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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CHANGE REQUEST** | | | | | | | | | | | | | | | |
|  | ETSI TS 103 300-3 | | | **Version** | 2.1.2 | **CR** | | 2 | | **rev** | | | | 1 |  |
|  | | | | | | | | | | | | | | | |
| **CR Title** | | Proposed corrections to TS 103 300-3 | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | |
| **Original Source** | | ITS WG 1 | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | |
| **Work Item Ref** | | N/A | | | | | **Submission date** | | | | | 14/06/2022 | | | |
| **Approving TB** | | ITS | | | | | **Approval date** | | | | |  | | | |
| **Category:** | | **F** | **Release** | | | | | | | | 2 | | |  | |
|  | | Use **one** of the following categories: **F** (correction) **A** (correction in an earlier release) **B** (addition of feature)  **C** (functional modification of feature) **D** (editorial modification) | | | | | | | | | | |  | | |
|  | |  | | | | | | | | | | | | | |
| **Reason for change** | | | Minor comments received on the VAM specification would need correction in the TS 103 300-3 standard | | | | | | | | | | | | |
|  | | |  | | | | | | | | | | | | |
| **Consequence if not approved** | | | Ambiguity and reduced performance of the standard | | | | | | | | | | | | |
|  | | |  | | | | | | | | | | | | |
| **Summary of change** | | | Harmonize fields differently described as optional/mandatory in the TS vs. the asn.1  Minimize size for VAM Path Prediction  After comment received in decision ITS(22)DEC262: since the proposed changes are not backwards compatible, increase the protocolVersion of the VAM | | | | | | | | | | | | |
|  | | |  | | | | | | | | | | | | |
| **Clauses affected** | | | 7.3.4, 7.3.6, B.1.1, B.7.3 and the asn.1 module of the VAM in the ETSI gitlab | | | | | | | | | | | | |
|  | | |  | | | | | | | | | | | | |
| **Linked Change Requests** | | | Initially submitted as contribution ITSWG1(22)060011 | | | | | |  | | | | | | |
|  | | |  | | | | | |  | | | | | | |
|  | | |  | | | | | | | | | | | | |
| **Other comments** | | | IMPORTANT: The change below applies to the current published version of TS 103 300-3 V2.1.2 and does NOT take into account future changes expected from the CDD (ETSI TS 102 894-2) Release 2 finalization. | | | | | | | | | | | | |
|  | | |  | | | | | | | | | | | | |

The following changes (in red below) should be applied:

7.3.4 VAM VRU LF container

The VRU LF container of the VAM contains potential slow-changing information of the VRU ITS-S. It shall include the parameters listed in clause B.4.1. Some elements are mandatory, others are optional or conditional mandatory.

The VRU LF container shall be included into the VAM with a parametrizable frequency as specified in clause 6.2. The VAM VRU LF container has the following content.

* The DE *VruProfileAndSubProfile* shall contain the identification of the profile and the sub-profile of the originating VRU ITS-S if defined. Table 10 shows the list of profiles and sub-profiles specified in the present document.
* **Table 10: VruProfileAndSubProfile description based on profiles**

[…..]

The DE *VruProfileAndSubProfile* is ~~OPTIONAL~~ MANDATORY if the VRU LF container is present. ~~If it is absent, this means that the profile is unavailable.~~

NOTE: The sub-profiles for VRU profile 3 are used only in the CAM special container.

[…..]

7.3.6 VAM VRU Motion Prediction container

The VRU Motion Prediction Container carries the past and future motion state information of the VRU. The VRU Motion Prediction Container of type *VruMotionPredictionContainer* shall contain information about the past locations of the VRU of type *PathHistory*, predicted future locations of the VRU (formatted as *SequenceOfVruPathPoint* *),* safe distance indication between VRU and other road users/objects of type *SequenceOfVruSafeDistanceIndication,* VRU's possible trajectory interception with another VRU/object shall be of type *SequenceOfTrajectoryInterceptionIndication* *,* the change in the acceleration of the VRU shall be of type *AccelerationChangeIndication*, the heading changes of the VRU shall be of *HeadingChangeIndication,* and changes in the stability of the VRU shall be of type *StabilityChangeIndication*.

* The Path History DF is of PathHistory type. The PathHistory DF shall comprise the VRU's recent movement over past time and/or distance. It consists of up to 40 past path points (see ETSI TS 102 894-2 [7]). When a VRU leaves a cluster and wants to transmit its past locations in the VAM, the VRU may use the PathHistory DF.
* The Path Prediction DF is of ~~SequenceOfVruPathPoint~~ PathPredicted type and shall define up to ~~40~~ 15 future path points, confidence values and corresponding time instances of the VRU ITS-S. It contains future path information for up to 10 seconds or up to ~~40~~ 15 path points, whichever is smaller.

B.1.1 header

|  |  |
| --- | --- |
| Description | ITS PDU header of the VAM. This DF includes DEs for the VAM *protocolVersion*, the VAM message type identifier *messageID* and the station identifier *stationID* of the originating ITS-S.  The DE *protocolVersion* is used to select the appropriate protocol decoder at the receiving ITS-S.  This DE *messageID* should be harmonized with other C-ITS message identifier definitions. |
| Insertion in VAM | Mandatory. |
| Data setting and presentation requirements | For the present document, the value of the DE *protocolVersion* shall be set to 2~~1~~.  For VAM, the DE *messageID* shall be set to vam(16).  The StationID shall be locally unique.  This DF shall be presented as specified in clause E.3*.* |

B.7.3 pathPrediction

|  |  |
| --- | --- |
| Description | This DF provides the set of predicted locations of the ITS-S, confidence values and the corresponding future time instants. |
| Insertion in VAM | Optional. |
| Data setting and presentation requirements | The DF shall be presented as specified in ~~clause F.7.1~~ the asn.1 (see clause A). It is a sequence of ~~VruPathPoint~~ PathPointPredicted*.* |

=========================================

**Impacts on the asn.1**

VAM-PDU-Descriptions {itu-t(0) identified-organization(4) etsi(0) itsDomain(5)

wg1(1) ts(103300) vam(1) version2(2)}

ItsPduHeaderVam ::= ItsPduHeader(WITH COMPONENTS {..., protocolVersion(2), messageId(vam)})

VamParameters ::= SEQUENCE {

basicContainer BasicContainer, -- from VAM-Temp-Imports

vruHighFrequencyContainer VruHighFrequencyContainer ~~OPTIONAL~~,

vruLowFrequencyContainer VruLowFrequencyContainer OPTIONAL,

vruClusterInformationContainer VruClusterInformationContainer OPTIONAL,

vruClusterOperationContainer VruClusterOperationContainer OPTIONAL,

vruMotionPredictionContainer VruMotionPredictionContainer OPTIONAL,

... }

VruLowFrequencyContainer ::= SEQUENCE {

profileAndSubprofile VruProfileAndSubprofile ~~OPTIONAL~~,

exteriorLights VruExteriorLights OPTIONAL,

sizeClass VruSizeClass OPTIONAL,

...

}

VruClusterInformationContainer ::= SEQUENCE {

clusterId ClusterId,

clusterBoundingBoxShape ClusterBoundingBoxShape,

clusterCardinalitySize ClusterCardinalitySize, -- 0 means unknown

clusterProfiles ClusterProfiles OPTIONAL,

... }

VruMotionPredictionContainer ::= SEQUENCE {

pathHistory PathHistory OPTIONAL,

pathPrediction PathPredicted OPTIONAL,

safeDistance SequenceOfVruSafeDistanceIndication OPTIONAL,

trajectoryInterceptionIndication SequenceOfTrajectoryInterceptionIndication OPTIONAL,

accelerationChangeIndication AccelerationChangeIndication OPTIONAL,

headingChangeIndication HeadingChangeIndication OPTIONAL,

stabilityChangeIndication StabilityChangeIndication OPTIONAL,

...

}

PathPredicted::= SEQUENCE (SIZE(0..15,...)) OF PathPointPredicted

PathPointPredicted::= SEQUENCE {

deltaLatitude DeltaLatitude,

deltaLongitude DeltaLongitude,

horizontalPositionConfidence PosConfidenceEllipse OPTIONAL,

deltaAltitude DeltaAltitude -- DEFAULT unavailable,

altitudeConfidence AltitudeConfidence -- DEFAULT unavailable,

pathDeltaTime DeltaTimeTenthOfSecond,

...

}

DeltaLatitude ::= INTEGER {

unavailable (131072)

} -- Range is (-131071..131072) Delta (-13.1m°South…(0.1 microdegree)… 13.1m°Nord)

-- corresponding to ~(917m South…(7mm)…917m North)

DeltaLongitude ::= INTEGER {

unavailable (131072)

} -- Range is (-131071..131072) Delta (-13.1m°West…(0.1 microdegree)… 13.1m°East)

-- corresponding to ~(1440m West…(11mm)…1440m East)@ equator

-- corresponding to ~(925m West…(7 mm)…925m East) @ 50°Longitude

-- corresponding to ~(585m West…(4.4mm)…585m East) @ 66°Longitude (polar circle)

DeltaTimeTenthOfSecond::= INTEGER {

unavailable (127)

} -- Range is (0..127) (0.1s … (0.1s) … 12.8s)