



# **Review Business Functionality for APAC Common SWIM Services**

FFICE/4

# Feedback on the inputs required by SWIM TF from Domain Knowledge Group

## 1. Propose to remove “Message Exchange Pattern” from the list of requested information

- Domain Knowledge Group such as FF-ICE Ad-Hoc Group should focus on providing the business rules and process completion criteria. MEPs can be more appropriately determined by technical groups such as SWIM TF.

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)
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## 2. Propose to expand the “Brief description of service” into comprehensive scenarios that need to be supported under each information service

- Within a service, there could be different operational scenarios that have varying operational requirements and business completion criteria, hence requiring different MEPs

# Proposal 1: Remove MEP from requested information

Issue: MEP Assignment is ambiguous

## 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 <u>for Airspace Users</u> to submit, update or cancel flight plans <u>through a SWIM-based interface using FIXM</u> . <u>Reference: ICAO Doc 9965 (Manual on FF-ICE)</u> <u>Target Implementation timeframe 2034</u>	<u>Full Flight plan with trajectory for registration, update or cancellation</u>	FIXM	<u>Req/Reply</u> <u>Async R/R</u> <u>and Pub/Sub</u>	1
FF-ICE publication service	Provides <u>harmonised sharing of</u> flight plan information in a <u>global-standard format</u> supporting common situation awareness. <u>Reference: ICAO Doc 9965 (Manual on FF-ICE)</u>	<u>Flight information for publication Full Flight Plan with trajectory (latest agreed)</u>	FIXM	Pub/Sub	2
FF-ICE trial service	Allows operators to test the effect of a potential change in a	Proposed changes in a flight	FIXM	<u>Req/Reply</u>	2

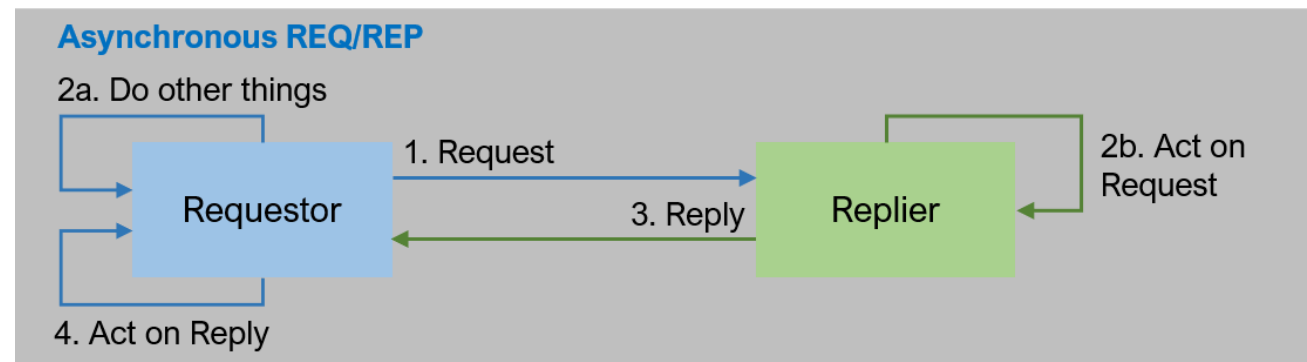
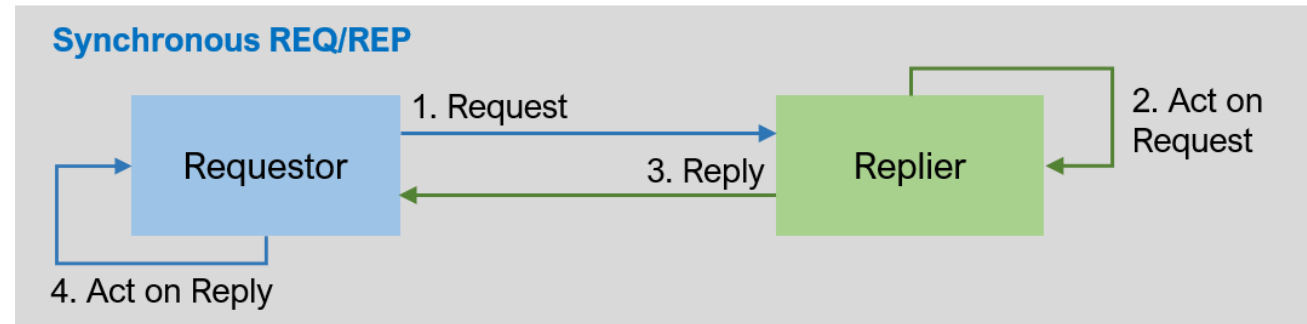
- Example: FF-ICE Filing Service is currently labelled as: “Request/Reply + Pub/Sub”
- What does this actually mean?

# Proposal 1: Remove MEP from requested information

Issue: Challenging for business users to understand MEP definitions provided in ICAO Doc 10203

Business users are provided the following definitions and diagrams on Request/Reply:

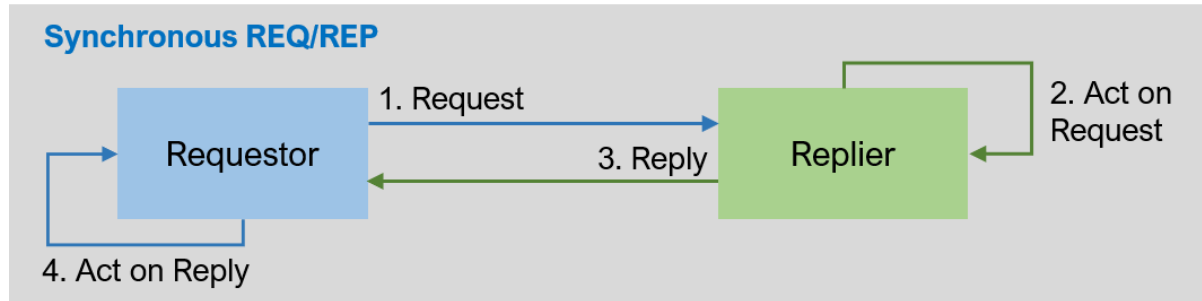
- **Synchronous R/R MEP** is defined as – *The consumer initiates a request to an information service; the service processes the request and generates a reply to the consumer. The consumer **waits for the information service to provide a response**. During this waiting period, the consumer **cannot send 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 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***



# Proposal 1: Remove MEP from requested information

*Issue: Challenging for business users to understand MEP definitions provided in ICAO Doc 10203*

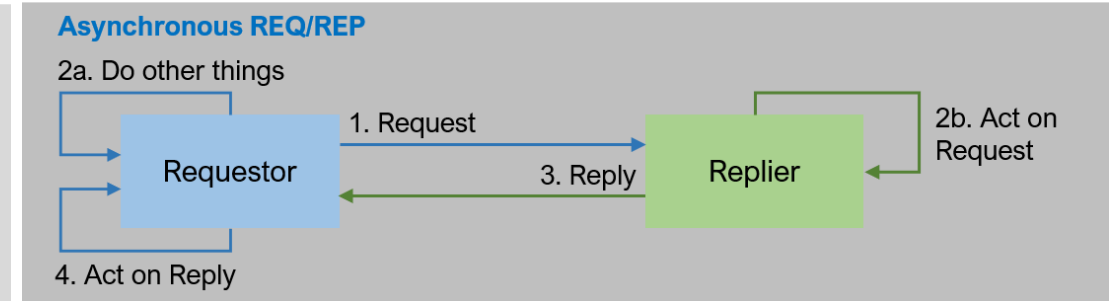
Business users are provided the following definitions and diagrams on Request/Reply:



**Shows waiting with no other activities**

**But what exactly can't I do?**

- Can't file other flights?
- Can't do any work at all?
- Just can't send more requests for this specific transaction / specific flight?



**Shows "Do other things" while waiting**

**But what are "other things"?**

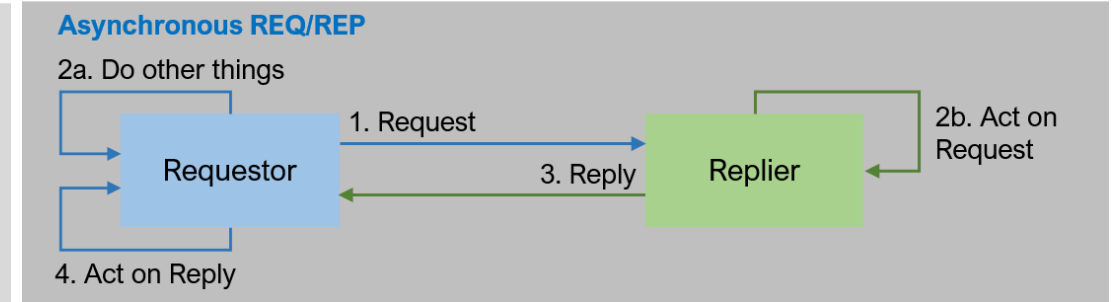
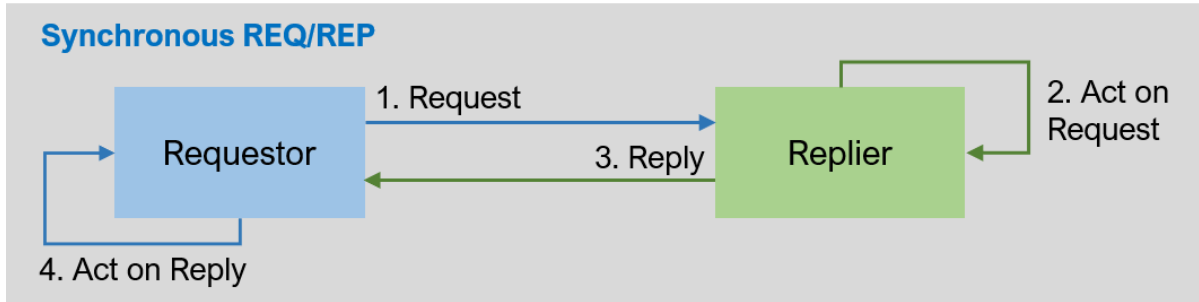
- Other flights?
- Other operations for the same flight?
- Other business activities entirely?

- Do "other requests" / "other operations" refer to same flight? Or different flights?
- Diagrams don't clarify the scope of "other operations"
- Business users can't tell what they're allowed to do while waiting

# Proposal 1: Remove MEP from requested information

*Issue: Challenging for business users to understand MEP definitions provided in ICAO Doc 10203*

The definitions could apply to different levels:



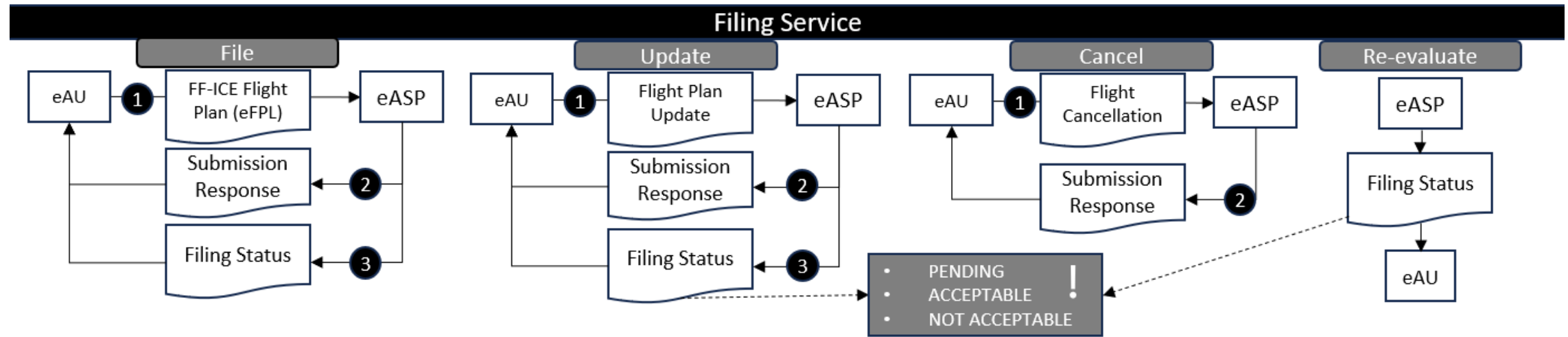
Level	Synchronous	Asynchronous
<b>Technical</b>	Wait for technical confirmation/acknowledgement	Continue without waiting for technical confirmation
<b>Business</b>	Wait for business confirmation – but which? Submission Response? Filing Status?	Continue without waiting for business confirmation - But what can I do? Work on other flights? Other operations on same flight?

- ICAO definitions don't specify which level
- Technical confirmation  $\neq$  Business confirmation

# Proposal 2: Expand the “Brief description of service” into comprehensive scenarios

*Issue: Each service could include multiple different scenarios that might require different MEPs*

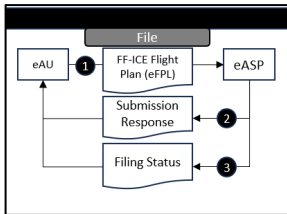
Filing Service as an example



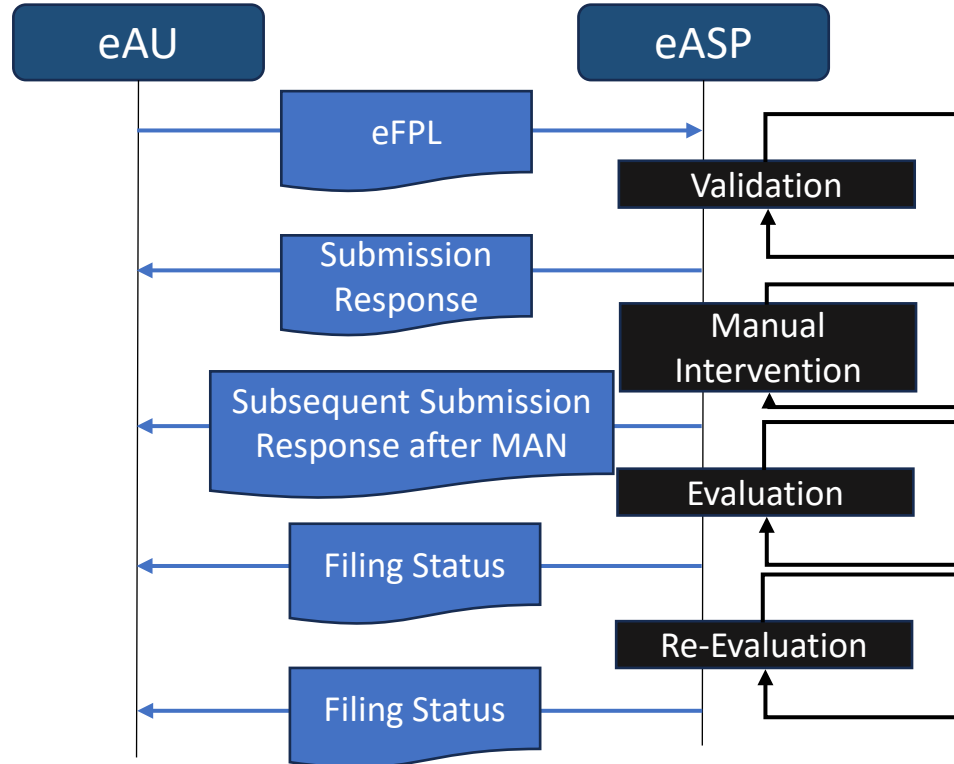
- Scenarios:
  - **File new flight plan / Update existing flight plan / Re-evaluation** → Need subsequent Filing Status update
  - **Cancel flight plan** → Need only Submission Response confirmation
  - **Manual processing** → 2 Submission Responses provided to eAU
- Issue:
  - Each scenario has different operational requirements and different business completion criteria
  - Single MEP assignment cannot represent this variety

# Proposal 2: Expand the “Brief description of service” into comprehensive scenarios

*Issue: Each scenario could have multiple message exchanges*



**File Flight Plan Scenario**



- Questions this raises:
  - Which individual messages use Async Request/Reply vs Pub/Sub?
  - Are all steps synchronous or asynchronous?
  - When is business operation actually complete?
  - Which steps must the operator wait for before they can proceed operationally?
- Issue:
  - Single MEP assignment does not specify behavior for each message
  - Technical implementers must make assumptions

# Potential Approach

## 1. Remove MEP from initial service definition table

- Better handled by technical experts (SWIM TF)

Business functionality of the service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Recommended service in initial 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.	Flight plan for registration, update or cancellation	FIXM	Req/Reply	1

Table: Business functionality of APAC Common SWIM Information Services

2. Propose **Three-step Process** to define Information Service implementation for clear separation between business requirements and technical implementation, allocating tasks to appropriate groups based on their expertise

Step	Description	Responsibility
1	Broad Level Information Service Definition (using initial service definition table)	Domain Expert Group
2	<p><b>Define operational scenarios with detailed requirements</b></p> <ol style="list-style-type: none"> <li>1. Identify scenarios – List all operational use cases for each service</li> <li>2. For each scenario – Determine business completion: when operators can consider their business operation complete</li> <li>3. Analyse workflows – complete <b>Scenario Analysis Table (next slide)</b> for every scenario</li> </ol>	Domain Expert Group
3	<p><b>Determine technical specifications</b></p> <ul style="list-style-type: none"> <li>• Consider technical constraints and infrastructure</li> <li>• Based on clear business requirements from Step 2, select appropriate technical mechanisms/protocol for each message exchange to realize business behavior</li> </ul>	SWIM Task Force

# Scenario Analysis

Break down complete workflow of scenario from start to finish.

Fields	Description
<b>Business Completion Criteria</b>	When is business operation actually complete?

For each step:

Fields	Description
<b>Message</b>	What specific messages are exchanged in what order? Who is the sender/recipient?
<b>Message Details &amp; Dependencies</b>	Mandatory / Optional / Conditional What must happen before this message?
<b>Business Timeout</b>	How long should I wait?
<b>Comments</b>	Other details? E.g., details on background processing

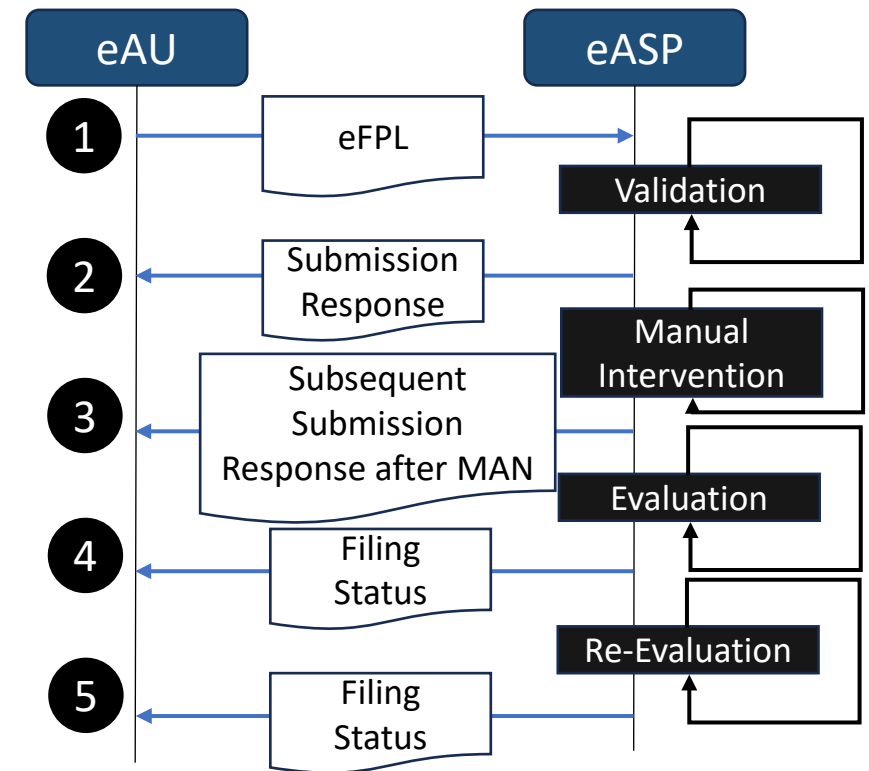
# Break down of Filing Scenario

## Business Completion:

- Filing Status received with ACCEPTABLE / NOT ACCEPTABLE

	Message	Details	Timeout	Comments
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 (2 <sup>nd</sup> evaluation)	eASP sends updated FS when flight is ready to be evaluated (for PENDING) or when operational changes affect flight status

## File Flight Plan Scenario



- Is there anything else in the scenario analysis that needs to be defined, so that SWIM TF can provide the technical definition?

# For Discussion

- Proposal 1: Remove MEP from requested information: Leave technical solutioning to technical Implementers
- Proposal 2: Expand the “Brief description of service” into comprehensive scenarios to reduce assumptions and support technical solutioning