International Civil Aviation Organization

The Fifth Meeting of System Wide Information Management Task Force (SWIM TF/5)

Video Tele-conference, 9 – 11 August 2021.

Agenda Item 9: State, Regional and Global SWIM Updates

PROOF-OF-CONCEPT FOR SURVEILLANCE DATA SHARING ON SWIM BY SURVEILLANCE STUDY GROUP (SURSG)

(Presented by Hong Kong China on behalf of the SURSG)

SUMMARY

The 1st part of this paper summarizes the progress update of the SURSG since its first meeting (SURSG/1) held from 20 to 22 April 2021. A proof-of-concept for surveillance data sharing on SWIM to be conducted in Hong Kong China is proposed in the 2nd part of this paper for States' reference.

1. INTRODUCTION

1.1 According to the work plan proposed at SURSG/1, the tasks for the study group were grouped under two stages, namely feasibility study stage and recommendation stage. The study group is expected to table the study, identification and recommendation of possible and practical models for surveillance data sharing on SWIM in the feasibility study stage before SURSG/2.

2. DISCUSSION

Part One: Progress Update of SURSG

2.1 As a follow-up action of SURSG/1, task leads of sub-tasks under the feasibility study stage were to be identified among the volunteer contributors. As a result, Singapore is the task lead for sub-task 2.1 whereas Hong Kong China is the task lead for sub-tasks 2.2.to 2.6, as tabled below:

Sub Task	Description
2-1	Preparation of Concept of Use/Operation (CONCOPS)
2-2	Study, identify and recommend on Implementation Model including the consideration of system design and collaboration model on sharing of surveillance data.
2-3	Study, identify and recommend on an Infrastructure Model based on SWIM and CRV infrastructure
2-4	Study, identify and recommend on a Business Model including commitments by data sharing participants as well as incurred resource and cost

2.5	Study, identification and recommendation of Participation Model in consideration of commitments by data consumers and multi-lateral agreement on surveillance data sharing
2.6	Preparation of implementation roadmap and time frames with consideration of approach, types of surveillance data and information exchange model

2.2 The tentative implementation plan for sub-task 2.1 is as follows.

Item	Task	Target Completion Date
1.	Release of draft paper of CONOPS	Mid Jul 2021
2.	Comment on draft paper of CONOPS by States	Early Aug 2021
3.	Preparation of draft paper for SURICG/6	Early Aug 2021
4.	Comment on draft paper for SURICG/6 by States	Mid Aug 2021
5.	Submit paper on CONOPS to SURICG/6	Mid Aug 2021

2.3 The tentative implementation plan for sub-tasks 2.2 to 2.6 is as follows.

Item	Task	Target Completion Date
1.	Preparation of framework for sub-tasks 2.2 to 2.6	Mid Sep 2021
2.	Preparation of draft papers based on the framework	Mid Oct 2021
3.	Revision of draft papers based on updates in CONOPS	Mid Nov 2021
4.	Comment on draft papers by contributors	Mid Dec 2021
5.	Finalize papers for sub-tasks 2.2 to 2.6	Mid Jan 2022

2.4 As the CONOPS (Sub-Task 2.1) might have implications on contents or topics of sub-tasks 2.2-2.6, their implementation plan might be adjusted accordingly.

2.5 Contribution from volunteers of all sub-tasks of the study group would be sought in due course and greatly appreciated.

Part Two: Proof-of-concept (POC) for surveillance data sharing

2.6 In parallel with the feasibility study, Hong Kong China plans to have a POC conducted by sharing ADS-B data collected in Hong Kong on a simulated SWIM EMS over CRV set up based on the hybrid infrastructure model, which is the co-existence of "**Distributed Model**" with ANSPs operating their own Enterprise Message Services (EMSes) and the "**Centralized Model**" with ANSPs accessing centralized SWIM services provided by 3rd party(ies). This hybrid model has been successfully demonstrated during the SWIM in ASEAN Demonstration in November 2019 and is considered a suitable infrastructure for SWIM implementation in APAC.

2.7 Insofar as practicable, the POC aims to demonstrate the feasibility of surveillance data sharing in SWIM with a simplified setup to collect some simple performance data such as network bandwidth, latency and to illustrate some fundamental operation modes of data sharing such as publish

and subscribe and other SWIM administration services. A high-level system block diagram of the POC is given in Figure 1 below.

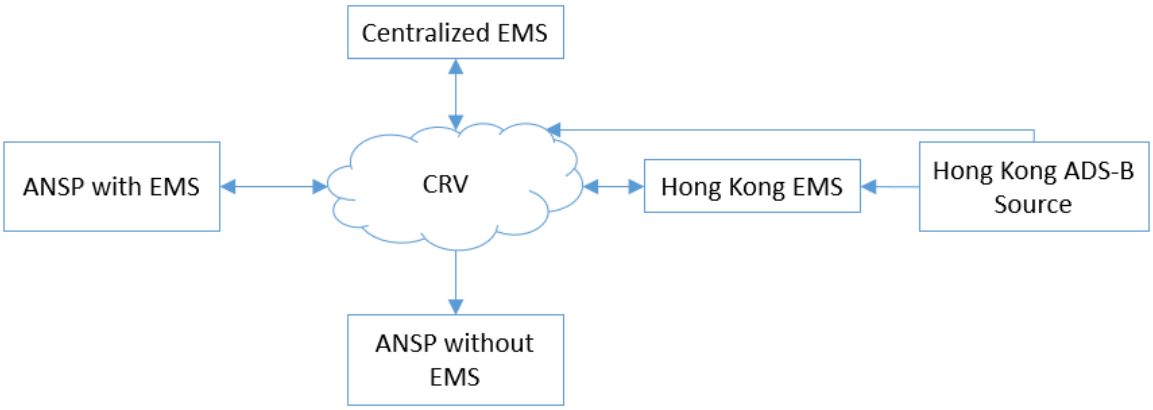

Figure 1: High-Level System Block Diagram of the POC

2.8 As shown in Figure 1, the source ADS-B data will be shared, it may be transmitted directly onto the simulated CRV in its native format, and arrive to the centralized EMS for data conversion and publication, and it may also be firstly converted by the ANSP's EMS to the agreed SWIM format. Both approaches will be examined, taking into account of the latency requirement, efficiency of the network bandwidth usage, etc.

2.9 An ANSP with EMS can subscribe to the Hong Kong EMS and/or the Centralized EMS to receive the shared ADS-B data. The centralized EMS will most likely be running with more value added services than the ANSP's EMS, such as data validation and data filtering, the pros and cons of the two approaches are to be examined in some of the papers of SURSG sub-tasks whereas this POC aims to show such data flows are feasible.

2.10 An ANSP without EMS can access the Centralized EMS to receive the shared ADS-B data directly. They should be able to make use of the graphical user interface (GUI) provided by the Centralized EMS to visualize the shared ADS-B data for their own use.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) provide support to the proof-of-concept of surveillance data sharing on SWIM and on-going work of the SURCG; and

c) discuss any relevant matter as appropriate

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