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INFORMATION PAPER

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Agenda Item 4: Meteorological information exchange in digital form

IWXXM IMPLEMENTATION AND MONITORING IN HONG KONG, CHINA

(Presented by Hong Kong, China)

SUMMARY

This paper presents the recent update and monitoring with regard to implementation of OPMET exchange in ICAO Meteorological Information Exchange Model (IWXXM) in Hong Kong, China.

1. INTRODUCTION

1.1 Hong Kong Observatory (HKO), as the Meteorological Service Provider, takes the role of an "IWXXM Producer" and generates OPMET data in IWXXM version 3.0 from source. HKO also joined hands with Hong Kong Regional OPMET Centre (ROC) of Hong Kong Civil Aviation Department (HKCAD) in developing IWXXM translation and aggregation services and supporting IWXXM exchange over AMHS since November 2020 as presented in MET SG/24 – IP/23 and MET/IE WG/19 – IP/08. The following sections introduce the recent update and monitoring results regarding the implementation of IWXXM exchange in Hong Kong China.

2. DISCUSSION

Auto-notification of IWXXM validation failure to originating centre

2.1 IWXXM aggregation software for ROC Hong Kong was enhanced in April 2021 to generate an automatic e-mail notification (Figure 1) to originating centre in case an IWXXM report prepared by its NOC could not pass the IWXXM validation test. The notification includes the validation error message and an attachment of the associated IWXXM report to facilitate timely rectifying actions for improving IWXXM message quality.

Monitoring of translation service

2.2 ROC Hong Kong has been translating OPMET data disseminated by Manila NOC and Macao NOC from TAC to IWXXM. The monitoring results of the TAC-IWXXM translation of METAR/SPECI and TAF by individual aerodromes as well as the SIGMET of Manila FIR during

January to December 2021 is shown in Table 1. The overall translation success rates for METAR/SPECI and TAF were above 98%, while that for SIGMET was about 94%.

2.3 Figure 2(a) shows that the trends of monthly translation success rate for METAR/SPECI and TAF were relatively stable in 2021. The translation success rate for SIGMET increased in Q2 2021 as the translation software was enhanced to improve the translation capability for WC SIGMET, including those in the new format defined in Amendment 79 of Annex 3.

Monitoring of validation service

2.4 ROC Hong Kong conducted validation of IWXXM messages for individual aerodrome received from NOC before it was accepted for aggregation and dissemination to ensure the IWXXM message quality for operational use by user systems.

2.5 The monitoring results of IWXXM validation for incoming METAR/SPECI and TAF by individual aerodromes during January to December 2021 are also summarized in Table 1. The overall validation success rate for METAR/SPECI was about 95%, while the success rate for TAF was 100% for most of the aerodromes.

2.6 Figure 2(b) shows the trend of monthly validation success rate for METAR/SPECI and TAF in 2021. The validation success rate for METAR/SPECI increased during May to June 2021 as the launch of the automatic notification to IWXXM message originator mentioned in para. 2.1 successfully facilitated the rectification of issues in May 2021. The validation success rate for METAR/SPECI has reached 100% since June 2021.

Updated AMHS path for IWXXM dissemination

2.7 Hong Kong China continued to disseminate IWXXM reports directly to the ROCs Singapore, Kuala Lumpur, Brisbane and Wellington through the following operational AMHS paths passing through Manila to supplement official dissemination path to ensure that aggregated IWXXM TAF messages of about 10 KB disseminated by ROC Hong Kong could reach the respective ROC destinations.

2.8 In addition, Hong Kong China has started to routinely disseminate IWXXM message also to ROC Beijing and ROC Tokyo since December 2021 and March 2022 respectively after successful tests.

Destination (ROC)	AMHS path	Type of IWXXM report	Status
Bangkok	VHHH-VTBB	METAR/SPECI, SIGMET	Operational
Singapore	VHHH-RPLL-WSSS	METAR/SPECI, TAF, SIGMET	Operational
Kuala Lumpur	VHHH-RPLL-WSSS-WMKK	METAR/SPECI, TAF, SIGMET	Operational
Brisbane	VHHH-RPLL-WSSS-YBBB	METAR/SPECI, TAF, SIGMET	Operational
Wellington	VHHH-RPLL-WSSS-YBBB-NZCH	METAR/SPECI, TAF, SIGMET	Operational
Tokyo	VHHH-RJJJ	METAR/SPECI, TAF, SIGMET	Operational
Beijing	VHHH-ZBBB	METAR/SPECI, TAF, SIGMET	Operational trial

Experience sharing on number of body part of AMHS messages for IWXXM exchange

2.9 During the test phase of bilateral IWXXM exchange, ROC Hong Kong observed that the AMHS messages carrying IWXXM reports received from some ROCs generally contained two file body parts, i.e. one for message body text and the other for attachment file. As defined in Section 2.3 in the Appendix A of *Guidelines for the Implementation of OPMET Data Exchange using IWXXM*, the

AMHS messages for IWXXM exchange shall contain exactly one body-part which is an FTBP, i.e. IWXXM attachment only without any text body. Also, it is suggested ROCs heading for IWXXM implementation to support the requirement of IPM Heading Extension (IHE) and File Transfer Body Part (FTBP) as the functional groups of AMHS to ensure the AMHS systems and User Agents (UAs) could receive and forward the IWXXM messages properly.

Future plans

2.10 HKO is now upgrading the IWXXM generation and translation software to support IWXXM version 2021-2[*]. HKO would also develop web service interfaces for local airline users to retrieve IWXXM reports based on their operational workflow.

2.11 The HKCAD AMHS will be upgraded appropriately to facilitate the seamless relaying of IWXXM bulletins from other ROCs to NOCs.

2.12 Hong Kong China will continue to conduct further IWXXM exchange with other NOCs, ROCs and RODBs to facilitate the international exchange of IWXXM bulletin via AMHS in the APAC Region.

3. ACTION BY THE MEETING

3.1 Note the information contained in this paper.

3.2 Consider the next steps to monitor the OPMET exchange in IWXXM and IWXXM message quality in the APAC Region.

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[*] IWXXM version 2021-2 published in Nov 2021 supports the information and reporting requirements in Amendments 79 and 80 to ICAO Annex 3. A table showing the versions of IWXXM and its individual packages (e.g. METAR/SPECI) and their relationships to ICAO Annex 3 requirements can be found at: https://github.com/wmo-im/iwxxm/wiki/Package-Compatibility

Table 1: Success rate of IWXXM translation service and IWXXM validation service provided by ROC Hong Kong during January to December 2021

ROC HONG KONG IWXXM SERVICE	PRODUCT TYPE	LOCATION	Jan-Dec 2021		
			Total	Fail	Success Rate
Translation of TAC messages from NOC	METAR/SPECI	RPLB	8865	77	99.1%
		RPLI	6612	122	98.2%
		RPLL	9063	105	98.8%
		RPMD	8753	79	99.1%
		RPMZ	6218	74	98.8%
		RPVM	8694	162	98.1%
		VMMC	17671	9	99.9%
	TAF	RPLB	1454	10	99.3%
		RPLI	1455	5	99.7%
		RPLL	1468	18	98.8%
		RPMD	1446	3	99.8%
		RPMZ	1449	13	99.1%
		RPVM	1433	5	99.7%
		VMMC	1524	1	99.9%
	SIGMET	RPHI	2474	152	93.9%
Validation of IWXXM messages from NOC	METAR/SPECI	RCFN	19118	288	98.5%
		RCKH	20465	588	97.1%
		RCMQ	21123	991	95.3%
		RCNN	20030	635	96.8%
		RCSS	20555	464	97.7%
		RCTP	20997	957	95.4%
	TAF	RCFN	1487	0	100.0%
		RCKH	1546	0	100.0%
		RCMQ	1623	0	100.0%
		RCNN	1520	1	99.9%
		RCSS	1548	0	100.0%
		RCTP	1576	0	100.0%

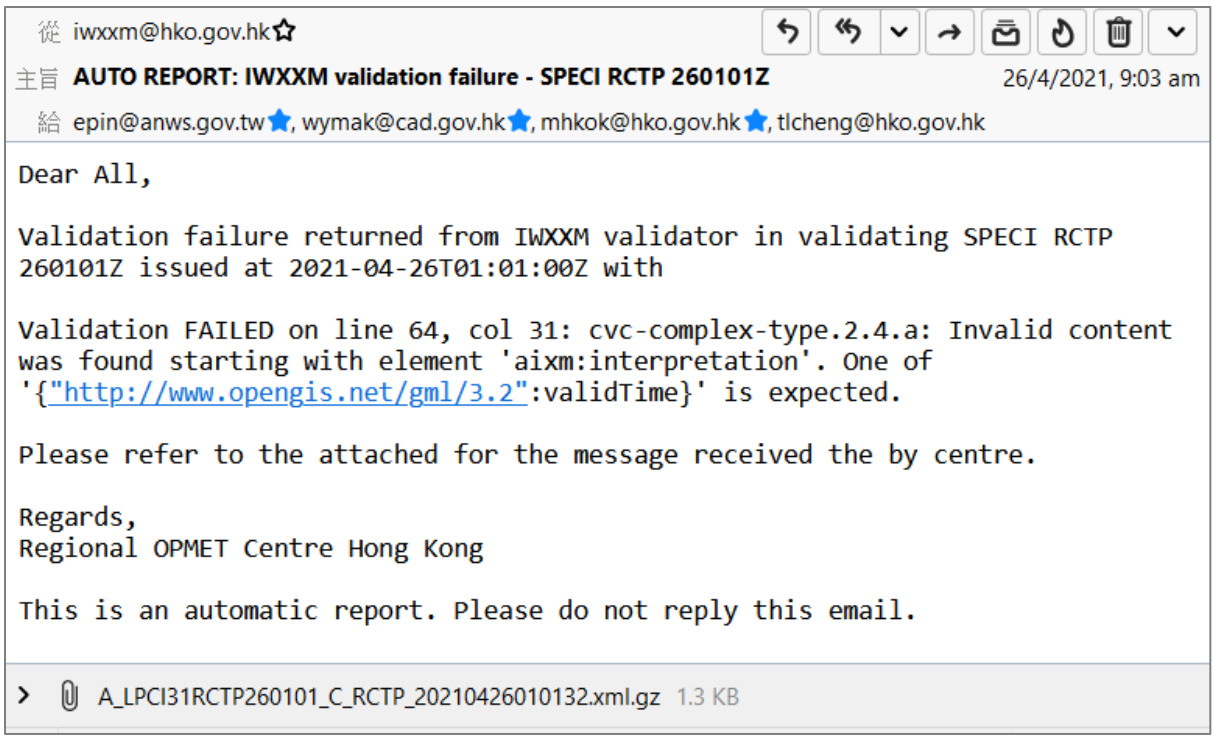
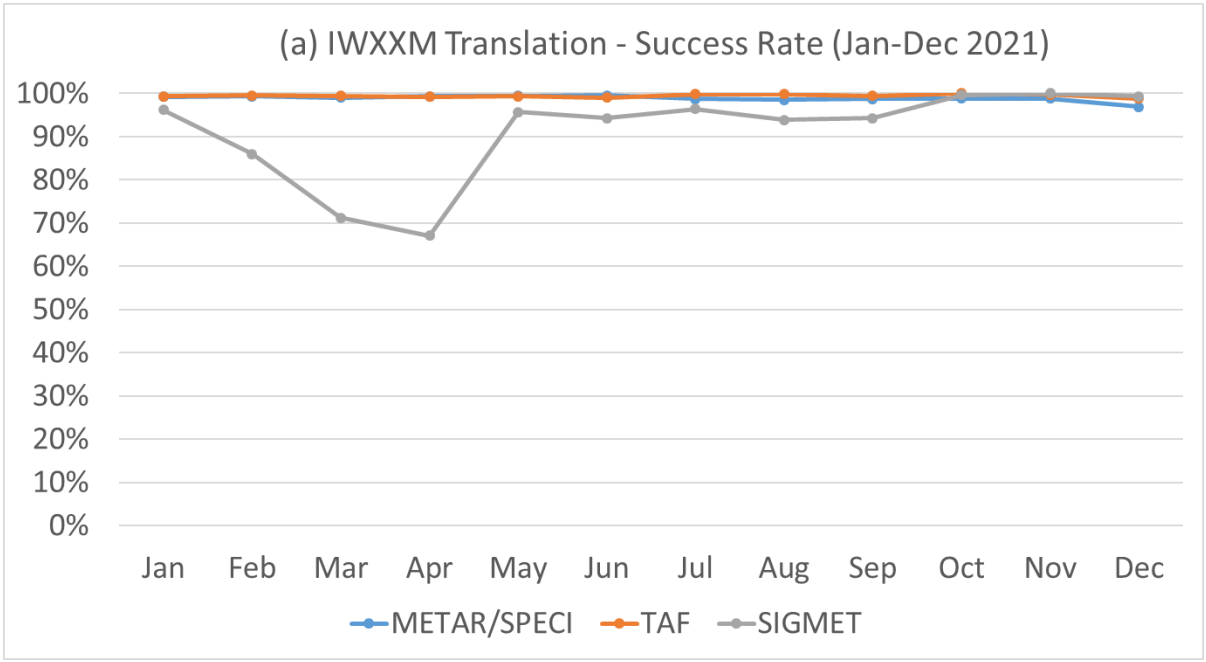


Figure 1: Automatic email notification of IWXXM validation failure to originating centre provided by ROC Hong Kong.



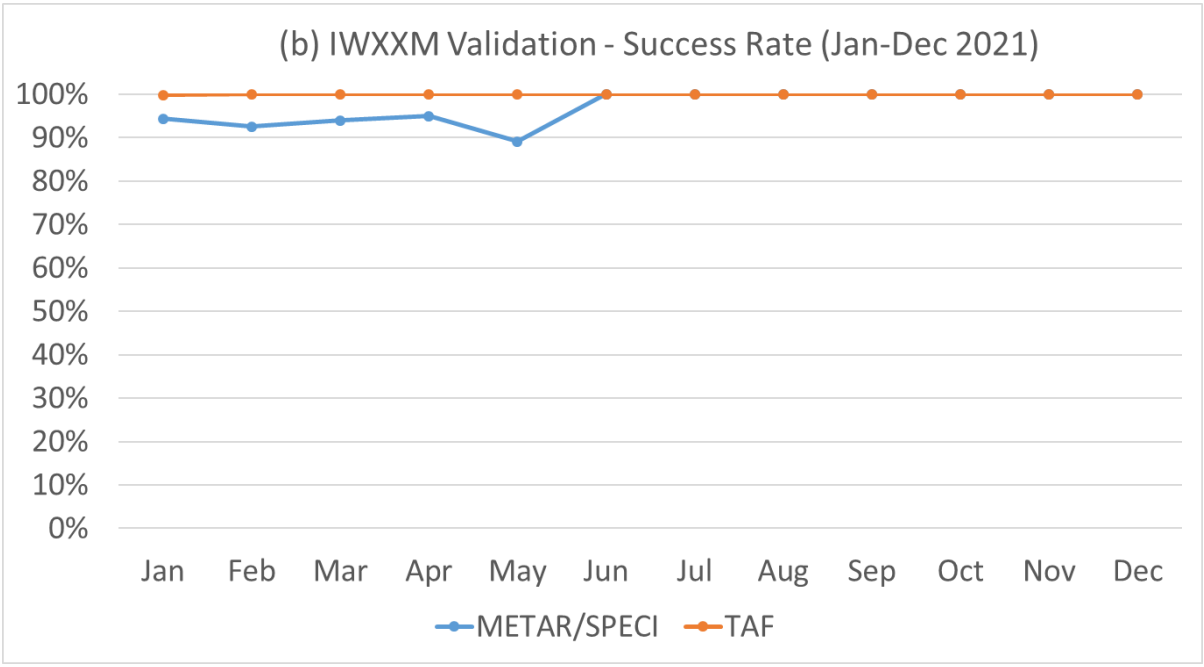


Figure 2: Time series of success rate of (a) IWXXM translation service and (b) IWXXM validation service provided by ROC Hong Kong during January to December 2021