GLOBAL AVIATION CHALLENGES AND OPPORTUNITIES

2010

2020

2030

2040
IN EUROPE...

2012
9.5 million flights
0.7 billion passengers

2035
14.4 million flights
1.4 billion passengers
KEY CHALLENGES/OPPORTUNITIES FOR THE FUTURE OF MOBILITY

- Increased global competition
- Societal needs and consumer empowerment
- Environment protection
- Energy efficiency and sustainability
- Digital technologies
- Connectivity
- Multimodality and collaborative business models
THE NEED FOR PERFORMANCE

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

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

ENVIRONMENT
- Up to 10% reduction in CO₂ emissions
- Positive impact on noise and air quality
TODAY’s AVIATION INFRASTRUCTURE
TODAY’s AVIATION INFRASTRUCTURE

10 Gbps

100 Mbps

1 Mbps

64 kbps

10 kbps

ACARS

1980

1990

2000

2007

2018

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput

Throughput
TODAY’s AVIATION INFRASTRUCTURE

8B€ of service fees a year
1B€ of infrastructure costs
and...
3B€ of inefficiencies costs (delays, CO₂, ...)

[Image: Map of aviation infrastructure with various colors indicating different data points.]

[Logo: SESAR Joint Undertaking]
WHAT
OUR VISION...

- **Automation support**: Automation and use of data communications
- **Integrated systems**: Lean and modular systems, easily upgradable and interoperable
- **Integration of all vehicles**: All air vehicles fully integrated in ATM environment (incl. RPAS)
- ** Sharing of information**: Information shared digitally via data services
- **Flight- and flow-centric operations**: Airspace users fly their preferred business and mission trajectory in a flow and network context
- **Virtualisation**: Virtualisation allowing more dynamic resource allocation
DEVELOPING THE AVIATION ECOSYSTEM

TODAY

DIGITAL AVIATION: SYSTEM WIDE INFORMATION MANAGEMENT

WITH SESAR
MANY MORE SOLUTIONS ADDRESSING...

- DRONES
- GENERAL AVIATION & ROTORCRAFT
- REMOTE TOWER
- SATELLITE
DEMONSTRATIONS - GENERATE CONFIDENCE AND ACCELERATE SPEED OF CHANGE

Boost collaboration and generate confidence from industry and regulators

Significantly prove reductions of business risks for investors

Move global standards significantly forward
HOW
WALKING THE TALK...

2007-2014: 700M€ of EU funds & 2.1B€ of overall PPP budget
2014-2021: 585M€ & 1.5B€ of overall budget
1€ invested in SESAR = 6€ of benefit for Europe’s aviation system
THE POWER OF PARTNERSHIP...
EXTENDING THE PARTNERSHIP

Securing buy-in and operational interoperability

Airports

Ground Industry

Airborne Industry

Professional Staff Associations

Academia, R&D community

Civ/Mil Authorities (NSA’s)

Civ/Mil NSAs EASA

A6 CANSO EUROCAE FAB´s EDA (Mil) ASP Alliances like Borealis

Air Navigation Service Providers

Civ/Mil Airspace users

Airlines ERA IATA GA/Rotorcraft BA EDA (Mil)

ACI SEAC EDA (Mil)

ASD ICCAIA EUROCAE EDA (Defense Industry)

ATCEUC (ATCOs) ECA (IFALPA) (Pilots) ETF (all Aviation professionals) IFATCA (ATCOs) IFATSEA (ATSEPs)

Scientific Committee ACARE (strategic Research Agenda) EUROCONTROL ART SESAR Innovation Days (Annual) U.S. – EU MoC CP1.10 coordination on exploratory research
OUR WORK....
DELIVERING RESULTS...

63 SESAR Solutions
24 are already being deployed across Europe

-4% air navigation service costs
+33% airspace capacity in TMA
-2.3% fuel consumption and emission per flight
+34% airspace capacity en-route
-30% flight time variance*
+11% airport capacity

No increase in accidents despite increase in traffic

* Corresponding to a reduction of the standard deviation between actual and scheduled flight time from 7.4 to 6.1 minutes.
THE NEED FOR HARMONISATION AND INTEROPERABILITY

• Ensure that the same flight/aircraft can operate in all systems;

• Ensure that relevant and common “standards” are available when needed;

• Minimize costs by sharing results and efforts.
STATE OF HARMONISATION - 2nd edition

• Full lifecycle of ATM modernisation incl. Exploratory research and Deployment activities

• ATM Architecture mirroring the ICAO Ops. Concept

• Short / medium / long term strategies for transparency in convergence
  ▪ A/G Data Comm, SWIM, NAV, TBO, SUR,....

• Standardisation roadmap supporting the GANP/ASBU’s

• Cyber security – operational resilience requirements and technical security control

• Integration of UAS/RPAS/Drones - in particular for VLL/UTM/’U-Space’. 
TO CONCLUDE

- Public-private partnership
- Blending corporate & academic values
- Acceleration of the innovation lifecycle
- Worldwide outreach

**Mission & Policy-driven** approach

Addressing **systemic & societal challenges**

Linked to **deployment instruments**

Working together towards **global interoperability and harmonisation**

Contributing to the **global competitiveness** of EU industry & aviation market

Delivering the **digital aviation infrastructure** for a new era in flying
Thank you very much for your attention!