Supporting European Aviation

EUROCONTROL

“Get into SWIM” session

MEP Identification

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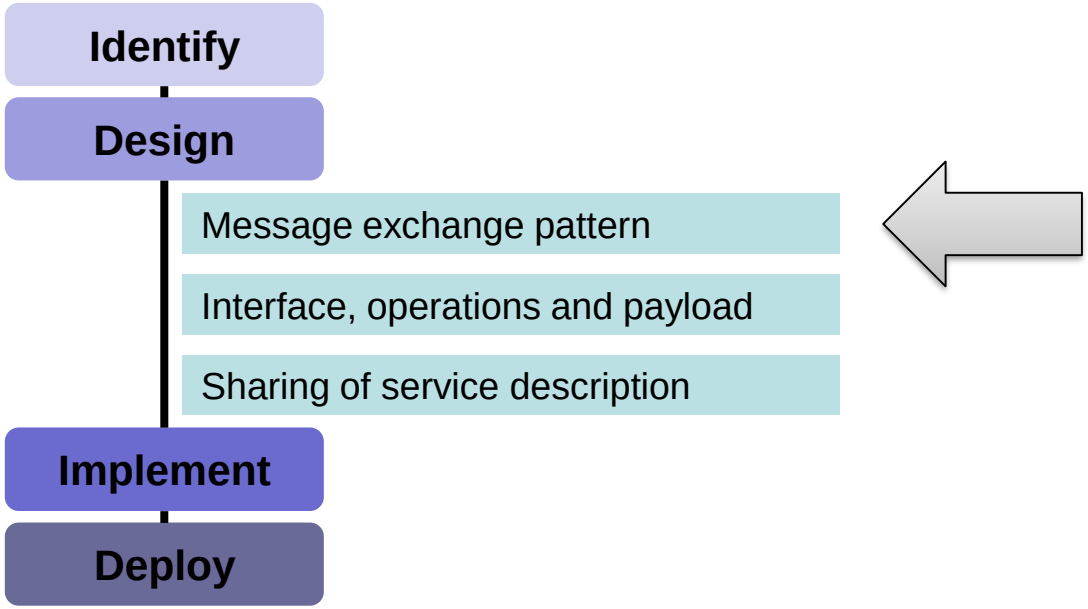
FOUNDING MEMBER SESAR JOINT UNDERTAKING

NETWORK MANAGER

MEP Identification



Introduction

A message exchange pattern (**MEP**) is a template, devoid of application semantics, that describes a generic pattern for the exchange of messages between agents.

It describes relationships (e.g. temporal, causal, sequential, etc.) of multiple messages exchanged in conformance with the pattern, as well as the normal and abnormal termination of any message exchange conforming

W3C

MEPs can only be understood in relation to a particular level of abstraction.

Resources

Resources

SWIM TI Message Exchange Patterns Identification Guidelines

https://ost.eurocontrol.int/sites/AISWIM/SWIMspecs/TEC/Shared%20Documents/Supporting%20Material/02%20-%20SWIM%20TI%20MEPs%20Identification%20Guidelines/SWIM%20TI%20Message%20Exchange%20Patterns%20Identification%20Guidelines.docx

Application MEPs Overview

These are the MEPs that describe the information interactions at application level and that are implemented using SWIM TI primitive MEPS. They include:

- One Way
- Synchronous Request/Reply
- Asynchronous Request/Reply
- Fan-out
- Publish/Subscribe Push
- Publish/Subscribe Pull
- Brokered Publish/Subscribe Push

MEP Characteristics: Cardinality

Cardinality describes the number of systems participating in the exchange of messages. We distinguish three classes of MEPs according to their cardinality:

- **1-1**: The Message Exchange Pattern involves the exchange of messages between two systems.
- **1-many**: The Message Exchange Pattern involves the exchange of messages of one system with one or more systems.
- **Many-many**: The Message Exchange Pattern involves the exchange of messages of multiple systems with multiple systems.

MEP Characteristics: Decoupling

- **Space** decoupling describes the characteristic of a MEP where the systems participating in the message exchange do not need knowledge of the network address of the other systems .
- **Time** decoupling characteristic describes a MEP where the systems participating in a message exchange do not have to be simultaneously active for the message exchange to proceed.
- **Process** decoupling characteristic describes the degree of decoupling of the system processes involved in the MEP. According to this characteristic MEPs are classified in two classes:
  - Synchronous
  - Asynchronous

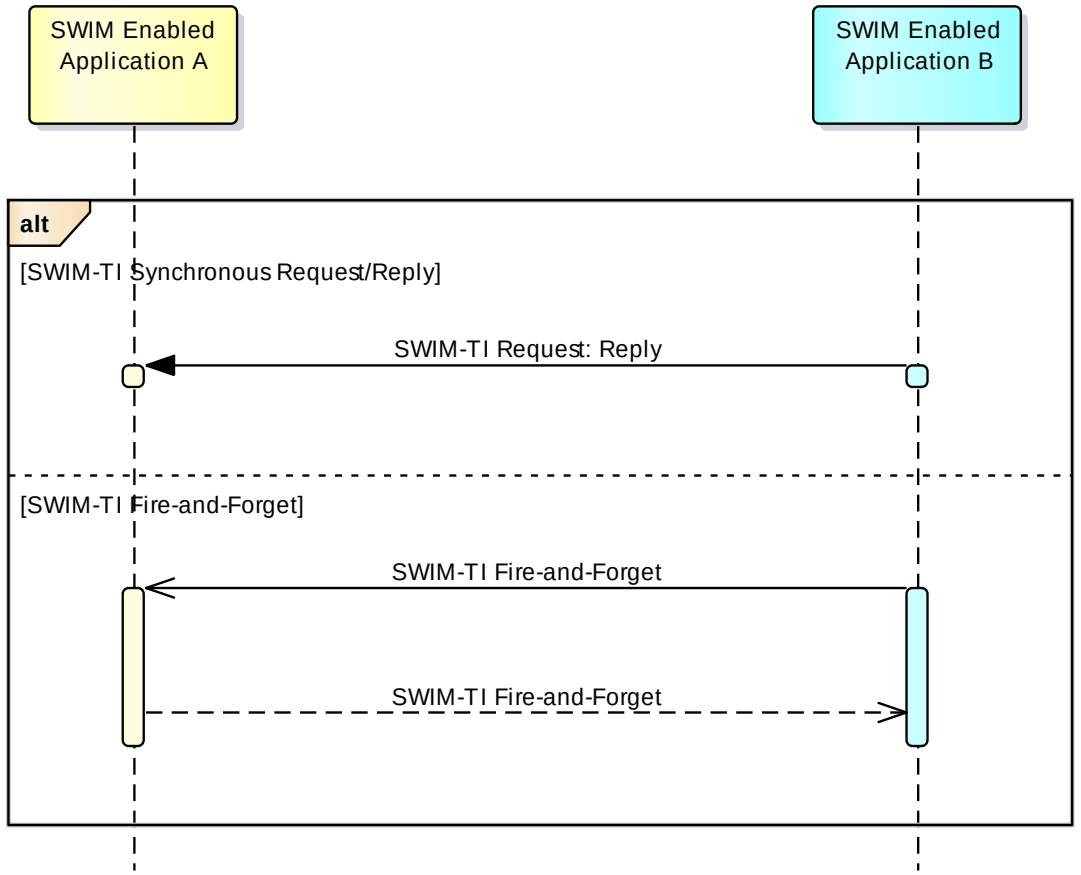
MEPs Initial Catalogue

- One Way
- Synchronous Request/Reply
- Asynchronous Request/Reply
- Fan-out
- Publish/Subscribe Push
- Publish/Subscribe Pull
- Brokered Publish/Subscribe Push

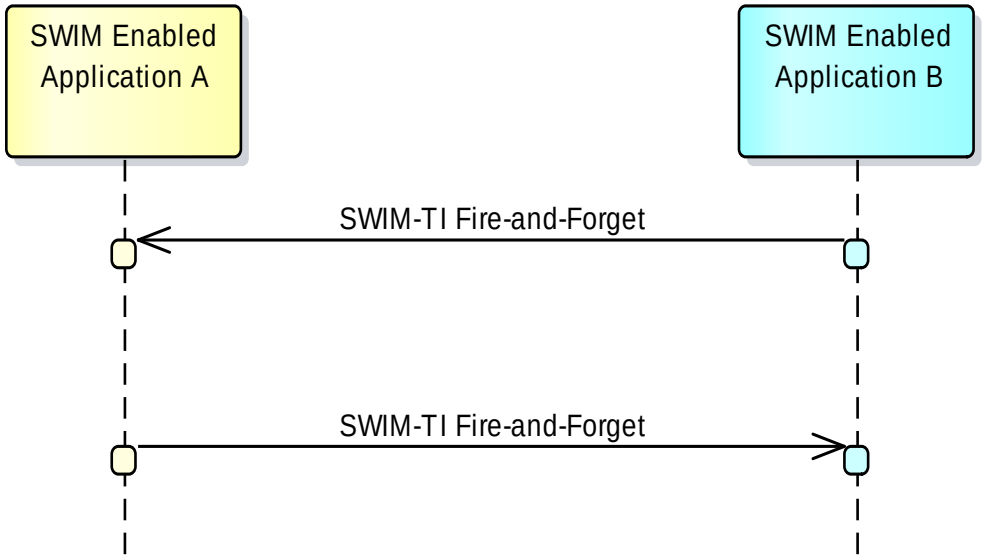
One Way


SWIM Enabled Application A
SWIM Enabled Application B
SWIM-TI Fire-and-Forget

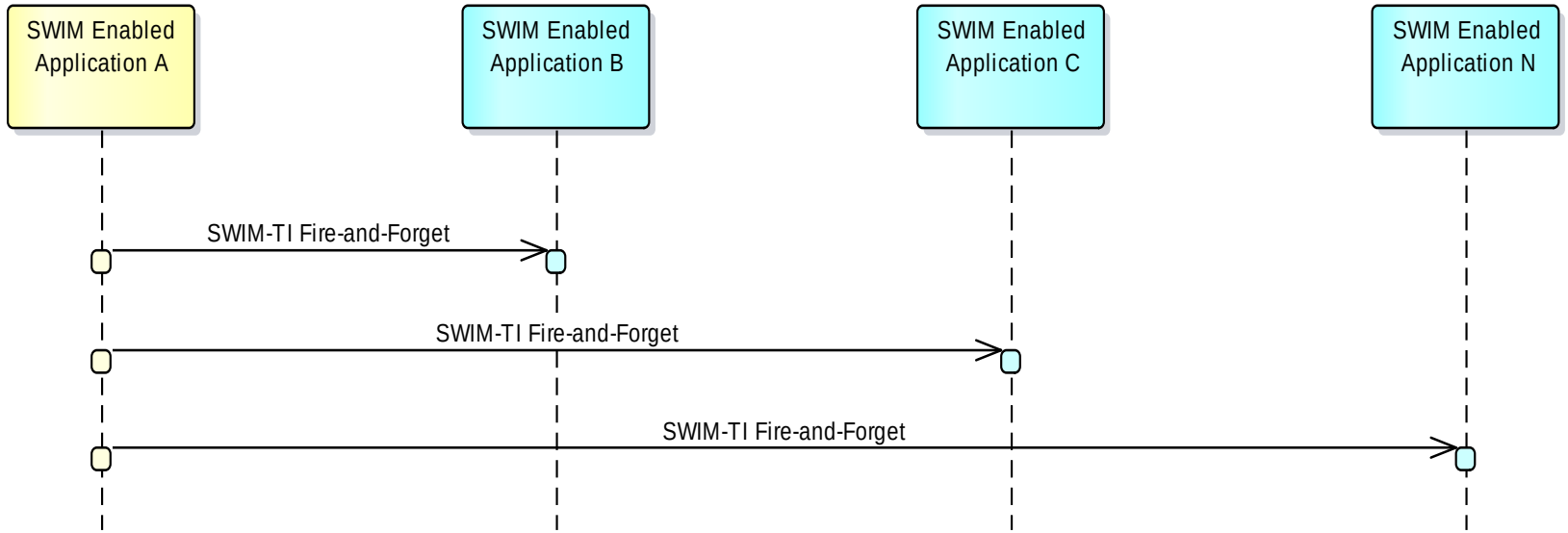
Synchronous Request/Reply



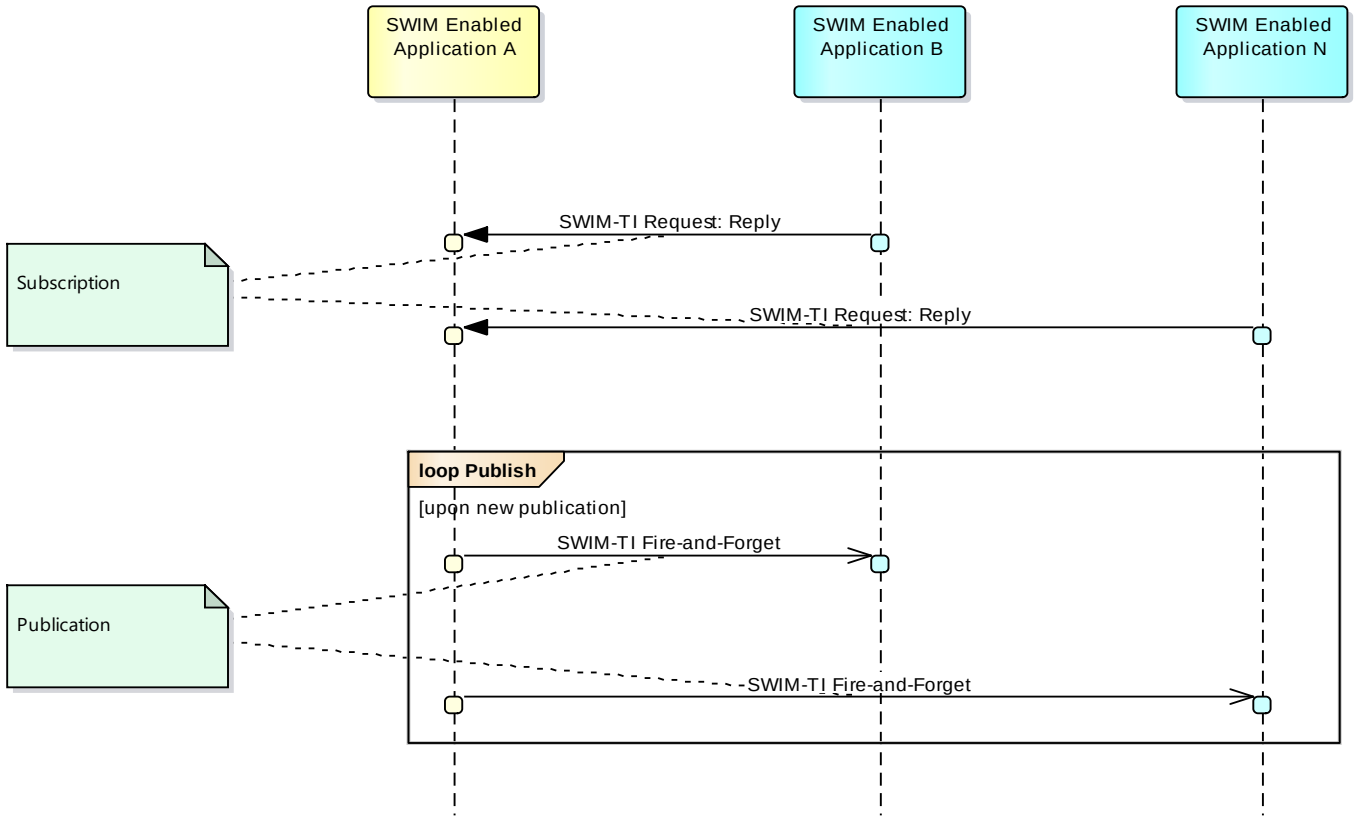
Asynchronous Request/Reply



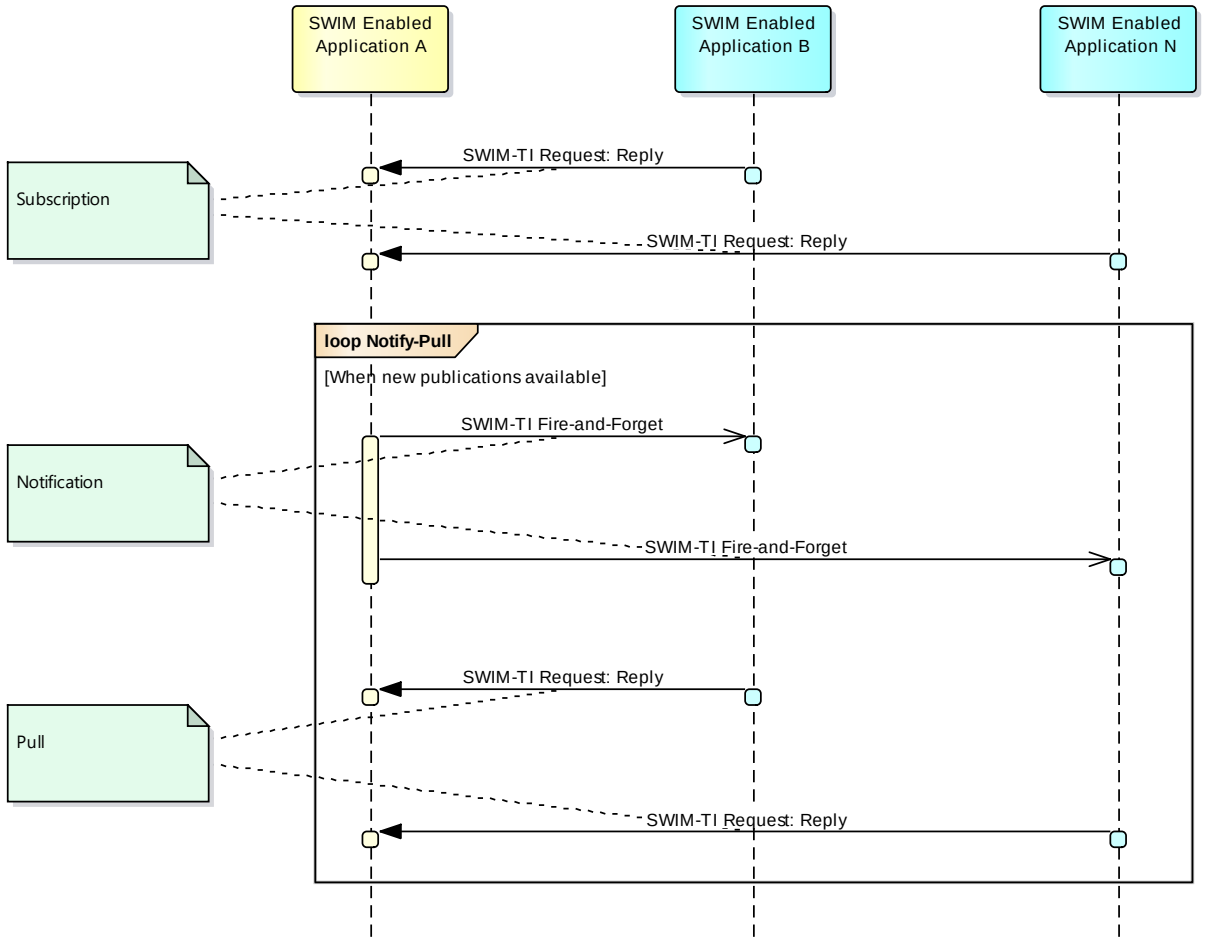
Fan-Out


SWIM Enabled Application A
SWIM Enabled Application B
SWIM Enabled Application C
SWIM Enabled Application N
SWIM-TI Fire-and-Forget
SWIM-TI Fire-and-Forget
SWIM-TI Fire-and-Forget

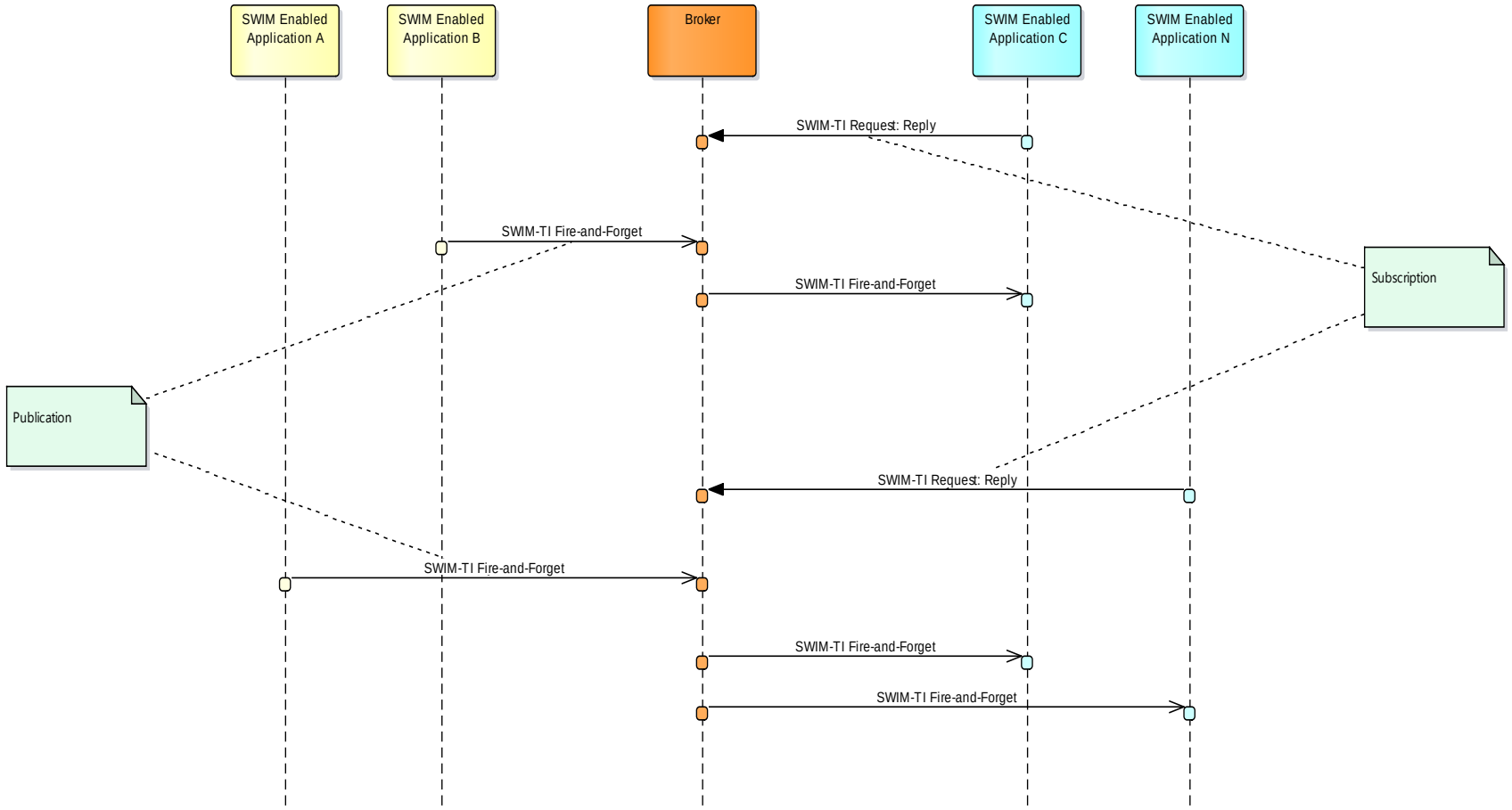
Publish/Subscribe Push



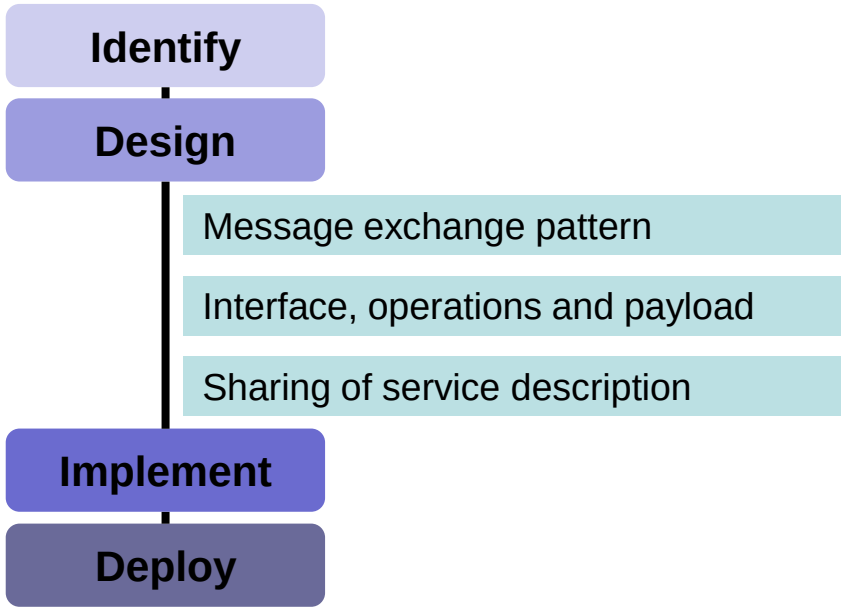
Publish/Subscribe Pull



Brokered Publish/Subscribe Push

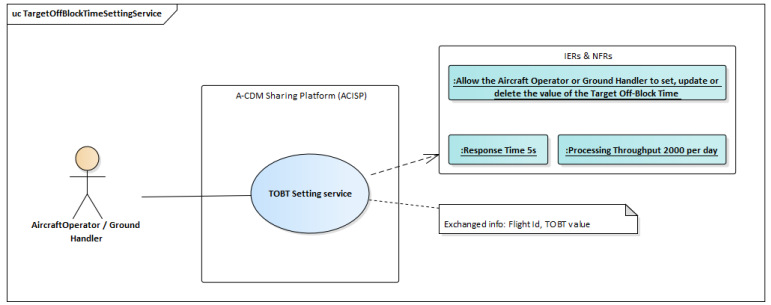


MEP Identification



EXAMPLE

MEP Identification



Cardinality	**1-1**
Space Decoupling	**NO**
Time Decoupling	**NO**
Process Decoupling	**Synchronous**

- Flight information service is centralized, provided by the A-CDM Sharing Platform (Airport).
- Consumers (Aircraft Operators/ Ground Handlers) interact 1-1 with the service.

Synchronous Request/Reply

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