CNV2XMSG_VC_BUS	0x32	Basic Bus type, including minibus, city-bus, interurban coach, articulated bus, trolly bus and off-road bus
	CNV2XMSG_VC_EM_ FIRETRUCK_LIGHT	0x3E	Emergency vehicle: Light fire truck
	CNV2XMSG_VC_EM_ FIRETRUCK_HEAVY	0x3F	Emergency vehicle: Heavy fire truck
	CNV2XMSG_VC_EM_ NURSING	0x40	Emergency vehicle: Nursing car
	CNV2XMSG_VC_EM_ AMBULANCE	0x41	Emergency vehicle: ambulence
	CNV2XMSG_VC_EM_ POLICE_LIGHT	0x42	Emergency vehicle: Light police car
	CNV2XMSG_VC_EM_ POLICE_HEAVY	0x43	Emergency vehicle: Heavy police car
	CNV2XMSG_VC_EM_ ENGINEERING	0x44	Emergency vehicle: Engineering vehicle
Description	Integer of DE_BasicVehicleClass see "GB/T Technical Requirements of Vehicular Communication System based on LTE-V2X Direct Communication" **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.31 CnV2xMsg_VehicleIDType

[CP_SWS_CnV2xMsg_02032] Definition of ImplementationDataType CnV2xMsg_VehicleIDType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_VehicleIDType (draft)	
Kind	Structure	
Elements	Values	
	Type	Array of uint8
	Size	8
	Comment	–
Description	Vehicle ID as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.1.32 CnV2xMsg_PositionConfidenceType

[CP_SWS_CnV2xMsg_02033] Definition of ImplementationDataType CnV2xMsg_PositionConfidenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_PositionConfidenceType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_ POSITIONCONFIDENCE_ POS_UNAVAILABLE	0x00	Not equipment or unavailable
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_500_00	0x01	the position accuracy is equal to or less than 500 meter
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_200_00	0x02	the position accuracy is equal to or less than 200 meter

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	CNV2XMSG_ POSITIONCONFIDENCE_ POS_100_00	0x03	the position accuracy is equal to or less than 100 meter
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_050_00	0x04	the position accuracy is equal to or less than 50 meter
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_020_00	0x05	the position accuracy is equal to or less than 20 meter
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_010_00	0x06	the position accuracy is equal to or less than 10 meter
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_005_00	0x07	the position accuracy is equal to or less than 5 meters
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_002_00	0x08	the position accuracy is equal to or less than 2 meters
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_001_00	0x09	the position accuracy is equal to or less than 1 meters
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_000_50	0x0a	the position accuracy is equal to or less than 0.5 meters
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_000_20	0x0b	the position accuracy is equal to or less than 0.2 meters
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_000_10	0x0c	the position accuracy is equal to or less than 0.1 meters
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_000_05	0x0d	the position accuracy is equal to or less than 0.05 meters
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_000_02	0x0e	he position accuracy is equal to or less than 0.02 meters
	CNV2XMSG_ POSITIONCONFIDENCE_ POS_000_01	0x0f	he position accuracy is equal to or less than 0.01 meters
Description	Enumeration of DE_PositionConfidence as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.33 CnV2xMsg_ElevationConfidenceType

[CP_SWS_CnV2xMsg_02034] Definition of ImplementationDataType CnV2xMsg_ElevationConfidenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_ElevationConfidenceType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_UNAVAILABLE	0x00	Not equipment or unavailable
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_500_00	0x01	the elevation accuracy is equal to or less than 500 meter
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_200_00	0x02	the elevation accuracy is equal to or less than 200 meter
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_100_00	0x03	the elevation accuracy is equal to or less than 100 meter
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_050_00	0x04	the elevation accuracy is equal to or less than 50 meter
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_020_00	0x05	the elevation accuracy is equal to or less than 20 meter
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_010_00	0x06	the elevation accuracy is equal to or less than 10 meter
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_005_00	0x07	the elevation accuracy is equal to or less than 5 meters
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_002_00	0x08	the elevation accuracy is equal to or less than 2 meters
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_001_00	0x09	the elevation accuracy is equal to or less than 1 meters
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_000_50	0x0a	the elevation accuracy is equal to or less than 0.5 meters
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_000_20	0x0b	the elevation accuracy is equal to or less than 0.2 meters
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_000_10	0x0c	the elevation accuracy is equal to or less than 0.1 meters

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	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_000_05	0x0d	the elevation accuracy is equal to or less than 0.05 meters
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_000_02	0x0e	the elevation accuracy is equal to or less than 0.02 meters
	CNV2XMSG_ELEVATIONCONFIDENCE_ALT_000_01	0x0f	the elevation accuracy is equal to or less than 0.01 meters
Description	Enumeration of DE_ElevationConfidence as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.34 CnV2xMsg_SpeedConfidenceType

[CP_SWS_CnV2xMsg_02035] Definition of ImplementationDataType CnV2xMsg_SpeedConfidenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_SpeedConfidenceType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_SPEEDCONFIDENCE_SPD_UNAVAILABLE	0x00	Not equipment or unavailable
	CNV2XMSG_SPEEDCONFIDENCE_SPD_100_00	0x01	the speed accuracy is equal to or less than 100 meter / sec
	CNV2XMSG_SPEEDCONFIDENCE_SPD_010_00	0x02	the speed accuracy is equal to or less than 10 meter /sec
	CNV2XMSG_SPEEDCONFIDENCE_SPD_005_00	0x03	the speed accuracy is equal to or less than 5 meter /sec
	CNV2XMSG_SPEEDCONFIDENCE_SPD_001_00	0x04	the speed accuracy is equal to or less than 1 meter /sec
	CNV2XMSG_SPEEDCONFIDENCE_SPD_000_10	0x05	the speed accuracy is equal to or less than 0.1 meter /sec
	CNV2XMSG_SPEEDCONFIDENCE_SPD_000_05	0x06	the speed accuracy is equal to or less than 0.05 meter /sec

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	CNV2XMSG_ SPEEDCONFIDENCE_ SPD_000_01	0x07	the speed accuracy is equal to or less than 0.01 meters /sec
Description	Enumeration of DE_SpeedConfidence as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.35 CnV2xMsg_HeadingConfidenceType

[CP_SWS_CnV2xMsg_02036] Definition of ImplementationDataType CnV2xMsg_HeadingConfidenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_HeadingConfidenceType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_ HEADINGCONFIDENCE_ HEAD_UNAVAILABLE	0x00	Not equipment or unavailable
	CNV2XMSG_ HEADINGCONFIDENCE_ HEAD_10_0000	0x01	the heading accuracy is equal to or less than 10 degree
	CNV2XMSG_ HEADINGCONFIDENCE_ HEAD_05_0000	0x02	the heading accuracy is equal to or less than 5 degree
	CNV2XMSG_ HEADINGCONFIDENCE_ HEAD_01_0000	0x03	the heading accuracy is equal to or less than 1 degree
	CNV2XMSG_ HEADINGCONFIDENCE_ HEAD_00_1000	0x04	the heading accuracy is equal to or less than 0.1 degree
	CNV2XMSG_ HEADINGCONFIDENCE_ HEAD_00_0500	0x05	the heading accuracy is equal to or less than 0.05 degree
	CNV2XMSG_ HEADINGCONFIDENCE_ HEAD_00_0100	0x06	the heading accuracy is equal to or less than 0.01 degree
	CNV2XMSG_ HEADINGCONFIDENCE_ HEAD_00_0125	0x07	the heading accuracy is equal to or less than 0.0125 degree
Description	Enumeration of DE_HeadingConfidence as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		

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Variation	–
Available via	Rte_CnV2xMsg_Type.h

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8.7.3.1.36 CnV2xMsg_SteeringWheelAngleConfidenceType

[CP_SWS_CnV2xMsg_02037] Definition of ImplementationDataType CnV2xMsg_SteeringWheelAngleConfidenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_SteeringWheelAngleConfidenceType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2XMSG_ STEERINGWHEELANGLE-CONFIDENCE_SWA_ UNAVAILABLE	0x00	Not equipment or unavailable
	CNV2XMSG_ STEERINGWHEELANGLE-CONFIDENCE_ SWA_2_00	0x01	the steering wheel angle accuracy is equal to or less than 2 degree
	CNV2XMSG_ STEERINGWHEELANGLE-CONFIDENCE_ SWA_1_00	0x02	the steering wheel angle accuracy is equal to or less than 1 degree
	CNV2XMSG_ STEERINGWHEELANGLE-CONFIDENCE_ SWA_0_02	0x03	the steering wheel angle accuracy is equal to or less than 0.02 degree
Description	Enumeration of DE_SteeringWheelAngleConfidence as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.37 CnV2xMsg_FuelType

[CP_SWS_CnV2xMsg_02038] Definition of ImplementationDataType CnV2xMsg_FuelType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_FuelType (draft)		
Kind	Type		
Derived from	uint8		
Range	0..15	–	–
Description	unknownFuel FuelType::= 0 gasoline FuelType::= 1 -- Gasoline Powered ethanol FuelType::= 2 -- Including blends diesel FuelType::= 3 -- All types electric FuelType::= 4 hybrid FuelType::= 5 -- All types hydrogen FuelType::= 6 natGasLiquid FuelType::= 7 -- Liquefied natGasComp FuelType::= 8 -- Compressed propane FuelType::= 9 as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft		
Variation	–		
Available via	Rte_CnV2xMsg_Type.h		

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8.7.3.1.38 CnV2xMsg_SecReportType

[CP_SWS_CnV2xMsg_10057] Definition of datatype CnV2x_SecReportType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2x_SecReportType (draft)		
Kind	Type		
Derived from	uint8		
Range	CNV2X_SECREP_SUCCESS	0x00	Indicating security service has successfully executed
	CNV2X_SECREP_FALSE_SIGNATURE	0x01	Indicating false signature
	CNV2X_SECREP_INVALID_CERTIFICATE	0x02	Indicating invalid certificate

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	CNV2X_SECREP_ REVOKED_CERTIFICATE	0x03	Indicating revoked certificate
	CNV2X_SECREP_ INCONSISTENT_CHAIN	0x04	Indicating inconsistent certificate chain
	CNV2X_SECREP_ INVALID_TIMESTAMP	0x05	Indicating invalid timestamp
	CNV2X_SECREP_ DUPLICATE_MESSAGE	0x06	Indicating duplicate message
	CNV2X_SECREP_ INVALID_MOBILITY_DATA	0x07	Indicating invalid mobility data
	CNV2X_SECREP_ UNSIGNED_MESSAGE	0x08	Indicating unsigned message
	CNV2X_SECREP_ SIGNER_CERTIFICATE_ NOT_FOUND	0x09	Indicating signer certificate not found
	CNV2X_SECREP_ UNSUPPORTED_SIGNER_ IDENTIFIER_TYPE	0x0a	Indicating unsupported signer identifier type
	CNV2X_SECREP_ INCOMPATIBLE_ PROTOCOL	0x0b	Indicating incompatible protocol version
	CNV2X_SECREP_ UNENCRYPTED_ MESSAGE	0x0c	Indicating unencrypted message
	CNV2X_SECREP_ DECRYPTION_ERROR	0x0d	Indicating decryption error
	CNV2X_SECREP_ UNSUPPORTED_ SIGNATURE_ALGORITHM	0x0e	Indicating unsupported signature algorithm
	CNV2X_ SECREP_AID_ MISMATCH	0x0f	Indicating mismatch between AID in Secured protocol data Unit(SPDU) and AID in Pseudonym Certifate
	CNV2X_ SECREP_ ERROR_OTHER	0x0fe	Indicating security service error caused by other reasons
	CNV2X_SECREP_NONE	0xff	Indicating no security service has been executed
Description	Used to describe the security report after invocation of security services for Decapsulation (verify or decrypt) **Tags:** atp.Status=draft		
Available via	CnV2x_GeneralTypes.h		

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8.7.3.1.39 CnV2xMsg_AccelerationSet4WayPresenceType

[CP_SWS_CnV2xMsg_02106] Definition of datatype CnV2xMsg_AccelerationSet4WayPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_AccelerationSet4WayPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	**Kind**	**Name**	**Mask**	**Description**
	bit	LatAcceleration	0x02	Bit 1: Optional child present
	bit	VerticalAcceleration	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_AccelerationSet4WayType **Tags:** atp.Status=draft			
Available via	Rte_CnV2xMsg_Type.h			

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8.7.3.1.40 CnV2xMsg_FuelTypeType

[CP_SWS_CnV2xMsg_02031] Definition of datatype CnV2xMsg_FuelTypeType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_FuelTypeType (draft)		
Kind	Type		
Derived from	uint8		
Range	0x00	–	unknownFuel FuelType
	0x01	–	gasoline FuelType
	0x02	–	ethanol FuelType
	0x03	–	diesel FuelType
	0x04	–	electric FuelType
	0x05	–	hybrid FuelType
	0x06	–	hydrogen FuelType
	0x07	–	natGasLiquid FuelType
	0x08	–	natGasComp FuelType
	0x09	–	propane FuelType

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Description	Integer of DE_FuelType as defined in CCSA YD/T 3709-2020. **Tags:** atp.Status=draft
Available via	Rte_CnV2xMsg_Type.h

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8.7.3.2 BSM Data Frame Types

8.7.3.2.1 CnV2xMsg_Position3DType

[CP_SWS_CnV2xMsg_02101] Definition of ImplementationDataType CnV2xMsg_Position3DType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_Position3DType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_Position3DPresenceType
	Comment	Mark optional childs present or not
	Latitude	
	Type	sint32
	Comment	Latitude of the geographical point, 1/10 micro degree. Range: -900000000..900000001; The value 900000001 shall be used for invalid;
	Longtitude	
	Type	sint32
	Comment	Longtitude of the geographical point, 1/10 micro degree. Range: -1799999999..1800000001; The value 1800000001 shall be used for invalid
	Elevation	
	Type	sint32
	Comment	Elevation of the geographical point, in units of 10 cm steps above or below the reference ellipsoid. Range: -4096..61439
Description	DF_Position3D as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.2.2 CnV2xMsg_Position3DPresenceType

[CP_SWS_CnV2xMsg_02140] Definition of ImplementationDataType CnV2xMsg_Position3DPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_Position3DPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	**Kind**	**Name**	**Mask**	**Description**
	bit	Elevation	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_Position3DType **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

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8.7.3.2.3 CnV2xMsg_PositionAccuracyType

[CP_SWS_CnV2xMsg_02102] Definition of ImplementationDataType CnV2xMsg_PositionAccuracyType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_PositionAccuracyType (draft)	
Kind	Structure	
Elements	SemiMajorAxisAccuracy	
	Type	uint8
	Comment	semi-major axis accuracy at one standard dev; Range: 0..255 (0-12.7 meter) Value 254: any value equal or greater than 12.70 meter ; Value 255: unavailable semi-major axis value
	SemiMinorAxisAccuracy	
	Type	uint8
	Comment	semi-minor axis accuracy at one standard dev; Range: 0..255 (0-12.7 meter) Value 254: any value equal or greater than 12.70 meter ; Value 255: unavailable semi-major axis
	SemiMajorAxisOrientation	
	Type	uint16

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	Comment	Orientation of semi-major axis ; Units of 360/65535 deg = 0.0054932479; Range: 0..65536 -- a value of 0 shall be 0 degrees -- a value of 1 shall be 0.0054932479 degrees -- a value of 65534 shall be 359.9945078786 deg -- a value of 65535 shall be used for orientation unavailable
Description	DF_PositionAccuracy as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.2.4 CnV2xMsg_PositionConfidenceSetType

[CP_SWS_CnV2xMsg_02103] Definition of ImplementationDataType CnV2xMsg_PositionConfidenceSetType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PositionConfidenceSetType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_PositionConfidenceSetPresenceType
	Comment	Mark optional childs present or not
	PositionConfidence	
	Type	CnV2xMsg_PositionConfidenceType
	Comment	Absolute accuracy of a reported latitude and longtitude value
	Elevationconfidence	
	Type	CnV2xMsg_ElevationConfidenceType
	Comment	Absolute accuracy of a reported elevation value
Description	DF_PositionConfidenceSet as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.5 CnV2xMsg_PositionConfidenceSetPresenceType

[CP_SWS_CnV2xMsg_02141] Definition of ImplementationDataType CnV2xMsg_PositionConfidenceSetPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PositionConfidenceSetPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	**Kind**	**Name**	**Mask**	**Description**
	bit	ElevationConfidence	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_PositionConfidenceSetType **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

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8.7.3.2.6 CnV2xMsg_MotionConfidenceSetType

[CP_SWS_CnV2xMsg_02104] Definition of ImplementationDataType CnV2xMsg_MotionConfidenceSetType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_MotionConfidenceSetType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_MotionConfidenceSetType
	Comment	Mark optional childs present or not
	SpeedConfidence	
	Type	CnV2xMsg_SpeedConfidenceType
	Comment	Absolute accuracy of speed value
	HeadingConfidence	
	Type	CnV2xMsg_HeadingConfidenceType
	Comment	Absolute accuracy of Heading value
	SteeringWheelAngleConfidence	
	Type	CnV2xMsg_SteeringWheelAngleConfidenceType

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	Comment	Absolute accuracy of steering wheelAngle value
Description	DF_MotionConfidenceSet as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.7 CnV2xMsg_MotionConfidenceSetPresenceType

[CP_SWS_CnV2xMsg_02142] Definition of datatype CnV2xMsg_MotionConfidenceSetPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_MotionConfidenceSetPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***
	bit	SteeringWheelAngleConfidence	0x04	Bit 2: Optional child present
	bit	HeadingConfidence	0x02	Bit 1: Optional child present
	bit	SpeedConfidence	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_MotionConfidenceSetType **Tags:** atp.Status=draft			
Available via	Rte_CnV2xMsg_Type.h			

⌋

8.7.3.2.8 CnV2xMsg_AccelerationSet4WayType

[CP_SWS_CnV2xMsg_02105] Definition of ImplementationDataType CnV2xMsg_AccelerationSet4WayType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_AccelerationSet4WayType (draft)	
Kind	Structure	
Elements	LongAcceleration	
	Type	sint16
	Comment	acceleration at longitudinal direction, -- LSB units are 0.01 m/sˆ2 -- the value 2000 shall be used for values greater than 2000 -- the value -2000 shall be used for values less than -2000 -- a value of 2001 shall be used for Unavailable Range: -2000..2001
	LatAcceleration	
	Type	sint16
	Comment	acceleration at latitude direction -- LSB units are 0.01 m/sˆ2 -- the value 2000 shall be used for values greater than 2000 -- the value -2000 shall be used for values less than -2000 -- a value of 2001 shall be used for Unavailable Range: -2000..2001
	VerticalAcceleration	
	Type	sint8
	Comment	Vehicle acceleration at vertical direction -- LSB units of 0.02 G steps over -2.52 to +2.54 G -- The value +127 shall be used for ranges >= 2.54 G -- The value -126 shall be used for ranges <= 2.52 G -- The value -127 shall be used for unavailable Rang: -127..127
	YawRate	
	Type	sint16
	Comment	rotation around z-axis, LSB units of 0.01 degrees per second (signed) Range: -32767..32767
Description	DF_AccelerationSet4Way as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.2.9 CnV2xMsg_BrakeSystemStatusType

[CP_SWS_CnV2xMsg_02107] Definition of ImplementationDataType CnV2xMsg_BrakeSystemStatusType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_BrakeSystemStatusType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_BrakeSystemStatusPresenceType
	Comment	Mark optional childs present or not
	BrakePedalStatus	
	Type	CnV2xMsg_BrakePedalStatusType
	Comment	Indicate the Vehicle pedal status
	BrakeAppliedStatus	
	Type	CnV2xMsg_BrakeAppliedStatusType
	Comment	Indicate the vehicle multiple brakes status
	TractionControlStatus	
	Type	CnV2xMsg_TractionControlStatusType
	Comment	Indicate vehicle traction control status
	AntiLockBrakeStatus	
	Type	CnV2xMsg_AntiLockBrakeStatusType
	Comment	Indicate vehicle ABS status
	StabilityControlStatus	
	Type	CnV2xMsg_StabilityControlStatusType
	Comment	Indicate stability control status
	BrakeBoostApplied	
	Type	CnV2xMsg_BrakeBoostAppliedType
	Comment	Indicate vehicle brake boost status
	AuxiliaryBrakeStatus	
	Type	CnV2xMsg_AuxiliaryBrakeStatusType
	Comment	Indicate auxiliary brake status
Description	DF_BrakeSystemStatus as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.2.10 CnV2xMsg_BrakeSystemStatusPresenceType

[CP_SWS_CnV2xMsg_02108] Definition of ImplementationDataType CnV2xMsg_BrakeSystemStatusPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_BrakeSystemStatusPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	**Kind**	**Name**	**Mask**	**Description**
	bit	AntiLockBrakeStatus	0x08	Bit 3: Optional child present
	bit	StabilityControlStatus	0x04	Bit 2: Optional child present
	bit	BrakeBoostApplied	0x02	Bit 1: Optional child present
	bit	AuxiliaryBrakeStatus	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_BrakeSystemStatusType **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

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8.7.3.2.11 CnV2xMsg_VehicleSizeType

[CP_SWS_CnV2xMsg_02109] Definition of ImplementationDataType CnV2xMsg_VehicleSizeType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VehicleSizeType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_VehicleSizePresenceType
	Comment	Mark optional childs present or not
	VehicleWidth	
	Type	uint16
	Comment	Vehicle width, LSB units are 1 cm Range: 0..1023
	VehicleLength	
	Type	uint16

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	Comment	Vehicle length, LSB units of 1 cm Range: 0..4095
	VehicleHeight	
	Type	uint8
	Comment	Vehicle height, LSB units of 5 cm Range: 0..127
Description	DF_VehicleSize as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.2.12 CnV2xMsg_VehicleSizePresenceType

[CP_SWS_CnV2xMsg_02110] Definition of ImplementationDataType CnV2xMsg_VehicleSizePresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_VehicleSizePresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***
	bit	VehicleHeight	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_VehicleSizeType **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

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8.7.3.2.13 CnV2xMsg_VehicleClassificationType

[CP_SWS_CnV2xMsg_02111] Definition of ImplementationDataType CnV2xMsg_VehicleClassificationType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VehicleClassificationType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_VehicleClassificationPresenceType
	Comment	Mark optional childs present or not
	BasicVehicleClass	
	Type	CnV2xMsg_BasicVehicleClassType
	Comment	Vehicle basic type
	FuelType	
	Type	CnV2xMsg_FuelType
	Comment	Vehicle fule type
Description	DF_VehicleClassification as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.2.14 CnV2xMsg_VehicleClassificationPresenceType

[CP_SWS_CnV2xMsg_02112] Definition of ImplementationDataType CnV2xMsg_VehicleClassificationPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_VehicleClassificationPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***
	bit	FuelType	0x01	Bit 0 (LSB): Optional child present

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Description	Presence flags for CnV2xMsg_VehicleClassificationType **Tags:** atp.Status=draft
Variation	–
Available via	Rte_CnV2xMsg_Type.h

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8.7.3.2.15 CnV2xMsg_DDateTimeType

[CP_SWS_CnV2xMsg_02113] Definition of datatype CnV2xMsg_DDateTimeType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_DDateTimeType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_DDateTimePresenceType
	Comment	Mark optional childs present or not
	DYear	
	Type	uint16
	Comment	Indicate calendar year, 0 indicate unkown Range: 0..4095
	DMonth	
	Type	uint8
	Comment	Indicate months of a year, 0 indicate unkown Range: 0..12
	DDay	
	Type	uint8
	Comment	Indicate Days of a month, 0 indicate unkown Range:0..31
	DHour	
	Type	uint8
	Comment	Indicate hours in a day, =24 present unkonwn Range:0..31
	DMinute	
	Type	uint8
	Comment	Indicate minutes in one hour, 60 present unkown Range: 0..60
	DSecond	
	Type	uint16
	Comment	unit: millisecond, indicate milliseconds in a minute, =60000 present unknown Range: 0..65536
	DTimeoffset	
	Type	sint16
	Comment	Indicates the minute difference from UTC time Range: -840..840

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Description	DF_DDateTime as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft
Available via	Rte_CnV2xMsg_Type.h

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8.7.3.2.16 CnV2xMsg_DDateTimePresenceType

[CP_SWS_CnV2xMsg_02144] Definition of datatype CnV2xMsg_DDateTimePresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_DDateTimePresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***
	bit	DYear	0x40	Bit 6: Optional child present
	bit	DMonth	0x20	Bit 5: Optional child present
	bit	DDay	0x10	Bit 4: Optional child present
	bit	DHour	0x08	Bit 3: Optional child present
	bit	DMinute	0x04	Bit 2: Optional child present
	bit	DSecond	0x02	Bit 1: Optional child present
	bit	DTimeOffset	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_DDateTimeType **Tags:** atp.Status=draft			
Available via	Rte_CnV2xMsg_Type.h			

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8.7.3.2.17 CnV2xMsg_PositionOffsetLL24BType

[CP_SWS_CnV2xMsg_02114] Definition of datatype CnV2xMsg_PositionOffsetLL24BType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PositionOffsetLL24BType (draft)	
Kind	Structure	
Elements	Lon	
	Type	CnV2xMsg_OffsetLLB12Type
	Comment	12-bit value indicating latitude and longitude deviation
	Lat	
	Type	CnV2xMsg_OffsetLLB12Type
	Comment	12-bit value indicating latitude and longitude deviation
Description	DF_PositionOffset-LL-24B as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.2.18 CnV2xMsg_PositionOffsetLL28BType

[CP_SWS_CnV2xMsg_02115] Definition of datatype CnV2xMsg_PositionOffsetLL28BType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PositionOffsetLL28BType (draft)	
Kind	Structure	
Elements	Lon	
	Type	CnV2xMsg_OffsetLLB14Type
	Comment	14-bit value indicating latitude and longitude deviation
	Lat	
	Type	CnV2xMsg_OffsetLLB14Type
	Comment	14-bit value indicating latitude and longtitude deviation
Description	DF_PositionOffset-LL-28B as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	

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Available via	Rte_CnV2xMsg_Type.h

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8.7.3.2.19 CnV2xMsg_PositionOffsetLL32BType

[CP_SWS_CnV2xMsg_02116] Definition of datatype CnV2xMsg_PositionOffsetLL32BType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_PositionOffsetLL32BType (draft)	
Kind	Structure	
Elements	Lon	
	Type	CnV2xMsg_OffsetLLB16Type
	Comment	16-bit value indicating latitude and longitude deviation
	Lat	
	Type	CnV2xMsg_OffsetLLB16Type
	Comment	16-bit value indicating latitude and longitude deviation
Description	DF_PositionOffset-LL-32B as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.2.20 CnV2xMsg_PositionOffsetLL36BType

[CP_SWS_CnV2xMsg_02117] Definition of datatype CnV2xMsg_PositionOffsetLL36BType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_PositionOffsetLL36BType (draft)
Kind	Structure
Elements	Lon

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	Type	CnV2xMsg_OffsetLLB18Type
	Comment	18-bit value indicating latitude and longitude deviation
	Lat	
	Type	CnV2xMsg_OffsetLLB18Type
	Comment	18-bit value indicating latitude and longitude deviation
Description	DF_PositionOffset-LL-36B as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.2.21 CnV2xMsg_PositionOffsetLL44BType

[CP_SWS_CnV2xMsg_02118] Definition of datatype CnV2xMsg_PositionOffsetLL44BType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

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Name	CnV2xMsg_PositionOffsetLL44BType (draft)	
Kind	Structure	
Elements	Lon	
	Type	CnV2xMsg_OffsetLLB22Type
	Comment	22-bit value indicating latitude and longitude deviation
	Lat	
	Type	CnV2xMsg_OffsetLLB22Type
	Comment	22-bit value indicating latitude and longitude deviation
Description	DF_PositionOffset-LL-44B as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Available via	Rte_CnV2xMsg_Type.h	

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8.7.3.2.22 CnV2xMsg_PositionOffsetLL48BType

[CP_SWS_CnV2xMsg_02119] Definition of datatype CnV2xMsg_PositionOffsetLL48BType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PositionOffsetLL48BType (draft)	
Kind	Structure	
Elements	Lon	
	Type	CnV2xMsg_OffsetLLB24Type
	Comment	24-bit value indicating latitude and longitude deviation
	Lat	
	Type	CnV2xMsg_OffsetLLB24Type
	Comment	24-bit value indicating latitude and longitude deviation
Description	DF_PositionOffset-LL-48B as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.23 CnV2xMsg_PositionOffsetLL64BType

[CP_SWS_CnV2xMsg_02120] Definition of datatype CnV2xMsg_PositionOffsetLL64BType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PositionOffsetLL64BType (draft)	
Kind	Structure	
Elements	Lon	
	Type	CnV2xMsg_LongtitudeType
	Comment	32-bit value indicating latitude and longitude deviation
	Lat	
	Type	CnV2xMsg_LatitudeType
	Comment	32-bit value indicating latitude and longitude deviation
Description	DF_PositionOffset-LL-64B as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	

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Available via	Rte_CnV2xMsg_Type.h

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8.7.3.2.24 CnV2xMsg_PositionOffsetLLType

[CP_SWS_CnV2xMsg_02121] Definition of datatype CnV2xMsg_PositionOffsetLLType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PositionOffsetLLType (draft)	
Kind	Union	
Elements	PositonLL24B	
	Type	CnV2xMsg_PositionOffsetLL24BType
	Comment	12-bit value indicating latitude and longitude deviation
	PositionLL28B	
	Type	CnV2xMsg_PositionOffsetLL28BType
	Comment	14-bit value indicating latitude and longitude deviation
	PositionLL32B	
	Type	CnV2xMsg_PositionOffsetLL32BType
	Comment	16-bit value indicating latitude and longitude deviation
	PositionLL36B	
	Type	CnV2xMsg_PositionOffsetLL36BType
	Comment	18-bit value indicating latitude and longitude deviation
	PositionLL44B	
	Type	CnV2xMsg_PositionOffsetLL44BType
	Comment	22-bit value indicating latitude and longitude deviation
	PositionLL48B	
	Type	CnV2xMsg_PositionOffsetLL48BType
	Comment	24-bit value indicating latitude and longitude deviation
	PositionLL64B	
	Type	CnV2xMsg_PositionOffsetLL64BType
	Comment	32-bit value indicating latitude and longitude deviation **Tags:** atp.Status=draft
Description	DF_PositionOffsetLL as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.25 CnV2xMsg_VertcalOffsetType

[CP_SWS_CnV2xMsg_02122] Definition of datatype CnV2xMsg_VerticalOffsetType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VerticalOffsetType (draft)	
Kind	Union	
Elements	VerOffsetB07	
	Type	CnV2xMsg_VerOffsetB07Type
	Comment	7-bit value indicating vertical deviation
	VerOffsetB08	
	Type	CnV2xMsg_VerOffsetB08Type
	Comment	8-bit value indicating vertical deviation
	VerOffsetB09	
	Type	CnV2xMsg_VerOffsetB09Type
	Comment	9-bit value indicating vertical deviation
	VerOffsetB10	
	Type	CnV2xMsg_VerOffsetB10Type
	Comment	10-bit value indicating vertical deviation
	VerOffsetB11	
	Type	CnV2xMsg_VerOffsetB11Type
	Comment	11-bit value indicating vertical deviation
	VerOffsetB12	
	Type	CnV2xMsg_VerOffsetB12Type
	Comment	12-bit value indicating vertical deviation
Description	DF_VerticalOffset as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.26 CnV2xMsg_PositionOffsetLLVType

[CP_SWS_CnV2xMsg_02123] Definition of datatype CnV2xMsg_PositionOffsetLLVType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PositionOffsetLLVType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_PositionOffsetLLVPresenceType
	Comment	Mark optional childs present or not
	PositionOffsetLLTypeIndicator	
	Type	uint8
	Comment	Indicatiing the exact Union type of PositionOffsetLL 0x00: Positon LL24B 0x01: PositonLL28B 0x02: PositonLL32B 0x03: PositonLL36B 0x04: PositonLL44B 0x05: PositonLL48B 0x06: PositonLL64B
	PositionOffsetLL	
	Type	CnV2xMsg_PositionOffsetLLType
	Comment	Indicating latitude and longitude deviation
	VerticalOffset	
	Type	CnV2xMsg_VerticalOffsetType
	Comment	Indicating vertical deviation
	VerticalOffsetTypeIndicator	
	Type	uint8
	Comment	Indicating the exact Union type of VerticalOffset, 0x00: VerOffsetB07, 0x01: VerOffsetB08, 0x02: VerOffsetB09, 0x03: VerOffsetB10, 0x04: VerOffsetB11, 0x05: VerOffsetB12
Description	DF_PositionOffsetLLV as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.27 CnV2xMsg_PositionOffsetLLVPresenceType

[CP_SWS_CnV2xMsg_02124] Definition of datatype CnV2xMsg_PositionOffsetLLVPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PositionOffsetLLVPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	**Kind**	**Name**	**Mask**	**Description**
	bit	VerticalOffset	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_PositionOffsetLLVType **Tags:** atp.Status=draft			
Available via	Rte_CnV2xMsg_Type.h			

⌋

8.7.3.2.28 CnV2xMsg_PathPredictionType

[CP_SWS_CnV2xMsg_02125] Definition of ImplementationDataType CnV2xMsg_PathPredictionType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PathPredictionType (draft)	
Kind	Structure	
Elements	radiusOfCurve	
	Type	uint16
	Comment	Radius of curvature, Unit is 0.1m Range: 0..65535
	Confidence	
	Type	uint8
	Comment	Confidence of path prediction, LSB units of 0.5 percent. Range: 0..200
Description	DF_PathPrediction as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.29 CnV2xMsg_VehicleEmergencyExtensionsType

[CP_SWS_CnV2xMsg_02126] Definition of ImplementationDataType CnV2xMsg_VehicleEmergencyExtensionsType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VehicleEmergencyExtensionsType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_VehicleEmergencyExtensionsPresenceType
	Comment	Mark optional childs present or not
	ResponseType	
	Type	CnV2xMsg_ResponseTypeType
	Comment	Response type
	SirenInUse	
	Type	CnV2xMsg_SirenInUseType
	Comment	Siren status
	LightbarInUse	
	Type	CnV2xMsg_LightbarInUseType
	Comment	Light bar status
Description	DF_VehicleEmergencyExtensions as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.30 CnV2xMsg_VehicleEmergencyExtensionsPresenceType

[CP_SWS_CnV2xMsg_02143] Definition of ImplementationDataType CnV2xMsg_VehicleEmergencyExtensionsPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VehicleEmergencyExtensionsPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***

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	bit	ResponseType	0x04	Bit 2: Optional child present
	bit	SirenInUse	0x02	Bit 1: Optional child present
	bit	LightBarInUse	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_VehicleEmergencyExtensionsType **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

⌋

8.7.3.2.31 CnV2xMsg_PathHistoryPointType

[CP_SWS_CnV2xMsg_02129] Definition of datatype CnV2xMsg_PathHistoryPointType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PathHistoryPointType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_PathHistoryPointPresenceType
	Comment	Mark optional childs present or not
	PositionOffsetLLV	
	Type	CnV2xMsg_PositionOffsetLLVType
	Comment	Indicate vehicle 3D position offset
	TimeOffset	
	Type	uint16
	Comment	Indicate time offset of reference time point, LSB units of of 10 mSec. Range: 1..65535 ; A value of 65534 to be used for 655.34 seconds or greater, a value of 65535 to be unavailable
	Speed	
	Type	uint16
	Comment	Indicate vehicle tspeed, Units of 0.02 m/s. Range: 0..8191; The value 8191 indicates that speed is unavailable
	PositonConfidenceSet	
	Type	CnV2xMsg_PositionConfidenceSetType
	Comment	Indicate confidence of Vehicle position
	CroseHeading	
	Type	uint8

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	Comment	Indicate vehicle heading, LSB is in units of 1.5 degrees. Range: 0..240; the value 240 shall be used for unavailable
Description	DF_PathHistoryPoint as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.32 CnV2xMsg_PathHistoryPointPresenceType

[CP_SWS_CnV2xMsg_02130] Definition of datatype CnV2xMsg_PathHistoryPointPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PathHistoryPointPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***
	bit	PositonConfidenceSet	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_PathHistoryPointType **Tags:** atp.Status=draft			
Available via	Rte_CnV2xMsg_Type.h			

⌋

8.7.3.2.33 CnV2xMsg_PathHistoryPointListType

[CP_SWS_CnV2xMsg_02131] Definition of ImplementationDataType CnV2xMsg_PathHistoryPointListType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PathHistoryPointListType (draft)	
Kind	Structure	
Elements	Count	
	Type	uint8
	Comment	Number of valid elements within array.
	PositionOffsetLLV	
	Type	Array of CnV2xMsg_PathHistoryPointListType
	Size	23
	Comment	Indicate vehicle 3D position offset
Description	DF_PathHistoryPointList as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.34 CnV2xMsg_PathHistoryType

[CP_SWS_CnV2xMsg_02132] Definition of ImplementationDataType CnV2xMsg_PathHistoryType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PathHistoryType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_PathHistoryPresenceType
	Comment	Mark optional childs present or not
	InitialPositionFullVector	
	Type	CnV2xMsg_FullPositionVectorType
	Comment	Indicate initial vehicle position vecor
	GNSSStatus	

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	Type	CnV2xMsg_GNSSStatusType
	Comment	Indicate time offset
	CrumbData	
	Type	CnV2xMsg_PathHistoryPointListType
	Comment	Indicate path history points list
Description	DF_PathHistory as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.35 CnV2xMsg_PathHistoryPresenceType

[CP_SWS_CnV2xMsg_02133] Definition of ImplementationDataType CnV2xMsg_PathHistoryPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PathHistoryPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***
	bit	InitialPositionFullVector	0x02	Bit 1: Optional child present
	bit	GNSSStatus	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_PathHistoryType **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

⌋

8.7.3.2.36 CnV2xMsg_FullPositionVectorType

[CP_SWS_CnV2xMsg_02127] Definition of ImplementationDataType CnV2xMsg_FullPositionVectorType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_FullPositionVectorType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_FullPositionVectorPresenceType
	Comment	Mark optional childs present or not
	Positon3D	
	Type	CnV2xMsg_Position3DType
	Comment	Indicate vehicle 3D position
	Heading	
	Type	uint16
	Comment	Indicate vehicle heading
	TransmissionState	
	Type	CnV2xMsg_TransmissionStateType
	Comment	Indicate vehicle transmission state
	Speed	
	Type	uint16
	Comment	Indicate vehicle speed
	PositionConfidenceSet	
	Type	CnV2xMsg_PositionConfidenceSetType
	Comment	Indicate vehicle position confidence
	TimeConfidence	
	Type	CnV2xMsg_TimeConfidenceType
	Comment	Indicate time confidence
	MotionConfidenceSet	
	Type	CnV2xMsg_MotionConfidenceSetType
	Comment	Indicate vehicle Motion confidence
Description	DF_FullPositionVector as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.37 CnV2xMsg_FullPositionVectorPresenceType

[CP_SWS_CnV2xMsg_02128] Definition of ImplementationDataType CnV2xMsg_FullPositionVectorPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_FullPositionVectorPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	**Kind**	**Name**	**Mask**	**Description**
	bit	DDataTime	0x40	Bit 3: Optional child present
	bit	Heading	0x20	Bit 5:Optional child present
	bit	TransmissionState	0x10	Bit 4:Optional child present
	bit	Speed	0x08	Bit 3:Optional child present
	bit	PositionConfidenceSet	0x04	Bit 2: Optional child present
	bit	TimeConfidence	0x02	Bit 1: Optional child present
	bit	MotionConfidenceSet	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_FullPositionVectorType **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

⌋

8.7.3.2.38 CnV2xMsg_VehicleSafetyExtensionsType

[CP_SWS_CnV2xMsg_02134] Definition of ImplementationDataType CnV2xMsg_VehicleSafetyExtensionsType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VehicleSafetyExtensionsType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_VehicleSafetyExtensionsPresenceType
	Comment	Mark optional childs present or not
	VehicleEventFlags	
	Type	CnV2xMsg_VehicleEventFlagsType

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	Comment	Mark optional childs present or not
	PathHistory	
	Type	CnV2xMsg_PathHistoryType
	Comment	Mark optional childs present or not
	PathPrediction	
	Type	CnV2xMsg_PathPredictionType
	Comment	Mark optional childs present or not
	ExteriorLights	
	Type	CnV2xMsg_ExteriorLightsType
	Comment	Mark optional childs present or not
Description	DF_VehicleSafetyExtensions as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.39 CnV2xMsg_VehicleSafetyExtensionsPresenceType

[CP_SWS_CnV2xMsg_02135] Definition of ImplementationDataType CnV2xMsg_VehicleSafetyExtensionsPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_VehicleSafetyExtensionsPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	***Kind***	***Name***	***Mask***	***Description***
	bit	VehicleEventFlags	0x04	Bit 2: Optional child present
	bit	PathPrediction	0x02	Bit 1: Optional child present
	bit	ExteriorLights	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_VehicleSafetyExtensionsType **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

⌋

8.7.3.2.40 CnV2xMsg_BsmType

[CP_SWS_CnV2xMsg_02136] Definition of ImplementationDataType CnV2xMsg_BsmType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_BsmType (draft)	
Kind	Structure	
Elements	Presence	
	Type	CnV2xMsg_BsmPresenceType
	Comment	Mark optional childs present or not
	MsgCount	
	Type	uint8
	Comment	Msg count, Range: 0..127; After the number reaches 127, the next one goes back to 0
	Id	
	Type	CnV2xMsg_VehicleIDType
	Comment	Vehicle ID
	DSecond	
	Type	uint16
	Comment	Indicate milliseconds in a minute, Range: 0..65535; a value =6000 indicate invalid value
	TimeConfidence	
	Type	CnV2xMsg_TimeConfidenceType
	Comment	Indicate time confidence
	Position3D	
	Type	CnV2xMsg_Position3DType
	Comment	Indicate vehicle 3D position
	PositionAccuracy	
	Type	CnV2xMsg_PositionAccuracyType
	Comment	Accuracy for GNSS system
	PositionConfidenceSet	
	Type	CnV2xMsg_PositonConfidenceSetType
	Comment	Realtime position confidence
	TransmissionState	
	Type	CnV2xMsg_TransmissionStateType
	Comment	Indicate vehicle transmission state
	Speed	
	Type	uint16
	Comment	Indicate vehicle speed, Units of 0.02 m/s, Range: 0..8191; The value 8191 indicates that speed is unavailable
	Heading	

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	Type	uint16
	Comment	Indicate vehicle heading, LSB of 0.0125 degrees Range: 0..28800
	SteeringWheelAngle	
	Type	sint8
	Comment	Absolute accuracy of steering wheelAngle value, Units of 1.5 degrees. Range: -126..127; A range of 189 to +189 degrees, +127 to be used for unavailable
	MotionConfidenceSet	
	Type	CnV2xMsg_MotionConfidenceSetType
	Comment	Indicate vehicle Motion confidence
	AccelerationSet4Way	
	Type	CnV2xMsg_AccelerationSet4WayType
	Comment	Indicate 4 way acceleration
	BrakeSystemStatus	
	Type	CnV2xMsg_BrakeSystemStatusType
	Comment	Indicate vehicle brake system status
	VehicleSize	
	Type	CnV2xMsg_VehicleSizeType
	Comment	Indicate vehicle size
	VehicleClassification	
	Type	CnV2xMsg_VehicleClassificationType
	Comment	Indicate vehicle types
	VehicleSafetyExtensions	
	Type	CnV2xMsg_VehicleSafetyExtensionsType
	Comment	Vehicle safety auxiliary information
	VehicleEmergencyExtensions	
	Type	CnV2xMsg_VehicleEmergencyExtensionsType
	Comment	Auxiliary information for emergency vehicles
Description	BSM frame as defined in CCSA YD/T 3709-2020. Values for data elements within this structure shall be used according that document. **Tags:** atp.Status=draft	
Variation	–	
Available via	Rte_CnV2xMsg_Type.h	

⌋

8.7.3.2.41 CnV2xMsg_BsmPresenceType

[CP_SWS_CnV2xMsg_02137] Definition of ImplementationDataType CnV2xMsg_BsmPresenceType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_BsmPresenceType (draft)			
Kind	Bitfield			
Derived from	uint8			
Elements	**Kind**	**Name**	**Mask**	**Description**
	bit	TimeConfidence	0x04	Bit 2: Optional child present
	bit	MotionConfidenceSet	0x02	Bit 1: Optional child present
	bit	VehicleEmergencyExtesnsions	0x01	Bit 0 (LSB): Optional child present
Description	Presence flags for CnV2xMsg_BsmType **Tags:** atp.Status=draft			
Variation	–			
Available via	Rte_CnV2xMsg_Type.h			

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8.7.3.2.42 CnV2xMsg_BsmRootType

[CP_SWS_CnV2xMsg_02138] Definition of ImplementationDataType CnV2xMsg_BsmRootType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_BsmRootType (draft)	
Kind	Structure	
Elements	Bsm	
	Type	CnV2xMsg_BsmType
	Comment	Structure of the BSM data
	TransactionID	
	Type	uint32
	Comment	TransactionId for received BSM
	RxParams	
	Type	CnV2xMsg_RxParamsType
	Comment	Rx parameters of the received BSM packet

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Description	BSM root message structure delivered to Applications **Tags:** atp.Status=draft
Variation	–
Available via	Rte_CnV2xMsg_Type.h

⌋

8.7.3.2.43 CnV2xMsg_PositionAndTimeType

[CP_SWS_CnV2xMsg_02139] Definition of ImplementationDataType CnV2xMsg_PositionAndTimeType

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_PositionAndTimeType (draft)	
Kind	Structure	
Elements	Position3D	
	Type	CnV2xMsg_Position3DType
	Comment	Indicate 3D position
	PositionAccuracy	
	Type	CnV2xMsg_PositionAccuracyType
	Comment	Accuracy for GNSS system
	Timestamp	
	Type	uint32
	Comment	Timestamp [1 ms]
	Heading	
	Type	uint16
	Comment	Heading [0.0125 degree] Range: 0..28800
	Speed	
	Type	uint16
	Comment	Speed [0.02 m/s] Range: 0..8192
	Position3DValid	
	Type	boolean
	Comment	Indicates that position3Dis valid
	PositionAccuracyValid	
	Type	boolean
	Comment	Indicates that PositionAccuracy is valid
Description	Position and time related information as defined within CCSA YD/T 3709-2020 **Tags:** atp.Status=draft	
Variation	–	

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Available via	Rte_CnV2xMsg_Type.h

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8.7.3.2.44 CnV2xMsg_MapRootType

[CP_SWS_CnV2xMsg_91005] Definition of ImplementationDataType CnV2xMsg_MapRootType

Status: DRAFT

⌈

Name	CnV2xMsg_MapRootType (draft)
Kind	Structure
Description	– **Tags:** atp.Status=draft
Variation	–
Available via	Rte_CnV2xMsg_Type.h

⌋

8.7.3.2.45 CnV2xMsg_PositonConfidenceSetType

[CP_SWS_CnV2xMsg_91003] Definition of ImplementationDataType CnV2xMsg_PositonConfidenceSetType

Status: DRAFT

⌈

Name	CnV2xMsg_PositonConfidenceSetType (draft)
Kind	Structure
Description	– **Tags:** atp.Status=draft
Variation	–
Available via	Rte_CnV2xMsg_Type.h

⌋

8.7.3.2.46 CnV2xMsg_RsiRootType

[CP_SWS_CnV2xMsg_91000] Definition of ImplementationDataType CnV2xMsg_RsiRootType

Status: DRAFT

⌈

Name	CnV2xMsg_RsiRootType (draft)
Kind	Structure
Description	– **Tags:** atp.Status=draft
Variation	–
Available via	Rte_CnV2xMsg_Type.h

⌋

8.7.3.2.47 CnV2xMsg_RsmRootType

[CP_SWS_CnV2xMsg_91001] Definition of ImplementationDataType CnV2xMsg_RsmRootType

Status: DRAFT

⌈

Name	CnV2xMsg_RsmRootType (draft)
Kind	Structure
Description	– **Tags:** atp.Status=draft
Variation	–
Available via	Rte_CnV2xMsg_Type.h

⌋

8.7.3.2.48 CnV2xMsg_SpatRootType

[CP_SWS_CnV2xMsg_91002] Definition of ImplementationDataType CnV2xMsg_SpatRootType

Status: DRAFT

⌈

Name	CnV2xMsg_SpatRootType (draft)
Kind	Structure
Description	– **Tags:** atp.Status=draft
Variation	–
Available via	Rte_CnV2xMsg_Type.h

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8.7.4 Ports

8.7.4.1 CnV2xMsg_CnV2xMsg_Vdp

[CP_SWS_CnV2xMsg_07001] Definition of Port CnV2xMsg_Vdp required by module CnV2xMsg

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_Vdp (draft)		
Kind	RequiredPort	***Interface***	CnV2xMsgVdp
Description	Port for retrieving data from VDP application **Tags:** atp.Status=draft		
Variation	–		

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8.7.4.2 CnV2xMsg_CnV2xMsg_Cnv2xApplRxIndicationBSM

[CP_SWS_CnV2xMsg_07002] Definition of Port CnV2xMsg_CnV2xApplRxIndicationBSM provided by module CnV2xMsg

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_CnV2xApplRxIndicationBSM (draft)		
Kind	ProvidedPort	***Interface***	CnV2xApplRxIndicationBsm
Description	Port for delivering received BSMs to application layer **Tags:** atp.Status=draft		
Variation	–		

⌋

8.7.4.3 CnV2xMsg_CnV2xMsg_Poti

[CP_SWS_CnV2xMsg_07003] Definition of Port CnV2xMsg_Poti provided by module CnV2xMsg

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_Poti (draft)		
Kind	ProvidedPort	***Interface***	CnV2xMsgPoti
Description	Service port for exchange of Postion and Time info. **Tags:** atp.Status=draft		
Variation	–		

⌋

8.7.4.4 CnV2xMsg_CnV2xMsg_Cnv2xApplRxIndicationRSI

[CP_SWS_CnV2xMsg_07004] Definition of Port CnV2xMsg_CnV2xApplRxIndicationRSI provided by module CnV2xMsg

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_CnV2xApplRxIndicationRSI (draft)		
Kind	ProvidedPort	***Interface***	CnV2xApplRxIndicationRsi
Description	Port for delivering received RSIs to application layer **Tags:** atp.Status=draft		
Variation	–		

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8.7.4.5 CnV2xMsg_CnV2xMsg_Cnv2xApplRxIndicationRSM

[CP_SWS_CnV2xMsg_07005] Definition of Port CnV2xMsg_CnV2xApplRxIndicationRSM provided by module CnV2xMsg

Status: DRAFT
Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_CnV2xApplRxIndicationRSM (draft)		
Kind	ProvidedPort	***Interface***	CnV2xApplRxIndicationRsm
Description	Port for delivering received RSMs to application layer **Tags:** atp.Status=draft		
Variation	–		

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8.7.4.6 CnV2xMsg_CnV2xMsg_Cnv2xApplRxIndicationSPAT

[CP_SWS_CnV2xMsg_07006] Definition of Port CnV2xMsg_CnV2xApplRxIndicationSPAT provided by module CnV2xMsg

Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_CnV2xApplRxIndicationSPAT		
Kind	ProvidedPort	***Interface***	CnV2xApplRxIndicationSpat
Description	Port for delivering received SPATs to application layer		
Variation	–		

⌋

8.7.4.7 CnV2xMsg_CnV2xMsg_Cnv2xApplRxIndicationMAP

[CP_SWS_CnV2xMsg_07007] Definition of Port CnV2xMsg_CnV2xApplRxIndicationMAP provided by module CnV2xMsg

Upstream requirements: CP_SRS_CnV2X_00501

⌈

Name	CnV2xMsg_CnV2xApplRxIndicationMAP		
Kind	ProvidedPort	***Interface***	CnV2xApplRxIndicationMap
Description	Port for delivering received MAPs to application layer		
Variation	–		

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9 Sequence diagrams

9.1 time Initialization

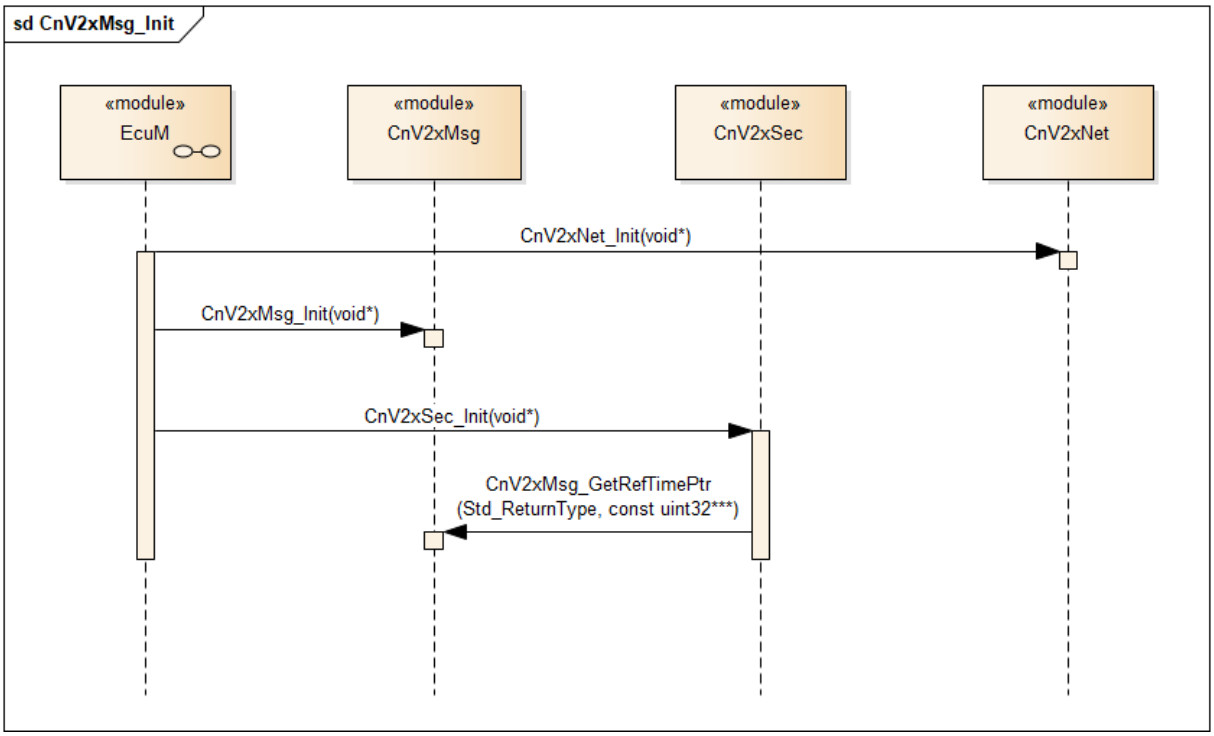

Figure 9.1: Time Initialization

9.2 Position and Time Update

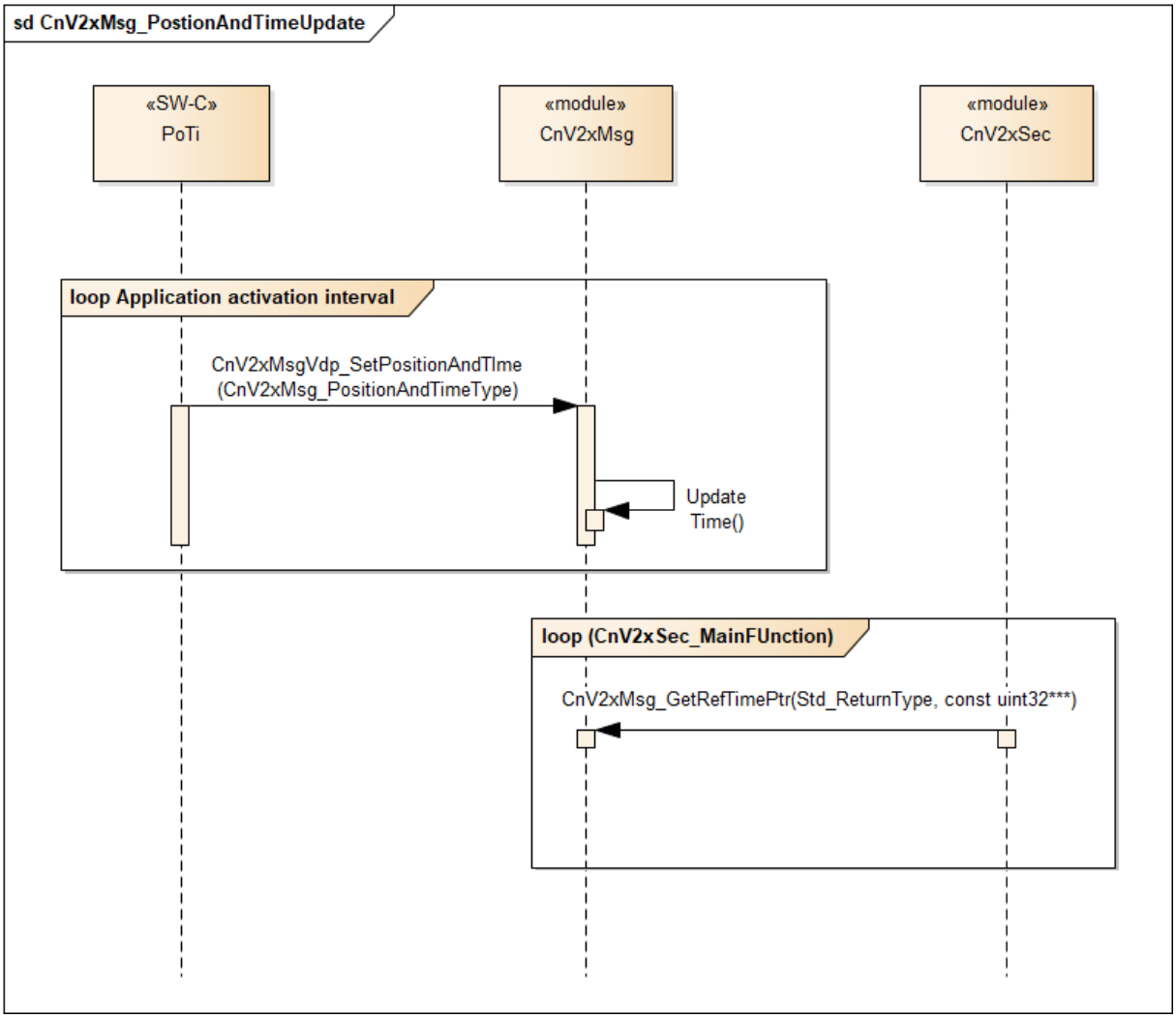

Figure 9.2: Position and Time Update

9.3 BSM Generation and Transmission

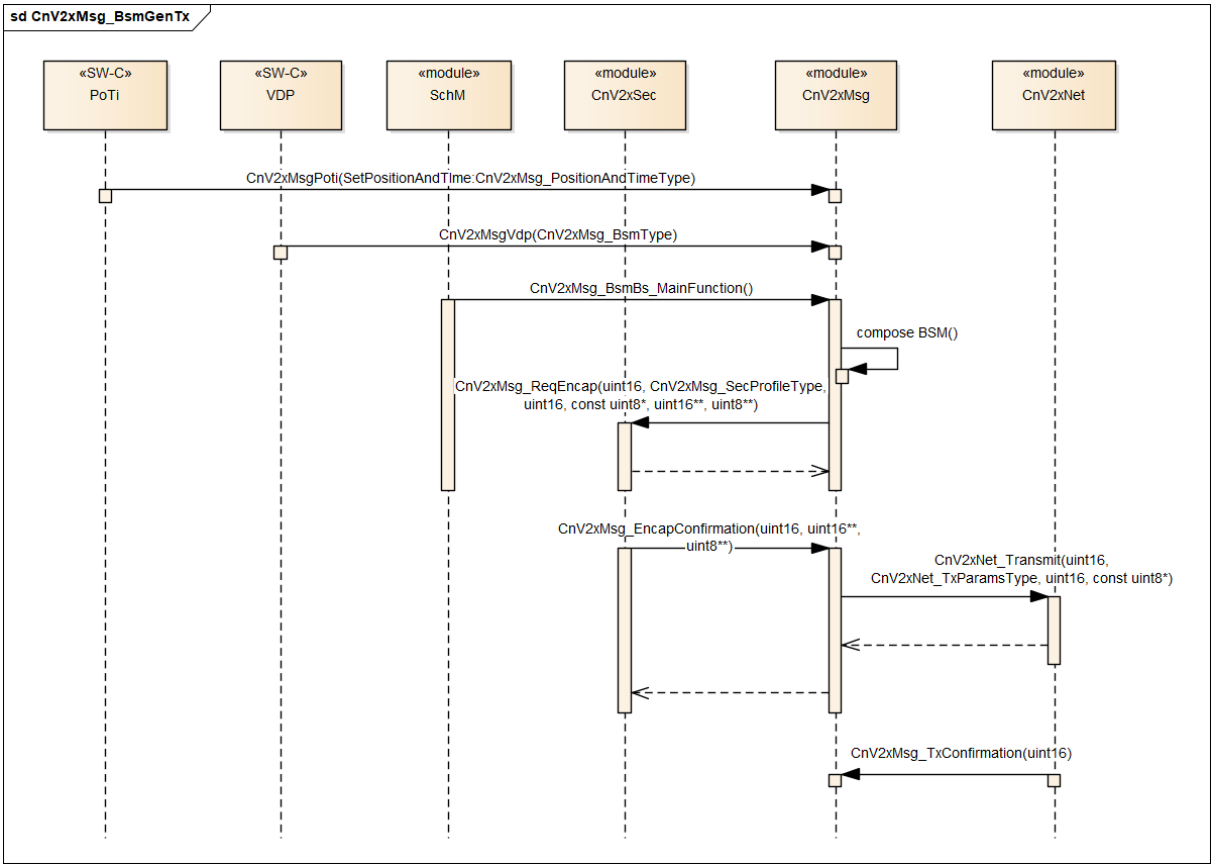

Figure 9.3: BSM Generation and Transmission

9.4 BSM Reception

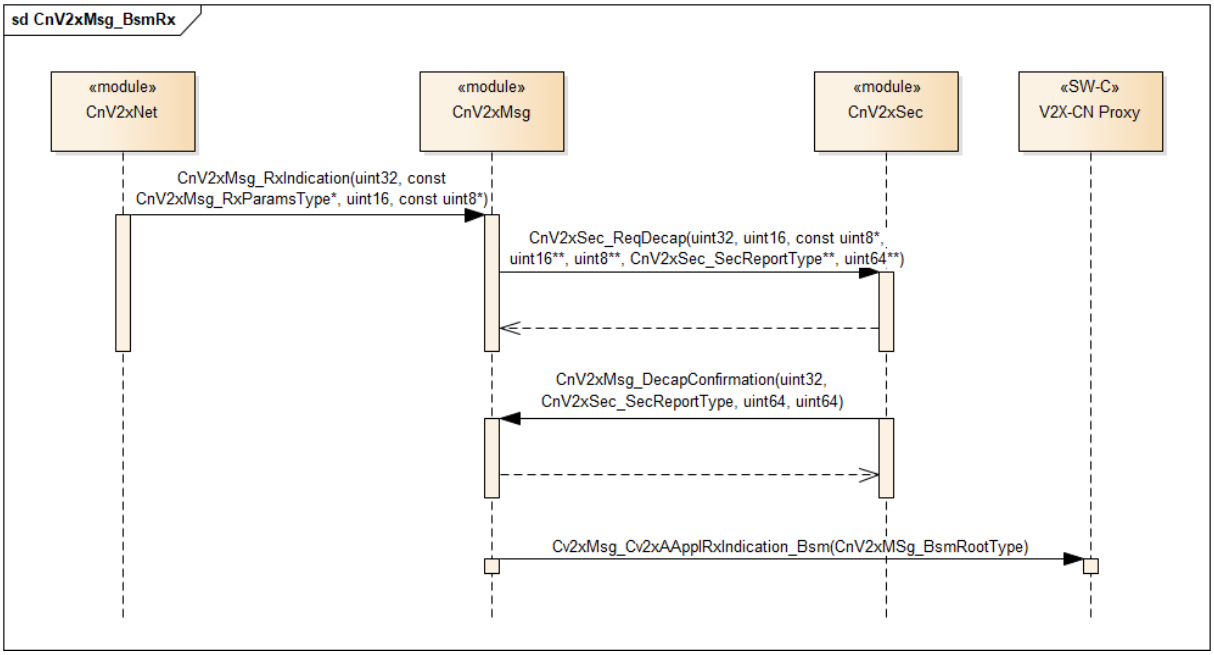

Figure 9.4: BSM Reception

9.5 RSI Reception

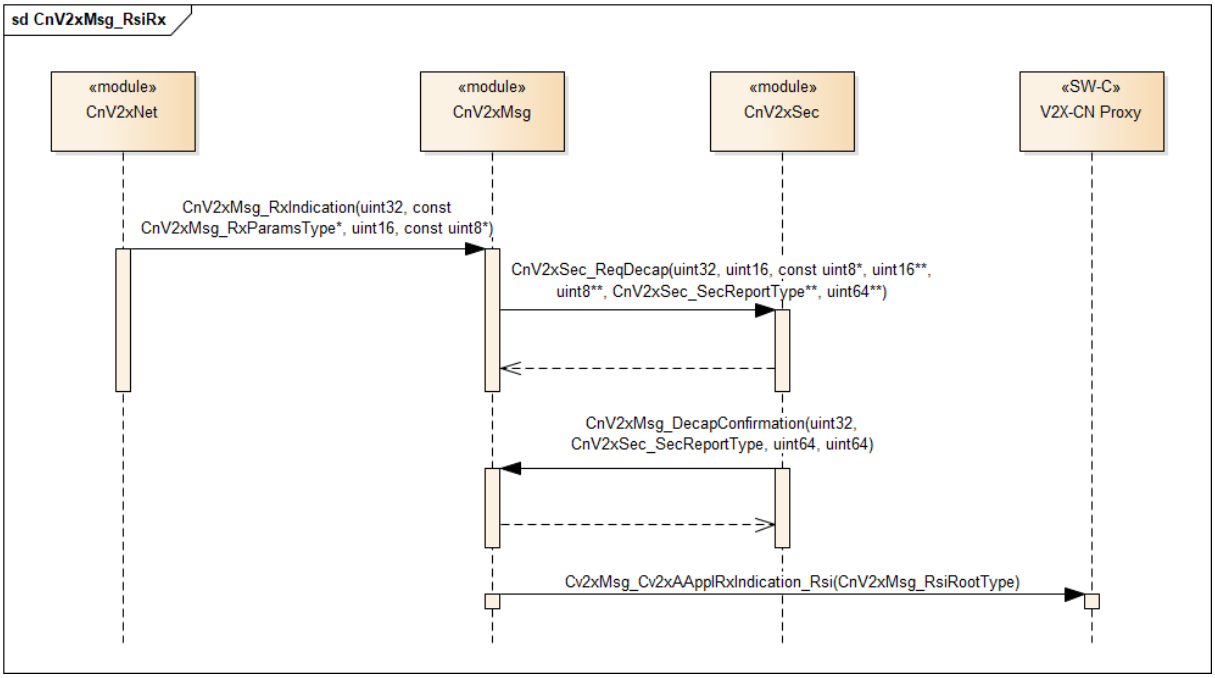

Figure 9.5: RSI Reception

9.6 RSM Reception

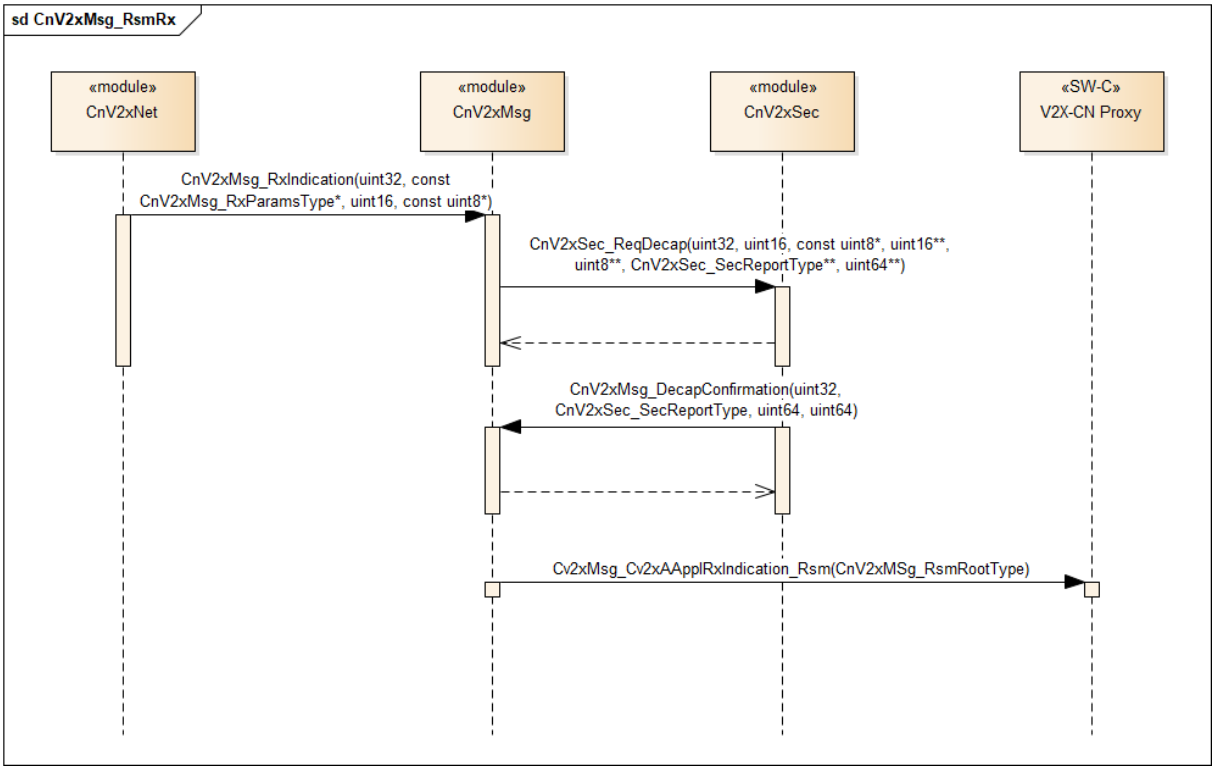

Figure 9.6: RSM Reception

9.7 SPAT Reception

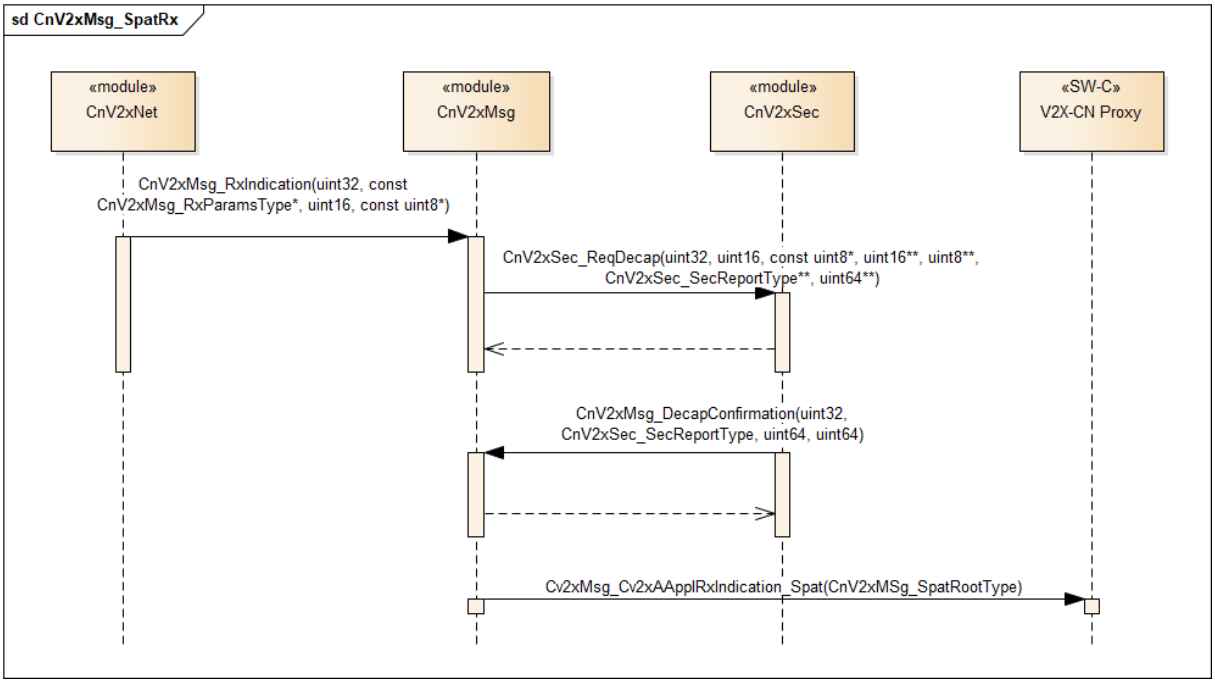

Figure 9.7: SPAT Reception

9.8 MAP Reception

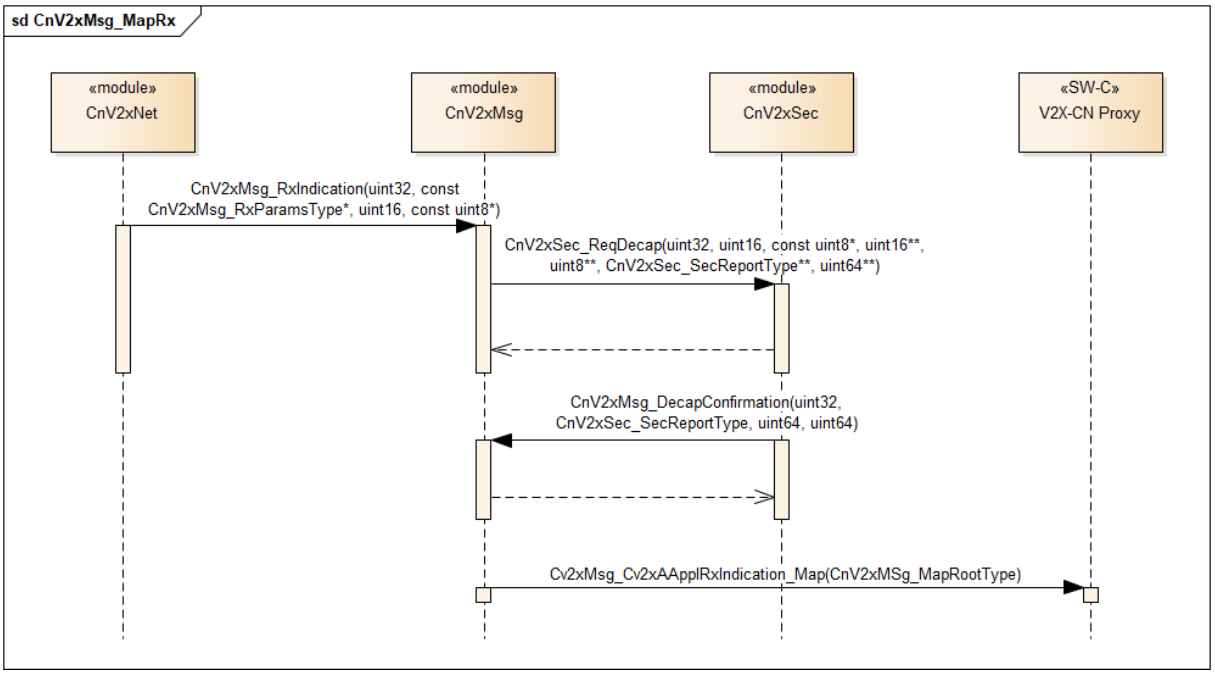

Figure 9.8: MAP Reception

9.9 Update Pseudonym

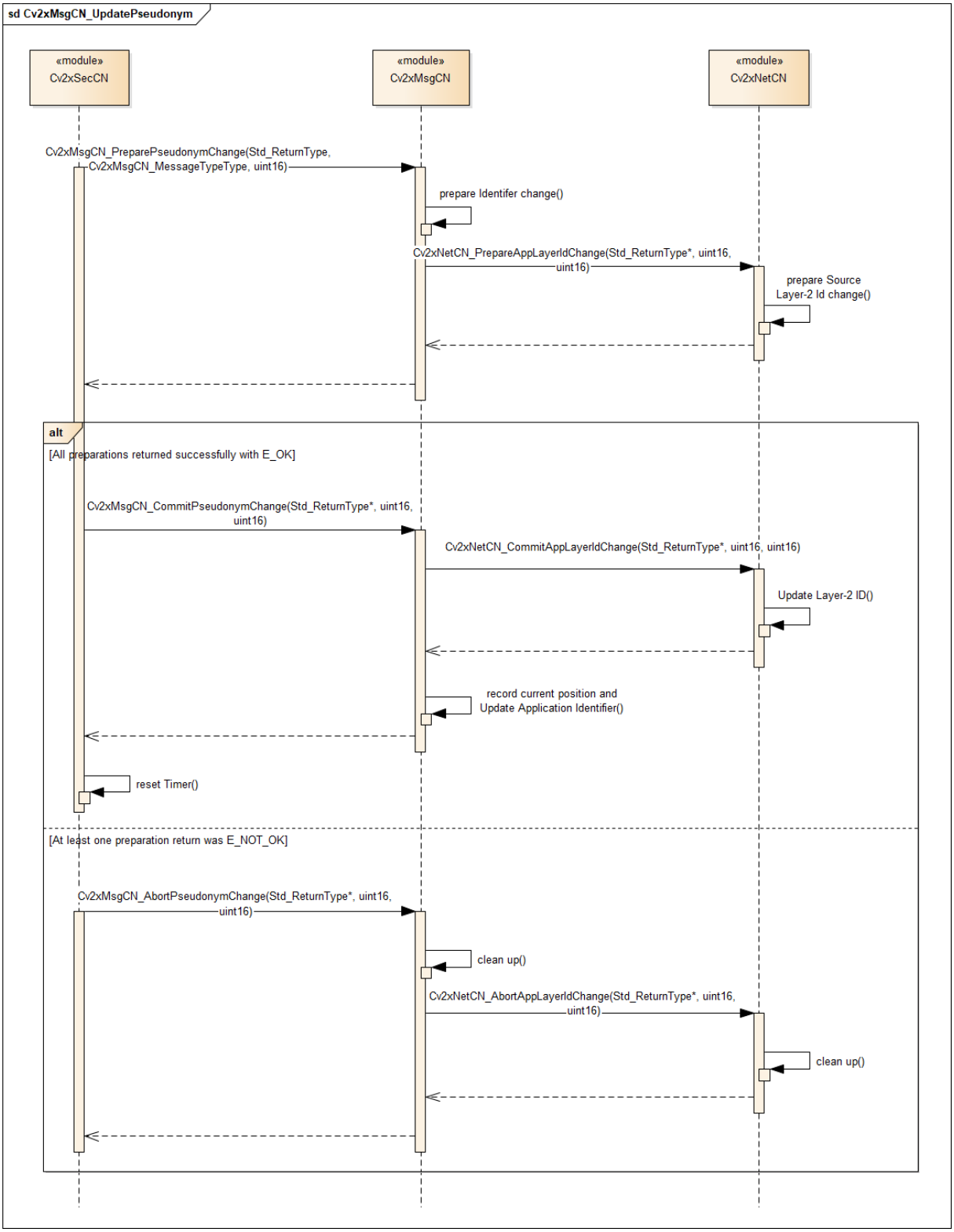

Figure 9.9: Update Pseudonym

9.10 Messages Reception via V2xDM

V2X messages reception via V2xDM please refer to [8] chapter 9.3.

10 Configuration specification

10.1 Containers and configuration parameters

The following chapters summarize all configuration parameters. The detailed meanings of the parameters are described in Chapter 7 and Chapter 8.

10.1.1 Variants

[SWS_CnV2xMsg_08001]

Upstream requirements: SRS_BSW_00345

⌈The CnV2xMsg module only supports VARIANT-PRE-COMPILE⌋

10.1.2 CnV2xMsg

[ECUC_CnV2xMsg_00001] Definition of EcucModuleDef CnV2xMsg

Status: DRAFT

⌈

Module Name	CnV2xMsg
Description	Configuration of the CnV2xMsg module.
Post-Build Variant Support	false
Supported Config Variants	VARIANT-PRE-COMPILE

Included Containers		
Container Name	**Multiplicity**	**Scope / Dependency**
CnV2xMsgConfig	1	This container contains the configuration parameters of the BSW module CnV2xMsg. **Tags:** atp.Status=draft
CnV2xMsgGeneral	1	This container contains the general configuration parameters of the AUTOSAR CnV2xMsg module. **Tags:** atp.Status=draft

⌋

10.1.3 CnV2xMsgGeneral

[ECUC_CnV2xMsg_00002] Definition of EcucParamConfContainerDef CnV2xMsg General

Status: DRAFT

⌈

Container Name	CnV2xMsgGeneral
Parent Container	CnV2xMsg
Description	This container contains the general configuration parameters of the AUTOSAR CnV2x Msg module. **Tags:** atp.Status=draft
Configuration Parameters	

Included Parameters		
Parameter Name	**Multiplicity**	**ECUC ID**
CnV2xMsgBsmBsMainFunction	1	[ECUC_CnV2xMsg_00003]
Cnv2xMsgCRsiSMainFunction	1	[ECUC_CnV2xMsg_00007]
CnV2xMsgDevErrorDetect	1	[ECUC_CnV2xMsg_00004]
CnV2xMsgMapSMainFunction	1	[ECUC_CnV2xMsg_00010]
CnV2xMsgMgtMainFunction	1	[ECUC_CnV2xMsg_00006]
CnV2xMsgRsmSMainFunction	1	[ECUC_CnV2xMsg_00008]
CnV2xMsgSpatSMainFunction	1	[ECUC_CnV2xMsg_00009]
CnV2xMsgVehicleClass	1	[ECUC_CnV2xMsg_00011]
CnV2xMsgVersionInfoApi	1	[ECUC_CnV2xMsg_00005]
CnV2xMsgvMaxCurveRadius	1	[ECUC_CnV2xMsg_00017]
CnV2xMsgvMaxPHistDistance	1	[ECUC_CnV2xMsg_00013]
CnV2xMsgvMaxPHistPoints	1	[ECUC_CnV2xMsg_00015]
CnV2xMsgvMinCurveRadius	1	[ECUC_CnV2xMsg_00016]
CnV2xMsgvMinPHistDistance	1	[ECUC_CnV2xMsg_00012]
CnV2xMsgvPathPerpendicularDist	1	[ECUC_CnV2xMsg_00014]
CnV2xMsgvPPredRadiusError	1	[ECUC_CnV2xMsg_00018]
CnV2xMsgvPPredTransitionTime	1	[ECUC_CnV2xMsg_00019]
CnV2xMsgvStationarySpeedThresh	1	[ECUC_CnV2xMsg_00020]

No Included Containers

⌋

[ECUC_CnV2xMsg_00003] Definition of EcucFloatParamDef CnV2xMsgBsmBsMainFunction

Status: DRAFT

⌈

Parameter Name	CnV2xMsgBsmBsMainFunction		
Parent Container	CnV2xMsgGeneral		
Description	This parameter defines the schedule period of CnV2xMsg_BsmBs_Main Function.Unit:[s] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucFloatParamDef		
Range	]0 .. 1[		
Default value	0.1		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00007] Definition of EcucFloatParamDef Cnv2xMsgCRsiSMainFunction

Status: DRAFT

⌈

Parameter Name	Cnv2xMsgCRsiSMainFunction		
Parent Container	CnV2xMsgGeneral		
Description	This parameter defines the schedule period of CnV2xMsg_RsiS_MainFunction.Unit:[s] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucFloatParamDef		
Range	]0 .. INF[		
Default value	0.1		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00004] Definition of EcucBooleanParamDef CnV2xMsgDevErrorDetect

Status: DRAFT

⌈

Parameter Name	CnV2xMsgDevErrorDetect		
Parent Container	CnV2xMsgGeneral		
Description	Switches the Default Error Tracer (Det) detection and notification ON or OFF. - true: enabled (ON) - false: disabled (OFF) **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucBooleanParamDef		
Default value	false		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00010] Definition of EcucFloatParamDef CnV2xMsgMapSMainFunction

Status: DRAFT

⌈

Parameter Name	CnV2xMsgMapSMainFunction		
Parent Container	CnV2xMsgGeneral		
Description	This parameter defines the schedule period of CnV2xMsg_MapS_MainFunction.Unit:[s] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucFloatParamDef		
Range	]0 .. INF[		
Default value	0.1		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00006] Definition of EcucFloatParamDef CnV2xMsgMgtMain Function

Status: DRAFT

⌈

Parameter Name	CnV2xMsgMgtMainFunction		
Parent Container	CnV2xMsgGeneral		
Description	This parameter defines the schedule period of CnV2xMsg_Mgt_MainFunction.Unit:[s] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucFloatParamDef		
Range	]0 .. 1[		
Default value	0.1		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00008] Definition of EcucFloatParamDef CnV2xMsgRsmSMainFunction

Status: DRAFT

⌈

Parameter Name	CnV2xMsgRsmSMainFunction		
Parent Container	CnV2xMsgGeneral		
Description	This parameter defines the schedule period of CnV2xMsg_RsmS_Main Function.Unit:[s] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucFloatParamDef		
Range	]0 .. INF[		
Default value	0.1		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00009] Definition of EcucFloatParamDef CnV2xMsgSpatSMainFunction

Status: DRAFT

⌈

Parameter Name	CnV2xMsgSpatSMainFunction		
Parent Container	CnV2xMsgGeneral		
Description	This parameter defines the schedule period of CnV2xMsg_SpatS_Main Function.Unit:[s] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucFloatParamDef		
Range	]0 .. INF[		
Default value	0.1		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00011] Definition of EcucEnumerationParamDef CnV2xMsgVehicleClass

Status: DRAFT

⌈

Parameter Name	CnV2xMsgVehicleClass	
Parent Container	CnV2xMsgGeneral	
Description	This configuration value defines the Vehicle Class information, Road Side Unit not supported by AUTOSAR. **Tags:** atp.Status=draft	
Multiplicity	1	
Type	EcucEnumerationParamDef	
Range	CNV2XMSG_VC_BUS	50 **Tags:** atp.Status=draft
	CNV2XMSG_VC_EM_AMBULANCE	65 **Tags:** atp.Status=draft
	CNV2XMSG_VC_EM_ENGINEERING	68 **Tags:** atp.Status=draft
	CNV2XMSG_VC_EM_FIRETRUCK_HEAVY	63 **Tags:** atp.Status=draft
	CNV2XMSG_VC_EM_FIRETRUCK_LIGHT	62 **Tags:** atp.Status=draft

▽

△

	CNV2XMSG_VC_EM_NURSING	64 **Tags:** atp.Status=draft	
	CNV2XMSG_VC_EM_POLICE_HEAVY	67 **Tags:** atp.Status=draft	
	CNV2XMSG_VC_EM_POLICE_LIGHT	66 **Tags:** atp.Status=draft	
	CNV2XMSG_VC_GOODS_LIGHT	20 **Tags:** atp.Status=draft	
	CNV2XMSG_VC_GOODS_SEMITRAILER	25 **Tags:** atp.Status=draft	
	CNV2XMSG_VC_PASSENGER	10 **Tags:** atp.Status=draft	
	CNV2XMSG_VC_SPECIAL	1 **Tags:** atp.Status=draft	
	CNV2XMSG_VC_UNKNOWN	0 **Tags:** atp.Status=draft	
Default value	CNV2XMSG_VC_UNKNOWN		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00005] Definition of EcucBooleanParamDef CnV2xMsgVersionInfoApi

Status: DRAFT

⌈

Parameter Name	CnV2xMsgVersionInfoApi		
Parent Container	CnV2xMsgGeneral		
Description	Enable/disables the API for reading the version information of the CnV2xMsg Module. - true: enabled (ON) - false: disabled (OFF) **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucBooleanParamDef		
Default value	false		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00017] Definition of EcucIntegerParamDef CnV2xMsgvMax CurveRadius

Status: DRAFT

⌈

Parameter Name	CnV2xMsgvMaxCurveRadius		
Parent Container	CnV2xMsgGeneral		
Description	The maximum Curve Radius **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucIntegerParamDef		
Range	0 .. 18446744073709551615		
Default value	2500		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00013] Definition of EcucIntegerParamDef CnV2xMsgvMax PHistDistance

Status: DRAFT

⌈

Parameter Name	CnV2xMsgvMaxPHistDistance		
Parent Container	CnV2xMsgGeneral		
Description	The Maximum distance between the first and last path history point along the vehicle path), Unit:[m] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucIntegerParamDef		
Range	0 .. 18446744073709551615		
Default value	300		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00015] Definition of EcucIntegerParamDef CnV2xMsgvMaxPHistPoints

Status: DRAFT

⌈

Parameter Name	CnV2xMsgvMaxPHistPoints		
Parent Container	CnV2xMsgGeneral		
Description	Maximum number of path history points in a BSM packet **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucIntegerParamDef		
Range	0 .. 18446744073709551615		
Default value	15		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00016] Definition of EcucIntegerParamDef CnV2xMsgvMinCurveRadius

Status: DRAFT

⌈

Parameter Name	CnV2xMsgvMinCurveRadius		
Parent Container	CnV2xMsgGeneral		
Description	The minimum Curve Radius **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucIntegerParamDef		
Range	0 .. 18446744073709551615		
Default value	100		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00012] Definition of EcucIntegerParamDef CnV2xMsgvMinPHistDistance

Status: DRAFT

⌈

Parameter Name	CnV2xMsgvMinPHistDistance		
Parent Container	CnV2xMsgGeneral		
Description	The Minimum distance between the first and last path history point along the vehicle path), Unit:[m] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucIntegerParamDef		
Range	0 .. 18446744073709551615		
Default value	200		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00014] Definition of EcucIntegerParamDef CnV2xMsgvPathPerpendicularDist

Status: DRAFT

⌈

Parameter Name	CnV2xMsgvPathPerpendicularDist		
Parent Container	CnV2xMsgGeneral		
Description	The perpendicular distance between any point on the vehicle path and the straight line connecting two adjacent path history points, unit:[m] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucIntegerParamDef		
Range	0 .. 18446744073709551615		
Default value	200		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00018] Definition of EcucIntegerParamDef CnV2xMsgvPPred RadiusError

Status: DRAFT

⌈

Parameter Name	CnV2xMsgvPPredRadiusError		
Parent Container	CnV2xMsgGeneral		
Description	The error from the actual radius, Unit:[%] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucIntegerParamDef		
Range	0 .. 100		
Default value	2		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00019] Definition of EcucFloatParamDef CnV2xMsgvPPred TransitionTime

Status: DRAFT

⌈

Parameter Name	CnV2xMsgvPPredTransitionTime		
Parent Container	CnV2xMsgGeneral		
Description	The transition time from a constant radius of curvature (R1) to a new constant radius of curvature (R2), unit: [s] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucFloatParamDef		
Range	[-INF .. INF]		
Default value	4		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

[ECUC_CnV2xMsg_00020] Definition of EcucIntegerParamDef CnV2xMsgvStationarySpeedThresh

Status: DRAFT

⌈

Parameter Name	CnV2xMsgvStationarySpeedThresh		
Parent Container	CnV2xMsgGeneral		
Description	The threshold of vehicle speed, unit:[m/s] **Tags:** atp.Status=draft		
Multiplicity	1		
Type	EcucIntegerParamDef		
Range	0 .. 18446744073709551615		
Default value	1		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

10.1.4 CnV2xMsgConfig

[ECUC_CnV2xMsg_00022] Definition of EcucParamConfContainerDef CnV2xMsgConfig

Status: DRAFT

⌈

Container Name	CnV2xMsgConfig
Parent Container	CnV2xMsg
Description	This container contains the configuration parameters of the BSW module CnV2xMsg. **Tags:** atp.Status=draft
Configuration Parameters	

Included Parameters		
Parameter Name	**Multiplicity**	**ECUC ID**
CnV2xMsgV2xDmServiceConfig	1	[ECUC_CnV2xMsg_00021]

Included Containers		
Container Name	**Multiplicity**	**Scope / Dependency**
CnV2xMsgDmMsgConfig	1..*	This container contains the configuration of all messages that are passed on to the V2x Data Manager. **Tags:** atp.Status=draft

⌋

[ECUC_CnV2xMsg_00021] Definition of EcucBooleanParamDef CnV2xMsgV2xDmServiceConfig ⌈

Parameter Name	CnV2xMsgV2xDmServiceConfig		
Parent Container	CnV2xMsgConfig		
Description	Enable/disables the messages reception service via V2xDm. - true: enabled (ON) - false: disabled (OFF)		
Multiplicity	1		
Type	EcucBooleanParamDef		
Default value	false		
Post-Build Variant Value	false		
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

10.1.5 CnV2xMsgDmMsgConfig

[ECUC_CnV2xMsg_00023] Definition of EcucParamConfContainerDef CnV2xMsgDmMsgConfig

Status: DRAFT

⌈

Container Name	CnV2xMsgDmMsgConfig		
Parent Container	CnV2xMsgConfig		
Description	This container contains the configuration of all messages that are passed on to the V2x Data Manager. **Tags:** atp.Status=draft		
Post-Build Variant Multiplicity	false		
Multiplicity Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Configuration Parameters			

Included Parameters		
Parameter Name	**Multiplicity**	**ECUC ID**
CnV2xMsgDmAid	0..*	[ECUC_CnV2xMsg_00025]

No Included Containers

⌋

[ECUC_CnV2xMsg_00025] Definition of EcucEnumerationParamDef CnV2xMsg DmAid

Status: DRAFT

⌈

Parameter Name	CnV2xMsgDmAid		
Parent Container	CnV2xMsgDmMsgConfig		
Description	When message is processed by the V2X Data Manager (CnV2xMsgV2xDmService Config is enabled), this configuration is used to indicate the type of message. **Tags:** atp.Status=draft		
Multiplicity	0..*		
Type	EcucEnumerationParamDef		
Range	CNV2XMSG_AID_DYNAMIC_RSI	3622 **Tags:** atp.Status=draft	
	CNV2XMSG_AID_EMERGENCY_EVENTTRIGGERED_BSM	3617 **Tags:** atp.Status=draft	
	CNV2XMSG_AID_EMERGENCY_REGULAR_BSM	113 **Tags:** atp.Status=draft	
	CNV2XMSG_AID_MAP	3618 **Tags:** atp.Status=draft	
	CNV2XMSG_AID_NONEMERGENCY_EVENTTRIGGERED_BSM	112 **Tags:** atp.Status=draft	
	CNV2XMSG_AID_NONEMERGENCY_REGULAR_BSM	111 **Tags:** atp.Status=draft	
	CNV2XMSG_AID_RSM	3623 **Tags:** atp.Status=draft	
	CNV2XMSG_AID_SEMIDYNAMIC_RSI	3621 **Tags:** atp.Status=draft	
	CNV2XMSG_AID_SPAT	3619 **Tags:** atp.Status=draft	
	CNV2XMSG_AID_STATIC_RSI	3620 **Tags:** atp.Status=draft	
	CNV2XMSG_AID_V2X_TERMINAL_AFTERMARKET	3617 **Tags:** atp.Status=draft	
Post-Build Variant Multiplicity	false		
Post-Build Variant Value	false		
Multiplicity Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Value Configuration Class	**Pre-compile time**	X	All Variants
	Link time	–	
	Post-build time	–	
Scope / Dependency	scope: local		

⌋

A Not applicable requirements

B Change history of AUTOSAR traceable items

Please note that the lists in this chapter also include traceable items that have been removed from the specification in a later version. These items do not appear as hyperlinks in the document.

B.1 Traceable item history of this document according to AUTOSAR Release R23-11

B.1.1 Added Specification Items in R24-11

none

B.1.2 Changed Specification Items in R24-11

Number	Heading
[CP_SWS_CnV2xMsg_01045]	Definition of scheduled function CnV2xMsg_SpatS_MainFunction
[CP_SWS_CnV2xMsg_02038]	Definition of ImplementationDataType CnV2xMsg_FuelType
[CP_SWS_CnV2xMsg_02102]	Definition of ImplementationDataType CnV2xMsg_PositionAccuracyType
[CP_SWS_CnV2xMsg_02105]	Definition of ImplementationDataType CnV2xMsg_AccelerationSet4Way Type

Table B.1: Changed Specification Items in R24-11

B.1.3 Deleted Specification Items in R24-11

none

B.1.4 Added Specification Items in R23-11

Number	Heading
[CP_SWS_CnV2xMsg_01063]	Definition of API function CnV2xMsg_GetTime32
[CP_SWS_CnV2xMsg_01064]	Definition of API function CnV2xMsg_SetPositionAndTime

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Number	Heading
[CP_SWS_-CnV2xMsg_02031]	Definition of datatype CnV2xMsg_FuelTypeType
[CP_SWS_-CnV2xMsg_02106]	Definition of datatype CnV2xMsg_AccelerationSet4WayPresenceType
[CP_SWS_-CnV2xMsg_10057]	Definition of datatype CnV2x_SecReportType
[CP_SWS_-CnV2xMsg_91000]	Definition of ImplementationDataType CnV2xMsg_RsiRootType
[CP_SWS_-CnV2xMsg_91001]	Definition of ImplementationDataType CnV2xMsg_RsmRootType
[CP_SWS_-CnV2xMsg_91002]	Definition of ImplementationDataType CnV2xMsg_SpatRootType
[CP_SWS_-CnV2xMsg_91003]	Definition of ImplementationDataType CnV2xMsg_PositonConfidenceSet Type
[CP_SWS_-CnV2xMsg_91005]	Definition of ImplementationDataType CnV2xMsg_MapRootType

Table B.2: Added Specification Items in R23-11

B.1.5 Changed Specification Items in R23-11

none

B.1.6 Deleted Specification Items in R23-11

none