



FROM INNOVATION TO SOLUTION

# SESAR

**Aerospace Technology Congress 2016**

**Stockholm, Sweden**

**Michael Standar,**

**SESAR Joint Undertaking**



founding members

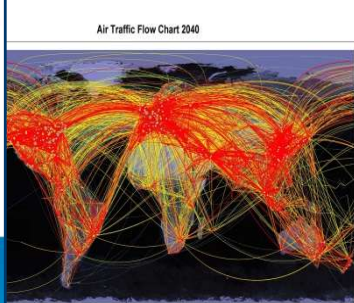
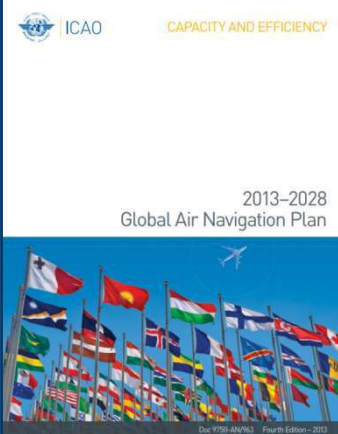


# ICAO projected global traffic scenario - 2040



# The European ATM Master Plan

## An Aviation Strategy FOR EUROPE



### SECURITY

- Ensuring high levels of security



### COST EFFICIENCY

- Up to **40%** reduction in air navigation services costs per flight



### CAPACITY

- Up to **30%** reduction in departure delays
- Up to **10%** additional flights landing at congested airports
- A system capable of handling up to **100%** more traffic



### ENVIRONMENT

- Up to **10%** reduction in CO<sub>2</sub> emissions
- Positive impact on noise and air quality



### SAFETY

- Improvement by up to a factor of **4**



### OPERATIONAL EFFICIENCY

- Up to **6%** reduction in flight time
- Up to **10%** reduction in fuel burn



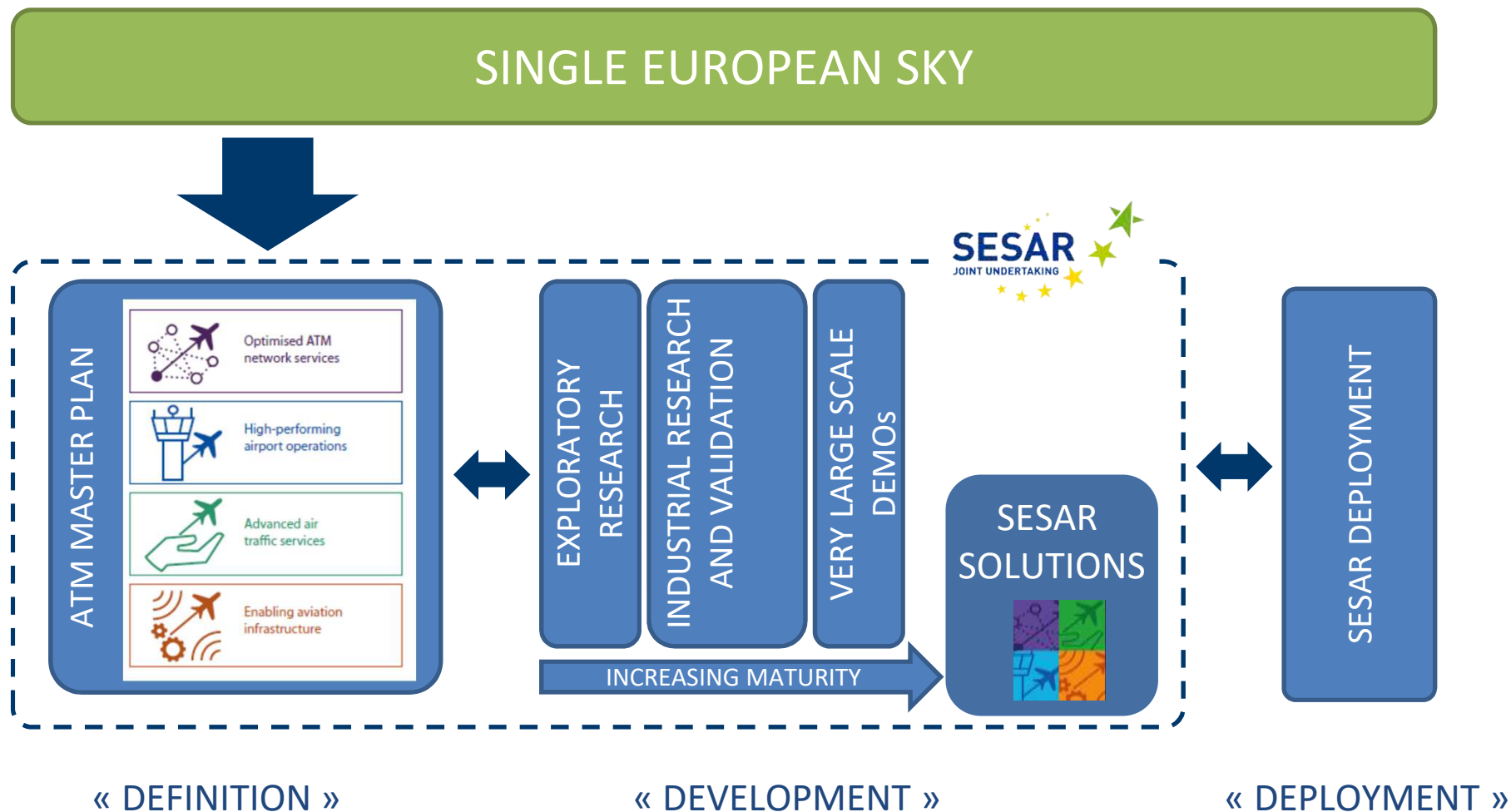
# SESAR - addressing global mobility challenges

- dealing with expected traffic growth
- addressing complexity of and transition from the existing systems and operations
- need for innovative approaches to aviation and air traffic management
- boost of performance including safety/security performance



# WALKING THE TALK...

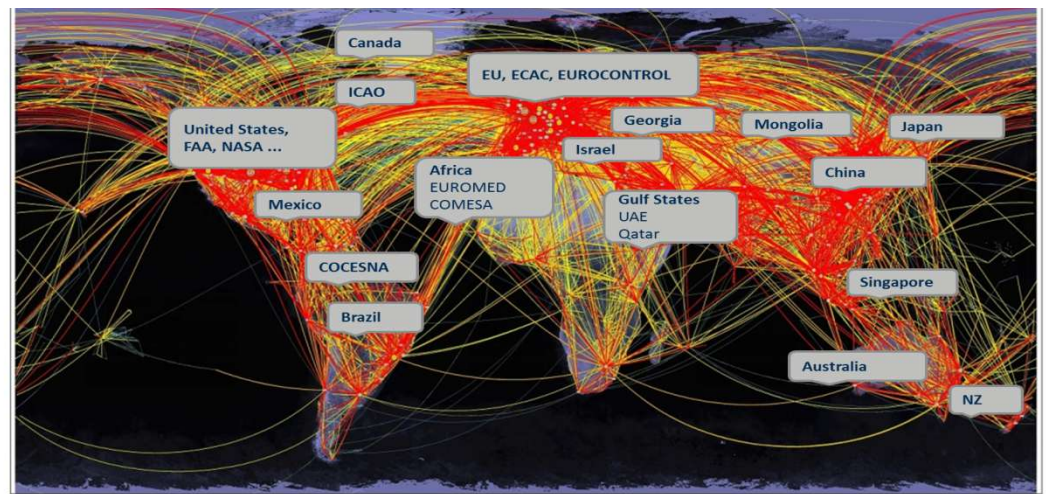
SINGLE EUROPEAN SKY



# SESAR Public Private Partnership = Working Together



Int. Cooperation under the EU framework  
Global Market for European Industry

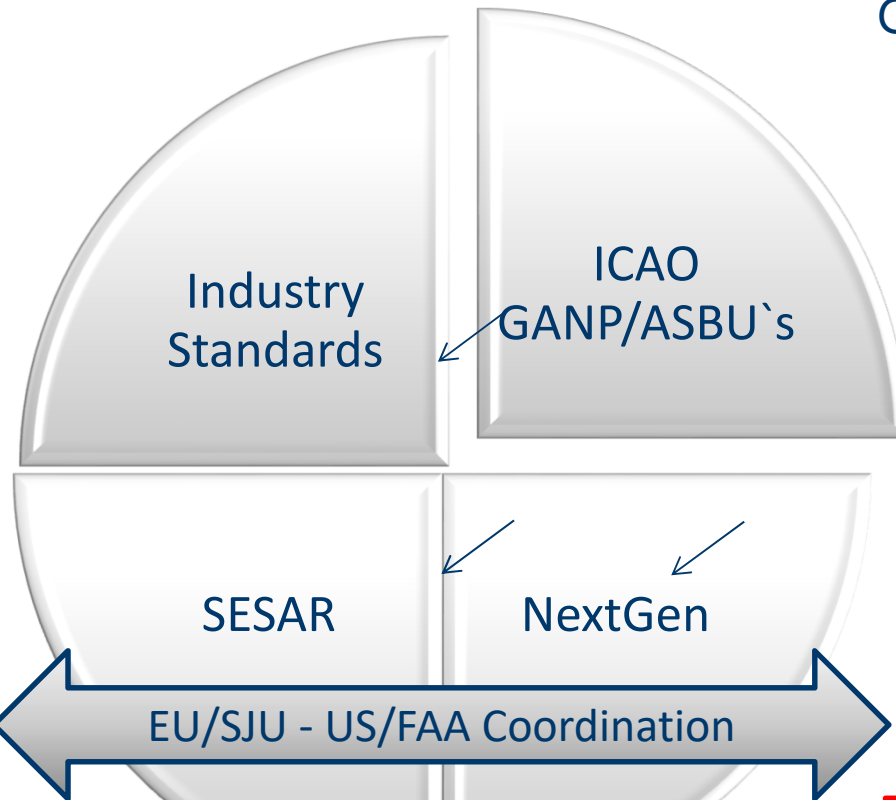


- EC (founding member)
- EUROCONTROL (founding member)
- EASA
- EDA
- ESA
- Clean Sky

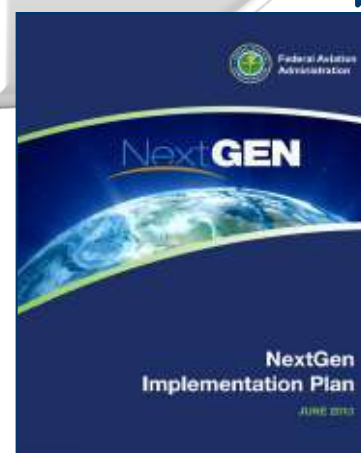
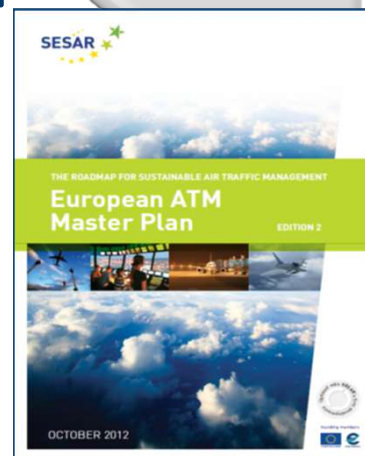
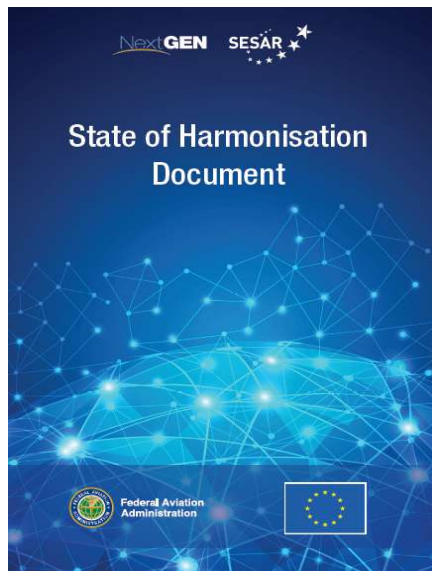
# Global cooperation & Interoperability

Standards for harmonised implementation & regulation

**EUROCAE WG  
RTCA SC**

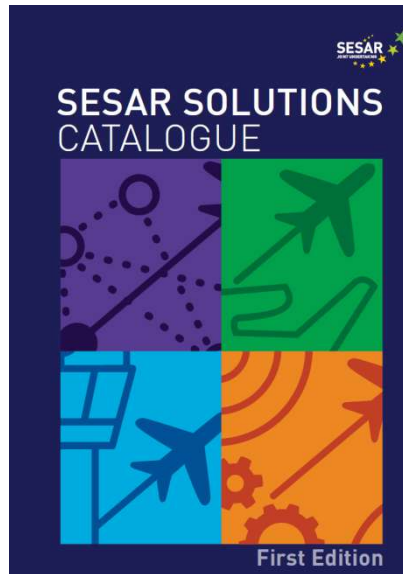


Global consensus to ensure global interoperability

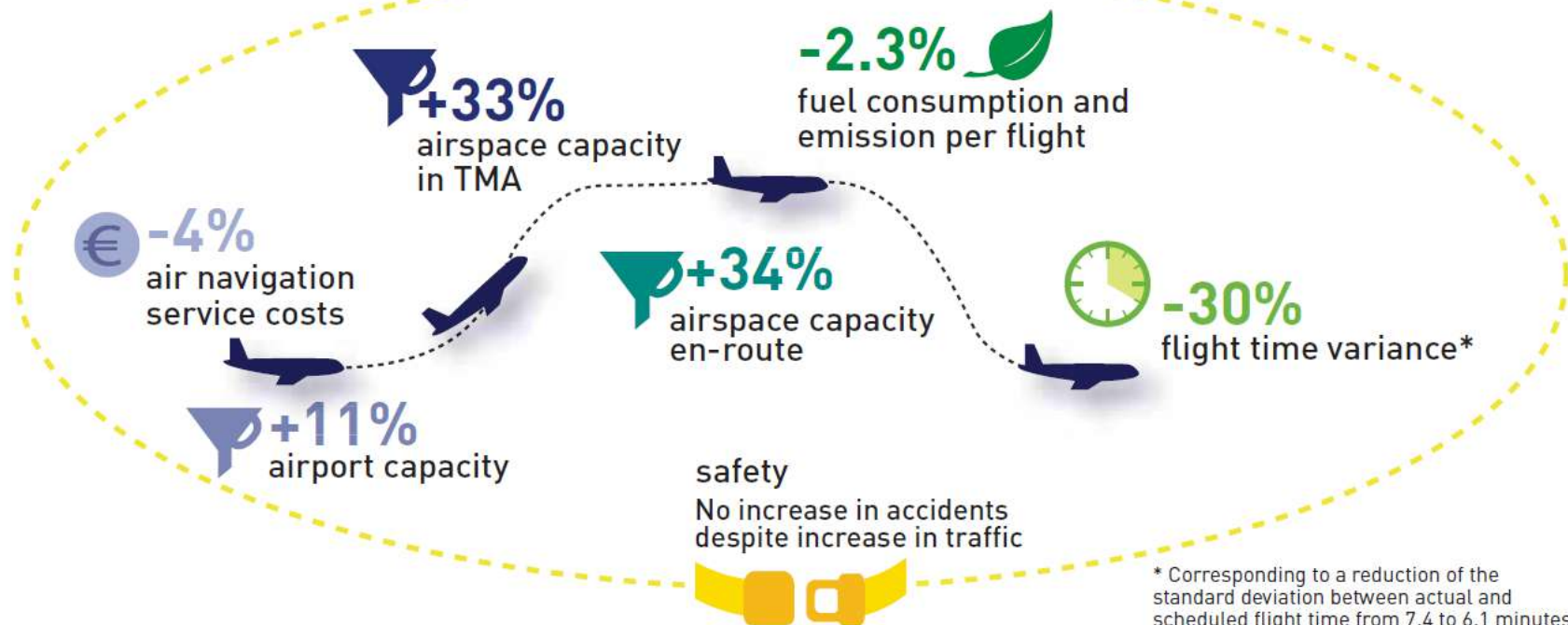


**EU-US MoC  
SESAR-NextGen  
Coordination  
Activities**

# SESAR OUTCOME



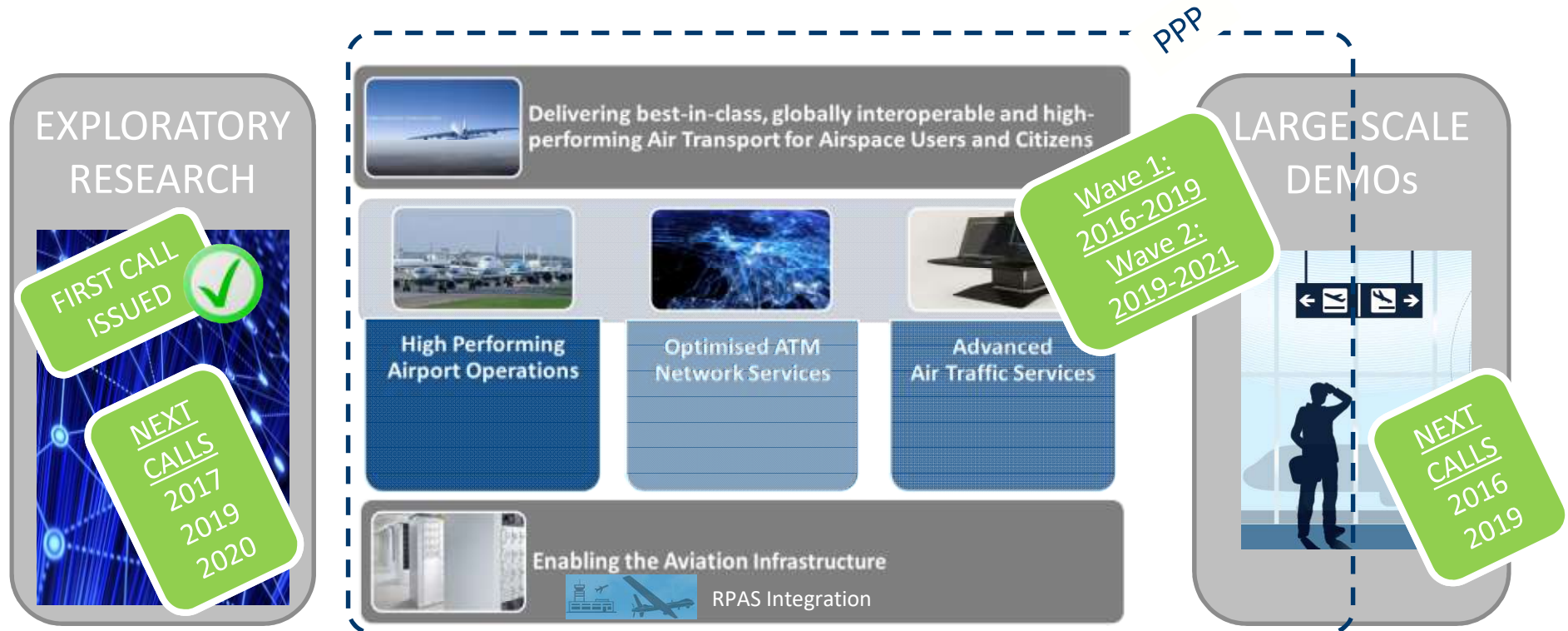
- Solutions delivered in SESAR 1 (SESAR Solutions Catalogue – First Edition)
- Solutions developed in SESAR 1, to be delivered in SESAR 2020
- Solutions to be developed in SESAR 2020





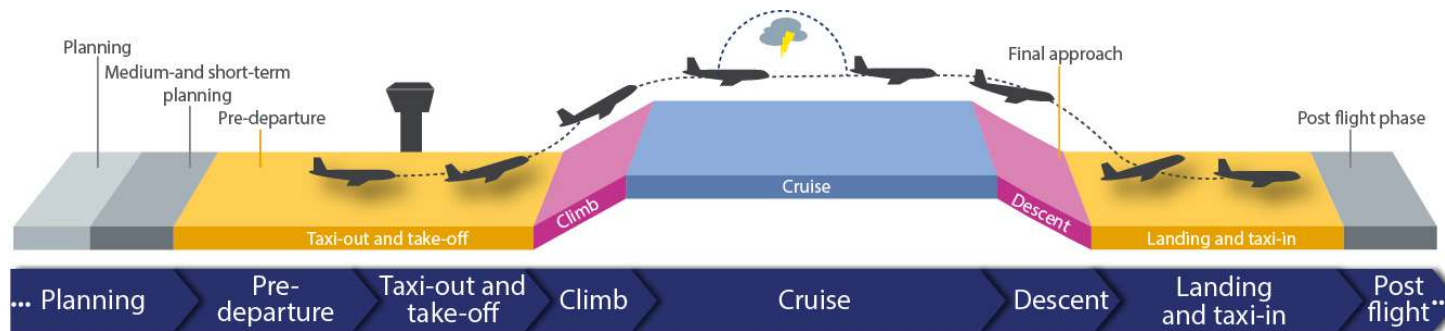
# SESAR 2020

## THE SESAR 2020 PROGRAMME STRUCTURE



2 waves : 2016-19 & 2019-21, synchronised with the European ATM Master Plan update cycle

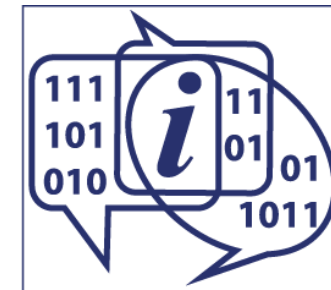
# Enabling Performance - Improving System Capabilities



Automation support



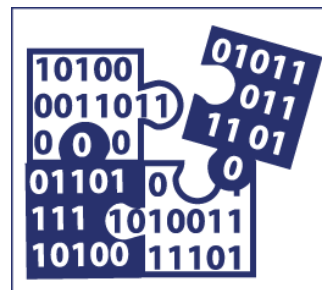
Flight- and flow-centric operations



Sharing of information



Integration of all vehicles



Integrated systems



Virtualisation

# Automation support



- Operator/Controller working position (CWP)
- Enhanced Airborne Collision Avoidance System (ACAS)
- Traffic situation awareness for pilots and vehicle drivers
- Automated surface movement planning and routing
- Enhanced Short Term Conflict Alert (STCA)
- Airport safety nets
- ‘Follow the greens’

# Flight- and flow-centric operations



- Initial 4D trajectories Data Comm (Extended Projected Profile, EPP and CPDLC)
- Calculated Take-Off-Time (CTOT) with Target Time of Arrival (TTA)
- Performance Based Navigation (PBN)
- Air/ground Data Communication
  - SATCOM
  - Iris Precursor
  - AeroMACS
- Integrated CNS supporting enabling operations
- User-preferred routing
- Extended AMAN

# Sharing of information



- SWIM – System- wide information management
- Extended flight plan
- Digital integrated briefing
- MET Information Exchange
- Advanced flow management slot swapping
- Air- ground data communication – Aircraft connectivity to SWIM

# Integration of all vehicles



- UAS/RPAS/Drone integration all types of operations
  - SESAR UTM Concept definition
  - Information Management
  - Aircraft System capabilities and ground based capabilities
  - Security and cyber-resilience
  - Science for higher levels of automation
  - Close coordination with EASA, EUROCAE and JARUS
  - Cooperation well in place with the U.S. /FAA, NASA
- Advanced Flexible Use of Airspace (AFUA)
- Enhanced terminal operations with RNP transition to final approach for all airspace users

# Integrated systems



- Integration of Airport Operations Planning and Network Operations Planning (AOP/NOP Integration)
- Interoperability between ground systems (IOP)
- Advanced Short-Term Air Traffic Flow Management measures (STAM)
- Traffic complexity detection and resolution

# Virtualisation




- Remote Tower technology and operations
- Virtual center's operations
- European-wide Free-Routing operations
- Dynamic sectorization principles
- System Wide Information Management (SWIM) implementation



# From SESAR vision to tangible Solutions



**Automation support**  
Automation and use of data communications



**Integration of all vehicles**  
All air vehicles fully integrated in ATM environment (incl. RPAS)



**Integrated systems**  
Lean and modular systems, easily upgradable and interoperable



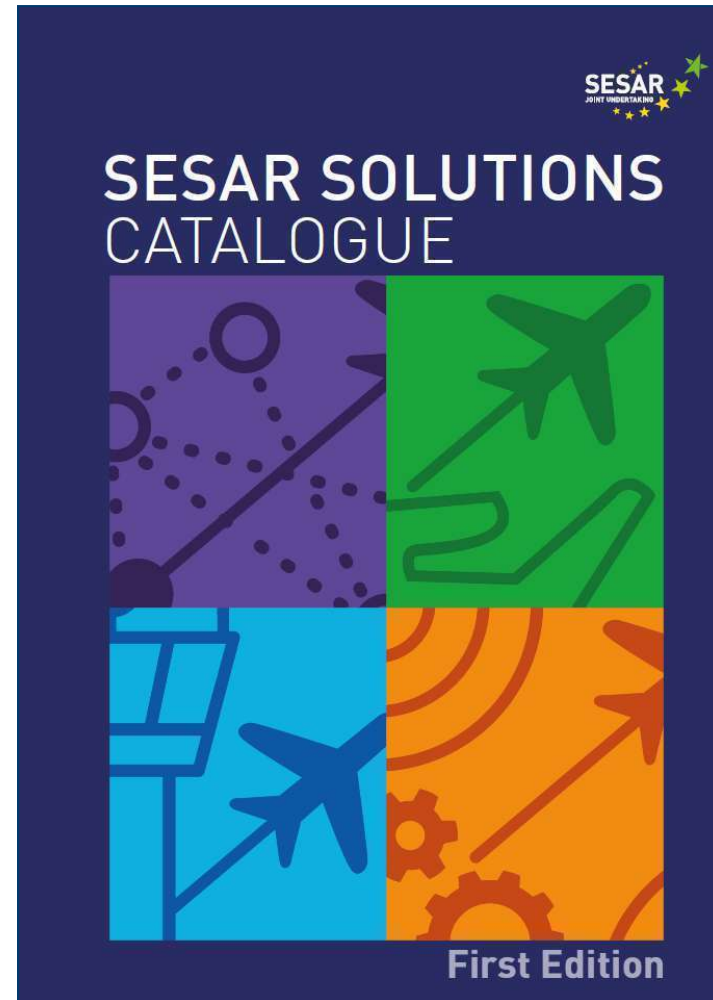
**Flight- and flow-centric operations**  
Airspace users fly their preferred business and mission trajectory in a flow and network context



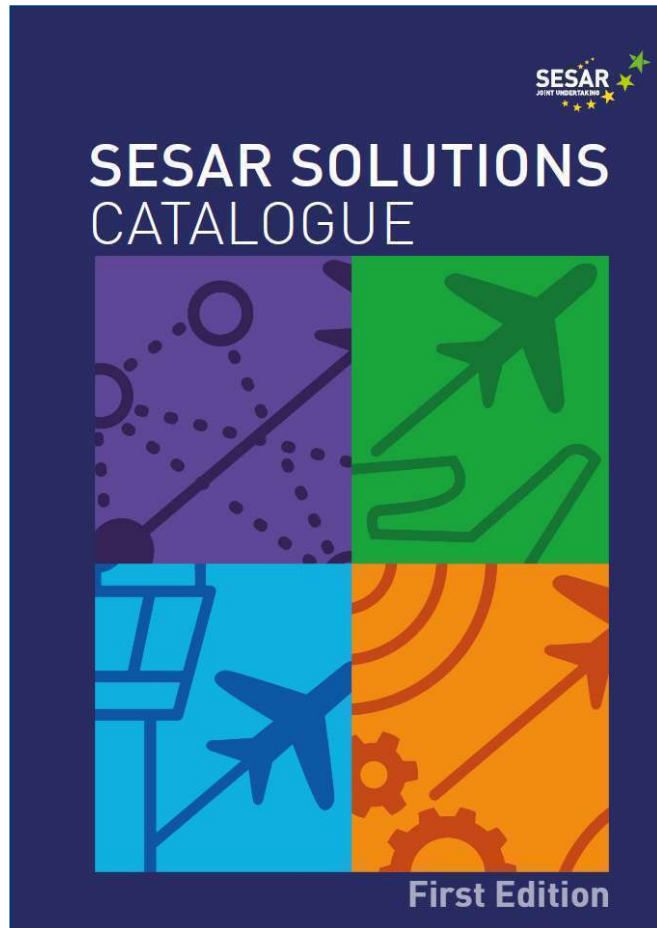
**Sharing of information**  
Information shared digitally via data services



**Virtualisation**  
Virtualisation allowing more dynamic resource allocation



# SESAR Solutions Catalogue



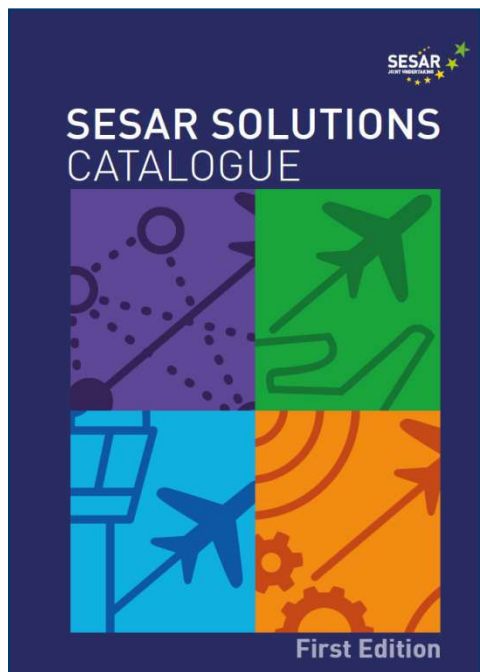
**SESAR Solutions** refer to new or improved operational procedures or technologies that aim to contribute to the modernisation of the European and Global ATM system.

- **63 SESAR Solutions**
- divided by 4 areas (Key Features)



- **24 are already being deployed across Europe**

# SESAR Solutions in a global context



Find out more:  
[www.sesarju.eu/newsroom](http://www.sesarju.eu/newsroom)





Thanks for your attention