Supporting European Aviation

EUROCONTROL

“Get into SWIM” session

Design service payload

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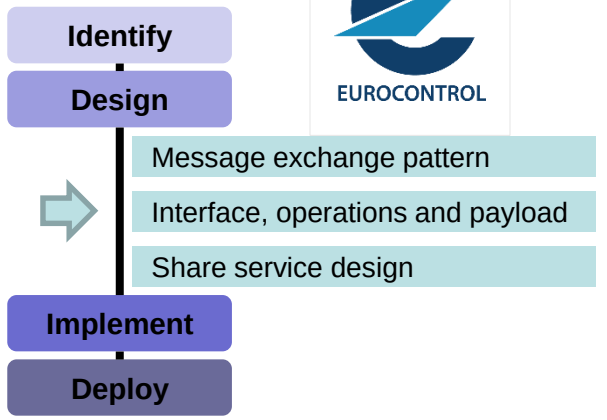
DECMA / RTD / DAI – Digitalisation and Information unit
23rd May 2019

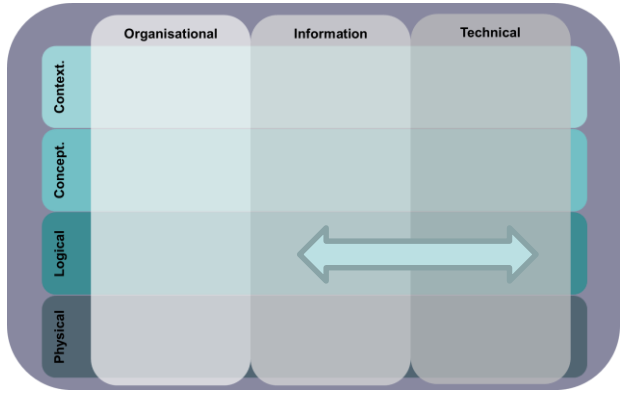
FOUNDING MEMBER SESAR JOINT UNDERTAKING

NETWORK MANAGER

Activity

- Definition of the service (interface, service operations and **information service payload**)





- IER – Logical Representation of the Information Exchanged
- Objective – Resources – Benefits
- SWIM Specification requirements
- Constructing the Information Definition
- Semantic Correspondence using AIRM

SWIM-SERV-022 Information definition

SWIM-SERV-023 AIRM conformance

Resources

Example service description.
[Donlon TOBT Setting Service Description]

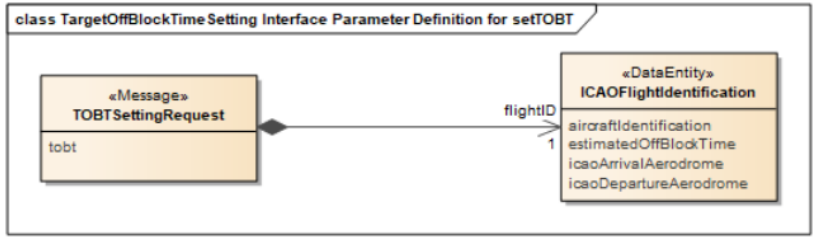
AIRM conformance

Conformant with AIRM version 4.2.0.

Message Types

TOBTSettingRequest

Message which provides the Target Off-Block Time value of a specific flight.



Attributes:

tobt	Type	TargetOffBlockTime
	Description	The Target Off-Block Time value to be set TOBT is the time that an operator / handling agent estimates that an aircraft will be ready, all doors closed, boarding bridge removed, push back vehicle present, ready to start up / push back immediately upon reception of clearance from the TWR.
	Note	Mandatory
	AIRM Definition Trace	urn:x-ses:sesarju:airm:v420:ConceptualModel:SubjectFields:Flight:FlightEvent:TargetOffBlockTime

Information Exchange Requirement

Identifier	Name	Issuer	Intended Addressees	Information Element	Interaction Rules and Policy
TOBT Update	Update TOBT	Aircraft Operator or Ground Handler	Airport Operations Plan	**Target Off-Block Time**	This is done in accordance with the operations involving Target Off-Block Time that take place between A-CDM Milestones 2 and 11

Information Definition

tobt	**Type**	TargetOffBlockTime
	Description	The Target Off-Block Time value to be set TOBT is the time that an operator / handling agent estimates that an aircraft will be ready, all doors closed, boarding bridge removed, push back vehicle present, ready to start up / push back immediately upon reception of clearance from the TWR.
	Note	Mandatory
	AIRM Definition Trace	urn:aero:airm:1.0.0:ConceptualModel:Subjects:Flight:FlightEvent:TargetOffBlockTime

Interoperability Objective

semantic interoperability. The ability of computer systems and organisations to exchange data with unambiguous, shared meaning

SWIM Principle

use of open standards. An open standard is one that is publicly available and has various rights of use associated with it. It may also have various properties describing its design phase (e.g. open process)

Resources

ATM Information Reference Model (AIRM).
http://airm.aero

Outcome

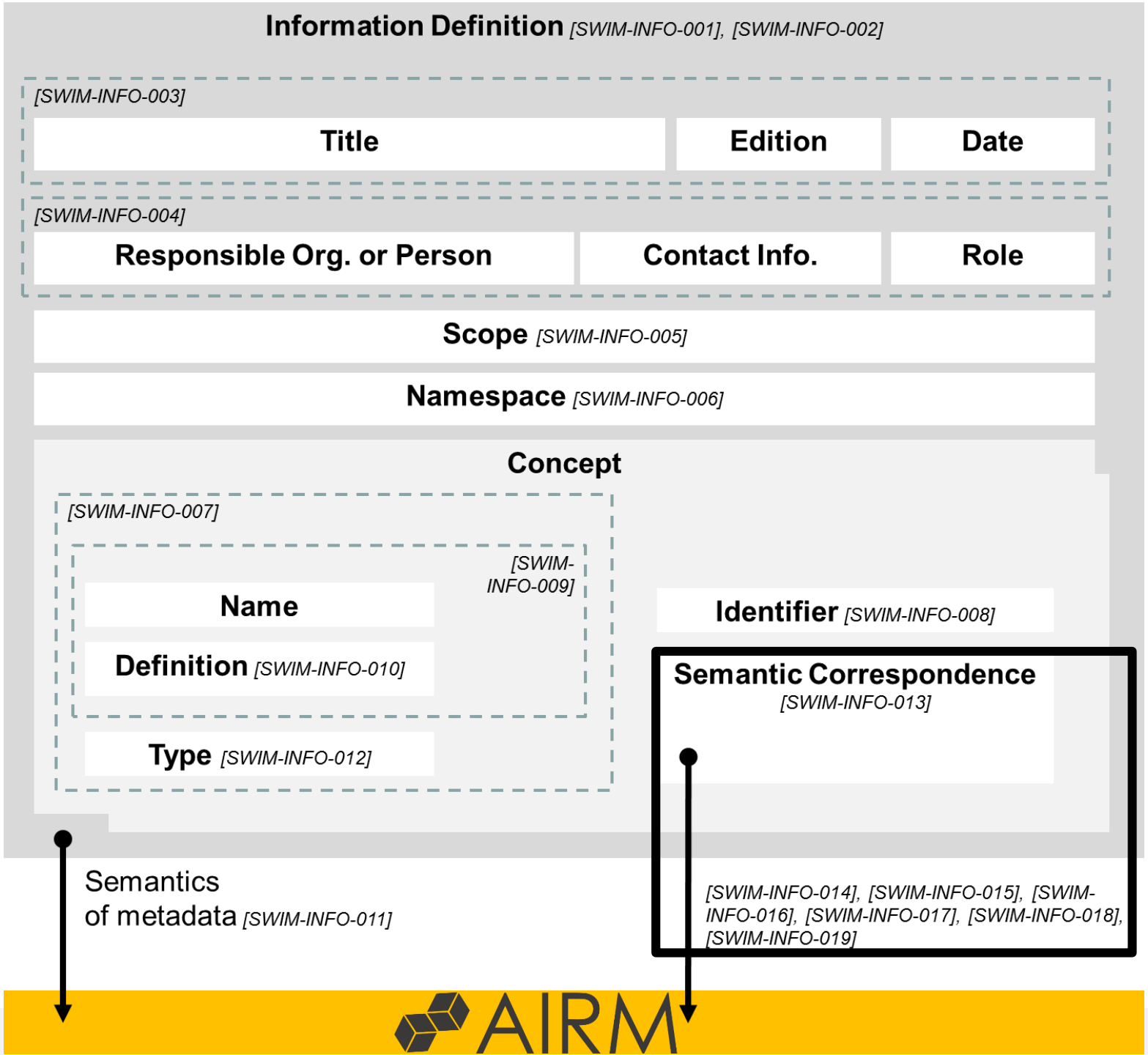
Service payload, (the logical) representation of the information exchanged by the service interface operations

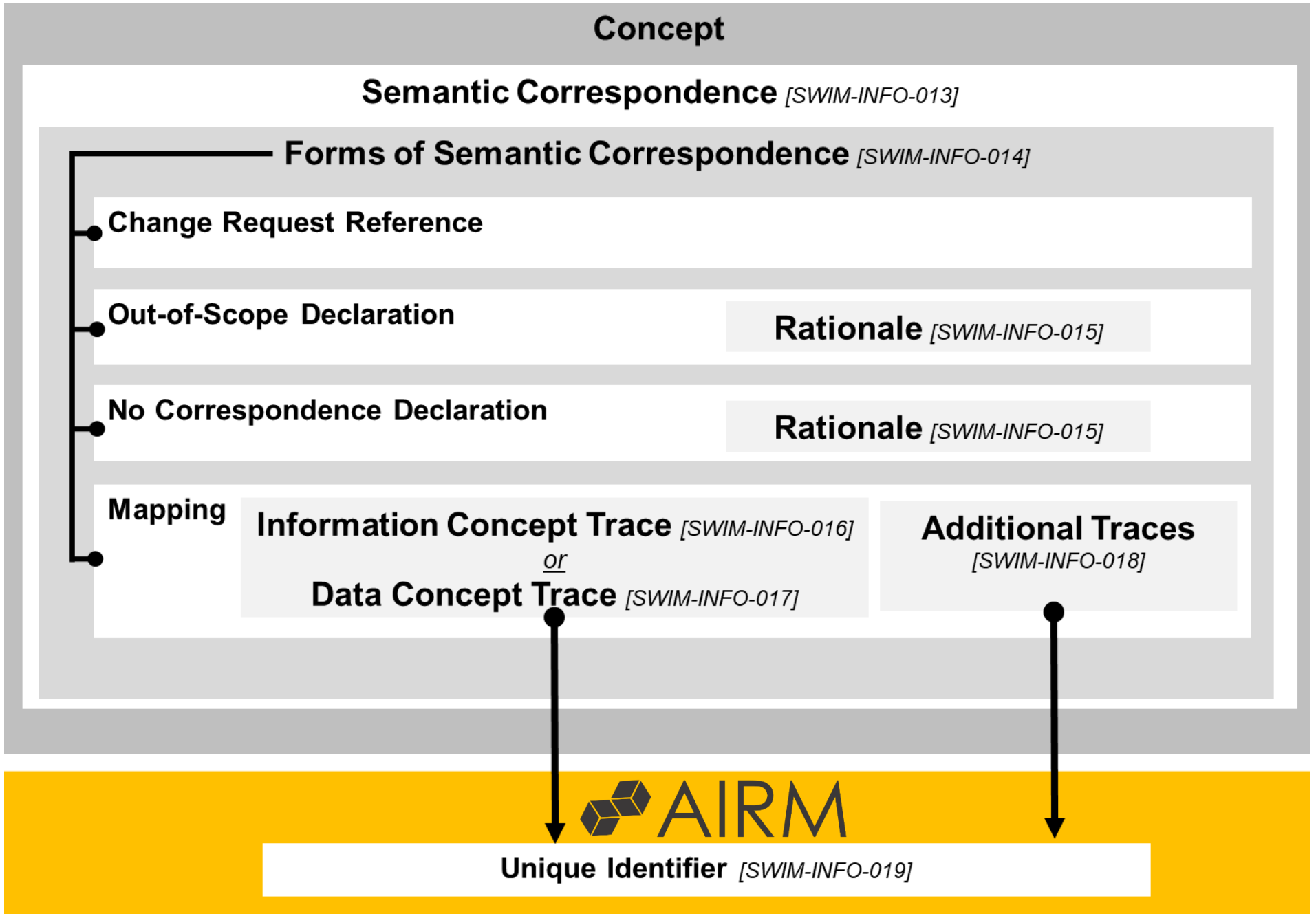
Term

information definition. A formal representation of information concepts or data concepts.

Benefit

Reuse. Making use of the work of others means you work less and the overall service eco-system is more coherent

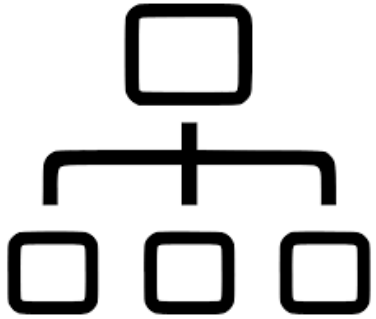

Information Definition [SWIM-INFO-001], [SWIM-INFO-002]
[SWIM-INFO-003]
Title
Edition
Date
[SWIM-INFO-004]
Responsible Org. or Person
Contact Info.
Role
Scope [SWIM-INFO-005]
Namespace [SWIM-INFO-006]
Concept
[SWIM-INFO-007]
[SWIM-INFO-009]
Name
Definition [SWIM-INFO-010]
Type [SWIM-INFO-012]
Identifier [SWIM-INFO-008]
Semantic Correspondence
[SWIM-INFO-013]
[SWIM-INFO-014], [SWIM-INFO-015], [SWIM-INFO-016], [SWIM-INFO-017], [SWIM-INFO-018], [SWIM-INFO-019]
Semantics
of metadata [SWIM-INFO-011]
AIRM


Concept
Semantic Correspondence [SWIM-INFO-013]
Forms of Semantic Correspondence [SWIM-INFO-014]
Change Request Reference
Out-of-Scope Declaration
Rationale [SWIM-INFO-015]
No Correspondence Declaration
Rationale [SWIM-INFO-015]
Mapping
Information Concept Trace [SWIM-INFO-016]
or
Data Concept Trace [SWIM-INFO-017]
Additional Traces
[SWIM-INFO-018]
AIRM
Unique Identifier [SWIM-INFO-019]

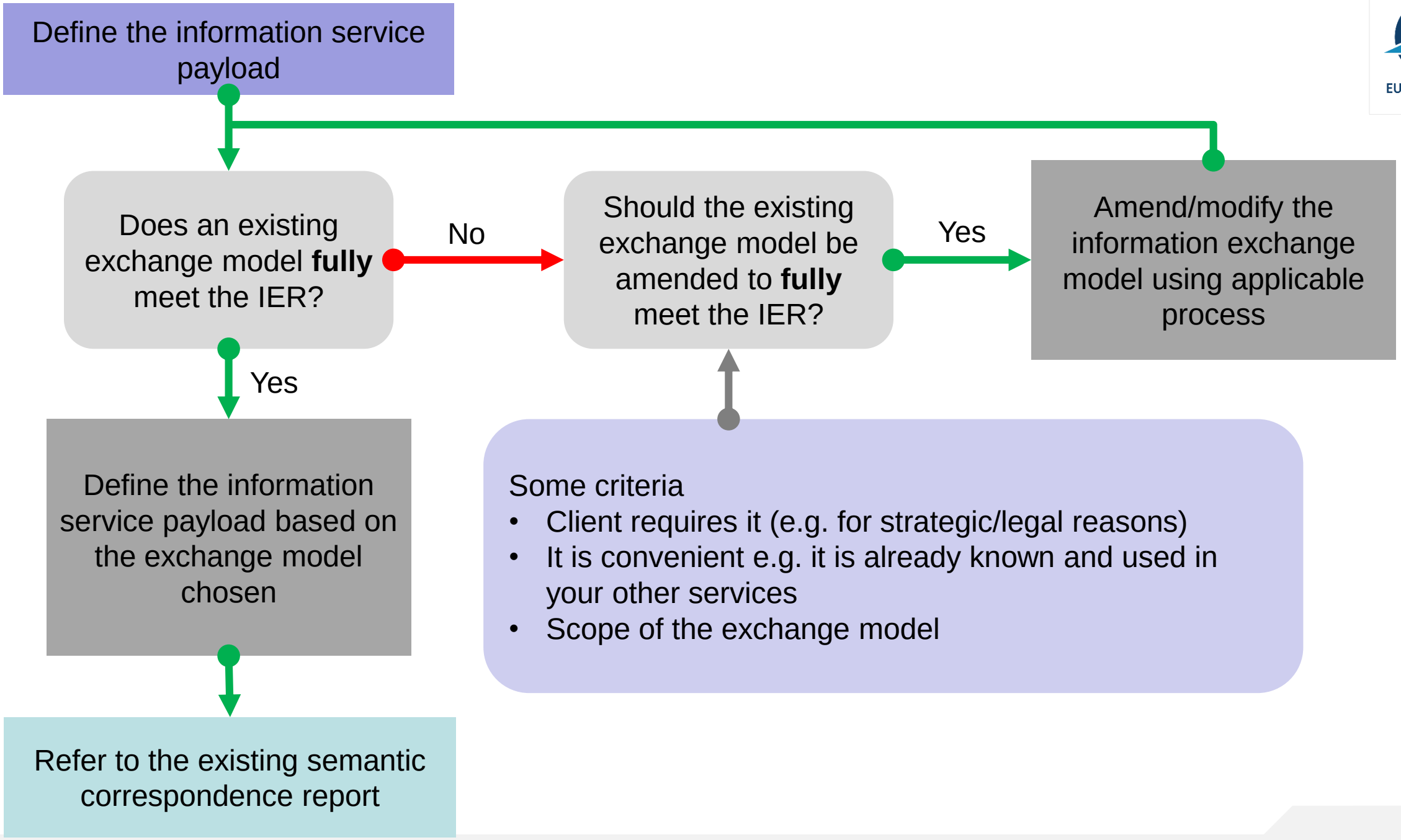
Where to start?

Use an existing information exchange model

Start from a blank piece of paper and create a new model



Start from the AIRM and derive a model


Define the information service payload
Does an existing exchange model **fully** meet the IER?
No
Should the existing exchange model be amended to **fully** meet the IER?
Yes
Amend/modify the information exchange model using applicable process
Yes
Define the information service payload based on the exchange model chosen
Some criteria
• Client requires it (e.g. for strategic/legal reasons)
• It is convenient e.g. it is already known and used in your other services
• Scope of the exchange model
Refer to the existing semantic correspondence report

Good SWIM practice

Ensure that the existing information exchange model chosen uses the AIRM as its semantic reference.

Resources

AIRM Community Area. Draft semantic correspondence reports are available in the AIRM Community Area.

Join the AIRM Community Area at: http://airm.aero/community.html

Benefit

Reuse. Making use of the work of others means you work less and the overall service eco-system is more coherent

Define the information service payload

Does an existing exchange model **fully** meet the IER?

No

Should the existing exchange model be amended to **fully** meet the IER?

Yes

Amend/modify the information exchange model using applicable process

Yes

Define the information service payload based on the exchange model chosen

Refer to the existing semantic correspondence report

No

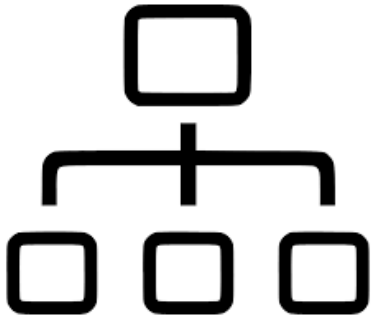
Define the information service payload based on a new payload model

Ensure that the payload definition is conformant with the semantics of the AIRM

AIRM

New information definition

Start from a blank piece of paper and create a new model



Start from the AIRM and derive a model

AIRM

Benefit

The semantic correspondence is “in-built” making your new model “conformant by design”. In other words, there is no need to perform a mapping exercise.

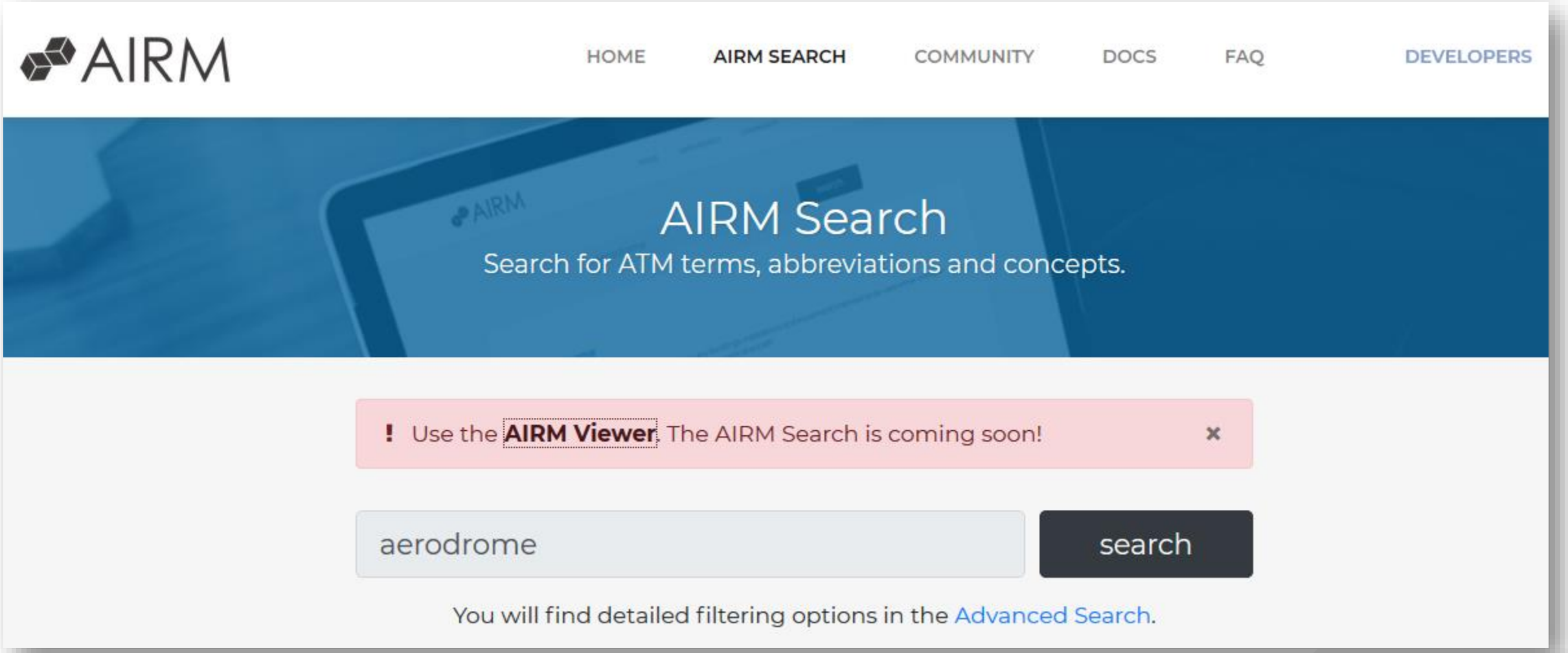
TargetOffBlockSetting Information Definition

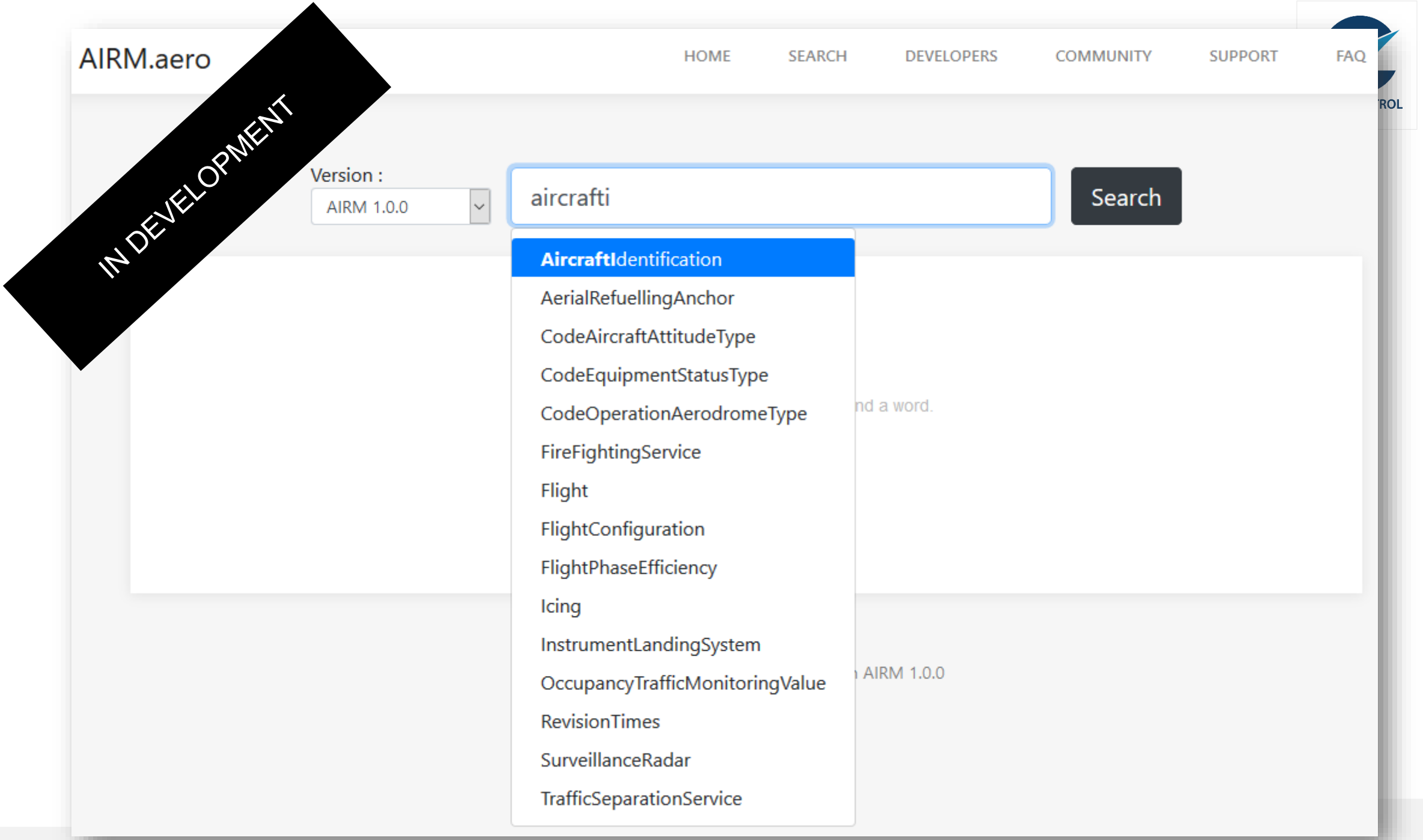
tobt	**Type**	TargetOffBlockTime
	Description	The Target Off-Block Time value to be set TOBT is the time that an operator / handling agent estimates that an aircraft will be ready, all doors closed, boarding bridge removed, push back vehicle present, ready to start up / push back immediately upon reception of clearance from the TWR.
	Note	Mandatory

aircraftIdentification	**Type**	AircraftIdentification
	Description	Name used by ATS units to identify and communicate with the aircraft.
	Note	Mandatory

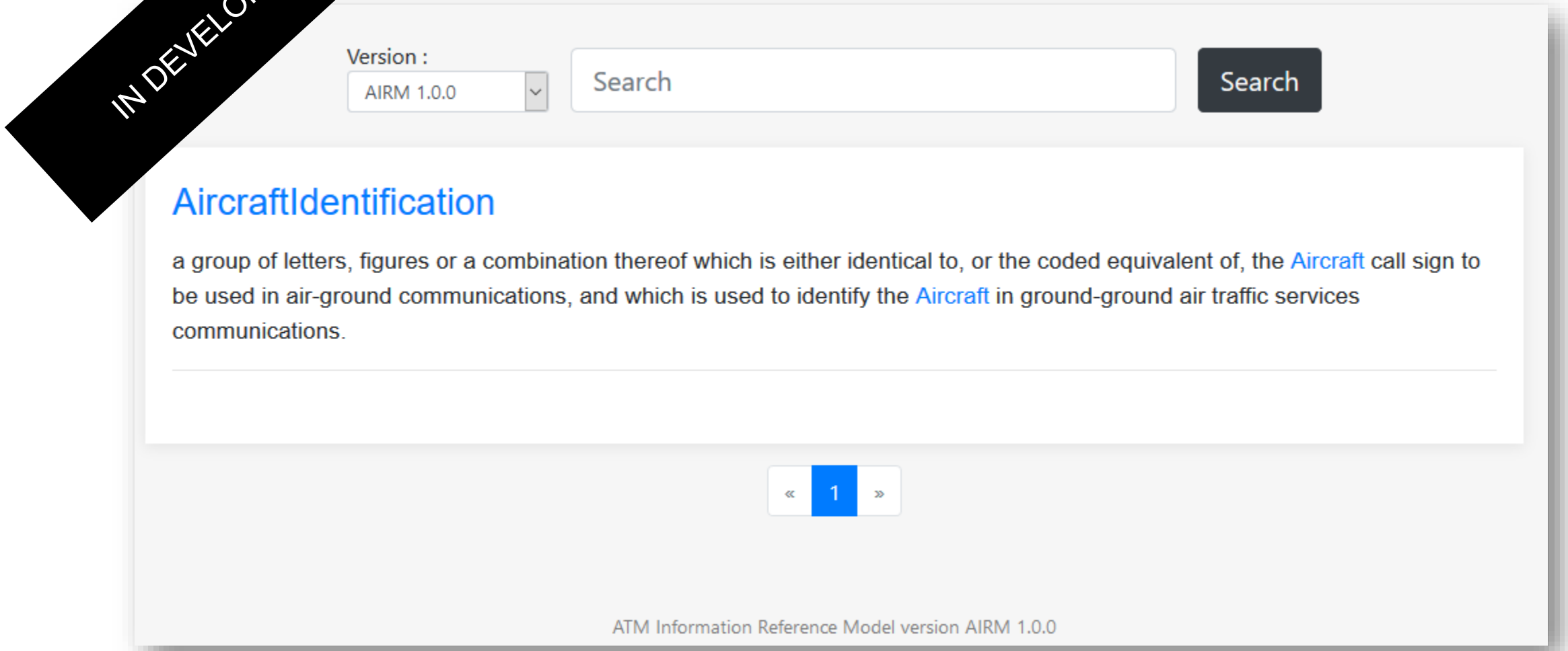
Using the AIRM and airm.aero for semantic correspondence

http://airm.aero/search.html




AIRM.aero
HOME
SEARCH
DEVELOPERS
COMMUNITY
SUPPORT
FAQ
IN DEVELOPMENT
Version :
AIRM 1.0.0
aircrafti
Search
AircraftIdentification
AerialRefuellingAnchor
CodeAircraftAttitudeType
CodeEquipmentStatusType
CodeOperationAerodromeType
FireFightingService
Flight
FlightConfiguration
FlightPhaseEfficiency
Icing
InstrumentLandingSystem
OccupancyTrafficMonitoringValue
RevisionTimes
SurveillanceRadar
TrafficSeparationService
nd a word.
AIRM 1.0.0

IN DEVELOPMENT



IN DEVELOPMENT

EUROCONTROL

AircraftIdentification

a group of letters, figures or a combination thereof which is either identical to, or the coded equivalent of, the Aircraft call sign to be used in air-ground communications, and which is used to identify the Aircraft in ground-ground air traffic services communications.

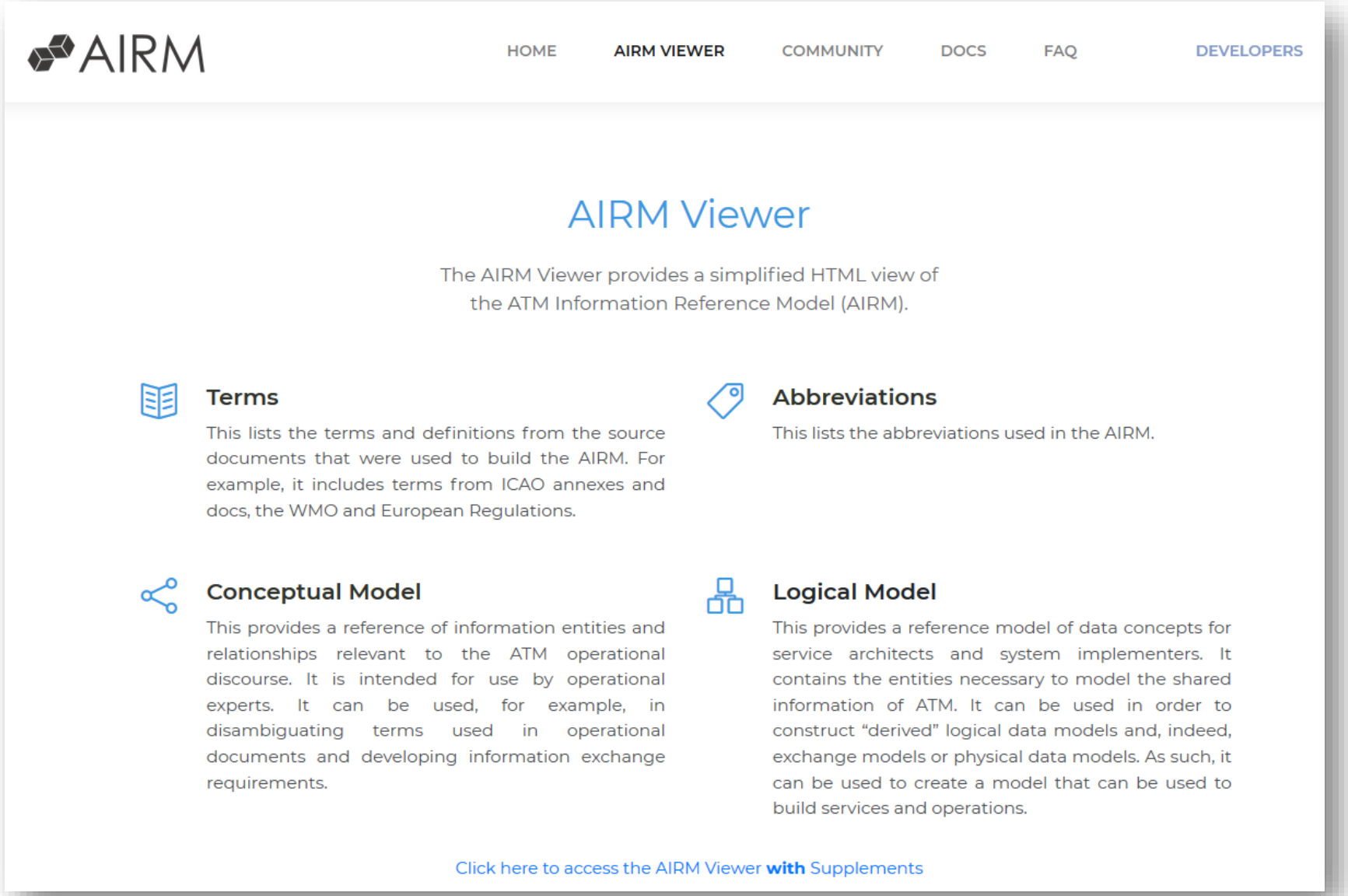
Synonyms:

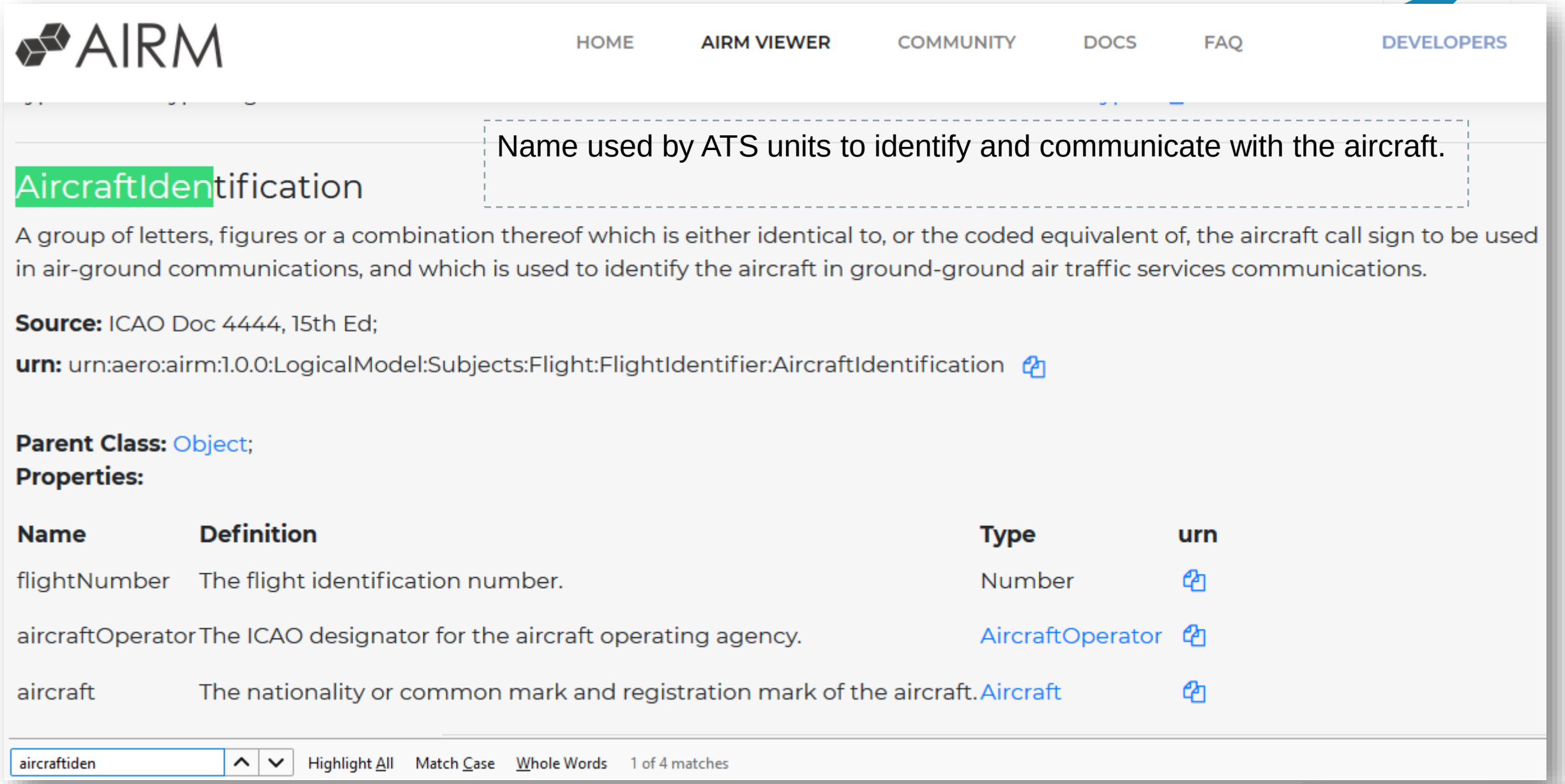
Sources: ICAO Doc 4444, 15th Ed;

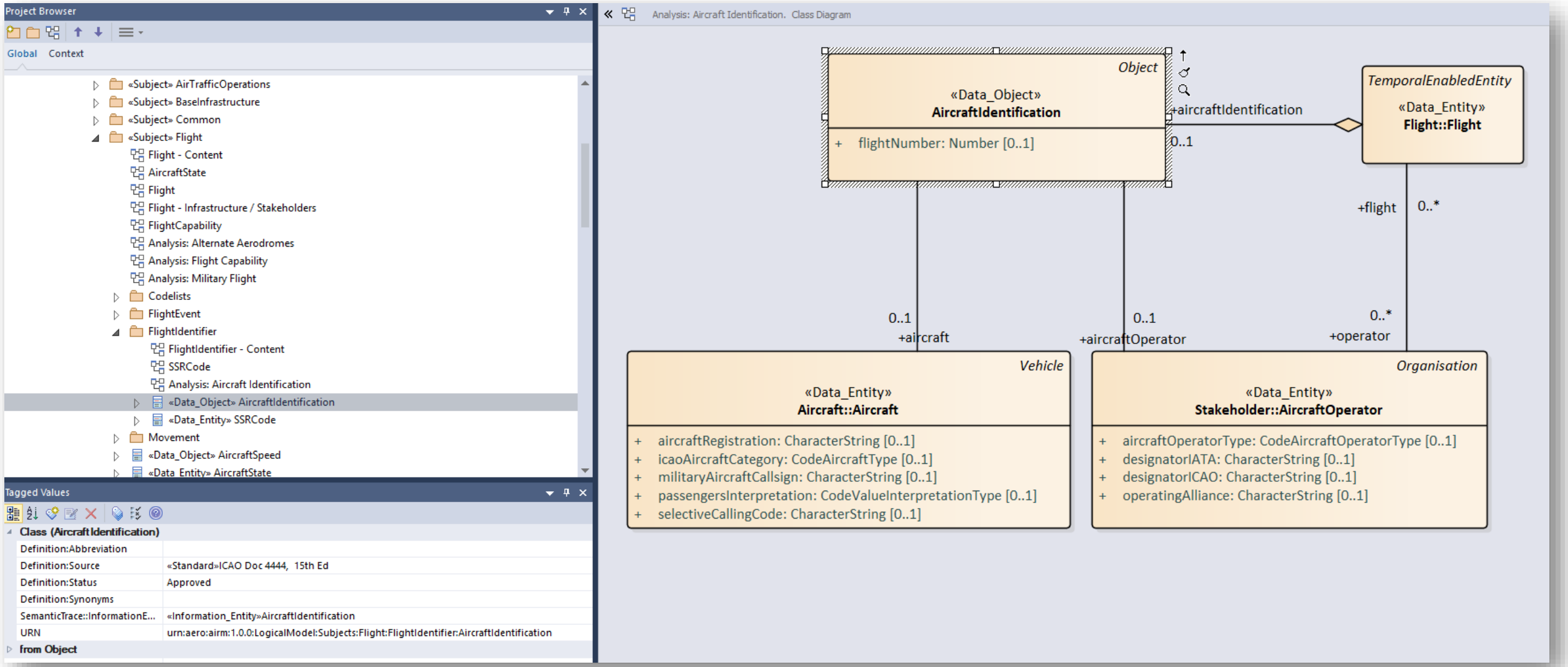
– Less...

Status: Approved

Urn: urn:aero:airm:1.0.0:LogicalModel:Subjects:Flight:FlightIdentifier:AircraftIdentification Copy urn


AIRM
HOME
AIRM VIEWER
COMMUNITY
DOCS
FAQ
DEVELOPERS
AIRM Viewer
The AIRM Viewer provides a simplified HTML view of the ATM Information Reference Model (AIRM).
Terms
This lists the terms and definitions from the source documents that were used to build the AIRM. For example, it includes terms from ICAO annexes and docs, the WMO and European Regulations.
Abbreviations
This lists the abbreviations used in the AIRM.
Conceptual Model
This provides a reference of information entities and relationships relevant to the ATM operational discourse. It is intended for use by operational experts. It can be used, for example, in disambiguating terms used in operational documents and developing information exchange requirements.
Logical Model
This provides a reference model of data concepts for service architects and system implementers. It contains the entities necessary to model the shared information of ATM. It can be used in order to construct "derived" logical data models and, indeed, exchange models or physical data models. As such, it can be used to create a model that can be used to build services and operations.
Click here to access the AIRM Viewer with Supplements


AIRM
HOME
AIRM VIEWER
COMMUNITY
DOCS
FAQ
DEVELOPERS
Name used by ATS units to identify and communicate with the aircraft.
AircraftIdentification
A group of letters, figures or a combination thereof which is either identical to, or the coded equivalent of, the aircraft call sign to be used in air-ground communications, and which is used to identify the aircraft in ground-ground air traffic services communications.
Source: ICAO Doc 4444, 15th Ed;
urn: urn:aero:airm:1.0.0:LogicalModel:Subjects:Flight:FlightIdentifier:AircraftIdentification
Parent Class: Object;
Properties:
Name
Definition
Type
urn
flightNumber
The flight identification number.
Number
aircraftOperator
The ICAO designator for the aircraft operating agency.
AircraftOperator
aircraft
The nationality or common mark and registration mark of the aircraft.
Aircraft
aircraftiden
Highlight All
Match Case
Whole Words
1 of 4 matches


Project Browser
Global
Context
«Subject» AirTrafficOperations
«Subject» BaseInfrastructure
«Subject» Common
«Subject» Flight
Flight - Content
AircraftState
Flight
Flight - Infrastructure / Stakeholders
FlightCapability
Analysis: Alternate Aerodromes
Analysis: Flight Capability
Analysis: Military Flight
Codelists
FlightEvent
FlightIdentifier
FlightIdentifier - Content
SSRCode
Analysis: Aircraft Identification
«Data_Object» AircraftIdentification
«Data_Entity» SSRCode
Movement
«Data_Object» AircraftSpeed
«Data_Entity» AircraftState
Tagged Values
Class (AircraftIdentification)
Definition:Abbreviation
Definition:Source
«Standard»ICAO Doc 4444, 15th Ed
Definition:Status
Approved
Definition:Synonyms
SemanticTrace::InformationE...
«Information_Entity»AircraftIdentification
URN
urn:aero:airm:1.0.0:LogicalModel:Subjects:Flight:FlightIdentifier:AircraftIdentification
from Object
Analysis: Aircraft Identification. Class Diagram
Object
«Data_Object»
AircraftIdentification
+ flightNumber: Number [0..1]
+aircraftIdentification
0..1
TemporalEnabledEntity
«Data_Entity»
Flight::Flight
+flight
0..*
0..1
+aircraft
0..1
+aircraftOperator
0..*
+operator
Vehicle
«Data_Entity»
Aircraft::Aircraft
+ aircraftRegistration: CharacterString [0..1]
+ icaoAircraftCategory: CodeAircraftType [0..1]
+ militaryAircraftCallsign: CharacterString [0..1]
+ passengersInterpretation: CodeValueInterpretationType [0..1]
+ selectiveCallingCode: CharacterString [0..1]
Organisation
«Data_Entity»
Stakeholder::AircraftOperator
+ aircraftOperatorType: CodeAircraftOperatorType [0..1]
+ designatorIATA: CharacterString [0..1]
+ designatorICAO: CharacterString [0..1]
+ operatingAlliance: CharacterString [0..1]

Information Definition

aircraftIdentification	**Type**	AircraftIdentification
	Description	Name used by ATS units to identify and communicate with the aircraft.
	Note	Mandatory
	Trace	urn:aero:airm:1.0.0:LogicalModel:Subjects:Flight:FlightIdentifier:AircraftIdentification

Information Definition

tobt	Type	TargetOffBlockTime
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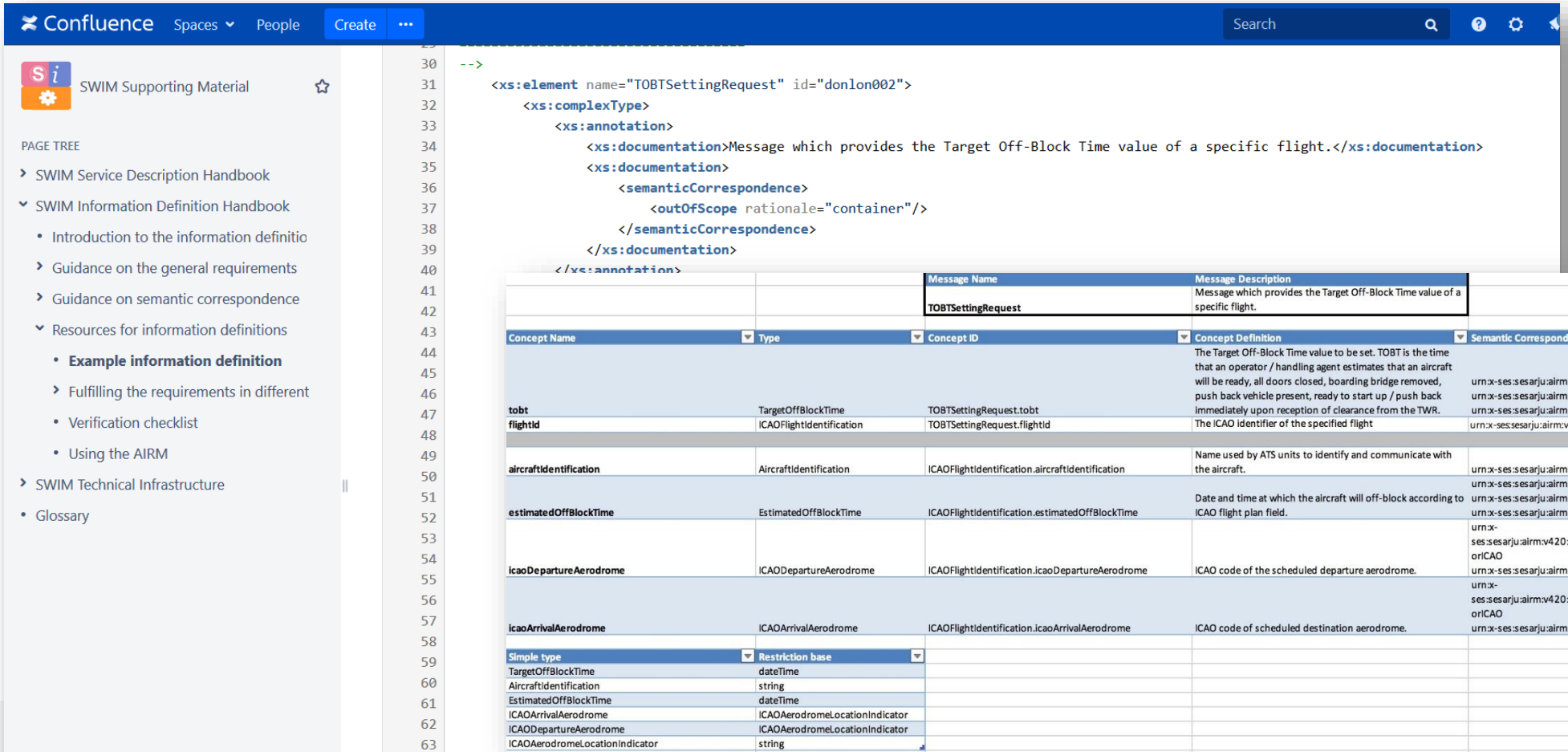
	AIRM Definition Trace	urn:aero:airm:1.0.0:ConceptualModel:Subjects:Flight:FlightEvent:TargetOffBlockTime
	AIRM Semantic Trace	urn:aero:airm:1.0.0:LogicalModel:Subjects:Flight:FlightEvent:OffBlockReady@time
	AIRM Context Trace	urn:aero:airm:1.0.0:LogicalModel:Subjects:Common:Codelists:CodePlanningStatusType@TARGET

Resources

SWIM Specification Supporting material.
Example and guidance is available at https://ext.eurocontrol.int/swim_confluence/display/SWIM/Example+information+definition

EUROCONTROL



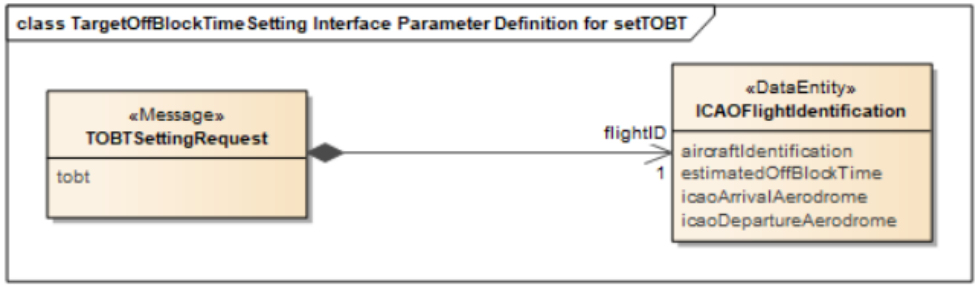
AIRM conformance

Conformant with AIRM version 4.2.0.

Message Types

TOBTSettingRequest

Message which provides the Target Off-Block Time value of a specific flight.



Attributes:

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