

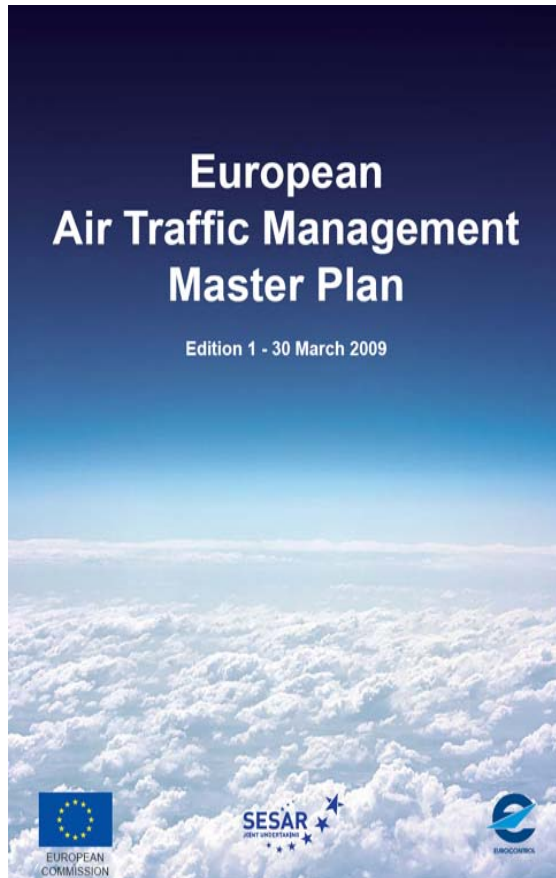
Directorate-General  
for Energy  
and Transport



EUROPEAN  
COMMISSION

# Single European Sky, SESAR, European ATM Master Plan (IP1)

# European ATM Masterplan



➤ 1st edition of the European ATM Master Plan based on Council Decision from 30. March 2009

➤ It consists of

- ✓ the baseline SESAR ATM Master Plan,
- ✓ the Council's Decision,
- ✓ the Council's Resolution and
- ✓ the Communication from the Commission on the ATM Master Plan, hence providing the complete picture (contents and the process)

➤ SESAR Master Plan (D5) will remain as it is - a testimony from the definition phase - whereas the European ATM Master Plan will be regularly updated according to the high level process described in the Communication

➤ Edition 2 (IP1) is expected to be presented at the Admin Board of the SESAR JU in 2010



# European ATM Masterplan



COUNCIL OF  
THE EUROPEAN UNION



## Council resolution on the endorsement of the European Air Traffic Management Master Plan

2935th TRANSPORT, TELECOMMUNICATIONS and ENERGY Council meeting  
Brussels, 30 March 2008

The Council adopted the following resolution:

"THE COUNCIL OF THE EUROPEAN UNION,

Recalling:

- (i) the Council statement of 9 June 2006 on the proposal for a Council Regulation on the establishment of a Joint Undertaking to develop the new-generation European air traffic management system (SESAR),
- (ii) Council Regulation (EC) No 219/2007 of 27 February 2007 establishing the SESAR Joint Undertaking (hereinafter "the Joint Undertaking") and the Council Regulation (EC) No 1361/2008 of 16 December 2008, amending Regulation (EC) No 219/2007,
- (iii) the Council Resolution of 8 June 2007 on the formal establishment of the Joint Undertaking,
- (iv) the Council Resolution of 9 October 2008 on the launch of the development phase of the SESAR project,
- (v) the importance of the SESAR project for ensuring the sustainable growth of European civil aviation,

## P R E S S

Rue de la Loi 175 B - 1048 BRUSSELS Tel.: +32 (0)2 281 8239 / 6319 Fax: +32 (0)2 281 8026  
[press.office@consilium.europa.eu](mailto:press.office@consilium.europa.eu) <http://www.consilium.europa.eu/Newsroom>

➤ Article 10.....

REQUESTS the Commission to develop and maintain a regulatory roadmap, in consultation with the SESAR Joint Undertaking, all stakeholders, and in cooperation with the military. This will be based on the Community legal framework (Implementing Rules and Community Specifications) to support the deployment of the SESAR Implementation Packages;



# ● IP1 definition / refinement from JWG

EC, SESAR JU, Eurocontrol started as JWG the refinement process



Implementation timing

Geographical classification

Stakeholder/Airspace User deployment

Costs, further parameters...

Directorate-General  
for Energy  
and Transport

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
AD-0101	Reduced Risk of Runway Incursions through Improved Procedures and Best Practices on the Ground	Local	V566	3	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0102	Automated Alerting of Controller in Case of Runway Incursion	Local	V566	3	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0103	Improved Runway Tail-Out Storage and Release for Parallel Runway Operations	Local	V4	4	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0201	Enhanced Ground Controller Situational Awareness in all ATIS/ASD Conditions	Local	V3	3	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0202	Elimination of FOD (Foreign Object Debris) on the Airport	Local	V2	2	IP2	IP2	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0203	Enhanced Assistance to Airport Vehicle Driver	Local	V22	2	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0204	Crosswind Reduced Separations for Departures and Arrivals	Local	V3	3	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0301	Crosswind Reduced Separations for Departures and Arrivals	Local	V3	3	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0302	Wake Based Separation for Arrivals	Europe	V2	2	IP2	IP2	D TMA/E-route Operations	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0303	Fixed Reduced Separations based on Wake Vortex Prediction	Europe	V2	2	IP2	IP2	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0304	Fixed Reduced Separations based on Wake Vortex Prediction	Europe	V2	2	IP2	IP2	D TMA/E-route Operations	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0306	Additional Rapid Exit Taxiways (RET) and Entries	Local	V346	3	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0402	Interlaced Take-Off and Landing	Local	V576	3	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0403	Optimized Dependent Parallel Operations	Local	V3	3	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0501	Improved Operations in Adverse Conditions through Airport Collaborative Decision Making	Local	V5	5	Local	IP1	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									
AD-0502	Improved Operations in Low Visibility Conditions through Airport Collaborative Decision Making	Required SES	SES	5	OIS	OIS	A Airports and Aerodrome ATC	A2 Implement ground movement control systems (A-SMGCS level 1,2) and safety nets (runway incursions)									



Reduction from a total of 96 to 80 OIs Operational Improvements



# ● IP1 refined definition



80 OI steps (147 elements) grouped into 57 bullets

**IP1** as refined with the 80 OI steps (for the capability and service levels 0 & 1) is the essential **SESAR baseline** from which the future implementation of SESAR developments will be built;

**The refined IP1 definition was presented and endorsed at**

- » SCG/10 in February 2009
- » ICB/27 in March 2009
- » Single Sky Committee/30 in April 2009

# ● IP1 OI classification

- **In the JWG paper on IP1 governance (SCG/11, May 2009) it was agreed that**
  - » due to the very wide diversity of contributory elements and stakeholders, no single measure or mechanism can be used for the overall implementation of IP1.
  - » it is necessary to adopt a broad range of mechanisms and processes to ensure the efficient, coordinated and timely implementation of IP1.
  - » the EC regulatory roadmap will be based on the existing Community legal framework (Interoperability Regulation 552/2004, SES Implementing Rules, SES Community Specifications) and will be enhanced with a further deployment option using industry standards
- **The monitoring of this voluntary implementation option using industry standards could be done with amended ESSIP/LSSIP mechanisms**
- **Therefore each OI was scanned with all data available and classified to a possible corresponding implementation mechanism:**
  - **IR** Implementing Rule
  - **CS** Community Specification
  - **IS** Industry Standard
  - or not to be considered any further (e.g. part of another OI)

# Airports and Aerodrome ATC

The IP1 baseline builds on these OI elements and the JWG proposes the following implementation mechanisms:

1. Implement Airport CDM, **CS review A-CDM**
2. Implement ground movement control systems (A-SMGCS level 1+2) and safety nets (runway incursions), **CS review SMGCS**
3. Implement basic Departure Management Systems (DMAN), **CS on DMAN**
4. Implement initial Airport data link (D-OTIS, ATIS), **IR review DLS**
5. Implement environmentally sustainable (aircraft fuel use, noise and emissions) airport operations (CEM), **IS**
6. Runway usage optimisation (Mixed mode operations, parallel operations, low visibility procedures, crosswind separations, ILS areas, MLS operations, runway occupancy time reduction techniques, brake to vacate procedures), **IS**
7. On-Line NOP access, **IR on NOP**

# ● Aircraft Systems

The IP1 baseline builds on these OI elements and the JWG proposes the following implementation mechanisms:

1. Implement Precision Navigation (2-D RNP, precision approaches, optimised cruise-descend modes, GNSS approaches), **CS review GNSS applications**
2. Upgrade the existing avionics and cockpit HMI to initial ATSAW applications based on ADS-B (in / out), **IS / CS on applications**
3. Upgrade ACAS display modes, **IS**
4. Deployment of protected-mode-CPDLC to complement VHF voice communication, **IR review DLS**

# ● Aircraft Operations FOC

**The IP1 baseline builds on these OI elements and the JWG proposes the following implementation mechanisms:**

1. Implement Airport CDM, **CS review A-CDM**
2. Reduce aircraft impact on the environment (Airport, En-route aircraft fuel and emissions), **IS**
3. System adaptation to common data model (starting with weather information systems), **IS**

# ● TMA/En-Route Operations

**The IP1 baseline builds on these OI elements and the JWG proposes the following implementation mechanisms:**

1. Implement Arrival / Departure Management Systems (AMAN/DMAN) in high density TMAs, **CS on AMAN/DMAN**
2. Improve airspace planning through AAMS (including flexible sectorisation management), **IR on AAMS/NM**
3. Implement automated support for controllers (safety nets, conflict detection tools, flight conformance monitoring aids), **CS on ATC sup tools**
4. Deployment of protected-mode-CPDLC to complement voice communications, **IR review DLS**
5. Implement in-trail procedures in oceanic airspace (ATSA-IP), **IS**
6. Implement TMA improvements (CCD/CDA, crosswind separations), **CS on CCD/CDA**
7. Network Operations Plan (NOP) access, **IR on NOP**

# ● SWIM

**The IP1 baseline builds on these OI elements and the JWG proposes the following implementation mechanisms:**

1. Initiate the SWIM framework (SWIM roles and responsibilities, licensing aspects, security issues, liability and ownership,....), **IR on SWIM**
2. Implementation (Management) of SWIM information applications based on the SWIM capability level 1 (AIM, weather, A-CDM, NOP), **CS on applications (link to A-CDM, MET,...)**
3. Implement initial SWIM network and technical services, **CS on SWIM network services**

# ● CNS Systems & Infrastructure

**The IP1 baseline builds on these OI elements and the JWG proposes the following implementation mechanisms:**

1. Deployment of VHF (8.33kHz) above FL195 for voice communication and VDL2/ATN for initial data link communication to support communication applications, **IR on RCP, CS on applications**
2. Implementation of GNSS applications (e.g. APV/LPV) to support navigation applications, **IR on RNP, CS on applications**
3. Implement MLAT systems and deploy ADS-B ground stations to support surveillance applications, **IR on RSP, CS on applications**
4. SWIM backbone capability level 1 (Deployment of AMHS for ground-ground data communication, creation of a European IP backbone network and start implementation of VoIP (Voice over IP) for ground-ground voice communication, **IR on SWIM, CS on applications**)

# ● **Airspace and Network Management 1**

**The IP1 baseline builds on these OI elements and the JWG proposes the following implementation mechanisms:**

1. Implement uniform airspace classification (7 ICAO classes below FL195), **IR on airspace classifications**
2. Improve airspace planning (multiple route options, cross-border sectorisation, further routing options, optimum trajectories in defined airspace/time, etc.) referred as AAMS, **IR on AAMS/NM**
3. Integrate military activity and traffic into network to optimise utilisation of available airspace, **IR on AAMS/NM**
4. Implement data repositories (Airspace-ADR, Demand-DDR) to improve data consolidation and sharing, **CS on ASM/ATFCM data and tools**
5. Improve and integrate capacity planning and ATFCM processes/tools (seamless planning, scenarios and simulation tools, CDM procedures, short-term ATFCM measures, critical events), **IR on AAMS/NM**

....

# ● Airspace and Network Management 2

The IP1 baseline builds on existing/mature elements and consists of the following items:

6. Improve flight plan filing (including through briefing facilities) and ensure FPL consistency for all users in a flexible airspace environment, **IR review IFPL**
7. Network performance assessment (including civil/military elements), **link to SES II performance regulation**
8. Implementation of the Network Operations Plan (NOP), **IR on NOP**
9. Integration of airports into the network management process, **IR on NOP**

# Aeronautical Information

The IP1 baseline builds on these OI elements and the JWG proposes the following implementation mechanisms:

1. Implement Aeronautical Information Management quality measures, **IR review ADQ**
2. Move towards digital NOTAMs and digital AIM, **IR review ADQ**
3. Increase quality of weather forecasts and improve MET information management, **CS on MET**
4. Integrate weather information in the ATM and AOC Systems, **CS on MET**
5. Deployment of weather information systems at Airports, **CS on MET**



# IP1 regulatory roadmap

## Implementing Rules IRs

- **A total number of 56 OIs were identified as candidates for implementation through an Implementing Rule IR**
- **The OI classification indicates the need for the following new IRs:**
  - » **IR** on Advanced Airspace Management AAMS and Network Management
  - » **IR** on the implementation of the Network Operations Plan (NOP)
  - » **IR** on airspace classification
  - » **IR** on SWIM
  - » **IR** on Required Navigation Performance (RNP)
  - » **IR** on Required Surveillance Performance (RSP)
  - » **IR** on Required Communication Performance (RCP)
- **The OI classification requires a review/update of the following existing or planned IRs:**
  - » **IR** on Data Link Services (DLS)
  - » **IR** on Coordination and Transfer (COTR) and Initial Flightplan (IFPL)
  - » **IR** on VHF 8.33 Implementation (VCS)
  - » **IR** on ATFM
  - » **IR** on Aeronautical Data Quality (ADQ)
  - » **IR** on Surveillance Performance and Interoperability (SPI)



# ● IP1 regulatory roadmap link to SES II regulation development

- The OI classification for the following 3 network performance assessment OIs indicated a direct interaction to the performance IR of SES II and must be included in this development process

SDM-0101	Network Performance Assessment
SDM-0102	Civil-Military Cooperation Performance Assessment
SDM-0103	Sustainability Performance Management of the ATM Network



# IP1 regulatory roadmap

## Community Specifications CSs

- A total number of 39 OIs were identified as candidates for implementation through a Community Specification CS
- The OI classification indicates the need for the following new CSs:
  - » CS on Arrival and Departure Management (AMAN/DMAN) Systems
  - » CS on Continuous Climb Departures and Continuous Descent Arrivals
  - » CS on automated support tools for air traffic controllers
  - » CS on Data Repositories and ASM/ATFCM tools
  - » CS on the use of MET data in ATM and AOC systems
  - » CS on SWIM Network Services (capability level 1)
- The OI classification requires a review/update of the following existing CSs:
  - » CS on A-CDM (Airport Collaborative Decision Making)
  - » CS on GNSS applications (APV/LPV)
  - » CS on A-SMGCS (Airport Surface Movement Guidance and Control Systems)





# IP1 regulatory roadmap

## Deployment via industry standards

- A total number of 49 OIs were identified as candidates for implementation through a voluntarily deployment of industry standards
- These OIs have been identified as being either
  - » already implemented based on a local decision;
  - » used for local/regional (best practise) implementation of particular applications or procedures;
  - » not foreseen for a wide-spread deployment within IP1;
  - » internally linked to other OIs (e.g. certain CFMU functionality elements)
- Nevertheless, the deployment of these OIs via the use of industry standards should be continuously monitored, so that the required operational and technical performance for the IP1 baseline can be assured



# ● Towards the IP1 regulatory roadmap

- **The proposed IP1 regulatory roadmap has been consulted with all stakeholders (including the military) through the various groups and meetings in September**
- **At the last ICB/30 meeting on the 29.Sep.2009, the ICB**
  - Noted the proposal for the IP1 regulatory roadmap (launch of new / review of existing IRS and CSs)
  - Endorsed the proposal for the IP1 regulatory roadmap as one of the initial inputs to the update of the European ATM Masterplan
  - Endorsed further activities by the EC to ensure refinement of the proposal for each IR and CS as part of a coherent package
- **After initial discussions in the DG TREN Single Sky Committee (SSC) in Oct.09, the SSC gave a favourable opinion to the IP1 regulatory roadmap at the last meeting Dec.09**
- **The refined definition for IP1, together with the related regulatory roadmap and consolidated support material (e.g. risk management plan) should then constitute the backbone for the first update of the European ATM Masterplan**