



EUROPEAN ATM MASTER PLAN IN A NUTSHELL

30 June, 15h00 - 16h00

Florian Guillermet, **SESAR JU** Executive Director

Alain Siebert, **SESAR JU** Chief Economist & Master Planning

Hortensia Caballero, **SESAR JU** Expert in Master Planning

Marie-France Deslandes, **Eurocontrol**

Project Management Coordinator
for Master Planning



Agenda

15:00 Welcome

Alain Siebert, SESAR JU

15:05 The vision of the ATM Master Plan remains valid

Florian Guillermet, SESAR JU

15:10 ATM Master Plan: key structuring document for ATM innovation

Alain Siebert, SESAR JU

15:20 Towards the delivery of a digital European sky

Hortensia Caballero, SESAR JU

15:35 A robust and approved plan to implement the vision

Marie-France Deslandes, Eurocontrol

15:45 Q&A and wrap-up

Alain Siebert, SESAR JU

Practical instructions for the session

- The webinar recording and slides will be uploaded on the SJU website following the event.
- **CHAT:** the chat is open to all attendees.
- **QUESTIONS:** questions can be raised by any attendee and we will do our outmost to address as many of them as possible during the Q&A.
- **POLLS:** will pop up during the webinar from time to time. Please be ready to contribute 😊

Poll

What do you expect to get out of this webinar?



A better understanding of short-term implications of the updated plan (2020-2025)



Greater perspective on changes ahead that will impact operations in the medium/longer-term (post-COVID, 2025+)



A better general understanding of changes ahead and seeing the future of aviation infrastructure in Europe





The vision of the ATM Master Plan remains valid

Florian Guillermet, **SESAR JU Executive Director**



COVID-19 and the impact on the vision for ATM modernisation

Questions that we asked our stakeholders

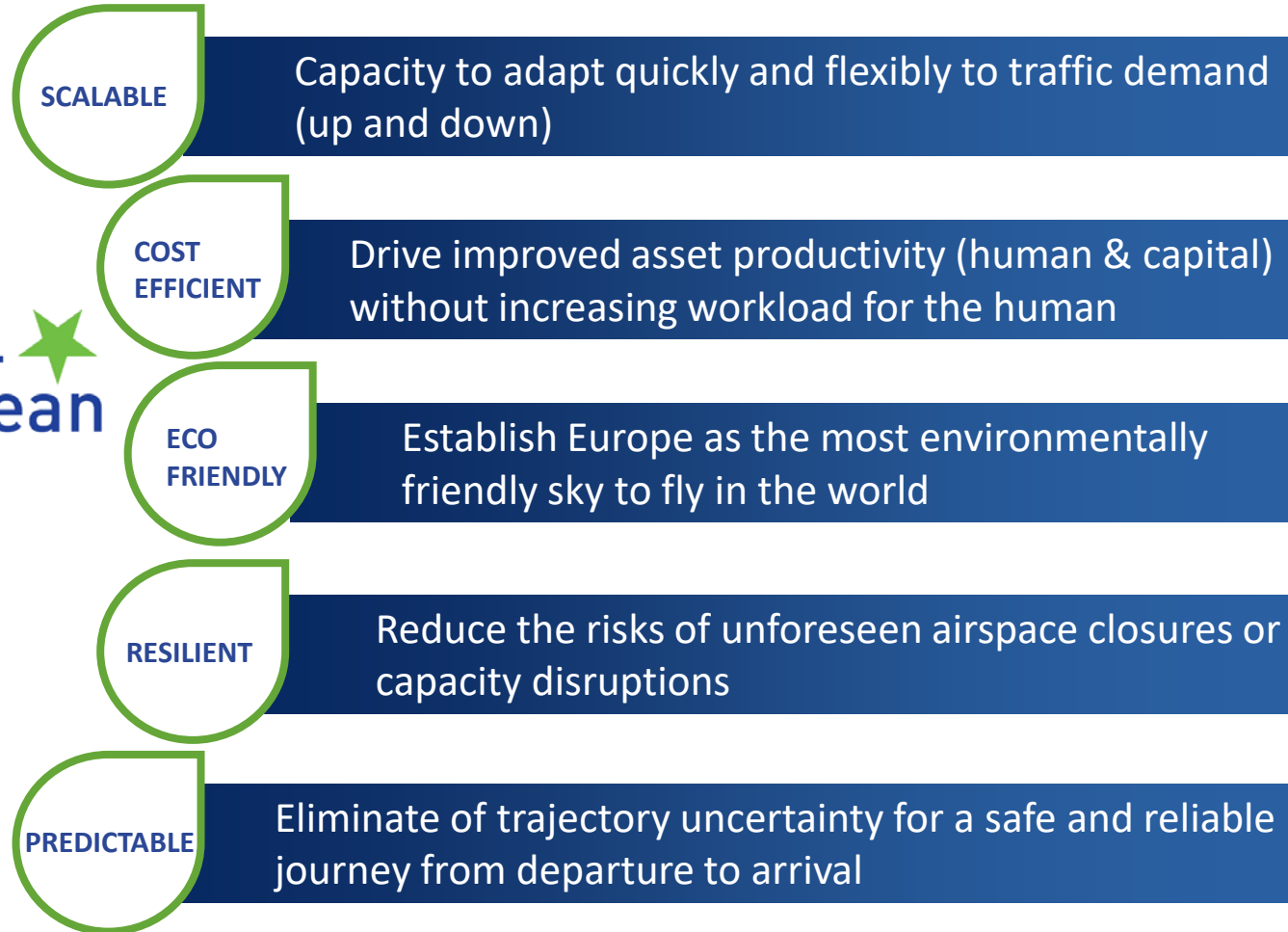
Is our overall vision still valid?

Is there still a sense of urgency in the ATM community to embrace a more digital future in order to become more resilient and scalable to fluctuated demand for air transport?

Are adjustments needed to our short-medium term priorities to help the sector grow out of the crisis?

What implications—positive or negative—could our pandemic response hold for climate action?

The vision of the ATM Master Plan calls for an acceleration of the digitalisation of aviation infrastructure to offer new capabilities



**Bring the EU
ATM
infrastructure
into the
digital age**



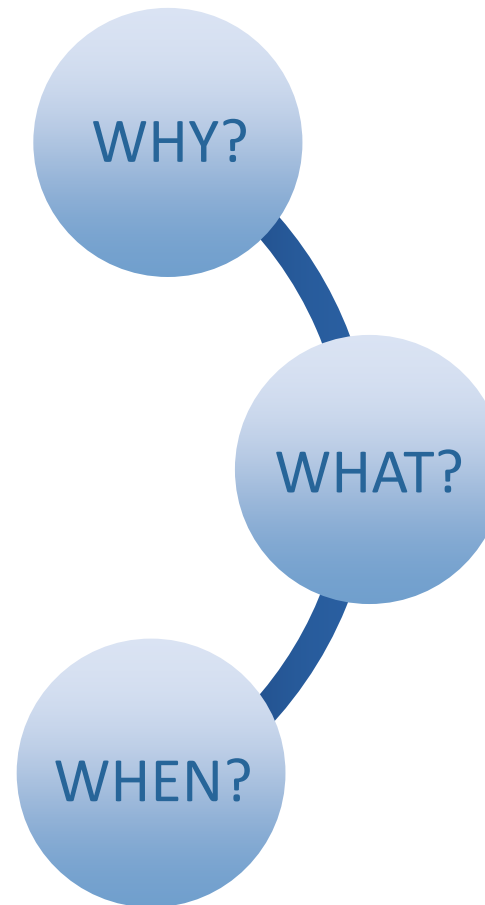


ATM Master Plan: key structuring document for ATM innovation

Alain Siebert, **SESAR JU Chief Economist and Master Planning**



ATM Master Plan: more than a paper exercise



SAFETY DIMENSION – connected to EASA EPAS

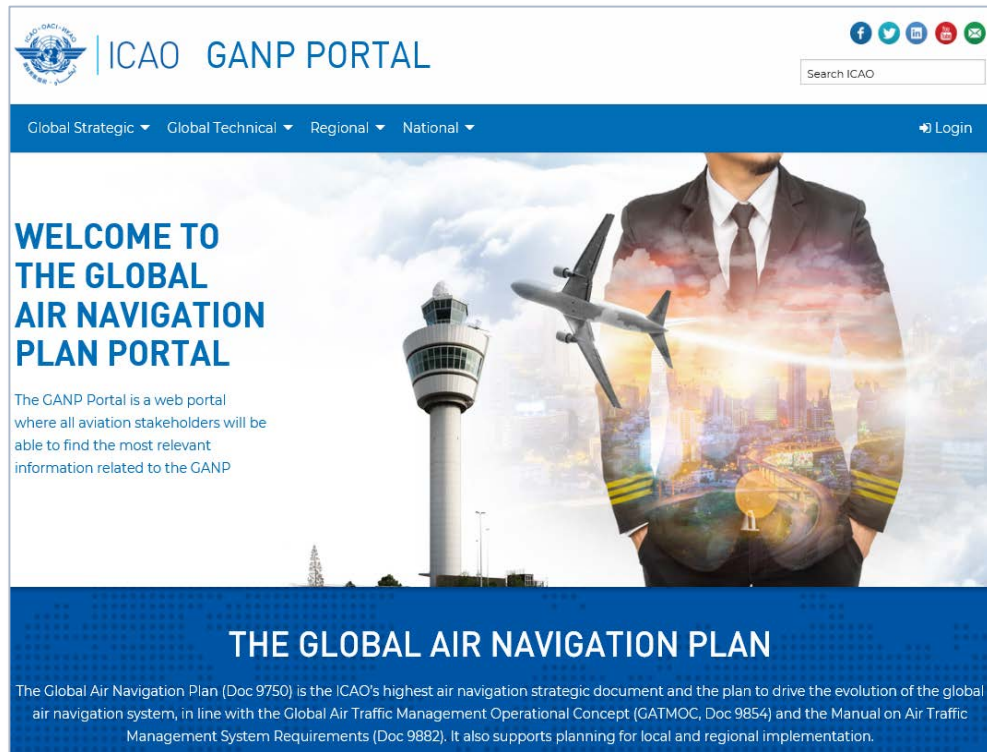


- Safety targets
- Rulemaking activities
- Safety promotion

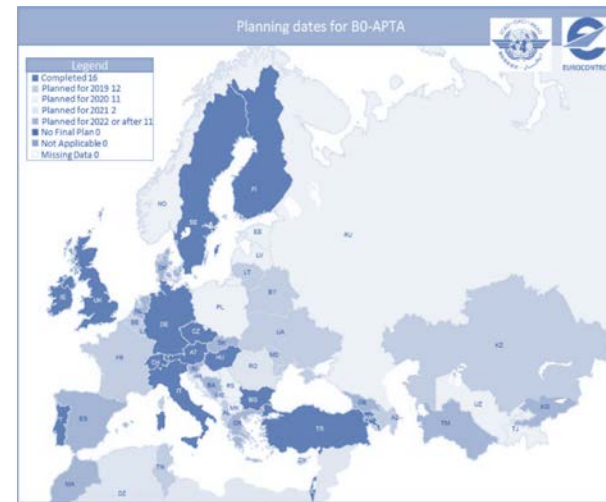


Closely linked to align SESAR and EASA priorities on ATM

Global dimension – connected to ICAO GANP



MP is a high interest cooperation area in all **bilateral arrangements** with FAA, Japan, Singapore, Qatar ...



The MP is the voice and “ambassador” of European ATM on the global scene



Collaborative and inclusive approach

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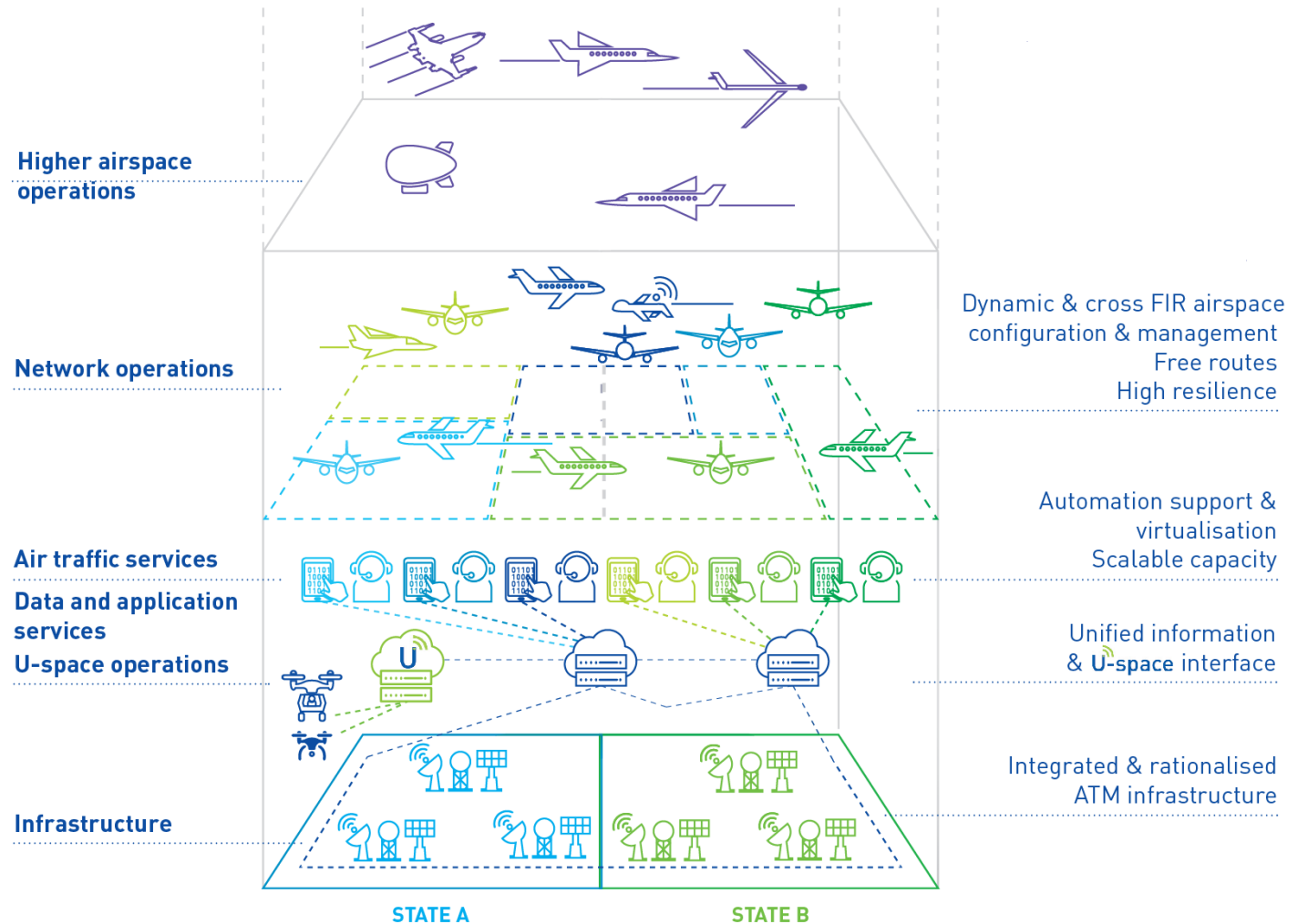
SESAR vision: towards the delivery of a digital European sky

Hortensia Caballero, **SESAR JU Expert in Master Planning**

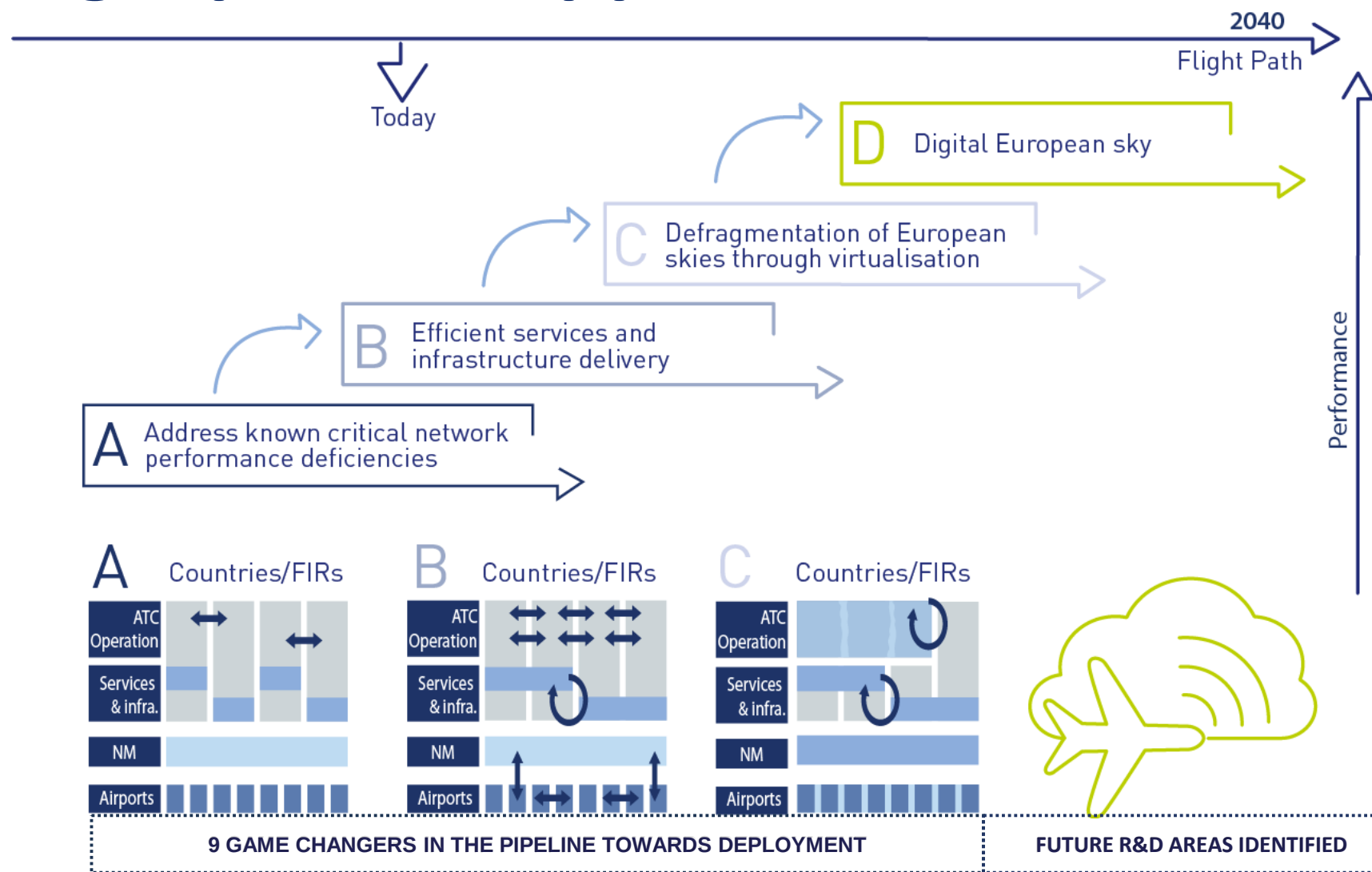


Towards a digital European sky

- Fully scalable ATC system with strong air-ground integration relying on a digital ecosystem
- Elimination of environmental inefficiencies caused by the aviation infrastructure
- Capable of fully exploiting the potential offered by the next generation aircraft for cleaner and quieter flight



Taking a phased approach



Towards greater levels of automation

Definition		Definition of level of automation per task				Automation level targets per MP phase (A,B,C,D)		
		Information acquisition and exchange	Information analysis	Decision and action selection	Action implementation	Autonomy	Air traffic control	U-space services
Action can only be initiated by human	LEVEL 0 LOW AUTOMATION	Automation supports the human operator in Information acquisition and exchange and information analysis						
	LEVEL 1 DECISION SUPPORT	Automation supports the human operator in information acquisition and exchange and information analysis and action selection for some tasks/functions						
	LEVEL 2 TASK EXECUTION SUPPORT	Automation supports the human operator in information acquisition and exchange, information analysis, action selection and action implementation for some tasks/functions . Actions are always initiated by Human Operator. Adaptable/adaptive automation concepts support optimal socio-technical system performance.						
Action can be initiated by automation	LEVEL 3 CONDITIONAL AUTOMATION	Automation supports the human operator in information acquisition and exchange, information analysis, action selection and action implementation for most tasks/functions . Automation can initiate actions for some tasks . Adaptable/adaptive automation concepts support optimal socio-technical system performance.						
	LEVEL 4 HIGH AUTOMATION	Automation supports the human operator in information acquisition and exchange, information analysis, action selection and action implementation for all tasks/functions. Automation can initiate actions for most tasks . Adaptable/adaptive automation concepts support optimal socio-technical system performance.						
	LEVEL 5 FULL AUTOMATION	Automation performs all tasks/functions in all conditions. There is no human operator.						

Degree of automation support for each type of task

Combining technology and airspace changes



Airspace
re-configuration
Operational
Excellence
programmes



Virtualisation and
free flow of data
across borders



Framework to
reward early
movers

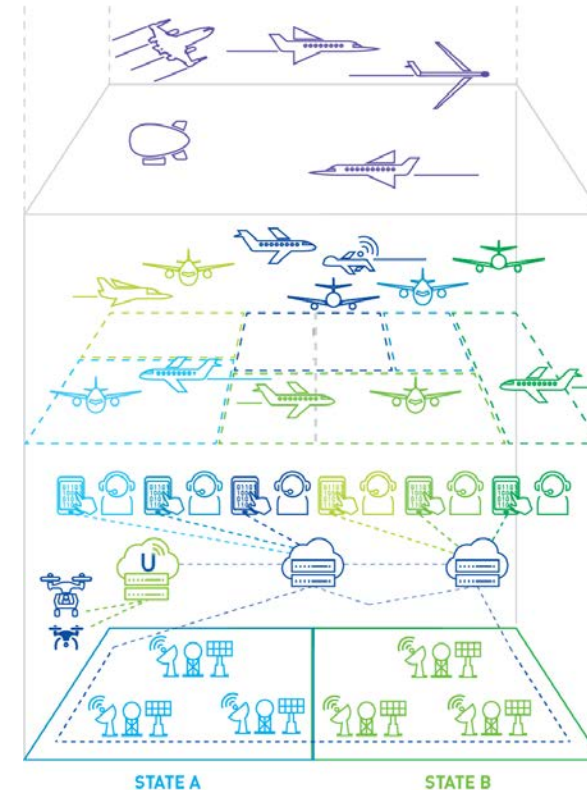
First milestone to be achieved in 2025

Game changers already in the pipeline towards deployment

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Essential
Operational
Changes

1. CNS infrastructure and services
2. ATM interconnected network
3. Digital AIM and MET services
4. U-space services
5. Virtualisation of service provision
6. Airport and TMA performance
7. Fully dynamic and optimised airspace
8. Trajectory based operations
9. Multimodal mobility and integration of all airspace users



U-space services to support the safe integration of drones into airspace.



The human dimension is key

Human-system integration in the ATM system

A new work system

- Human and machines jointly performing work

New tools

- Supporting continuous and system-wide awareness of all critical processes at all times

Decision-making tools

- Assisting where collaborative, co-adaptive and joint intelligences modes are used.
- Controlling cyberattacks and technical failures
- Ensuring recovery and safety throughout of the functional system

Human and machine working together

- A joint activity with shared processes
- Collaboration of the actors to optimize system performance

Systems thinking design approach

- Incorporating requirements for human and machine effective collaboration across the system

Change management

- to implement a large and complex socio-technical systems
- To prepare for transition to a new work system
- To consider sociological factors and all actors needs



Key priorities for future research and innovation



Connected and automated ATM



Air-ground integration and autonomy



U-space and urban air mobility



Virtualisation and cyber-secure data sharing



Capacity-on-demand and dynamic airspace



AI for aviation



Civil/military interoperability and coordination

FUTURE R&D AREAS IDENTIFIED

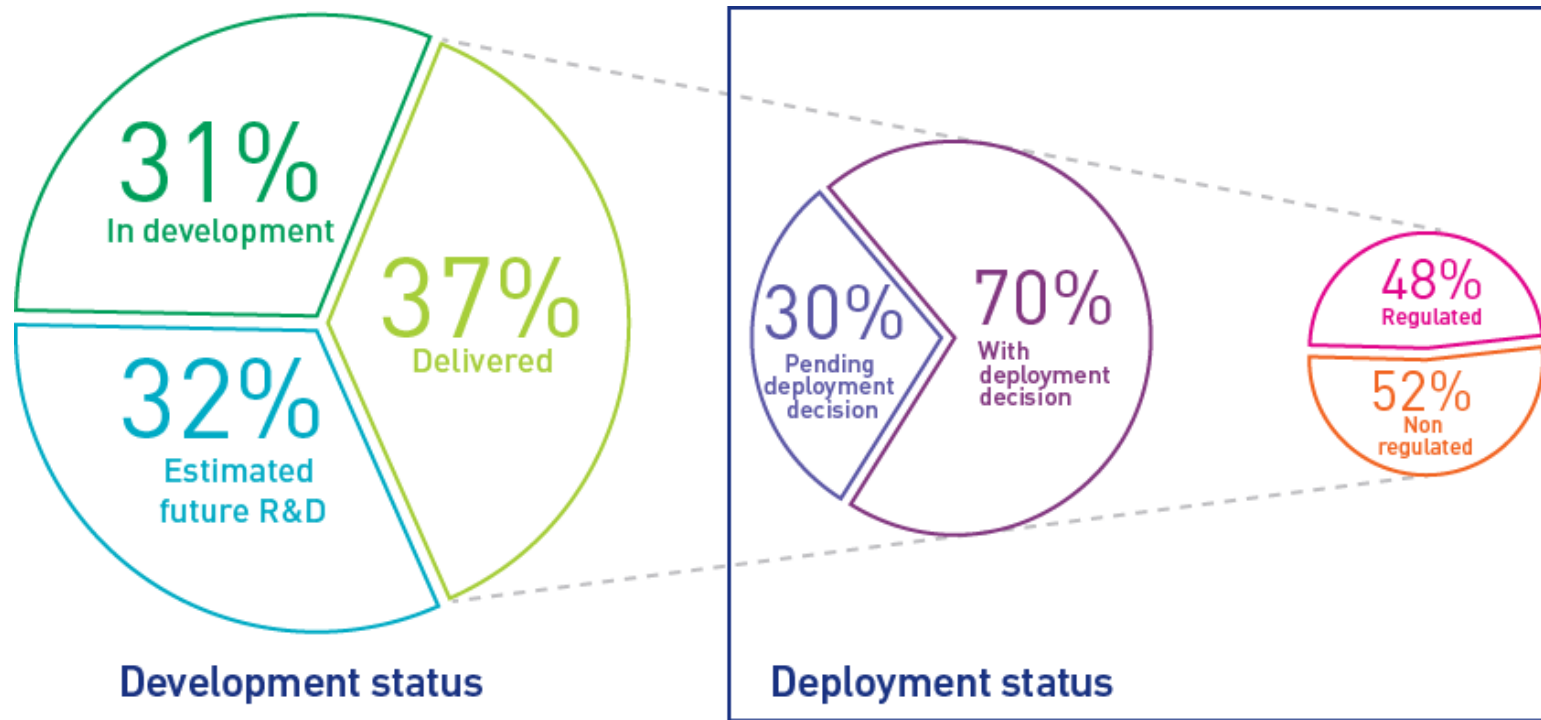


A robust and approved plan to implement the vision

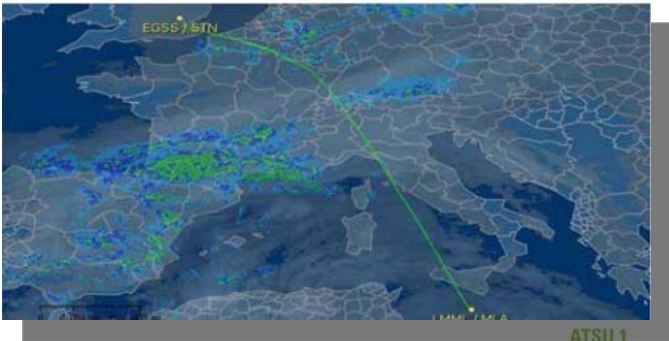
Marie-France Deslandes, **Eurocontrol Project Management Coordinator for Master Planning**



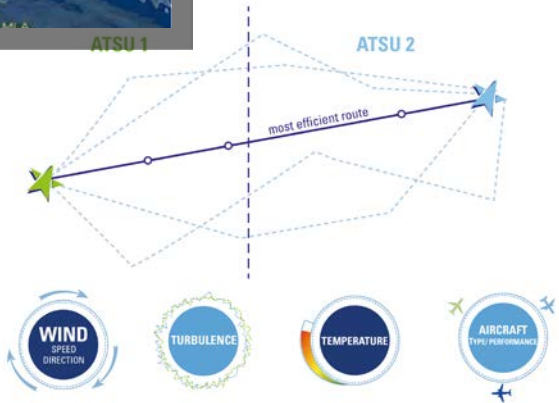
The achievement of the vision requires the development and deployment of SESAR solutions



Deployment roadmaps



Free route
airspace



SOL **Solution #32 — Free Route through the use of Direct Routing**
Direct routing is established within direct routing airspace with the aim of providing airspace users additional flight planning route options on a larger scale across FIRs such that overall planned leg distances are reduced in comparison with the fixed route network and are fully optimised.
Direct Routing Airspace defined laterally and vertically with a set of entry/exit conditions where published direct routings are available.
A Direct Routing is a published segment of a great circle between 2 published waypoints.

Program	SESAR1
Need for coordination	Network
Related to	Solution #65, Solution PJ.01-01, Solution PJ.01-02, Solution PJ.06-01, Solution PJ.06-02
Date V1 Gate	—
Date V2 Gate	—
Date V3 Gate	—
Deployment start date	31-12-2009
Benefits start date (IOC)	31-12-2016
Full benefit date (FOC)	31-12-2024



Virtual centre



Deployment Scenario Title	Virtual centre concept																				
Deployment Scenario Description	Virtual-centre concept, work station, service interface definition and virtual-centre concepts will provide an operating environment in which different ATS units, across different ANSPs, will appear as a single unit and will be subject to operational and technical interoperability. This will include development of the ATSU... show more																				
Essential Operational Change	Virtualisation of Service Provision																				
Maturity	In development phase: Key Solutions Approaching Maturity																				
Applicable Operating Environment																					
Airport	Terminal Airspace	En-Route	Network																		
Timeline																					
2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
									Deployment												
									Benefits												
Performance Contribution of the DS																					
Capacity					Safety					Environment					Cost-efficiency					Operational efficiency	

www.sesarju.eu/in-practice
www.atmmasterplan.eu/exec/deployment-scenarios



Key short & medium term milestones

2025

- SESAR 2020 delivered
- First batch of deployments for mature SESAR solutions completed, delivering quick wins
- Initial U-space services implemented
- Future SESAR programme initiated
- Regulation evolved to support transition ahead

2030

- Delivery of next generation of SESAR technologies
- Virtualisation techniques and dynamic airspace configuration
- Gradual introduction of high level of automation support
- Advanced U-space services operational across Europe
- Resources are shared across the network

Need and ways to accelerate SESAR market uptake

New way of
working inside
SESAR



Regulation to
support
innovation



Shorter
innovation
cycles

- More agility: creating solutions through faster prototyping and move to demonstrations with end-users
 - Developing solutions that set the next performance standards without pre-judging any particular technology/system
 - Openness, in the form of increased collaboration between 'traditional' engineering domains and new entrants
 - Strengthen cooperation with standardisation bodies and reinforce relations with regulatory authorities in the development phase to prepare for deployment
-
- Creating a legal and financial framework that rewards early movers
 - Focusing on delivery of services rather than technologies to be implemented
-
- From 30 years to 5-10 years, focusing on disruptive innovation



Delivering benefits to Europe and its citizens



28 million tonnes per year
could be saved with a digital
European sky



A digital
European sky
will ensure
passengers do
not lose time
at airports or
in the air in
the EU



An aviation
infrastructure that
opens up digital opportunities
for people and business and
enhances Europe's position



Position Europe as the most
environmentally friendly sky
to fly in the world



2020 edition of ATM Master Plan

Alain Siebert, **SESAR JU Chief Economist and Master Planning**



Wrap up / what's new



- Provides a clear vision to accelerate the digital transformation of aviation infrastructure, delivering a “**digital European sky**”
- Includes actions combining **operational** measures and **technological** solutions to address **resilience & scalability**
- Addresses **integration of all air vehicles**, manned and unmanned, civil and military, in all airspaces, controlled or not (e.g. **U-space**)
- Describes the need and ways to accelerate SESAR **market uptake**
- Reflects the **human dimension** and acknowledges the change needed in a more automated environment
- Is synchronised with EASA’s **European Plan for Aviation Safety (EPAS)** and ICAO’s **Global Air Navigation Plan (GANP)**



Poll

Please, indicate your degree of agreement or disagreement to the following statement:

‘A more digital and sustainable ATM will help the sector grow out of the crisis’



Strongly disagree



Disagree



Neither agree nor disagree



Agree



Strongly agree



EUROPEAN ATM MASTER PLAN IN A NUTSHELL

*Thank you very much
for your attention!*

<https://www.sesarju.eu/>

<https://www.eurocontrol.int/>

<https://www.atmmasterplan.eu/>

