



ICAO

*International Civil Aviation Organization***The Seventh Meeting of System Wide Information Management Task Force (SWIM TF/7)***Bangkok, Thailand, 09 – 12 May 2023***Agenda Item 2:** Outcomes of relevant meetings on SWIM related matters**OUTCOME OF THE THIRD MEETING OF THE SURVEILLANCE STUDY GROUP (SURSG/3)**

(Presented by the Secretariat)

**SUMMARY**

This paper presents the discussions and relevant outcomes on the Third Meeting of the Surveillance Study Group (SURSG/3).

**1. INTRODUCTION**

1.1 The Third Meeting of the Surveillance Study Group (SURSG/3) was held in Hong Kong, China, with the hybrid option (In-Person and Virtual Participation) *from 22 to 24 March 2023*. The Meeting was attended by **102** participants (25 In-Person and 77 Virtual) from **14** States/Administrations, **2** International Organizations, and **3** industry partners. The meeting report, working papers, information papers, and other resources can be accessed by following link:

<https://www.icao.int/APAC/Meetings/Pages/2023-SURSG-3.aspx>

1.2 This paper summarised relevant information and updates from the meeting.

**2. DISCUSSION**

2.1 The summary of discussion in the Meeting is given in following paragraphs.

*Review of Work Plan for Surveillance Study Group - Hong Kong China (WP/11)*

2.2 The paper reviewed and shared recommendations on the Surveillance Study Group Work Plan in view of the progress and development following SURSG/2 held in March 2022. Considering the planned Joint Event for Surveillance Data Sharing in the SWIM Trial and SWIM Over CRV Demonstration (Demo) and the progress of the current Work Plan, the Meeting reviewed the changes proposed to Items 3-2, 4, 4-1 & 4.2 of the Work Plan. SURSG Chair requested Meeting to provide support and participate in the Trial.

2.3 In accordance with the proposed and agreed changes in WP/11, it was discussed and agreed that description of Task 4 (on Guidance Material) would be elaborated to include the incorporation of a section of technical and operational considerations as reference for the preparation of multilateral agreement for states/parties intending to share surveillance data and the elaborated text

is to be discussed at the next SURSG meeting. **ACTION ITEM 3-1**

2.4 The approved and modified SURSG work plan by the SURSG/3 Meeting is as follows, also provided in **Appendix A** to this paper.

Group	Task	Description	Start	End	Task Owner(s)
Recommendation Stage	3	Report on the possible implementation of surveillance data sharing in SWIM	SURSG/2	SURICG/7	TBD
	3-1	Consolidation of all the outcomes of Task 2 into a report according to the contents defined in TOR for submission to SURICG	SURSG/2	SURICG/7	Hong Kong China, IATA, Singapore, Thailand, Viet Nam
	<del>3-2</del>	<del>Preparation of draft multi-lateral agreement on surveillance data sharing and data consumption</del>  [absorbed into Task 4]	<del>SURSG/2</del>	<del>SURICG/7</del>  (to be reviewed at SURSG/3)	<del>TBD</del>
	4	Guidance materials for the sharing and access of surveillance data	<del>SURICG/7</del>  (after Demo)	<del>SURICG/9</del> <del>SURICG/10</del>	TBD
	4-1	Preparation of the framework and 1 <sup>st</sup> draft of guidance material	<del>SURICG/7</del>  <del>SURICG/8</del>  (after Demo)	<del>SURSG/3</del>  SURSG/4 or SURSG/5 <sup>1</sup>	TBD
	4-2	Further development of the working draft of guidance material for endorsement by SURICG and CNS SG	<del>SURSG/3</del>  (after Demo)	<del>SURICG/9</del>  SURICG/10	TBD

*Outcomes of the Kick-off Meeting of the Surveillance Sharing in SWIM (System Wide Information Management) Trial Implementation Group (S3TIG) – Sec (WP/05)*

2.5 The paper summarized the outcomes of the Kick-off Meeting of Surveillance Sharing in SWIM (System Wide Information Management) Trial Implementation Group (S3TIG) held on December 6, 2022, via Video Tele Conference (VTC).

*Business Models for Joining the S3TIG Trial – PCCWG (WP/12)*

2.6 PCCWG presented proposals on how ANSPs can participate in the upcoming S3TIG Trial, including the CRV connectivity requirements, surveillance data sharing demonstration, and scenario-based demonstration. The SURSG/3 meeting noted that it is beneficial to the aviation

<sup>1</sup> Subject to timing of Demo.

community if more ATM stakeholders participate in the SWIM Data Exchange. The Meeting was invited to share the number of Member States which will participate in the Trial and discuss the scope of the Trial for the commercial and technical arrangement.

2.7 The SURSG/3 meeting shared the need to explore other options to join the Trial/demo by States/Administrations having no CRV connectivity. Additionally, further deliberations were required about the cost implication for States having CRV connectivity but no spare bandwidth to share for the Trial/demo. It was agreed that S3TIG will incorporate this discussion into the agenda item while preparing the Survey questionnaire. **ACTION ITEM 3-2**

*A Joint Event for Surveillance Data Sharing in SWIM Trial and SWIM over CRV Demonstration - Hong Kong, China (WP/07)*

2.8 Hong Kong China proposed combining the surveillance data sharing in the SWIM Trial under S3TIG (“the Trial”) and the SWIM Demonstration over CRV under SWIM TF as a joint event for States’ consideration. It was informed that the proposal on combining the two events would save effort in preparing similar network and system infrastructure for the Trial, demonstrate data exchange of different throughput and examine such bandwidth requirements on CRV, and enhance user experience with more types of SWIM services showcased.

2.9 The SURSG/3 meeting endorsed that *the Trial* and *SWIM over CRV Demonstration* should be conducted as a **Joint Event**. However, the proposal needs to be agreed by SWIM TF Meeting. Further discussions on this paper are recorded under SP/01 discussion in the report from sections 5.6 to 5.9.

*Trial of Surveillance Data Sharing Using SWIM - Hong Kong, China (WP/08)*

2.10 The paper presented the proposal on the items to be demonstrated in the Trial of the surveillance data sharing using SWIM under S3TIG for States’ consideration. The Trial was proposed to be conducted as a demonstration event followed by an evaluation period of about three months, subject to discussion in S3TIG.

2.11 The SURSG/3 meeting noted that with live surveillance data sharing being realized among participating States in the Trial, the practicality and technology in surveillance data sharing using SWIM could be shown to the audience. In addition, a scenario-based demonstration was proposed to visualize the benefits brought to ATFM operation during the Event. Prepared scripts and data, including surveillance data, flight information, MET information, and flow management information, will be exchanged in real-time to simulate the data flow of a complete life cycle of an ATFM operation, which cannot be easily captured in a live situation. Other SWIM capabilities proposed to be demonstrated in the Event were also shared.

2.12 Further discussions on this paper are recorded under SP/01 discussion in the paper from sections 2.13 to 2.16.

*Survey for Expression of Interest (EOI) in participating in Demo/Trial of S3TIG – Sec (SP/01)*

2.13 The SURSG/3 meeting deliberated the proposed questions for Expression of Interest (EOI) in participating in the Joint Event of S3TIG and reviewed the S3TIG Joint Event Tentative Timelines. The SURSG/3 meeting agreed that the proposed questions need modifications along with the addition of more information to support States/Administrations to respond to the Survey.

2.14 The S3TIG will amend the questionnaire and prepare supporting documents containing useful information such as definitions of various terms used in the questionnaire to clear potential doubts of Member States/Administrations responding to the survey and any other necessary modifications. The

questionnaire will be a composite survey with ideally 2 separate sets of questions respective for the Trial and SWIM over CRV Demonstration (Demo). **ACTION ITEM 3-3** The S3TIG will share the part of the questionnaire mainly related to the Demo and the endorsement of the proposal for the Joint Event by SURSG/3 in a joint working paper (say by Hong Kong China, Singapore and Thailand) or a paper by lead of S3TIG to SWIM TF/7 to be held from 9-12 May 2023 in Bangkok, Thailand for SWIM TF/7's agreement. **ACTION ITEM 3-4.** The SURSG/3 meeting also agreed that the Survey will be shared with States/Administrations only, not involving any other parties.

2.15 The Survey will be shared, after SWIM TF/7 endorsement, with Member States/Administrations by ICAO Secretariat. **ACTION ITEM 3-5** The S3TIG will draft a formal package/agreement to participate in the Joint Event by Member States/Administrations to be shared with interested States/Administrations after the outcomes of the Survey are processed, analyzed, and interested Members to participate in the Demo/Trial are identified. **ACTION ITEM 3-6**

2.16 The tentative timelines to conduct the Trial and/or Demo were as follows:

Task	Responsible Parties	Tentative Timelines/Deadlines
Finalization of Survey Questionnaire	SURSG/3 and S3TIG Participants, Led by HK China, Thailand, and Singapore	28 April 2023
Sharing Survey with APAC Member States	ICAO Secretariat	19 May 2023 (4 weeks will be provided to States to respond)
Submission of response and States and possible extension of Survey	All Interested APAC States	23 June 2023
Compilation of Response to Survey	ICAO Secretariat SURSG/S3TIG Chairs/Leads	30 June 2023
Sharing formal package with agreed Parties to participate in Demo and/or Trial	Agreed Parties and Host State (Hong Kong China)	July 2023 (1 Month will be provided to States to respond)
Working-level preparatory Meetings (online/in-person)	Lead and Deputy Lead, agreed Parties	Mid-August 2023 – October 2023
Trial/Demo	Agreed Parties and Host State (Hong Kong China)	November 2023 ( Worst case scenario: Q1 2024)
Report on Demo	Lead and Deputy Lead	SURSG/4

*Data Format for Surveillance Data Sharing – Hong Kong, China (WP/06)*

2.17 Hong Kong China presented the proposal on the data format to be exchanged in the Trial of the surveillance data sharing using SWIM under S3TIG for States' consideration. As a recommendation from the Study Report delivered under SURSG, the Trial to be conducted under S3TIG would adopt the ADS-B CAT 21 Version 2.1 data format to support ATFM operation.

2.18 The paper compared the pros and cons of using FIXM, JSON, and original ASTERIX data and suggested that using the original ASTERIX data format as the payload for SWIM data exchange would be a preferred option. Based on the ASEAN Demonstration, the AMQP headers were proposed for carrying the surveillance data payload.

2.19 Further discussions on this paper are recorded under WP/09.

*State of SWIM implementation in Singapore and readiness to share ADS-B data – Singapore (WP/09)*

2.20 Singapore presented the progress of SWIM implementation in Singapore and its impact on the sharing of surveillance information, specifically ADS-B data from the Singapore ADS-B sensor. Singapore shared its plan for upgrading the SWIM infrastructure, which includes a provision for the connection to the CRV through which data can be shared. After completing the SWIM upgrading works, Singapore shared its intention to publish the ADS-B data from the Singapore ADS-B sensor for consumption by approved parties as an ASTERIX-based JSON formatted message similar to the current ADS-B service in the Singapore SWIM is provisioned.

2.21 Considering the format for ADS-B data sharing has not yet been decided, Singapore proposed that the Meeting direct the S3TIG group to be deliberate on this matter and consider the appropriate message format to facilitate ADS-B data exchange.

2.22 The SURSG/3 meeting discussed the pros and cons of different data formats proposed in the WP/06 and concurred that ASTERIX and JSON, both may be considered as potential data formats for conducting the trial and SWIM over CRV demonstration. Another proposal was to add a question related to the preferred data format, with ASTERIX and JSON data format as potential answers, in the Survey questionnaire to be prepared by S3TIG to better understand the readiness of interested demo/Trial parties. S3TIG will discuss the requirements of the proposed question to add in the survey questionnaire. **ACTION ITEM 3-7** S3TIG will further deliberate on this topic of interest and priority and propose data format(s) for the Trial and Demo. **ACTION ITEM 3-8**

*Benefits of Surveillance Data Sharing for MET Information Services in SWIM - Hong Kong, China (IP/02)*

2.23 Hong Kong Observatory (HKO), under Hong Kong China, presented how future MET information services could be enhanced using the surveillance data shared in SWIM. The Meeting noted that MET information to be exchanged in SWIM includes ICAO Meteorological Information Exchange Model (IWXXM) messages, gridded products, and imagery. In particular, the four dimensions (4D) MET information service can also provide users with on-demand access to polygons or images of high-impact weather phenomena derived from the gridded products, which is useful to aviation users for assessing the potential impact of weather on their flight trajectory over time. Furthermore, the benefits of surveillance data for MET information services to ANSP and airlines were elaborated.

2.24 SURSG Chair requested to explore the possibility to include the elements and proposed applications in the IP/02 paper for demonstration in the proposed Joint Event, which was agreeable to HKO and the Meeting. The S3TIG will consider the feasibility to incorporate the demonstrations proposed in the paper in the planned Joint Event. **ACTION ITEM 3-9**

*Lessons Learned in Sharing Surveillance Data using SWIM Information Service - Republic of Korea (WP/10)*

2.25 The paper presented ROK's lessons learned in the exchange of surveillance data through a SWIM information service, specifically through the utilization of the Advanced Message Queuing Protocol (AMQP) based messaging services. With the introduction of characteristics of surveillance data, the SURSG/3 meeting noted ROK had implemented SWIM information services for

surveillance data currently working on the SWIM testbed. Additionally, the considerations for future implementation along with lessons learned were shared with the Meeting.

2.26 In response to a question, ROK clarified that it provides both ASTERIX and JSON data formats to the Stakeholders based on Stakeholder's needs.

*Review ToR and Action Items List – Sec (WP/04)*

2.27 The paper presented the current ToR of SURSG and S3TIG and the Action item list of SURSG Meetings for SURSG/3 meeting review and update. The SURSG/3 meeting noted that there was no need to update the ToR of both groups and the Action Items list was discussed and updated by the SURSG/3 meeting, which is provided in Appendix B of the Report.

*Date and Venue for the Next Meeting*

2.28 The SURSG/3 meeting decided that further Meetings of S3TIG would be conducted in Virtual mode until the need for In- Person meetings arises.

2.29 The SURSG/3 meeting discussed the date and venue of the next SURSG Meeting. It was advised that the next Meeting of SURSG should be held after the proposed Surveillance data sharing in the SWIM Trial and the SWIM Demonstration over CRV Demonstration are completed. The SURSG/3 meeting agreed that the next Study Group Meeting would be In-Person after the successful completion of the Joint Event. The ICAO Secretariat will inform participants about the exact dates and venue in due course.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information in this paper; and
- b) discuss any matters as appropriate.

-----

**REVISED WORK PLAN of SURSG**

<b>Table 1</b>						
<b>Group</b>	<b>Task</b>	<b>Description</b>	<b>ToR Para.</b>	<b>Start</b>	<b>End</b>	<b>Task Owner(s)</b>
<b>Feasibility Study Stage</b>	1	Preparation of Progress Report on the SURSG deliverables	-	-	Before every SURSG Meeting	Study Group Lead(s)
	2	Study, identification and recommendation of possible and practical models for surveillance data sharing in SWIM	2	SURSG/1	SURSG/2	Hong Kong China (TL)
	2-1	Preparation of Concept of Use/Operation	2(a) 3(c)	SURSG/1	SURSG/2	Singapore/TL, Hong Kong China, Thailand, Viet Nam
	2-2	Study, identify and recommend on Implementation Model including the consideration of system design and collaboration model on sharing of surveillance data.	2(b), (d) 3(a)	SURSG/1	SURSG/2	Hong Kong China, Republic of Korea, Singapore, Thailand, Viet Nam
	2-3	Study, identify and recommend on an Infrastructure Model based on SWIM and CRV infrastructure	2(f) 3(b)	SURSG/1	SURSG/2	China, Hong Kong China, Singapore, Thailand, Viet Nam, PCCW Global as advisor
	2-4	Study, identify and recommend on a Business Model including commitments by data sharing participants as well as incurred resource and cost	2(b), (c), (d) 3(d), (e)	SURSG/1	SURSG/2	China, Hong Kong China, Singapore, Thailand, Viet Nam
	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(c), (d) 3(e)	SURSG/1	SURSG/2	Hong Kong China, Singapore, Thailand, China, Viet Nam, IATA

SWIM TF/7  
Appendix A to WP/04

	2-6	Preparation of implementation roadmap and time frames with consideration of approach, types of surveillance data and information exchange model	2(e) 3(a)	SURSG/1	SURSG/2	China, Hong Kong China, Singapore, Thailand, Viet Nam
Recommendation Stage	3	Report on the possible implementation of surveillance data sharing in SWIM	-	SURSG/2	SURICG/7	TBD
	3-1	Consolidation of all the outcomes of Task 2 into a report according to the contents defined in TOR for submission to SURICG	-	SURSG/2	SURICG/7	Hong Kong China, IATA, Singapore, Thailand, Viet Nam
	<del>3-2</del>	<del>Preparation of draft multi-lateral agreement on surveillance data sharing and data consumption</del>  [absorbed into Task 4]	<del>SURSG/2</del>	<del>SURICG/7</del>  (to be reviewed at <del>SURSG/3</del> )	<del>TBD</del>	<del>3-2</del>
	4	Guidance materials for the sharing and access of surveillance data	<del>SURICG/7</del>  (after Demo)	<del>SURICG/9</del> <del>SURICG/10</del>	TBD	4
	4-1	Preparation of the framework and 1 <sup>st</sup> draft of guidance material	<del>SURICG/7</del>  <del>SURICG/8</del>  (after Demo)	<del>SURSG/3</del>  SURSG/4 or SURSG/5 <sup>1</sup>	TBD	4-1
	4-2	Further development of the working draft of guidance material for endorsement by SURICG and CNS SG	<del>SURSG/3</del>  (after Demo)	<del>SURICG/9</del>  SURICG/10	TBD	4-2

<sup>1</sup> Subject to timing of Demo.