**3GPP TSG-CT WG1 Meeting #150C1-244899**

**Maastricht, Netherlands, 19-23 August 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **0042** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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:*** | Corrections in UASAPP TS 24.257 for Rel-18 | | | | | | | | |
|  |  | | | | | | | | |
| ***Source to WG:*** | InterDigital | | | | | | | | |
| ***Source to TSG:*** | CT1 | | | | | | | | |
|  |  | | | | | | | | |
| ***Work item code:*** | UASAPP\_Ph2 | | | | |  | ***Date:*** | | 2024-08-12 |
|  |  | | | |  | |  | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | |  |
|  | *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 can be 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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | |
| ***Reason for change:*** | | | A few errors are spotted in 24.257 v18.3.0 for Rel-18, which needs to be corrected. The changes include:   * Client procedure for DAA support involving UAVs with U2X support procedure includes “DAA-client-event-info” element whereas server procedure for DAA support involving UAVs with U2X support procedure includes acknowledgement “DAA-client-event-info-ack”, and “-ack” is missing in the definition which needs to be correct. Also the data structure, semantics and XML schema needs to be aligned. * Server procedure for DAA support involving UAVs without U2X support procedure includes “DAA-server-event-info” element whereas client procedure for DAA support involving UAVs without U2X support procedure includes acknowledgement “DAA-server-event-info-ack”, and “-ack” is missing in the definition which needs to be correct. Also the data structure, semantics and XML schema needs to be aligned.   **Backward compatibility analysis:**  This CR introduces backward compatible change since it corrects the IE name for DAA-client-event-info to DAA-client-event-info-ack, and DAA-server-event-info to DAA-server-event-info-ack in the client and server procedure for DAA support involving UAVs with U2X support which were duplicated in the request and response messages. | | | | | | |
|  | | |  | | | | | | |
| ***Summary of change:*** | | | This CR proposes corrections in 24.257 v18.3.0 for Rel-18:  - IE name “DAA-client-event-info-ack”,  - IE name “DAA-server-event-info-ack”  - IE structure was undefined “DAA-client-event-info due to incorrect naming  - Update XML and Semantics for the above changes | | | | | | |
|  | | |  | | | | | | |
| ***Consequences if not approved:*** | | | Errors remain and incorrect implementation | | | | | | |
|  | |  | | | | | | | |
| ***Clauses affected:*** | | 6.8.2.2, 6.8.1.3, 7.2, 7.3.2, 7.4 | | | | | | | |
|  | |  | | | | | | | |
|  | | **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:*** | | In CT1#147, C1-241553, CR#0033 was agreed that corrected the bulltets formating as, style B1-> B2 at numerous places under clause 7.2. That correction is not implemented in the 24.257 18.3.0, hence the correct formatting is adopted for clause 7.2. | | | | | | | |
|  | |  | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | |

\* \* \* \* Start of changes \* \* \* \*

#### 6.8.2.2 DAA support involving UAVs with U2X support procedure

Upon receiving an HTTP POST request containing:

a) a Content-Type header field set to "application/vnd.3gpp.uae-info+xml"; and

b) an application/vnd.3gpp.uae-info+xml MIME body with a <DAA-client-event-info> element,

the UAE-S shall store the DAA client event information and links information received in the <DAA-client-event-info> element and then forward the DAA client event information and links information to the UAS application specific server and upon receiving a DAA client event information acknowledgement from the UAS application specific server, the UAE-S shall generate an HTTP 200 (OK) response according to IETF RFC 9110 [5]. In the HTTP 200 (OK) response message, the UAE-S:

a) shall include a Content-Type header field set to "application/vnd.3gpp.uae-info+xml";

b) shall include an application/vnd.3gpp.uae-info+xml MIME body and in the <UAE-info> root element:

1) shall include a <DAA-client-event-info-ack> element with an <acknowledgement> child element indicating the acknowledgement of DAA client event information; which

1) shall include a <UAS-id> element set to the identifier of the UAS for which the DAA client support information applies; and

2) shall include a <UAE-layer-detected-information> element indicating list of UASes where e.g. U2X layer has detected possible flight path conflict;

i) shall include a <UAS-identity> element set to identification of e.g. a U2X-UAS where U2X layer has detected possible flight path conflict; and

ii) shall include a <Location-information> element indicating location of e.g. a U2X-UAS where U2X layer has detected possible flight path conflict; and

c) shall send the HTTP 200 (OK) message towards the UAE-C.

\* \* \* \* Next changes \* \* \* \*

#### 6.8.1.3 DAA support involving UAVs without U2X support procedure

Upon receiving an HTTP POST request containing:

a) a Content-Type header field set to "application/vnd.3gpp.uae-info+xml"; and

b) an application/vnd.3gpp.uae-info+xml MIME body with a <DAA-server-event-info> element,

the UAE-C:

a) shall generate an HTTP 200 (OK) response according to IETF RFC 9110 [5]. In the HTTP 200 (OK) response message, the UAE-C:

1) shall include a Content-Type header field set to "application/vnd.3gpp.uae-info+xml"; and

2) shall include an application/vnd.3gpp.uae-info+xml MIME body and in the <UAE-info> root element:

i) shall include a <DAA-server-event-info-ack> element with an <acknowledgement> child element indicating the acknowledgement of DAA server event information; and

b) shall send the HTTP 200 (OK) response towards the UAE-S.

\* \* \* \* Next changes \* \* \* \*

## 7.2 Structure

The UAE document shall conform to the XML schema described in clause 7.4.

The <UAE-info> element shall be the root element of the UAE document.

The <UAE-info> element shall include at least one of the followings:

a) a <c2-modes-switching-configuration-info> element;

b) a <C2-communication-mode-notification-info> element;

c) a <C2-related-trigger-event-report> element;

d) a <C2-operation-mode-switching> element;

e) a <UAV-application-message-info> element;

f) a <C2-operation-mode-switching-performed> element;

g) a <registration-info> element;

h) a <de-registration-info> element;

i) a <USS-change-info> element;

j) a <USS-change-notification-info> element;

k) a <USS-change-request-info> element;

l) a <DAA-support-configuration-info> element;

m) a <DAA-client-event-info> element;

n) a <DAA-server-event-info> element; and

o) a <multi-USS-configuration-info> element.

The <c2- communication-modes-configuration-info> element shall include the followings:

a) a <UAS-id> element;

b) a <C2-operation-mode-management-configuration> element which shall include the followings:

1) a <C2-operation mode-management-requirement> element;

2) an <allowed-C2-communication-modes> element;

3) a <primary-C2-communication-mode> element;

4) a <secondary-C2-communication-mode> element; and

5) a <policy-of –C2-switching> element; and

c) a <result> element.

The <C2-communication-mode-notification-info> element shall include the followings:

a) a <UAS-id> element;

b) a <selected-primary-C2-communication-mode> element;

c) a <selected-secondary-C2-communication-mode> element; and

d) an <acknowledgement> element.

The <C2-related-trigger-event-report> element shall include the followings:

a) a <UAE-client-id> element; and

b) an <application-QoS-related-event> element.

The <C2-operation-mode-switching> element shall include the followings:

a) a <UAE-server-id> element;

b) a <C2-operation-mode-switching-requirement> element;

c) a <time-validity> element; and

d) a <geographical-area> element.

The <UAV-application-message-info> element shall include the followings:

a) a <UAV-id> element;

b) an <application-defined-proximity-range-info> element;

c) an <application-payload> element; and

d) an <acknowledgement> element.

The <C2-operation-mode-switching-performed> element shall include the followings:

a) a <result> element.

The <registration-info> element shall include the followings:

a) a <UAV-id> element;

b) a <UAS-UE-information> element;

c) a <proposed-registration-lifetime> element;.

d) a <registration-lifetime> element; and

e) a <result> element.

The <de-registration-info> element shall include the followings:

a) a <UAV-id> element; and

b) a <result> element.

The <USS-change-info> element shall include the followings:

a) a <result> element.

The <USS-change-notification-info> element shall include the followings:

a) a <Reason> element; and

b) a <Target-USS-information> element.

The <USS-change-request-info> element shall include the followings:

a) a <UASS-id> element;

b) a <UAS-id> element;

c) a <USS-change-authorization-information> element;

d) a <Target-USS> element; and

e) a <Target-USS-info> element which shall include the followings:

1) a <USS-endpoint> element;

2) a <USS-capabilities> element;

3) an <LUN-id> element; and

4) a <List-of-USS-DNAI(s)> element.

The <DAA-support-configuration-info> element shall include the followings:

a) a <UAS-id> element; and

b) a <DAA-application-policy> element.

The <DAA-client-event-info> element shall include the followings:

a) a <UAS-id> element; and

b) a <UAE-layer-detected-information> element which shall include the followings:

1) a <UAS-identity> element; and

2) a <Location-information> element.

The <DAA-client-event-info-ack> element shall include the followings:

a) an <acknowledgement> element which shall include the followings:

1) a <UAS-id> element; and

2) a <UAE-layer-detected-information> element which shall include the followings:

i) a <UAS-identity> element; and

ii) a <Location-information> element.

The <DAA-server-event-info> element shall include the followings:

a) a <UAS-id> element; and

c) a <UAE-layer-detected-information> element which shall include the followings:

1) a <UAS-identity> element; and

2) a <Location-information> element.

The <DAA-server-event-info-ack> element shall include the followings:

a) a <acknowledgement> element.

The <multi-USS-configuration-info> element shall include the followings:

a) a <UAS-id> element; and

b) a <Multi-USS-policy-management-configuration> element which shall include the followings:

1) an <Allowed-USS> element;

2) a <Serving-USS-information> element;

3) an <Additional-information-for-change-of-USS> element; and

4) an <Area-for-change-of-USS> element.

The <subscribe-host-UAV-dynamic-info> element shall include the followings:

a) a <UAS-id> element;

b) an <application-defined-proximity-range-info> element;

c) a <subscription-ID> element; and

d) a <result> element.

The <notification-of-host-UAV-dynamic-info> element shall include the followings:

a) a <subscription-ID> element;

b) a <location-of-the-host-UAV> element; and

c) a <list-of-UAVs-info> element which shall include the followings:

1) a <nearby-UAV-ID> element;

2) a <location-information> element; and

3) a <distance-information> element.

\* \* \* \* Next changes \* \* \* \*

### 7.3.2 XML schema

<?xml version="1.0" encoding="UTF-8"?>

<xs:schema xmlns:xs="<http://www.w3.org/2001/XMLSchema>"

targetNamespace="urn:3gpp:ns:uaeInfo:1.0"

xmlns:uaeinfo="urn:3gpp:ns:uaeInfo:1.0"

elementFormDefault="qualified"

attributeFormDefault="unqualified"

xmlns:xenc="http://www.w3.org/2001/04/xmlenc#">

<!-- root XML element -->

<xs:element name="uae-info" type="uaeinfo:uaeinfo-Type" id="uae"/>

<xs:complexType name="uaeinfo-Type">

<xs:sequence>

<xs:element name="c2-communication-modes-configuration-info" type="uaeinfo:tC2CommunicationModesConfigurationType" minOccurs="0"/>

<xs:element name="c2-communication-mode-notification-info " type="uaeinfo:tC2CommunicationModeNotificationType" minOccurs="0"/>

<xs:element name="c2-related-trigger-event-report" type="uaeinfo:tC2RelatedTriggerEventReportType" minOccurs="0"/>

<xs:element name="c2-operation-mode-switching" type="uaeinfo:tC2OperationModeSwitchingType" minOccurs="0"/>

<xs:element name="UAV-application-message-info" type="uaeinfo:tUAVApplicationMessageInfoType" minOccurs="0"/>

<xs:element name="c2-operation-mode-switching-performed" type="uaeinfo:tC2OperationModesSwitchingPerformedType" minOccurs="0"/>

<xs:element name="registration-info" type="uaeinfo:tRegistrationInfoType" minOccurs="0"/>

<xs:element name="de-registration-info" type="uaeinfo:tDe-registrationInfoType" minOccurs="0"/>

<xs:element name="DAA-client-event-info" type="uaeinfo:tDAAClientEventInfoType" minOccurs="0"/>

<xs:element name="DAA-server-event-info" type="uaeinfo:tDAAServerEventInfoType" minOccurs="0"/>

<xs:element name="Multi-USS-configuration" type="uaeinfo:tMultiUssConfigurationType" minOccurs="0"/>

<xs:element name="USS-change-request" type="uaeinfo:tUssChangeRequestType" minOccurs="0"/>

<xs:element name="Subscribe-host-UAV-dynamic-info" type="uaeinfo:tSubscribeHostUAVDynamicInfoType" minOccurs="0"/>

<xs:element name="Notification-of-host-UAV-dynamic-info" type="uaeinfo:tNotificationOfHostUAVDynamicInfoType" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tC2CommunicationModesConfigurationType">

<xs:sequence>

<xs:element name="UAS-id" type="uaeinfo:contentType" minOccurs="0" maxOccurs="1"/>

<xs:element name="c2-operation-mode-management-configuration" type="uaeinfo:tC2OperationModeManagementConfigurationType" minOccurs="0" maxOccurs="1"/>

<xs:element name="result" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:any namespace="##other" processContents="lax"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tC2CommunicationModeNotificationType">

<xs:sequence>

<xs:element name="UAS-id" type="uaeinfo:contentType" minOccurs="0" maxOccurs="1"/>

<xs:element name="selected-primary-C2-communication-mode" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="selected-secondary-C2-communication-mode" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="acknowlegement" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:any namespace="##other" processContents="lax"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tC2RelatedTriggerEventReportType">

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<xs:element name="UAE-client-id" type="uaeinfo:contentType" minOccurs="0" maxOccurs="1"/>

<xs:element name="application-QoS-related-event" type="xs:string" minOccurs="0" maxOccurs="1"/>

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<xs:anyAttribute namespace="##any" processContents="lax"/>

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<xs:sequence>

<xs:element name="UAE-server-id" type="uaeinfo:contentType" minOccurs="0" maxOccurs="1"/>

<xs:element name="C2-operation-mode-switching-requirement" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="time-validity" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="geographical-area-change" type="uaeinfo:tGeographicalAreaChange"/>

<xs:any namespace="##other" processContents="lax"/>

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<xs:element name="UAV-id" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="application-defined-proximity-range-info" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="application-payload" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="acknowlegement" type="xs:string" minOccurs="0" maxOccurs="1"/>

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</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tC2OperationModesSwitchingPerformedType">

<xs:sequence>

<xs:element name="result" type="xs:string" minOccurs="1" maxOccurs="1"/>

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</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

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<xs:complexType name="tRegistrationInfoType">

<xs:sequence>

<xs:element name="UAV-id" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="UAS-UE-information" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="proposed-registration-lifetime" type="xs:integer" minOccurs="0" maxOccurs="1"/>

<xs:element name="registration-lifetime" type="xs:integer" minOccurs="0" maxOccurs="1"/>

<xs:element name="result" type="xs:string" minOccurs="0" maxOccurs="1"/>

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<xs:complexType name="tDe-registrationInfoType">

<xs:sequence>

<xs:element name="UAV-id" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="result" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:any namespace="##other" processContents="lax"/>

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<xs:complexType name="contentType">

<xs:choice>

<xs:element name="uaeURI" type="xs:anyURI"/>

<xs:element name="uaeString" type="xs:string"/>

<xs:element name="uaeBoolean" type="xs:boolean"/>

<xs:any namespace="##other" processContents="lax"/>

</xs:choice>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tC2OperationModeManagementConfigurationType">

<xs:sequence>

<xs:element name="c2-operation-mode-management-requirement" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="allowed-C2-communication-modes" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="primary-C2-communication-modes" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="secondary-C2-communication-mode" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="policy-of –C2-switching" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:any namespace="##other" processContents="lax"/>

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<xs:sequence>

<xs:element name="UAS-id" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="Multi-USS-policy-management-configuration" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="Allowed-USS" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="Serving-USS-information" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="Additional-information-for-change-of-USS" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="Area-for-change-of-USS" type="xs:string" minOccurs="1" maxOccurs="1"/>

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</xs:complexType>

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<xs:element name="UAS-id" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="USS-change-authorization-information" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="Target-USS" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="Target-USS-info" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="USS-endpoint" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="USS-capabilities" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="LUN-id" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="List-of-USS-DNAI(s)" type="xs:string" minOccurs="1" maxOccurs="1"/>

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<xs:sequence>

<xs:element name="UAS-id" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="application-defined-proximity-range-info" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="subscription-ID" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="result" type="xs:string" minOccurs="0" maxOccurs="1"/>

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<xs:complexType name="tNotificationOfHostUAVDynamicInfoType">

<xs:sequence>

<xs:element name="subscription-ID" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="location-of-the-host-UAV" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="list-of-UAVs-info" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="nearby-UAV-ID" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="location-information" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="distance-information" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:any namespace="##other" processContents="lax"/>

</xs:sequence>

</xs:complexType>

<xs:complexType name="tDAASupportConfigurationInfoType">

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<xs:element name="DAA-application-policy" type="xs:string" minOccurs="1" maxOccurs="1"/>

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</xs:complexType>

<xs:complexType name="tDAAClientEventInfoType">

<xs:sequence>

<xs:element name="UAS-id" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="UAE-layer-detected-information" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="UAS-identity" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="Location-information" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:any namespace="##other" processContents="lax"/>

</xs:sequence>

</xs:complexType>

<xs:complexType name="tDAAClientEventInfoAckType">

<xs:sequence>

<xs:element name="acknowledgement" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="UAS-id" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="UAE-layer-detected-information" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="UAS-identity" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:element name="Location-information" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:any namespace="##other" processContents="lax"/>

</xs:sequence>

</xs:complexType>

<xs:complexType name="tDAAServerEventInfoType">

<xs:sequence>

<xs:element name="UAS-id" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="UAE-layer-detected-information" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="UAS-identity" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="Location-information" type="xs:string" minOccurs="0" maxOccurs="1"/>

<xs:any namespace="##other" processContents="lax"/>

</xs:sequence>

</xs:complexType>

<xs:complexType name="tDAAServerEventInfoAckType">

<xs:sequence>

<xs:element name="acknowledgement" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:any namespace="##other" processContents="lax"/>

</xs:sequence>

</xs:complexType>

<xs:complexType name="tGeographicalAreaChange">

<xs:sequence>

<xs:element name="any-area-change" type="uaeinfo:tEmptyTypeAttribute" minOccurs="0"/>

<xs:element name="enter-specific-area" type="uaeinfo:tSpecificAreaType" minOccurs="0"/>

<xs:element name="exit-specific-area-type" type="uaeinfo:tSpecificAreaType" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="uaeinfo:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tEmptyTypeAttribute">

<xs:complexContent>

<xs:extension base="uaeinfo:tEmptyType">

<xs:attribute name="trigger-id" type="xs:string" use="required"/>

</xs:extension>

</xs:complexContent>

</xs:complexType>

<xs:complexType name="tSpecificAreaType">

<xs:sequence>

<xs:element name="geographical-area" type="uaeinfo:tGeographicalAreaDef"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="uaeinfo:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:attribute name="trigger-id" type="xs:string" use="required"/>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tGeographicalAreaDef">

<xs:sequence>

<xs:element name="polygon-area" type="uaeinfo:tPolygonAreaType" minOccurs="0"/>

<xs:element name="ellipsoid-arc-area" type="uaeinfo:tEllipsoidArcType" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="uaeinfo:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tPolygonAreaType">

<xs:sequence>

<xs:element name="corner" type="uaeinfo:tPointCoordinate" minOccurs="3" maxOccurs="15"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="uaeinfo:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tEllipsoidArcType">

<xs:sequence>

<xs:element name="center" type="uaeinfo:tPointCoordinate"/>

<xs:element name="radius" type="xs:nonNegativeInteger"/>

<xs:element name="offset-angle" type="xs:unsignedByte"/>

<xs:element name="included-angle" type="xs:unsignedByte"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="uaeinfo:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tPointCoordinate">

<xs:sequence>

<xs:element name="longitude" type="uaeinfo:tCoordinateType"/>

<xs:element name="latitude" type="uaeinfo:tCoordinateType"/>

<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

<xs:element name="anyExt" type="uaeinfo:anyExtType" minOccurs="0"/>

</xs:sequence>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:complexType name="tCoordinateType">

<xs:choice minOccurs="1" maxOccurs="1">

<xs:element name="threebytes" type="uaeinfo:tThreeByteType" minOccurs="0"/>

<xs:any namespace="##other" processContents="lax"/>

<xs:element name="anyExt" type="uaeinfo:anyExtType" minOccurs="0"/>

</xs:choice>

<xs:attribute name="type" type="xs:string"/>

<xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

<xs:simpleType name="tThreeByteType">

<xs:restriction base="xs:integer">

<xs:minInclusive value="0"/>

<xs:maxInclusive value="16777215"/>

</xs:restriction>

</xs:simpleType>

<xs:complexType name="tEmptyType"/>

<xs:complexType name="anyExtType">

<xs:sequence>

<xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

</xs:sequence>

</xs:complexType>

</xs:schema>

\* \* \* \* Next changes \* \* \* \*

## 7.4 Data semantics

The <UAE-info> element is the root element of the XML document. The <UAE-info> element contains the <c2-modes-switching-configuration-info>, <C2-communication-mode-notification-info>, <C2-related-trigger-event-report>, <C2-operation-mode-switching>, <UAV-application-message-info>, <C2-operation-mode-switching-performed>, <registration-info> and <de-registration-info> sub-elements.

<c2- communication-modes-configuration-info> element contains the following elements:

a) <UAS-id>, an element contains identification of the UAS, which could be in form of identifier for the UAS, e.g. group ID, or collection of individual identifiers for the UAV and UAV-C, e.g. CAA ID, GPSI, IP address;

b) <C2-operation-mode-management-configuration>, an element contains the following elements:

1) <C2-operation mode-management-requirement>, an element contains the identification of the type of the C2 mode switching to be supported by the UAE server, which could be either from direct to network-assisted C2, or from network-assisted to direct C2 or to UTM navigated;

2) <allowed-C2-communication-modes>, an element contains a string set to "direct", "network assisted", or "USS/UTM navigated";

3) <primary-C2-communication-mode>, an element contains a string set to "direct", or "network assisted" used to indicate the primary C2 communication mode;

4) <secondary-C2-communication-mode>, an element contains a string set to "direct", or "network assisted" used to indicate the secondary C2 communication mode; and

5) <policy-of –C2-switching>, an element contains a string set to the parameters for C2 switching, which are the QoS thresholds on active and target link, and

c) <result>, an element contains a string set to either "positive" or "negative" used to indicate the positive or negative result of the C2 mode switching configuration response.

<C2-communication-mode-notification-info> element contains the following elements:

a) <UAS-id>, an element contains identification of the UAS, which could be in form of identifier for the UAS, e.g. group ID, or individual identifiers for the UAV and UAV-C, e.g. CAA ID, GPSI, IP address;

b) <selected-primary-C2-communication-mode>, an element contains a string set to "direct", or "network assisted" used to indicate the selected primary C2 communication mode;

c) <selected-secondary-C2-communication-mode>, an element contains a string set to "direct", or "network assisted" used to indicate the selected secondary C2 communication mode; and

d) <acknowledgement>, an element contains a string set to either "yes" or "not" used to indicate the acknowledgement of selected C2 communication mode(s).

<C2-related-trigger-event-report> element contains the following elements:

a) <UAE-client-id>, an element contains a string set to the identifier of the UAE client which indicates the QoS downgrade; and

b) <application-QoS-related-event>, an element contains a string indicating the expected or actual application QoS/QoE parameters which were changed (i.e. latency, throughput, reliability, jitter).

<C2-operation-mode-switching> element contains the following elements:

a) <UAE-server-id>, an element contains a string set to the identifier of the UAE server which instructs the UAS to apply the C2 mode switching;

b) <C2-operation-mode-switching-requirement>, an element contains a string set to either "direct to network-assisted" or "network-assisted to direct" used to indicate the type of the C2 mode switching to be applied;

c) <time-validity>, an element contains a string set to the time validity for the C2 switching requirement; and

d) <geographical-area>, an element specifying a geographical area for which the C2 switching applies and has the following sub-elements:

1) <polygon-area>, an optional element specifying the area as a polygon specified in clause 5.4 of 3GPP TS 23.032 [11]; and

2) <ellipsoid-arc-area>, an optional element specifying the area as an ellipsoid arc specified in clause 5.7 of 3GPP TS 23.032 [11].

<UAV-application-message-info> element contains the following elements:

a) <UAV-id>, an element contains the unique identifier of a UAV which requests the sending of the UAV application message. The UAV-id is in the form of a 3GPP UE ID (e.g. GPSI, External Identifier) or CAA level UAV ID as assigned by civil aviation authorities (e.g. FAA) via USS/UTM;

b) <application-defined-proximity-range-info>, an element contains the range information over which the UAV application message is to be sent;

c) <application-payload>, an element contains the application payload that is to be delivered to the other UAVs; and

d) <acknowledgement>, an element contains a string set to either "yes" or "not" used to indicate the acknowledgement of communications between UAVs within a geographical area.

<C2-operation-mode-switching-performed> element contains the following elements:

a) <result>, an element contains a string set to either "positive" or "negative" used to indicate the positive or negative result of the reception.

<registration-info> element contains the following elements:

a) <UAV-id>, an element contains the unique identifier of a UAV which initiates the UAS UE registration procedure;

b) <UAS-UE-information>, an element contains the information (e.g. UAS UE IP address, Multi-USS capability, DAA assist capability) the UAS UE needs to provide to the UAE-S;

c) <proposed-registration-lifetime>, an element contains the time during which the UAS UE wants to stay registered to the UAE-S for receiving UAV application messages from the UAS application specific server;

d) <registration-lifetime>, an element contains the time during which the UAS UE can stay registered to the UAE-S for receiving UAV application messages from the UAS application specific server; and

e) <result>, an element contains a string set to either "success" or "failure" indicating success or failure of the UAS UE registration.

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

a) <UAV-id>, an element contains the unique identifier of a UAV which initiates the UAS UE de-registration procedure; and

b) <result>, an element contains a string set to either "success" or "failure" indicating success or failure of the UAS UE de-registration.

<USS-change-info> element contains the following elements:

a) <result>, an element contains a string set to either "positive" or "negative" used to indicate the positive or negative result of the reception.

<USS-change-notification-info> element contains the following elements:

a) <Reason>, an element contains the reason for change of USS; and

b) <Target-USS-information>, an element contains a string set to the identifier of the new USS that the UAV has connected to (identified e.g. by FQDN).

<USS-change-request-info> element contains the following elements:

a) <UASS-id>, an element contains the identification of the UAS application specific server which requests the change of USS. This ID can be the USS identifier, when the UAS application specific server is the USS;

b) <UAS-id>, an element contains identification of the UAS, which could be in form of identifier for the UAS, e.g. group ID, or collection of individual identifiers for the UAV and UAV-C, e.g. CAA ID, GPSI, IP address;

c) <USS-change-authorization-information>, an element contains the authorization token to verify the request;

d) <Target-USS>, an element contains a string set to the identifier of the USS that is the target of a switch (identified e.g. by FQDN); and

e) <Target-USS-info>, an element contains the information of the target USS:

1) <USS-endpoint>, an element specifying the endpoint information (e.g. URI, FQDN, IP address) used to communicate with the USS;

2) <USS-capabilities>, an element specifying the capabilities supported by the target USS;

3) <LUN-id>, an element contains a string set to the identifier of the LUN where the serving/target USS belongs; and

4) <List-of-USS-DNAI(s)>, an element contains DNAI(s) associated with the target USS.

The <DAA-support-configuration-info> element contains the following elements:

a) <UAS-id>, an element contains identification of the UAS, which could be in form of identifier for the UAS, e.g. group ID, or collection of individual identifiers for the UAV and UAV-C, e.g. CAA ID, GPSI, IP address; and

b) <DAA-application-policy>, an element contains the DAA application policy.

The <DAA-client-event-info> element contains the following elements:

a) <UAS-id>, an element contains identification of the UAS, which could be in form of identifier for the UAS, e.g. group ID, or collection of individual identifiers for the UAV and UAV-C, e.g. CAA ID, GPSI, IP address; and

b) <UAE-layer-detected-information>, an element contains a list of UASes where e.g. U2X layer has detected possible flight path conflict:

1) <UAS-identity>, an element contains a string set to the identifier of e.g. a U2X-UAS, where U2X layer has detected possible flight path conflict; and

2) <Location-information>, an element specifying the location of e.g. a U2X-UAS, where U2X layer has detected possible flight path conflict.

<DAA-client-event-info-ack> element contains the following elements:

a) <acknowledgement>, an element contains a string set to either "yes" or "not" used to indicate the acknowledgement of DAA client event information.

1) <UAS-id>, an element contains identification of the UAS, which could be in form of identifier for the UAS, e.g. group ID, or collection of individual identifiers for the UAV and UAV-C, e.g. CAA ID, GPSI, IP address; and

2) <UAE-layer-detected-information>, an element contains a list of UASes where e.g. U2X layer has detected possible flight path conflict:

i) <UAS-identity>, an element contains a string set to the identifier of e.g. a U2X-UAS, where U2X layer has detected possible flight path conflict; and

ii) <Location-information>, an element specifying the location of e.g. a U2X-UAS, where U2X layer has detected possible flight path conflict.

The <DAA-server-event-info> element shall include the followings:

a) <UAS-id>, an element contains identification of the UAS, which could be in form of identifier for the UAS, e.g. group ID, or collection of individual identifiers for the UAV and UAV-C, e.g. CAA ID, GPSI, IP address; and

b) <UAE-layer-detected-information>, an element contains a list of UASes where e.g. U2X layer has detected possible flight path conflict:

1) <UAS-identity>, an element contains a string set to the identifier of e.g. a U2X-UAS, where U2X layer has detected possible flight path conflict; and

2) <Location-information>, an element specifying the location of e.g. a U2X-UAS, where U2X layer has detected possible flight path conflict.

<DAA-server-event-info-ack> element shall include the followings:

a) <acknowledgement>, an element contains a string set to either "yes" or "not" used to indicate the acknowledgement of DAA server event information.

<multi-USS-configuration-info> element contains the following elements:

a) <UAS-id>, an element contains identification of the UAS, which could be in form of identifier for the UAS, e.g. group ID, or collection of individual identifiers for the UAV and UAV-C, e.g. CAA ID, GPSI, IP address; and

b) <Multi-USS-policy-management-configuration>, an element contains the requirements and policy for Multi-USS management:

1) <Allowed-USS>, an element contains a string set to the identifier of a USS that can be the target of a switch (identified e.g. by FQDN) which provides the information of the allowed USSs for the UAS;

2) <Serving-USS-information>, an element contains the information about the serving USS identifier;

3) <Additional-information-for-change-of-USS>, an element contains the information about the serving USS, related with the switch to a particular target USS; and

4) <Area-for-change-of-USS>, an element specifying an area where the Multi-USS management request applies. This can be geographical area, or topological area in which the capability is active.

<subscribe-host-UAV-dynamic-info> element contains the following elements:

a) <UAS-id>, an element contains identification of the UAS, which could be in form of identifier for the UAS, e.g. group ID, or collection of individual identifiers for the UAV and UAV-C, e.g. CAA ID, GPSI, IP address;

b) <application-defined-proximity-range-info>, an element that indicates the range information over which the host UAV's dynamic information is required;

c) <subscription-ID>, an element that is an identifier of a successful subscription; and

d) <result>, an element contains a string set to either "positive" or "negative" used to indicate the positive or negative result of the reception.

<notification-of-host-UAV-dynamic-info> element contains the following elements:

a) <subscription-ID>, an element that is an identifier of a successful subscription;

b) <location-of-the-host-UAV>, an element containing the location of the host UAV during the Host UAV dynamic information subscription; and

c) <list-of-UAVs-info>, an element including the information of the UAVs which were detected in the application defined proximity range:

1) <nearby-UAV-ID>, an element contains identification of the nearby UAS;

2) <location-information>, an element set to the location information of the nearby UAV within the application defined proximity range; and

3) <distance-information>, an element element set to the distance information of the nearby UAV relative to the host UAV.

\* \* \* \* End of changes \* \* \* \*