**3GPP TSG-CT WG1 Meeting #129-eC1-212348**

**Electronic meeting, 19-23 April 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **24.486** | **CR** | **0074** | **rev** | **-** | **Current version:** | **16.3.0**  |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Data semantics for switching modes of operations for V2V communications procedure |
|  |  |
| ***Source to WG:*** | Huawei, Hisilicon |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | eV2XAPP |  | ***Date:*** | 2021-04-08 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | The specification needs to define the data semantics for the switching modes of operations for V2V communications procedure defined in 3GPP TS 23.286 clause 9.8.3. |
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| ***Summary of change:*** | 1. Add the data semantics for the switching modes of operations for V2V communications procedure. |
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| ***Consequences if not approved:*** | The data semantics for the switching modes of operations for V2V communications procedure is missing |
|  |  |
| ***Clauses affected:*** | 8.5 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* First Change \* \* \* \*

## 8.5 Data semantics

The <VAE-info> element is the root element of the XML document. The <VAE-info> element contains the <registration-info>, <de-registration-info>, <location-tracking.info>, <message-info>, <service-discovery-info>, <local-service-info>, <V2X-USD-announcement-info>, <set-PC5-parameters-info>, <layer2-group-id-mapping>, <id-list-notification>, <network-monitoring-subscription-info>, <network-monitoring-info-notification>, <communication-status-info> and <V2V-communication-assistance-info> sub-elements.

<registration-info> element contains the following elements:

a) <V2X-UE-id>, an element contains the identity of the V2X UE;

b) <reception-uri>, an element that contains the URI of the V2X UE;

c) one or more <V2X-service-id> elements. Each <V2X-service-id> element contains the V2X service ID which the V2X UE is interested in receiving (e.g. PSID or ITS AID of ETSI ITS DENM, ETSI ITS CAM); and

d) <result>, an element which indicates a value either "success" or "fail".

<V2X-UE-id> is a mandatory element used to include the identity of a VAL client. The <V2X-UE-id> element contains the identity of the VAL client.

<reception-uri> element indicates the destination URI of messages sent to the V2X UE, and includes a URI as specified in IETF RFC 2616 [19].

<de-registration-info> element contains the following elements:

a) <V2X-UE-id>, an element contains the identity of the V2X UE;

b) one or more <V2X-service-id> elements. Each <V2X-service-id> element contains the V2X service ID which the V2X UE is no longer interested in receiving (e.g. PSID or ITS AID of ETSI ITS DENM, ETSI ITS CAM); and

c) <result>, an element which indicates a value either "success" or "fail".

<location-tracking-info> element contains either:

a) a <V2X-UE-id> element set to the identity of the V2X UE that subscribes or unsubscribes to a geographical area;

b) a <geo-id> element set to the identity of the geographical area to be subscribed or unsubscribed; and

c) an <operation> element which indicates a value either "subscribe" or "unsubscribe";

or:

a) a <result> element set to the value "success" or "failure" indicating success or failure of the subscription or unsubscription; and

b) an <operation> element which indicates a value either "subscribe" or "unsubscribe".

<message-info> element contains the following elements;

a) <V2X-UE-id>, an optional element contains the identity of the V2X UE;

b) <V2X-group-id>, an optional element contains the identity of the V2X group;

c) <payload>, an optional element contains the payload of the V2X message (e.g. ETSI ITS DENM);

d) <V2X-service-id>, an optional element contains the V2X service ID which the V2X message belongs to;

e) <geo-id>, an optional element contains a geographical area identity representing a geographical area;

f) <message-reception-ind>, an optional element used to indicate that a reception report is required to be sent;

g) <message-reception-uri>, an optional element indicates the destination URI of a requested reception report, and includes a URI as specified in IETF RFC 2616 [19]; or

h) <result>, an optional element contains a string set to either "success" or "failure" used to indicate success or failure of the V2X message reception.

<service-discovery-info> is a mandatory element used to include the V2X service discovery response information. The <service-discovery-info> element contains either:

a) an <V2X-UE-id> sub-element; or

b) a <result> sub-element and an optional <service-discovery-data> sub-element.

The <service-discovery-data> is an optional which shall include one or more <V2X-service-map> elements.

The <V2X-service-map> element shall include following attributes:

a) one or more <V2X-service-id> attributes that each contains a V2X service identifier as specified in ETSI TS 102 965 [18] and ISO TS 17419 [20]; and

b) a <V2X-AS-address> attribute that contains a V2X application server address as specified in 3GPP TS 23.285 [21].

<local-service-info> element contains either the following elements:

a) a <V2X-UE-id> element and a <geo-id> element;

or the following elements:

a) a <result> element set to the value "success" or "failure" indicating success or failure of getting the local service information;

b) if the result is "success", shall include a <local-service-info-content> element which provides the local service information.

<geo-id> element contains a geographical area identity representing a geographical area.

<local-service-info-content> is an optional element and has the following sub-elements:

a) a <V2X-server-USD> element that specifying the information for V2X server USD and has the following sub-elements:

1) a <TMGI> element;

2) an <mbms-service-areas> element;

3) a <frequency> element; and

4) a <V2X-mbms-sdp> element;

b) a <V2X-AS-address> element that contains a V2X application server address as specified in 3GPP TS 23.285 [21]; and

c) a <V2X-USD> element that specifying the information for V2X USD and has the following sub-elements:

1) a <TMGI> element;

2) an <mbms-service-areas> element;

3) a <frequency> element; and

4) a <V2X-mbms-sdp> element.

<V2X-USD-announcement-info> is an element used to describe the V2X USD information that V2X UE received from the VAE server which contains the <V2X-UE-id> and <V2X-USD-configuration-data> sub-elements.

<V2X-USD-configuration-data> element is a mandatory element set to the V2X USD configuration data as specified in 3GPP TS 23.285 [21] which contains the <TMGI>, <mbms-service-areas>, <frequency> and <V2X-mbms-sdp> sub-elements.

<TMGI> is a mandatory element encoded as specified in 3GPP TS 24.008 [6] excluding the Temporary mobile group identity IEI and the length of Temporary mobile group identity IE contents.

<mbms-service-areas> is a mandatory element which contains one or more <mbms-service-area-id> elements. Each <mbms-service-area-id> contains a MBMS SAI, encoded as specified in 3GPP TS 23.003 [2].

<frequency> is an optional element encoded as specified in 3GPP TS 29.468 [15].

<V2X-mbms-sdp> is mandatory element which contains SDP configuration information encoded as specified in 3GPP TS 24.386 [8] clause 7.2.2.

<set-PC5-parameters-info> element contains the following elements:

a) <V2X-UE-id>, an element contains the identity of the V2X UE;

b) <PC5-parameters-configuration-data>, an optional element set to the PC5 parameters configuration data as specified in 3GPP TS 23.285 [21] contains the following elements:

1) <expiration-time>, a mandatory element encoded as specified in 3GPP TS 24.385 [7] clause 5.5.2;

2) <plmn-list>, a mandatory element which contains one or more <plmn-id> elements, each <plmn-id> element is encoded as specified in 3GPP TS 23.003 [2];

3) <authorized-when-not-served-by-E-UTRAN>, a mandatory element encoded as specified in 3GPP TS 24.385 [7] clause 5.5.8;

4) <radio-parameters>, a mandatory element contains the following elements:

i) one or more <radio-parameters-content> elements, each <radio-parameters-content> element is encoded as specified in3GPP TS 36.331 [17] clause 9 for the SL-V2X-Preconfiguration;

ii) <geographical-area>, a mandatory element specifying a geographical area and has the following sub-elements:

A) <polygon-area>, an optional element specifying the area as a polygon specified in clause 5.2 of 3GPP TS 23.032 [3]; and

B) <ellipsoid-arc-area>, an optional element specifying the area as an ellipsoid arc specified in clause 5.7 of 3GPP TS 23.032 [3]; and

iii) <operator-managed>, a mandatory element encoded as specified in 3GPP TS 24.385 [7] clause 5.5.19; and

5) <V2X-service-ids-list>, a mandatory element contains the following elements:

i) one or more <V2X-service-id> elements. Each <V2X-service-id> element contains the V2X service ID which the V2X UE is no longer interested in receiving (e.g. PSID or ITS AID of ETSI ITS DENM, ETSI ITS CAM); and

ii) one or more <layer2-id> elements. Each <layer2-id> element is encoded as the DestinationLayer2ID specified in 3GPP TS 36.300 [16]; or

c) <result>, an optional element which indicates a value either "success" or "failure".

<layer2-group-id-mapping> element contains the following elements:

a) <dynamic-group-info> element; and

b) <prose-layer2-group-id>, an element contains the identity of the ProSe Layer-2 Group.

<dynamic-group-info> element contains the following elements:

a) <dynamic-group-id>, an element contains the identity of the dynamic group;

b) <group-definition>, an element containing dynamic group definition information; and

c) <group-leader-id>, an element contains the identity of the group leader.

<id-list-notification> element contains the following sub-elements:

a) <dynamic-group-id>, an element set to the identity of the dynamic group; and

b) one or more <group-member-id> element(s), each <group-member-id> element contains the following sub-elements:

1) a <V2X-UE-id> element, an element set to the identity of the joined or left V2X UE; and

2) <group-scope>, an element that has the value "joined" or "left". The value "joined" means that the V2X UE joined the group. The value "left" means that the V2X UE left the group.

<network-monitoring-subscription-info> is an optional element which contains the <V2X-UE-id>, <subscription-events> and <triggering-criteria> sub-elements.

<subscription-events> is a mandatory element which contains one or more <events> sub-elements.

<event> element contains a string set to either "uplink degradation" or "congestion" or "overload" or "coverage".

<triggering-criteria>, a mandatory element which contains at least one of the following sub-elements:

a) <cell-change>, an optional element specifying what cell changes trigger the VAE-S to send monitoring reports to the VAE-C. This element consists of the following sub-elements:

1) <any-cell-change>, an optional element. The presence of this element specifies that any cell change is a trigger. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

2) <enter-specific-cell>, an optional element specifying an NCGI which when entered triggers a request for alocation report coded as specified in clause 19.6A in 3GPP TS 23.003 [2]. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string; and

3) <exit-specific-cell>, an optional element specifying an NCGI which when exited triggers the VAE-S to send monitoring reports to the VAE-C coded as specified in clause 19.6A in 3GPP TS 23.003 [2]. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

b) <tracking-area-change>, an optional element specifying what tracking area changes trigger the VAE-S to send monitoring reports to the VAE-C. This element consists of the following sub-elements:

1) <any-tracking-area-change>, an optional element. The presence of this element specifies that any tracking area change is a trigger. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

2) <enter-specific-tracking-area>, an optional element specifying a tracking area identity coded as specified in clause 19.4.2.3 in 3GPP TS 23.003 [2] which when entered triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string; and

3) <exit-specific-tracking-area>, an optional element specifying a tracking area identity coded as specified in clause 19.4.2.3 in 3GPP TS 23.003 [2] which when exited triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

c) <plmn-change>, an optional element specifying what PLMN changes trigger the VAE-S to send monitoring reports to the VAE-C. This element consists of the following sub-elements:

1) <any-plmn-change>, an optional element. The presence of this element specifies that any PLMN change is a trigger. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

2) <enter-specific-plmn>, an optional element specifying a PLMN id (MCC+MNC) coded as specified in 3GPP TS 23.003 [2] which when entered triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string; and

3) <exit-specific-plmn>, an optional element specifying a PLMN id (MCC+MNC) coded as specified in 3GPP TS 23.003 [2] which when exited triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

d) <mbms-sa-change>, an optional element specifying what MBMS changes trigger the VAE-S to send monitoring reports to the VAE-C. This element consists of the following sub-elements:

1) <any-mbms-sa-change>, an optional element. The presence of this element specifies that any MBMS SA change is a trigger for the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

2) <enter-specific-mbms-sa>, an optional element specifying an MBMS service area id which when entered triggers the VAE-S to send monitoring reports to the VAE-C. The MBMS service area id is coded as specified in clause 15.3 in 3GPP TS 23.003 [2] for service area identifier (SAI). This element contains a mandatory <trigger-id> attribute that shall be set to a unique string; and

3) <exit-specific-mbms-sa>, an optional element specifying an MBMS service area id which when exited triggers the VAE-S to send monitoring reports to the VAE-C. The MBMS service area id is coded as specified in clause 15.3 in 3GPP TS 23.003 [2] for service area identifier (SAI). This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

e) <mbsfn-area-change>, an optional element specifying what MBSFN changes trigger a request for the VAE-S to send monitoring reports to the VAE-C. This element consists of the following sub-elements:

1) <any-mbsfn-area-change>, an optional element. The presence of this element specifies that any MBSFN area change is a trigger for the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

2) <enter-specific-mbsfn-area>, an optional element specifying an MBSFN area which when entered triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string; and

3) <exit-specific-mbsfn-area>, an optional element specifying an MBSFN area which when exited triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

f) <periodic-report>, an optional element specifying that periodic request for the VAE-S to send monitoring reports to the VAE-C shall be sent. The value in seconds specifies the reporting interval. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

g) <travelled-distance>, an optional element specifying that the travelled distance shall trigger a request for the VAE-S to send monitoring reports to the VAE-C. The value in metres specified the travelled distance. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

h) <vertical-application-event>, an optional element specifying what application signalling events triggers the VAE-S to send monitoring reports to the VAE-C. The <vertical-application-event> element has the following sub-elements:

1) <initial-log-on>, an optional element specifying that an initial log on triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

2) <location-configuration-received>, an optional element specifying that a received location configuration triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string; and

3) <any-other- event>, an optional element specifying that any other application signalling event than initial-log-on and location-configuration-received triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

i) <geographical-area-change>, an optional element specifying what geographical are changes trigger the VAE-S to send monitoring reports to the VAE-C. This element consists of the following sub-elements:

1) <any-area-change>, an optional element. The presence of this element specifies that any geographical area change is a trigger. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

2) <enter-specific-area>, an optional element specifying a geographical area which when entered triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string. The <enter-specific-area> element has the following sub-elements:

i) <geographical-area>, an optional element containing a <trigger-id> attribute and the following two sub-elements:

A) <polygon-area>, an optional element specifying the area as a polygon specified in clause 5.2 in 3GPP TS 23.032 [3]; and

B) <ellipsoid-arc-area>, an optional element specifying the area as an ellipsoid arc specified in clause 5.7 in 3GPP TS 23.032 [3]; and

3) <exit-specific-area-type>, an optional element specifying a geographical area which when exited triggers the VAE-S to send monitoring reports to the VAE-C. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string.

The <network-monitoring-info-notification> element contains the following sub-elements:

a) <VAL-UE-id>, an element contains the identity of the V2X UE who subscribes the network monitoring information;

b) <network-monitoring-info>, an element contains one or more <trigger-id> attributes that identifies the triggering criteria that resulted in the VAE-S sending the monitoring report to the VAE-C. In addition, the <network-monitoring-info> contains the following sub-elements:

1) <uplink-quality-level>, an optional element contains an integer used to indicate the uplink quality level;

2) <congestion-info>, an optional element contains an integer used to indicate the congestion level that may be exact value for congestion status reported by NWDAF to NEF or abstracted value e.g. (High, Medium, Low) which can be reported by the NEF to the AF;

3) <geographical-area>, an optional element contains the following elements:

i) <cell-area>, an optional element specifying an NCGI which when entered triggers a request for alocation report coded as specified in clause 19.6A in 3GPP TS 23.003 [2] for which the monitoring applies;

ii) <tracking-area>, an optional element specifying a tracking area identity coded as specified in clause 19.4.2.3 in 3GPP TS 23.003 [2] for which the monitoring applies;

4) <time-validity>, an optional element specifies the period for which the monitoring applies; and

5) <MBMS-level>, an optional element contains the following elements:

i) <MBMS-coverage-level>, an optional element contains an integer used to indicate the MBMS coverage level; or

ii) <MBMS-bearer-level-event>, an optional element contains a string used to indicate the MBMS bearer level events.

The <communication-status-info> element contains the following sub-elements:

a) <V2X-UE-id>, a mandatory element contains the identity of the V2X UE;

b) <V2V-communication-mode>, a mandatory element contains a string "LTE-PC5" or "NR-PC5" indicating which V2V communication mode supported by the V2X UE;

c) <V2X-service-id>, an optional element contains the V2X service ID corresponding to the communication status;

d) <cell-info>, an optional element contains a string "NR cell" or "E-UTRA cell" indicating the cell information of which the V2X UE is located; and

e) <communication-link-status-info>, an optional element contains a string indicating the communication status of the V2X UE (e.g. uplink/downlink data rates, packet loss and etc.).

The <V2V-communication-assistance-info> element contains the following sub-elements:a) <V2X-UE-id>, a mandatory element contains the identity of the V2X UE;

b) <V2X-service-id>, an optional element contains the V2X service ID corresponding to the recommendation information; and

c) <V2V-communication-assistance>, a mandatory element contains a string indicating the assistance information for V2V communication mode switching to the V2X UE (e.g. recommended V2V communication mode, location, V2X service type, time validity, V2X service status, V2X application requirement, etc.).

Editor’s note: The detail of the <communication-link-status-info> element and the <V2V-communication-assistance> element is FFS.

\* \* \* End of Change \* \* \* \*