



ICAO

*International Civil Aviation Organization*

**Third Meeting of the Surveillance Study Group (SURSG/3)**

(Hong Kong China, 22– 24 March 2023)

Agenda Item 4: Progress update of SWIM Trial Implementation Group (S3TIG)

**BUSINESS MODELS FOR JOINING THE S3TIG TRIAL**

(Presented by PCCW Global Limited)

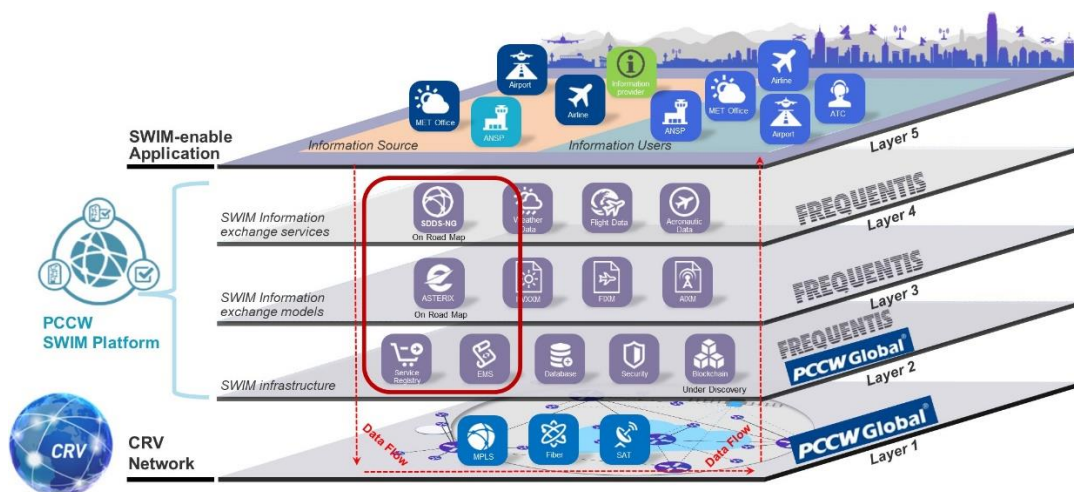
**SUMMARY**

This paper presents proposals on how ANSPs can participate in the upcoming S3TIG Trial.

**1. INTRODUCTION**

S3TIG is proposing a trial on Dec 2023, which aims to demonstrate the Surveillance Data Sharing in a simulated SWIM over CRV environment and the benefits of a Surveillance Central Data Processor (SCDP). In addition, a scenario-based demonstration is also proposed to visualize the benefits of SWIM brought to ATFM operation during the Event.

PCCW Global (PCCWG), as the CRV provider, is pleased to participate and support this trial with CRV as the network infrastructure and SDDS-NG (Surveillance Data Distribution System - Next Generation) system from Frequentis (PCCW Global’s partner) playing the role of SCDP at the trial.

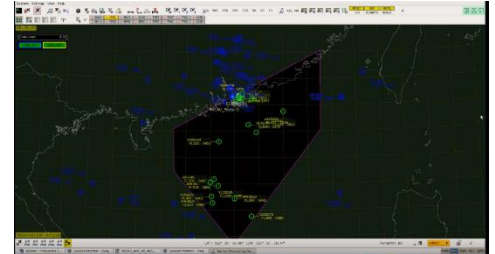


High-level development road map of CRV Network based SWIM architecture and this trial will focus on SDDS-NG (Asterix) Service

## 1.1 CRV Network Based SWIM Services for ANSPs

### a) Surveillance Central Data Processor (SCDP)

At SURSG/2 in March 2022, PCCW Global presented WP/06 regarding the Surveillance Data Sharing trial. This trial was the collaboration of HKCAD, PCCW Global and Frequentis. The purpose aims to demonstrate the sharing in a simulated SWIM over CRV environment and the benefits of a Surveillance Central Data Processor (SCDP).



Source: <https://www.youtube.com/watch?v=3pnGmMuc45s>

### b) PCCW SWIM Platform

PCCW SWIM Platform, based on Frequentis MosaiX SWIM, is on the CRV network infrastructure. (PCCW Network Based IWXXM Translation and Exchange Services is an ICAO CRV OG approved service. WP02-ICAO AI2 – Outcomes of relevant meetings – section 2.21)

### c) Global EMS node

At SWIM TF4 in November 2020, in its IP/07, PCCW Global introduced its SWIM platform and suggested its SWIM Infrastructure could be one of the global/commercial EMS nodes to deliver SWIM services or qualified third party services.

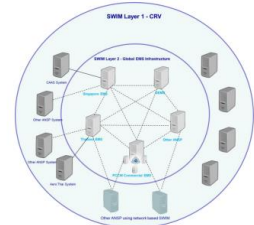


Figure 1- Global EMS Infrastructure

## 1.2 CRV Network Based SWIM Deployment options and associated Business models

In future, where such services are available from a 3<sup>rd</sup> party (such as PCCW Global or others), PCCW Global envisages the following models that it can offer to support SWIM implementation:

### a) On-Premise option (Option A)

Deployment model: PCCW SWIM platform/software can be deployed in customer's data center if a customer prefers to own and manage its SWIM infrastructure.

Business model: One-time equipment and setup charges and software license fees and yearly maintenance fee (CAPEX).

### b) SWIM-as-a-Service option (Option B)

Deployment model: A customer subscribes to SWIM service(s) with minimal on-premise deployment that are available and hosted on the PCCW SWIM in the platform via new/existing CRV connection without managing entire SWIM infrastructure.

Business mode: Monthly subscription charge (OPEX)

Remarks: SWIM-as-a-Service also can interoperate with customer self-built SWIM system via mutual agreed protocols (AMQP) to provide value-added services (e.g. service discovery)

**c) Hybrid option**

Combination of on-premise model (Option A) and SWIM-as-a-Service model (Option B).

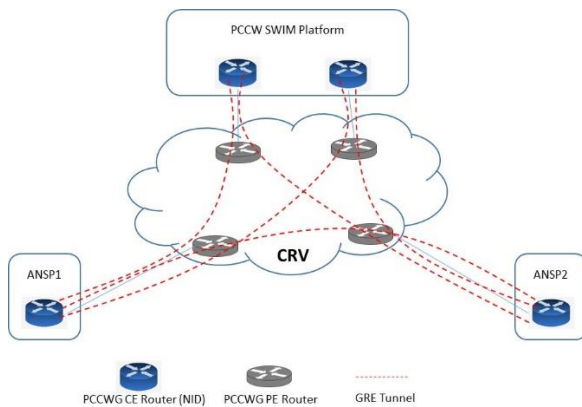
**2. DISCUSSION**

Presently, for the upcoming Trial, participants may participate in following ways:

**2.1.1 CRV Connectivity Requirements:**

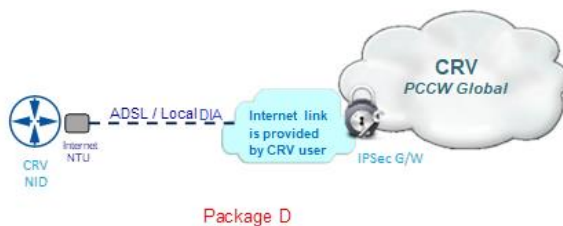
To join the trial for the Surveillance Data Sharing and the Scenario based demonstration on Dec 2023:

- a) Existing CRV users - using the residual bandwidth (estimated 128k for data subscriber and 512k for data publisher) for their existing CRV connection and establish GRE tunnel to CRV network based SWIM platform.



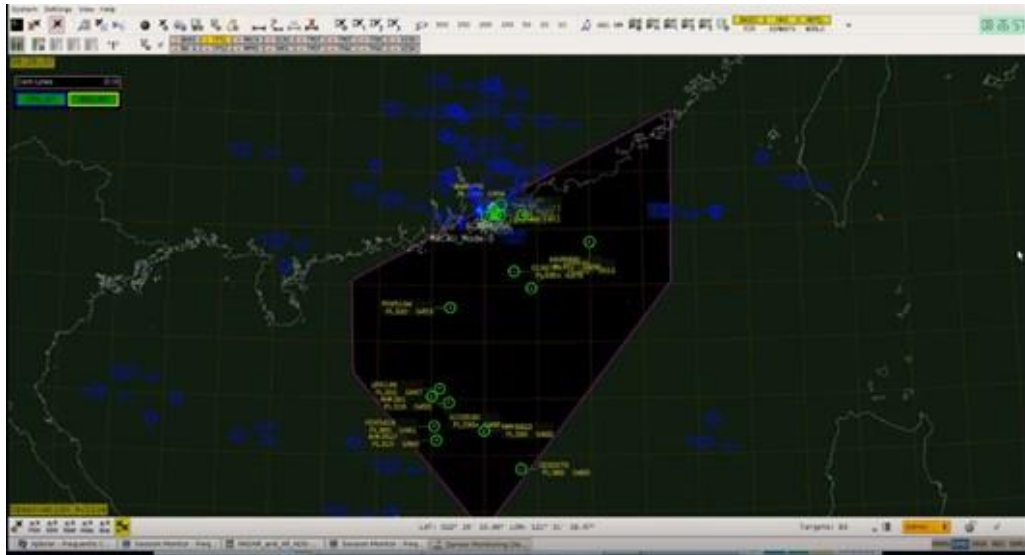
State Members on CRV
Australia
Bhutan
China
Fiji
Hong Kong, China
India
Indonesia
Japan
Malaysia
Mongolia (under provisioning)
Nepal
New Zealand
Papua New Guinea
Philippines
Republic of Korea
Singapore
Thailand
USA

- b) Non-CRV subscribing states/administrations may need to expedite the application of package D to join CRV for this trial.



### **2.1.2 Surveillance Data Sharing Demonstration**

Surveillance Data Contributors publish surveillance data (ADS-B CAT 21 Version 2.1) via AMQP connection to the CRV network based SCDP. Surveillance Data Consumers subscribe and view the aggregate surveillance data on their own platform or via our user interface.



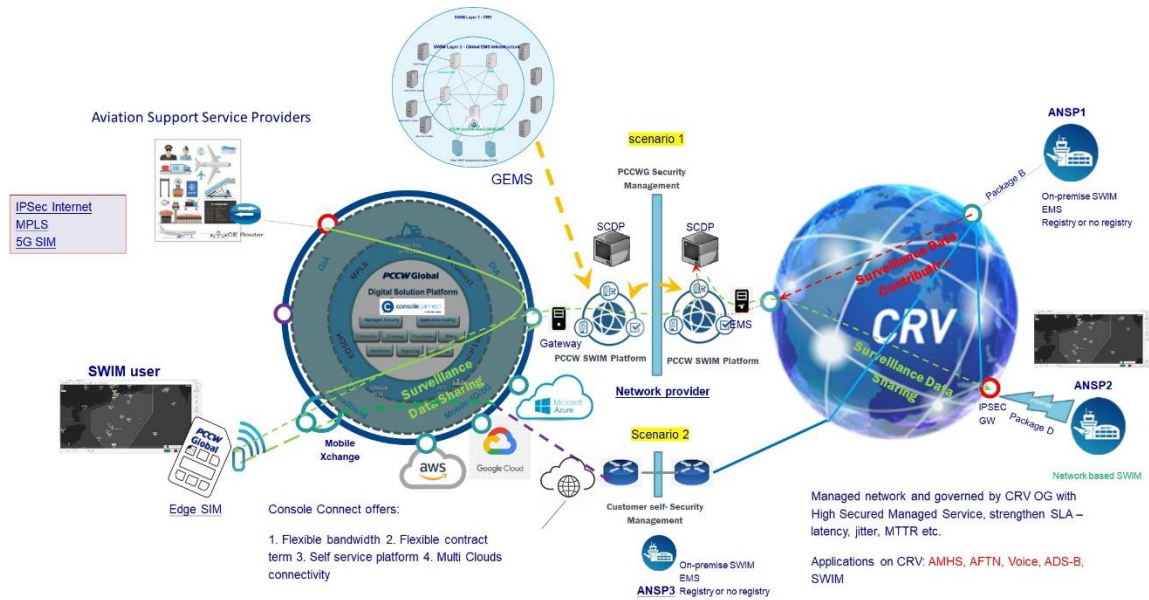
### **2.1.3 Scenario Based Demonstration**

As a potential GEMS provider, PCCW explores to demonstrate the optimization of the publisher's CRV bandwidth via our GEMS service to support large number of subscribers.

ANSPs may explore the feature by connecting to our platform/ GEMS via AMQP to publish their data.

## **3. Future Roadmap**

PCCW is aware that it is beneficial to the Aviation community if more ATM stakeholders to participate in the SWIM Data Exchange. Hence, we are keen to evolve Console Connect and develop CC SWIM-as-a-Service with CRV OG, SWIM TF and SURSG to support Aviation Support Service Providers to join the SWIM community in the near future.



*SWIM TF/6 WP10, PCCW Global introduced the self-service connectivity platform to access CC SWIM-as-a-Service for Aviation Support Service Providers in a simple, predictable and secure environment. CC SWIM-as-a-Service can exchange SWIM data only with CRV SWIM-as-a-Service via security gateway.*

#### 4. ACTION BY THE MEETING

The meeting is invited to:

- a) note the information contained in this paper;
- b) confirm with S3TIG the number of State members who will participate in the trial; and
- c) discuss with S3TIG and PCCW Global the scope of the trial for the commercial and technical arrangement

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