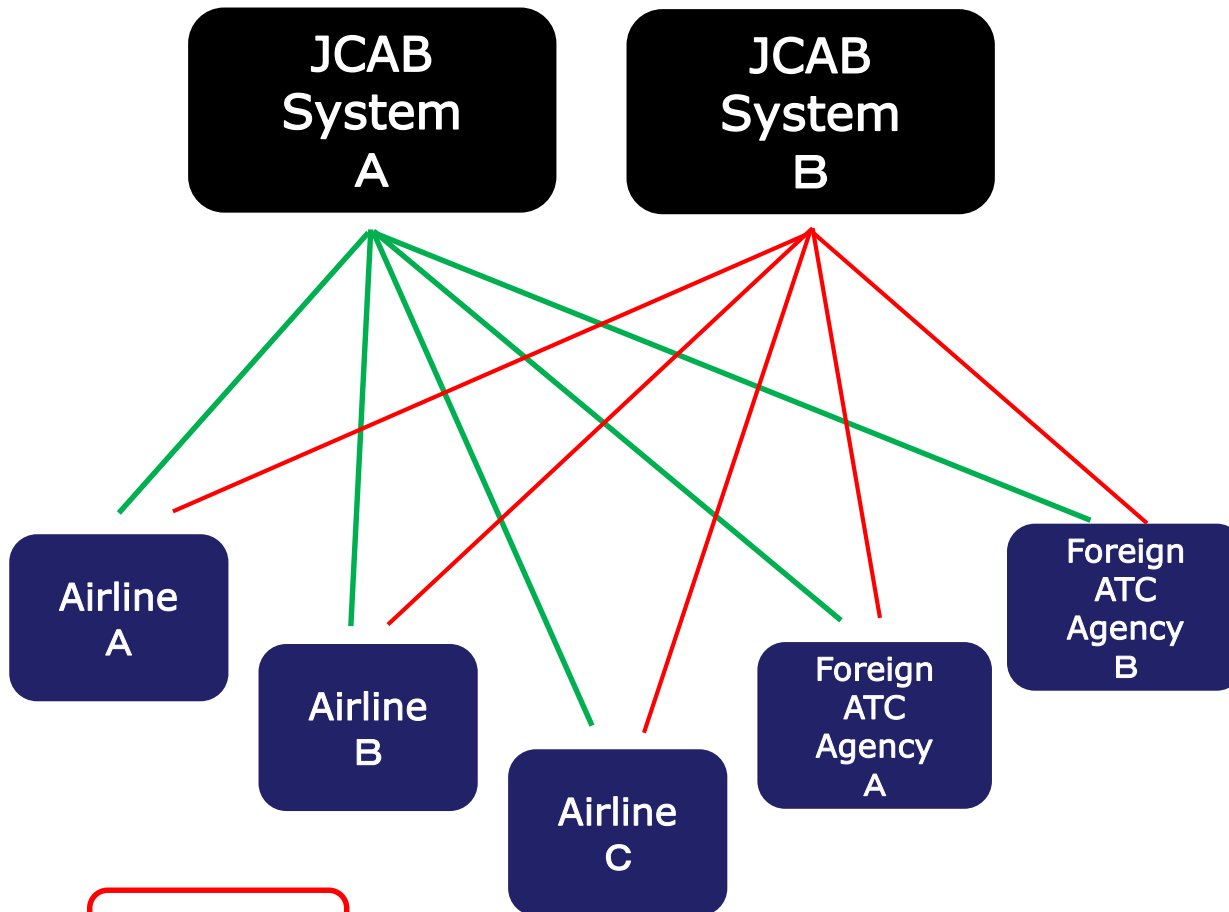


Introduction of System Wide Information Management (SWIM) in JAPAN

ICAO APAC SWIM Seminar
(Bangkok, Thailand, 08 May 2023)

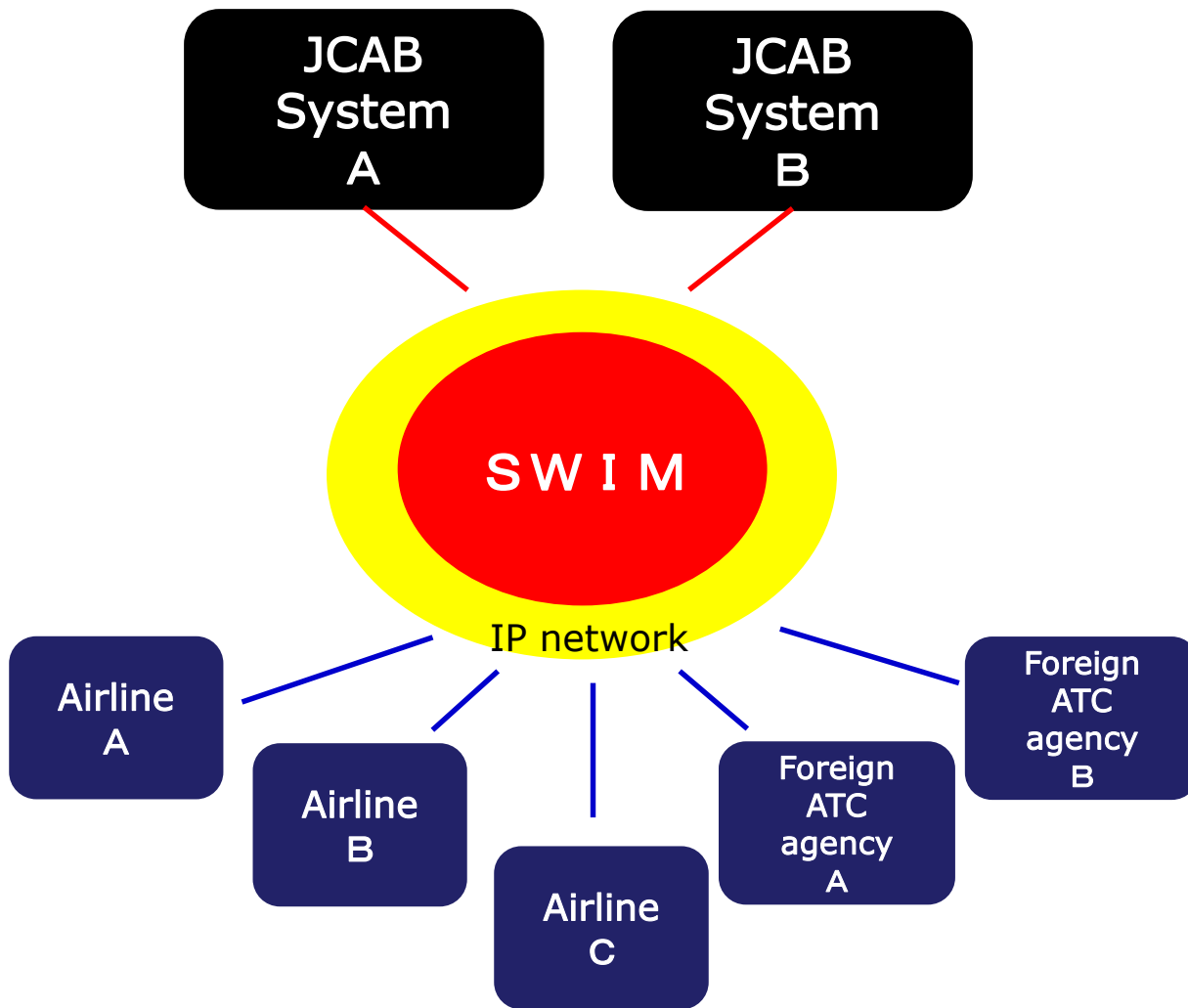


Current status

- Information sharing with external agencies, such as airlines and foreign ATC agencies, is performed through "one-to-one" connections using individual interfaces and dedicated lines from multiple JCAB systems.
- In addition, information sharing is text-based, using special communication procedures defined by ICAO in 1950's, and modern IT technology cannot be fully utilized.
- Therefore, in principle, both parties must confirm the contents of the information by a person when using it.

Issues

It is not possible to improve ATM operations to accommodate increasing air traffic or to interoperate with neighboring countries.



Solutions

- Information is shared via SWIM with external organizations, such as airlines and foreign ATC agencies, and related systems are connected in a "many-to-many" manner.
- Specifically, the use of a common interface and IP network utilizing Internet technology, as well as the digitization of information, will create an environment in which modern IT technology can be used.
- This facilitates automated information processing and improves the efficiency and safety of information transfer among the parties involved.

It will be possible to support the realization of measures for the growing air traffic, such as the realization of Trajectory Based Operations.

What is SWIM?

SWIM (System Wide Information Management) is an information sharing platform, and innovative and efficient management and operation of air traffic is facilitated when those involved in aviation have access to the information they need, in the way they need it.

What will SWIM bring to the aviation community?

- ✓ SWIM provides a uniform interface for real time, relevant, and reliable information on aviation, flight operation, and weather, enabling users to use such information more quickly and accurately.
- ✓ SWIM provides standards and policies to achieve interoperability between aviation systems.



SWIM contributes to the **"Transformation"** of future air traffic systems.



SWIM is the **"Hub"** for sharing the **"Digital Data"** necessary for future air traffic systems.



Access to information that will transform the aviation community is:

SWIM

4. Our History of SWIM Implementation

SWIM briefing session (2017)

- Brief description of "What is SWIM?"
- Introduction of case studies in Europe and the U.S.
- Questionnaire survey

SWIM introduction study group (2018)

- User needs survey
- Initial service study
- Examination of SWIM system
- Review and consensus of an introduction plan → Service to start in 2024

SWIM initial service briefing session (2020)

- Brief description of initial service (concept)
- Description of Service Overview

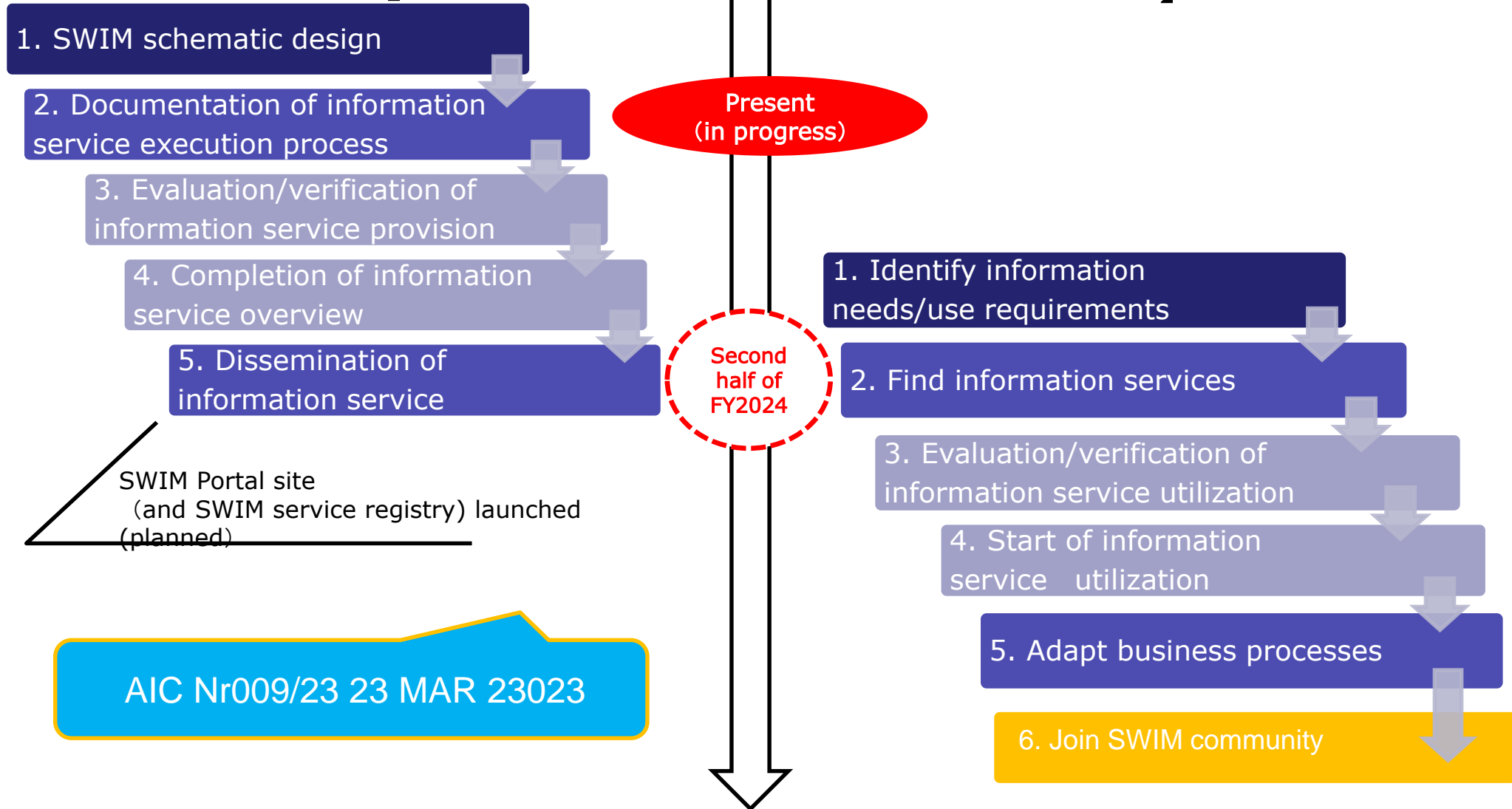
《JCAB》 Schematic design to build SWIM (2019)

- Initial service design
- SWIM system design

5. Our steps to start SWIM

【Steps on the service provider side】

【Steps on the service user side】



6.Preparatory Meeting for SWIM

Now ~APR 2023

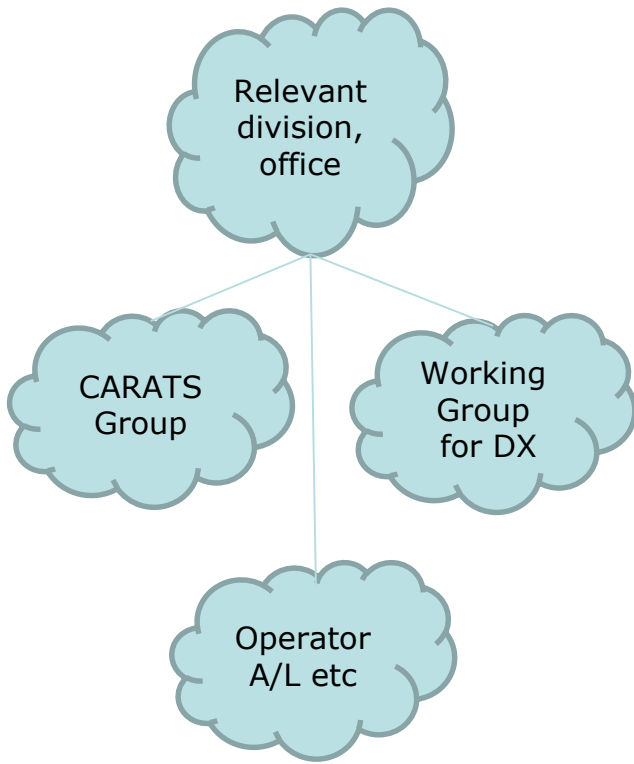


Preparation for SWIM
MAY 2023~DEC 2024

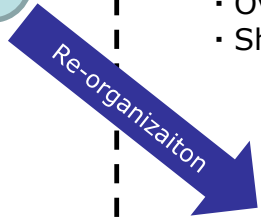
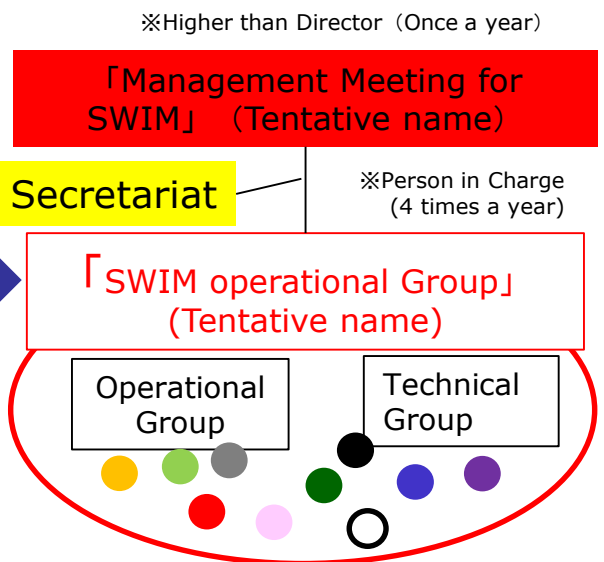
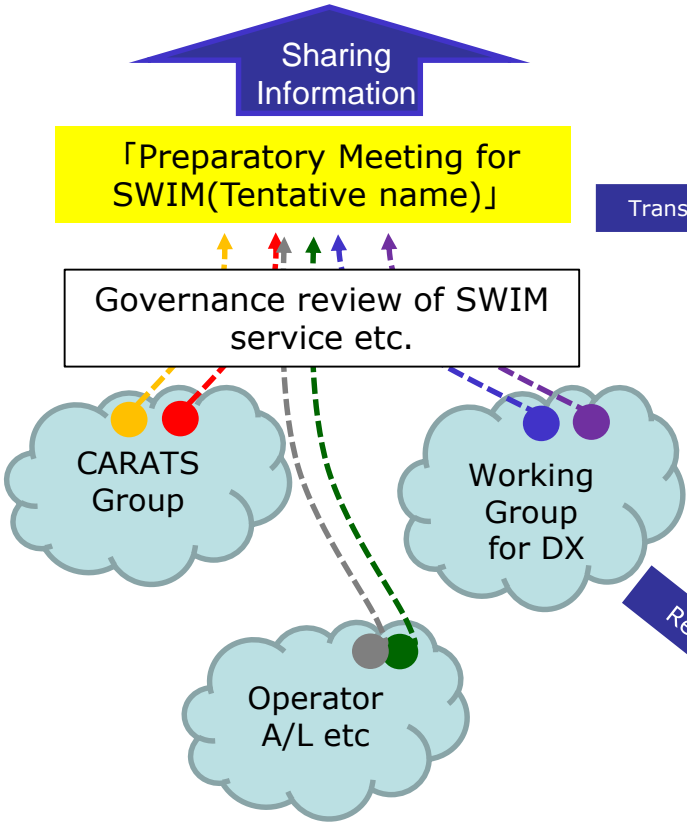


System Operation

Investigation meeting for SWIM



CARATS WG



- Improvement and Request
- Overall operation of service cycle
- Sharing of operational issues etc

Cases that can not be sorted out by SWIM service

7. Lessons Learned for SWIM initial service

STEP1

Be aware of the specific needs.

STEP2

Build a system, without basic operational concept.

STEP3

Get the understanding of SWIM outline for only some stakeholders.

STEP4

Announce to ALL users just before operation starting.

STEP1

Be aware of the various needs.

STEP2

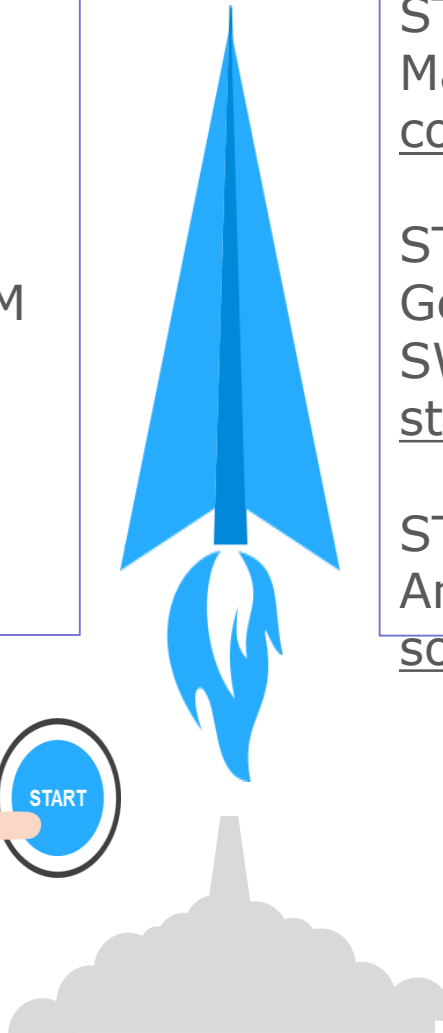
Make an basic operational concept, then build a system.

STEP3

Get the understanding of SWIM outline for many stakeholders.

STEP4

Announce to ALL users as soon as possible.



Surely one by one

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JAPAN
MINISTRY OF LAND, INFRASTRUCTURE,
TRANSPORT AND TOURISM
CIVIL AVIATION BUREAU
AERONAUTICAL INFORMATION SERVICE CENTER

AIC
Nr 009/23
23 MAR 2023

009/23
新しい情報サービスの導入について

009/23
Introduction of New Information Services

- 背景及び目的
国土交通省航空局は、2025年第一四半期をめどに、SWIM (System Wide Information Management) コンセプトに基づく新しい情報サービスの提供を開始する予定である。
- 導入予定のサービスならびにその概要
提供予定のサービスは、別表1及び2のとおり。別表1に記載のサービスは、国土交通省航空局から利用者へのB2Bサービスであり、別表2に記載のサービスは、WEBブラウザによる提供である。

(別表1)

情報の種類	サービスの名称	サービスの概要	メッセージ交換パターン	情報交換モデル
航空情報	デジタル NOTAM 登録サービス *1	NOTAM 事項通報の AIXM フォーマットでの登録サービス	Request/Reply	AIXM5.1.1
	デジタル NOTAM 配信サービス	NOTAM の AIXM フォーマットでの配信サービス	Publish/Subscribe	AIXM5.1.1
	デジタル NOTAM リクエストサービス *1	NOTAM の AIXM フォーマットでのリクエストサービス	Request/Reply	AIXM5.1.1
	AIP データ配信サービス	AIP 及び障害物データの AIXM フォーマットでの配信サービス	Publish/Subscribe	AIXM 5.1.1
空港情報	ATIS 情報配信サービス	ATIS 情報の XML フォーマットでの配信サービス	Publish/Subscribe	XML
	ATIS 情報リクエストサービス *1	ATIS 情報の XML フォーマットでのリクエストサービス	Request/Reply	XML
パイレップ情報	C-PIREP*2 登録サービス *1	C-PIREP 情報の XML フォーマットでの登録サービス	Request/Reply	XML
	C-PIREP 配信サービス	C-PIREP 情報の XML フォーマットでの配信サービス	Publish/Subscribe	XML
	C-PIREP リクエストサービス	C-PIREP 情報の XML フォーマットでのリクエストサービス	Request/Reply	XML
気象情報	気象情報配信サービス	気象情報の XML フォーマットでの配信サービス	Publish/Subscribe	XML

情報の種類	サービスの名称	サービスの概要	メッセージ交換パターン	情報交換モデル
運航情報	フライトプラン登録サービス *1	FIXM フォーマットでのフライトプラン登録サービス	Request/Reply	FIXM 4.2
	ATS 情報配信サービス	XML フォーマットでの運航情報配信サービス	Publish/Subscribe	XML
	ATS 情報リクエストサービス	XML フォーマットでの運航情報リクエストサービス	Request/Reply	XML
複合的な情報の提供	パッケージリクエストサービス	航空情報・気象情報を合成し、テキスト情報を提供するサービス	Request/Reply	XML
その他の文字情報	メッセージ Web メールサービス *1	サービス報 (AIXM, WXXM, FIXM フォーマット以外のメッセージ) を交換するサービス	Request/Reply	XML

- * 1 本サービスは WEB ブラウザからの利用も可能である。
- * 2 C-PIREP (Common PIREP) とは、運航者が個々に保有する乱気流及び着水情報に係る機長報告を、会社及び機関の枠を超えて共有化し相互に利用可能とした情報をいう。

(別表2)

情報の種類	サービスの名称	サービスの概要
航空情報	AIP ファイルダウンロードサービス	AIP の PDF ファイルをダウンロードするサービス
	AIP 閲覧サービス	AIP の閲覧を行うためのサービス
複合的な情報の提供	空港プロファイルサービス	空港に関する運航情報・航空情報・気象情報を合成し、Web ブラウザ向けに提供するサービス
	空域プロファイルサービス	空域に関する運航情報・航空情報・気象情報を合成し、Web ブラウザ向けに提供するサービス
空港スロット情報	スロットリクエストサービス	空きスロットの確認及び予約を行うサービス

略語：
AIXM Aeronautical Information Exchange Model
B2B Business to Business
FIXM Flight Information Exchange Model
IWXXM ICAO Meteorological Information Exchange Model

3. 問い合わせ先
国土交通省航空局交通管制部運用課
E-Mail : hqt-jcab-swim@ki.mlit.go.jp

1. Background and purpose

Japan Civil Aviation Bureau (JCAB) plans to start providing a new information service based on the SWIM (System Wide Information Management) concept in the first quarter of 2025.

2. Information Services to be introduced and its overview

Listed in Table 1 are B2B services and in Table 2 are provided only on the web browser by JCAB.

(Table 1)

Type of Information	Service Name	Service Overview	Message Exchange Pattern	Information Exchange Model
Aeronautical Information	Digital NOTAM Registration Service ^{*1}	Registration service of candidate NOTAM in AIXM format	Request/Reply	AIXM5.1.1
	Digital NOTAM Distribution Service	Distribution service of NOTAM in AIXM format	Publish/Subscribe	AIXM5.1.1
	Digital NOTAM Request Service ^{*1}	Request service of NOTAM in AIXM format	Request/Reply	AIXM5.1.1
	AIP Data Distribution Service	Distribution service of AIP and Obstacle data in AIXM format	Publish/Subscribe	AIXM 5.1.1
Terminal Information	ATIS Information Distribution Service	Distribution service of ATIS information in XML format	Publish/Subscribe	XML
	ATIS information Request Service ^{*1}	Request service for ATIS information in XML format	Request/Reply	XML
PILOT REPORT Information	C-PIREP ^{*2} Registration Service ^{*1}	Registration service for C-PIREP information in XML format	Request/Reply	XML
	C-PIREP Distribution Service	Distribution service of C-PIREP information in XML format	Publish/Subscribe	XML
	C-PIREP Request Service	Request service of C-PIREP information in XML format	Request/Reply	XML
Weather Information	Weather Information Distribution Service	Distribution service of weather information in XML format	Publish/Subscribe	XML
Flight Information	Flight Plan Filing Service ^{*1}	Flight plan registration service in FIXM format	Request/Reply	FIXM 4.2
	ATS Information Distribution Service	Flight information distribution service in XML format	Publish/Subscribe	XML
	ATS Information Request Service	Flight information request service in XML format	Request/Reply	XML
Providing complex information	Package Request Service	Service that synthesizes Aeronautical information and weather information and provides it in text information	Request/Reply	XML
Other Information	Message Webmail Service ^{*1}	Service for exchanging service information (messages other than AIXM, WXXM, and FIXM formats)	Request/Reply	XML

^{*1} These services can also be used in web browser.

^{*2} C-PIREP (Common PIREP) is a captain's report for turbulence and icing information held by individual operators, and is information that is shared among concerned parties for mutual use.

(Table 2)

Type of information	Service name	Service overview
Aeronautical Information	AIP file download Service	Service to download PDF files of AIP
	AIP browsing Service	Service for browsing AIP
Providing complex information	Airport Profile Service	Service that synthesizes flight information, Aeronautical information, and weather information related to airports and provides it in web browsers
	Airspace Profile Service	Service that synthesizes flight information, Aeronautical information, and weather information related to airspace and provides it in web browsers
Airport SLOT	Slot Request Service	Service for confirming and reserving vacant slots

ABBREVIATIONS AND ACRONYMS:

AIXM Aeronautical Information Exchange Model
 B2B Business to Business
 FIXM Flight Information Exchange Model
 WXXM ICAO Meteorological Information Exchange Model

3. Contact information

For more information, please contact following:
 Operations and Flight Inspection Division,
 Air Navigation Services Department, Japan Civil Aviation Bureau,
 Ministry of Land, Infrastructure, Transport and Tourism
 Email: hqt-jcab-swim@ki.mlit.go.jp

*Thank you so much
for your kind attention.*

