**3GPP TSG-SA WG6 Meeting #49-e S6-221324r1**

**e-meeting, 16th – 25th May 2022 (revision of S6-221014)**

**Source: InterDigital**

**Title: Evaluation of Key Issue #2**

**Spec: 3GPP TR 23.700-55**

**Agenda Item: 9.9**

**Document for: Approval**

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**1. Introduction**

The Editor’s Note on Multi-USS configuration is removed. Details on configuration will be specified during the normative work. The below change is proposed incorporated into 3GPP TR 23.700-55 v 0.4.0.

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

### 9.2.1 General

All the key issues, solutions and architecture enhancements specified in this technical report are listed in Table 9.2.1-1.

Table 9.2.1-1 provides a mapping of the key issues to the related solutions. It also indicates whether the solution requires enhancement to the Release-17 architecture and lists the dependencies on other working groups.

Table 9.2.1-1 Key issue and solutions

| Key issues (evaluation clause reference) | Solution | Architectural enhancement  (clause reference) | Enhancements required | Dependency on other working groups |
| --- | --- | --- | --- | --- |
| KI #1 Direct communication between UAVs |  |  |  | SA2 |
| KI #2: Support for multi-USS deployments | Solution #1: Change of USS during flight NOTE 1 | 7.3 | None | None |
| Solution #2: Support for USS re-mapping for a UAS | 7.4 | None | None |
| KI 3: Coordination between Uu and PC5 for direct UAV-to-UAV or UAV-to-UAV-C communication |  |  |  | SA2 |
| *KI#1: <title>* | *Solution #x: <title>* | *6.x* | *Architecture / None* | *<WG>* |
| *Solution #y: <title>* | *6.y* | *Architecture / None* | *<WG>* |
| NOTE 1: Change of DN/EDN to avoid disruption while in flight due to change of USS is not covered by this solution. | | | | |

### 9.2.2 Evaluation of key issue #1: Direct communication between UAVs

This clause provides an overall evaluation of all the solutions defined for Key Issue #1.

### 9.2.3 Evaluation of key issue #2: Support for multi-USS deployments

Key Issue #2 outlines the following to be investigated:

a) Whether and how the UAE layer can be enhanced to support change of USS/UTM during flight.

b) Whether and how the UAE layer needs to be enhanced to assist the traffic steering of UAS application traffic to different DN/EDN to avoid application service disruption while in-flight.

Solution #1 focuses on bullet a) including handling of management and policy for multi-USS deployments. By the policy for multi-USS configuration parameters, the USS will decide the level of control the UAE-layer can take on behalf of the USS.

Solution #2 re-use the management and policy-framework from solution #1, with additions for mapping between USS service areas and 3GPP infrastructure information (i.e., DNAI).

Solution #1 and solution #2 complements each other to address both bullet a) and bullet b) using a common policy framework.

A policy-based approach with the execution as requested by the USS via the UAE Client / UAE server in solution #1 and a UAE Server centric approach in solution #2 are compatible with each other and can be combined into a "UAE layer assisted / USS controlled" based solution covering all possible scenarios and requirements of key issue #2. This approach is in line with the principles and functionality specified in 3GPP TS 23.255 [3] for C2 comunication mode selection/switching.

Solution #1 and solution #2 are selected as the basis for normative work, based on the following combined UAE layer assisted / USS controlled principles:

1) The Multi-USS capabilities of the UAE client and the UAE server are provided to the USS.

2) The UAE server and the UAE client are provided with policies from the USS for multi-USS deployments.

3) The USS is always in control of the decision for USS change during flight. The solutions enable the USS to explicitly make the decision to change the USS or provide/revoke permissions to the UAE client to make the decision on behalf of the USS based upon configuration provided by the USS when communication with the USS is lost.

NOTE: Possible actions by the UAE server due to loss of contact with the USS will be discussed during the normative phase.

4) The UAE server uses information provided by the USS in the policies for multi-USS deployment and the UAV location from the 3GPP network when providing a notification to the USS about a possible change of USS. This is based on the policy from the USS. The USS can initiate change of USS if this is required.

5) The UAE client notifies the UAE server when, based on policy from the USS, it detects condition for change of USS. The UAE server provides an indication to the USS to enable the USS to make the decision of change of USS.

The UAE client may also trigger an immediate/autonomous change of USS in case of emergency situations.

6) The UAE server can, based on UAV tracking information from SEAL LMS and detection of UAV mobility to the DNAI associated with the USS, inform the USS about possible change of USS. Based on this, the USS can initiate a change of USS.

7) For cases where UAE server cannot determine the conditions for change of USS, the UAE server relies on UAE client assistance as above.

8) The UAE server performs traffic influence for the change of USS.

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