

*International Civil Aviation Organization*



ICAO

**Eighth Meeting of Aeronautical Communication Service  
Implementation Co-ordination Group of APANPIRG  
(ACSICG/8)**

Video Tele-Conference, 21 – 23 June 2021

---

**Agenda Item 7:** Next meeting date and any other business

**PRESENTATION OF PCCW NETWORK BASED IWXXM TRANSLATION AND  
EXCHANGE SERVICE**

(Presented by PCCW Global Limited and Fiji Airports Limited)

**SUMMARY**

This information paper describes PCCW IWXXM Translation and Exchange Service. It can serve as an alternative solution for member States to fulfil the exchange of IWXXM messages as mandated in Amendment 80 to ICAO Annex 3.

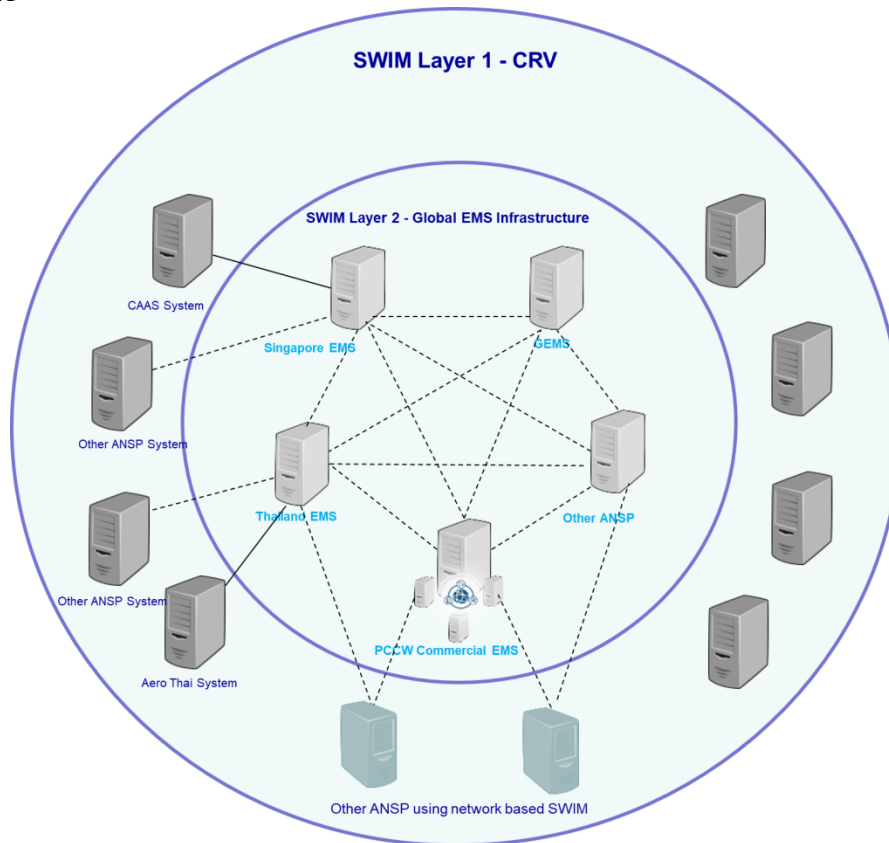
**1. INTRODUCTION**

1.1 ICAO APAC CRV has leveraged PCCW Global's high-speed international IP network, with mission-critical connections running across a diversified infrastructure supporting multiple aviation-specific applications. PCCW Global, the CRV provider, is keen to develop value-added services on top CRV to demonstrate our commitment to the Aviation industry.

1.2 PCCW Global is offering SWIM as a Service on a private and scalable platform in partnering with one of leading aviation vendors - FREQUENTIS. PCCW Global owned the network infrastructure & is hosting the EMS and SWIM applications to provide an alternative solution to ANSPs and to facilitate the migration to SWIM.

1.3 PCCW EMS will participate in the global EMS infrastructure as a commercial EMS node to offer our service or qualified third party services. PCCW Global will manage the network bandwidth, system maintenance and development of the platform.

1.4 Fiji Airports & PCCW Global has successfully conducted TAC to IWXXM translation test as a Proof of Concept on this service and the outcome of the testing is also presented in this paper.



PCCW EMS supports the following features:

1. Acts as an information backbone for connecting aviation stakeholders
2. Supports globally available SWIM Technical Infrastructure Specifications as well as existing infrastructure AFTN, AMHS
3. Supports globally available aviation information exchange models (AIXM, FIXM, IWXXM) as well as legacy data formats
4. Comes with a Service Registry allowing publishers and subscribers of services to find each other.
5. Comes with a SWIM/AMHS Gateway to support the transition from AMHS to SWIM

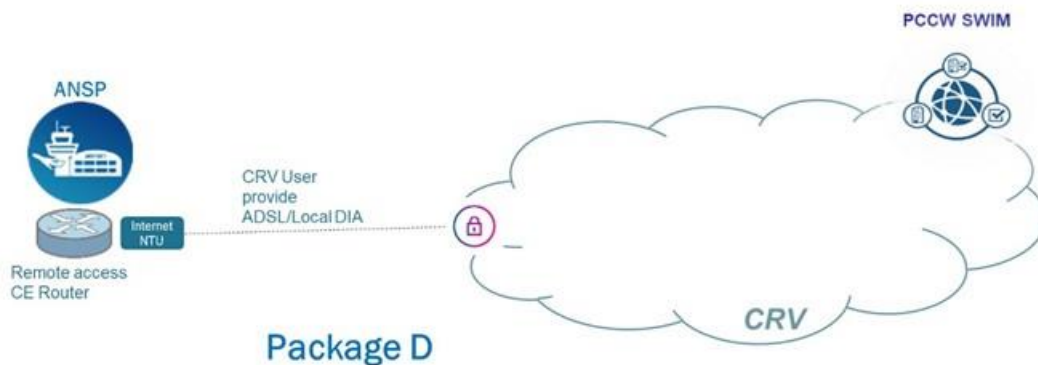
1.5 PCCW IWXXM Translation and Exchange Service is one of the service available which is hosted in the high availability private platform and fully controlled environment which connects to CRV network infrastructure.

1.6 The service complies with ICAO and WMO standards and is designed to support the acquisition, management, processing and dissemination of meteorological data related to aviation.

## 2. DISCUSSION

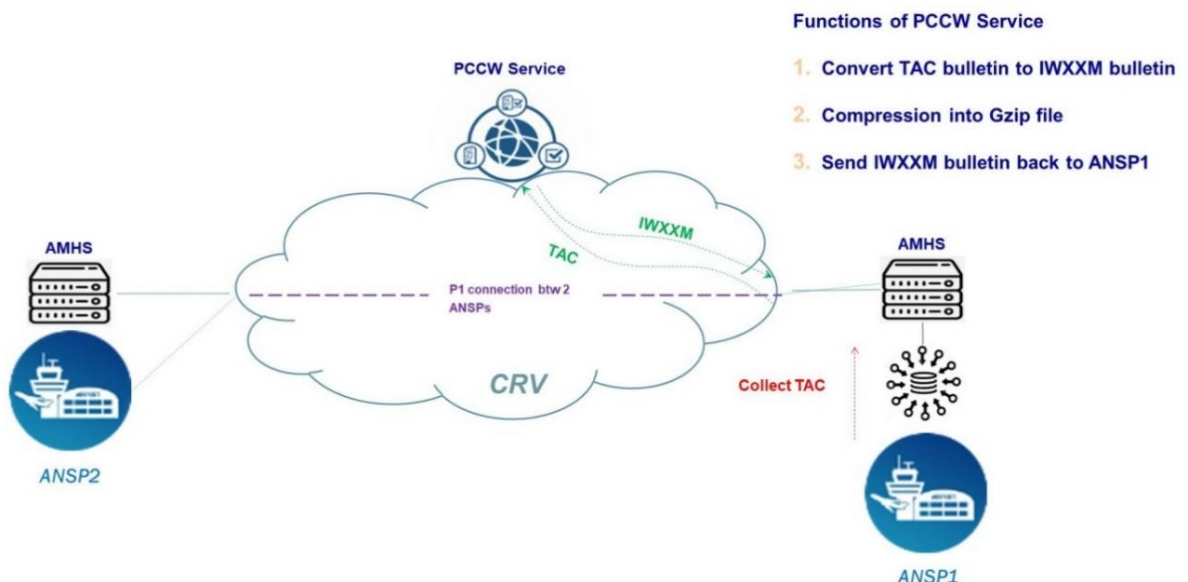
### 2.1 Service Components

- i) CRV connection - support AMHS P1 or AMQP connections from users to the EMS via CRV.
- ii) Translation and Aggregation Service – validates, aggregates and translates messages from TAC to IWXXM formats and generates bulletins.
- iii) Exchange Service - All translated data can be returned to the IWXXM user or redistributed to designated IWXXM users via CRV upon mutual agreement.
- iv) For ANSP without AMHS System should consider subscribing to the CRV Package D which also comes with the tools for the operators to compose and send TAC messages to PCCW EMS

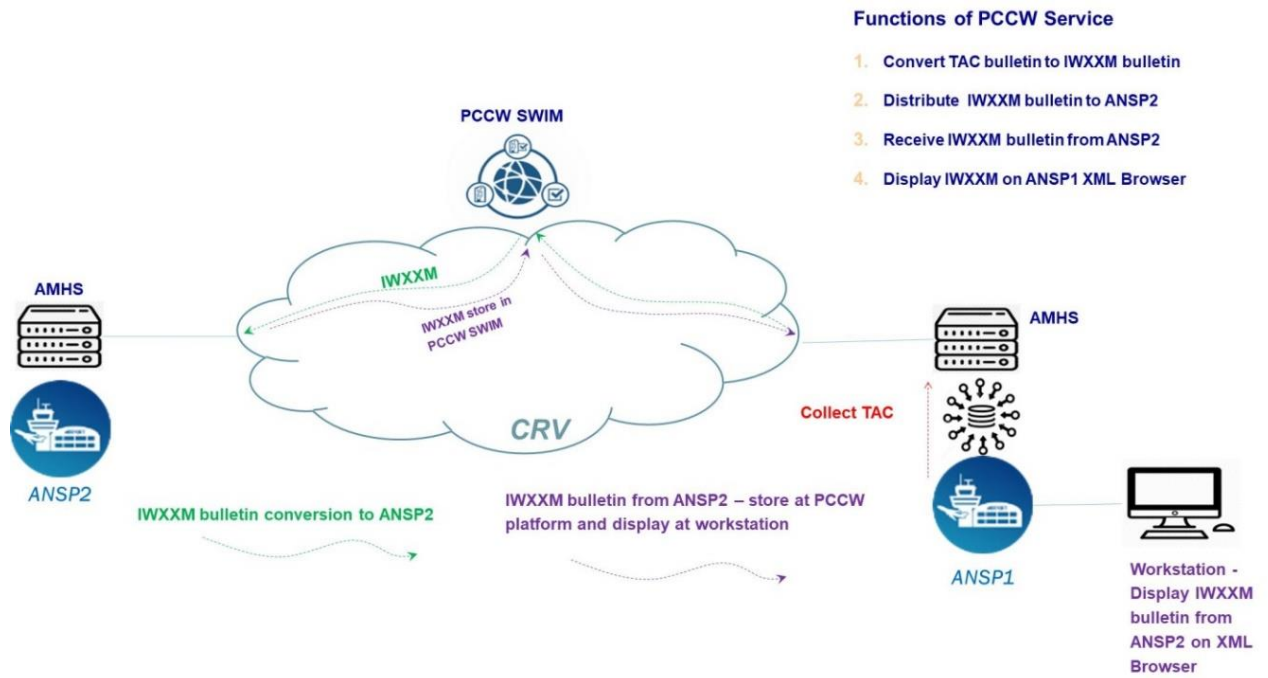


CRV Package D - This service allows customers to access our MPLS backbone via a lower cost broadband access and is an ideal option for smaller branch offices or as a backup option. PCCW Global will configure IPsec port at MPLS IPsec gateway and install a CE router (NID) for connecting customer owned Internet link on the site. User will connect to the CRV network via a point-to-point encrypted IPsec tunnel which supports 100% Bronze QoS only.

### 2.2 Function 1 - Translation and aggregation service



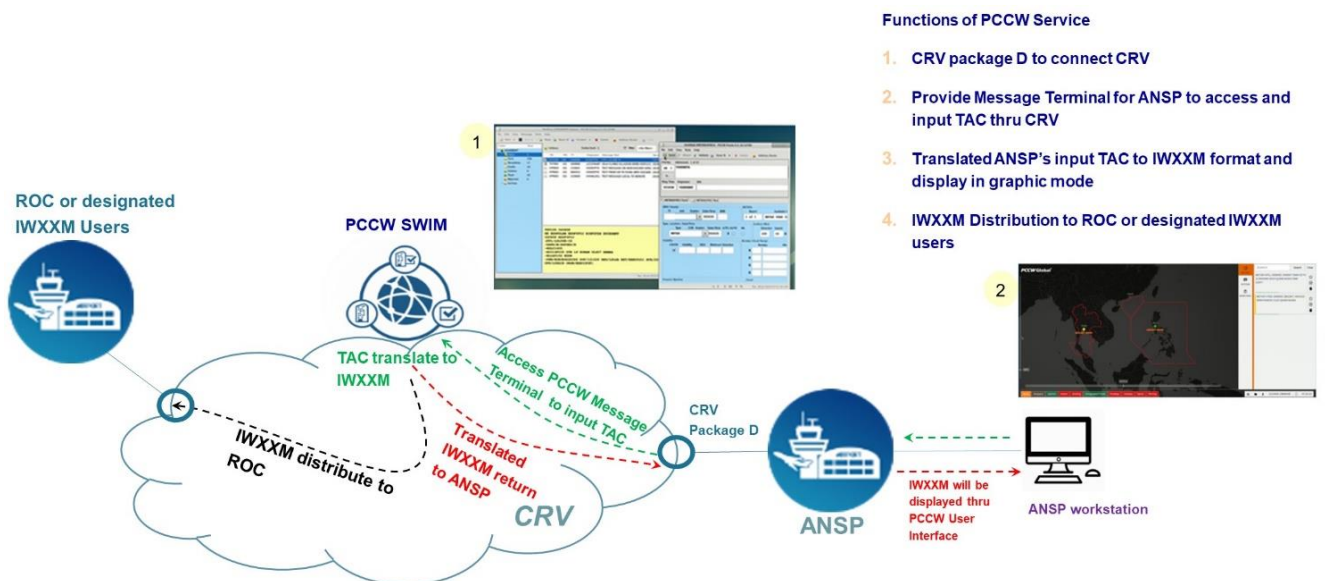
Function 2 - IWXXM Exchange Service



**Functions of PCCW Service**

1. Convert TAC bulletin to IWXXM bulletin
2. Distribute IWXXM bulletin to ANSP2
3. Receive IWXXM bulletin from ANSP2
4. Display IWXXM on ANSP1 XML Browser

Function 3 - IWXXM Services for ANSPs without AMHS – Message Terminal & XML Browser

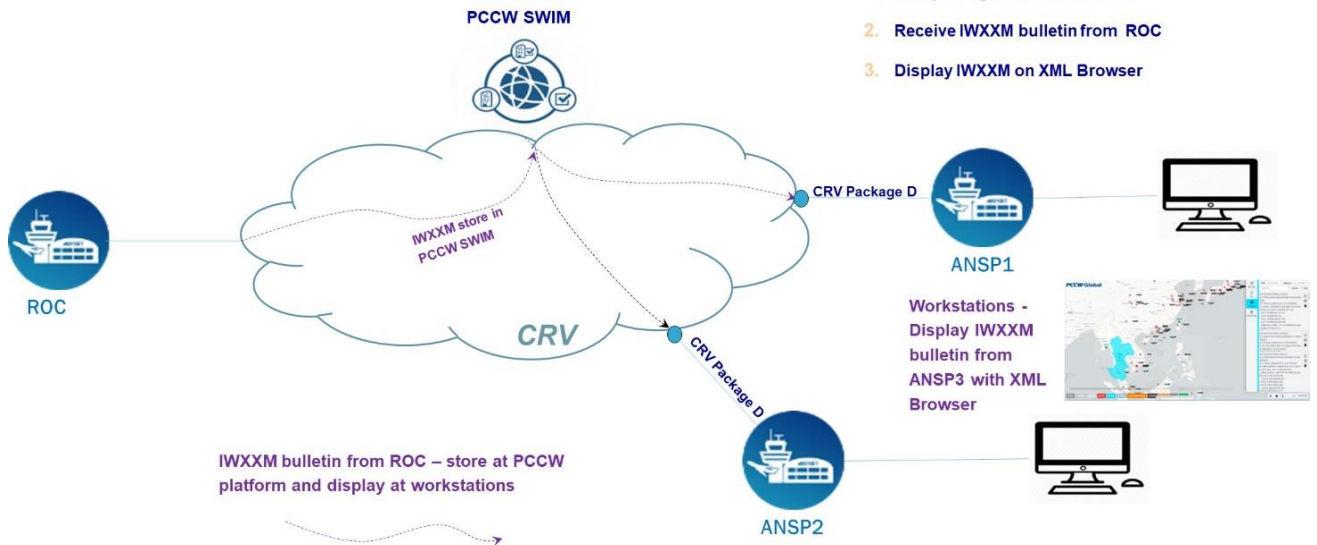


**Functions of PCCW Service**

1. CRV package D to connect CRV
2. Provide Message Terminal for ANSP to access and input TAC thru CRV
3. Translated ANSP's input TAC to IWXXM format and display in graphic mode
4. IWXXM Distribution to ROC or designated IWXXM users

**Functions of PCCW Service for ANSPs without AMHS**

1. CRV package D to connect CRV
2. Receive IWXXM bulletin from ROC
3. Display IWXXM on XML Browser

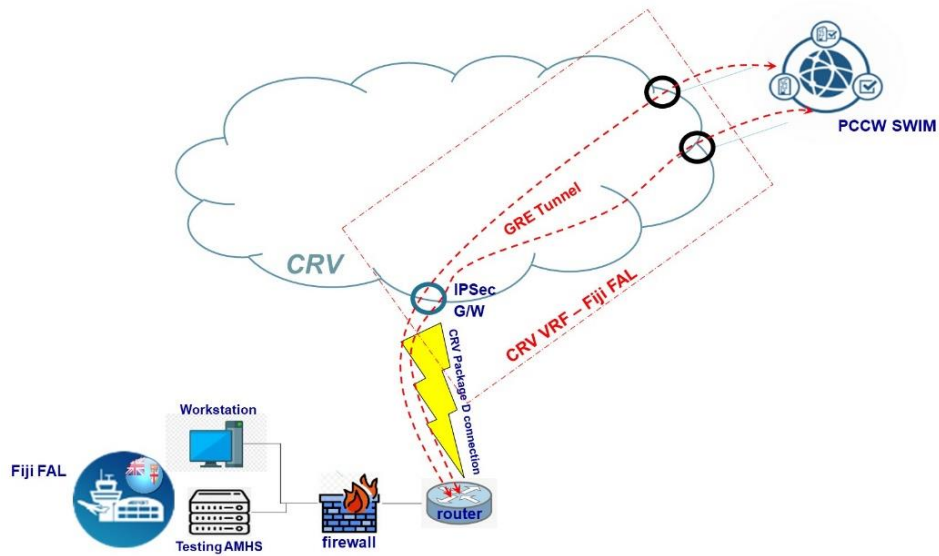


2.2 Benefits of PCCW Network based IWXXM Service

One-time Cost (System setup)	Low
System Operation & Maintenance	Nil
Recurrent Cost – Service Subscription	OPEX
CRV Connection	No need to upgrade if distribution thru PCCW platform
Alternative IWXXM delivery paths for AMHS connection	YES
Development Efforts	Nil
Delivery Lead Time	Short
Flexibility	High

2.3 Fiji Trial of PCCW IWXXM service

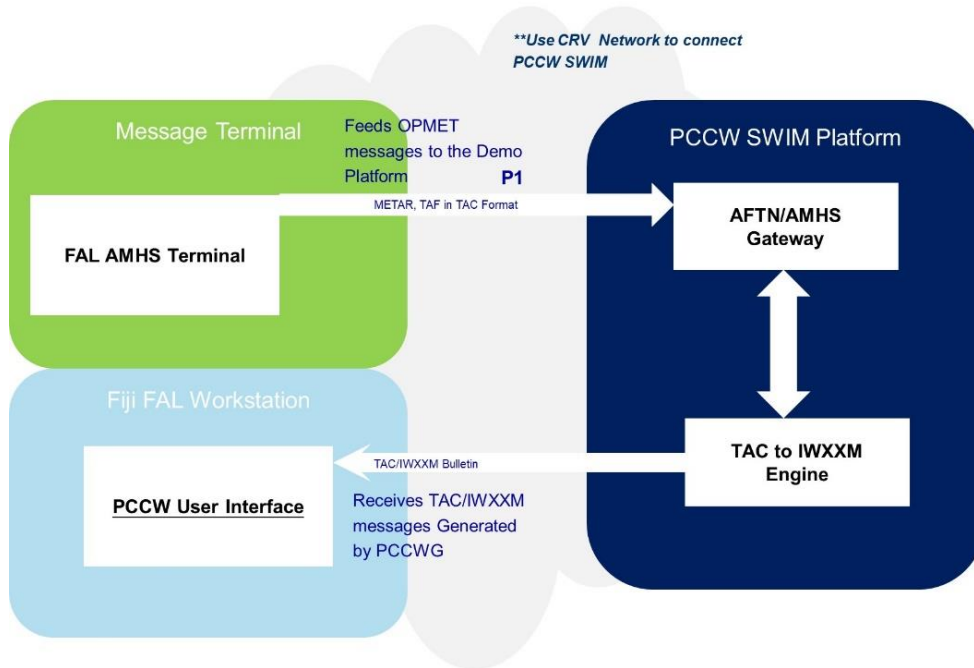
Network Setup – Fiji IWXXM Trial



Network setup:

1. Using existing CRV package D connection
2. FAL Testing AMHS and workstation (for IWXXM display) are connected to PCCW SWIM

### Trial Environment Setup – Fiji TAC to IWXXM Conversion



#### Trial System Setup:

1. Connectivity between Fiji Test AMHS and PCCW SWIM. Both systems can ping each other.
2. MTA connection configuration created on both ends based on the AMHS Configuration document
3. MTA Routing rules to pass messages.
  - a. Fiji to route PCCWYFYFYY to PCCW MTA
  - b. PCCW to route NFFNYFYFYY to Fiji MTA
4. MTA Connections are open on both ends

#### Process:

##### TAC to IWXXM

1. NFFN sends TAC Message over P1 link with PCCW to the AMHS Address. Every time NFFN sends a TAC, the PCCW SWX system will convert the TAC message to IWXXM and for the purpose of testing, redistribute the IWXXM to PCCWNFFN for viewing. At the same time, the message is fed to the SWIM graphical user interface.

##### METAR in TAC coming in from Fiji

Source	Destination	End Time	Deq Time	Supplemental
mta@fiji	mta@p1	15/04/2015	15/04/2015	
mta@mta	mta@GATEWAY-AFTN	15/04/2015	15/04/2015	

Message Text	Message Details	Envelope Recipients (1)	IPM Recipients (1)	XML Data
<pre> FRI: FF FT: 150415 SAP531 NFFN 150400 METAR NCRG 150400Z AUTO 10010KT 070V130 9999 SCT020/// BRN025/// BRN031/// 24/20 Q1015= METAR NFFN 150400Z 27006KT 9999 FEW030 29/23 Q1013 NOSIG= METAR NENA 150400Z 06010KT 9999 SCT024 27/22 Q1015= METAR NFFT 150400Z 09009KT 9999 BKN016 BRN280 24/22 Q1019= METAR NFTV 150400Z 09009KT 9999 FEW018 SCT290 26/22 Q1016= METAR NFTU 150400Z 09013KT 9999 FEW018TCU SCT110 BRN300 30/24 Q1010= METAR NFTA 150400Z 08011KT 9999 SCT015CU 31/25 Q1009= METAR NIUE 150400Z 11018KT 9999 FEW018 SCT110 25/20 Q1017= METAR NFSF 150400Z 08005KT 9999 SCT020 BRN150 29/26 Q1012= METAR NVSS 150400Z NIL= METAR NVVV 150400Z NIL= METAR PLCH 150400Z 09006KT 9999 FEW020 28/22 Q1010= METAR NFFL 150400Z 09016KT 9999 SCT017 BRN280 26/21 Q1017=           </pre>				

Translated IWXXM Fiji METAR

The screenshot shows a software interface with a table of products and a detailed view of a specific product.

TTAAII	CCCC	YYGGgg	BBB	Reception Date	Type	Product Title
LAPS31	NFFN	15000		2021-06-15 05:15:12	X	IWXXM METAR - Aerodrome Weather Observation
LAPS31	NFFN	15040		2021-06-15 04:49:59	X	IWXXM METAR - Aerodrome Weather Observation
LAPS31	NFFN	150200		2021-06-15 02:01:36	X	IWXXM METAR - Aerodrome Weather Observation
LAPS31	NFFN	140350		2021-06-14 05:50:51	X	IWXXM METAR - Aerodrome Weather Observation
LAPS31	NFFN	140330		2021-06-14 05:32:43	X	IWXXM METAR - Aerodrome Weather Observation
LAPS31	NFFN	140426		2021-06-14 04:25:25	X	IWXXM METAR - Aerodrome Weather Observation
LAPS31	NFFN	140425		2021-06-14 04:23:21	X	IWXXM METAR - Aerodrome Weather Observation
LAPS31	NFFN	140420		2021-06-14 04:20:40	X	IWXXM METAR - Aerodrome Weather Observation
LAPS31	NFFN	140410		2021-06-14 04:11:18	X	IWXXM METAR - Aerodrome Weather Observation
LAPS31	NFFN	140300		2021-06-14 03:00:44	X	IWXXM METAR - Aerodrome Weather Observation

**Product Details**  
 Product Title: IWXXM METAR - Aerodrome Weather Observation  
 LAPS31 NFFN 150400  
 <?xml version="1.0" encoding="UTF-8" standalone="yes"?>  
 <collect:MeteorologicalBulletin gml:id="uaid.5a70bc50-236f-49ef-bf24-b04ad9713ad9" xsi:schemaLocation="http://def.wmo.int/collect/2014 http://icao.int/iwxxm/3.0 http://www.isotc211.org/2005/gco http://www.opengis.net/om/2.0 http://www.opengis.net/samplingSpatial/2.0 http://www.opengis.net/gml/3.2 http://def.wmo.int/metce/2013 http://www.aisx.aero/schema/5.1.1 http://def.wmo.int/opm/2013 http://www.opengis.net/sampling/2.0 http://www.isotc211.org/2005/gmd http://www.w3.org/2001/XMLSchema-instance http://www.isotc211.org/2005/gts http://www.isotc211.org/2005/gsr http://www.w3.org/1999/xlink http://www.isotc211.org/2005/gsa" xmlns:aisx="http://www.aisx.aero/schema/5.1.1" xmlns:iwxxm="http://icao.int/iwxxm/3.0" xmlns:metce="http://def.wmo.int/metce/2013" xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:gts="http://www.isotc211.org/2005/gts" xmlns:opm="http://def.wmo.int/opm/2013" xmlns:collect="http://def.wmo.int/collect/2014" xmlns:om="http://www.opengis.net/om/2.0" xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gsa="http://www.w3.org/2001/XMLSchema-instance">  
 <collect:MeteorologicalInformation>  
 <iwxxm:METAR automatedStation="true" reportStatus="NORMAL" permissibleUsage="OPERATIONAL" translatedBulletinID="SINGLE\_REPORT" translatedBulletinReceptionTime="2021-06-15T04:49:59.000Z" translationCentreDesignator="PCCW" translationCentreName="PCCW Global" translationTime="2021-06-15T04:49:59.000Z" gml:id="uaid.6d607bfc-0970-476d-b7b9-4ee2ec087d">  
 <gml:identifier codeSpace="urn:uuid:">6319fb04-ca2e-48d3-8967-8cdfe119aac</gml:identifier>  
 <gml:location>  
 <gml:Point srsName="http://www.opengis.net/def/crs/EPSG/0/4326" srsDimension="2" axisLabels="Lat Lon" gml:id="uaid.e37e036a-ec94-4665-9ed6-ce2bd0c0ffcd">  
 <gml:pos>21.2012556 -159.7990444</gml:pos>  
 </gml:Point>  
 </gml:location>  
 </iwxxm:issueTime>

2. Check the Message Terminal to see the IWXXM Message Has Arrived.

The screenshot shows an email client interface with an inbox and a detailed view of a selected message.

**Inbox** Selected: 1

N	U	Pri	Originator	Subject	Date
	A	XL	PCCWS...	LTPS31 NFFN 150500	2021-06-15 05:28:35
	A	XL	PCCWS...	LAPS31 NFFN 150500	2021-06-15 05:15:12
	A	XL	PCCWS...	LAPS31 NFFN 150400	2021-06-15 04:49:59
	A	XL	PCCWS...	LAPS31 NFFN 150200	2021-06-15 02:01:36
	A	XL	PCCWS...	LAPS31 NFFN 140550	2021-06-14 05:50:51
	A	XL	PCCWS...	LAPS31 NFFN 140530	2021-06-14 05:32:43
	A	XL	PCCWS...	LAPS31 NFFN 140426	2021-06-14 04:25:26

**LAPS31 NFFN 150400**

**From:** PCCWSWAM <JC=XX/ADMD=ICAO/PRMD=PCCW/O=GLOBAL/OU=PCCW/CN=PCCWSWAM/>  
**Submission Time:** 2021-06-15 04:49:59 **Delivery Time:** 2021-06-15 04:49:59 **Priority:** Non-Urgent

Message Text Recipients Attachments

Type	Size	File Name
Compressed IWXXM	5913	A_LAPS31NFFN150400_C_NFFN_20210615044959.xml.gz

Selected message: LAPS31 NFFN 150400 Wed, 16 Jun 2021 07:43:40 UTC

3. Every time a TAC comes in from NFFN, the SWIM graphical user interface parses it:



2.4 Summary – PCCW IWXXM Translation and Exchange service provides the flexibility and reliability to acquire MET data in TAC and IWXXM formats from multiple designated sources and the processing functionality to validate, store and redistribute the data, along with the ability to display it on web interface via the CRV private network.

Please visit below link to learn more about PCCW CRV & SWIM Services: -

<https://youtu.be/iPd941AV0pQ>

### 3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information contained in this paper and
- b) Discuss any relevant matter as appropriate
- c) Enquiry for the trial of PCCW IWXXM Translation and Exchange Services – please contact Bono Ng - bcng@pccwglobal.com

-----