



ICAO

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The Seventh Meeting of System Wide Information Management Task Force (SWIM TF/7)

Bangkok, Thailand, 09 – 12 May 2023

Agenda Item 3: Updates on the assigned tasks by task leads/contributors including progress report and issues

f) Validation & Demonstration

- Task 7: SWIM Demonstration

A JOINT EVENT FOR SWIM OVER CRV DEMONSTRATION AND SURVEILLANCE DATA SHARING IN SWIM TRIAL

(Presented by Hong Kong China, Singapore and Thailand)

SUMMARY

This paper presents the proposal to combine the SWIM Demonstration over CRV and the surveillance data sharing in SWIM trial as a joint event for States' consideration.

1. INTRODUCTION

- 1.1 A SWIM Demonstration over CRV (“the Demo”) was planned to be hosted in Hong Kong China back in 2020 to demonstrate the operational benefits of using CRV to carry SWIM data, and the corresponding services envisaged as necessary or complementary to the implementation of SWIM in APAC region. Due to the COVID-19 pandemic, the demonstration was postponed until further notice.
- 1.2 On the other hand, the Surveillance Sharing in SWIM Trial Implementation Group (S3TIG) with kick-off meeting in Dec 2022 was established with the objective to support and promote the trial implementation of surveillance data sharing based on SWIM (“the Trial”) under the SURSG.
- 1.3 With the easing of the COVID-19 pandemic, it is opportune timing to consider the way forward for both events given so much commonality between the two, in terms of demonstration setup, environment and objective. It is considered beneficial to combine the two events into a joint event with the considerations and advantages described in the following sections.

2. DISCUSSION

The case for a Joint Event

2.1 No mutual exclusivity from any of two events is seen in the joint event since simplistically, each individual event could be seen as the exchange of information of a particular kind (flight data or surveillance data). The combined event has the following advantages:

- a. Enriched contents and a more holistic demonstration instead of two individual demonstrations dedicated to the exchange of one major type of data in the SWIM environment - participants would be able to appreciate the demonstration of exchange of multiple SWIM data types in a combined event.
- b. The combined event would be a forum to demonstrate a potential and interactive way of exchange of data with corresponding SWIM services such as publish-n-subscribe, governance and management and potential participation of stakeholders other than states and administrations.
- c. Obvious and substantial savings in logistics, costs, and efforts in a combined event, which also gravitates the interests of stakeholders towards the broadness of aviation data that can be potentially exchanged in SWIM. This then allows for better correlation over larger data sets thereby improving accuracy and decision making.
- d. The combined event is in line with SURSG Study Report released in Feb 2022 to demonstrate the viability of surveillance sharing in SWIM and potential SWIM infrastructure models.

CRV as the network infrastructure for the Demo/Trial

2.2 During the preparation of the Demo, a pseudo CRV connection was established connecting Thailand, Singapore and Hong Kong China. The Trial is to utilize the same pseudo CRV network infrastructure so that, on one hand, normal operational CRV network is not affected and on the other, other means of connection (such as the Internet) to enable the participation in the Trial could also be explored to demonstrate alternative means of access to SWIM data by various stakeholders and the various interconnecting pathways and gateways that could exist.

State owned Enterprise Messaging Service (EMS) and Surveillance Central Data Processor (SCDP)

2.3 States owned EMS and EMS provided by a SWIM service provider had been implemented in the Demo, which can be served as the fundamental system architecture for the Trial and speed up the setup process to include other S3TIG members. This setup is also in line with the hybrid model for surveillance data sharing as proposed in the Study Report of SURSG.

2.4 The SCDP as one of the services to be provided by a potential SWIM service provider under the Trial can be integrated together with the planned SWIM data services (e.g. FIXM and IWXXM) in the Demo, which can enrich the types of SWIM services that can be consumed by the participants.

ATFM scenario

2.5 ATFM scenario, based on the ASEAN Demonstration, is to be refined and enriched to be used in the Demo, which is considered a suitable use case to demonstrate the operational benefits brought by SWIM. Coincidentally, the surveillance data planned to be shared in the Trial is to support ATS applications not used for aircraft separation, ATFM scenario, which is of such type becomes a

common scenario of the Demo and the Trial. With the addition of surveillance data sharing to the ATFM scenario, the overall impression of the use case will be enhanced.

Survey Questionnaire

2.6 S3TIG is conducting a survey to gauge States’ interest in participating in the joint event. A draft questionnaire for the survey has been prepared and related questions to the Demo is attached in Appendix 1 for reference.

Summary

2.7 In summary, the proposal on combing the two events can:-

- a) Save effort in preparing similar network and system infrastructure for the Trial;
- b) Demonstrate data exchange of different throughput and examine such bandwidth requirement on CRV; and
- c) Enhance user experience with more types of SWIM services and data demonstrated.

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 proposal;
- c) participate in the joint event; and
- d) discuss any relevant matter as appropriate

Survey on Attending and Participating in the SWIM Demonstration over CRV cum Surveillance Sharing in SWIM Trial Joint Event

Background:

A SWIM Demonstration over CRV (“the **Demo**”) was planned to be hosted in Hong Kong China back in 2020 under SWIM TF, to demonstrate the operational benefits of using CRV to carry SWIM data, and the corresponding services envisaged as necessary or complementary to support implementation of SWIM in APAC region. Due to the COVID-19 pandemic, the demonstration had been postponed.

On the other hand, the Surveillance Sharing in SWIM Trial Implementation Group (S3TIG) was established under Surveillance Study Group (SURSG) with the objective to support and promote the trial implementation of surveillance data sharing based on SWIM (“the **Trial**”) under the SURSG.

Given substantial commonality between the two events, both events would take place as a **Joint Event** (tentatively lasting 2 days) to be hosted by Hong Kong China with attendance in Hong Kong and participants taking part in the Joint Event. The Joint Event is scheduled to take place in end 2023 or Q1 2024.

Moreover, subject to your feedbacks, the set-up would be accessed after the Joint Event for participants to appreciate the operation of the SWIM environment and potential SWIM applications (“the **Post-Event Appreciation**”) in order for further evaluation.

To gauge your organization’s interest in the Joint Event and level of participation for planning and implementation purposes, a questionnaire has been prepared for your kind response by **xxxx xxxx** 2023. **Kindly circle your response, cross out inapplicable entries or provide your input** depending on the structures of the questions.

We look forward to your support for the event and promoting the implementation of SWIM in the Asia Pacific region together.

Questionnaire¹

Respondent Information

State/Administration	
Organization	
Post title	
Phone	
Email	

Joint Event

- 1) Would your organization send delegates to attend the 2-day Joint Event hosted by Hong Kong China in Q4 2023 or Q1 2024?
- a. Yes
 - b. No

Demo

- 2) Would your organization like to participate in the **Demo**?
- a. Yes
 - b. No

If Yes:

- (i) Will your organization operate a trial or operational SWIM Enterprise Messaging Service (EMS) for exchange of SWIM data? **Yes/No**
- (ii) Regardless of the reply to (i) above, would your organization participate in the exchange of flight, surveillance, MET information or ATFM information? **Yes/No**
- (iii) If Yes to (ii), would your organization be willing to share its:
 - a. Flight data (**Yes/No**)? If Yes, **Real-time/Recorded/Simulated data**?
 - b. MET data (**Yes/No**)? If Yes, **Real-time/Recorded/Simulated data**?
 - c. ATFM data (**Yes/No**)? If Yes, **Real-time/Recorded/Simulated data**?

¹ Any response in this questionnaire is not to be taken as commitment by the respondent or the surveyor.

3) Are there SWIM services you would like demonstrated? **Yes/No**

If yes, please specify:

Trial

4) Would your organization like to participate in the **Trial**?

- a. **Yes**
- b. **No**

If Yes, would your organization participate in the **Trial** as

- a. **as Contributor** of surveillance data? If Yes, **ADS-B data/Radar**?
- b. **as Consumer** of surveillance data? If Yes, **ADS-B data/Radar**?
- c. **as Contributor & Consumer** of surveillance data? If yes, **ADS-B data/Radar**?
- d. **as Observer** *See Note*

Note: An Observer may interact with the HMI of the SWIM services in the Post-Event Appreciation.

If your organization would participate as a Contributor of surveillance data at the Trial, your organization would share:

Real-time data/Recorded data/Simulated data?

5) Other than ADS-B data, are there other types of data or SWIM features your organization would like to be included in the **Trial**?

If yes, please specify:

6) What would be the preferred mode of access of the **Trial**?

- a. Pseudo CRV

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Our organization **is interested/not interested** in obtaining free CRV Package D CRV connection to participate in the Joint Event and Post-Event Appreciation ^{See Note}.

[Note:

- (i) *S3TIG considered that the option to use operational CRV for the **Trial** is not recommended after revisiting the nature of the operational CRV. Operational CRV is a safety critical environment that testing or trial on it was not preferred. Any testing or trial may raise potential risks to the services running within the operational environment. Therefore, S3TIG suggested to remove this option from the **Trial**.*
- (ii) *PCCWG may provide up to 5 pseudo CRV Package D connections for free (priority will be given to data contributor operated with a trial or operational SWIM EMS) for participating in the Joint Event and Post-Event Appreciation period for interested participants for the **Trial** but subject to consideration of a participant's geographical location, ease of installation (such as whether participant is an existing CRV subscriber) as well as available communication infrastructures that could support CRV Package D connections.*
- (iii) *Pseudo-CRV operates exactly the same as operational CRV as it is a dedicated and segregated CRV-network with the same hardware setup. Therefore, similar to operational CRV, dedicated Network Interface Device would be installed at participant's site.]*

- b. Console Connect - PCCWG may provide up to 10 free SIM cards for mobile connection (primarily for Aviation Support Service Providers (i.e. non-ANSPs) and support ANSP as Observer via mobile or desktop devices).

Our organization **is/is NOT** interested in participating in the Joint Event and Post-Event Appreciation by accessing Console Connect services provided by PCCWG ^{See Note}.

[Note: Console Connect service is PCCWG's services that allow users to gain access to the simulated SWIM environment in the Trial to publish/subscribe data services, among other SWIM services for participation in the **Trial** and in the Post-Event Appreciation.]

- 7) If there will be a Post-Event Appreciation² accessible for a period of time for participants and interested parties to appreciate the SWIM environment and system HMI:

- a. If your organization is a data contributor, would your organization continue to provide the data? **Yes/No**.

If Yes, for _____ **weeks** after the Joint Event

- b. Regardless if your organization is a data Contributor, data Consumer or Observer of the Joint Event, would your organization be interested in accessing the demonstration set-up after the event? **Yes/No?**

² Some services or data might be available after the Joint Event.

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If Yes, for _____ **weeks** after the Joint Event

- 8) What types of SWIM data payload for carrying the surveillance data would you like to be included?
- a. **ASTERIX only**
 - b. **JSON only**
 - c. **ASTERIX and JSON**

*[Note: ASTERIX will be the native binary format of the surveillance data. JSON will be in a tailored text-based format to be determined by S3TIG during the preparation of the **Trial**.]*