ACI EUROPE
AIRPORT GROUPING

Initial Airport Operations Plan Introduction

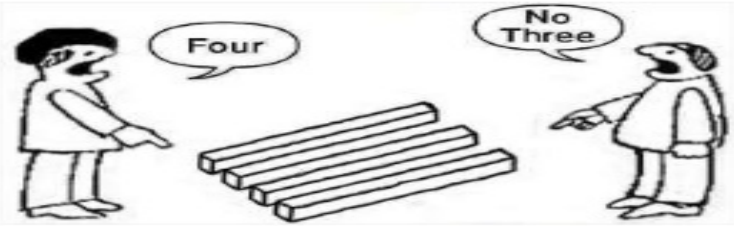
Luc Laveyne SDM airport liaison and managing director SDAG.

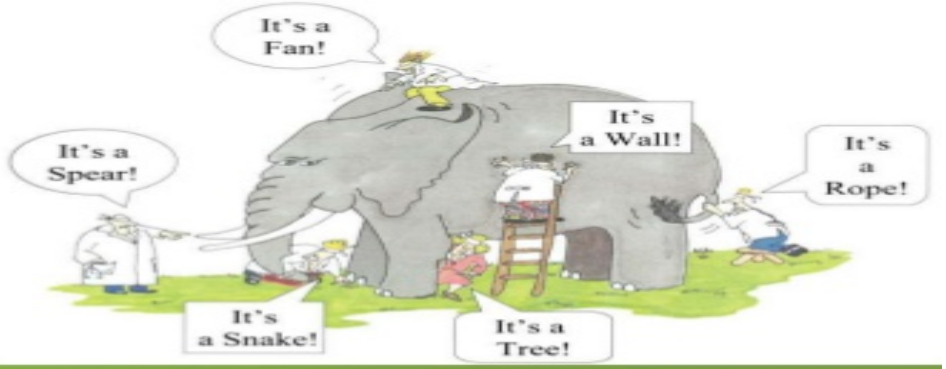
8 September 2017 - Hosted by SDAG.

Goal of the workshop.

ACI EUROPE AIRPORT GROUPING

The Need for Common Understanding





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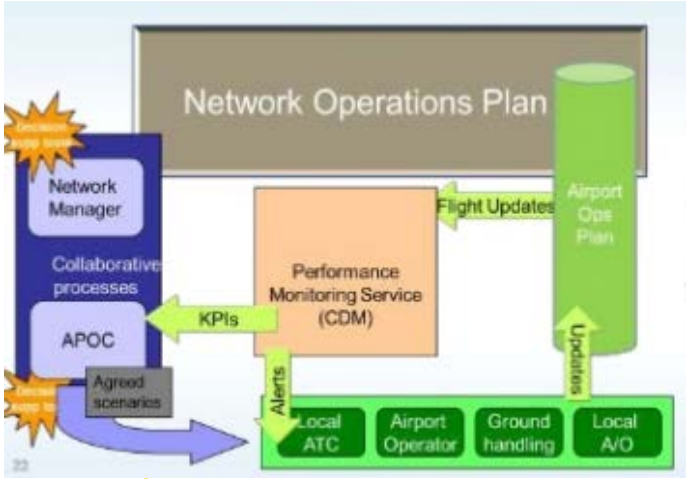


SESAR DEPLOYMENT MANAGER

Scenario for the meeting.

- **SESSION 1 : Sesar Deployment Manager**
- 1. The context – Eric Miart - SDM

  > Article 2 IR 716/2014
  > What topics are prepared by SDM in the revision of the IR 716/2014 ?
  > What is mentioned in the Deployment Plan.

- 2. How to comply to IR 716/2014 – SDM view – François Xavier Rivoisy - SDM
- **GROUP DISCUSSION**
- Joint conclusions SDM and SDAG.

- **SESSION 2 : AOP/NOP Information Sharing**
- 1. What are the indispensable data as part of the Airport Operations Plan that are needed by the NM and airport operators to be able to comply with IR 716/2014 ? Mathis Birenheide – Network Manager.
- 2. Input of airports in the discussion.
- 3. Joint conclusions NM and SDAG
- **SESSION 3 : Preparation - Joint application Initial AOP - call 2017 project leader, full gap coverage.**
- Information session – discussion – preparation for the call
- 16.15 End of the workshop

Initial Airport Operations Plan Context IR 716/2014 and SESAR Deployment Plan

Eric Miart, SDM.

8 September 2017 - Joint SDM-SDAG meeting, hosted by SDAG.

Article 2 – IR 716/2014

- (2) ‘Airport Operations Plan (AOP)’ means a single, common and collaboratively agreed rolling plan available to all airport stakeholders whose purpose is to provide common situational awareness and to form the basis upon which stakeholder decisions relating to process optimisation can be made;

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (1/12)

2.1 Departure Management Synchronised with Pre-departure sequencing

- Same as current, plus:
- Operational stakeholders involved in A-CDM shall jointly establish pre-departure sequences and will rely on AOP limited to the airport part of AOP, taking into account agreed principles to be applied for specific reasons (such as runway holding time, slot adherence, departure routes, airspace user preferences, night curfew, evacuation of stand/gate for arriving aircraft, adverse conditions including de-icing, actual taxi/runway capacity, current constraints, etc.).
- There exists an obvious need to link between AOP limited to the airport part of AOP and AOP-NOP integration as depicted under section 4.1.2 “Collaborative NOP” of the PCP.
- In combination with Airport — Collaborative Decision Making (A-CDM) and Airport Operations Plan (AOP), Pre-departure management reduces taxi times, increases Air Traffic Flow Management-Slot (ATFM-Slot) adherence and predictability of departure times. Departure management aims at maximising traffic flow on the runway by setting up a sequence with minimum optimised separations. “ Initial” removed, reflecting discussions with SJU and NM. as there is no definition

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (2/12)

2.1 Departure Management Synchronised with Pre-departure sequencing

- Proposed modification to “systems requirements):

- Departure Management (DMAN), A-CDM and AOP systems shall be integrated and shall support optimised pre-departure sequencing with information management systems for airspace users (Target Off Block Time (TOBT) feeding) and airport (contextual data feeding)

- Same as current, plus:

- Electronic Flight Strips (EFS) shall be implemented to support Initial DMAN, Basic A-CDM and Initial AOP.

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (3/12)

PROPOSED MODIFICATION OF PCP ARTICLE 2 on page L 190/21:

(2) 'Airport Operations Plan (AOP)' means a single, common and collaboratively agreed rolling plan available to all airport stakeholders whose purpose is to provide common situational awareness and to form the basis upon which stakeholder decisions relating to process optimisation can be made; AOP is limited to flight trajectory, airport resources and weather data, in view to support "AOP-Collaborative NOP" integration.

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (4/12)

2.2 Departure Management integrating Surface Management Constraints

- Suppress whole PCP Section 2.1.2 and add the need for A-SMGCS L1&L2 under section 2.1.4 “Automated Assistance to Controller for Surface Movement Planning and Routing” of the PCP.

- See updated text proposal for new PCP section 2.1.4.

- **In any case, FPA must check whether this proposal has any impact on the Calls 2014, 2015 and 2016.**

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (5/12)

2.2 Departure Management integrating Surface Management Constraints

- Suppress whole PCP Section 2.1.2 and add the need for A-SMGCS L1&L2 under section 2.1.4 “Automated Assistance to Controller for Surface Movement Planning and Routing” of the PCP.
- See updated text proposal for new PCP section 2.1.4.
- **In any case, FPA must check whether this proposal has any impact on the Calls 2014, 2015 and 2016.**
- **Proposed modification for the system requirements:**
- Same as current, plus:
- Electronic Flight Strips (EFS) shall be implemented to support A-SMGCS Level 1 and Level 2.

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (6/12)

2.3 Time-Based Separation for Final Approach

- No change to current PCP text is proposed
- About the list of PCP concerned airports, it is proposed to leave it as it is for the time being and to have SDAG proposing a revision through the « Stakeholders Consultation Platform (SCP)» exercise.

System requirements:

- Same as current plus:
- AOP limited to the airport part of AOP. See comment above

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (7/12)

2.4 Automated Assistance to Controller for Surface Movement Planning and Routing

- Suppression of the whole PCP Section 2.1.2 and adding the need for A-SMGCS L1&L2 under section 2.1.4 “Automated Assistance to Controller for Surface Movement Planning and Routing” of the PCP will lead to modification of that very section of the PCP. See updated text proposal for new PCP section 2.1.4.

- **In any case, FPA must check whether this proposal has any impact on the Calls 2014, 2015 and 2016**

- **System requirements:**

- See updated text proposal for new PCP section 2.1.4. (on next slide)

Updated text proposal for new PCP section 2.1.4.

- **Integration of section 2.2 into section 2.4:**
- Advanced Surface Movement Guidance and Control Systems (A-SMGCS) shall provide optimised taxi-time and improve predictability of take-off times by monitoring of real surface traffic and by considering updated taxi times in departure management.
- The routing and planning functions of A-SMGCS shall provide the automatic generation of taxi routes, with the corresponding estimated taxi time and management of potential conflicts.
- Taxi routes may be manually modified by the air traffic controller before being assigned to aircraft and vehicles. These routes shall be available in the flight data processing system.
- ***System requirements:***
- A-SMGCS Level 1 and Level 2
- Electronic Flight Strips (EFS) shall be implemented to support A-SMGCS Level 1 and Level 2.
- The A-SMGCS routing and planning function shall calculate the most operationally relevant route as free as possible of conflicts which permits the aircraft to go from stand to runway, from runway to stand or any other surface movement
- The controller working position shall allow the air traffic controller to manage surface route trajectories
- The flight data processing system shall be able to receive planned and cleared routes assigned to aircraft and vehicles and manage the status of the route for all concerned aircraft and vehicles

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (8/12)

2.5 Airport Safety Nets

No change proposed for the main texte and for the system requirements.

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (9/12)

EU and EFTA Member States:

Remove the « Other third countries" section which includes Istanbul Ataturk Airport.

Target dates:

- FOC date under PCP Section 4.3 being 01/01/2022 must be aligned with the AOP limited to the airport part of AOP FOC of 01/01/2021. The same apply for the supporting AF5 Families. Postpone AOP date to 01/01/2022.

- Postpone FOC Date of the "Airport Safety Nets" to 01/01/2024.

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (10/12)

Need for synchronisation:

The deployment of Airport Integration and Throughput functionality shall be coordinated due to the potential network performance impact of delayed implementation in the targeted airports. In particular, synchronisation among “Airport Integration and Throughput” solutions as well as synchronisation with “Extended Arrival Management and Performance Based Navigation in the High-Density Terminal Manoeuvring Areas”, “Network Collaborative Management” and “Initial System Wide Information Management” shall be implemented.

From a technical perspective, the deployment of targeted system and procedural changes shall be synchronised in order to ensure that the performance objectives are met. This synchronisation of investments shall involve multiple airport operators, air navigation service providers and the Network Manager (“Network Collaborative Management” section of the PCP). Furthermore, synchronisation during the related industrialisation phase shall take place, in particular among supply industry and standardisation bodies.

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (11/12)

No change proposed to “essential pre-requisites”.

Interdependencies with other ATM functionalities:

- Same as current plus:
- There are interdependencies with AF1 (*Extended Arrival Management and Performance Based Navigation in the High-Density Terminal Manoeuvring Areas*), (AMAN – TBS), with AF4 (*Network Collaborative Management*) (AOP – NOP/AOP integration) and with AF5 (*Initial System Wide Information Management*) (relevant – ad-hoc functionalities).
- Data exchange between stakeholders mandated to deploy AF2 shall be implemented using System Wide Information Management (SWIM) services where iSWIM functionality (AF5) referred to in Point 5 is available. The concerned systems must be able to provide or consume SWIM services. Until iSWIM is available existing data exchange technology may be used.
- There exists a need to implement both “Departure Management integrating Surface Management Constraints” and “Airport Safety Nets” to achieve full SES safety benefits at airports.

What are the topics prepared by SDM for the revision of the IR 716/2014 (PCP)? (12/12)

Additional comments:

- Consider adding a note in the introductory part of the PCP which will stipulate and explain the rationale and links of the PCP with the SDM DPs.

- Need to check whether all AFs are aligned concerning the need to differentiate between pre-requisites and system requirements.

What is proposed by SDM for the CP2 (1/2)
subject to approval

A.SESAR Solution #21 – Airport Operations Plan and AOP-NOP Seamless Integration

1.SESAR Solution Description:

Full integration of Airports into the ATM Network planning function, taking into considerations all the operations impacting the airport airside processes. Will allow for accurate Demand Capacity Balancing, enhancing time-based operations, reducing in-air and on-ground holding and enhancing overall airport and network performance.

The SESAR Solution #21:

- focuses on the elements which will help integrate AOP and NOP in a seamless way, building on and complementing Deployment Programme (DP) 2017 Family 2.1.4 “Initial AOP”.
- supports the European ATM Master Plan’s key feature of ‘Network Collaborative Management & Dynamic Capacity Balancing’ by using the SESAR concept of High Performing Airport Operations to achieve a full integration of airports into the ATM network, ensuring a seamless process through Collaborative Decision Making (CDM).
- supports airport operations with an increased scope and timescale of data shared between the Airport and the Network Manager, building upon the Pre-SESAR Airport Collaborative Decision Making (A-CDM) baseline.
- is strongly linked with SESAR Solution #18 ‘CTOT to TTA for ATFCM’ and with Solution #20 ‘Collaborative NOP’ due to the concept integration needed with the Airport Operations Plan (AOP).
- makes operations run more smoothly and efficiently through access to changes in scheduling, changes in operating conditions and circumstances, and through the implementation of ad-hoc KPIs, lead to proactive performance management by all partners.
- steer and monitor airport performance through establishing the performance goals and Key Performance Indicators (KPIs) thresholds and monitor performance against the goals

What is proposed by SDM for the CP2 (2/2)
subject to approval

A.SESAR Solution #21 – Airport Operations Plan and AOP-NOP Seamless Integration

2. Key issues:

It is essential to consider the AOP management as a key application supporting the services offered by Solution #21.
This Airports Operation Plan (AOP) management tool is a local management tool allowing all airport stakeholders (CDM partners) to access and update the AOP (which provides a common and collaboratively agreed rolling plan that will form the single source of airport operations information). The involvement of airport CDM partners (typically Airspace Users/Ground handlers, ANSP, Airport operator) in the management of the AOP will improve the overall operations predictability.
The development of ad-hoc KPIs is key to ensure the AOP-NOP Integration delivers all the expected benefits – e.g. increase in: predictability, flexibility, efficiency, operational costs reduction, capacity enhancing, punctuality, resilience through quicker and efficient recovery while facing adverse weather conditions or unusual situations. See also section A.1.4 below.
The availability of an AOP is essential for the future Airport Demand Capacity Balancing (A-DCB) concept than enables the accurate determination of TTA for ATFCM purposes.

Content of SDM Deployment Programme? (1/4)

Family 2.1.4 – Initial Airport Operational Plan (AOP),

Description & scope:

The Airport element that reflects the operational status of the Airport and therefore facilitates Demand and Capacity Balancing is the Airport Operations Plan (AOP). The AOP connects the relevant stakeholders, notably the Airspace Users' Flight Operations Centre (FOC). It contains data and information relating to the different status of planning phases and is in the format of a rolling plan, which naturally evolves over time.

The AOP is a single, common and collaboratively agreed rolling plan available to all airport stakeholders whose purpose is to provide common situational awareness and to form the basis upon which stakeholder decisions relating to process optimization can be made. The ATM stakeholders' planning processes and working methods are included in the AOP.

The AOP contains elements such as KPIs and alerts, which allow monitoring and assessing the performance of A-CDM operations. Most of the data involved in the AOP implementation is currently shared among local stakeholders and where available, through the A-CDM process.

Content of SDM Deployment Programme? (1/4) bis

The initial AOP is the local airport part of the AOP. The following data have to be implemented:

- Flight trajectory data: Information sharing related to Flight Progress Information Elements of an Inbound/Outbound/airport transit Trajectory to/from/at Airport.

- Airport Resources data: Airside and landside resources such as runway capacity & configuration, or parking stands.

- Local weather data: Information sharing related to MET Information Elements of airport.

There are also strong interdependencies with S-AF4.2 Collaborative NOP as well as with S-AF5.5 Cooperative Network Information Exchange.

The initial AOP shares information with the NOP which provides a rolling picture of the network situation used by stakeholders to prepare their plans and their inputs to the network CDM processes (e.g. negotiation of airspace configurations). NM Information will be freely exchanged by Operational stakeholders by means of defined cooperative network information services, using the yellow SWIM TI Profile.

Content of SDM Deployment Programme? (2/4)

Family 2.1.4 – Initial Airport Operational Plan (AOP), inter-dependencies:

- Family 2.1.1 Initial DMAN
- Family 2.1.3 Basic A-CDM
- Family 4.2.4 AOP/NOP Information Sharing
  - > The full AOP implementation requires synchronisation with the NOP (see AF4 "interactive Rolling NOP"). The implementation of this synchronisation is targeted by Family 4.2.4 "AOP/NOP information sharing".
- Family 5.3.1 Aeronautical Information Exchange / Service in support of A-CDM and iAOP
- Family 5.4.1 Upgrade / Implement Meteorological Information Exchange System / Service
- Family 5.5.1 Interface and data Requirements of AF4 NOP and of A-CDM and iAOP
- Family 5.6.1 Flight Information System / Service in support of A-CDM and iAOP

Content of SDM Deployment Programme? (3/4)

Family 2.1.4 – Initial Airport Operational Plan (AOP), deployment approach:

The implementation of the Family would require the process of information sharing related to Flight Progress Information Elements of an inbound / outbound airport transit Trajectory to / from / at the airport, as described in the OFA 05.01.01 document (**MM1** – Flight trajectory data implementation).

The Initial Airport Operations Plan (AOP) deployment would also need the installation of the necessary airside and landside resources, such as runway capacity, runway configuration and

parking stands (**MM2** – Airport resources data implementation).

Moreover, and information sharing process related to MET Information Elements of Airport, as outlined in the OFA 05.01.01 document, shall be duly performed (**MM3** – Local weather

data implementation).

The execution of such activities is expected to lead to the start of permanent operat (**MM4** – Implementation completed).

Content of SDM Deployment Programme? (4/4)

Family 2.1.4 – Initial Airport Operational Plan (AOP), recommendations:

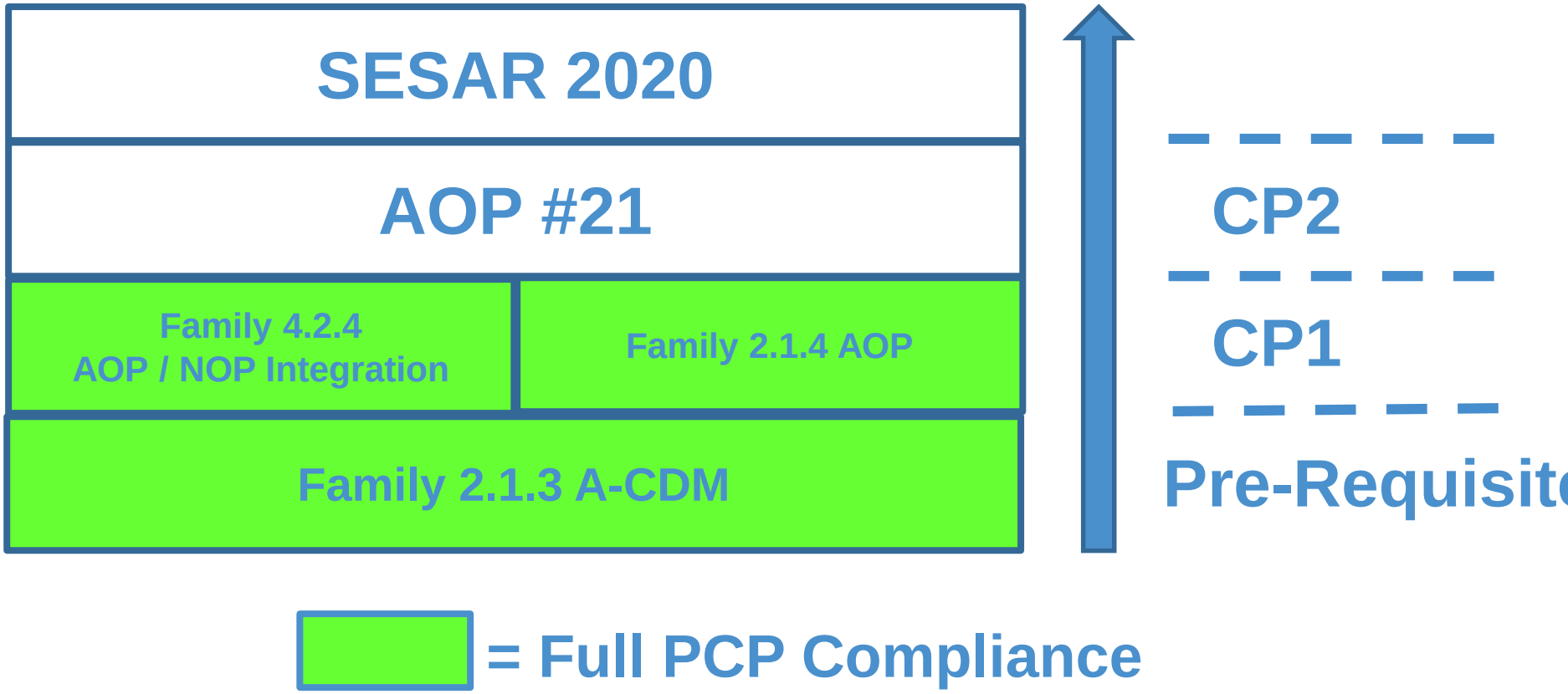
Family 2.1.4 can be considered as pre-requisite to Family 4.2.4, hence should be implemented as soon as possible not waiting for Family 4.2.4 to be ready/completed. Family 2.1.4 can also be seen as an extension of the Airport Operational Database.

It is recommended to take into consideration the three following elements of S-AF2.1: F211, F213 and F214 which are necessary to achieve the “Departure Management Synchronised with Predeparture sequencing”.

It is recommended to implement Family 2.1.4 as soon as possible since Initial AOP is part of the critical initiatives to resolve and mitigate the impacts of current capacity constraints and potential bottlenecks, which might hinder the overall performance at network level.

It is recommended liaising between different stakeholders (both within the same stakeholder category and between different categories) to draft and present joint proposals in the framework of upcoming Calls. It is recommended to take into consideration the results of Gap Analysis.

Relationship A-CDM and AOP?



Towards full AOP?

- AIRSIDE = CP1
- TERMINAL ½ Terminal = CP2
- LANDSIDE ACCESS

= SESAR 2020

Initial Airport Operations Plan How to comply to IR 716/2014 and SESAR Deployment Plan

François Xavier Rivoisy

8 September 2017 - Joint SDM-SDAG meeting, hosted by SDAG.

Agenda

How to comply to IR 716/2014 ?

> What is behind the generic AOP as defined in Article 2 of IR 716/2014 ?

> What is needed to comply to the PCP as iAOP is only “mentioned” in AF4 regarding AOP-NOP integration ?

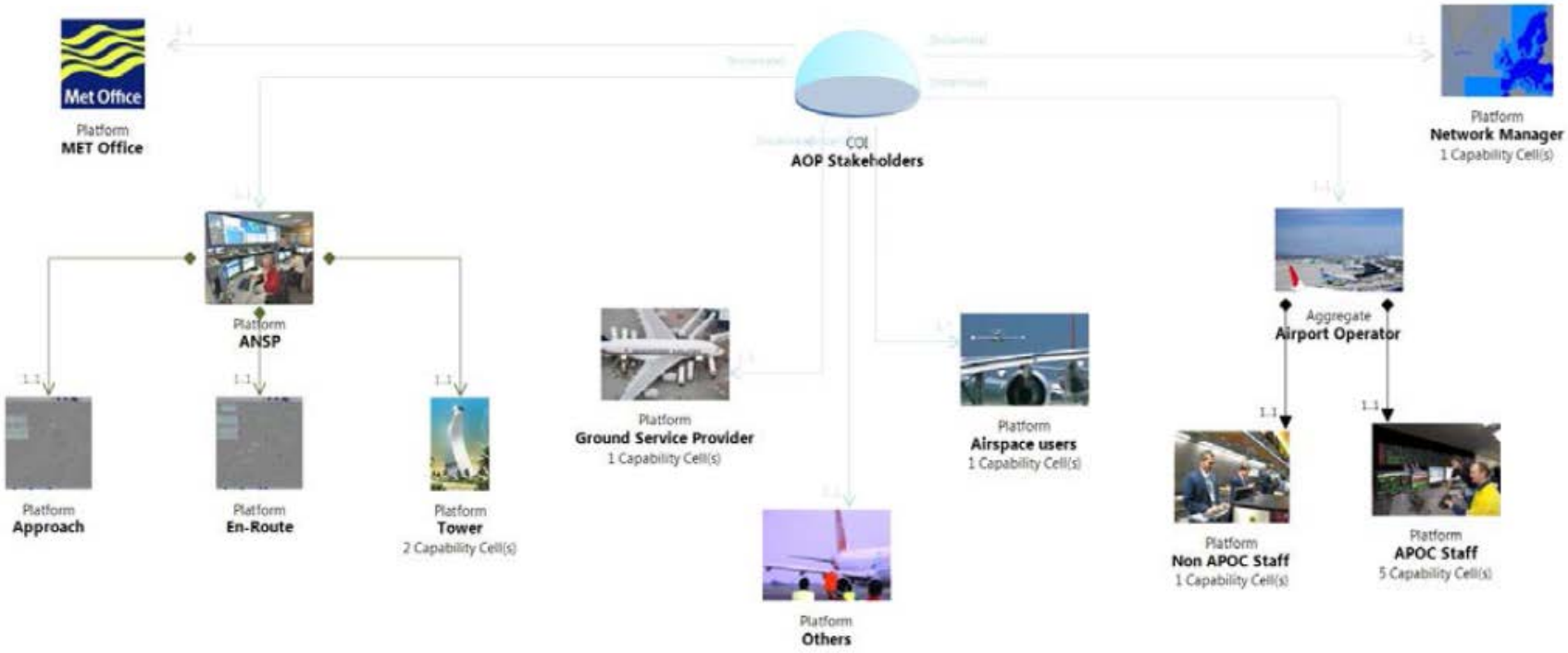
> What about SWIM ?

What is an AOP?

- AOP definition as mentioned in Article 2 of IR 716/2014
  > ‘Airport Operations Plan (AOP)’ means a single, common and collaboratively agreed rolling plan available to all airport stakeholders whose purpose is to provide common situational awareness and to form the basis upon which stakeholder decisions relating to process optimisation can be made

- Definition based on the full Airport Operations Management concept developped in SESAR 1
  > Solution #21 (SESAR solutions catalogue)
  > OFA 05.01.01
  > AOP Final Specification documents

What is an AOP ?



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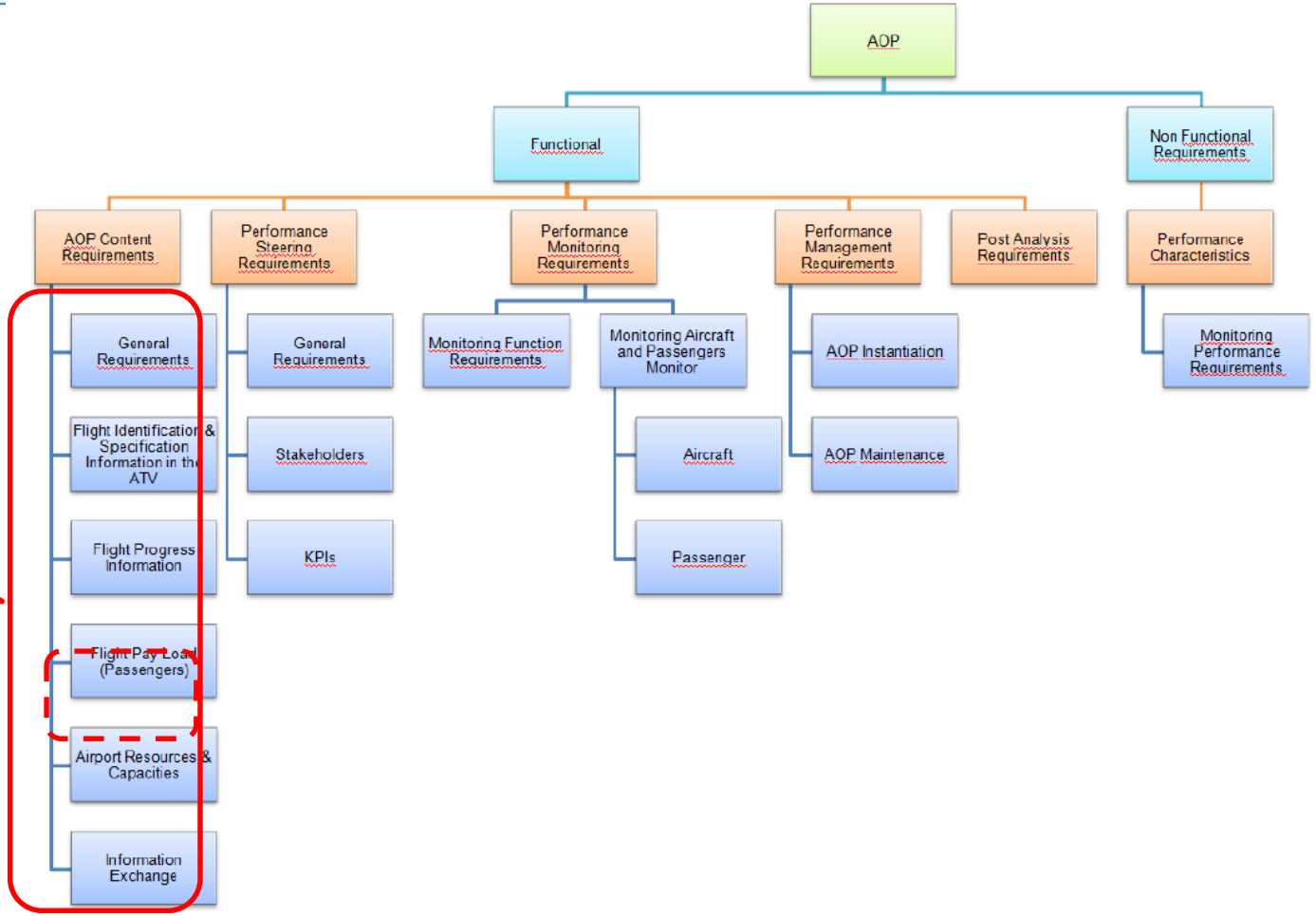
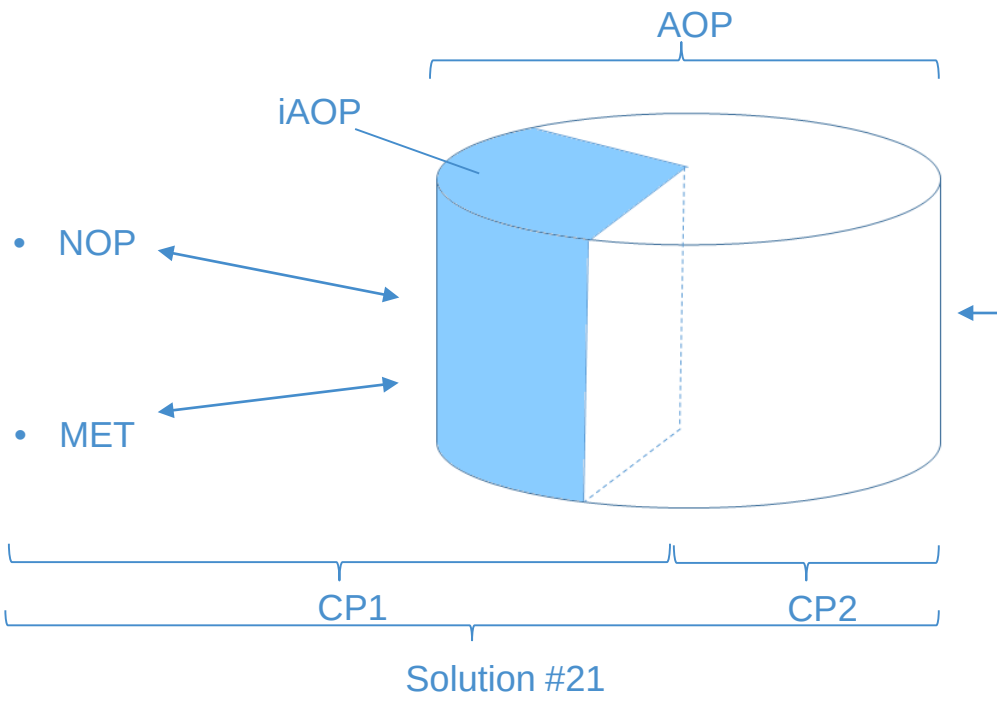


Scope of the IR

What is an AOP ?



AOP vs A-CDM

Extract from “Release 5 SESAR Solution ID #21 Airport operations plan (AOP) and its seamless integration with the network operations plan (NOP)”:

> … The Solution supports airport operations with an increased scope and timescale of data shared between the Airport and the Network Manager, building upon the Pre-SESAR Airport Collaborative Decision Making (A-CDM) baseline.

What is an AOP ?

AOP Content requirements

1. Flight Identification / Specification Information Elements for Trajectories to/from Ground Node
2. Flight Progress Information Elements of an Inbound Trajectory to Ground Node
3. Flight Progress Information Elements of an Outbound Trajectory from Ground Node
4. Flight Progress Information Elements specific to the Airport Transit View at the Ground Node
5. Relevant Messages for Trajectory Progress to/from Ground Node / AOP
6. (pay)Load Information Elements of Flights to/from Ground Node
7. Airport Resource & Capacity Information Elements of Ground Node
8. MET Information Elements of Ground Node
9. Performance Information Elements of Ground Node
10. Performance Management Information Elements of Ground Node
11. Performance Steering Information Elements of Ground Node
12. Post Operations Analysis Information Elements of Ground Node

What is an AOP ?

AOP Content requirements : extract from OFA 05.01.01 (1/5)

1. Flight Identification / Specification Information Elements for Trajectories to/from Ground Node

Information Name		Owner / Source			AOP / NOP shared information			Comments	
		Prime	1e alt.	2e alt.	From distributor		To		
Flight Identification and specification information									
FL ID	Flight identification	AOC			AOP	→	NOP		1
Code Share ID(s)	All code shared flight Identifications	AOC			AOP	→	NOP		2
ARCID	ICAO call sign	AOC			NOP	→	AOP		3
DOF	Date of scheduled Flight	AOC			AOP	→	NOP		4
ARRDEP	Arrival / Departure indicator	AO			AOP			ARRDEP not used in NOP	5
GUFI	Global Unique Flight Identifier	AOC			NOP	→	AOP		6
IFPLID	Initial Flight Plan Identifier	NM			NOP	→	AOP		7
AC OP	Aircraft Operator	AOC			NOP	→	AOP		8
FL type	Type of flight	AOC			NOP	→	AOP		9
FL ST	Flight Priority	AOC			NOP	→	AOP		10
Prioritisation Tag	Flight Priority Indicator	AOC			NOP	→	AOP		11
REG	Aircraft Registration	AOC			NOP	→	AOP		12
ARCCOD	Aircraft Code (IATA Aircraft Type)	AOC			AOP	→	NOP	Provided by AOC or converted from ATYP	13
ATYP	Aircraft Type (ICAO Aircraft type)	AOC			NOP	→	AOP		14

What is an AOP ?

AOP Content requirements : extract from OFA 05.01.01 (2/5)

5. Relevant Messages for Trajectory Progress to/from Ground Node / AOP

Information Name		Owner / Source			AOP / NOP shared information			Comments	
		Prime	1* alt.	2* alt.	From distributor		To		
Messages									
API message	Arrival Planning information message. Message containing at least the following information elements: - FLID (IATA Arrival Flight identification) - ARCID (ICAO Arrival Flight identification) - DOF (IATA Date of Flight) - REG (aircraft registration) - AAST (Airport Arrival Slot Time) - SIBT (Scheduled In-Block Time) - SLDT (Scheduled Landing Time) - TTA (coordinated Target Time of Arrival = TTA-C) - EIBT (Estimated In-Block Time, from Flight plan) - EXIT (Estimated Taxi-In Time) - DEP (IATA Origin code) - ADEP (ICAO Origin code) - Runway identifier of the assigned Arrival Runway (RWYARR) - Standard Terminal Arrival Route identifier (STAR) - Terminal ID - API status [initiate, update, cancel]	Local ATC	AO		AOP	→	NOP		473
DPI message	Departure Planning Information message. Message containing at least the following information elements: - FLID (IATA Arrival Flight identification) - ARCID (ICAO Arrival Flight identification) - DOF (IATA Date of Flight) - REG (aircraft registration) - ADST (Airport Departure Slot Time) - SOBT (Scheduled Off-Block Time) - STOT (Scheduled Take-Off Time) - TTD (coordinated Target Time of Departure = TTD-C) - EOBT (Estimated Off-Block Time, from Flight plan) - EXOT (Estimated Taxi-Out Time) - DES (IATA Destination code) - ADES (ICAO Destination code) - Runway identifier of the assigned Departure Runway (RWYDEP) - Standard Instrument Departure route identifier (SID) - Terminal ID - DPI status [initiate, update, cancel]	Local ATC	AO		AOP	→	NOP		474

What is an AOP ?

AOP Content requirements : extract from OFA 05.01.01 (3/5)

7. Airport Resource & Capacity Information Elements of Ground Node

Information Name	Owner / Source			AOP / NOP shared information			Comments	Ref
	Prime	1e alt.	2e alt.	From distributor		To		
Airport Resource and Capacity Information								
Airport ID (IATA)	AO			AOP	→	NOP		169
Airport ID (ICAO)	AO			AOP	→	NOP		170
Airport Status Code	APOC supervisor	AO	Local ATC	AOP	→	NOP	Details to be further defined	171
Airport Status Description	APOC supervisor	AO	Local ATC	AOP	→	NOP	Details to be further defined	172
Runway State	AO	Local ATC		AOP				173
Stand State	AO			AOP				174
Taxiway State	AO	Local ATC		AOP				175
De-Icing Position State	AO	DIA		AOP				176
Declared Total Runway Capacity	AO	Local ATC		AOP	→	NOP		177
Declared Arrival Runway Capacity	AO	Local ATC		AOP	→	NOP		178
Declared Departure Runway Capacity	AO	Local ATC		AOP	→	NOP		179
Declared Total TMA capacity	Local ATC			AOP				180
Declared inbound TMA capacity	Local ATC			AOP				181

What is an AOP ?

AOP Content requirements : extract from OFA 05.01.01 (4/5)

8. MET Information Elements of Ground Node

Information Name	Owner / Source			AOP / NOP shared information			Comments	Ref
	Prime	1e alt.	2e alt.	From distributor		To		
General MET								
Meteorological data	MET			AOP	→	NOP		223
METAR	MET			AOP	→	NOP		224
MET REPORT	MET			AOP	→	NOP		225
TAF	MET			AOP	→	NOP		226
TREND	MET			AOP	→	NOP		227
Aerodrome Warning MET	MET			AOP	→	NOP		228
SNOWTAM	MET			AOP	→	NOP		229
Reduced set of MET data	MET			AOP	→	NOP		230
MET data / parameters								
Cloud Base	MET			AOP				231
Ceiling or vertical visibility information	MET			AOP				232
Cloud amount	MET			AOP				233
Mean surface wind direction	MET			AOP				234
Surface wind direction probability forecasts	MET			AOP				235

What is an AOP ?

AOP Content requirements : extract from OFA 05.01.01 (5/5)

11. Performance Steering Information Elements of Ground Node

Information Name	Owner / Source			AOP / NOP shared information		Comments	
	Prime	1e alt.	2e alt.	From distributor	To		
Performance Steering							
Alert – Aircraft Stand shortage Threshold	OSB			AOP			407
Alert – Ground Movement Capacity Shortage Threshold	OSB			AOP			408
Alert - Arrival Capacity Shortage Threshold	OSB			AOP			409
Alert - Departure Capacity Shortage Threshold	OSB			AOP			410
Alert - TMA Capacity Shortage Threshold	OSB			AOP			411
Alert - Average Arrival Delay Threshold	OSB			AOP			412
Alert - Arrival Punctuality Delay Thresholds	OSB			AOP			413

How to comply to IR 716/2014 ?

- AOP is mentioned in AF4 (Network Collaborative Management) and associated to 2 sub AFs
  - > 4.1.2 : *Collaborative NOP*
  - > 4.1.3 : *Calculated Take-off Time to Target Times for ATFCM purposes*

- Don’t forget SWIM in AF5 and supporting AF4 !
  - > 5.1.2 : SWIM Technical Infrastructure and Profiles
  - > 5.1.4 : Meteorological Information Exchange
  - > 5.1.5 : Cooperative Network Information Exchange

How to comply to IR 716/2014 ?

Collaborative NOP

- Sub AF 4.1.2 description

4.1.2. *Collaborative NOP*

The Network Manager shall implement a Collaborative NOP consisting of increased integration of NOP and Airport Operations Plan (AOP) information. The Collaborative NOP shall be updated through data exchanges between Network Manager and operational stakeholder systems in order to cover the entire trajectory lifecycle and to reflect priorities when needed. Airport configurations constraints and weather and airspace information shall be integrated into the NOP. Where available, the airport constraints shall be derived from the AOP. The ATFCM target times may be used as input to arrival sequencing. Where available and required for traffic sequencing, the Target Time for Arrival shall be derived from the AOP. Where Target Times are used by ATFCM to address airport congestion, these Target Times may be subject to AOP alignment as part of ATFCM coordination processes. Target Times shall also be used to support airport arrival sequencing processes in the en-route phase. The integrated airport configurations and weather and airspace information shall be able to be read and modified by authorised operational stakeholders participating in managing and operating the network.

The development of a Collaborative NOP shall focus on the availability of shared operational planning and real-time data.

How to comply to IR 716/2014 ?

Collaborative NOP

The Network Manager shall implement a Collaborative NOP consisting of increased integration of NOP and Airport Operations Plan (AOP) information

- Purpose : Increase the existing A-CDM link

The Collaborative NOP shall be updated through data exchanges between Network Manager and operational stakeholder systems in order to cover the entire trajectory lifecycle and to reflect priorities when needed.

- AOP content requirements scope : 1, 2, 3, 5

Airport configurations constraints and weather and airspace information shall be integrated into the NOP. Where available, the airport constraints shall be derived from the AOP

- AOP content requirements scope : 7, 8

How to comply to IR 716/2014 ?

Collaborative NOP

The ATFCM target times may be used as input to arrival sequencing. Where available and required for traffic sequencing, the Target Time for Arrival shall be derived from the AOP. Where Target Times are used by ATFCM to address airport congestion, these Target Times may be subject to AOP alignment as part of ATFCM coordination processes. Target Times shall also be used to support airport arrival sequencing processes in the en-route phase

- AOP content requirements scope : 2

The integrated airport configurations and weather and airspace information shall be able to be read and modified by authorised operational stakeholders participating in managing and operating the network

- AOP content requirements scope : 7, 8

How to comply to IR 716/2014 ?

Collaborative NOP

- Sub AF 4.1.2 description

System requirements

— Operational stakeholders shall be granted access to the data they need through queries within the NOP

— Operational stakeholder ground systems shall be adapted to interface with network management systems. AOP systems shall interface with the NOP systems to implement a Collaborative NOP

— Interface between operational stakeholder systems and network management systems shall be implemented using System-Wide Information Management services once available

How to comply to IR 716/2014 ?

Collaborative NOP

> Operational stakeholders shall be granted access to the data they need through queries within the NOP
  - NOP Portal, OneSky Online (Extranet) : NMIR, ATFCM Stats,…

> Operational stakeholder ground systems shall be adapted to interface with network management systems. AOP systems shall interface with the NOP systems to implement a Collaborative NOP
  - AOP NOP Integration project

> Interface between operational stakeholder systems and network management systems shall be implemented using System-Wide Information Management services **once available**
  - SWIM

How to comply to IR 716/2014 ?

Calculated Take-off Time to Target Times for ATFCM purposes

- Sub AF 4.1.3 description

4.1.3. *Calculated Take-off Time to Target Times for ATFCM purposes*

Target Times (TT) shall be applied to selected flights for ATFCM purposes to manage ATFCM at the point of congestion rather than only at departure. Where available, the Target Times of Arrival (TTA) shall be derived from the Airport Operations Plan (AOP). TTAs shall be used to support airport arrival sequencing processes in the en-route phase.

System requirements

— Network Manager's systems shall support target time sharing. Systems shall be able to adjust Calculated Take-off Times (CTOTs) based on refined and agreed TTAs at the destination airport; TTAs shall be integrated into the AOP for subsequent refinement of the NOP

— Flight data processing systems may need to be adapted in order to process downlinked trajectory data (ADS-C EPP)

➢ TTA is an element of AOP (AOP content requirements scope : 2)

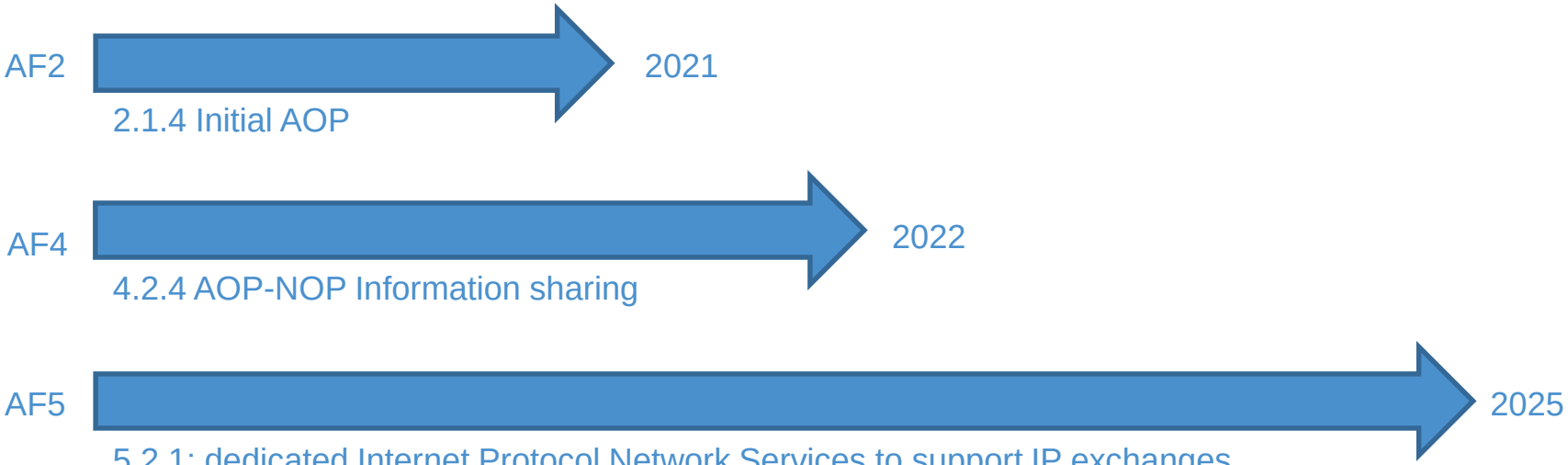
How to comply to IR 716/2014 ?

AOP Content requirements

1. Flight Identification / Specification Information Elements for Trajectories to/from Ground Node
2. Flight Progress Information Elements of an Inbound Trajectory to Ground Node
3. Flight Progress Information Elements of an Outbound Trajectory from Ground Node
4. Flight Progress Information Elements specific to the Airport Transit View at the Ground Node
5. Relevant Messages for Trajectory Progress to/from Ground Node / AOP
6. (pay)Load Information Elements of Flights to/from Ground Node
7. Airport Resource & Capacity Information Elements of Ground Node
8. MET Information Elements of Ground Node
9. Performance Information Elements of Ground Node
10. Performance Management Information Elements of Ground Node
11. Performance Steering Information Elements of Ground Node
12. Post Operations Analysis Information Elements of Ground Node

How to comply to IR 716/2014 ?

Deployment scenario / Deployment Programme 2016



How to comply to IR 716/2014 ?

PCP Review

- Need to define « AOP » in AF2
- Need to align AOP & NOP FOC dates in 2022

AOP Deployment
State of play : 2.1.4 Family

CEF Call	Project Leader	Title	Actual start date	Actual end date	Declarative progress
2016	Duesseldorf International	Initial AOP DUS	15/02/2017	31/12/2020	
2015	London Heathrow	Airport Operating Plan AOP	16/02/2016	12/08/2017	97,29%
	Brussels National	AIRSTAT	01/03/2016	31/03/2019	23,45%
	Brussels National	APOC implementation	01/03/2016	15/09/2017	62,99%
	Aéroports De Paris	CDG and ORLY - Initial Airport Operational Plan (AOP)	01/03/2016	31/12/2020	22,63%
	Swedavia	DMAN Stockholm Arlanda Airport	01/10/2016	31/12/2018	3,59%
	Aéroports de la Côte d'Azur	iAOP implementation	24/11/2016	31/12/2020	2,57%
	Amsterdam Schiphol	Implementation of AOP Schiphol Airport	01/01/2017	31/12/2018	0,00%
	Frankfurt International	Initial Airport Operations Plan @ FRA	16/01/2017	31/12/2019	2,76%
	Swedavia	Initial AOP	01/10/2016	31/12/2018	13,94%
	Munich Franz Josef Strauss	Initial APOC and AOP	21/03/2016	14/04/2017	100,00%
	London Gatwick	Integrated Ground Management (GMAN)	01/04/2016	31/12/2018	7,81%
2014	London Heathrow	Preparation for AOP	01/10/2014	31/08/2017	36,24%
	Aéroports De Paris	SAIGA	01/01/2014	15/12/2015	100,00%

AOP Deployment

State of play : 2.1.4 Family

DP2017 – Final draft

Airport	Currently deployed	In progress / Planned	Not planned	Expected completion date	Implementation Status by Operational Stakeholder Category			
					Stakeholders considered as Gaps		Other stakeholders involved in the Family deployment	
					ANSPs	*Airport Operators*	*Military Authorities*	*MET Providers*
(N) Amsterdam Schiphol	0%	100%	0%	Dec 2024				
Barcelona El Prat	0%	100%	0%	Dec 2021				
Berlin Brandenburg Airport	45%	45%	10%	Dec 2020				
Brussels National	0%	100%	0%	Dec 2020				
Copenhagen Kastrup	0%	100%	0%	Jun 2018				
Dublin Airport	0%	0%	100%	-				
Dusseldorf International	0%	100%	0%	Dec 2020				
Frankfurt International	0%	100%	0%	Dec 2020				
(N) London Gatwick	0%	100%	0%	Dec 2021				
London Heathrow	95%	5%	0%	Jul 2017				
London Stansted	0%	0%	100%	-				
Madrid Barajas	0%	100%	0%	Dec 2021				
Manchester Ringway	0%	0%	100%	-				
Milan Malpensa	0%	100%	0%	Dec 2024				
Munich Franz Josef Strauss	80%	10%	10%	Dec 2020				
Nice Cote D'Azur	0%	100%	0%	Dec 2020				
Oslo Gardermoen	0%	0%	100%	-				
Palma de Mallorca Son San Juan	0%	100%	0%	Dec 2021				
Paris Charles De Gaulle	0%	100%	0%	Dec 2020				
(N) Paris Orly	0%	100%	0%	Dec 2020				
Rome Fiumicino	0%	100%	0%	Dec 2020				
Stockholm Arlanda	0%	100%	0%	Dec 2018				
Vienna Schwechat	0%	100%	0%	Dec 2021				
Zurich Kloten	✓			✓				

Chart Key per Stakeholders

- Family's scope fully implemented
- Family's scope fully covered by on-going CEF projects
- Implementation in progress (with CEF funding)
- Implementation in progress (without CEF funding)
- Implementation planned
- Implementation not planned
- Not applicable
- No information available

AOP Deployment
State of play : 4.2.4 Family (1/2)

CEF call	Project Leader	Project Contributors	Title	Actual end date	Actual start date	Declarative progress
2016	Eurocontrol / NM	Amsterdam Schiphol Barcelona El Prat Brussels National Madrid Barajas Palma De Mallorca Stockholm Arlanda	AOP-NOP Integration - Extended Implementation			
2015	Eurocontrol / NM	Aéroports De Paris Frankfurt International London Heathrow	AOP-NOP Integration	31/12/2019	01/03/2016	16,93%

AOP Deployment

State of play : 4.2.4 Family

DP2017 – Final draft

Airport	Currently deployed	In progress / Planned	Not planned	Expected completion date	Implementation Status by Operational Stakeholder Category				
					Stakeholders considered as Gaps		Other stakeholders involved in the Family deployment		
					Network Manager	Airport Operators	ANSPs	Military Authorities	MET Providers
Amsterdam Schiphol	0%	100%	0%	Dec 2024					
Barcelona El Prat	0%	100%	0%	Dec 2021					
Berlin Brandenburg Airport	0%	100%	0%	Jun 2018					
Brussels National	0%	100%	0%	Dec 2021					
Copenhagen Kastrup	0%	100%	0%	Dec 2018					
Dublin Airport	0%	100%	0%	Dec 2018					
Dusseldorf International	0%	100%	0%	Dec 2021					
Frankfurt International	0%	100%	0%	Dec 2021					
London Gatwick	0%	0%	100%	-					
London Heathrow	0%	100%	0%	Dec 2021					
London Stansted	0%	0%	100%	-					
Madrid Barajas	0%	100%	0%	Dec 2021					
Manchester Ringway	0%	0%	100%	-					
Milan Malpensa	0%	55%	45%	-					
Munich Franz Josef Strauss	0%	100%	0%	Dec 2021					
Nice Cote D'Azur	0%	0%	100%	-					
Oslo Gardermoen	0%	0%	100%	-					
Palma de Mallorca Son San Juan	0%	100%	0%	Dec 2021					
Paris Charles De Gaulle	0%	100%	0%	Dec 2021					
Paris Orly	0%	100%	0%	Dec 2021					
Rome Fiumicino	0%	100%	0%	Dec 2020					
Stockholm Arlanda	0%	100%	0%	Dec 2020					
Vienna Schwechat	0%	100%	0%	Dec 2021					
Zurich Kloten	0%	100%	0%	-					

Chart Key per Stakeholders

- Family's scope fully implemented
- Family's scope fully covered by on-going CEF projects
- Implementation in progress (with CEF funding)
- Implementation in progress (without CEF funding)
- Implementation planned
- Implementation not planned
- Not applicable
- No information available

THANK YOU

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