Donlon TOBT Setting Service Description

This is an example of Service Description for a fictitious service, with the intention to illustrate the EUROCONTROL SWIM specifications.

Service Description Identification

title	Donlon TOBT Setting Service Description
edition	0.93
reference date	23/10/2018

General service elements

Service Identification

name	TargetOffBlockTimeSetting Service
version	1.0.0

Service Abstract

The TargetOffBlockTimeSetting service supports the Airport CDM concept and its implementation by allowing A-CDM Partners, typically aircraft operators and ground handlers, with the capability to set the Target Off-Block Time (TOBT) that indicates the target time for the aircraft to be ready for Off-Block.

It is part of a set of services supporting the Airport CDM concept and its implementation by providing the A-CDM partners with Common Situation Awareness about flights at a CDM airport.

Service Provider

organisation	Donlon Airport Operator
points of contact	To request access to the service: http://www.donlon-airport.com/swim/service-request
	For Incidents on services in operation, contact the Service desk [24/7]: +693 555 01 service-desk@donlon-airport.com

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  - Complex Types
    - ICAOFlightIdentification
    - ResponseStatus
  - Simple Types
    - TargetOffBlockTime <<DateTime>>
    - AircraftIdentification <<string>>
    - EstimatedOffBlockTime <<DateTime>>
    - ICAODepartureAerodrome <<ICAOAerodromeLocationIndicator>>
    - ICAOArrivalAerodrome <<ICAOAerodromeLocationIndicator>>
    - ICAOAerodromeLocationIndicator <<string>>
    - ReasonForRejection <<string>>
    - Status <<enumeration>>
- Other service elements
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Attachment
Conformance assessment - Donlon example

Service Categories

information exchange area	flight information exchange
availability status	operational
business activity	airport operations management
intended service consumer	airspace user airside ground handler
geographical extent	EADD (Donlon/Intl.)

Service standard reference

This service conforms to the TargetOffBlockTimeSetting service as defined by SESAR in the ISRM 2.0, published within the 5th element of the Initial system-wide information management (SWIM) technology solution pack (http://www.sesarju.eu/node/2255, 05_ISRM_Solution_46_SWIM_Technological_Solution.zip, file 0542DEL_08.03.10_D65_European_ATM_Service_Description_for_TargetOffBlockTimeSetting_Service.pdf

Deviations: the original payload has been adapted in order to better fulfil the role of example.

Operational Needs

Operational and Business context

The context is the Airport Collaborative Decision Making (A-CDM) concept as defined in Airport CDM Implementation Manual v4.

In A-CDM it is important to allow A-CDM Partners to set the value of some milestones when necessary.

The classical example is to allow the Aircraft Operator or the Ground Handler to set the Target Off-Block Time (TOBT) that indicates what is the target time for the aircraft to be ready for off-block.

Not any value can be accepted. There may be many business rules for validating the value. As for example: value cannot be in the past, value can no longer be changed, too many changes, etc.

Setting the TOBT value is possible at many stages during the A-CDM process, as early as Milestone 2 (EOBT-2hr) up to and including Milestone 11 (Boarding starts).

The Business Logic may involve validations such as:

- not accepting values in the past
- not accepting a new value too close the existing one (there is a minimum change involved)
- Limiting the number of changes after TSAT has been issued.

Information Exchange Requirements

The service is defined to satisfy two IERs, which were derived from the A-CDM Implementation Manual :

IER1	To allow the Aircraft Operator or Ground Handler to set, update or delete the value of the Target Off-Block Time of a departing flight. This is done in accordance with the operations involving Target Off-Block Time that take place between A-CDM Milestones 2 and 11 (derived from: Airport CDM Implementation Manual v4)
IER2	To allow the competent authority to set the value of the Target Off-Block Time for a given aircraft in specific circumstances. In other words, under adverse conditions or special circumstances this service allows the competent authorities to set the Target Off-Block Time value of the flight. (derived from: Airport CDM Implementation Manual v4)

Service identification process of the A-CDM services

Airport CDM is about partners (airport operators, aircraft operators/ground handlers, ATC and the Network Operations) working together more efficiently and transparently, with a special focus on information sharing. These A-CDM Partners often have their own information systems, which must be integrated in order to support the A-CDM processes. There is a need for establishing modern techniques and standardisation across the industry for maximising the benefits of the automation required at each airport, using approaches like Service Oriented Architecture (SOA), web services, and XML data exchanges that are known to help and support interoperability.

The designed A-CDM services result from a joint service activity between SESAR and ACI. Within ACI (Airport Council International), the ACRIS (Airport Community Recommended Information Services) working group had set up the project AACO (ACRIS Airport CDM Operational project). Within SESAR the Service Coordination Group had set up the FT10 Service Activity.

As AACO and FT10 were quite similar, it was decided to run a joint service activity, with common objective, scope and deliverable. This joint service activity has been run with close and effective collaboration, following the SESAR Method on Services.

Four A-CDM services have been identified: AirportFlightInformationPublication, TargetOffBlockTimeSetting, PreDepartureSequenceSetting, and CalculatedPreDepartureSequenceDelivery.

Service Functionality

function	real world effect
Allow the service consumer to **set** (i.e. define or update) the TOBT value for a specific flight.	The Target Off-Block Time (TOBT) value is defined
Allow the service consumer to **delete** the TOBT value for a specific flight.	The Target Off-Block Time (TOBT) value is undefined

The A-CDM Implementation Manual defines the impact of the TOBT value at various stages of the A-CDM process.

Access and Use Conditions

Legal constraints

TBD

Service Policies

Business policy

TBD

Operational policy

TBD

Technical policy

TBD

Service consumption constraints

TBD

Security constraints

Confidentiality

TBD

Integrity

TBD

Authentication

Consumer side authentication: TBD

Provider side authentication: Authentication is required

Authorisation

TBD

Quality of Service

availability	99.95 % outside the planned outages Schedule of planned outages: http://www.donlon-airport.com/swim/planned-outages
capacity	2000 service requests per hour
response time	2s delay for 95% of messages

Technical Constraint

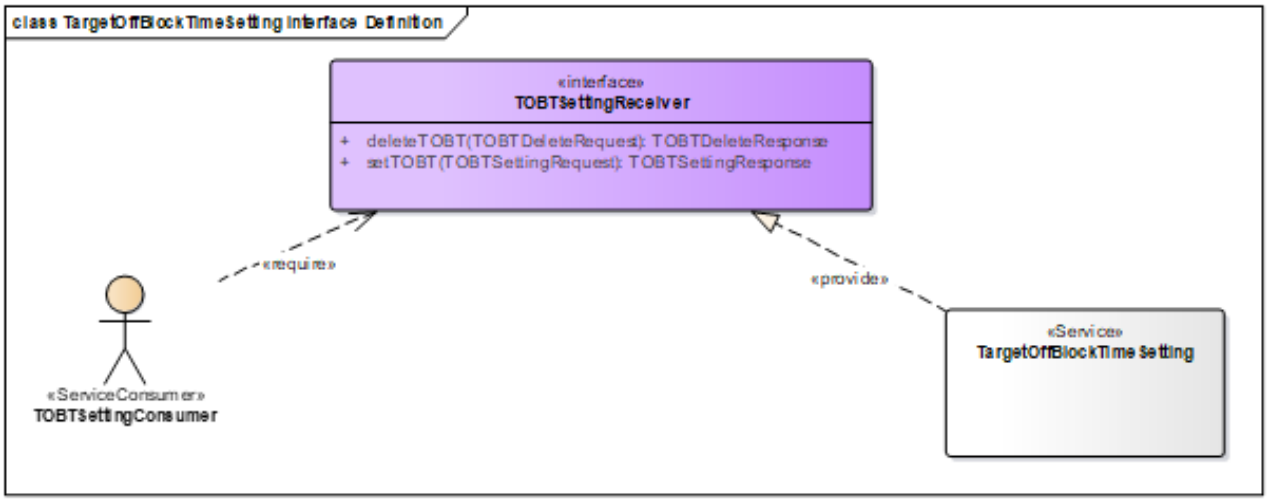
No known technical constraint.

Service interfaces

Interfaces overview

The service is based on the single provided interface TOBTSettingReceiver.

The following diagram summarises the service and its provided interface



Message exchange pattern

The service follows the Synchronous Request/Response Message Exchange Pattern.

TOBTSettingReceiver Interface

name	TOBTSettingReceiver
description	The interface allows setting or deleting the TOBT of the specified flight.
role	Provider side interface
network address	http://www.swim.donlon-airport.com/swim-ops/gateway
message exchange pattern	SynchronousRequestReply

Additional network addresses:

pre-operational evaluation	http://www.swim.donlon-airport.com/swim-pre-ops/gateway

Service Interface Binding

SWIM TI Profile and interface bindings

XML requests and replies embedded into SOAP messages, themselves embedded into HTTP requests and responses. Operation names are associated to SOAP requests.

profile name	TI Yellow Profile specification
profile version	Edition Number 1.0
selected binding	WS SOAP
supported optional requirements	-

Service interface protocols and data format

transport / messaging protocols	HTTP 1.1 SOAP1.1, SOAP1.2 Protocol implementation compliant with WSI Basic Profile 2.0

protocol configuration	HTTP Messages will indicate the payload content type using the content-type header HTTP Messages that transport compressed payloads will use deflate/gzip/exi as expressed in the content-encoding header (compression ratio is around 20%) HTTP will use the chunked transfer encoding and indicate this in the transfer-encoding header. HTTP will use the status header to indicate the status of the response using a code and corresponding meaning phrase. (see exception handling) HTTP post method is supported
security	Server authentication based on X.509 certificates Client authenticates based on HTTP Basic TLS1.2 Cypher Suites: AES_128_GCM_SHA256, AES_256_CCM

exception handling	The services make use of the standard HTTP 400 error [Bad Request] in any of the following cases:
	
	• The request is for an unsupported release
	• The request is not a well-formed XML
	• The request is a well-formed XML but it is not valid with respect to the XSD (i.e. it does not conform to the type and attribute names defined in the XSD and documented in the reference manuals). Examples of causes for invalid XML documents are:
	  • Unexpected element or attribute
	  • Element order violation
	  • Incorrect primitive value
	  • Unexpected enum value

Machine-readable service interface definition

Service description in WSDL 1.1 <<add reference>>

Message description by XML Schema <<add reference>>

Service Operations

setTOBT

operation	setTOBT	The setTOBT Service Operation receives the Target Off-Block Time for a specific flight. The operation returns a confirmation of the validity of the provided Target Off-Block Time taking into account these business rules: • Not accepting values in the past • Not accepting a new value too close to the existing one (there is a minimum change involved) • Limiting the number of changes after TSAT has been issued
input	TOBTSettingRequest	Message which provides the Target Off-Block Time value of a specific flight.
output	TOBTSettingResponse	Message which responds the validity of a previously sent TOBTSettingRequest message.
error		

deleteTOBT

operation	deleteTOBT	The deleteTOBT Service Operation receives a request for deleting the Target Off-Block Time for a specific flight. The operation returns a confirmation of the validity of such request taking into account this business rule: • Not accepting request affecting a flight with no Target Off-Block Time set yet.
input	TOBTDeleteRequest	Message which requests deleting the last TOBT value of the specified flight.
output	TOBTDeleteResponse	Message which responds the validity of a previously sent TOBTDeleteRequest message.
error		

Service behaviour

Each operation of the interface can be called independently.

The following diagram illustrates the interaction between the service consumer and the service:

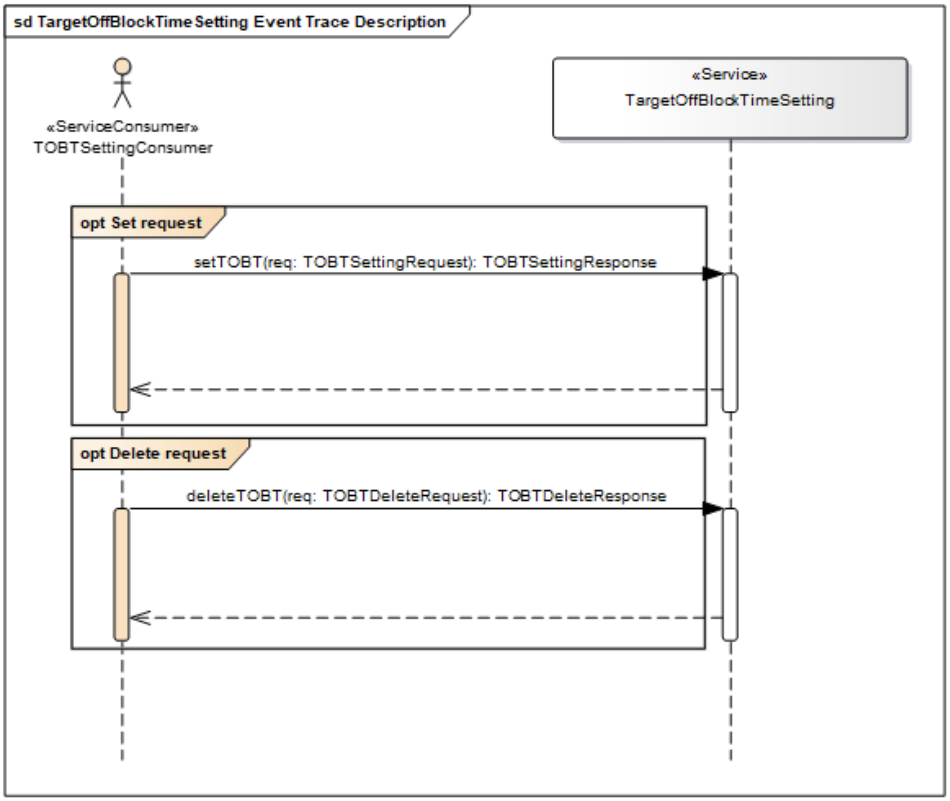


Figure 1: Sequence diagram

Model view

The model is published as an XMI file that can be imported in Sparx Enterprise Architect.

<<add reference>>

Information Definition

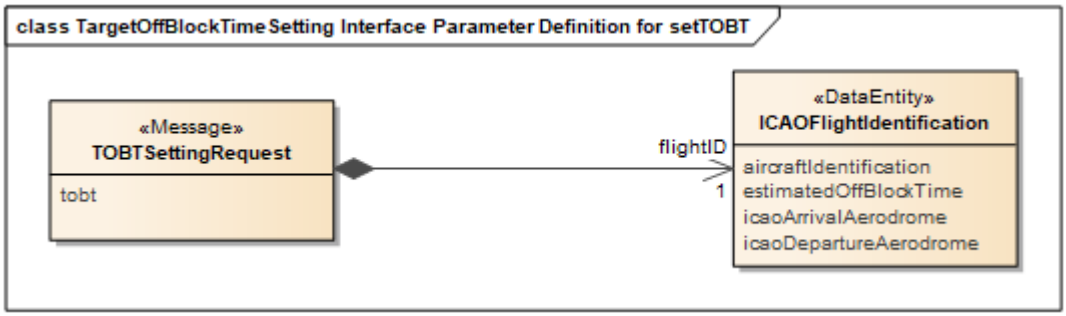
AIRM conformance

Conformant with AIRM version 1.0.0.

Message Types

TOBTSettingRequest

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

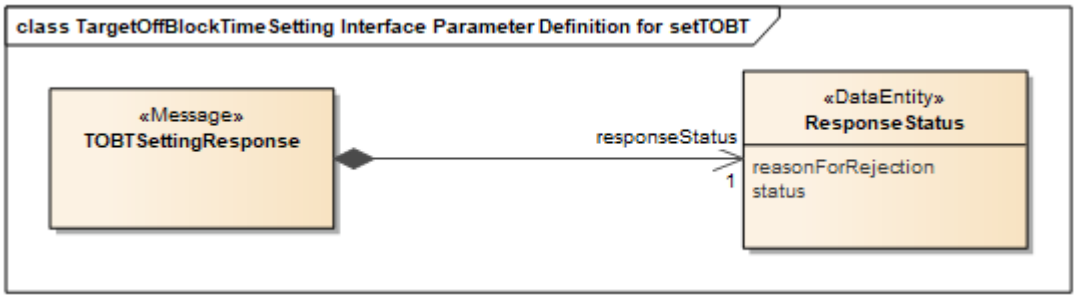


Attributes:

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: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
flightID	Type	ICAOFlightIdentification
	Description	The ICAO identifier of the specified flight
	Note	Mandatory

TOBTSettingResponse

Message which responds the validity of a previously sent TOBTSettingRequest message.

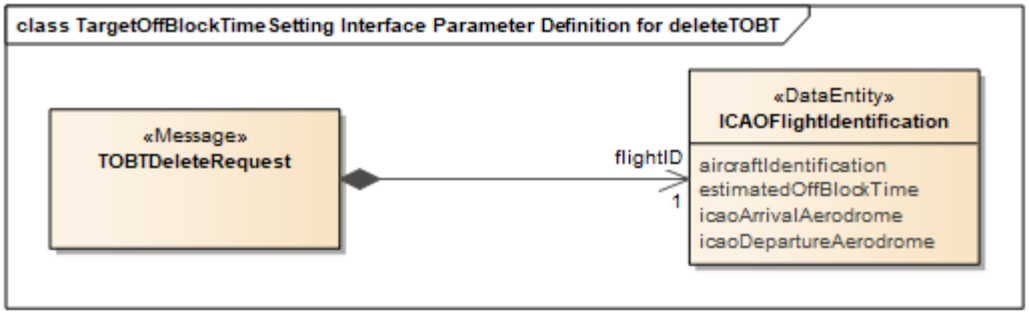


Attributes:

responseStatus	Type	ResponseStatus
	Description	Status of the response to the service request
	Note	Mandatory

TOBTDeleteRequest

Message which requests deleting the last TOBT value of the specified flight.

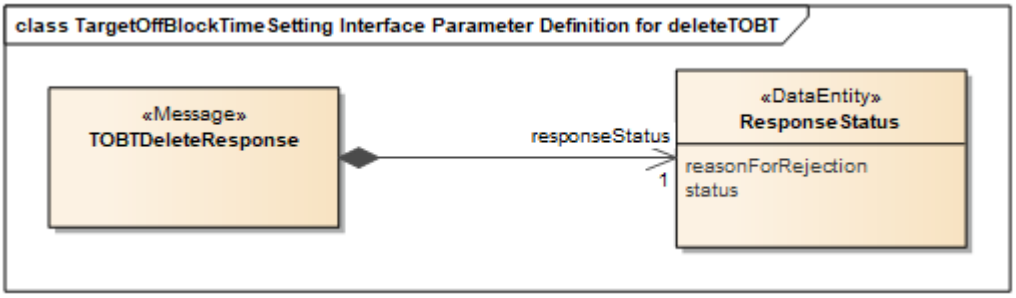


Attributes:

flightID	Type	ICAOFlightIdentification
	Description	The ICAO identifier of the specified flight
	Note	Mandatory

TOBTDeleteResponse

Message which responds the validity of a previously sent TOBTDeleteRequest message.



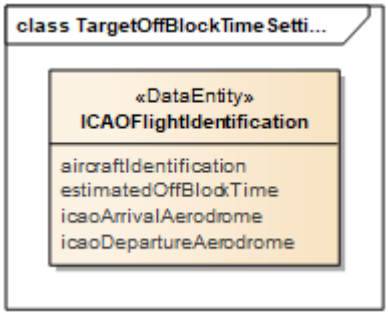
Attributes:

responseStatus	Type	ResponseStatus
	Description	Status of the response to the service request
	Note	Mandatory

Complex Types

ICAOFlightIdentification

Flight identification structure based on usual ICAO fields present in the Flight Plan.

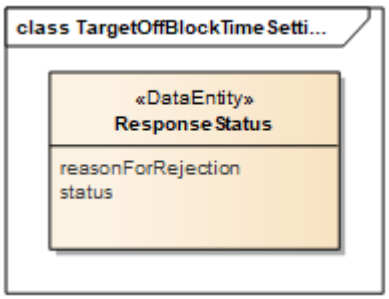


Attributes:

aircraftIdentification	Type	AircraftIdentification
	Description	Name used by ATS units to identify and communicate with the aircraft.
	Note	Mandatory
	AIRM Semantic Trace	urn:aero:airm:1.0.0:LogicalModel:Subjects:Flight:FlightIdentifier:AircraftIdentification
estimatedOffBlockTime	Type	EstimatedOffBlockTime
	Description	Date and time at which the aircraft will off-block according to ICAO flight plan field.
	Note	Mandatory
	AIRM Definition Trace	urn:aero:airm:1.0.0:ConceptualModel:Subjects:Flight:FlightEvent:EstimatedOffBlockTime
	AIRM Semantic Trace	urn:aero:airm:1.0.0:LogicalModel:Subjects:Flight:FlightEvent:OffBlock@time
	AIRM Context Trace	urn:aero:airm:1.0.0:LogicalModel:Subjects:Common:Codelists:CodePlanningStatusType@ESTIMATED
icaoDepartureAerodrome	Type	ICAODepartureAerodrome
	Description	ICAO code of the scheduled departure aerodrome.
	Note	Mandatory
	AIRM Semantic Trace	urn:aero:airm:1.0.0:LogicalModel:Subjects:BaseInfrastructure:AerodromeInfrastructure:Aerodrome@locationIndicatorICAO
	AIRM Context Trace	urn:aero:airm:1.0.0:LogicalModel:Subjects:Flight:Flight@departureAerodrome
icaoArrivalAerodrome	Type	ICAOArrivalAerodrome
	Description	ICAO code of scheduled destination aerodrome.
	Note	Mandatory
	AIRM Semantic Trace	urn:aero:airm:1.0.0:LogicalModel:Subjects:BaseInfrastructure:AerodromeInfrastructure:Aerodrome@locationIndicatorICAO
	AIRM Context Trace	urn:aero:airm:1.0.0:LogicalModel:Subjects:Flight:Flight@destinationAerodrome

ResponseStatus

General structure of responses of an A-CDM service.



Attributes:

reasonForRejection	Type	ReasonForRejection
	Description	Code or textual description on the reason for rejection
	Note	Mandatory when status = REJECTED

	AIRM Semantic Trace	AIRM_out_of_scope
status	Type	Status
	Description	Specifies whether the related request has been accepted or not. Values: • ACCEPTED • REJECTED
	Note	Mandatory
	AIRM Semantic Trace	AIRM_out_of_scope

Simple Types

TargetOffBlockTime <<DateTime>>

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.

AircraftIdentification <<string>>

Name used by ATS units to identify and communicate with the aircraft.

String of 1 to 7 alphanumeric characters.

EstimatedOffBlockTime <<DateTime>>

Date and time at which the aircraft will off-block according to ICAO flight plan field.

ICAODepartureAerodrome <<ICAOAerodromeLocationIndicator>>

ICAO code of the scheduled departure aerodrome.

ICAOArrivalAerodrome <<ICAOAerodromeLocationIndicator>>

ICAO code of scheduled destination aerodrome.

ICAOAerodromeLocationIndicator <<string>>

ICAO code of scheduled destination aerodrome.

String of 4 alphabetic uppercase character.s

ReasonForRejection <<string>>

Code or textual description on the reason for rejection

Status <<enumeration>>

Specifies whether a request has been accepted or not.

Values:

- ACCEPTED
- REJECTED

Other service elements

Service validation

The service has not been validated yet.

Service monitoring

There is no service monitoring mechanism available to service consumers.

Examples of code

No code example available.

Abbreviations & Acronyms

abbreviation	term
AACO	ACRIS Airport CDM Operational project
A-CDM	Airport Collaborative Decision Making
ACI	Airport Council International
ACRIS	Airport Community Recommended Information Services
AIRM	ATM Information Reference Model
ATM	Air Traffic Management
CDM	Collaborative Decision Making
FT10	SESAR A-CDM Service Activity
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IER	Information Exchange Requirement
IFPL	Individual Flight Plan message
IFPS	Integrated Initial Flight Plan Processing System
ISRM	Information Service Reference Model
SESAR	Single European Sky ATM Research Programme
SOA	Service Oriented Architecture
SWIM	System Wide Information Management
TOBT	Target Off-Block Time
TSAT	Target Start Up Approval Time
UML	Unified Modeling Language
WSDL	Web Services Definition Language
XSD	XML Schema Definition