International Civil Aviation Organization

SEVENTH MEETING OF THE ASIA/PACIFIC AIR TRAFFIC MANAGEMENT AUTOMATION SYSTEM TASK FORCE (ATMAS TF/7)

Bangkok, Thailand 2-4 June 2026

Agenda Item 2: Review of Outcomes of Relevant Meetings

OUTCOMES OF SWIM TF/11

(Presented by the Secretariat)

SUMMARY

The paper presents the relevant outcomes of the Eleventh Meeting of the System Wide Information Management Task Force (SWIM TF/11).

1. INTRODUCTION

1.1 The Eleventh Meeting of the System Wide Information Management Task Force (SWIM TF/11) was held from **25 – 29 May 2026** in the ICAO APAC Regional Office, Bangkok, Thailand. The Meeting was attended by **100** participants from **16** Member States/Administrations and **3** International Organisations. The Meeting report, working papers, information papers, and other resources can be accessed by the following link:

https://www.icao.int/APAC/meetingdocs?fid=60121

1.2 This paper summarises relevant information and updates from the SWIM TF/11 Meeting.

2. DISCUSSION

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

Outcomes of ANSIA TF/1 – Sec (WP/04)

2.2 ICAO Secretariat presented the discussions and relevant outcomes of the First Meeting of the ANS Information Assurance Task Force (ANSIA TF/1), which was held from **28 to 30 January 2026** in the ICAO APAC Regional Office, Bangkok, Thailand. The Meeting report, working papers, information papers, and other resources can be accessed by this link.

2.3 It was noted that after Decision CNS SG/29/14 made by CNS SG/29 in 2025 for the creation of ANS Information Assurance Task Force (ANSIA TF), it was agreed that the ANSIA TF would prepare the draft Terms of Reference (ToR), its key deliverables, and plan in close coordination with CRV OG, ACSICG, SWIM TF, TFP Secretary and IMP Secretary. After CNS SG/29, with the collaborative efforts of ANSIA TF experts, the first draft of the ToR was finalised. The ANSIA TF/1

reviewed and modified the draft ToR, and the *Draft Decision ANSIA TF/1/1 – Adoption of Terms of Reference (ToR) of the ANS Information Assurance Task Force (ANSIA TF)* was endorsed by the ANSIA TF/1 for CNS SG/30 adoption.

2.4 The Meeting noted the following three work packages formulated by ANSIA TF/1 and their plan for the way forward:

1. Scoping the regional trust framework
2. Developing PKI and governance arrangements
3. Selecting use cases of regional interest

2.5 It was informed that each of these work packages needs a Statement of Work (SOW) to be elaborated with a scope statement, associated tasks, deliverables and proposed timelines. The Meeting noted the following volunteer States to participate in each work package of the ANSIA TF.

SN	Work Package (WP)	Volunteer States	Work Package Lead
1.	**WP01**- Scoping the regional trust framework	China, Fiji, India, Japan, Malaysia, Philippines, Singapore, Thailand, Tonga and the United States	Singapore
2.	**WP02-** Developing PKI and governance arrangements	Fiji, India, Japan, Philippines, Singapore, Thailand, Tonga and the United States	United States
3.	**WP03-** Selecting use cases of regional interest	Fiji, India, Japan, Philippines, Singapore, Thailand, Tonga, and the United States	India

Table 1- The Work Package of ANSIA TF

2.6 It was added that good progress has been made by **WP01, WP/02 and WP03, leading** to the drafting of the SOW for their work packages. All leads have shared the draft SOW with their work package contributors for review and feedback. The online Meeting of these experts was held on **14 May 2026**. The online Meeting reviewed and finalised the SOW, as well as outlined the next steps to advance the assigned WP.

2.7 The Meeting noted that, with the establishment of ANSIA TF, Task 3 Security Service under SWIM TF would be more appropriately undertaken by the ANSIA TF. Further discussion on this matter was conducted under the SWIM TF Tasks restructuring.

Asia/Pacific Regional Flight and Flow Information for a Collaborative Environment (FF-ICE) Release 1 Implementation Plan – FF-ICE Ad Hoc Group (WP/09)

2.8 Singapore and Thailand, on behalf of the ICAO APAC FF-ICE Ad-Hoc Group, presented the draft APAC Regional FF-ICE Release 1 Implementation Plan.

2.9 The Meeting noted that the APAC FF-ICE/R1 Plan provides regional guidance for implementing FF-ICE/R1 services, covering operational and technical requirements, and recommends areas of harmonisation for the APAC region (e.g., FF-ICE flight plan (eFPL) validation checks, the interpretation of Filing Status, the Filing Status responses for identified ATFM scenarios). The APAC FF-ICE/R1 Plan highlights that the implementation of SWIM, a key enabler for FF-ICE, within the APAC region, should follow the regionally agreed-upon guidelines, including APAC SWIM Technical

Infrastructure Profiles Version 1.0, and the APAC Common SWIM Information Services, to ensure interoperability and harmonised implementation. The Plan also identifies that interactions between the FF-ICE capable ATM Service Providers (eASPs) and the FF-ICE capable Airspace Users (eAUs) through FF-ICE services are conducted via SWIM-based message exchanges.

2.10 It was also noted that the APAC FF-ICE/R1 Plan specifies the use of Flight Information Exchange Model (FIXM) and the regional Extension to support the digital flight information exchange in a SWIM environment. As agreed by APANPIRG/35 through its Conclusion APANPIRG/35/4, the APAC FF-ICE/R1 Plan identifies that FIXM version 4.3 shall be used as the standard format for the implementation of FF-ICE/R1 services in the APAC region starting from Q3/2026. Additionally, the APAC regional FIXM version 4.3.0 Extension shall be used for cross-border ATFM operations, A-CDM, ATFM/A-CDM integration, and traffic synchronization within the region, as agreed by APANPIRG/36 through its Conclusion APANPIRG/36/12. The change process for the cross-border FIXM operating version used to support system-to-system information exchange via SWIM shall follow the procedure agreed by ATM/SG/13 through its Conclusion ATM/SG/13-5. It was shared that, in FF-ICE operations, eFPL evaluations require checks against restrictions/constraints managed by existing ATM systems; if available, SWIM information services should be used to provide more details of applicable restrictions and constraints.

2.11 The Meeting was informed that the APAC FF-ICE/R1 Plan recommended implementation timeline for APAC as follows:

a) 2030: commencement of technical tests and trials involving eAUs and cross-border eASP interactions;

b) 2031: begin operational tests to identify and resolve any issues; and

c) 2032: full operationalisation of three FF-ICE/R1 services (Filing Service, Flight Data Request Service and Notification Service).

2.12 It was also informed that the draft APAC FF-ICE/R1 Plan, as agreed by the ICAO APAC FF-ICE Ad-Hoc Group in March 2026 was reviewed by the ATFM & A-CDM SG/16 in April 2026. The ATFM & A-CDM SG/16 provided two suggestions: to review paragraph 6.3.6.2.4, in particular the example related to the “ACCEPTABLE” Filing Status, and to consider the inclusion of ATFM Daily Plan (ADP) in the scenarios in the table stipulated in the Appendix C of the Plan.

2.13 The Meeting reviewed the draft APAC FF-ICE/R1 Plan provided in **Appendix A**, particularly the implementation timeline. It was informed that the draft APAC FF-ICE/R1 Plan, including all feedback from ATFM & A-CDM SG/16 and SWIM TF/11, will be submitted to CNS SG/30 (6-10 July 2026) and ATM SG/14 (3-7 August 2026) for approval. Subject to approval by both groups and the availability of Doc 9965 Manual on FF-ICE Vol. II – Implementation Guidance, the draft APAC FF-ICE/R1 Plan will be submitted to APANPIRG/37 (tentatively in November 2026) for endorsement.

2.14 Additionally, the Meeting was informed that the dissolution of the FF-ICE Ad-Hoc group and the establishment of the APAC FF-ICE Implementation Task Force will be proposed to ATM SG. The Implementation Task Force would, *inter alia*, address the transition from FPL2012 to FF-ICE, operations in a mixed-mode environment, and FF-ICE/R1 implementation issues in the APAC region.

2.15 The Meeting shared the concern about the proposed implementation timeline. It was discussed that, if the timeline proposed by the FF-ICE Ad-Hoc Group is based on the assumption that fully operational SWIM would be available by 2030, the proposed three-year period from the commencement of technical tests and trials to the full operationalisation of three FF-ICE/R1 services is highly challenging. It was suggested that the FF-ICE Ad-Hoc group consider testing the FF-ICE R/1 services over the SWIM TI prototype being developed by SIPG, which is expected to be ready by Q2

2027. By doing so, it would allow ample time for services testing, while ensuring that the regional SWIM TI would be able to support the requirements of FF-ICE/R1. For further discussion on the possibility of conducting tests and trials on the regional SWIM TI prototype starting from Q2 2027, it was suggested that the FF-ICE Ad-Hoc group and SIPG first discuss the feasibility of such tests and trials.

2.16 In response to a question regarding the appropriate timeframe for the FF-ICE Ad-hoc Group to initiate coordination with SIPG for testing activities, it was suggested that coordination commence from March 2027, given that the regional SWIM TI prototype is expected to be ready by Q2 2027.

Outcomes of ATFM & A-CDM Steering Group 16 Meeting – ATFM & A-CDM SG Chair (WP/29)

2.17 This paper presented the discussions and relevant outcomes of the Sixteenth Meeting of Air Traffic Flow Management and Airport Collaborative Decision-Making Steering Group (ATFM & A-CDM SG/16), which was held in Bangkok, Thailand, from 6 to 10 April 2026. The Meeting report, working papers, information papers, and other resources can be accessed by the following link: APAC Meetings | International Civil Aviation Organisation.

2.18 It was noted under ATFM & A-CDM SG/16 - *Agenda Item 6b*: *ATFM, A-CDM systems communication – ATFN/AMHS, FIXM, SWIM,* two WPs were discussed:

i. Guidance Material to Assist APANPIRG Subsidiary Groups in Reviewing and Updating the List of APAC Common SWIM Information Services (WP-6b-01)

ii. ATFM FIXM Message Data Attributes and Associated Message Templates Based on FIXM Version 4.3 as Asia/Pacific Regional Standard (WP-6b-02)

2.19 Guidance material provided in ATFM & A-CDM/SG/16 WP-6b-01 Appendix A illustrated the type and level of detail required, including business functionality of the information service, a brief description of the service, type of information to be exchanged, information exchange model/message type, message exchange pattern, and priority. A worked example was included for reference.

2.20 The ATFM & A-CDM SG/16 was informed that APANPIRG subsidiary groups were invited to assess whether existing entries combine multiple business functions and, if so, consider splitting them into more detailed and focused information services. Additionally, the ATFM & A-CDM SG/16 noted that a working draft of the Second Version had been developed, and APANPIRG subsidiary groups were requested to submit updates using “track changes” for consolidation at the SWIM TF/11 (26–29 May 2026).

2.21 The ATFM & A-CDM SG/16 noted the feedback from the APAC FF-ICE Ad-Hoc Group, which emphasised that domain-specific groups should focus on defining business rules and business process completion criteria, while the SWIM TF should determine MEP. The APAC FF-ICE Ad-Hoc Group also recommended inclusion of comprehensive operational scenarios as appendices to the Business Functionality for APAC Common SWIM Information Services document.

2.22 During the discussions at the ATFM & A-CDM SG/16, Singapore and Thailand presented a joint response that aligned with the recommendations of the APAC FF-ICE Ad hoc Group discussion. The response proposed updates to the APAC Common SWIM Information Services related to ATFM, focusing on improving clarity and usability. Key proposals included replacing the existing

"Priority" column with two new columns - "Applicability" and "Desired Implementation Timeframe" – to better reflect operational relevance and implementation planning considerations. It was also noted by the ATFM & A-CDM SG/16 that the current MEP column had created ambiguity between business and technical aspects; therefore, it was proposed that MEP be addressed by the SWIM TF.

2.23 In addition, the ATFM & A-CDM SG/16 agreed with the recommendation by the APAC FF-ICE Ad-Hoc Group to enhance the "Brief description of the service" column by incorporating a reference to a dedicated appendix, to provide detailed use cases and required MEPs. Derived from the existing work of the Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC), **five ATFM information exchange scenarios** related to Flight-Specific ATFM Measure Service and ATFM/A-CDM Integration Service were developed. The finalised scenarios were submitted to SWIM TF/11 for identification of the appropriate MEP. The Meeting reviewed the document and agreed that the proposed content is sufficient for SWIM TF to initiate the identification of MEP.

2.24 The Meeting discussed whether the receipt confirmation for ATFM messages identified in the five scenarios is required, as this would affect the selection of the MEP. It was clarified that, apart from ATFM units, airspace users, and airport operators, confirmation is not required. Furthermore, the Meeting discussed whether all possible MEPs for all types of users of ATFM-related SWIM information services should be included in the breakdown scenario tables. The Meeting agreed that only the MEP required to fulfil the operational requirements identified by the domain expert groups should be included, in order to avoid confusion and to provide a minimum implementation requirement for information service implementers.

2.25 The Meeting was informed of the work on identification, mapping, and development of ATFM FIXM message data attributes and associated message templates based on FIXM version 4.3, to support cross-border ATFM operations, A-CDM, ATFM/A-CDM integration, and traffic synchronisation in a SWIM environment in the APAC region.

2.26 The Meeting noted *Conclusion APANPIRG/36/12* on the adoption of APAC Regional FIXM 4.3 Extension, which includes data attributes required to support regional operational requirements that are not included in the FIXM 4.3 Core. Based on this identification and mapping, the Technical Sub-Group (TSG) of AMNAC developed ATFM FIXM message templates (*ATFM & A-CDM/SG/16 WP-6b-02 Appendix C*). These templates defined the structure and rules for automated validation of ATFM-related FIXM messages, covering CTOT/CTO allocation/cancellation and TTOT allocation. The templates also integrated the use of FIXM 4.3 Core and APAC Extension within the template schema to ensure harmonised and interoperable message construction for cross-border ATFM system-to-system exchanges via SWIM. It was noted that Appendix A of ATFM & A-CDM SG/16 – WP-6b-02 provides the list of data attributes for the five identified ATFM FIXM messages. Appendix B provides a mapping of data attributes to the FIXM version 4.3 Core and the APAC Extension. Appendix C provides the associated ATFM FIXM message templates to support harmonised and automated message validation.

2.27 It was added that, following the ATFM & A-CDM SG/16, additional feedback on the ATFM FIXM message templates was received, and the message template schema was updated accordingly. The validation of the updated message template scheme was successfully conducted by Singapore and Thailand in May 2026, as presented in SWIM TF/11 – WP/12.

2.28 The Meeting was shared that the associated ATFM FIXM message templates developed to support harmonised and automated message validation fall under the responsibility of the SWIM TF. Therefore, the ATFM FIXM message templates schema required review by the SWIM TF. Discussion on this matter was recorded under WP/12.

ATFM FIXM Message and Associated Message Templates based on FIXM Version 4.3 – ATFM SG (WP/12)

2.29 This paper presented the work on the development of ATFM FIXM message and associated message templates based on FIXM version 4.3 to support cross-border ATFM operations, A-CDM, ATFM/A-CDM integration, and traffic synchronisation in the SWIM environment in Asia/Pacific region. The Meeting noted that FIXM version 4.3 was formalised as the regionally agreed information exchange model for information exchange between operational ATFM systems. In support of cross-border ATFM operations and ATFM/A-CDM integration, successive regional FIXM extensions were developed collaboratively by the ATFM SG and the SWIM TF. In line with *Conclusion APANPIRG/35/4* and to ensure readiness of the implementation of ATFM FIXM information exchange, the Technical Sub-Group (TSG) of the Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC), in collaboration with members of the SWIM TF, identified the ATFM FIXM message data attributes, mapped them to the FIXM version 4.3 Core and Extension, and developed the associated message templates.

2.30 It was informed that this work was presented to the ATFM & A-CDM SG/16 through WP-6b-02 in April 2026. Consequently, the ATFM & A-CDM SG/16 agreed, through its *Draft Conclusion ATFM & A-CDM/SG/16-6*, to the adoption of the identified ATFM FIXM message data attributes, mapping, and the associated message templates, based on FIXM version 4.3, as regional standard templates effective Q1/2027.

2.31 The Meeting noted that additional feedback was received after ATFM & A-CDM SG/16, and the templates were subsequently updated. Singapore and Thailand successfully validated the updated message templates in May 2026. It was highlighted that with the updated message template schema, the identified ATFM message data attributes and their mapping to the FIXM version 4.3 Core and the APAC Extension, as agreed by ATFM & A-CDM SG/16, remain unchanged.

2.32 With the abovementioned, the **Draft Conclusion SWIM TF/11/02** – *Adoption of ATFM FIXM Message Data Attributes and Associated Message Templates Based on FIXM Version 4.3 as Asia/Pacific Regional Standard* was proposed, which was endorsed by the SWIM TF/11 Meeting for APANPIRG/37 adoption through CNS SG/30 endorsement.

Development of Updated Version of Business Functionality of APAC Common SWIM Information Service and Associated Guidance Material – Task 6 Leads (WP/16)

2.33 The Meeting was recalled that, Decision 36/11 from APANPIRG/36 in November 2025, adopted the First Version of the Business Functionality for APAC Common SWIM Information Services. At SWIM TF/10 in May 2025, it was noted that the level of detail differed across different information domains (e.g. aeronautical information, flight information, surveillance data, meteorological information, etc.), potentially caused by different levels of understanding as to what detail was needed by SWIM TF to facilitate the development of SWIM information services within the APAC region. Two actions were raised at SWIM TF/10 to improve the utility and information in the listing of APAC Common SWIM Information Services.

2.34 The paper proposed the initial draft, second working version of the Business Functionality of APAC Common SWIM Information Services, taking into account inputs from the relevant APANPIRG Subsidiary Groups, including FF-ICE Ad-Hoc Group, SURSG, SURICG, ATFM & A-CDM/SG, MET/IE WG and AAITF and also incorporated additional suggested improvements that were identified through the consultation with those Subsidiary Groups.

2.35 The suggested improvements to the Business Functionality for Common APAC SWIM Information Services were proposed as follows:

a) Replace “Priority” with two independent columns (not yet incorporated into the table):

i. “Applicability” (“region-wide” in order to achieve the anticipated benefits, vs. “as needed" to meet local needs); and

ii. “Desired implementation timeframe” (Immediate (before 2030), Medium-term (2030-2035), Long-term (beyond 2035)).

b) Inclusion of a “maturity” attribute only in the working version of the table (i.e. not in the published version) to highlight the state of development of the associated Information Service (e.g. mature, under development, ideation). This will provide easy insight by all relevant stakeholders, for example when deciding which Information Services to include when recommending the publishing of subsequent versions of the Business Functionality of APAC Common SWIM Information Services at ICAO APAC e-doc website, i.e. only “mature” and “under development” Information Services would be published.

c) Identification of the relevant Subsidiary Group responsible for the associated entry(ies) in the document, by relevant Information Service domains (e.g. Flight Information Services, Aeronautical Information Services). Note that this has resulted in creating a new separate Information Service domain grouping, “Flow Information Services”, which had been grouped with the Flight Information Services in the published First Version.

2.36 The specific suggestions from Subsidiary Groups regarding the usability, clarity, and structure of the information in the list of APAC Common SWIM Information Services were shared at the Meeting.

2.37 It was noted that, at the Fourth Asia/Pacific FF-ICE Ad-Hoc Group Meeting and Workshop, held from 16 to 18 March 2026, the Ad-hoc Group reviewed the Business Functionality of APAC Common SWIM Information Services, Version 1.0, and agreed on the following recommendations for consideration by the SWIM TF.

a) Recognising the limited technical expertise within domain-specific groups such as the FF-ICE Ad-Hoc Group, it was agreed that the group should **focus on defining business rules and business process completion criteria** for information services. The determination of appropriate Message Exchange Patterns (MEPs) for each business process should be undertaken by SWIM TF, which possesses the relevant technical expertise.

b) To support the determination of MEPs, it was agreed that **comprehensive operational scenarios**, including operational requirements and business process completion criteria, are essential. Accordingly, such scenarios, where required, should be provided as an appendix to the Business Functionality of APAC Common SWIM Information Services document. A reference to the appendix should also be included in the ‘Brief description of the service’ column. Figure 1 illustrates an example of how these comprehensive scenarios may be incorporated:

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	~~Priority of Recommended sService in iInitial APAC Common SWIM IS~~ (1) / (2) / (3)
FF-ICE filing service	Provides a means to submit, update or cancel flight plans through a SWIM-based interface using FIXM. Appendix A: Filing Scenario	Flight plan for registration, update or cancellation	FIXM	Appendix A	1

SWIM TF to fill in

Appendix A: Filing Scenario

	Message	Details	Timeout	Comments	Message Exchange Pattern
1	eAU send eFPL (FFP) to eASP	Mandatory	N/A	-	
2	eASP returns Submission Response (SR) #1 to eAU	Mandatory (after eFPL received)	1 minute	eASPs validate message format and basic rules. SR ACK: Validation passed SR REJ: Validation failed SR MAN: Manual Processing needed	
3	eASP returns Submission Response (SR) #2 to eAU	Conditional (only if SR#1 = MAN)	Variable (manual processing time)	Any subsequent SR is provided after manual intervention of eFPL (after SR MAN)	
4	eASP returns Filing Status (FS) #1 to eAU	Mandatory (If final SR = ACK)	1 minute after SR "ACK"	eASPs evaluate flight plan against operational constraints and ATM configuration	
5	eASP returns Filing Status (FS) #2 to eAU	Conditional (If FS #1 = PENDING, or due to **re-evaluation**)	Variable (2nd evaluation)	eASP sends updated FS when flight is ready to be evaluated (for PENDING) or when operational changes affect flight status	

Figure 1: An example of how the comprehensive scenarios may be incorporated in the Business Functionality of APAC Common SWIM Information Services.

2.38 The SURSG/5 and SURICG/11 Meetings deliberated at length on the initial set of APAC Common SWIM Surveillance Information Services and provided input and comments. The SURSG/5 and SURICG/11 Meetings recommended that *Guidance Materials for the sharing of surveillance data in SWIM* should be added as a reference document for APAC Common SWIM Surveillance Information Services to support service implementers. This has been incorporated into the draft second working version of the document.

2.39 At the ATFM & A-CDM/SG/16 Meeting, Singapore and Thailand presented a joint response (SP/14) that aligned with the outcomes of the FF-ICE Ad-Hoc Group discussion. The response proposed updates to the APAC Common SWIM Information Services related to ATFM, focusing on improving clarity and usability. It was also noted that the current "Message Exchange Pattern (MEP)" column had created ambiguity between business and technical aspects; therefore, it was proposed that MEP determination be separated and addressed by the SWIM TF. In addition, Singapore and Thailand recommended enhancing the table by incorporating a clearer "Brief description of the service" through referenced filing scenarios example developed by the FF-ICE Ad-Hoc Group. The proposed next steps included finalising these scenarios and submitting them to the SWIM TF within agreed timelines in 2026 to support the identification of MEP. The finalised scenarios were submitted to SWIM TF/11 to undertake the identification of MEP.

2.40 The ATFM & A-CDM SG/16 Meeting noted that Appendix B of the working paper identified four ATFM-related SWIM Information Services; however, **only two services—namely the Flight-Specific ATFM Measure Service and the ATFM/A-CDM Integration Service**—had been included in the first published edition. The ATFM & A-CDM SG/16 encouraged further review of the remaining two services, i.e. the ADP Distribution Service and the Flow-Specific ATFM Measure Service, considering any progress since the SWIM TF/10 discussions, and invited feedback on their potential inclusion in the next revision.

2.41 It was clarified that the proposed ATFM messages in the five ATFM information exchange scenarios were associated with two APAC Common SWIM Information Services, with the first message exchanged under the ATFM/A-CDM Integration Service and the remaining four messages under the Flight-Specific ATFM Measure Service; additional administrative clarity might be provided through supporting appendices. The Meeting noted that, while a reference document for the ADP Distribution Service was made available following the elevation of the Asia-Pacific ADP exchange

procedure, the digital data format for ADP remained under development and the exchange model was yet to be defined. The Flow-Specific ATFM Measure Service was similarly recognised as less mature, given the absence of a harmonised, region-wide operational application and potential network impacts. It was agreed that further operational and technical development was required before detailed SWIM messaging could be specified, and that relative maturity or priority could be reflected in the information services table, with coordinated input from the ATFM & A-CDM/SG to be provided to the SWIM/TF Meeting in May 2026.

2.42 The ATFM & A-CDM/SG/16 Meeting proposed no changes in the provided list of ATFM-related information services. In addition, the message types proposed to the information services table will be mapped to relevant information services for SWIM TF reference to identify the Message Exchange Pattern.

2.43 The MET/IE WG/24 Meeting noted the information presented in WP/27 and reviewed the guidance material provided by SWIM TF. During the discussion, the Meeting suggested that **the SWIM TF may wish to consider addressing possible options for push "pub-sub" services and on-demand "request/reply" services as part of future refinement of the document.** The MET/IE WG/24 Meeting reviewed the list of APAC Common SWIM Information Services related to MET and agreed that no amendments or modifications were needed at this Meeting**.**

2.44 The ICAO Aeronautical Information Services − Aeronautical Information Management Implementation Task Force (AAITF/21) Meeting does not propose any new amendments to the APAC Common SWIM Aeronautical Information Services already published in version 1 of the document in 2025.

2.45 In response to a suggestion to develop, at the global level rather than the regional level, a list of Common SWIM Information Services, in addition to those being defined by the technical panels, it was informed that, due to differences in current SWIM implementation maturity across regions, the IMP has different priorities. However, considering the APAC SWIM implementation timelines of 2024-2030, it was essential for the SWIM TF to define a prioritised list of Common SWIM Information Services to support APAC States/Administrations in identifying required information services that should be implemented on SWIM as a priority within the APAC region. It was further added that, as several key IMP members and other relevant panels are also part of the SWIM TF, efforts are being made to ensure that APAC Common SWIM Information services remain aligned with the global format and other relevant global recommendations.

2.46 The Meeting reviewed the draft Second Version of the APAC Common SWIM Information Services document and agreed that SWIM TF is best placed to determine the most appropriate Message Exchange Pattern for each defined Information Service proposed in the table of Business Functionalities for APAC Common SWIM Information Services.

2.47 It was agreed that the revised version template will incorporate all suggestions provided by different expert groups. In addition, all services containing some fields marked with "TBD" or "?" and not incorporated into the first version will be included in version 2.0 to avoid confusion within expert groups regarding the exclusion of information services for which the groups had previously provided inputs. It was added that new columns for which information is currently unavailable will be left blank, with all possible options available for further selection by relevant expert groups. These measures were intended to ensure that the APAC Common SWIM Information Services v2.0 document will be used by the relevant expert groups for regular review during their upcoming Meetings.

2.48 It was suggested to upload "Guidance Material for Business Functionality of APAC Common SWIM Information Services", provided in **Appendix B**, to ICAO APAC e-Document webpage as a supporting document to the second version of APAC Common SWIM Information

Services, to support other domain expert groups in updating the second version of APAC Common SWIM Information Services.

2.49 The Meeting agreed to publish the document provided in **Appendix C**, as the second version and present the revised document for consideration by CNS SG/30 through the **Draft Decision SWIM TF/11/02** - *Adoption of APAC Common SWIM Information Services, v2.0* and subsequent adoption by APANPIRG/37. Following APANPIRG/37's adoption of the proposed Draft Decision, the list of APAC Common SWIM Information Services will be uploaded to the ICAO APAC e-document portal.

SWIM TF Tasks restructuring- SWIM TF Co-Chair (SP/05)

2.50 The Meeting was informed of the current SWIM TF task structure, and leads are as follows:

Groups	Task No.	Subject/Task	Task Leads
Implementation Planning	1	Regional implementation philosophy & roadmap	David Leow (Singapore) Amornrat Jirattigalachote (Thailand)
SWIM infrastructure	2	Regional SWIM infrastructure	Xiaodong Lu (Japan), Yosuke MORO (Japan) Henry Chan (Hong Kong, China)
	3	Security service	Jim Laymon (USA)
Technical Architecture	4	Development and maintenance of regional information exchange models	Amornrat Jirattigalachote (Thailand) Wen Zhu (USA)
Governance	5	Regional SWIM Governance Framework	Young Jin Ha (ROK) Mark Kaplun (USA), Yosuke MORO (Japan) Xiaodong Lu (Japan), Honglei Gao (China)
Information Services	6	Information services	Marco Kok (Hong Kong, China) Jeremy Bienkowski (Australia)
Validation & Demonstration	7	SWIM Demonstration	David Leow (Singapore) Amornrat Jirattigalachote (Thailand)
	8	SWIM services and application validation	Yosuke MORO (Japan) Xiaodong Lu (Japan), Honglei Gao (China), Young Jin Ha (ROK)
Coordination and Promotion	9	Monitoring of Panels' work	Yosuke MORO (Japan)
	10	Regional coordination and SWIM-related information sharing	John Moore (IATA)
	11	SWIM implementation education and promotion (New task)	Vacant

Table 2- The Existing Task Structure leads

2.51 It was noted that, during the SWIM TF Task Leads Meetings conducted after the SWIM TF/10 Meeting, there were discussions on the need for restructuring of tasks under SWIM TF. The proposal presented by the SWIM TF Co-Chair included the removal of **Task 3 – Security Service**, as the ANSIA TF is currently working on the ANS information security aspects. It was clarified that the SWIM TF will continue collaborating and coordinating with the ANSIA TF to ensure SWIM security requirements are incorporated into their relevant deliverables. The second proposal was to remove **Task 7 – SWIM Demonstration**, as the APAC region is currently in the SWIM implementation phase rather than the validation stage. The third proposal was to rename **Task 8 – SWIM Services and Application Validation** to **Task X – SWIM Services Validation,** as SWIM applications are beyond the scope of SWIM as defined in Doc 10039 Manual on the SWIM Concept**.** Lastly, it was suggested to merge three tasks: **Task 9 – Monitoring of Panels' Work**, **Task 10 – Regional Coordination and SWIM-related Information Sharing**, and **Task 11 – SWIM Implementation Education and Promotion** into a single task entitled "Coordination and Promotion", considering that regional coordination is currently conducted through the well-established coordination process between the ICAO Secretariat of SWIM TF and relevant expert groups.

2.52 The Meeting discussed the proposed restructuring of tasks and their respective leads. After detailed deliberations, the agreed task structure and corresponding task leads are as follows:

Groups	Task No.	Subject/Task	Task Leads
Implementation Planning	1	Regional implementation philosophy & roadmap	David Leow (Singapore) Amornrat Jirattigalachote (Thailand)
SWIM infrastructure	2	Regional SWIM infrastructure	Xiaodong Lu (Japan), Yosuke MORO (Japan) Henry Chan (Hong Kong, China)
Technical Architecture	3	Development and maintenance of regional information exchange models	Amornrat Jirattigalachote (Thailand) Vacant
Governance	4	Regional SWIM Governance Framework	Young Jin Ha (ROK) ~~Mark Kaplun (USA)~~ (retired) Justin Prasai (U.S) Yosuke MORO (Japan) Xiaodong Lu (Japan), Honglei Gao (China)
Information Services	5	Information services	Marco Kok (Hong Kong, China) vacant
Validation & Demonstration	6	SWIM services ~~and application~~ validation	Yosuke MORO (Japan) Xiaodong Lu (Japan), Honglei Gao (China), Young Jin Ha (ROK)
Coordination and Promotion	7	Coordination and Promotion	Yosuke MORO (Japan) Elvin Liow (Singapore)

Table 3- New Task Structure and leads

Date and Venue for the Next Meeting

2.53 The Meeting discussed the next SWIM TF Meeting dates. The SWIM TF/12 is tentatively planned to be held from **7 to 11 June 2027**.

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

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASIA/PACIFIC REGIONAL FLIGHT AND FLOW – INFORMATION FOR A COLLABORATIVE ENVIRONMENT RELEASE 1 (FF-ICE/R1) IMPLEMENTATION PLAN

Version 1.0, xxxx yyyy

This guidance was developed by the Asia/Pacific Flight and Flow Information for a Collaborative Environment Ad Hoc Group

Approved by APANPIRG/xx and published by the
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1. SCOPE OF APAC REGIONAL FF-ICE/R1 IMPLEMENTATION PLAN

1.1 Alignment with Global Framework

1.1.1 This *Asia/Pacific Regional Flight and Flow – Information for a Collaborative Environment Release 1 (FF-ICE/R1) Implementation Plan* (the "Plan") has been developed to complement the International Civil Aviation Organization (ICAO) global framework and guidance. This Plan supplements and tailors the global Flight and Flow – Information for a Collaborative Environment (FF-ICE) concepts and objectives to the regional context of the Asia/Pacific (APAC), providing a practical roadmap for implementation in APAC States while remaining aligned with ICAO's provisions. This Plan operates on established relevant ICAO materials and on the foundational concepts, principles, and guidelines of System-wide Information Management (SWIM), Air Traffic Flow Management (ATFM) practices, and aviation information security requirements. Therefore, this Plan does not duplicate fundamental explanations from the *Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE)* (ICAO Doc 9965) or other global manuals. Instead, it focuses on regional implementation aspects bridging the gap between ICAO's global guidance and the specific needs of APAC stakeholders.

1.1.2 In accordance with other APAC regional plans, such as the *Asia/Pacific Plan for Collaborative Aeronautical Information Management*, this Plan is not intended to duplicate or pre-empt global guidance issued by ICAO expert groups. Rather, it builds upon the issued guidance to outline how FF-ICE can be implemented across the APAC region in a coordinated and harmonized manner. Global reference documents, i.e. *Manual on FF-ICE - Implementation Guidance* (ICAO Doc 9965 - Volume II), *Manual on System-wide Information Management (SWIM) Concept* (ICAO Doc 10039), etc., contain these foundational concepts, and this Plan serves to apply those concepts in the regional implementation setting.

1.1.3 This Plan uses the terms "shall", "should", and "may" to indicate the level of compliance expected from States in following this document.

1.1.3.1 "Shall" indicates provisions that are compulsory for States to implement as these provisions are considered necessary for regional harmonization and interoperability.

1.1.3.2 "Should" indicates provisions that are recommended as best practices for regional coordination. States are encouraged to implement these provisions where operationally feasible.

1.1.3.3 "May" indicates provisions that are optional and can be implemented at the discretion of individual States based on their operational requirements and capabilities.

1.1.4 This Plan recognizes that States retain control over their implementation decisions, while encouraging regional harmonization.

1.2 APAC Regional Context and Guidance

1.2.1 The FF-ICE implementation in the APAC region is being undertaken in parallel with the region's broader air navigation modernization strategies. The *Asia/Pacific Air Navigation Plan Volume III* explicitly identifies FF-ICE and Trajectory-based Operations (TBO) as key elements of future Air Traffic Management (ATM) enhancements. The *Asia/Pacific Air Navigation Plan (ANP) Volume III* calls on APAC States to work collaboratively through ICAO and regional platforms towards a seamless ATM environment, including the implementation of SWIM, FF-ICE, and TBO to support future traffic growth

and sustainability. Particularly, the implementation of SWIM, a key enabler for FF-ICE, within the APAC region, should follow the regionally agreed-upon guidelines, including *APAC SWIM Technical Infrastructure Profiles Version 1.0*, and the *APAC Common SWIM Information Services*. Following these guidelines will ensure interoperability and harmonized implementation.

1.2.2 Moreover, the *Asia/Pacific Plan for Collaborative Aeronautical Information Management Version 4.0* and the *Asia/Pacific Regional Framework for Collaborative ATFM Version 4.0* complement the FF-ICE initiative by simultaneously addressing the Aeronautical Information Management (AIM) and ATFM improvements that are needed. The *Asia/Pacific Plan for Collaborative Aeronautical Information Management* provides guidance on the transition from Aeronautical Information Services (AIS) to AIM and digital data exchange, which is a foundational element for successful FF-ICE implementation.

1.3 Mandatory and Optional FF-ICE Services

1.3.1 In accordance with *Procedures for Air Navigation Services – Air Traffic Management* (ICAO Doc 4444), Filing Service and Flight Data Request Service are mandatory. Additionally, to support the sunsetting of ICAO 2012 Flight Plan (FPL2012) and, at a minimum, DEP and ARR related Air Traffic Services (ATS) messages, the Notification Service is a mandatory service within the APAC region. The FF-ICE Planning Service, Trial Service, and Publication Service are considered optional within the APAC region.

2. EXECUTIVE SUMMARY

2.1 This Plan provides regional strategy and guidance for the implementation of the FF-ICE within the APAC region. This Plan also supports the transition from the traditional FPL2012 to the modernized FF-ICE environment, enabling collaborative, service-based information exchange among ATM Service Providers (ASPs), Airspace Users (AUs), and other aviation stakeholders. This Plan is aligned with the *Global Air Navigation Plan* (GANP) (ICAO Doc 9883), and the *Asia/Pacific ANP Volume III*.

2.2 The implementation of FF-ICE represents a significant step towards achieving TBO in the region. Through standardized information services and system-to-system interoperability, FF-ICE will facilitate the sharing and management of comprehensive flight and flow data through all phases of flight. This Plan defines the regional approach to implementing FF-ICE/R1 covering the pre-departure phase and lays the foundation for a future expansion to Release 2 (FF-ICE/R2 - post-departure operations).

2.3 The APAC region is adopting a harmonized approach to the use of global data standards, particularly the Flight Information Exchange Model (FIXM) version 4.3.0, together with the APAC regional FIXM version 4.3.0 Extension to support cross-border ATFM and Airport Collaborative Decision Making (A-CDM) integration. Mixed-mode operations between legacy and FF-ICE environments are expected during the transition period, and guidance has been included regarding translation mechanisms, validation procedures, and coordination processes necessary for maintaining seamless operation.

2.4 This Plan details the operational and technical requirements for the implementation of FF-ICE services. Filing Service and Flight Data Request Service are established as mandatory in accordance with *the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM)*, ICAO Doc 4444), with the Notification Service also identified as mandatory within the APAC region to support the eventual retirement of the FPL2012 and related ATS messages. The Planning, Trial, and Publication Services are considered optional but are recommended, to enhance collaborative decision-making and information availability.

2.5 Recognizing the importance of data integrity and operational assurance, this Plan introduces a common validation process, standardized submission response codes, and uniform filing-status interpretations. It outlines cybersecurity considerations for FF-ICE operations, recommending implementation of secure communication protocols and promoting adherence to ICAO information security guidance.

2.6 Implementation of FF-ICE/R1 across the APAC region will be achieved in phases. Technical trials and cross-border testing are targeted to begin in 2030, followed by operational testing in 2031. The testing will lead to full operational capability (FOC) of the regionally mandatory FF-ICE/R1 services (Filing Service, Flight Data Request Service and Notification Service) by 2032. This timeline supports regional readiness for the planned global sunset of the FPL2012 in 2034. States and Administrations will report progress to the ICAO APAC Regional Office annually to ensure synchronous advancement and to identify any areas requiring additional support or coordination.

2.7 This Plan will be maintained and updated in alignment with revisions to *GANP* (ICAO Doc 9883), and the *Asia/Pacific ANP Volume III*. Post-implementation coordination and performance monitoring will ensure continuous improvement and harmonization across the region. Through the collaborative and progressive implementation of FF-ICE, the APAC region will advance towards a fully information-driven ATM environment that enhances safety, efficiency, and predictability in support of the global vision for a seamless and interoperable air navigation system.

3. DEFINITIONS (REFERENCED FROM DOC 9965)

Air Traffic Management (ATM) — The dynamic, integrated management of air traffic and airspace including air traffic services, airspace management and air traffic flow management — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.

ATM community — The aggregate of organizations, agencies or entities that may participate, collaborate and cooperate in the planning, development, use, regulation, operation and maintenance of the ATM system.

ATM configuration — The arrangement of the non-flight elements of the Air Traffic Control (ATC) System. The ATM configuration imposes constraints on flights through such factors including military airspace reservations and releases, sector configurations, runway combinations and runway usage.

ATM Service Provider (ASP) — A Unit involved in performing Air Traffic Management responsibilities as introduced in the PANS-ATM.

ATM system limitations — Inherent characteristics that limit its ability to support desired aircraft operations or effectively accommodate demand on resources.

Coordinated airport — Any airport where, in order to land or take off, it is necessary for an aircraft operator to have been allocated a slot by an appropriate authority.

Effective flight constraints — The subset of flight constraints that actually affected the flight's unconstrained trajectory.

Emergency Service Provider (ESP) — Provider of emergency services, such as search and rescue organizations.

Flight and Flow – Information for a Collaboration Environment (FF-ICE) — Information necessary for planning, coordination, and notification of flights exchanged in a standardized format between members of the ATM community, including those involved in flight operations and aerodrome operations.

FF-ICE can refer to a single instance (an individual flight) and also to an aggregation of flights (each with their own flight information in FF-ICE).

Flight and Flow – Information for a Collaboration Environment (FF-ICE) services — A set of services established for the purpose of facilitating the exchange of flight and flow – information for a collaborative environment, more accurate assessment of demands, appropriate resource planning, and optimum flight planning and execution.

Flight constraint — Results from applying a restriction to a particular flight and describes bounds (e.g. in altitude, speed, time, and route) that constrain free movement of the flight.

Note: Throughout this document, the term 'constraint' should be understood as 'flight constraint' unless explicitly indicated otherwise.

Flight plan — Specified information relative to an intended flight or portion of a flight of an aircraft.

Note 1: the term "flight plan" may be prefixed by the words "preliminary", "filed", "current" or "operational" to indicate the context and different stages of flight.

Note 2: when the word "message" is used as a suffix to this term, it denotes the context and format of the flight plan data as transmitted.

Operational flight plan. The operator's plan for the safe conduct of the flight, based on considerations of aeroplane performance, other operating limitations, and relevant expected conditions on the route to be followed and at the aerodromes concerned.

Preliminary flight plan (PFP). The flight plan submitted by an operator or a designated representative to conduct collaborative planning of a flight, prior to filing a flight plan for use by ATS units.

Filed flight plan. The latest flight plan as submitted and updated by the pilot, an operator or a designated representative for use by ATS units.

Note: the FPL denotes a filed flight plan exchanged using aeronautical fixed services while eFPL denotes a filed flight plan exchanged using FF-ICE services. The eFPL allows for the exchange of additional information not contained within the FPL.

Current flight plan (CPL). The flight plan that reflects changes to the filed flight plan by subsequent ATC clearances.

Repetitive flight plan (RPL). A flight plan related to a series of frequently recurring, regularly operated individual flights with identical basic features, submitted by an operator or a designated representative, for retention and repetitive use by ATS units.

eFPL. A symbol used to designate a filed flight plan exchanged using FF-ICE services.

FPL. A symbol used to designate a filed flight plan exchanged via Aeronautical Fixed Services (AFS).

Flight plan originator — An operator or the operator's designated representative that has flight planning responsibility for the flight.

Gate-to-gate — An expression that describes the ground and airborne segments of aircraft operations from the first movement with intention of flight (from gate, stand or parking position) to completion of movement after flight (gate, stand or parking position).

Globally unique flight identifier (GUFI) — An unchangeable data element associated with a flight that allows all eligible members of the ATM community to unambiguously refer to information pertaining to the flight.

Message — A discrete unit of communication, expressed electronically, and intended by the source for consumption by some recipient or group of recipients. The term "message" is thus not limited only to ATS messages over AFTN, but can include communication via other technologies including those described in ICAO Doc 10039.

Message originator — An operator, their designated representative, or an ATS unit that transmitted the message.

Note: This is equivalent to the use of Originator in PANS-ATM Chapter 11.

Operator — The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Procedure — A procedure is an established practice or prescribed method of proceeding with an action, normally non-systematic, under given circumstance or situation, in the provision of a service or part thereof.

Process — A process is an operation or series of operations performed in a definite manner, normally systematically, in the provision of a service or part thereof.

Ranked trajectories — A series of desired trajectories organized in the order of preference, with tolerances supplied, if necessary, by the airspace user, to define when the next ranked trajectory should be used.

Note: *Tolerances are used to express the bounds of variation on the trajectory, triggering a preference for the next ranked trajectory.*

Relevant ASP — Unit(s) designated by the appropriate ATS authority to which the flight plan for a particular flight needs to be provided and includes:

- The Area Control Centre (ACC) or flight information centre serving the control area of the Flight Information Region (FIR) within which the departure aerodrome is situated;
- The centres in charge of each FIR or upper FIR along the route;
- For flights along specified routes or portions of routes in close proximity to FIR boundaries, the centres in charge of each FIR or upper FIR adjacent to such routes or portions of routes;
- When a potential re-clearance in flight (RIF) request is indicated in the flight plan, the additional centres concerned and to the aerodrome control tower of the revised destination aerodrome;
- The aerodrome control tower at the destination aerodrome;
- Flow management centres responsible for ATS units along the route.
- Flight and flow – information services unit along the route of the flight.

Restrictions — Documented rules that are aimed at managing the ATM System, which act on, and reduce the freedom of a group of flights (i.e., flights with certain common characteristics). Restrictions result from ATM system limitations.

Note: a published restriction, in addition to the cause and applicability criteria, may also include the constraint. For example, "due to congestion all flights departing ABCD between Monday and Friday during the hours from 07:00 to 17:00 and routing via AWY1 to destination WXYZ must remain below FL250".

Typically, an Air Traffic Flow Management (ATFM) measure, which is a type of restriction, will require a specific flight constraint to be issued to each impacted flight. For example, "between 09:00 and 14:00, the airspace <airspace ref> can only accept 15 aircraft per hour. Flights planned to enter the airspace during this time period will be issued with an ATFM slot".

Runway Visual Range (RVR) — The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.

Service — A service is the provision of a pre-defined set of work including any associated information intended to benefit the customer.

Trajectory — The representation of an aircraft continuous path, both in the air and on the ground, comprised of position (x, y, z) and time.

Desired trajectory — The trajectory that is requested and generated by the airspace user with its knowledge of the ATM system's configuration and published restrictions and that reflects the most recent request of the airspace user.

Note: *there is only one desired trajectory for any given flight at any time. To allow for flexibility and as the ATM system has unpredictable or uncontrollable events, it is likely that it will be necessary to renegotiate trajectories leading to a revision in the agreed trajectory. The desired trajectory therefore reflects the most recent airspace user request. Where the agreed trajectory is not the desired trajectory then the ASP will negotiate to obtain a revised agreed trajectory.*

Negotiating trajectory — A trajectory proposed by eAU or eASP as a potential agreed trajectory.

Note: *each participant would be allowed only one negotiating trajectory at a time which represents their most recent proposal in the negotiation. These trajectories may not necessarily be a gate-to-gate trajectory and are intended to be transitory.*

Agreed trajectory — The trajectory that reflects the most recent agreement between the airspace user and the ASP after collaboration, and/or imposition of pre-collaborated rules.

Note: *There is only one agreed trajectory for any given flight at any time.*

Executed trajectory — The actual trajectory of the aircraft from the start-up to the last known position.

Note: *The executed trajectory is what was executed and is not necessarily the desired or agreed trajectories. The executed trajectory relates only to the current flight of the aircraft (and does not contain information from previous flights, even with an en-route to en-route perspective). The executed trajectory information can be used for performance and operational analysis.*

Trajectory synchronization — The process of aligning the trajectories for a single flight held by operationally relevant entities (including ground and airborne) such that remaining differences are operationally negligible for the execution of the flight.

Minutes in Trail (MINIT) / Miles in Trail (MIT) — MINIT/MIT are tactical ATFM measures and are expressed as the number of minutes or miles between each successive aircraft at an airspace boundary point. (Doc 9971)

4. INTRODUCTION

4.1 FF-ICE is a global ICAO initiative to modernize flight planning and trajectory management through enhanced information exchange methods and collaboration. At the global level, FF-ICE is designed to address the limitations of the traditional FPL2012 by enabling a fully collaborative TBO environment. This means that a flight's trajectory can be shared, managed, and adjusted among stakeholders in all phases of flight, improving predictability and efficiency in line with the TBO concept. By exchanging more comprehensive flight and flow data (such as detailed route trajectories and aircraft performance information) in a standardized, system-wide manner, FF-ICE aims to increase airspace capacity and flight efficiency while maintaining safety. This is a key objective identified in the *Global Air Traffic Management Operational Concept* (GATMOC) (ICAO Doc 9854) for future ATM systems, and a critical goal for the FF-ICE effort overall.

4.2 ICAO's FF-ICE concept is documented in ICAO Doc 9965, which is organized into two volumes. Volume I outlines the overall FF-ICE Concept, covering how information for flight planning, flow management, and trajectory management will support a collaborative ATM environment. Volume II, *FF-ICE Implementation Guidance,* provides detailed guidance to ASPs and AUs for implementing FF-ICE in the pre-departure phase, particularly the FF-ICE/R1 capabilities. According to this ICAO guidance, FF-ICE/R1 introduces a set of new services including Planning Service, Filing Service, Trial Service, Flight Data Request Service, Notification Service, and Publication Service, which collectively enable stakeholders to file collaborative flight plans, perform trial trajectory analyses, update or cancel plans, share flight event updates, and request flight information through SWIM-based messages. Each service is defined through agreed-upon procedures and message formats to help ensure consistent information exchange among FF-ICE participants, while allowing flexibility in interface implementation. The subsequent FF-ICE/R2 will extend these principles into the post-departure phase by supporting in-flight trajectory updates and collaborative adjustments between ASPs and AUs, further building on the foundation established by FF-ICE/R1.

5. BACKGROUND

5.1 SWIM as an Enabler for FF-ICE

5.1.1 The implementation of FF-ICE is fundamentally supported by the concept of SWIM. SWIM provides the technical infrastructure, standards, and governance needed to allow seamless information exchange among ATM stakeholders.

5.1.2 In the FF-ICE environment, flight data sharing is accomplished through SWIM-based information services rather than traditional point-to-point messaging. FF-ICE operates within a SWIM operational environment where the key flight planning processes are described and offered in terms of services.

5.1.3 These services are published and discovered via SWIM, enabling authorized stakeholders to exchange flight and flow information in real time, using common formats and protocols. SWIM ensures that all FF-ICE messages are exchanged on a secure, interoperable network with agreed-upon data exchange models and service interfaces. Crucially, SWIM's service-oriented architecture means that FF-ICE information exchanges are standardized at the service level, even as the underlying technologies and implementations may differ between States.

5.1.4 Guidance on implementing SWIM information services, such as those to support FF-ICE, are provided in the *Procedures for Air Navigation Services – Information Management* (PANS-IM, ICAO Doc 10199) requirements and *Manual on the SWIM Implementation* (ICAO Doc 10203).

5.1.5 As the SWIM technical infrastructure evolves over time, the focus for FF-ICE will be on creating and maintaining adaptive operational services and data exchanges, ensuring that any State's system can communicate using the standard FF-ICE service definitions. The hardware/software implementation within each State can be flexible and technology-agnostic on the condition that the State is able to provide and consume the defined FF-ICE services and related information services through SWIM.

5.2 FIXM and Regional Extensions

5.2.1 The information exchange mechanism of FF ICE relies on standardized data formats. Notably, it relies on the Flight Information eXchange Model (FIXM) for encoding flight information. While FF-ICE defines what flight information needs to be exchanged among stakeholders, FIXM defines how that information is structured for digital exchange within a SWIM environment. As the globally standardized information exchange model, FIXM provides the rich, detailed, and structured flight and flow information required by the FF-ICE concept, representing a major advancement from the traditional teletype-format flight plan (FPL2012).

5.2.2 APAC stakeholders implement FF-ICE using the globally defined FIXM standard for flight data. However, in recognizing certain regional operational needs, the APAC region has developed its own endorsed extensions to FIXM to accommodate additional information specific to the region. An APAC FIXM extension was developed to include flight-specific data attributes necessary for cross-border ATFM operations, A-CDM, ATFM/A-CDM integration, and traffic synchronization. The APAC FIXM extension adds fields for information such as target take-off time, target time over, and other collaborative decision-making parameters that are crucial for coordinating operations across Flight Information Regions (FIRs) within the region.

5.2.3 This approach allows APAC States to exchange all necessary flight and flow information, including regional specifics, under FF-ICE, supporting the implementation of regional initiatives while still adhering to global standards and ensuring interoperability between APAC and other ICAO regions.

5.2.4 **Appendix A** provides guidance on translating FF-ICE FIXM information to ATS messages, and the structure of the legacy FPL2012, which may be needed to support ingestion of the FPL2012 flight plan.

5.2.5 **Appendix B** maps the FIXM Core version 4.3.0 data attributes required to support cross-border ATFM information exchanges.

5.3 Mixed-Mode Operations During Transition

5.3.1 As the APAC region begins implementing FF-ICE, there is expected to be an extended transition period during which legacy and new systems will operate in parallel. Not all States or ASPs will be ready to switch to FF-ICE/R1 on the same date. System upgrades and operational readiness will vary. Consequently, a mixed-mode environment will exist for several years, wherein some flights will be filed and managed using traditional FPL2012 procedures, while others will use the new FF-ICE services.

5.3.2 Section 6.1.8 provides regional implementation considerations for mixed-mode operations.

6. APAC REGIONAL IMPLEMENTATION PLAN

6.1 General

6.1.1 Information Exchange Standards

6.1.1.1 FF-ICE operations, as described in ICAO Doc 9965 Volume II, are performed through FF-ICE services. Each FF-ICE service is encompassed with a set of FF-ICE messages for exchanging flight information between stakeholders. These messages are constructed using FIXM, a globally standardized information model for flight and flow information exchange.

6.1.1.2 ATM Information Reference Model (AIRM) (https://airm.aero/), a standardized dictionary for ATM information, shall be used as a reference for ATM vocabulary in digital information exchange among stakeholders within the FF-ICE/R1 processes, to prevent ambiguities. To ensure semantic interoperability and consistency across information domains, AIRM also underpins the development of FIXM, Aeronautical Information Exchange Model (AIXM), and the ICAO Meteorological Information Exchange Model (IWXXM).

6.1.1.3 FIXM is comprised of the following components:

a) FIXM Core – provides globally harmonized flight data structures;

b) FIXM Applications – built upon FIXM Core to provide specific flight data structure such as FF-ICE messages and FF-ICE message templates; and

c) FIXM Extensions – Extends FIXM Core to support additional local, national, or regional information exchange requirements.

6.1.1.4 To ensure harmonized FF-ICE operations, the FF-ICE message templates specified in ICAO Doc 9965 Volume II and published on the official FIXM website (https://fixm.aero/) shall be used for FF-ICE implementation. Use of these templates will ensure consistent validation of data fields across stakeholders.

6.1.1.5 FIXM version 4.3.0 shall be used as the standard format for the implementation of FF-ICE/R1 services in the APAC region starting from Q3/2026, as agreed by APANPIRG/35 through its *Conclusion APANPIRG/35/4.*

6.1.1.6 The APAC regional FIXM version 4.3.0 Extension shall be used for cross-border ATFM operations, A-CDM, ATFM/A-CDM integration, and traffic synchronization within the region, as agreed by APANPIRG/36 through its *Conclusion APANPIRG/36/12*.

6.1.1.7 The change process for the cross-border FIXM operating version used to support system-to-system information exchange via SWIM shall follow the procedure agreed by ATM/SG/13 through its *Conclusion ATM/SG/13-5*.

6.1.1.8 It is recommended that the FIXM version used within the APAC region for FF-ICE services implementation and cross-border ATFM information exchange remain aligned to ensure effective communication and interoperability across ATM operation support systems throughout the region.

6.1.2 Globally Unique Flight Identifier (GUFI)

6.1.2.1 Under the current operational format, multiple fields are used to identify a specific flight, such as aircraft identification, departure aerodrome, destination aerodrome, date of flight, and Estimated

Off-Block Time (EOBT). However, this method may not always uniquely identify a flight, for example, when a flight is delayed. Automation will play a critical role in the FF-ICE environment where large volumes of simultaneous transactions and message exchanges are expected.

6.1.2.2 To avoid ambiguity in flight identification and accurate correlation of flight data, GUFI shall be used. The GUFI provides a unique reference to each flight and ensures clear distinction between flights with otherwise similar information.

6.1.2.3 When a flight plan is cancelled and a new flight plan is submitted, a new GUFI shall be assigned, even if the flight is considered the same by the operator. Alternatively, in place of the cancel and refile option, a new filed flight plan message can be provided with the same GUFI but with an incremented flight plan version and as a consequence, it will be treated as a complete replacement of the existing data.

6.1.2.4 It is recommended that the current flight association practices continue to be applied in parallel with the use of GUFI, during the initial implementation of FF-ICE. This approach will provide more robust data correlation and support operations in a mixed-mode environment.

6.1.3 Flight Plan Differentiation

6.1.3.1 In the early stage of FF-ICE implementation and the introduction of using GUFI as an additional field to differentiate a flight, it is possible that two flight plans with two different GUFIs may refer to the same flight. One of the scenarios is a system failure causing incomplete cancellation but followed by re-filing of eFPL. eAUs and eASPs should perform typical flight plan differentiation using aircraft identification, departure aerodrome, destination aerodrome, and EOBT, in addition to the check using only GUFI.

6.1.3.2 During the transition period, the eASPs should verify that multiple eFPLs with distinct GUFIs do not refer to the same flight. When such incidents are detected, manual resolution may be required.

6.1.4 GUFI Allocation Criteria

6.1.4.1 For GUFI allocation, the operation of an aircraft is considered “a flight” from the submission of its first flight plan – whether a Preliminary Flight Plan (PFP) or an eFPL – until the aircraft is in-block at the arrival aerodrome. For multi-leg operations, a different GUFI shall be allocated for each leg, as the departure aerodrome differs.

6.1.4.2 A key consideration in determining a flight is whether the aircraft becomes airborne. Once airborne, and subsequently landed at an aerodrome – whether the intended destination aerodrome, a diversion aerodrome, or even the departure aerodrome – the flight is deemed complete. If the aircraft intends to continue its operation, a new flight plan with a new GUFI shall be required.

6.1.4.3 If an aircraft is compelled to return to its parking stand prior to becoming airborne, such as in a “ground return” or “aborted take-off”, the original flight plan and GUFI may be retained, provided the intention is to continue the same flight. Otherwise, the flight plan shall be cancelled.

6.1.5 GUFI Procedure

6.1.5.1 An operator, or its designated representative, shall generate and allocate a GUFI to each flight plan. The operator should also ensure that all flight data submitted for that flight uses the same GUFI, and that no GUFI is reused for any other flight.

6.1.5.2 Upon receipt of either a PFP or an eFPL, the eASP shall verify it against the flight plan differentiation checks to ensure that:

a) the same PFP with a different GUFI does not already exist in the system;

b) the same eFPL with a different GUFI does not already exist in the system; and/or

c) a different PFP or eFPL with the same GUFI does not already exist in the system. If such a case exists and the newly received PFP or eFPL contains a later version number, it should be treated as a complete replacement of the existing data.

6.1.5.3 An eFPL should carry the same GUFI as its corresponding PFP, if submitted, but with an incremented version number.

6.1.5.4 Upon receipt of a Flight Plan Update message or a Flight Cancellation message, the eASP shall use the GUFI to retrieve the associated flight plan information before performing the required actions. It is also recommended that the eASP perform verification using other key fields in the received messages (e.g. aircraft identification, departure aerodrome, destination aerodrome, EOBT, etc.) to ensure accurate flight plan association.

6.1.6 GUFI Composition and Validation

6.1.6.1 A GUFI shall include a version 4 Universally Unique IDentifier (UUID) that has been standardized by the Open Software Foundation (OSF). The UUID specification is published by the Internet Engineering Task Force (IETF) as RFC 9562.

Note: RFC 9562 supersedes RFC 4122 (referenced in ICAO Doc 9965) and is backward compatible.

6.1.6.2 The UUID used in a GUFI shall be supplemented with the following additional information:

a) Namespace Identifier: captures the originator of the GUFI. Recommendations for constructing the namespace are as follows:

   i) eAU should use the three-letter designator in accordance with the *Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services* (ICAO Doc 8585);

   ii) eASP should use the four-letter location indicator in accordance with the *Location Indicators* (ICAO Doc 7910); and

   iii) Other GUFI originators should construct their namespace based on the Fully Qualified Domain Name (FQDN) of their organization.

b) Creation Timestamp: provides increased uniqueness of the generated GUFI. The timestamp should be in the Coordinated Universal Time (UTC), in accordance with FIXM version 4.3.0 schema.

6.1.6.3 The namespace portion of the GUFI should be static for a given originator. The UUID portion of the GUFI should be validated for proper formatting. In addition, the UUID portion should also be checked for duplication against existing UUIDs, generated by its own system and previously received from external systems.

6.1.6.4 The sole use of UUID as a GUFI is not recommended as it may lead to interoperability issues among stakeholders and potential GUFI collisions.

6.1.7 Cyber Security

6.1.7.1 eASPs and eAUs shall ensure that their FF-ICE systems are protected against cyber-attacks and that all exchanged information is authentic. Network and server protections such as a firewalls shall be implemented. Cybersecurity recommendations provided in *Aviation Common Certificate Policy* (ICAO Doc 10169) and *Manual on Aviation Information Security* (ICAO Doc 10204) should be utilized.

6.1.7.2 In the absence of a regionally agreed-upon Public Key Infrastructure (PKI) framework, a Transport Layer Security (TLS) self-signed certificate should be implemented, at minimum.

6.1.8 Mixed Mode Operations

6.1.8.1 eASP Responsibility

6.1.8.1.1 An eASP may provide a translation service to convert eFPL into FPL2012 to support the varying capabilities of AUs and ASPs within the APAC region during mixed-mode operations.

6.1.8.2 eAU Responsibility

6.1.8.2.1 An eAU or its designated representative shall submit eFPL to all relevant eASPs and FPL2012 to aASPs in accordance with ICAO Doc 4444 Chapter 17. The eAU or its designated representative shall ensure that all Flight Plan Updates are submitted to all relevant eASPs and aASPs using the appropriate message type:

a) If any changes are made after submitting eFPL (e.g. aircraft, route, delay): the eAU shall submit a Flight Plan Update to all relevant eASPs, and a CHG or DLA message to aASPs.

b) If a flight is expected to be delayed by more than 30 minutes: the eAU shall submit a Flight Plan Update to all relevant eASPs and a CHG or DLA message to aASPs.

c) If a flight is cancelled: the eAU shall submit a Flight Cancellation to all relevant eASPs and a CNL message to aASPs.

6.1.8.3 Translation

6.1.8.3.1 Translation between legacy FPL2012 and other relevant ATS messages in the current flight planning process into FF-ICE messages will play an important role in accommodating differing implementation timelines during the transition to full FF-ICE/R1 operations. ASPs may need to consider implementing the legacy-to-FF-ICE translation function to support its internal automation.

6.1.8.3.2 Translation is, however, only considered an interim solution. FF-ICE operations represent not only a change in flight plan format, but a paradigm shift in flight information exchange and management among ATM stakeholders.

6.1.8.3.3 Potential data loss may occur during translation between eFPL and FPL2012, because eFPL contains significantly more information than the legacy FPL2012. eAUs and eASPs are therefore encouraged to leverage the full benefits of FF-ICE services rather than prolonging reliance on translation.

6.1.8.3.4 For translation guidance, reference should be made to ICAO Doc 9965.

6.1.9 Access Management for FF-ICE Services

6.1.9.1 All FF-ICE services should implement robust access control mechanisms to ensure that only authorized parties can access FF-ICE services and receive flight data, safeguarding the confidentiality and integrity of sensitive information.

6.1.9.2 The following security safeguards should be implemented for all FF-ICE services:

a) authentication mechanisms to verify the identity of service users; and

b) authorization controls to ensure users can only access data and services appropriate to their role.

6.1.9.3 All FF-ICE service usage should be logged for operational monitoring, troubleshooting, and accountability purposes.

6.2 Common Validation Process for FF-ICE Services

6.2.1 Submission Response Message

6.2.1.1 Submission Response Messages are responses provided by the message recipient for every message submitted to them to acknowledge that they have received the messages and to indicate whether they are able or unable to process the messages. Submission Responses are used in a similar manner for five of the FF-ICE/R1 Services (Filing Service, Flight Data Request Service, Notification Service, Planning Service, and Trial Service). A Submission Response shall be “ACK”, “REJ” or “MAN”, where:

a) ACK: indicates the message will be processed by the eASP.

b) REJ: indicates the message cannot be processed and no data will be retained by the eASP.

c) MAN: indicates that manual intervention is required before processing can be completed.

6.2.1.2 Status Response Messages (Filing Status, Planning Status, and Trial Response) are only provided when the Submission Response status is “ACK”. If an eAU receives a Submission Response of “REJ”, no status response will be provided. The eAU must address the issues identified in the Submission Response explanation and resubmit the message until an “ACK” Submission Response is received, after which the appropriate status response will be provided.

6.2.2 General Validation Requirements

6.2.2.1 Upon receipt of any messages, the message recipient shall perform the following checks before returning a Submission Response. These checks include:

a) Basic syntax and semantic validation including FIXM version 4.3.0 schema compliance and applicable FIXM FF-ICE Applications; and

b) Other validation checks specific to the individual FF-ICE/R1 services.

Note: these are explained in greater detail in subsequent sections under each of the relevant FF-ICE/R1 services.

6.2.3 Submission Response "REJ"

6.2.3.1 When validation fails, the message recipient shall provide a Submission Response of "REJ" and include an explanation in the explanation note field. While harmonization of explanation notes is not required, eASPs should ensure that explanations are precise enough for eAUs to rectify their original message if necessary.

6.2.3.2 **Table 1** provides a sample template for eASPs to use within the explanation note regarding the various types of validation checks that might result in a Submission Response of "REJ".

Table 1: FF-ICE Submission Response Feedback for General Validation

Checks	Explanation Note
Syntax and Semantic Check	Wrong data format in field <X>
FIXM schema compliance	Field <X> not compliant to FIXM version 4.3.0
Mandatory Fields	Mandatory field <X> missing

6.2.4 Manual Processing Requirements

6.2.4.1 While FF-ICE processes are expected to be predominantly automated, manual processing may be required for specific operational needs. eASPs should clearly document their manual processing procedures and criteria and make them available to AUs.

6.2.4.2 When manual processing is required, eASPs shall send a "MAN" Submission Response to the message originator.

6.2.4.3 No action is required of the message originator on receipt of a "MAN" Submission Response from the eASP. The message originator should not submit any other messages relating to that flight until such time as an "ACK" or "REJ" Submission Response is received for that message.

6.2.4.4 After manual processing is completed, an "ACK" Submission Response shall be sent if the issue is resolved. A "REJ" Submission Response shall be sent if the issue remains unresolved. The eASP shall also provide a clear explanation of any manual changes made in their copy of the eFPL, within the explanation field of the Submission Response message.

6.2.4.5 Upon receipt of an "ACK" following a "MAN" Submission Response, the eAU should determine the need to submit a Flight Plan Update or Filed Flight Plan to all relevant ASPs incorporating the manual change that has been made to maintain a consistent flight plan across all ASPs.

6.2.4.6 The following scenarios should be considered for manual processing:

a) Special Handling Flights: flights requiring special handling (e.g. MEDEVAC, SAR) as identified in the Special Handling field, as defined in ICAO Doc 4444.

Note: these flights should normally not be rejected, even if they are non-compliant with standard restrictions. If these flight plans fail automatic validation checks, manual processing is recommended to ensure prompt facilitation and appropriate consideration of their special status.

b) Known System Issues: flights requiring manual intervention.

Note: these are cases where ATM system errors or configuration data errors which require manual intervention.

c) Other Exceptional Cases: these cases will be identified and documented by the eASP.

6.3 Filing Service

6.3.1 Introduction

6.3.1.1 The Filing Service is a mandatory service. Operators use the Filing Service to submit eFPLs and send updates, which are necessary to receive air traffic services.

6.3.1.2 To support the organized implementation of Filing Service in this region, a set of operational requirements and business rules should be utilized to provide clarity and operational consistency. While each eASP may have unique considerations and priorities, the transboundary nature of flights necessitates that certain processes be regionally agreed-upon, to allow for efficient flight planning for both eAUs and eASPs.

6.3.1.3 The Filing Service encompasses three primary processes:

a) Flight plan filing;

b) Flight plan updating; and

c) Flight plan cancellation.

6.3.1.4 **Figure 1** depicts the workflow and associated FF-ICE message exchanges for each Filing Service process, detailing the interaction between eAUs and eASPs throughout the flight plan lifecycle.

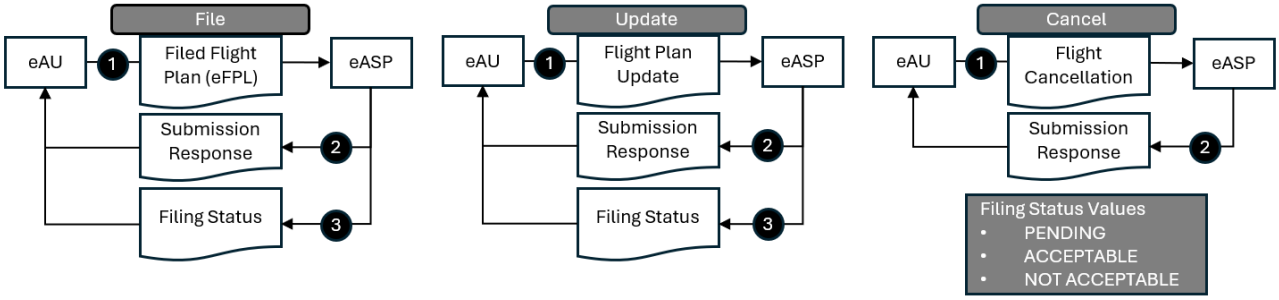


Figure 1: Filing Service Process Overview

6.3.1.5 There are five FF-ICE messages available under the Filing Service:

a) Filed Flight Plan Message;

b) Flight Plan Update Message;

c) Flight Cancellation Message;

d) Submission Response Message; and

e) Filing Status Message.

6.3.1.6 The following sections discuss the necessary processes and identify areas that would benefit from regional co-ordination for each of the Filing Service messages.

6.3.2 Filed Flight Plan Message

6.3.2.1 eFPLs are submitted by the eAUs as the first step under the Filing Service to obtain air traffic services. The eFPLs are subjected to validation checks resulting in a Submission Response, and evaluation checks resulting in a Filing Status.

6.3.3 Flight Plan Filing Cut-off Times

6.3.3.1 Flight plan filing cut-off times refer to the earliest and latest submission times for the filed flight plan. The earliest and latest submission times are defined in ICAO Doc 4444. However, regional agreements may impose stricter requirements necessitating that eAUs file their flight plans earlier than the standard latest submission time. The relevant cut-off times should be published by eASPs in the States' Aeronautical Information Publication (AIP). The flight plan filing cut-off times for the APAC region include:

a) Earliest submission timings: in accordance with ICAO Doc 4444 Section 4.4.2.1.1, eFPL shall not be submitted more than 120 hours before the EOBT of a flight. This requirement applies specifically to eFPL and does not extend to PFP.

b) Latest submission timings: In accordance with ICAO Doc 4444 Section 11.3.2, basic flight plan data necessary for flow control procedures shall be furnished at least 60 minutes in advance of the flight. eFPL shall therefore be submitted at least 60 minutes before EOBT.

6.3.3.2 The requirements specified in the *Asia Pacific Regional Framework for Collaborative Air Traffic Flow Management* should be followed, i.e. eFPL is to be submitted no less than three hours prior to the EOBT, except where operational or technical constraints necessitate otherwise.

6.3.4 Versioning

6.3.4.1 eASPs should refer to ICAO Doc 9965 Volume II Chapter 3.8 *Versioning & Reference Information*. It is the sole responsibility of the eAUs to increase the versioning of the flight plans. eASPs shall refer to the version numbers provided by eAUs and not change the flight plan versions.

6.3.4.2 eAUs shall increment the flight plan version by one, for the following scenarios:

a) a Flight Plan Update is made to the PFP;

b) a PFP has been previously submitted and the eAU is filing the flight plan (eFPL) for the same flight; or

c) an update is made to the eFPL.

6.3.4.3 It should be noted that the version number for the first submission of the eFPL received by an eASP might not be "1". This might occur when:

a) the eASP does not provide Planning Service and the eAU has previously submitted PFP to other eASPs that provide Planning Services; or

b) route changes result in the eASP becoming newly relevant to the flight, requiring the eAU to submit an eFPL with the current version number to inform the eASP of the existing flight plan.

6.3.4.4 If there is a concern of inconsistent version numbers between eAU and eASP, Flight Data Request Service can be used to obtain the eFPL which includes the version number.

6.3.5 Submission Response

6.3.5.1 The general validation requirements in accordance with section 6.2.2.1 also apply to the Submission Response Message.

6.3.5.2 Specific Validation Requirements for Filed Flight Plan

6.3.5.2.1 In addition to the checks listed in paragraph 6.2.2.1, submission timeframe, versioning, and flight association checks should also be conducted for Filed Flight Plans and Flight Plan Updates. eASPs may also implement additional checks based on local requirements to ensure that route/trajectories filed by eAUs contain valid routes, fix names, coordinates, etc. These checks include, but are not limited to:

a) trajectory syntactic checks; and

b) semantic checks.

6.3.5.2.2 **Table 2** provides a sample template for eASPs to use within the explanation note field for the various types of validation checks that might result in a Submission Response of "REJ":

Table 2: FF-ICE Submission Response feedback for Filed Flight Plans and Flight Plan Updates

Additional Checks for Filed Flight Plans and Flight Plan Updates	
Checks	***Explanation Note***
Submission Timeframe	EOBT is outside allowable submission timeframe
Versioning	A later version <Y> exists in the system
Flight association	Same flight with different GUFI found Different flight with same GUFI found
Route validation (Structure of route, lat/long of point, fix names)	Trajectory Info Error Invalid Route Structure Invalid Fix/waypoint

6.3.6 Filing Status Message

6.3.6.1 Overview

6.3.6.1.1 Filing Status reflects the operational acceptability of a flight plan based on the eASP's evaluation or re-evaluation against its operational environment, including but not limited to airspace configuration, published restrictions, and other relevant constraints. eASPs provide feedback to eAUs to identify the restrictions and constraints applicable to the flights. The Filing Status serves as a key mechanism for eASPs to communicate flight plan acceptability to eAUs before departure.

6.3.6.1.2 eASPs should evaluate eFPLs against restrictions and constraints managed by existing ATM systems to ensure comprehensive evaluation of flight plan acceptability. Restrictions and constraints considered should include but are not limited to:

a) aerodrome, airspace and route availability;

b) ATFM measures;

c) environmental conditions such as SIGMETs, WAFs, TAFs, and volcanic ash areas, affecting airspace availability or constraints; and

d) aircraft operations requirements (e.g. required navigation performance specifications, required equipage, etc.)

Note: the above list represents constraints and restrictions that eASPs should consider. However, not all of these will necessarily result in a "Not Acceptable" Filing Status.

6.3.6.2 Filing Status Values and Expected Actions from the eAUs

6.3.6.2.1 While eASPs retain the option to determine the specific criteria for each Filing Status based on their operational environment, the interpretation and expected actions from the eAUs for each Filing Status value shall be established as described in **Table 3**.

Table 3: FF-ICE Filing Status Interpretation and Expected eAU Action

Filing Status	Interpretation	Expected eAU Action
ACCEPTABLE	The flight plan complies with operational requirements. Any constraints identified can be accommodated without flight plan modifications.	No immediate action or update required. Note any provided constraints for awareness. Prepare for possible tactical clearances reflecting identified constraints.
NOT ACCEPTABLE	The flight plan does not comply with operational requirements and requires modification.	Submit Flight Plan Update to address non-compliance. If close to EOBT, the operator may be unable to update their flight plan in time, using FF-ICE/R1 processes. In these cases, the operator may update their flight plan as needed through tactical coordination with ATC. *Note: if departure eASP provides a "Not Acceptable" Filing Status, eAU can expect refusal to start-up clearance if non-compliance requires flight plan modification (e.g. aerodrome closure). This does not apply to "Not Acceptable" status received from downstream eASPs.*
PENDING	Flight plan evaluation has not yet been performed. More details under Section 6.3.6.5.1	Await subsequent filing status update. Monitor Expected Evaluation Time if provided.

6.3.6.2.2 The Filing Status is intended to indicate the acceptability of a proposed route or trajectory within airspaces where ATS are provided. It cannot be interpreted as the issuance of ATC clearance.

6.3.6.2.3 A “NOT ACCEPTABLE” Filing Status indicates that the flight plan is operationally inconsistent with the ATM configuration and/or with published restrictions and that operator action is required to obtain a clearance. eAUs are expected to submit Flight Plan Updates to address the non-compliance. Note that the Filing Status reflects route/trajectory acceptability only and does not prevent ATC tactical coordination during operations.

6.3.6.2.4 An “ACCEPTABLE” Filing Status can include potential constraints to alert eAUs of constraints that may affect the flight plan. For example, if a flight plan is 'Acceptable' but there is an applicable ATFM program for the arrival airport, the arrival eASP should include this constraint in the Filing Status even though its specific impact (e.g. constraint time) is not yet known. When Filing Status is “ACCEPTABLE”, eAUs are not expected to make any changes to their eFPLs.

6.3.6.2.5 When a Filing Status is “PENDING” or “NOT ACCEPTABLE”, an explanation shall be included within the Filing Status response to eAU.

6.3.6.3 **Feedback Methods for Restrictions/Constraints**

6.3.6.3.1 When providing restrictions and/or constraints to eAUs within the Filing Status, eASPs shall make use of one or more of the following methods:

a) Filing Status Explanation;

b) General Flight Constraint; and/or

c) Route/Trajectory (R/T) Point Constraint.

6.3.6.3.2 eASPs should retain flexibility in determining their Filing Status feedback methods and content, except in the scenarios described in paragraph 6.3.6.4.1, which require harmonized responses to ensure regional interoperability and consistent handling of situations.

6.3.6.3.3 Filing Status Explanation

6.3.6.3.3.1 The Filing Status Explanation is a mandatory field when the status is “PENDING” or “NOT ACCEPTABLE”, but is otherwise optional. It should provide information necessary for eAUs to understand why a flight plan is not operationally acceptable or to be alerted to potential constraints that could impact the flight. Where available, the explanation should include references to published restriction identifiers to facilitate the eAU’s understanding and response.

6.3.6.3.4 General Flight Constraint

6.3.6.3.4.1 General Flight Constraints may be used to indicate constraints that apply to the entire flight rather than specific trajectory points. These types of constraints may include:

a) applicability period of the constraint;

b) operational impact on the flight;

c) reference to published restriction identifiers where available; and

d) other operational information affecting flight.

6.3.6.3.5 Route/Trajectory (R/T) Point Constraints

6.3.6.3.5.1 Providing an "Agreed" or "Negotiating R/T" within the Filing Status is optional. When provided, eASPs may include specific constraints at route or trajectory points. These constraints may specify speed, level, and/or time requirements that the flight is expected to meet. Such constraints should be accompanied by information for the eAU to understand their operational impact, including but not limited to:

a) description of the constraint;

b) speed, level, and/or time constraints where relevant;

c) reference to published restriction identifiers, where available; and

d) other point-specific operational requirements.

6.3.6.4 **Harmonized Filing Status Responses for Identified ATFM Scenarios**

6.3.6.4.1 While eASPs maintain flexibility in determining their trajectory evaluation criteria and feedback methods, certain scenarios require pre-determined Filing Status responses to ensure regional interoperability and consistent handling of operational conditions. The following ATFM scenarios were identified to benefit from pre-established Filing Status responses:

a) Calculated Time Over (CTO) a point or Calculated Landing Time (CLDT) imposed by eASPs;

b) Ground Stop (GSt) imposed by arrival eASPs;

c) flight level restrictions imposed by relevant eASPs;

d) fix balancing imposed by relevant eASPs; and

e) re-routing imposed by relevant eASPs.

6.3.6.4.2 Harmonized Filing Status Responses

6.3.6.4.2.1 The regionally agreed-upon Filing Status Responses for these scenarios are detailed in **Table 10**. Consistent implementation by all eASPs in APAC is necessary to facilitate the processing requirements of eAUs.

6.3.6.4.2.2 eASPs are not required to suggest alternative solutions to eAUs. However, if eASPs choose to offer suggestions to assist eAUs, they may:

a) add additional suggested details to the end of the regionally agreed-upon explanation format in the Filing Status Explanation field; and/or

b) provide a Negotiating R/T containing the suggested alternative trajectory, including route, levels, or timing.

6.3.6.4.2.3 The regionally agreed-upon explanation format shown in **Table 10** should remain the primary response, with any additional suggested information considered as supplementary content rather than replacing the required format.

6.3.6.4.3 Scenario A) Calculated Time Over (CTO) a point or Calculated Landing Time (CLDT) imposed by eASPs

6.3.6.4.3.1 Due to demand capacity imbalance, the eASP may impose a time constraint of CTO or CLDT to flights.

Note: eASP shall provide feedback only on constraints within airspace where it provides ATS or ATFM service. Where constraints are to be applied outside this airspace, e.g. assignment of Calculated Take-Off Time (CTOT) at the departure aerodrome in an airspace outside the eASP's jurisdiction, special arrangement between ASPs shall be established.

6.3.6.4.3.2 When a CTO or CLDT is imposed on flights, the following responses shall be provided as presented in **Table 10**:

a) Filing Status value shall be "NOT ACCEPTABLE";

b) an explanation shall be provided, specifying at a minimum the ATFM constraint/restriction affecting the flight;

c) a Negotiating R/T shall be included to indicate the constrained point and its associated time constraint;

d) when providing constraint details in the Negotiating R/T, eASPs should:

i) use ElementStartPoint to identify the location of the constraint;

ii) provide the time constraint using Constraint.Time, and any additional level/speed constraints using Constraint.Level/Constraint.Speed, if applicable;

iii) provide the REGCAUSE in the constraint description;

iv) provide the REGUL in restriction reference; and

e) the message format for REGCAUSE and REGUL should be in accordance with the *Asia/Pacific Region AFTN/AMHS-based Interface Control Document (ICD)* for ATFM.

6.3.6.4.4 Scenario B) Ground Stop (GSt) imposed by arrival eASPs

6.3.6.4.4.1 The arrival eASP may need to restrict arrivals for a period when capacity has been severely reduced.

6.3.6.4.4.2 When a GSt is implemented, the eASP initiating the measure the following responses shall be utilized as detailed in **Table 10**:

a) Filing Status value shall be NOT ACCEPTABLE;

b) an explanation shall be provided. The following format should be used: GSt imposed on flights arriving into <aerodrome> from <YYYY-MM-DDTHH:mm:ssZ> to <YYYY-MM-DDTHH:mm:ssZ>;

c) if available, eASP should provide reference to the applicable restrictions within the explanation note: See NOTAM <XXX> / ADP <XXX> for details;

d) if available, SWIM information services should be used to provide more details of applicable restrictions; and

e) a Negotiating R/T is not required for GSt restrictions.

6.3.6.4.5 Scenario C) Flight level restrictions imposed by relevant eASPs

6.3.6.4.5.1 Restrictions resulting in unavailability of certain flight levels may be imposed.

6.3.6.4.5.2 When flight level restrictions are imposed, the following responses shall be utilized as detailed in **Table 10**:

a) Filing Status value shall be "NOT ACCEPTABLE";

b) an explanation shall be provided. The following format should be used: <FL or altitude, FL or altitude> on route <XXXX> not available;

c) if available, eASP should provide reference to the applicable restrictions within the explanation note: See NOTAM <XXX> for details;

d) if available, SWIM information services should be used to provide more details of applicable restrictions; and

e) a Negotiating R/T is not required for flow restrictions.

6.3.6.4.6 Scenario D) Fix balancing imposed by relevant eASPs

6.3.6.4.6.1 Fix balancing is a tactical ATFM measure aimed at distributing demand and avoiding delays, whereby the aircraft is assigned a different arrival or departure fix. This can be used, for example, during conditions where a STAR or a SID is unusable.

6.3.6.4.6.2 When fix balancing measures are imposed on flights, the following responses shall be utilized as detailed in **Table 10**:

a) Filing Status value shall be NOT ACCEPTABLE;

b) an explanation shall be provided. The following format should be used: Trajectory Point <XXXXX> not available;

c) if available, eASP should provide reference to the applicable restrictions within the explanation note: See NOTAM <XXX> for details;

d) if available, SWIM information services should be used to provide more details of applicable restrictions; and

e) a Negotiating R/T is not required for fix-balancing.

6.3.6.4.7 Scenario E) Re-routing imposed by relevant eASPs

6.3.6.4.7.1 eASPs may require flights to use alternative routing if specific routes/airspace are unavailable or constrained.

6.3.6.4.7.2 When re-routing measures are imposed on flights, the following responses shall be utilized as detailed in **Table 10**:

a) Filing Status value shall be "NOT ACCEPTABLE";

b) an explanation shall be provided in the format: Route <XXXXX> not available;

c) if available, eASP should provide reference to the applicable restrictions within the explanation note: See NOTAM <XXX> for details;

d) if available, SWIM information services should be used to provide more details of applicable restrictions; and

e) a Negotiating R/T is not required for re-routing.

6.3.6.4.8 Expected eAU Action

6.3.6.4.8.1 Upon receiving a "NOT ACCEPTABLE" Filing Status, eAUs shall submit a Flight Plan Update (refer to Section 6.3.7 for more details on Flight Plan Updates) to comply with assigned restrictions/constraints. In a mixed-mode environment, the corresponding CHG/DLA message should be submitted when applicable.

6.3.6.4.9 eASP Compliance Checking and Filing Status Response

6.3.6.4.9.1 eASPs shall evaluate the Flight Plan Update to check for compliance against the restrictions/constraints where applicable. Paragraphs 6.3.6.4.9.2 to 6.3.6.4.9.6 provide an example on how this evaluation can be performed for the following scenarios.

6.3.6.4.9.2 For Scenario A, eASPs should check the Estimated Time Over (ETO) of the constrained point submitted within the Flight Plan Update for compliance to the CTO:

a) If the ETO falls within the compliance window, the Filing Status response of the Flight Plan Update will be "ACCEPTABLE".

b) If the ETO falls outside the compliance window, the flight will be re-evaluated by the eASP.

c) The compliance window parameters as established through regional ATFM procedures shall be applied.

6.3.6.4.9.3 For Scenario B, the arrival eASP should check that the updated estimated landing time of the Flight Plan Update is not within the constrained period.

6.3.6.4.9.4 For Scenario C, the eASPs should check the Flight Plan Update to ensure that the unavailable Flight Levels of the specific trajectory points are not being used.

6.3.6.4.9.5 For Scenario D, the eASPs should check the Flight Plan Update to ensure that the unavailable trajectory points are not being used.

6.3.6.4.9.6 For Scenario E, the eASPs should check the Flight Plan Update to ensure that the unavailable routes are not being used.

6.3.6.4.9.7 When ATFM restrictions are cancelled and the last Filing Status value was "NOT ACCEPTABLE", the eASP shall provide an updated Filing Status with the value of "ACCEPTABLE" and an explanation that the ATFM restriction is no longer applicable or has been cancelled.

6.3.6.4.9.8 When ATFM restrictions are cancelled and the last Filing Status value was "ACCEPTABLE", the eASP should provide an optional updated Filing Status with the value of "ACCEPTABLE" and an explanation that the ATFM restriction is no longer applicable or has been cancelled.

Note: an "ACCEPTABLE" Filing Status may include information about applicable ATFM restrictions that do not constrain the flight (e.g. MIT/MINIT). This additional information is provided for situational

awareness. The eAUs may choose to modify their flight plan to optimize operations or may proceed without changes. The flight remains acceptable as filed, but operators can use this information to make informed decisions about potential route adjustments or other operational considerations.

6.3.6.4.9.9 When ATFM restrictions are cancelled and the eAU had previously modified their Desired Route/Trajectory to comply with the restriction, the eAU may use available SWIM services to identify when restrictions are lifted and may submit a Flight Plan Update to adjust their Desired Route/Trajectory.

6.3.6.5 Usage of "PENDING" Status

6.3.6.5.1 It is recommended that eASPs evaluate flight plans as soon as they are available. However, in situations where immediate evaluation is not possible, a "PENDING" Filing Status may be used when the eASP's system requires more time than the time-out period (see paragraph 6.8.1.1) to provide a definitive Filing Status. This could occur in scenarios such as:

a) When the flight plan has been received well in advance of the eASP's processing horizon for the flight; and

b) When eASPs do not conduct a re-evaluation process and hence prefer to provide the filing status nearer to the EOBT.

Note 1: this is not recommended as it may create a situation where other eASPs have returned a filing status to the flight plan, and there is no clarity for eAUs to determine whether the flight plans are accepted by all relevant eASPs.

Note 2: ICAO Doc 9965 recommends that the first non-Pending Filing Status should be provided no later than three hours before EOBT, provided the submission was made in the correct timeframe.

6.3.6.5.2 When providing a "PENDING" status, the eASP shall include an explanation. An Expected Evaluation Time should be included to indicate when the flight plan is likely to be fully processed.

6.3.7 Flight Plan Update Message

6.3.7.1 Flight Plan Updates are submitted by eAUs to inform on changes to the eFPL. These updates are subjected to similar validation and evaluation checks as the eFPLs.

6.3.7.2 When route changes result in new eASPs becoming concerned with the flight that did not previously receive the eFPL, the eAU shall submit the current version of the complete set of flight plan data in eFPL to those new eASPs, rather than a Flight Plan Update.

6.3.7.3 Flight Plan Update Cut-off Times

6.3.7.3.1 The submission timeframe for Flight Plan Update should provide sufficient flexibility to eAUs to cater to operational issues and any additional considerations that may arise after the filing of the eFPL. It is recommended that Flight Plan Updates are permitted from the time that the eAU receives the Filing Status of a submitted eFPL until route clearance delivery or the flight's AOBT, whichever occurs first.

6.3.7.3.2 eASPs shall ensure that any Flight Plan Update received after route clearance delivery results in appropriate clearance revision by ATC to maintain consistency between the flight plan and delivered clearance.

6.3.7.4 Flight Plan Update Threshold

6.3.7.4.1 ICAO Doc 9965 states that eASPs may publish threshold modification values that trigger the transmission of an update (see ICAO Doc 9965). With FF-ICE automating most of these processes, eAUs should be able to provide eASPs with the most recent data as possible, to increase operational predictability for all stakeholders.

6.3.7.4.2 It is recommended that eAUs submit Flight Plan Update each time there is a change in eFPL data, subject to their system capabilities. At a minimum, eAUs shall submit Flight Plan Update due to changes equivalent to an FPL2012 data update (ICAO Doc 4444 Section 11.4.2.2.4 states that a CHG message shall be transmitted when any change is to be made to basic flight plan data contained in previously-transmitted FPL or RPL data).

6.3.7.4.3 The same recommendation applies for updates to EOBT. eAUs should submit Flight Plan Update each time there is a change in EOBT, subject to their system capabilities. At a minimum, eAUs shall submit Flight Plan Update if EOBT is delayed by more than 30 minutes (ICAO Doc 4444 Section 11.4.2.2.3.1 states that a DLA message shall be transmitted if the flight is delayed by more than 30 minutes after the estimated off-block time contained in the basic flight plan data).

6.3.7.4.4 Providing the most recent data to eASPs ensures that all stakeholders have the most accurate and updated information of the flight plan available to perform their ATM functions, as even minor changes to route can affect trajectory predictions.

6.3.7.4.5 While the varying update thresholds for FPL2012 and eFPL will result in varying information received by eASPs versus aASPs, it should be noted that in a mixed-mode environment eASPs have the advantage of receiving the most updated information that eAUs are most likely to utilize. For this reason, the varied information received by eASPs versus aASPs should not present cause to delay sending more precise Flight Plan Updates to eASPs only.

6.3.8 Flight Cancellation

6.3.8.1 Specific Validation Requirements for Flight Cancellation

6.3.8.1.1 In addition to the general validation checks indicated in paragraph 6.2.2.1, eASPs should perform a flight association check, verify that the flight has not yet departed, and authenticate that the message originator has the authority to cancel the flight.

6.3.8.1.2 **Table 4** provides a sample template for eASPs to use within the explanation note field for the various types of validation checks that might result in a Submission Response of "REJ".

Table 4: FF-ICE Submission Response Feedback for Flight Cancellation Messages

Additional Checks for Flight Cancellation Messages	
Checks	***Explanation Note***
Flight association	Same flight with different GUFI found Different flight with same GUFI found
Authenticated user	No information available
Flight Plan State	Flight has already departed

Note: If the source of the request has no authorized access to the identified flight, a Submission Response of "REJ" should be returned, with an explanation that the recipient

does not have the requested information. Note that a response indicating non-authorization verifies for the sender that the flight exists, which is information in itself. Therefore, a generic message indicating that there is no information for the flight is preferable.

6.3.8.1.3 In accordance with ICAO Doc 9965, the eASP shall provide an "ACK" response when cancellation is successful, which shall terminate operational use of GUFI, as well as any further processing of all instances of the flight plan (preliminary and filed). A "REJ" response shall be given with an explanation, when cancellation is unsuccessful.

6.3.8.1.4 A cancelled flight cannot be reinstated. If the operator later decides to operate the flight, a new flight plan with a new GUFI shall be submitted.

6.3.9 Filing Requirements for Cross-ANSP and Local Agreements

6.3.9.1 Individual eASPs may consider establishing cross-ANSP agreements and local agreements with eAUs to facilitate seamless filing processes and the coordination of flight plan submissions across different airspace jurisdictions.

6.3.9.2 eASPs may likewise establish regional agreements with other eASPs for regional flight plan distribution and/or coordinated feedback on airspace restrictions.

6.3.9.3 eASPs may also establish local agreements with eAUs to facilitate FF-ICE implementation through translation services, Filing Status handling procedures, and tactical coordination arrangements.

6.3.9.4 However, the operational challenges that could arise from the potential complexity arising of a multitude of agreements, especially in the context of mixed mode operations, should also be a consideration.

6.3.9.5 It is recommended that APAC States adhere to the procedures in this Plan. Any local agreements or cross-ANSP agreements should not contradict the guidance provided in ICAO Doc 9965 or this Plan, which should supersede any supplementary or tangential agreements.

6.4 Flight Data Request Service

6.4.1 Introduction

6.4.1.1 The Flight Data Request Service is a mandatory service that eASPs will provide in the FF-ICE environment to allow authorized parties to obtain information about a flight, including flight plans, supplementary data, and flight status.

6.4.1.2 **Figure 2** depicts the workflow and associated FF-ICE message exchanges between FF-ICE participants during flight data queries.

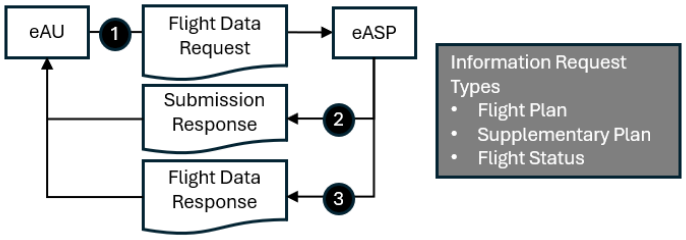


Figure 2: Flight Data Request Service Overview

6.4.1.3 There are three FF-ICE messages available under the flight data request service:

a) Flight Data Request Message;

b) Submission Response Message; and

c) Flight Data Response Message.

6.4.2 Flight Data Request Message

6.4.2.1 Information available for request by the eASPs should include the minimum set of data types as listed in ICAO Doc 9965 (flight plans, supplementary data, and flight status) as well as any additional information which the eASPs may choose to make available. eAUs may also enable eASPs to request relevant information concerning a flight. Request codes should be specified in the Requested Flight Data Item field of the Flight Data Request Message.

6.4.2.2 Access Control

6.4.2.2.1 In addition to the general requirements specified in Section 6.1.9, eASPs and eAUs should implement robust access control mechanisms to ensure that only authorized parties can receive the requested data, safeguarding the confidentiality and integrity of sensitive information. The following safeguards are recommended:

a) eAUs are limited to querying their own flights;

b) relevant eASPs should have full access to the eFPL and associated data;

c) adjacent eASPs (providers of airspaces not planned to be directly traversed by the flight but the boundaries of which are close to the flight trajectory) may be granted limited access to relevant eFPL for planning purposes; and

d) airport operators should have access to departures and arrivals pertinent to their operations.

6.4.2.3 Query Limits

6.4.2.3.1 The Flight Data Request Service is designed for querying information about individual flights, not for bulk data retrieval, in accordance with ICAO Doc 9965. eASPs and eAUs should publish request rate limit (i.e. the number of requests that can be made to the Flight Data Request Service within a specific period). Flight Data Requests that exceed the published request rate limit shall receive a Submission Response with status REJ and an appropriate explanation in **Table 5**, provided in section 6.4.2.6.2, indicating the rate limit violation.

6.4.2.4 Applicability Period

6.4.2.4.1 A flight data request pertaining to a specified eFPL is only valid from the time the eFPL is submitted to the time the flight is completed. A flight is completed when it has landed at the destination, diversion, or other alternate aerodrome.

6.4.2.4.2 An eASP may also support the submission of an information request for PFP data. This request will be valid from the time the PFP is submitted until the submission of the eFPL.

6.4.2.5 Submission Response Message

6.4.2.5.1 The general validation requirements in accordance with section 6.2.2.1 apply to the Submission Response Message criteria.

6.4.2.6 Specific Validation Requirements for Flight Data Request

6.4.2.6.1 In addition to the checks listed in paragraph 6.2.2.1, eASPs should perform flight association checks and validate the legitimacy of the request, ensuring that only authorized parties can access flight data.

6.4.2.6.2 **Table 5** provides a sample template for eASPs to use within the explanation note field for the various types of validation checks that might result in a Submission Response of "REJ".

Table 5: FF-ICE Submission Response feedback for Flight Data Request Messages

Additional Checks for Flight Data Request Messages	
Checks	***Explanation Note***
Flight association	Same flight with different GUFI found Different flight with same GUFI found
Multiple flights matched	Multiple flights with the requested information: a) Aircraft ID1, dep, dest, EOBT, GUFI b) Aircraft ID1, dep, dest, EOBT, GUFI
Requested flight not found	Flight does not exist
No authorized access to the identified flight	No information available
Requested flight data items not supported by the eASP	Request not supported
Query Limit	Query Limit Exceeded

6.4.3 Flight Data Response Message

6.4.3.1 It is recommended that the following R/T be included within the Flight Data Response for the various requests:

a) Flight Plan Request: eASPs should include the Desired R/T representing the last filed R/T by eAU. This is based on the understanding that the requestor wants to see the route information that the eAU last submitted; and

b) Flight Status Request: eASPs should include the latest R/T (either Agreed R/T or Negotiating R/T) as per the latest Filing Status of the flight, if applicable. This is based on the understanding that the requestor wants to see the latest response (i.e. Filing Status) provided by the eASPs.

6.5 Notification Service

6.5.1 Introduction

6.5.1.1 The Notification Service enables eASPs to notify relevant eASPs, as identified through the flight plan, of significant flight events such as departure and arrival. While Notification Service is not a

service mandated by ICAO Doc 4444 to be FF-ICE capable, it will likely be necessary to support the sunset of FPL2012 and the associated ATS messages. All ASPs in the APAC region shall implement the Notification Service according to the regional implementation timeline.

6.5.1.2 The Notification Service currently encompasses the full process of flight event notification through the sending of flight departure and arrival messages. **Figure 3** depicts the workflow and associated FF-ICE message exchanges, showing the interaction between FF-ICE participants throughout the flight notification process.

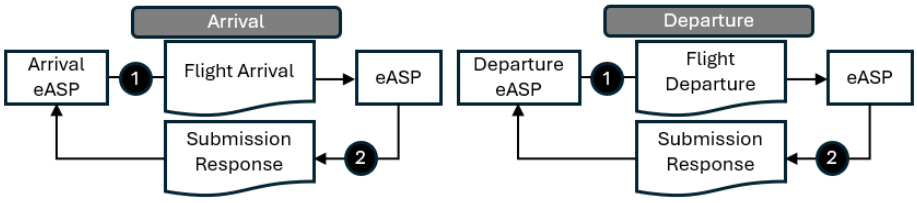


Figure 3: Notification Service Overview

6.5.1.3 There are three FF-ICE messages available under the Notification Service:

a) Flight Departure Message;

b) Flight Arrival Message; and

c) Submission Response Message.

6.5.2 Submission Response Message

6.5.2.1 In addition to the checks listed in paragraph 6.2.2.1, eASPs should perform flight association checks and timestamp validation checks to ensure that the arrival/departure time is not in the future and that the arrival time does not precede departure time in the case of the Arrival message. Additionally, the eASP should check to ensure that the originators of the Flight Departure/Flight Arrival Message are from the appropriate eASPs.

6.5.2.2 **Table 6** provides a sample template for eASPs to use within the explanation note for the various types of validation checks that might result in a Submission Response of "REJ".

Table 6: FF-ICE Submission Response feedback for Flight Departure and Flight Arrival Messages

Additional Checks for Flight Departure and Flight Arrival Messages	
Checks	***Explanation Note***
Flight association	Same flight with different GUFI found Different flight with same GUFI found
Timestamp Check	Arrival/Departure time is in the future Arrival time is before departure time
Permission to send notification	No rights to send Arrival/Departure message

6.5.2.3 Upon receipt of a Submission Response indicating "REJ" status from Notification Service, the sender shall review the Submission Status Explanation to determine the cause of rejection. The sender

shall make the necessary corrections to address the identified issues and re-submit the notification message, if applicable.

6.6 Planning Service

6.6.1 Introduction

6.6.1.1 The Planning Service is an optional service that enables collaborative decision-making between eAUs and eASPs by sharing informal flight plans well ahead of time via Preliminary Flight Plans, allowing improved demand prediction and optimal trajectory planning before the formal filing of flight plans. eASPs providing Planning Services shall publish the availability of the service in their AIP.

6.6.1.2 The Planning Service encompasses three primary processes:

a) PFP submission;

b) PFP updating; and

c) PFP cancellation.

6.6.1.3 **Figure 4** depicts the workflow and associated FF-ICE message exchanges for each process, showing the interaction between eAUs and eASPs throughout the PFP lifecycle.

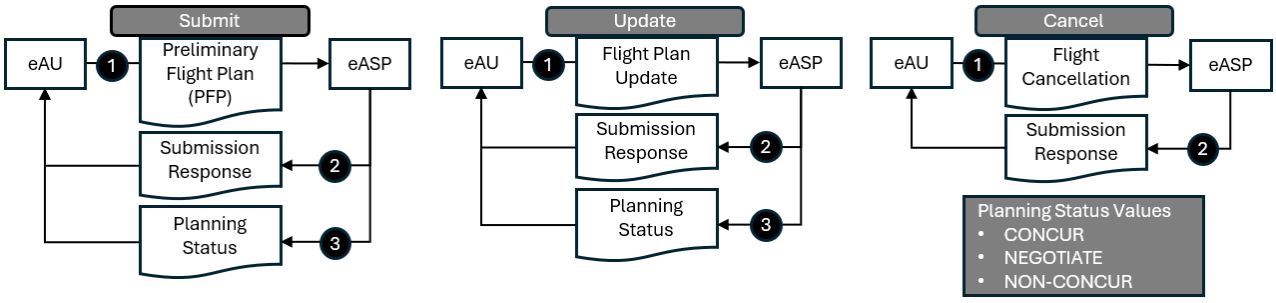


Figure 4: Planning Service Process Overview

6.6.1.4 There are five FF-ICE messages available under the Planning Service:

a) PFP Message;

b) Flight Plan Update Message;

c) Flight Cancellation Message;

d) Submission Response Message; and

e) Planning Status Message.

6.6.1.5 The processes under Planning Service are similar to those related to Filing Service, except that these processes take place in a timeframe designated before the submission of eFPL. This timeframe enables negotiations to take place with more advance notice.

6.6.2 Preliminary Flight Plan Message

6.6.2.1 PFPs are submitted by the eAUs as the first step under the Planning Service. Unlike eFPL which is submitted to all relevant eASPs, eAUs can choose to submit PFPs to select eASPs that they have

designated for cooperative planning efforts. Typically, these eASPs have airspaces that are complex or regularly constrained. The PFPs are subjected to validation checks resulting in a Submission Response, and evaluation checks resulting in a Planning Status.

6.6.3 PFP Cut-off Times

6.6.3.1 The PFP cut-off times refer to the earliest and latest submission times for the PFP. The earliest submission time is dependent on eASPs' capability and the type of advance planning that could be conducted between the eASPs and eAUs. Meanwhile, the latest submission time should be determined by the time that the eFPL is due. The PFP expires when the eFPL is due. PFP expiry refers to the point at which a PFP can no longer be processed or updated by eASP. The due time of eFPL is determined by each eASP and shall comply with the latest submission timing as defined in ICAO Doc 4444 and any regional agreements. This will also be the time after which the PFP will not be accepted. The cut-off times should be published by eASPs in the AIPs.

6.6.3.2 After an eFPL has been submitted, a PFP can no longer be submitted for the same flight.

6.6.4 Versioning

6.6.4.1 As with eFPL, it is the responsibility of the eAUs to increase the versioning of the PFPs. Every new version or Flight Plan Update made to the PFP will increment the version by one.

6.6.5 Submission Response Message

6.6.5.1 The general validation requirements as per paragraph 6.2.2.1 apply to the Submission Response Message criteria.

6.6.6 Specific Validation Requirements for PFPs

6.6.6.1 In addition to the checks listed in paragraph 6.2.2.1, submission timeframe, existence of eFPL, versioning, and flight association check should be conducted for PFPs and Flight Plan Updates. eASPs may also implement additional checks based on local requirements, to ensure that route/trajectories filed by eAUs contain valid routes, fix names, and coordinates, including but not limited to:

a) trajectory syntactic checks; and

b) semantic checks.

6.6.6.2 **Table 7** provides a sample template for eASPs to use within the explanation note field for the various types of validation checks that might result in a Submission Response of "REJ".

Table 7: FF-ICE Submission Response feedback for Preliminary Flight Plans and Flight Plan Updates

Additional Checks for PFPs and Flight Plan Updates	
Checks	***Explanation Note***
Submission Timeframe	EOBT is outside allowable submission timeframe
Existence of eFPL	eFPL for the same flight has already been submitted
Versioning	A later version <Y> exists in the system
Flight association	Same flight with different GUFI found

	Different flight with same GUFI found
Route validation (Structure of route, lat/long of points, fix names)	Trajectory Info Error Invalid Route Structure Invalid Fix/waypoint

6.6.7 Planning Status Message

6.6.7.1 Overview

6.6.7.1.1 The Planning Status reflects the likelihood that the flight plan will be operationally acceptable if submitted as an eFPL. The evaluations conducted for the PFPs are therefore similar to those conducted for the eFPLs. eASPs provide feedback within the Planning Status to eAUs to identify the restrictions and constraints applicable to the flights.

6.6.7.1.2 In line with the evaluations conducted for eFPLs, eASPs should evaluate PFPs against restrictions managed by existing ATM systems, to ensure comprehensive evaluation of flight plan acceptability. Refer to section 6.3.6.1.2 for the recommended list.

6.6.7.2 Planning Status Values

6.6.7.2.1 eASPs retain flexibility in determining the specific criteria for each planning status based on their operational environment. However, the criteria for a “NON-CONCUR” Planning Status should be similar to the criteria for a “NOT ACCEPTABLE” Filing Status.

6.6.7.2.2 Similarly, the criteria for a “CONCUR” Planning Status should be similar to the criteria for an “ACCEPTABLE” Filing Status.

6.6.7.2.3 A third Planning Status of “NEGOTIATE” is also available. This Planning Status refers to any situation where the flight plan is likely to be accepted if filed, but the R/T details differ.

6.6.7.3 Feedback Methods for Restrictions/Constraints

6.6.7.3.1 When providing restrictions / constraints to eAUs within the Planning Status, eASPs should make use of methods similar to those detailed under the Filing Status, as outlined in Section 6.3.6.3.1.

6.6.7.3.2 eASPs should retain flexibility in determining their Planning Status feedback methods and content, except in the scenarios described in Section 6.3.6.4.1 which require pre-established responses to promote regional interoperability and consistent handling.

6.6.7.3.3 For the five Scenarios (as described in Section 6.3.6.4.1), the Planning Status should therefore be “NON-CONCUR” with a Negotiating R/T provided where applicable, as specified in the established requirements.

6.6.7.3.4 The regionally agreed-upon Planning Status response format and explanation templates for the respective scenarios are detailed in **Appendix C Table 10**. The explanation formats listed within the table shall be used together with the “NON-CONCUR” Planning Status value.

6.6.8 Flight Plan Update Message

6.6.8.1 Flight Plan Updates are submitted by eAUs to provide information regarding changes to the PFPs. These updates are subjected to similar validation and evaluation checks as the PFPs.

6.6.9 Flight Plan Update cut-off times

6.6.9.1 The submission of Flight Plan Update for PFP should be allowed from the time that the eAU submits a PFP to the time that the eFPL is due.

6.6.10 Flight Plan Update Threshold

6.6.10.1 Unlike the flight plan filing process, which operates in a mixed-mode environment, the Planning Service impacts only FF-ICE-capable stakeholders. For this reason, eAUs are advised to submit Flight Plan Update each time there is a change in PFP data. There is no legacy message equivalent to the PFP, meaning that the PFP update may be as frequent as allowed within the system's capabilities, without impact to non-FF-ICE-capable stakeholders.

6.6.11 Flight Cancellation

6.6.11.1 Specific Validation Requirements for Flight Cancellation

6.6.11.1.1 In addition to the general validation checks detailed in paragraph 6.2.2.1, eASPs should perform flight association checks and authenticate that the message originator has the authority to cancel the flight.

6.6.11.1.1.1 **Table 8** provides a sample template for eASPs to use within the explanation note field for the various types of validation checks that might result in a Submission Response of "REJ".

Table 8: FF-ICE Submission Response feedback for Flight Cancellation

Additional Checks for Flight Cancellation Messages	
Checks	***Explanation Note***
Flight association	Same flight with different GUFI found Different flight with same GUFI found
Authenticated User	No information available

6.7 Trial Service

6.7.1 Introduction

6.7.1.1 The Trial Service is an optional service that allows operators to evaluate "what-if" scenarios for both preliminary and filed flight plans, without affecting the actual flight plan data, enabling better flight planning and constraint resolution.

6.7.1.2 The Trial Service encompasses the process of evaluating alternative flight scenarios without affecting existing flight plans. **Figure 5** depicts the workflow and associated FF-ICE message exchanges, showing the interaction between eAUs and eASPs throughout the trial request and evaluation process.

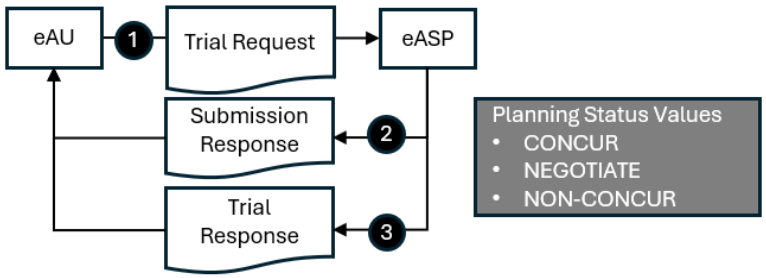


Figure 5: Trial Service Overview

6.7.1.3 There are three FF-ICE messages available under the Trial Service:

a) Trial Request Message;

b) Submission Response Message; and

c) Trial Response Message.

6.7.2 Trial Request Message

6.7.2.1 Trial Requests are submitted by the eAUs as the first step under the Trial Service. As with the PFPs, eAUs can choose to submit Trial Requests to selected eASPs with whom they wish to conduct the trials. Multiple Trial Requests can be submitted to the same eASP and these requests can be submitted even without the presence of PFPs/eFPLs. Trial Requests are subjected to validation checks resulting in a Submission Response and evaluation checks resulting in a Planning Status. Trial Requests shall be treated by the eASP as a separate, standalone transaction which has no impact on existing data.

6.7.2.2 Limits on Trial Request Frequency

6.7.2.2.1 eASPs may set limits on the maximum frequency of requests allowable within a specified period for each eAU to prevent system overload and ensure service availability for all users. These limitations should be published in the eASP's AIP.

6.7.2.3 Submission Response Message

6.7.2.3.1 The general validation requirements as per paragraph 6.2.2.1 apply to the Submission Response Message criteria.

6.7.2.4 Specific Validation Requirements for Trial Requests

6.7.2.4.1 In addition to the checks listed in paragraph 6.2.2.1, submission timeframe and request frequency checks should be conducted for Trial Requests. For submission timeframes, Trial Requests can be allowed up to route clearance delivery, allowing sufficient time to submit a Flight Plan Update arising from a positive Trial Response. This option is only available when Trial Requests are for a flight that is already provided as a PFP or eFPL. eASPs may also implement additional checks based on local requirements, to ensure that R/Ts filed by eAUs contain valid routes, fix names, and coordinates, including but not limited to:

a) trajectory syntactic checks; and

b) semantic checks.

6.7.2.4.2 **Table 9** provides a sample template for eASPs to use within the explanation note field for the various types of validation checks that might result in a Submission Response of "REJ".

Table 9: FF-ICE Submission Response feedback for Trial Requests

Additional Checks for Trial Requests	
Checks	***Explanation Note***
Submission Timeframe	Outside the allowable submission timeframe
Request Frequency	Frequency of Trial Requests has been exceeded
Route validation (Structure of route, lat/long of points, fix names)	Trajectory Info Error Invalid Route Structure Invalid Fix/waypoint

6.7.3 Trial Response Message

6.7.3.1 Planning Status Values

6.7.3.1.1 The Planning Status within the Trial Response Message reflects the likelihood that the flight plan will be operationally acceptable if submitted as a PFP or eFPL. The evaluations conducted for the Trial Requests are similar to those that are conducted for the PFPs.

6.7.3.1.2 However, as eAUs are allowed to submit multiple Trial Requests, it may not be practical for eASPs to consider all Trial Requests as actual traffic demand. It is therefore not expected for eASPs to provide flight specific constraints. For example, if a trial flight plan is expected to operate during the duration of an ATFM program, eASPs are expected to provide feedback to the eAUs that the flight will be caught in the ATFM program. A flight specific constraint need not be provided to the eAUs.

6.7.3.1.3 eASPs should publish the scope of evaluation performed for Trial Requests, in the AIP.

6.7.3.2 Feedback Methods for Restrictions/Constraints

6.7.3.2.1 When providing restrictions/constraints to eAUs within the Trial Response, eASPs should use methods similar to those used for the Planning Service. eASPs should similarly retain flexibility in determining their Trial Response feedback methods and content.

6.7.3.2.2 For the five Scenarios (as described in Section 6.3.6.4.1) which require regionally agreed-upon responses to ensure regional interoperability and consistent handling, the Trial Response shall contain a Planning Status of "NON-CONCUR". In addition, no flight specific constraints or R/Ts will be expected in the response.

6.7.3.2.3 The explanation within **Appendix C Table 10** can be used for relevant scenarios.

Note: eASPs should not include any flight-specific constraints or resource allocations, as Trial Requests are "what-if" scenarios that do not represent actual flight operations. The response should indicate general restriction applicability without reserving operational resources or assigning specific constraint values.

6.8 Message Delivery Assurance

6.8.1 Time-out for submitted messages

6.8.1.1 Time-outs are predefined waiting periods during which a system expects to receive a response from another system or user. If no response arrives within this window, the system marks the request as failed or expired. These time-out periods are deliberately set longer than the typical response time to account for various delays, such as system latency and network delays.

6.8.1.2 States should publish business-level time-out periods in their AIPs to provide operators with expected response times for FF-ICE services. These time-outs represent commitments for completing processes such as flight plan evaluation and trajectory assessment.

6.8.1.3 The time-out periods specified in the following sections are recommended business-level time-outs that eASPs should implement to ensure consistent service delivery across the region.

6.8.2 Submission Response

6.8.2.1 It is recommended that the timeout for the Submission Response message be set at one minute. If Submission Response is not received after one minute, the message originator should resubmit the original message (e.g. eFPL / Flight Plan Update / Flight Cancellation / PFP / Flight Departure / Flight Arrival / Flight Data Request etc).

6.8.3 Filing and Planning Status

6.8.3.1 For Filing Service, it is recommended that the timeout for Filing Status Message be set at one minute from the time the eAU receives a Submission Response of “ACK”. If the first Filing Status is not received one minute after receiving the Submission Response of “ACK”, eAUs may contact the eASPs. Filing Status Message is not expected if a Submission Response of “REJ” or “MAN” was received.

6.8.3.2 For Planning Service, if a re-evaluation process is provided, it is recommended that the timeout for Planning Status Message be set at one minute from the time the eAU receives a Submission Response of “ACK”. If the first Planning Status Message is not received one minute after receiving the Submission Response of “ACK”, eAUs may contact the eASPs. Planning Status Message is not expected if a Submission Response of “REJ” or “MAN” was received.

6.8.4 Trial Response and Flight Data Response

6.8.4.1 It is recommended that the timeout for Trial Response Message and Flight Data Response Message be set at one minute from the time the eAU receives a Submission Response of “ACK”. If the Trial Response or Flight Data Response is not received one minute after receiving the Submission Response of “ACK”, eAUs are expected to contact the eASPs. Trial Response Message or Flight Data Response Message are not expected if a Submission Response of “REJ” or “MAN” was received.

6.9 Publication Service

6.9.1 The Publication Service is an optional FF-ICE/R1 service used to provide flight information to authorized stakeholders. It is an event-based service that disseminates information whenever defined criteria are met.

6.9.2 Subscribers to this service may include a wide range of stakeholders from AUs to customs and immigration authorities, who may use the service to enhance situational awareness and adjust their operations based on the updated flight information received.

6.9.3 An eASP providing a Publication Service should ensure that the service is discoverable by potential subscribers, through the AIP or a SWIM service registry, for example. The eASP shall also ensure that appropriate access control is in place so that the subscribers can retrieve only the flight information relevant to their operations.

6.9.4 Given the nature of the Publication Service, it is recommended that its implementation uses a Publish/Subscribe message exchange pattern, with a push mechanism applied to improve service efficiency.

6.9.5 Currently, no specific FF-ICE message is defined for Publication Service. However, it is recommended that FIXM be used wherever possible, to exchange flight information through this service.

6.10 Re-evaluation Process

6.10.1 Re-evaluation is an optional process that an eASP may perform to determine whether a flight plan still complies with published restrictions or ATM constraints that may have been applied or modified since its last evaluation. Re-evaluation is provided as part of the Filing Service and Planning Service when implemented by an eASP. If implemented, reference should be made to ICAO Doc 9965.

6.10.2 The re-evaluation process is triggered by predefined factors, including:

a) Event trigger: an event affecting ATM configuration such as:

   i) airspace or airport conditions;

   ii) routing availability;

   iii) ATC constraints;

   iv) demand-capacity imbalance situations;

   v) meteorological constraints; and

b) Time trigger: a predefined interval that initiates the re-evaluation process, e.g. every 30 minutes.

   Note: the specific interval is to be determined by each eASP.

6.10.3 The re-evaluation process may continue until the aircraft has off-block. This may vary depending on ATM conditions. Cut-off times for specific ATM conditions are subject to national and/or regional agreement.

6.10.4 If, following a re-evaluation, the Filing Status (or Planning Status) changes, the eASP shall provide the eAU with the updated status and an explanation of the change as specified in Section 6.3.6.4.2.

6.11 Implementation Timeline for APAC

6.11.1 A phased approach to FF-ICE/R1 implementation with the following timeline is recommended for the APAC region:

a) 2030: commencement of technical tests and trials involving eAUs and cross-border eASP interactions.

b) 2031: begin operational tests to identify and resolve any issues.

c) 2032: full operationalization of three FF-ICE/R1 services (Filing Service, Flight Data Request Service and Notification Service).

6.11.2 This recommended timeline will ensure APAC States' readiness to support the sunset of FPL2012 in 2034. Note that SWIM implementation is a prerequisite for FF-ICE/R1 deployment, as FF-ICE services are built upon SWIM infrastructure and information exchange capabilities.

6.12 Implementation Monitoring

6.12.1 This Plan is a supplementary plan to the *Asia/Pacific ANP Volume III*, supporting the transition from current flight planning to FF-ICE operations. Implementation monitoring ensures harmonized regional deployment of FF-ICE capabilities and identifies areas requiring additional support or coordination.

6.12.2 APAC States should report their FF-ICE implementation status to the ICAO APAC Regional Office annually by 28 February. Implementation status will be examined by the APAC FF-ICE/R1 Implementation Task Force and presented at the Air Traffic Management Sub-Group (ATM/SG) of Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) to measure, report, and advance regional implementation progress, and identify implementation challenges.

6.12.3 It is expected that the relevant FF-ICE experts in each APAC State will be responsible for detailed reporting using the *Regional FF-ICE Monitoring and Reporting Form* (**Appendix D**) and coordinate with their APAC Seamless ANS Reporting point of contact to ensure the accuracy of higher-level reporting and consistency between separate reporting levels.

6.13 Plan Update Cycle and Process

6.13.1 This Plan requires periodic updates to maintain alignment with updates to:

a) ICAO Doc 9965;

b) GANP, including ASBU framework restructuring;

c) Asia/Pacific ANP Volume III; and

d) any other relevant documents and APANPIRG Conclusions/Decisions.

6.13.2 This Plan is intended to be reviewed every three years following its initial implementation. Earlier or more frequent review and amendment may be conducted as recommended by the APAC FF-ICE/R1 Implementation Task Force and as agreed-upon by APANPIRG through the ATM/SG.

6.13.3 This Plan shall be reviewed and updated by the APAC FF-ICE Regional Implementation Plan Drafting Group to be established under the APAC FF-ICE/R1 Implementation Task Force. The drafting group will consist of subject matter experts (SMEs) nominated by APAC States and International Organizations.

6.14 Post Implementation Process

6.14.1 To ensure continuous improvement of FF-ICE operations, both in operational procedures and technical capabilities, close and routine coordination among stakeholders should be conducted on an annual basis. This coordination should focus on sharing and reviewing the collective performance of FF-ICE operations, as well as implementing improvements within the region. The APAC FF-ICE/R1 Implementation Task Force will serve as a platform for these activities.

6.14.2 The following indicators are recommended for monitoring, to assess the performance of FF-ICE operations within the region.

a) submission time of the first eFPL, compared to EOBT specified in the eFPL;

b) number of "REJ" Submission Response messages, along with their explanations;

c) number of "MAN" Submission Response messages, along with their explanations;

d) number of "NOT ACCEPTABLE" Filing Status messages, along with their explanations;

e) number of negotiations before achieving "ACCEPTABLE" Filing Status, including time elapsed from the first submission of eFPL to the "ACCEPTABLE" Filing Status;

f) number of flights departing with "NOT ACCEPTABLE" Filing Status; and

g) number of Flight Data Request transactions and type of information requested.

REFERENCED DOCUMENTS

Asia/Pacific A-CDM Implementation Plan

Asia/Pacific ANP Volume III

*Asia/Pacific Common SWIM Information S*ervices.

Asia/Pacific Plan for Collaborative Aeronautical Information Management (AIM), Version 4.0

Asia/Pacific Region ATM Contingency Plan

Asia/Pacific Regional Framework for Collaborative Air Traffic Flow Management

Asia/Pacific SWIM Technical Infrastructure Profiles Version 1.0

Conclusion from APANPIRG/35/4

Conclusion from APANPIRG/36/12

Conclusion from ATM/SG/13-5

ICAO Doc 4444 — *Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM)*

ICAO Doc 7910 — *Location Indicators*

ICAO Doc 8585 — *Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services*

ICAO Doc 9854 — *Global Air Traffic Management Operational Concept (GATMOC)*

ICAO Doc 9883 — *Global Air Navigation Plan (GANP)*

ICAO Doc 9965 — *Manual on Flight and Flow Information for a Collaborative Environment (FF-ICE), Volume I (Concept) and Volume II (Implementation Guidance)*

ICAO Doc 9971 — *Manual on Collaborative Air Traffic Flow Management (ATFM)*

ICAO Doc 10039 — *Manual on the System Wide Information Management (SWIM)*

ICAO Doc 10169 — *Aviation Common Certificate Policy (ACCP)*

ICAO Doc 10199 — *Procedures for Air Navigation Services – Information Management (PANS-IM)*

ICAO Doc 10203 —*Manual on the System-wide Information Management (SWIM) Implementation*

ICAO Doc 10204 — *Manual on Aviation Information Security*

IETF RFC 9562 — *Universally Unique IDentifiers (UUIDs)*

IETF RFC 4122 — *A Universally Unique IDentifier (UUID) URN Namespace*

ABBREVIATIONS AND ACRONYMS[1]

Abbreviation/Acronym	Expansion
ACC	Area Control Centre
A-CDM	Airport Collaborative Decision Making
AFS	Aeronautical Fixed Services
AFTN	Aeronautical Fixed Telecommunication Network
AIM	Aeronautical Information Management
AIP	Aeronautical Information Publication
AIRM	ATM Information Reference Model
AIS	Aeronautical Information Services
AIXM	Aeronautical Information Exchange Model
ANP	Air Navigation Plan
ANS	Air Navigation Services
ANSP	Air Navigation Service Providers
AOBT	Actual Off-Block Time
APAC	Asia/Pacific
APANPIRG	Asia/Pacific Air Navigation Planning and Implementation Regional Group
ASBU	Aviation System Block Upgrade
ASP	ATM Service Provider
ATC	Air Traffic Control
aASP	Non-FFICE Capable ATM Service Provider
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATM/SG	Air Traffic Management Sub-Group

[1] Refer to ICAO Doc 9965 for definition of terms

Abbreviation/Acronym	Expansion
ATS	Air Traffic Services
AU	Airspace User
aAU	An AU that is not capable of using mandatory FF-ICE services.
CHG	ATS Change Message
CLDT	Calculated Landing Time
CNL	ATS Cancel Message
CPL	Current Flight Plan
CTO	Calculated Time Over
CTOT	Calculated Take-Off Time
DLA	ATC Delay Message
eASP	An ASP that is not capable of providing the mandatory FF-ICE services.
eAU	An AU that is capable of using mandatory FF-ICE services.
eFPL	Filed flight plan exchanged using FF-ICE services
EOBT	Estimated Off-Block Time
ESP	Emergency Service Provider
ETO	Estimated Time Over
FF-ICE	Flight and Flow Information for a Collaborative Environment
FIR	Flight Information Region
FIXM	Flight Information Exchange Model
FPL	Filed flight plan exchanged using via aeronautical fixed services (AFS)
FQDN	Fully Qualified Domain Name
GSt	Ground Stop
GUFI	Globally Unique Flight Identifier
ICAO	International Civil Aviation Organization
IETF	Internet Engineering Task Force

Abbreviation/Acronym	Expansion
IWXXM	ICAO Meteorological Information Exchange Model
MEDEVAC	Medical Evacuation
MINIT	Minutes in Trail
MIT	Miles in Trail
OSF	Open Software Foundation
PFP	Preliminary Flight Plan
PKI	Public Key Infrastructure
R1	Release 1 (for pre-departure phase)
R2	Release 2 (for post-departure phase)
RFC	Request for Comments
RIF	Re-Clearance in Flight
RPL	Repetitive Flight Plan
R/T	Route/Trajectory
RVR	Runway Visual Range
SAR	Search and Rescue
SID	Standard Instrument Departure
SIGMET	Significant Meteorological Hazards
SME	Subject Matter Expert
STAR	Standard Terminal Arrival Route
SWIM	System-wide Information Management
TAF	Terminal Area Forecast
TBO	Trajectory-based Operations
TLS	Transport Layer Security
UTC	Coordinated Universal Time
UUID	Universally Unique IDentifier

Abbreviation/Acronym	Expansion
WAF	Weather Avoidance Field

APPENDIX A FIXM MAPPING TO ATS

Translation of FF-ICE FIXM to ATS Messages is available on the FIXM website at https://docs.fixm.aero/#/ats-message-to-fixm-mapping/translating-ffice-fixm-messages-to-ats-messages

APPENDIX B MAPPING OF FIXM CORE 4.3.0 DATA ATTRIBUTES TO SUPPORT CROSS-BORDER ATFM INFORMATION EXCHANGE

Data Attribute	FIXM version 4.3.0 Core
EOBT	FlightType.departure.estimatedOffBlockTime = (EOBT)
ETO	FlightType.routeTrajectoryGroup.desired.element.point4D.time = (ETO) FlightType.routeTrajectoryGroup.desired.element.elementStartPoint = (point at which ETO is specified)
ELDT	FlightType.routeTrajectoryGroup.desired.element.point4D.time = (ELDT) FlightType.routeTrajectoryGroup.desired.element.point4D.pointProperty.propertyType = WHEELS_ON FlightType.routeTrajectoryGroup.desired.element.elementStartPoint.aerodromReferencePoint.locationIndicator = FlightType.arrival.destinationAerodrome.locationIndicator
CTOT	FlightType.routeTrajectoryGroup.negotiating.element.constraint.time.timeSpecification.timeValue = (CTOT) FlightType.routeTrajectoryGroup.negotiating.element.point4D.pointProperty.propertyType = WHEELS_OFF FlightType.routeTrajectoryGroup.negotiating.element.elementStartPoint.aerodromReferencePoint.locationIndicator = FlightType.departure.aerodrome.locationIndicator
CTO	FlightType.routeTrajectoryGroup.negotiating.element.constraint.time.timeSpecification.timeValue = (CTO) FlightType.routeTrajectoryGroup.negotiating.element.constraint.level = (Altitude, Flight Level or Range) FlightType.routeTrajectoryGroup.negotiating.element.elementStartPoint = (point at which CTO is specified)
CLDT	FlightType.routeTrajectoryGroup.negotiating.element.constraint.time.timeSpecification.timeValue = (CLDT)

Data Attribute	FIXM version 4.3.0 Core
	FlightType.routeTrajectoryGroup.negotiating.element.point4D.pointProperty.propertyType = WHEELS_ON FlightType.routeTrajectoryGroup.negotiating.element.elementStartPoint.aerodromReferencePoint.locationIndicator = FlightType.arrival.destinationAerodrome.locationIndicator

APPENDIX C HARMONIZED FILING STATUS RESPONSES

Table 10: Harmonized Filing Status Responses for Identified ATFM Scenarios

Scenario	Who to feedback	Filing Status Value	Planning Status Value	Explanation through FF-ICE Message (Mandatory if NOT ACCEPTABLE)	Type of Trajectory	FIXM Elements to use	Type of Constraint (Level, Speed, Time)	Constraint. Description (Optional)	Constraint. Restriction Reference (Optional)	Checking Point
a) CTO/ CLDT imposed by eASPs	Initiating eASP	NOT ACCEPTABLE	NON CONCUR	REGUL <AAAACCCCCDDMMMVV>	Negotiating	ElementStartPoint for location Constraint.Time for time Constraint.Level/ Constraint.Speed if applicable	Time (Level, Speed if applicable)	REGCAUSE <XX XX>	REGUL <AAAACCCCCDDMMMVV>	ETO / ELDT against CTO /CLDT
b) Ground Stop imposed by Arrival eASPs	Initiating eASP / Arrival eASP	NOT ACCEPTABLE	NON CONCUR	GSt imposed on flights arriving into <WSSS> from <YYYY-MM-DDTHH:mm:ssZ> to <YYYY-MM-DDTHH:mm:ssZ>. Note: If available, *See NOTAM <XXX> / ADP <XXX> for details.*	NULL	-	-	-		- ELDT against restricted period
c) Flight level Restrictions	All relevant eASP	NOT ACCEPTABLE	NON CONCUR	<FL or altitude, FL or altitude> on route <XXXX> not available.	NULL	-	-	-		Flight Level on Point against restricted flight levels

Scenario	Who to feedback	Filing Status Value	Planning Status Value	Explanation through FF-ICE Message (Mandatory if NOT ACCEPTABLE)	Type of Trajectory	FIXM Elements to use	Type of Constraint (Level, Speed, Time)	Constraint. Description (Optional)	Constraint. Restriction Reference (Optional)	Checking Point
				Note: If available, *See NOTAM <XXX> for details.*						
d) Fix Balancing	All relevant eASP	NOT ACCEPTABLE	NON CONCUR	Fix <XXXXX> not available. Note: If available, *See NOTAM <XXX> for details.*	NULL	-	-	-		Flight Trajectory against restricted points
e) Re-routing	All relevant eASP	NOT ACCEPTABLE	NON CONCUR	Route <XXXXX> not available. Note: If available, *See NOTAM <XXX> for details.*	NULL	-	-	-		Flight Trajectory against restricted routes

APPENDIX D REGIONAL FF-ICE MONITORING AND REPORTING FORM

This form is designed to monitor the implementation status of Flight and Flow Information for a Collaborative Environment (FF-ICE) services and capabilities within the region. This form should be completed by States to report their progress in implementing FF-ICE in accordance with ICAO Doc 9965 and the *Asia/Pacific Regional FF-ICE/R1 Implementation Plan*.

States should complete this form annually by 28 February to track implementation progress.

Scoring System

Each element uses a three-level scoring system:

- **0%** = Not implemented or no progress
- **50%** = Partial implementation with gaps, manual intervention required, or development in progress
- **100%** = Full implementation in compliance with regional requirements

Reporting Form Element	Reporting Metrices	Expected Outcome/Guidance to States	Response
General			
Implementation of FIXM-based information exchange	0% - State has not implemented FIXM-based information exchange 50% - State has implemented FIXM-based capability but uses older version 100% - State has implemented FIXM-based capability with latest FIXM version (v4.3.0)	State should implement FIXM-based information exchange using FIXM version 4.3.0 for all FF-ICE messages	
Implementation of national FF-ICE procedures, in accordance with ICAO Doc 4444 and ICAO Doc 9965	0% - State has not developed any national FF-ICE procedures 50% - State is in process of developing and implementing its national FF-ICE procedures 100% - State has fully established and published FF-ICE procedures based on ICAO Doc 9965 that are adhered to by stakeholders	State should establish and publish procedures covering FF-ICE operations, communication, and stakeholder responsibilities	

Reporting Form Element	Reporting Metrices	Expected Outcome/Guidance to States	Response
Filing Service			
Implementation of Filing Service	0% - No Filing Service implementation 50% - Partial implementation with gaps (e.g. incomplete message set support, incomplete validation/ evaluation capability, manual intervention required) 100% - Full automated implementation with complete message set, validation and evaluation capability in compliance with this document	Filing Service is mandatory service for eASPs Full implementation should include: a) complete message set support b) automated validation and evaluation c) published validation and evaluation criteria in AIP	
Implementation of Filing Re-evaluation Process	0% - No re-evaluation process 50% - Partial re-evaluation (e.g. limited status change handling, re-evaluation only for selected restrictions, and/or procedures not fully established) 100% - Full re-evaluation with established procedures	State should establish and publish clear procedures for the re-evaluation process and handling of status changes	
Implementation of national procedures for Filing Service mixed mode operations to support both FF-ICE and FPL2012 message handling (FPL, CHG, DLA), in accordance with ICAO Doc 4444, ICAO Doc 9965 and regional plan	0% - No mixed mode procedures 100% - Full procedures established for handling both FF-ICE and FPL2012 formats with appropriate message dissemination	State should establish and publish clear procedures so that eAUs understand what messages to submit, how to submit them, and what to expect to receive based on their technical capabilities (FF-ICE or FPL2012)	
Flight Data Request Service			

Reporting Form Element	Reporting Metrices	Expected Outcome/Guidance to States	Response
Implementation of Flight Data Request Service	0% - No implementation 50% - Partial implementation with gaps (e.g. limited request types support, manual intervention required) 100% - Full automated implementation in compliance with this document	Flight Data Request Service is mandatory service for eASPs Full implementation should include automated support for all required request types (Flight Plan, Supplementary Plan and Flight Status)	
Implementation of national procedures for Flight Data Request Service mixed-mode operations to support both FF-ICE and FPL2012 message handling (RQP, RQS), in accordance with Doc 9965, Doc 4444 and regional plan	0% - No mixed mode procedures 100% - Full procedures established for handling both FF-ICE and FPL2012 formats with appropriate message dissemination	State should establish and publish clear procedures so that eAUs/eASPs understand what messages to submit, how to submit them, and what to expect to receive based on their technical capabilities (FF-ICE or FPL2012)	
Notification Service			
Implementation of Notification Service	0% - No implementation 50% - Partial implementation with gaps (e.g. limited event types, manual intervention required) 100% - Full automated implementation in compliance with this document	Notification Service is mandatory service for APAC. Full implementation should include automated support for departure and arrival notifications	
Implementation of local procedures for Notification Service mixed mode operations to support both FF-ICE and FPL2012 message handling (DEP, ARR), in accordance with ICAO Doc 4444, ICAO Doc 9965 and regional plan	0% - No mixed mode procedures 100% - Full procedures established for handling both FF-ICE and FPL2012 formats with appropriate message dissemination	State should establish and publish clear procedures so that parties understand the notifications they should expect to receive based on their technical capabilities (FF-ICE or FPL2012)	

Reporting Form Element	Reporting Metrices	Expected Outcome/Guidance to States	Response
Planning Service			
Implementation of Planning Service	0% - No Planning Service implementation 50% - Partial implementation with gaps (e.g. incomplete message set support, incomplete validation/evaluation capability, manual intervention required) 100% - Full automated implementation in compliance with this document	Planning Service is recommended for ASPs whose airspace is complex and/or regularly constrained Full implementation should include: a) complete message set support b) automated validation and evaluation c) published validation and evaluation criteria in AIP	
Implementation of Planning Re-evaluation Process	0% - No re-evaluation process 50% - Partial re-evaluation (limited status change handling, re-evaluation only for selected restrictions, and/or procedures not fully established) 100% - Full re-evaluation with established procedures	State should establish and publish clear procedures for the re-evaluation process and handling of status changes	
Trial Service			
Implementation of Trial Service	0% - No Trial Service implementation 100% - Full automated implementation in compliance with this document *Note: Partial implementation of trial service is not expected as manual intervention is not practical for potentially large number of "fire and forget" messages.*	Optional service allowing "what-if" evaluation of flight plan alternatives Full implementation should include automated processing of Trial Requests and responses.	

Reporting Form Element	Reporting Metrices	Expected Outcome/Guidance to States	Response
Publication Service			
Implementation of Publication Service	0% - No implementation 100% - Subscription options published and available through SWIM with clear procedures for information subscription	Optional service for disseminating flight information. State should publish available subscription options and clear procedures for stakeholders to subscribe through SWIM	

Guidance Material for Business Functionality of APAC Common SWIM Information Services

Developed by: SWIM Task Force (Task 6)

Purpose

- This Guidance Material has been developed to assist relevant APANPIRG Subsidiary Groups (e.g. MET/IE, SURICG, AAITF, FF-ICE Ad Hoc Group, ATFM SG) in specifying the relevant information associated with the high-level definition of planned APAC Common SWIM Information Services
  - Version 1 of the APAC Common SWIM Information Services has recently been published on the ICAO APAC eDocs site as per Decision APANPIRG/36/11:

    https://www.icao.int/sites/default/files/APAC/Documents/edocs/CNS/APAC-Common-SWIM-Information-Services.pdf
  - The purpose of list of APAC Common SWIM Information Services (including associated priorities) is to provide States/Administrations with **guidance on anticipated services** to **support their planning and implementation** of SWIM
    - Listed Information Services are expected to be at different levels of maturity, i.e. are not expected to be fully matured prior to being added to the list as an indicative roadmap for the Information Service
    - It is not intended to be overly prescriptive
      - This information will be captured in the Information Service Definitions (ISD)

Version Maintenance

- The latest published version of the Common APAC SWIM Information Services is available on the ICAO APAC eDocs site (CNS section)
- Between published versions, SWIM TF maintains an updated working version of Information Services to capture inputs from the APANPIRG Subsidiary Groups as they occur
  - APANPIRG Subsidiary Groups are recommended to regularly review/update the APAC Common SWIM Information Services document each time they meet, and to provide updates to SWIM TF as necessary to maintain the currency of the list relevant to their information domain (e.g. Aeronautical Information, Flight information, Meteorological information)
  - Between published versions, SWIM TF will update the working list at SWIM TF meetings based on inputs from Subsidiary Groups
    - The latest working version will be available following finalisation of each SWIM TF Report

Categories

- The Categories associated with the Business Functionality of APAC Common SWIM Information Services are:
  - Business Functionality of the information service
  - Brief description of the service
  - Type of information to be exchanged
  - Information exchange model / Message type
  - Message exchange pattern
  - Priority
- Guidance on each Category is provided in the following slides

Business functionality of the information service

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

- **What the Information Service is called**
  - **Wherever possible**, this should **align with Information Services that are being implemented globally,** defining APAC regional variations only where needed
    - e.g. FF-ICE filing service
  - It may be prudent (even advisable) to define **different information services** where the **same information** is provided in the payload, but which may serve a **different business need** (i.e. be utilised by different consumers of the information services at a different rate or have a different Quality of Service)
    - E.g. An information service providing surveillance data to support the provision of aircraft separation could be expected to be defined separately to an information service providing surveillance data to support ATFM purposes, as the business usage differs between the two information services

Brief description of the service (1)

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

- **Plain text description of the information service**
  - Includes **Intended usage** of the information service
    - Includes indication (where relevant) of the intended service consumers and/or associated business need
  - Includes **Identification of** (and link to) the **latest reference document** (where one exists)
    - Provides insight/clarity on how the intended information service is aligning with global or regional concepts/implementations
      - E.g. For FF-ICE filing service, **ICAO Doc 9965 (Manual on FF-ICE)**
      - E.g. for Surveillance data only sharing service, **Guidance Materials for the sharing of surveillance data in SWIM** developed by SURSG
    - As maturity increases over time, the document reference will change
      - **Goal** is to reference the relevant Information Service Description (ISD) once developed

Brief description of the service (2)

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

- **Plain text description of the information service**
  - The description of the information service should include proposed timeframe for implementation
    - Note: proposed implementation timing may be moved to a separate column in a future update of the table
  - The description of the information service should ***not*** include:
    - Proposed timeframe for implementation (this is proposed to be captured in a future update to the table)
    - Reference to the Information Exchange Model (e.g. FIXM)
    - Information to be exchanged (captured in the “information to be exchanged” column)

Type of information to be exchanged

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

- **The information that will be exchanged as part of the information service**
  - Describes the information in general terms only (rather than individual data elements)
    - E.g. Surveillance data with DAPs, Basic flight plan information (without trajectory), etc.
  - The ISD (once developed) will specify all mandatory and optional fields
    - Subsidiary groups may need to separately develop this additional granularity if the information service has not already been defined elsewhere
  - Timeframes for transitioning information types should not be included

Information exchange model / message type

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

- **The information exchange model (or message type) employed by the payload of the information service**
  - Identifies standard Exchange Models (FIXM, IWXXM, AIXM)
    - E.g. (FIXM, IWXXM, AIXM)
  - Where the content within the payload comes from another message type or data format, this can be identified
    - E.g. Surveillance data: JSON or RAW (derived from ASTERIX Cat 21)
  - Version / associated extensions of the Exchange Model is not required
  - If not yet known or confirmed, “TBD” is acceptable

Message exchange pattern (1)

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

- **The type of information that will be exchanged as part of the information service**
  - **At least one of**:
    - Request/Reply (**Req/Rep**), **including type if known** (see additional information on following slides)
      - Synchronous Request/Reply (**Sync R/R**)
      - Asynchronous Request/Reply (**Async R/R**)
    - Fire and Forget (**One-way**)
    - Publish/Subscribe (**Pub/Sub**)
  - If multiple MEPs are possible, identify which are mandatory or optional
    - E.g. Pub/Sub and Sync R/R
    - E.g. Req/Rep (mand), Req/Rep (opt), etc.
  - **"TBD" to be used where MEP is not yet known**

Fire and Forget vs. Publish / Subscribe

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

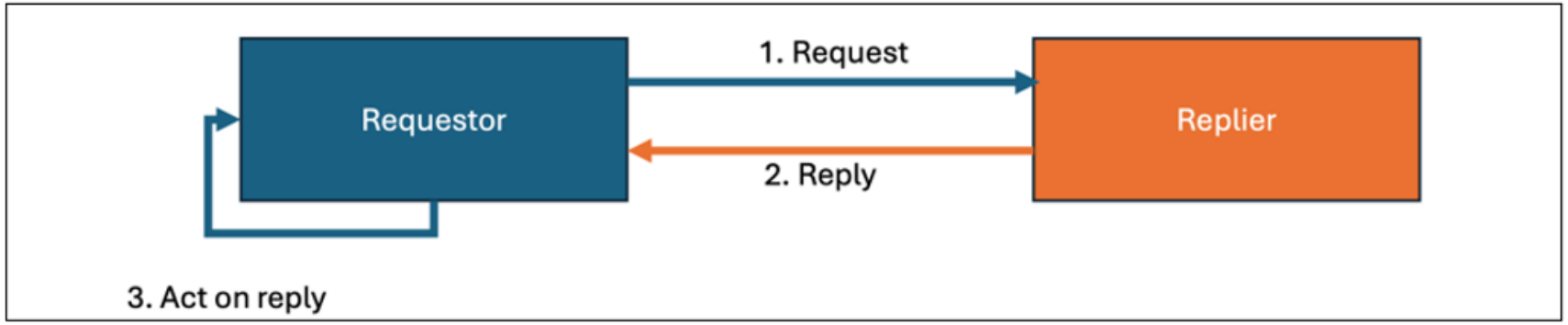
From the ICAO Manual on the SWIM Implementation (Doc 10203):

- For the **One-way ("Fire and Forget") MEP**, *the consumer initiates a message to an information service without expecting any response from the information service. This MEP is particularly useful at the lower application layer, where immediate message responses are not required*;
- For the **Publish/Subscribe MEP**, *the consumer initiates a subscription request to an information service. The subscription may be capable of providing details (such as through a filtering parameter) on the information being subscribed*
- The P/S MEP can be either a 'push' or a 'pull' mechanism:
  - For the 'push' mechanism, this requires that the consumer can receive messages at any time, and is not restricted from completing other operations while waiting for the Information Service to respond
  - For the 'pull' mechanism, this requires the Information Service to keep necessary updates available to the consumer, and that the consumer sends requests to the information service to receive the updates

Synchronous Request-Reply

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

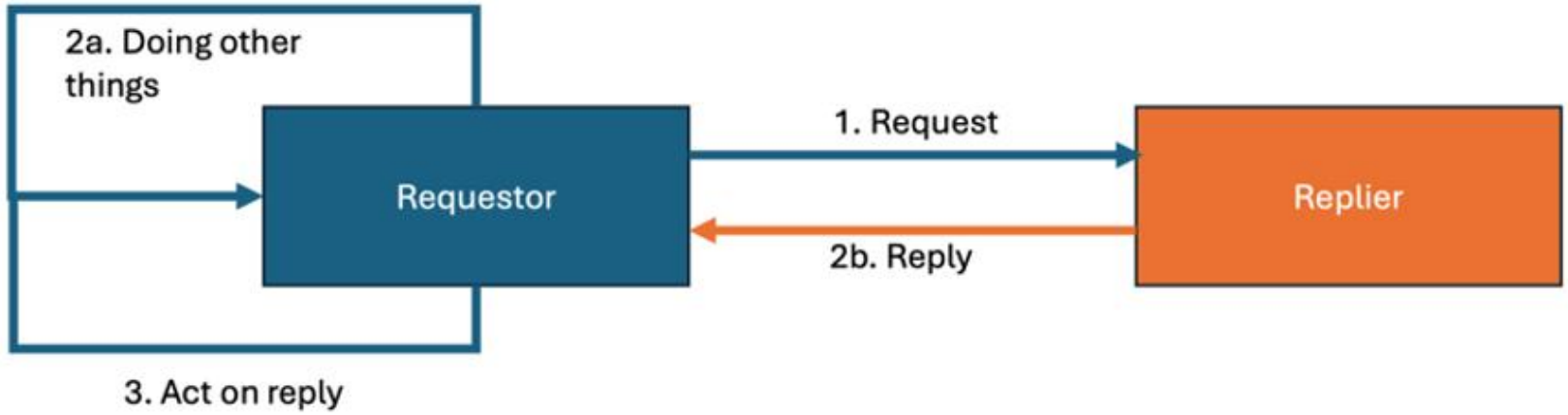
In Doc. 10203, **synchronous** R/R MEP is defined as – *The consumer initiates a request to an information service; the service processes the request and generates a reply to the consumer. The consumer waits for the information service to provide a response. During this waiting period, the consumer cannot send or receive any other requests or responses. This pattern is specifically applicable to information services that can quickly execute and respond to consumer requests*



Asynchronous Request-Reply

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

In Doc. 10203, **asynchronous** R/R MEP is defined as – *The consumer initiates a request to an information service; the service processes the request and generates a reply to the consumer. However, the consumer is not restricted from performing other operations while waiting for the information service's response. This MEP requires that the consumer be able to receive messages at any time and correlate them with prior requests*



Synchronous vs. Asynchronous Request-Reply

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

Index	Synchronous	Asynchronous
Time Coupling	Both requester and replier are available at the same time.	Requester sends a request and continues its process; replier can send the response later when available.
Space Coupling	Requester needs to know the exact service endpoint (protocol, address, API).	Requester sends to a known endpoint, but response may arrive via callback, polling, or correlation ID; looser coupling in response handling.
Reliability Handling	Retries and error handling happen at requestor side.	Retries and correlation of delayed responses must be managed at the requester side (e.g., matching reply with original request).
Use Cases	• Low latency expected • Both parties are available • Immediate response interaction	• Replier may not be immediate • Deferred or background processing acceptable
Typical Scenarios	• User Authentication • User Interface Interactions • Database Read and Immediate Write	• Order processing with delayed confirmation • Flight plan filing with later validation • Weather data request with queued response • Batch data processing

- Additional guidance can be found in "**Draft Guidance Material REQ REP MEP in Asia**" provided as an attachment to this presentation (**Attachment A2**)

- If in doubt:
  - Specify Req/Rep only
  - Leave as TBD

Priority (1) / (2) / (3)

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)

- **Either 1, 2 or 3 as determined by:**
  - Priority (1): Recommended for region-wide implementation for region-wide benefits
  - Priority (2): Recommended for implementation as much as practicable
  - Priority (3): Additional information services without common regional requirements and not included as a part of common regional information services

- *Note: It has been proposed to separate applicability (region-wide vs. as needed by a subset of States) and desired timeframe into separate columns, however any change to table columns will be formally communicated to Subsidiary Groups separately*

Example update

Note: this is not an actual update, it has been provided to indicate *potential* updates to FF-ICE Common APAC SWIM Information Services content that would align with this Guidance Material

Example – FF-ICE Information Services - Current

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)
APAC Common SWIM Flight Information Services					
GUFI service	GUFI (Globally Unique Flight Identifier) generation and provision	GUFI	FIXM	Req/Reply	1
FF-ICE filing service	Provides a means to submit, update or cancel flight plans through a SWIM-based interface using FIXM.	Flight plan for registration, update or cancellation	FIXM	Req/Reply Pub/Sub	1
FF-ICE publication service	Provides harmonised sharing of flight plan information in a global standard supporting common situation awareness.	Flight information for publication	FIXM	Pub/Sub	2
FF-ICE trial service	Allows operators to test the effect of a potential change in a flight plan prior to committing to the change.	Proposed changes in a flight plan	FIXM	Req/Reply	2
FF-ICE flight data request service	Allows an operator to request the current status of a flight plan, or an ANSP can request an operator to submit the latest version of their flight plan.	Current status of a flight plan, a copy of flight plan or supplementary plan	FIXM	Req/Reply	1
FF-ICE notification service	Provides notification of a change in flight state, such as Departure (DEP) and Arrival (ARR) Air Traffic Service (ATS) messages.	ARR, DEP messages	FIXM	Req/Reply Pub/Sub	1
FF-ICE planning service	Allows operators to submit preliminary flight plans for early Air Traffic Flow Management (ATFM) planning and to obtain feedback regarding restrictions/constraints affecting the flight.	Preliminary flight plan for early ATFM planning	FIXM	Req/Reply Pub/Sub	2

Example – FF-ICE Information Services – *Potential* updates

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Priority (1) / (2) / (3)
FF-ICE filing service	Provides a means for Airspace Users to submit, update or cancel flight plans ~~through a SWIM based interface using FIXM.~~ Reference: ICAO Doc 9965 (Manual on FF-ICE) Target Implementation timeframe 2034	Full ~~F~~flight plan with trajectory~~for registration, update or cancellation~~	FIXM	~~Req/Reply~~ Async R/R and Pub/Sub	1
FF-ICE publication service	Provides ~~harmonised sharing of~~ flight plan information in a ~~global~~ standard format supporting common situation awareness. Reference: ICAO Doc 9965 (Manual on FF-ICE)	~~Flight information for publication~~Full Flight Plan with trajectory (latest agreed)	FIXM	Pub/Sub	2
FF-ICE trial service	Allows operators to test the effect of a potential change in a flight plan prior to committing to the change. Reference: ICAO Doc 9965 (Manual on FF-ICE)	Proposed changes in a flight plan	FIXM	~~Req/Reply~~ Sync R/R and Async R/R	2
FF-ICE flight data request service	Allows an operator to request the current status of a flight plan, or an ANSP can request an operator to submit the latest version of their flight plan. Reference: ICAO Doc 9965 (Manual on FF-ICE) Target Implementation timeframe 2034	Current status of a flight plan, ~~or~~a copy of full flight plan, or supplementary plan	FIXM	~~Req/Reply~~ Sync R/R and Async R/R	1
FF-ICE notification service	Provides notification of a change in flight state, such as Departure (DEP) and Arrival (ARR) Air Traffic Service (ATS) messages. Reference: ICAO Doc 9965 (Manual on FF-ICE)	~~ARR, DEP messages~~Movement information (e.g. ARR, DEP)	FIXM	~~Req/Reply~~ Pub/Sub and Sync R/R and Async R/R	1
FF-ICE planning service	Allows operators to submit preliminary flight plans for early Air Traffic Flow Management (ATFM) planning and to obtain feedback regarding restrictions/constraints affecting the flight. Reference: ICAO Doc 9965 (Manual on FF-ICE)	Preliminary full flight plan with trajectory ~~for early ATFM planning~~	FIXM	~~Req/Reply~~ Async R/R and Pub/Sub	2

Suggested Improvements?

- **SWIM TF is open to improving usability/clarity of information within the table of APAC Common SWIM Information Services prior to publishing the next version**
- **For the next version, SWIM TF is already considering a proposal:**
  - To replace “Priority” column with:
    - Applicability: region-wide (to achieve anticipated benefits) vs. as needed (to meet local needs), and
    - Desired implementation timeframe (e.g. immediate (before 2030), medium (2030-2035), longer term)
- **SWIM TF invites Subsidiary Groups to provide suggestions ahead of SWIM TF/11 in May 2026 for consideration for incorporation into the next version**
  - SWIM TF thanks you in advance for any suggestions

Suggested Improvements – FF-ICE/4

- **FF-ICE/4 (16-18 March 2026) has additionally recommended the following:**
  1. **Subsidiary Groups should focus on defining business rules and business process completion criteria for Information Services. FF-ICE/4 recommended SWIM TF should undertake the determination of the appropriate Message Exchange Patterns (MEPs) for each business process, as SWIM TF possesses the relevant technical expertise**
  2. **FF-ICE/4 noted that comprehensive operational scenarios, including operational requirements and business process completion criteria, are essential. Accordingly, such scenarios, where required, should be provided as an appendix to the Business Functionality of APAC Common SWIM Information Services document. A reference to the appendix should also be included in the 'Brief description of the service' column, as illustrated below:**

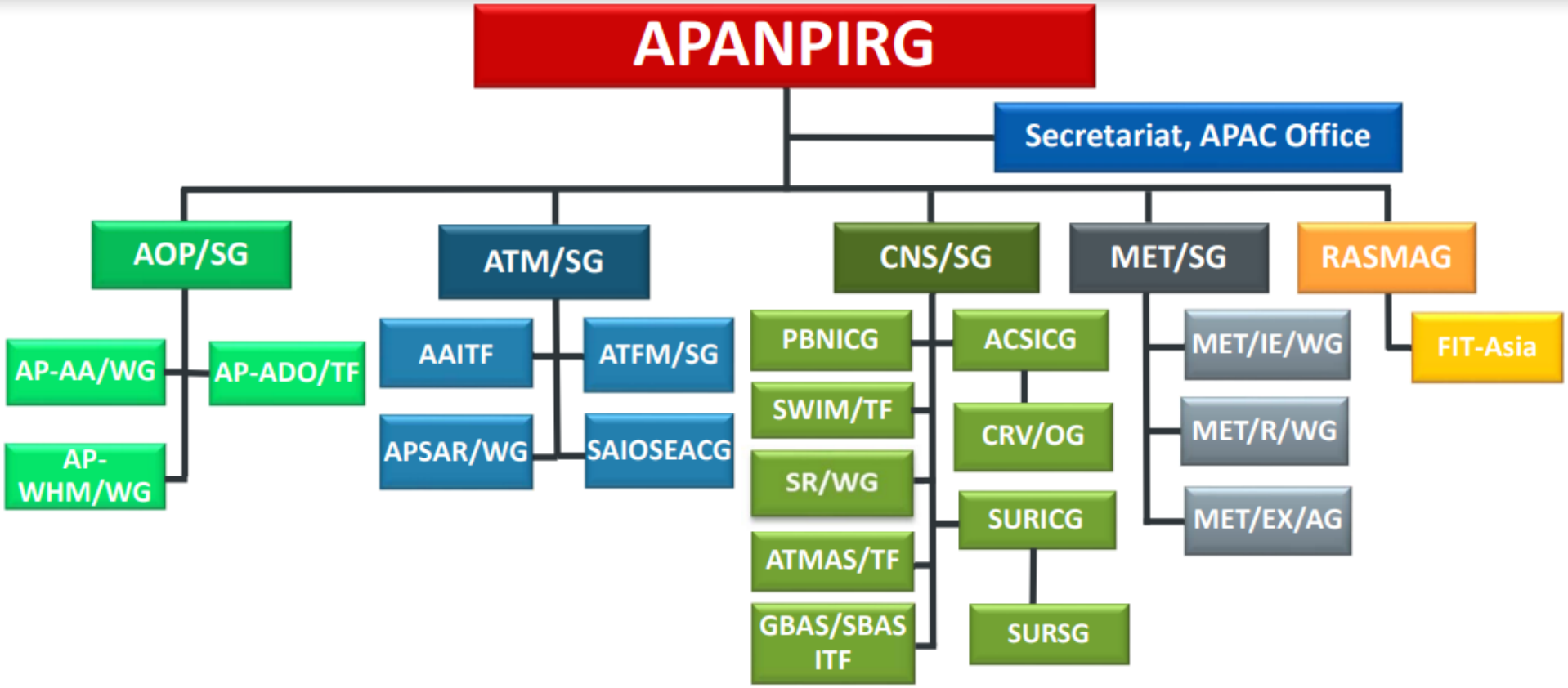
Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	~~Priority of Recommended sService in iInitial APAC Common SWIM IS~~ (1) / (2) / (3)
FF-ICE filing service	Provides a means to submit, update or cancel flight plans through a SWIM-based interface using FIXM. Appendix A: Filing Scenario	Flight plan for registration, update or cancellation	FIXM	Appendix A	1

SWIM TF to fill in

Appendix A: Filing Scenario

	Message	Details	Timeout	Comments	Message Exchange Pattern
1	eAU send eFPL (FFP) to eASP	Mandatory	N/A	-	
2	eASP returns Submission Response (SR) #1 to eAU	Mandatory (after eFPL received)	1 minute	eASPs validate message format and basic rules. SR ACK: Validation passed SR REJ: Validation failed SR MAN: Manual Processing needed	
3	eASP returns Submission Response (SR) #2 to eAU	Conditional (only if SR#1 = MAN)	Variable (manual processing time)	Any subsequent SR is provided after manual intervention of eFPL (after SR MAN)	

Reference



AOP/SG	-	Aerodrome Operations and Planning Sub Group
AP-AA/WG	-	APAC Aerodrome Assistance Working Group
AP-ADO/TF	-	APAC Aerodrome Design and Operations Task Force
AP-WHM/WG	-	APAC Wildlife Hazard Management Working Group

ATM/SG	-	ATM Sub Group
AAITF	-	AIS - AIM Implementation Task Force
APSAR/WG	-	APAC Search and Rescue Working Group
ATFM/SG	-	ATFM Steering Group
SAIOSEACG	-	South Asia Indian Ocean and South East Asia ATM Coordination Group

CNS/SG	-	CNS Sub Group
PBNICG	-	PBN Implementation Coordination Group
SWIM/TF	-	System-Wide Information Management Task Force
SR/WG	-	Spectrum Review Working Group
ATMAS/TF	-	ATM Automation System Task Force
GBAS/SBAS ITF	-	GBAS/SBAS Implementation Task Force
ACSICG	-	Aeronautical Communication Services Implementation Coordination Group
• CRV/OG	-	Common Regional Virtual Private Network (VPN) Operations Group
SURICG	-	Surveillance Implementation Coordination Group
• SURSG	-	Surveillance Study Group

MET/SG	-	Meteorology Sub Group
MET/IE/WG	-	Meteorological Information Exchange Working Group
MET/R/WG	-	Meteorological Requirements Working Group
MET/EX/AG	-	Meteorological Exercises Advisory Group

RASMAG	-	Regional Airspace Safety Monitoring Advisory Group
• FIT-ASIA	-	FANS Interoperability Team-Asia

Business Functionality of APAC Common SWIM Information Services
(Reviewed by FF-ICE/4, SURSG/5, SURICG/11, ATFM & A-CDM/SG/16, MET/IE WG/24, AAITF/21)

Second Version (May 2026)

Purpose.– This list of APAC Common SWIM Information Services, including associated priorities, provides States/Administrations with guidance on anticipated services to support their planning and implementation of SWIM.

Notes.– "Applicability": expected to be implemented "region-wide" in order to achieve the anticipated benefits, vs. "as needed" to meet the needs for a subset of the region
– "Desired implementation timeframe": Immediate (before 2030), Medium-term (2030-2035), Long-term (beyond 2035)
– "Maturity": "All elements defined" vs. "All elements not defined" (to be further refined)
("Applicability", "Desired Implementation Timeframe" and "Maturity" are yet to be reviewed by the Subsidiary Groups)

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Applicability	Desired implement-ation timeframe	Maturity
APAC Common SWIM Aeronautical Information Services							
Airspace management service	Exchanges of airspace status information between ASM Support System and Air Traffic Control (ATC) System. The sharing of airspace availability and airspace structure in real-time will contribute to a more efficient execution of the flight as information impacting the trajectory will be exchanged.	Availability or activation/deactivation or temporarily change of airspace, restricted area, danger area, search and rescue regions	AIXM	Pub/Sub or Req Reply			
Airspace feature service	Provides the characteristics of the three-dimensional airspace, described as horizontal projection with vertical limits, and their relevance to air traffic.	FIR/UIR boundaries, waypoints, enroute ATS routes, SIDs and STARs, navaids, procedures, and other airspace not limited to restricted area, prohibited area, danger area, search and rescue regions	AIXM	Pub/Sub or Req Reply			

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Applicability	Desired implement-ation timeframe	Maturity
		(Remarks – Other data published in the AIP may be included)					
Aerodrome feature service	Provides current and/or planned airport layout features, such as aerodrome mapping data, runway, taxiway, passenger facilities.	Runways, movement areas, aerodrome services, navaids, instrument landing systems, Aerodrome location, communication facilities (frequencies)	AIXM	Pub/Sub or Req Reply			
Runway Condition Report service	Provides runway surface conditions and contaminants (least to most slippery) that are directly correlated to aircraft take-off and landing performance.	Global Reporting Format (GRF) for runway surface conditions	AIXM	Pub/Sub or Req/Reply			
Digital NOTAM distribution service	Provides aeronautical information in accordance with the Digital NOTAM Specification, such as runway closure.	Digital NOTAM (e.g. Special activity airspace (SAA) NOTAMs, or other types of NOTAMs)	AIXM	Pub/Sub or Req Reply			
ATIS distribution service	Provides continuous and automated broadcast of recorded aeronautical information in airport and terminal areas.	Current weather conditions, runway in use, available approaches, and other data relevant to arriving and departing aircraft, specific ATC procedures, and any airport construction activity that could affect taxi planning	TBD	Pub/Sub			
Search and rescue service	Allows Rescue Coordination Centres (RCCs) to exchange information with neighbouring RCCs and ATS units for coordination during SAR operations.	Search and rescue regions, Registered aircraft operator details and contacts, ICAO Autonomous Distress Tracking (ADT) data, Location of Aircraft in Distress Repository (LADR) data, ICAO OPS CTRL	TBD	Pub/Sub			

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Applicability	Desired implement-ation timeframe	Maturity
		database contact information, SAR Unit (SRU) location and capability data					
APAC Common SWIM Flight Information Services							
GUFI service	GUFI (Globally Unique Flight Identifier) generation and provision	GUFI	FIXM	Req/Reply			
FF-ICE filing service	Provides a means to submit, update or cancel flight plans through a SWIM-based interface using FIXM. Appendix A: Filing Service Scenarios	Flight plan for registration, update or cancellation	FIXM	Appendix A			
FF-ICE publication service	Provides harmonised sharing of flight plan information in a global standard supporting common situation awareness.	Flight information for publication	FIXM	Pub/Sub			
FF-ICE trial service	Allows operators to test the effect of a potential change in a flight plan prior to committing to the change. Appendix A: Trial Service Scenarios	Proposed changes in a flight plan	FIXM	Appendix A			
FF-ICE flight data request service	Allows an operator to request the current status of a flight plan, or an ANSP can request an operator to submit the latest version of their flight plan. Appendix A: Flight Data Request Service Scenarios	Current status of a flight plan, a copy of flight plan or supplementary plan	FIXM	Appendix A			
FF-ICE notification service	Provides notification of a change in flight state, such as Departure (DEP) and Arrival (ARR) Air Traffic Service (ATS) messages.	ARR, DEP messages	FIXM	Appendix A			

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Applicability	Desired implement-ation timeframe	Maturity
	Appendix A: Notification Service Scenarios						
FF-ICE planning service	Allows operators to submit preliminary flight plans for early Air Traffic Flow Management (ATFM) planning and to obtain feedback regarding restrictions/constraints affecting the flight. Appendix A: Planning Service Scenarios	Preliminary flight plan for early ATFM planning	FIXM	Appendix A			
ADP Distribution Service	Supports publication and distribution of ATFM Daily Plan (ADP), based on information included in the APAC ADP Exchange Procedure1. The published ADP is designed to inform for stakeholders on upcoming demand/capacity constraints and possible ATFM measures.	Refer to ADP template	FLXM[2]?	Pub/Sub			
Flight-Specific ATFM Measure Service	Supports notification of information related to "flight-specific" ATFM measures, i.e. measures whose control mechanisms apply to a single flight. An example is the Ground Delay Program (GDP), whose control mechanism is a Calculated Take-Off Time (CTOT), or an ATFM measure for airborne flight, whose control mechanism is a Calculated Time Over (CTO).	CTOT, CTO, CLDT, and fields currently included in APAC AFTN/AMHS-Based ICD for ATFM[3]	FIXM	Appendix B			

[1] The ADP template included herein is not updated. The new ADP template had been agreed by the AMNAC group and included into the AMNAC COP v6.1, Appendix D, and was proposed to the ATFM/SG/15 (Apr-May 2025). The meeting agreed that the Secretariat will update the ADP Exchange Procedure to include the new template, which has already been supplied by AMNAC core team post-meeting.

[2] FLXM: Flow Information Exchange Model

[3] Based on the conclusion from ATFM/SG/15, an amendment to this ICD will be proposed in which a more structured use of REGUL and REGCAUSE fields will be introduced. This proposal is expected to be tabled at the upcoming CNS/SG meeting.

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Applicability	Desired implement-ation timeframe	Maturity
	Recipients of this information should take actions to comply with the ATFM measure contained herein. Appendix B: ATFM Operational Scenarios						
Flow-Specific ATFM Measure Service	Supports notification of information related to "flow-specific" ATFM measures, i.e. measures whose control mechanisms apply to a "group of flights" on a particular traffic flow. An example is the Minutes-in-Trail (MINIT) requirement applied on an eastbound traffic using A1 from VT*, VV* to RK*. Recipients of this information should take actions to comply with the ATFM measure contained herein.[4]	Spacing parameters for MINIT, MIT; Departure intervals for MDI; Alternate routes for Re-Routing; Flight level allocation for Level Capping	TBD	Pub/Sub			
ATFM/A-CDM Integration Service	Supports exchanges of flight-specific ATFM measure information and A-CDM milestone parameters among stakeholders, including arrival/departure ATFM units, airspace users, and airport operators, to integrate A-CDM process with ATFM operations. Appendix B: ATFM Operational Scenarios	ATFM measure information: CTOT A-CDM departure planning information: TOBT, TTOT, TSAT	FIXM	Appendix B			
APAC Common SWIM Meteorological Information Services							
FOR AERODROME							
METAR/SPECI service	Provides of IWXXM-formatted METAR/SPECI product specified in ICAO Annex 3.	Provision of the existing Annex 3 product via an information service	IWXXM	Pub/Sub Req/Reply			

[4] Common operating procedure for this group of ATFM measures (e.g., MINIT, MIT, MDI, Re-Route, Level Capping) has not been developed for the APAC region yet, and should be developed before finalizing the information service to support the operations.

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Applicability	Desired implement-ation timeframe	Maturity
TAF service	Provides of IWXXM-formatted TAF product specified in ICAO Annex 3.		IWXXM	Pub/Sub Req/Reply			
Aerodrome Meteorological Observation Information Service	Provides continuous observations of weather parameters at an aerodrome. Advanced meteorological SWIM (MET-SWIM) service being developed by MET Panel.	To be introduced as recommended practice in Annex 3 (Amd 84) in Nov 2030 tentatively (Note: Level of standardisation needs to be considered, as different aerodrome information services may be required for different use cases.)	IWXXM	Pub/Sub or Req/Reply			
Aerodrome Meteorological Forecast Information Service	Provides information of the expected meteorological conditions, including probability, at an airport during a specified period. Advanced meteorological SWIM (MET-SWIM) service being developed by MET Panel.		IWXXM	Pub/Sub or Req/Reply			
FOR ENROUTE							
SIGMET service	Provides IWXXM-formatted SIGMET product specified in ICAO Annex 3.	SIGMETs for thunderstorm, tropical cyclone, turbulence, icing, mountain wave, duststorm, sandstorm, volcanic ash and radioactive cloud	IWXXM	Pub/Sub Req/Reply			
AIRMET service	Provides IWXXM-formatted AIRMET product specified in ICAO Annex 3.	Provision of the existing Annex 3 product via an information service	IWXXM	Pub/Sub Req/Reply			
Tropical Cyclone Advisory service	Provides IWXXM-formatted Tropical Cyclone Advisory product specified in ICAO Annex 3. (Designated provider: States with Tropical Cyclone Advisory Centre)		IWXXM	Pub/Sub Req/Reply			
Volcanic Ash Advisory service	Provides IWXXM-formatted Volcanic Ash Advisory product specified in ICAO Annex 3. (Designated provider: States with Volcanic Ash Advisory Centre)		IWXXM	Pub/Sub Req/Reply			

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Applicability	Desired implement-ation timeframe	Maturity
Space Weather Advisory service	Provides IWXXM-formatted Space Weather Advisory product specified in ICAO Annex 3. (Designated provider: States with Space Weather Advisory Centre)		IWXXM	Pub/Sub Req/Reply			
Volcano Observatory Notice for Aviation (VONA) service	Provides of IWXXM-formatted VONA specified in ICAO Annex 3. Provision of VONA is a recommended practice in Annex 3 (Amd 82). (Designated provider: States with a designated State Volcano Observatory)		IWXXM	Pub/Sub Req/Reply			
Quantitative volcanic ash concentration information (QVA) service	Provides detailed information of significant volcanic ash in the atmosphere, including probabilities of ash concentration thresholds over space and time. Advanced meteorological SWIM (MET-SWIM) service being developed by MET Panel. (Designated provider: States with Volcanic Ash Advisory Centre (VAAC))	QVA gridded forecasts including probabilities, and IWXXM QVA objects. A recommended practice for significant ash clouds in Annex 3 (Amd 82) for VAACs in a position to do so from Nov 2025, and for all VAACs from Nov 2026.	Gridded data (e.g. NetCDF), IWXXM	Pub/Sub Req/Reply			
WAFC (World Area Forecast Centres) gridded forecast service	Provides global gridded weather forecasts. (Designated provider: WAFCs (UK and US))	Global gridded forecasts of CB, icing, turbulence, upper winds, upper-air temperatures and humidity, flight level and temperature of tropopause, and direction, speed and flight level of maximum wind	Gridded data in GRIB2	Pub/Sub Req/Reply			
WAFC significant weather (SIGWX) forecast service	Provides global WAFC SIGWX data sets with coverage expressed in polygons. (Designated provider: WAFCs (UK and US))	Significant weather forecast such as tropical cyclone, turbulence, icing, etc.	IWXXM	Pub/Sub ~~or~~ Req/Reply			

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Applicability	Desired implement-ation timeframe	Maturity
Special Air Report (ARS) service	Provides reports of special observations made by aircraft when they encounter special weather phenomena, such as moderate/severe turbulence or icing. (Note: Currently there is no plan to implement this information service at MET Panel)	Special aircraft observations of weather phenomena as specified in Annex 3, including turbulence, icing, mountain wave, thunderstorms, duststorm, sandstorm, volcanic cloud, volcanic activity / eruption	TBD	Pub/Sub or Req/Reply			
MET derived from Mode S DAPs service	Provides upper air winds and temperatures derived from Mode S Downlinked Aircraft Parameters (DAPs) (e.g. true airspeed, ground speed, magnetic heading, true track angle) and facilitates exchange of derived winds and temperatures among MET service providers.	Upper air winds and temperatures derived from Mode S DAPS	TBD	Pub/Sub or Req/Reply			
Satellite image service	Provides satellite observational information.	Satellite derived MET information (e.g. significant convection)	Gridded format (e.g. NetCDF) and image format	Req/Reply			
Weather radar image service	Provides two- or three-dimensional radar observational information.	Weather radar reflectivity to visualise the intensity of convection	Gridded format (e.g. NetCDF) and image format	Req/Reply			
APAC Common SWIM Surveillance Information Services							
Surveillance data only sharing service	Provides surveillance data of aircraft. (Reference: Guidance Material for the Sharing of Surveillance Data in SWIM)	latitude, longitude, flight level, ground speed (optional), magnetic heading (optional), target identification, target address, mode 3/A code (optional), date, time of message reception for position, quality indicators, SAC, SIC	ASTERIX Cat 21 (payload in JSON or RAW format)	Pub/Sub			

Business functionality of the information service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Applicability	Desired implement-ation timeframe	Maturity
Surveillance data with flight plan information sharing service	Provides surveillance data of aircraft with flight plan information. (Reference: Guidance Material for the Sharing of Surveillance Data in SWIM)	globally unique flight identifier, aircraft identification, departure aerodrome, destination aerodrome, aircraft type (optional), wake turbulence category (optional), latitude, longitude, flight level, ground speed (optional), magnetic heading (optional), target identification, target address, mode 3/A code (optional), date, time of message reception for position, quality indicators, SAC, SIC	ASTERIX Cat 21+FPL (payload in JSON format) Or ASTERIX Cat 21+FPL (FPL contained in message header and Cat 21 payload in RAW format)	Pub/Sub			

APPENDICES

Purpose

These appendices provide detailed operational scenarios for SWIM Information Services that require further description than can be achieved in the main Business Functionality for APAC Common SWIM Information Services table. The additional detail may be associated with varying requirements and business completion criteria, or where the behaviour of the service may depend on the operational scenario, therefore requiring a more granular analysis.

Scenario Steps Table

Operational scenarios detailed in the appendices should follow the format of a Scenario Steps table. The table below specifies and elaborates the fields in the Scenarios Steps table, as well as indicates who is responsible for completing each field.

Fields	Description	Responsibility
Step	Sequential identifier for each message exchange within the scenario	Domain Expert Group
Message	Specific message type, e.g. FF-ICE message type, with sender and recipient identification (e.g., "eAU sends Filed Flight Plan to eASP", "eASP returns Submission Response to eAU")	Domain Expert Group
Message Requirements	Message requirement classification and prerequisite conditions that must be satisfied prior to message transmission • Mandatory - Message must be sent/received in all instances of the scenario without exception • Conditional - Message must be sent/received when specific triggering conditions are met, but is not required when those conditions do not occur	Domain Expert Group
Business Timeout	Maximum acceptable time duration for message response from an operational perspective. The message originator is expected to contact the recipient if no response is received within the timeout period.	Domain Expert Group
Comments	Additional operational context, processing requirements, or business rule specifications that inform technical implementation	Domain Expert Group
Message Exchange Pattern	A template that describes relationships of multiple messages exchanged between interacting components to accomplish a single complete information exchange.	SWIM TF

APPENDIX A

Purpose

This appendix provides detailed operational scenarios for FF-ICE Flight Information Services, with the corresponding recommended MEP by the SWIM Task Force. Each FF-ICE service could contain multiple operational scenarios that have varying requirements and business completion criteria. Hence, technical specifications cannot be defined at the FF-ICE service level. They require more granular scenario-based analysis.

Scope and Application

Five of the six FF-ICE/R1 services are covered. Publication Service is not included as it requires a straightforward Pub/Sub MEP. For each of the 5 FF-ICE/R1 services, the possible operational scenarios were identified. Within each operational scenario, the business completion criteria and a table containing the scenario steps, message exchanges, actors involved, message requirements and business timeouts were detailed. With this information, the SWIM TF recommended the corresponding MEP.

Role Delineation

- Domain Expert Groups: The FF-ICE Ad-Hoc Group defined the operational scenarios and business completion criteria based on operational requirements
- SWIM Task Force: Determined appropriate technical specifications and Message Exchange Patterns based on the clearly defined business requirements provided

Business Completion Criteria Definition

- **Business Completion Criteria —** The point at which the relevant actor can consider their operational procedure for the specific flight to be complete and proceed with subsequent flight operations for that specific flight. This is defined by specific message receipts by the relevant actor.
    - *Format: [Actor] receives/sends [Message Type] [with specific status/condition when applicable]*

FILING SERVICE SCENARIOS

Scenario 1: Submission of Filed Flight Plan (eFPL) by eAU

Business Completion Criteria:

- eAU receives Filing Status with ACCEPTABLE or NOT ACCEPTABLE status indication; or
- eAU receives Submission Response with REJ status indication

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	eAU sends Filed Flight Plan (eFPL) to eASP	Mandatory	N/A	Initial flight plan submission	
2	eASP returns Submission Response (SR) to eAU	Mandatory (following eFPL reception)	1 minute following eFPL submission	Message format validation and basic rule compliance check **ACK**: Flight plan received and stored on file **REJ**: Flight plan rejected and not stored on file **MAN**: Manual intervention required	
3	eASP returns subsequent Submission Response(s) to eAU	Conditional (only when previous SR = MAN)	Variable (dependent on manual processing duration)	Additional Submission Responses will be sent after manual processing. Response can be • MAN (manual processing ongoing); • ACK (manual processing resolved and proceed to Filing Status); or • REJ (manual processing failed)	
4	eASP returns Filing Status (FS) to eAU	Conditional (when SR = ACK)	1 minute following SR "ACK"	Operational evaluation against ATM configuration and applicable restrictions/constraints	

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
				ACCEPTABLE: Complies with requirements **NOT ACCEPTABLE:** Does not comply with requirements **PENDING:** Not yet evaluated	
5	eASP returns Filing Status(es) to eAU	Conditional (when previous FS = PENDING or triggered by re-evaluation process)	Variable	Additional Filing Status messages sent when: 1) Initial status was PENDING and eASP subsequently completed flight plan evaluation, or 2) Re-evaluation of eFPL detects changes in ATM restrictions/constraints affecting flight plan acceptability	

Scenario 2: Submission of Flight Plan Update (FPU) by eAU

Business Completion Criteria:

- eAU receives Filing Status with ACCEPTABLE or NOT ACCEPTABLE status indication; or
- eAU receives Submission Response with REJ status indication

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	eAU sends Flight Plan Update (FPU)	Mandatory	N/A	Modification to existing flight plan data via update message	
2	eASP returns Submission Response (SR) to eAU	Mandatory (following FPU reception)	1 minute following FPU submission	Message format validation and basic rule compliance check **ACK**: Update processed successfully, flight plan modified	

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
				REJ: Update failed, flight plan unchanged **MAN**: Manual intervention required	
3	eASP returns subsequent Submission Response(s) to eAU	Conditional (only when previous SR = MAN)	Variable (dependent on manual processing duration)	Additional Submission Responses will be sent after manual processing. Response can be • MAN (manual processing ongoing): • ACK (manual processing resolved and proceed to Filing Status); or • REJ (manual processing failed)	
4	eASP returns Filing Status (FS) to eAU	Conditional (when SR = ACK)	1 minute following SR "ACK"	Operational evaluation against ATM configuration and applicable restrictions/constraints **ACCEPTABLE:** Complies with requirements **NOT ACCEPTABLE:** Does not comply with requirements **PENDING:** Not yet evaluated	
5	eASP returns Filing Status(es) to eAU	Conditional (when previous FS = PENDING or triggered by re-evaluation process)	Variable	Additional Filing Status messages sent when: 1) Initial status was PENDING and eASP subsequently completed flight plan evaluation, or 2) Re-evaluation of FPU detects changes in ATM restrictions/constraints affecting flight plan acceptability	

Scenario 3: Submission of Flight Cancellation (FC) by eAU

Business Completion Criteria:

- eAU receives Submission Response with ACK or REJ status indication

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	eAU sends Flight Cancellation (FC) to eASP	Mandatory	N/A	Termination of flight plan and associated GUFI operational use	
2	eASP returns Submission Response (SR) to eAU	Mandatory (following Flight Cancellation message reception)	1 minute following FC submission	Message format validation and basic rule compliance check **ACK**: Cancellation processed successfully, flight plan cancelled **REJ**: Cancellation failed, flight plan remains active **MAN**: Manual intervention required, flight plan remains active	
3	eASP returns subsequent Submission Response(s) to eAU	Conditional (only when previous SR = MAN)	Variable (dependent on manual processing duration)	Additional Submission Responses will be sent after manual processing. Response can be • MAN (manual processing ongoing); • ACK (manual processing resolved, cancellation successful); or • REJ (manual processing and cancellation failed)	

PLANNING SERVICE SCENARIOS

Scenario 1: Submission of Preliminary Flight Plan (PFP) by eAU

Business Completion Criteria:

- eAU receives Planning Status with CONCUR, NEGOTIATE, OR NON-CONCUR status indication; or
- eAU receives Submission Response with REJ status indication

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	eAU sends Preliminary Flight Plan (PFP) to eASP	Mandatory	N/A	Initial preliminary flight plan submission for collaborative decision making	
2	eASP returns Submission Response (SR) to eAU	Mandatory (following PFP reception)	1 minute following PFP submission	Message format validation and basic rule compliance check **ACK**: Preliminary Flight plan received and stored on file **REJ**: Preliminary Flight plan rejected and not stored on file **MAN**: Manual intervention required	
3	eASP returns subsequent Submission Response(s) to eAU	Conditional (only when previous SR = MAN)	Variable (dependent on manual processing duration)	Additional Submission Responses will be sent after manual processing. Response can be • MAN (manual processing ongoing); • ACK (manual processing resolved and proceed to Planning Status); or • REJ (manual processing failed)	
4	eASP returns Planning Status (PS) to eAU	Conditional (when SR = ACK)	1 minute following SR "ACK" if re-	Planning evaluation against ATM configuration and applicable restrictions/constraints.	

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
			evaluation process is provided	**CONCUR:** Complies with requirements **NEGOTIATE:** Would be accepted if filed, but eASP proposes modifications/constraints or identifies differences from desired route/trajectory **NON-CONCUR:** Does not comply with requirements	
5	eASP returns Planning Status(es) to eAU	Conditional (when re-evaluation process detects changes)	Variable	Additional Planning Status messages sent when re-evaluation detects changes in ATM restrictions/constraints affecting preliminary flight plan acceptability	

Scenario 2: Submission of Flight Plan Update (FPU) by eAU

Business Completion Criteria:

- eAU receives Planning Status with CONCUR, NEGOTIATE, OR NON-CONCUR status indication; or
- eAU receives Submission Response with REJ status indication

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	eAU sends Flight Plan Update (FPU) for PFP to eASP	Mandatory	N/A	Modification to existing preliminary flight plan data via update message	
2	eASP returns Submission Response (SR) to eAU	Mandatory (following FPU reception)	1 minute following FPU submission	Message format validation and basic rule compliance check **ACK**: Update processed successfully, preliminary flight plan modified	

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
				REJ: Update failed, preliminary flight plan unchanged **MAN**: Manual intervention required	
3	eASP returns subsequent Submission Response(s) to eAU	Conditional (only when previous SR = MAN)	Variable (dependent on manual processing duration)	Additional Submission Responses will be sent after manual processing. Response can be • MAN (manual processing ongoing); • ACK (manual processing resolved and proceed to Planning Status); or • REJ (manual processing failed)	
4	eASP returns Planning Status (PS) to eAU	Conditional (when SR = ACK)	1 minute following SR "ACK"	Planning evaluation against ATM configuration and applicable restrictions/constraints. **CONCUR:** Complies with requirements **NEGOTIATE:** Would be accepted if filed, but eASP proposes modifications/constraints or identifies differences from desired route/trajectory **NON-CONCUR:** Does not comply with requirements	
5	eASP returns Planning Status(es) to eAU	Conditional (when re-evaluation process detects changes)	Variable	Additional Planning Status messages sent when re-evaluation detects changes in ATM restrictions/constraints affecting preliminary flight plan acceptability	

Scenario 3: Submission of Flight Cancellation (FC) by eAU

Business Completion Criteria:

- eAU receives Submission Response with ACK or REJ status indication

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	eAU sends Flight Cancellation (FC) to eASP	Mandatory	N/A	Termination of preliminary flight plan and associated GUFI operational use	
2	eASP returns Submission Response (SR) to eAU	Mandatory (following Flight Cancellation message reception)	1 minute following FC submission	Message format validation and basic rule compliance check **ACK**: Cancellation processed successfully, preliminary flight plan cancelled **REJ**: Cancellation failed, preliminary flight plan remains active **MAN**: Manual intervention required, preliminary flight plan remains active	
3	eASP returns subsequent Submission Response(s) to eAU	Conditional (only when previous SR = MAN)	Variable (dependent on manual processing duration)	Additional Submission Responses will be sent after manual processing. Response can be • MAN (manual processing ongoing); • ACK (manual processing resolved, cancellation successful); or • REJ (manual processing and cancellation failed)	

NOTIFICATION SERVICE SCENARIOS

Scenario 1: Dissemination of Flight Departure (FD) Notification by Departure eASP

Business Completion Criteria:

- Departure eASPs receives Submission Response with ACK or REJ status indication

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	Departure eASP sends Flight Departure (FD) to relevant eASP(s)	Mandatory	N/A	Notification of actual departure event (equivalent to DEP message)	
2	Receiving eASP returns Submission Response (SR) to departure eASP	Mandatory (following departure message reception)	1 minute following dissemination of FD	Message format validation and basic rule compliance check **ACK:** Departure notification successful **REJ:** Departure notification failed **MAN:** Manual intervention required	
3	Receiving eASP returns subsequent Submission Response(s) to departure eASP	Conditional (only when previous SR = MAN)	Variable (dependent on manual processing duration)	Additional Submission Responses will be sent after manual processing. Response can be • MAN (manual processing ongoing); • ACK (departure notification successful); or • REJ (departure notification failed)	

Scenario 2: Dissemination of Flight Arrival (FA) Notification by Arrival eASP

Business Completion Criteria:

- Arrival eASPs receives Submission Response with ACK or REJ status indication

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	Arrival eASP sends Flight Arrival (FA) to relevant eASP(s)	Mandatory	N/A	Notification of actual arrival event (equivalent to ARR message)	
2	Receiving eASP returns Submission Response (SR) to arrival eASP	Mandatory (following arrival message reception)	1 minute following dissemination of FA	Message format validation and basic rule compliance check **ACK:** Arrival notification successful **REJ:** Arrival notification failed **MAN:** Manual intervention required	
3	Receiving eASP returns subsequent Submission Response(s) to arrival eASP	Conditional (only when previous SR = MAN)	Variable (dependent on manual processing duration)	Additional Submission Responses will be sent after manual processing. Response can be • MAN (manual processing ongoing); • ACK (arrival notification successful); or • REJ (arrival notification failed)	

TRIAL SERVICE SCENARIOS

Scenario 1: Submission of Trial Request (TRQ) by eAU

Business Completion Criteria:

- eAU receives Trial Response with CONCUR, NEGOTIATE, or NON-CONCUR; or
- eAU receives Submission Response with REJ status indication

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	eAU sends Trial Request(s) (TRQ) to eASP	Mandatory	N/A	Multiple independent requests can be sent simultaneously without waiting for responses. These "what-if" requests allow evaluation of flight plan alternatives without creating new flight plans or modifying existing flight plans. eASPs may limit number/frequency of requests.	
2	eASP returns Submission Response (SR) to eAU	Mandatory (following each trial request reception)	1 minute following TRQ submission	Message format validation and basic rule compliance check **ACK**: Trial request processed and will be evaluated **REJ**: Trial request rejected **MAN**: Manual intervention required	
3	eASP returns subsequent Submission Response(s) to eAU	Conditional (only when previous SR = MAN)	Variable (dependent on manual processing duration)	Additional Submission Responses will be sent after manual intervention. Response can be	

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
				• MAN (manual processing ongoing); • ACK (manual processing resolved and proceed to Trial Response); or • REJ (manual processing failed)	
4	eASP returns Trial Response (TRP) to eAU	Conditional (when SR = ACK)	1 minute following SR "ACK"	Evaluation against ATM configuration and applicable restrictions/constraints. . **CONCUR**: Complies with requirements **NEGOTIATE**: Would be accepted if submitted as eFPL or PFPs, but eASP proposes modifications/constraints or identifies differences from desired route/trajectory **NON-CONCUR**: Does not comply with requirements	

FLIGHT DATA REQUEST SERVICE SCENARIOS

Scenario 1: Submission of Flight Data Request (FDRQ) by eAU/eASP

Business Completion Criteria:

- Requestor (eAU/eASP) receives Flight Data Response; or
- Requestor (eAU/eASP) receives Submission Response with REJ status indication

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	eAU or eASP sends Flight Data Request (FDRQ) to eASP or eAU	Mandatory	N/A	Request for flight plan data, supplementary data, or flight status. Additional flight information may be provided, subjected to eAUs/eASPs implementation	
2	Receiving party returns Submission Response (SR) to message originator	Mandatory (following each flight data request reception)	1 minute from submission of FDRQ	Message format validation and basic rule compliance check **ACK**: Flight data request processed and flight information will be provided **REJ**: Flight data request rejected (invalid format, unauthorized access, or data not found etc.) **MAN**: Manual intervention required	
3	Receiving party returns subsequent Submission Response(s)	Conditional (only when previous SR = MAN)	Variable (dependent on manual processing duration)	Additional Submission Responses will be sent after manual intervention. Response can be • MAN (manual processing ongoing); • ACK (manual processing resolved and proceed to Flight Data Response); or	

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
				• REJ (manual processing failed)	
4	Receiving party returns Flight Data Response (FDRP)	Conditional (when SR = ACK)	1 minute following SR "ACK"	Requested flight information provided. No response expected from recipient of Flight Data Response	

APPENDIX B

ATFM Operational Scenarios for APAC Common SWIM Information Services

1. Background

1.1. As the aviation community moves away from legacy point-to-point teletype messaging, System-Wide Information Management (SWIM) serves as the primary enabler for the digital exchange of aeronautical, flight, and meteorological information.

1.2. The exchange of tactical ATFM requirements, specifically **Calculated Take-Off Time (CTOT)**, and **Calculated Time Over (CTO)**, and one of the key A-CDM data elements supporting demand prediction, the **Target Take-Off Time (TTOT)**, is currently managed through a mix of legacy message formats and systems and emerging digital services. To ensure global interoperability and seamless transition to FF-ICE operating environment, these exchanges must be mapped to clear operational use cases within ICAO guidance materials and regionally operating procedures.

1.3. The exchange of CTO, CTOT, and TTOT is critical for the following operational reasons:

1.4. Enabling Flexible Trajectory-Based Demand-Capacity Balancing (CTO): The exchange of CTO allows an ANSP to balance demand and capacity within their area of responsibility by metering traffic through a specific waypoint in their airspace or at the boundary of their Flight Information Region (FIR) rather than imposing ATFM control mechanism at the departure airport which may be outside their FIRs. This approach aligns with the spirit of FF-ICE, in which FF-ICE capable ATM service provider (eASP) provides ATM restriction/constraint impacting trajectory within their area to the FF-ICE capable airspace user (eAU), and the eAU is responsible for managing their trajectory to comply with the requirements. This approach provides greater flexibility for the AUs to determine how best to meet the DCB requirement while still honouring their business objectives.

1.5. Balancing Demand and Capacity through an ATFM Measure Imposed at Departure Aerodrome (CTOT): While the move toward CTO is foreseeable in the future FF-ICE environment, there will be cases where a conventional Ground Delay Program (GDP) with the assignment of CTOT will still be used, e.g., in the case of domestic ATFM operations or in specific areas of cross-border ATFM operations with special arrangements among the ANSPs involved. In a GDP, CTOT is the primary constraint time issued to regulate departures of flights destined for congested or constrained airspace or arrival aerodrome. The sharing of CTOT with ANSP managing the

departure aerodrome ensures that the departure aerodrome holds the aircraft on the ground to smooth out traffic peaks before they enter the airborne network or going to the arrival aerodrome.

1.6. Enhancing Predictability via Airport Collaboration (TTOT): TTOT is derived from Airport-Collaborative Decision Making (A-CDM) processes and provides a more accurate picture of when an aircraft is expected to be ready for departure compared to the filed flight plan. Integrating A-CDM derived times such as TTOT into ATFM assists in enhancing ATFM's demand prediction, resulting in a more accurate, dynamic, and effective demand-capacity balancing initiatives.

1.7. The transition from legacy messages (such as Slot Allocation Messages - SAM) transmitted via AFTN/AMHS to modern Flight Information Exchange Model (FIXM) messages is driven by the need for global interoperability, data richness, and the implementation of SWIM.

1.8. There is a need to shift from existing SAM and related messages to ATFM FIXM messages due to the following reasons below:

1.8.1. Limitations of legacy AFTN/AMHS formats: Legacy teletype-based formats are rigid and often lack the flexibility to carry complex trajectory data required for modern ATFM.

1.8.2. Support for FF-ICE and global standardization (which FIXM will be used for exchanging flight-related information): Shifting ATFM and A-CDM information exchange to FIXM-based message formats ensures that APAC ATFM and A-CDM operations are aligned with global ICAO standards and are ready to support the operations in FF-ICE environment, as well as facilitating "global interoperability.

1.8.3. Handling of region-specific requirements via extensions: Shifting to FIXM allows the region to define specific data elements (such as those found in the APAC Regional FIXM Extension) in a structured, machine-readable format (XML/GML) that legacy teletype-based messages cannot easily support.

2. Operational Scenarios

2.1. The three parameters cited represent different phases within a flight trajectory:

2.1.1. TTOT (Target Take-Off Time): Generated by A-CDM system, representing the expected time a flight is expected to depart from the departure aerodrome considering factors including the airspace user's TOBT (Target Off-Block Time) and departure sequencing requirements.

2.1.2. CTOT (Calculated Take-Off Time): Generated by the ATFM system to manage traffic into constrained or congested airspace or arrival aerodrome by controlling the departure (take-off) time of the flight from the departure aerodrome.

2.1.3. CTO (Calculated Time Over): Generated by the ATFM system to manage traffic into constrained or congested airspace by controlling the time the flight is expected to cross a specific waypoint in an airspace.

2.2. Operational Use Cases for ATFM FIXM messages to be exchanged using Flight-Specific ATFM Measure Service and ATFM/A-CDM Integration Service (ref. Business Functionality of APAC Common SWIM Information Services, version 1.0) are elaborated below:

2.2.1. Cross-Border A-CDM data exchange: Using SWIM to provide timely cross-border TTOT updates from A-CDM airports to airport operators or ANSP. This enables more accurate demand prediction, allowing for more optimised CTOT/CTO allocation and more appropriate delay assignment, reducing unnecessary buffering and ground delay.

2.2.2. Cross-Border Metering between Adjacent ANSPs: Sharing a CTO, especially between two adjacent Air Navigation Service Providers (ANSPs) enables traffic metering through early speed adjustments in the cruise phase, rather than ad-hoc holding by the downstream ANSP which are more costly, less environmentally friendly, and introduces additional workload on ATCOs.

2.2.3. Expanding the scope of ATFM measure: Conventional ATFM measure such as a GDP targets management of pre-departure flights. With the inclusion of CTO issuance, the scope of ATFM measure could be expanded to include airborne flights. AUs could contribute to overall traffic management through trajectory adjustments during cruise phase to meet with the required CTO. This could reduce ground delays as ATFM delays are spread across a wider flight profile range.

2.2.4. Dynamic Collaborative-Decision Making Process: Enabling ANSPs and AUs to view ATFM information in real-time and perform timely negotiations as information are exchanged.

3. ATFM FIXM Messages Identified

3.1. In order to achieve the above ops scenarios, five different messages were identified, namely (1) FIXM TTOT Allocation, (2) FIXM CTOT Allocation, (3) FIXM CTOT Cancellation, (4) FIXM CTO Allocation and (5) FIXM CTO Cancellation.

3.2. The FIXM TTOT, CTOT and CTO Allocation messages allow the system to exchange TTOT, CTOT or CTO values (respectively) when made available as well as providing the revision to them. Note that the revision to TTOT, CTOT, and CTO can be distributed using the "Allocation" messages by replacing the existing time values. Recipient systems should be able to differentiate between an initial allocation and a revision.

3.3. The FIXM CTOT and CTO Cancellation messages allow the system to remove the CTOT or CTO values usually sent after an ATFM program is cancelled.

Step	Message	Details	Business Timeout	Comments	Message Exchange Pattern
1	FIXM TTOT Allocation	Mandatory (when TTOT is available)	N/A	For all departure flights with TTOT, ANSPs will publish.	
2	FIXM CTOT Allocation	Mandatory (after ATFM program ran)	N/A	After a GDP is run or revised, dependent on individual configuration condition set on when to be sent out, this message has to be published.	
3	FIXM CTOT Cancellation	Mandatory (after ATFM program is canceled)	N/A	After GDP is canceled, or the assigned CTOT no longer applies to the flight, this message has to be published.	
4	FIXM CTO Allocation	Mandatory (after ATFM program ran)	N/A	After the ATFM measure is run or revised, dependent on individual configuration condition	

				set on when to be sent out, this message has to be published.	
5	FIXM CTO Cancellation	Mandatory (after ATFM program is canceled)	N/A	After the ATFM measure is canceled, or the assigned CTO no longer applies to the flight, this message has to be published.	

4. Mapping of ATFM FIXM Messages to APAC Common SWIM Information Service

4.1. Business functionality of the information service: **Flight-Specific ATFM Measure Service**

4.1.1. Scenario: Dissemination of CTOT Allocation by Initiating ATFMU to Facilitating ATFMU, AU, and other relevant stakeholders

4.1.1.1. Business Completion Criteria: Initiating ATFMU disseminates FIXM CTOT Allocation Message to Facilitating ATFMU, AU, and other relevant stakeholders. No business confirmation needed.

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	Initiating ATFMU sends FIXM CTOT Allocation to Facilitating ATFMUs, AUs, and other relevant stakeholders	Mandatory (after ATFM program ran)	N/A	After a GDP is run or revised, dependent on individual configuration condition set on when to be sent out, this message has to be published.	

4.1.2. Scenario: Dissemination of CTOT Cancellation by Initiating ATFMU to Facilitating ATFMU, AU, and other relevant stakeholders

4.1.2.1. Business Completion Criteria: Initiating ATFMU disseminates FIXM CTOT Cancellation Message to Facilitating ATFMU, AU, and other relevant stakeholders. No business confirmation needed.

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	Initiating ATFMU sends FIXM CTOT Cancellation to Facilitating ATFMUs, AUs, and other relevant stakeholders	Mandatory (after ATFM program is cancelled)	N/A	After GDP is cancelled, or the assigned CTOT no longer applies to the flight, this message has to be published.	

4.1.3. Scenario: **Dissemination of CTO Allocation** by Initiating ATFMU to Facilitating ATFMU and AU

4.1.3.1. Business Completion Criteria: Initiating ATFMU disseminates FIXM CTO Allocation Message to Facilitating ATFMU and AU. No business confirmation needed.

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	Initiating ATFMU sends FIXM CTO Allocation to Facilitating ATFMU and AU	Mandatory (after ATFM measure ran)	N/A	After ATFM measure is run or revised, dependent on individual configuration condition set on when to be sent out, this message has to be published.	

4.1.4. Scenario: Dissemination of CTO Cancellation by Initiating ATFMU to Facilitating ATFMU and Facilitating ATFMU and AU

4.1.4.1. Business Completion Criteria: Initiating ATFMU disseminates FIXM CTO Cancellation Message to Facilitating ATFMU and AU. No business confirmation needed.

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	Initiating ATFMU sends FIXM CTO Cancellation to Facilitating ATFMU and AU	Mandatory (after ATFM measure cancelled)	N/A	After ATFM measure is cancelled, or the assigned CTO no longer applies to the flight, this message has to be published.	

4.2. Business functionality of the information service: **ATFM/A-CDM Integration Service**

4.2.1. Scenario: Dissemination of TTOT Allocation by departure eASP/ATFMU

4.2.1.1. Business Completion Criteria: Departure eASP/ATFMU disseminates FIXM TTOT Allocation to relevant eASPs/ATFMU. No business confirmation needed.

Step	Message	Message Requirements	Business Timeout	Comments	Message Exchange Pattern
1	Departure eASP/ATFMU sends FIXM TTOT Allocation to relevant eASPs/ATFMUs	Mandatory (when TTOT is available)	N/A	For all departure flights with TTOT, ANSPs will publish.	