EASA
European Aviation Safety Agency

ARISE+
Funded by the European Union and implemented by the European Aviation Safety Agency

General Introduction – ATM Planning in Europe

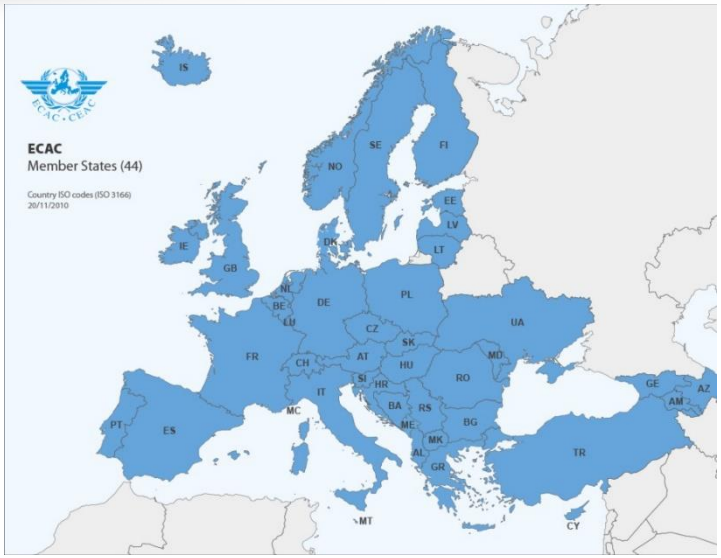
David Batchelor, Head of International Affairs, SESAR JU

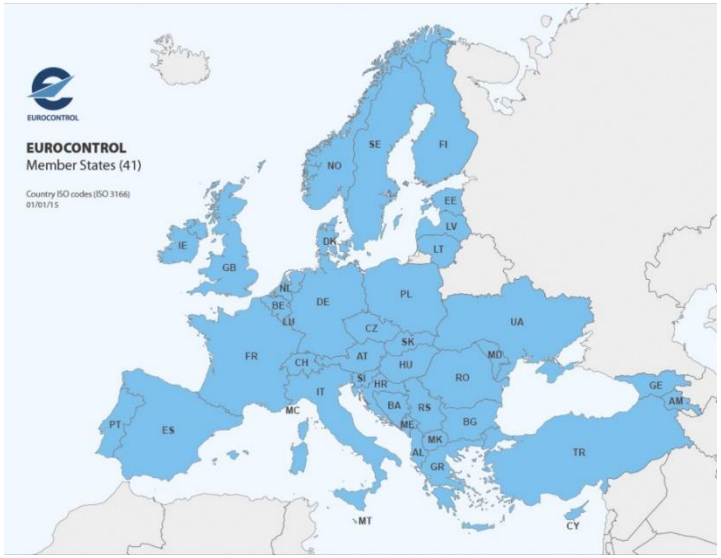
SESAR JOINT UNDERTAKING

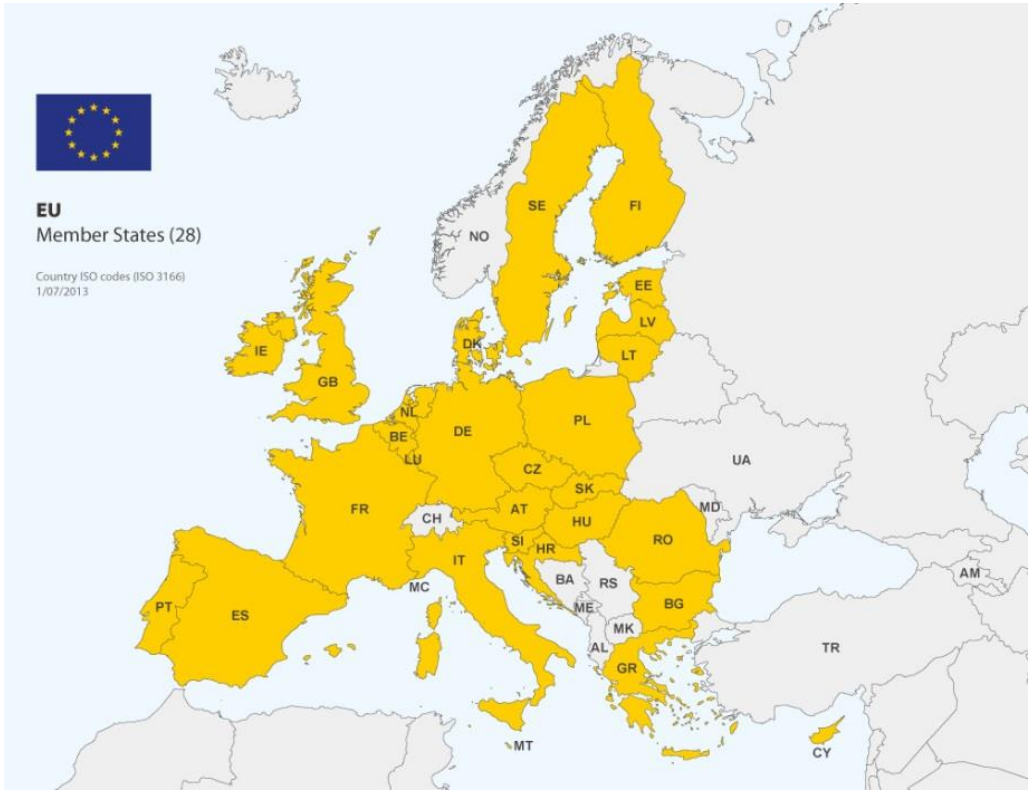
Your safety is our mission.

An agency of the European Union

EUROPEAN STATES







CHALLENGES OF AIR TRAFFIC MANAGEMENT IN THE EU

INCREASING TRAFFIC

- 9,5 million annual flights & 440 airports
- 63 Area Control Centres operating 650 sectors
- 16 700 Air Traffic Controllers

AIRSPACE FRAGMENTATION

- 28 major ANSPs in the EU
- 5 big ANSPs operating 60% of traffic flows
- Aircraft fly longer routes than strictly necessary

COSTS

- Annual cost of the ATM system inefficiency: **€ 5 billion**
- Cost of the ATM service: **6-10% of airline operating costs**

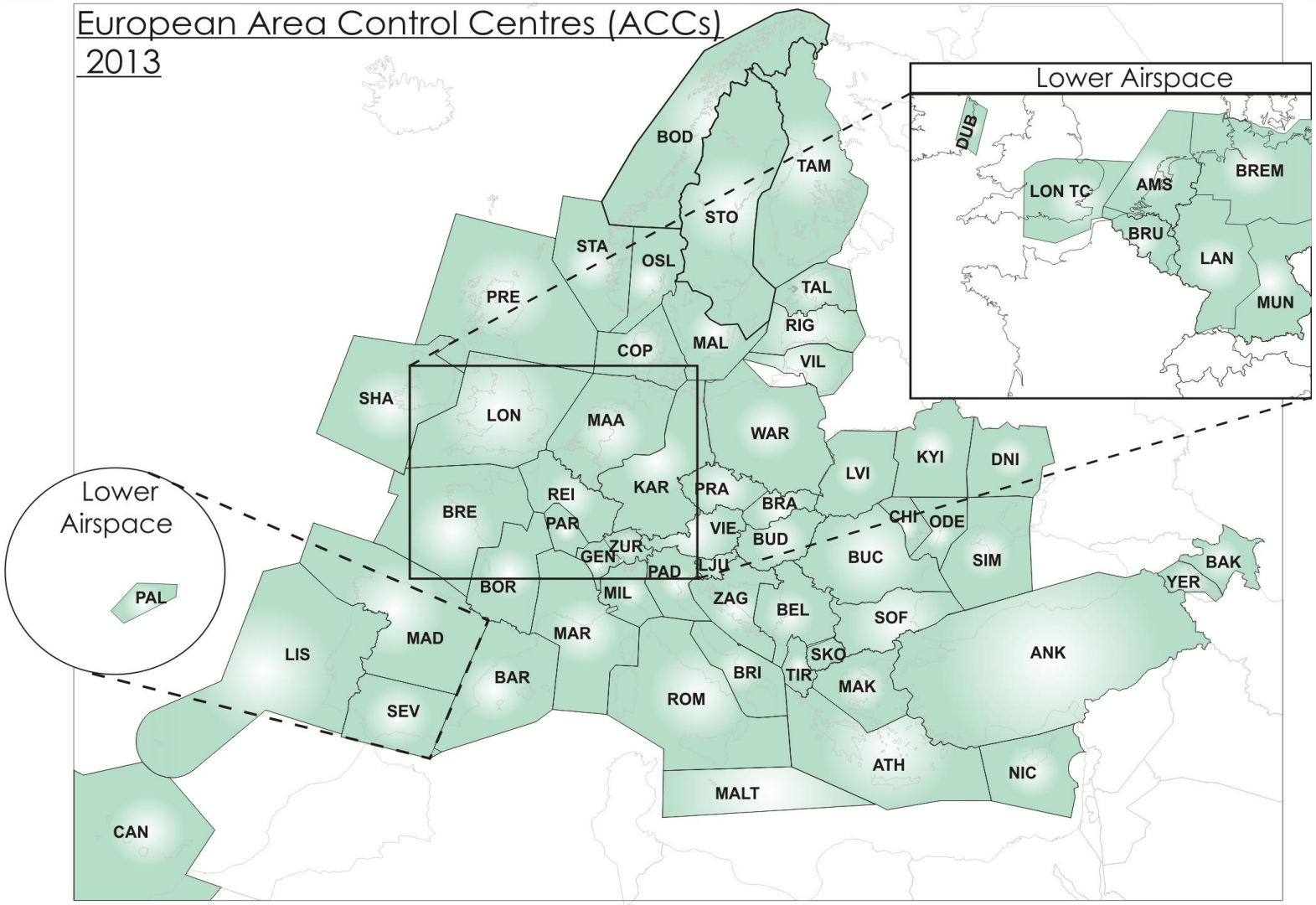
SAFETY

- Major ATM accident: collision in 2002 (Überlingen)

ENVIRONMENT

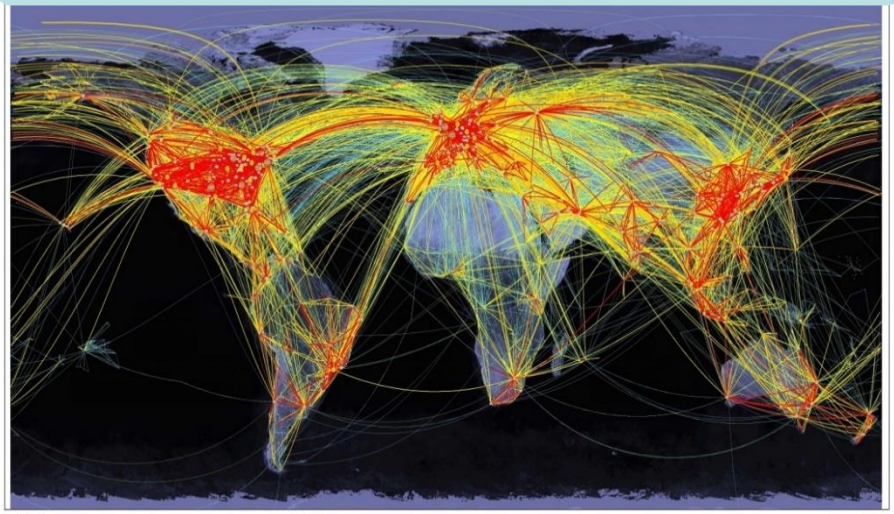
- Noise & emissions

AIRSPACE FRAGMENTATION IN THE EU

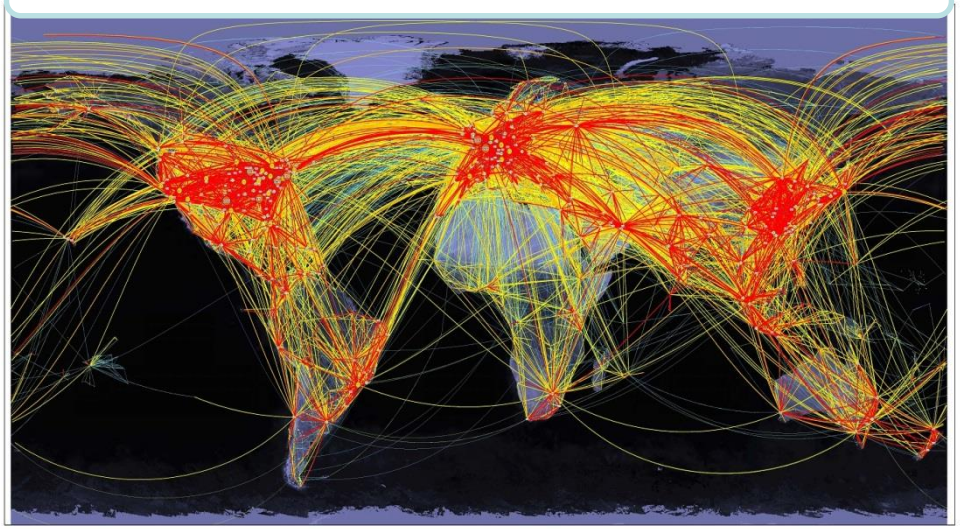


GLOBAL GROWTH IN AIR TRAVEL

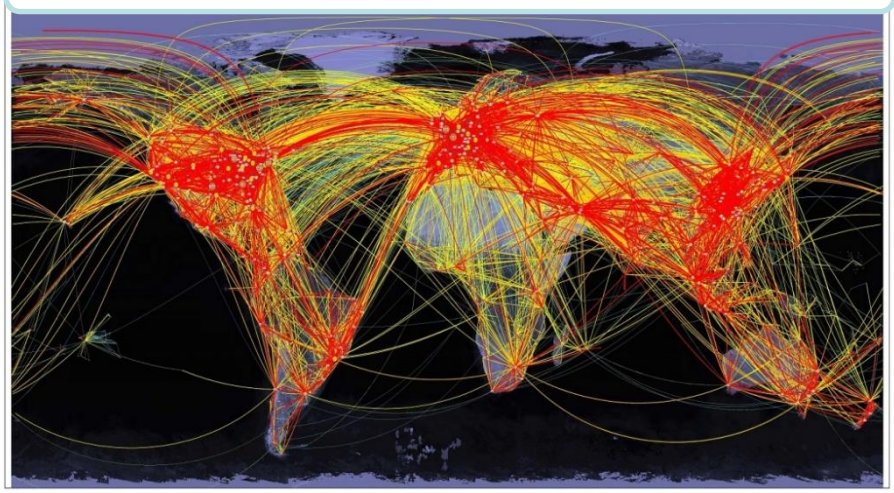
2010



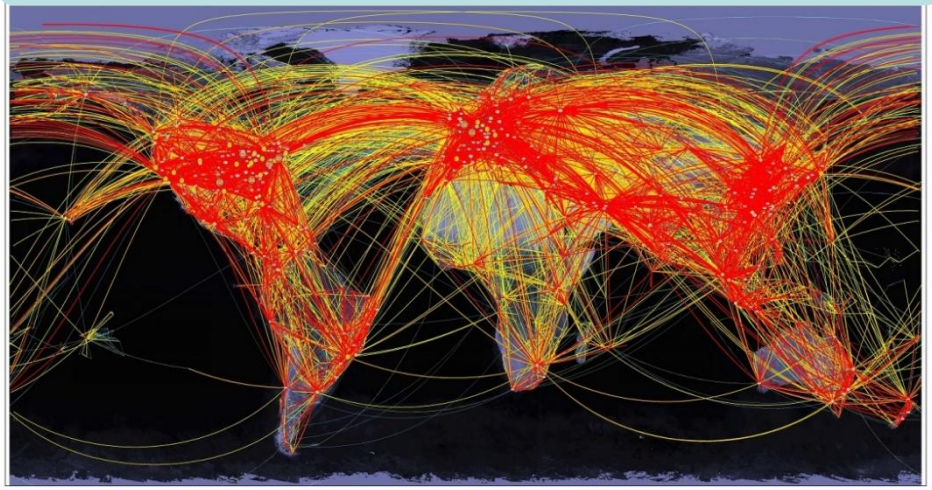
2020



2030



2040



TODAY'S AVIATION INFRASTRUCTURE

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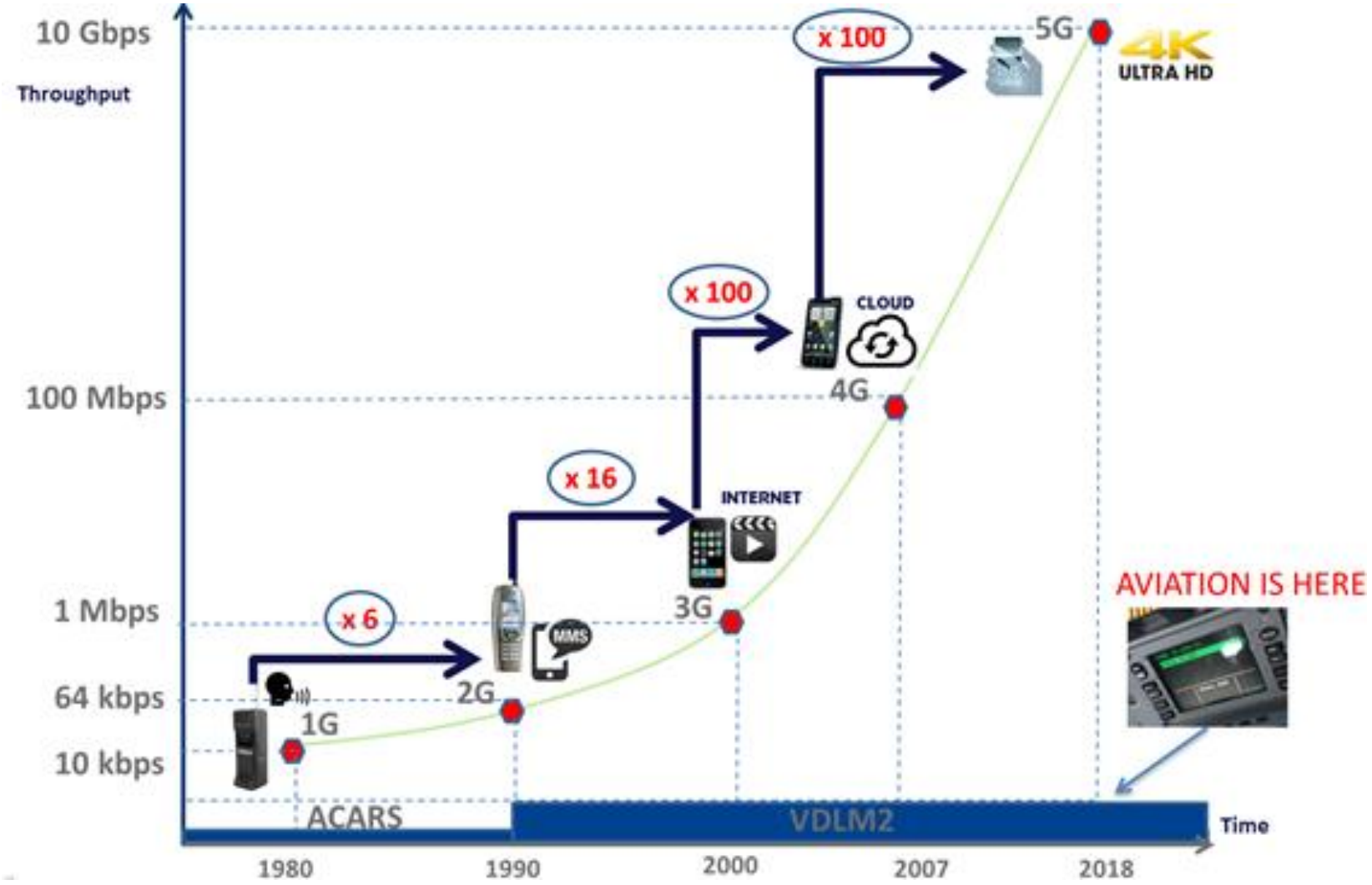

Enhancing European ATM Performance

Increase current capacity X 3

Increase safety by a factor of 10

Reduce the environmental impact by 10% per flight

Reduce ATM costs by 50%

The Single European Sky

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The Single **European** Sky

2 main threads

Institutional

Reforming ATM organisation & management

Service provision

airspace regulation

Safety

(EASA)

Technological

Modernising & harmonising ATM systems & operational procedures

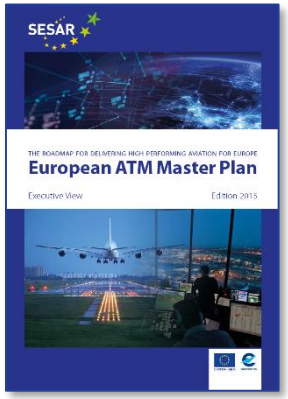
Common modernisation roadmap

Coordinated R&D and validation

Synchronised deployment

Interoperability

SESAR LIFECYCLE



Vision towards 2035

SESAR 1: 2008-2016
SESAR 2020: 2016-2024

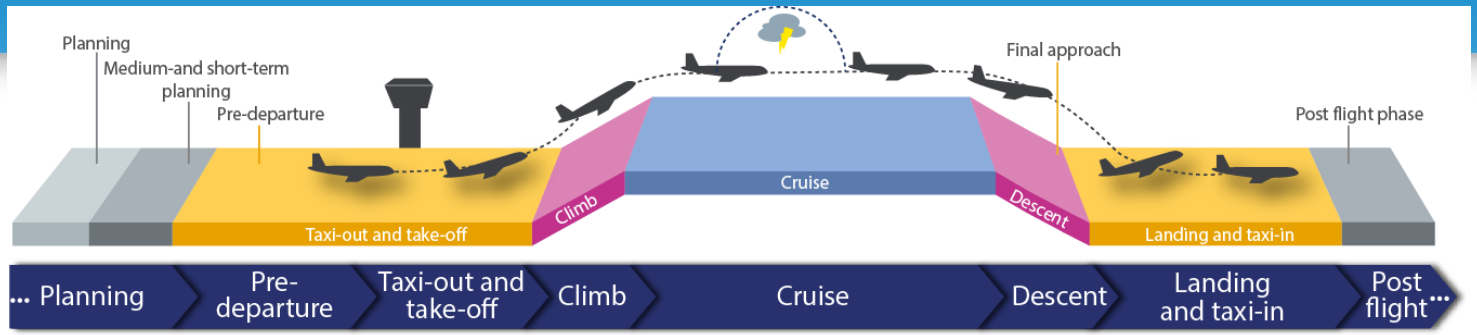
EU-wide deployment
Pilot Common Project: 2014-2024

THE EUROPEAN ATM MASTER PLAN

The roadmap driving the modernisation of the European ATM system

- ✓ Defines the vision and connecting R&D to it
- ✓ Drives at top level all EU funding priorities for both ATM development and deployment
- ✓ Contains:
  - Performance ambitions (The **Why**)
  - Description and prioritisation of technical solutions (The **What**)
  - Deployment scenarios per stakeholder (The **Where** and **When**)
  - Investment needs (The **How Much**)
  - Standardisation and regulatory roadmap (The **How**)

FLIGHT CENTRIC APPROACH



Focus on the flight through a number of key improvement areas

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

SESAR JOINT UNDERTAKING PARTNERSHIP

AIRBUS · AT-One · B4 CONSORTIUM · COOPANS · DASSAULT AVIATION · DFS Deutsche Flugsicherung · dgac DSNA · ENAIRE · enav · FREQUENTIS SESAR PARTNERS · Honeywell · indra · LEONARDO · NATMIG · NATS · SEAC · skyguide · THALES

HOW WE WORK TOGETHER

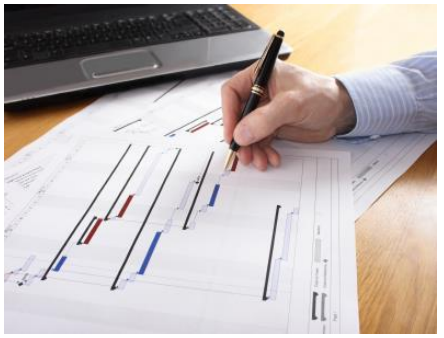
1

Airspace users are involved in every stage of the Program

2

All relevant **stakeholders are working together**

3

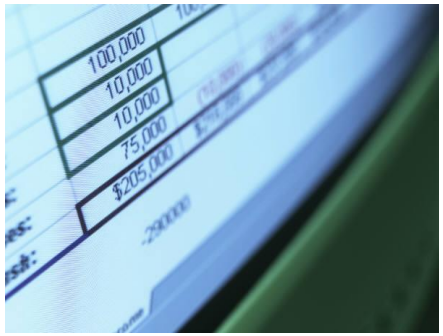


Industrial programme management, with one design authority

4

Validation as much as possible in **real operating environments** as a preparation for deployment

5

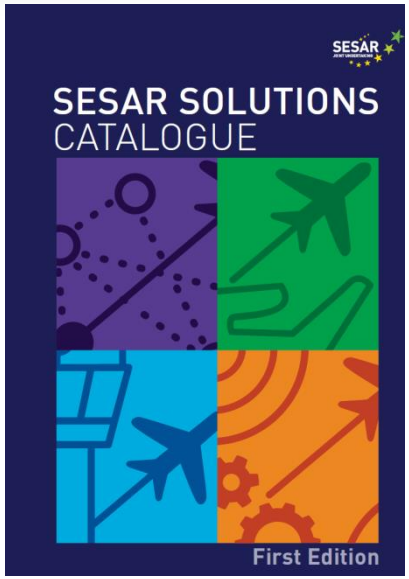


Strong emphasis on **demonstrating benefits** and building compelling business cases

6

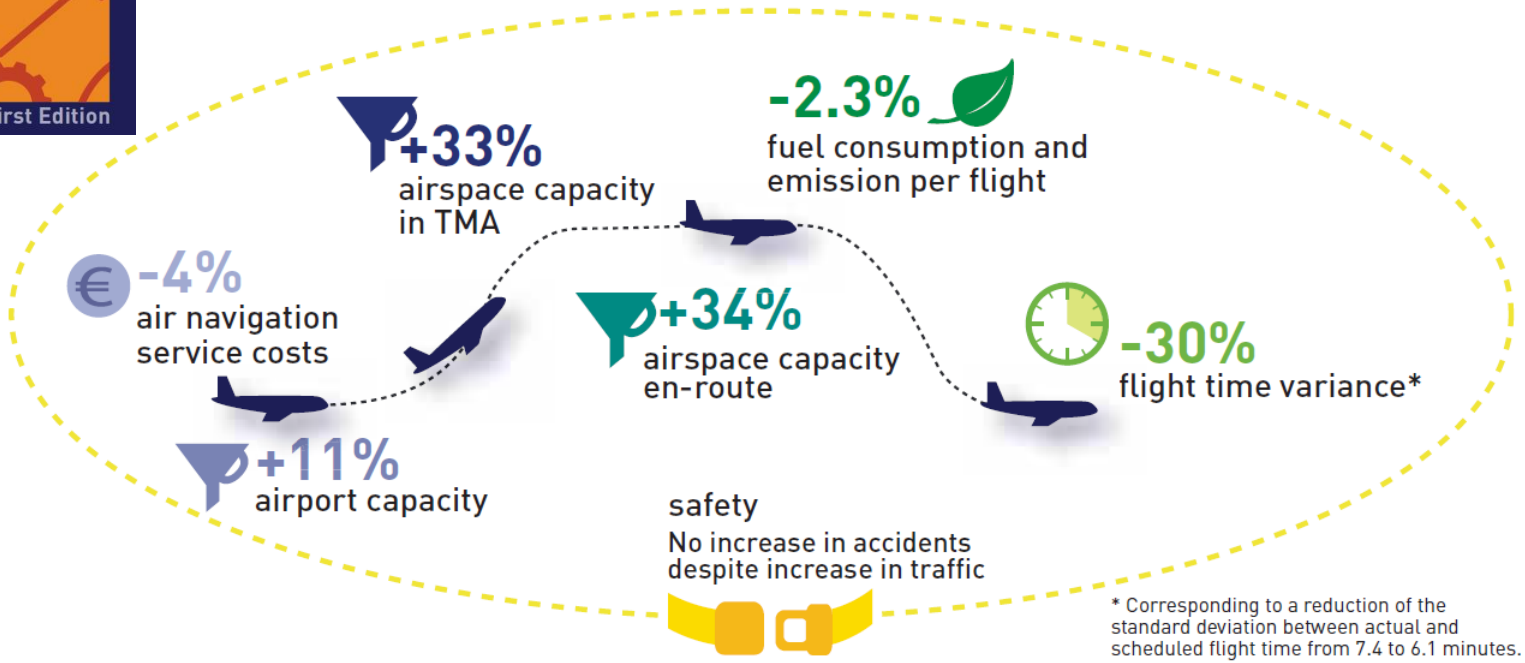
SJU prepares transition to deployment through **Master Planning** activities

SESAR 1 OUTCOME



63 SESAR Solutions: new or improved operational procedures or technologies that aim to contribute to the modernisation of the European and global ATM system

24 are already being deployed across Europe



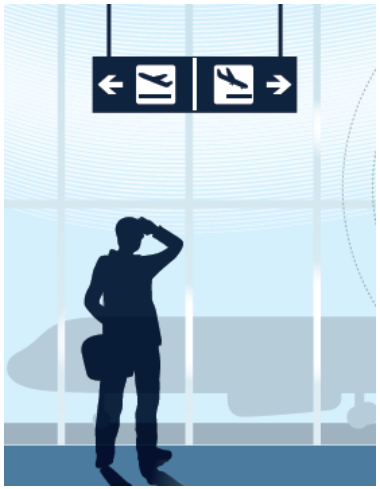
SESAR 2020 PROGRAMME

EXPLORATORY RESEARCH

INDUSTRIAL RESEARCH

- TRANSVERSAL ACTIVITIES
- OPTIMISED ATM NETWORK SERVICES
- ADVANCED AIR TRAFFIC SERVICES
- HIGH PERFORMING AIRPORT OPERATIONS
- ENABLING AVIATION INFRASTRUCTURE

VERY LARGE-SCALE DEMONSTRATION



SESAR INNOVATION PIPELINE

Exploratory Research

Concentrates on early maturity Excellent Science and initial applications to ATM

Industrial Research & Validation

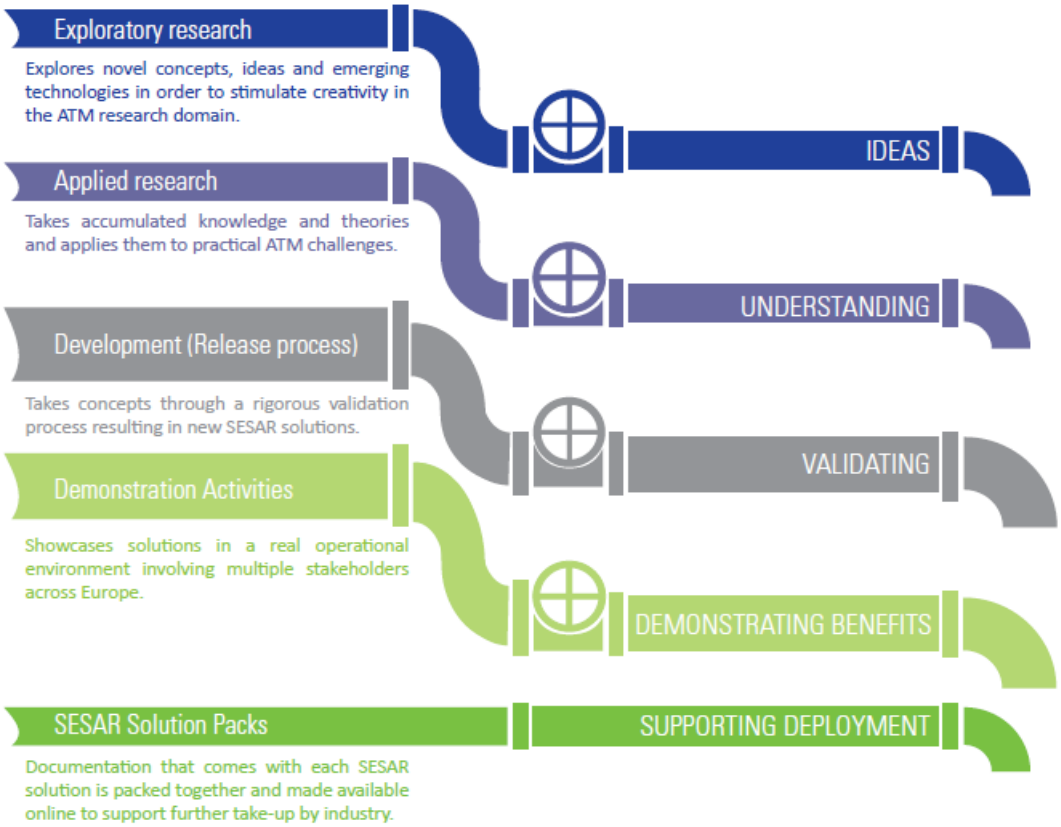
(Applied Research & Pre-industrial Development)

Concentrates on maturing and validating through Applied Research, Pre-Industrial Development and Validation of high benefit applications for ATM

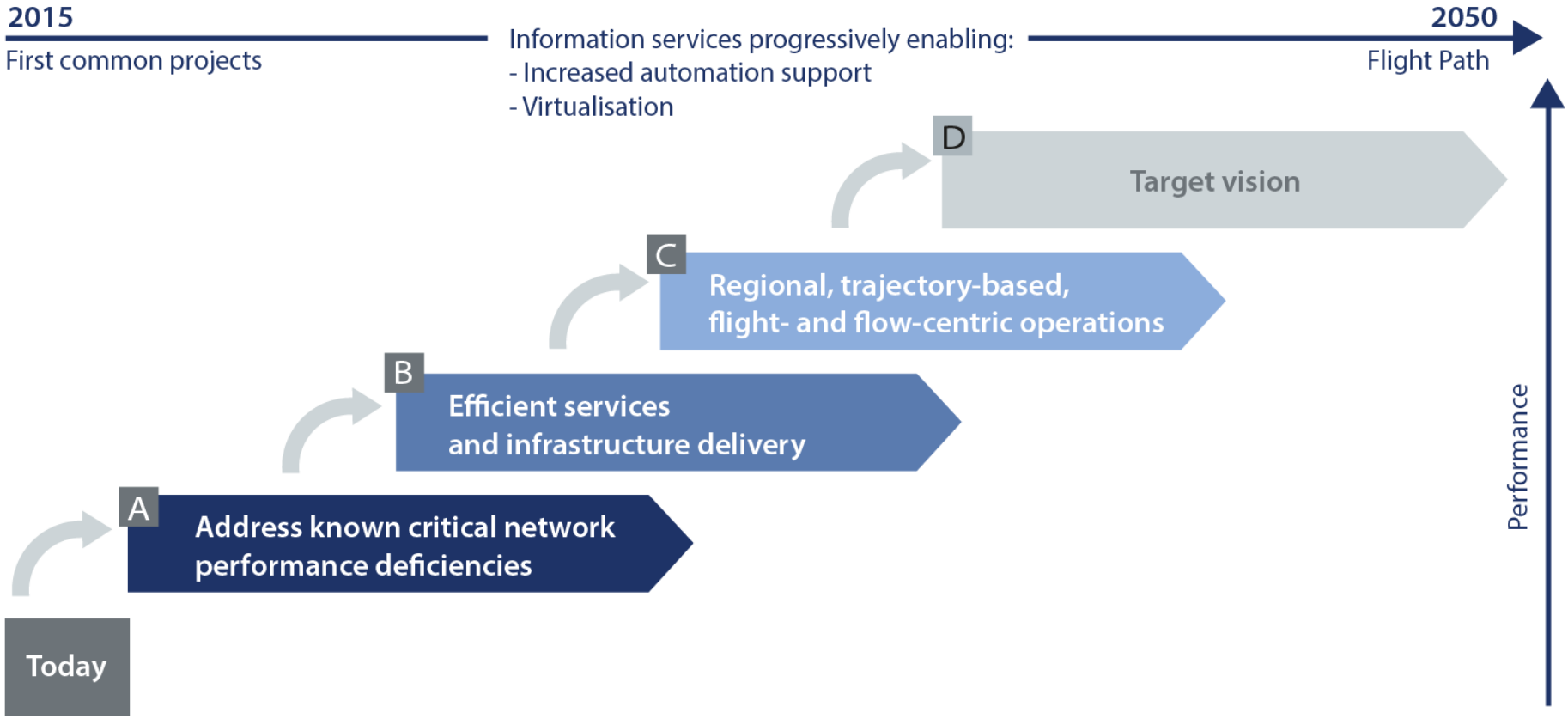
Demonstration Activities

Concentrates on taking the concepts and technology to a wider geographic and stakeholder application

Bridge to deployment through risk reduction



ENABLING A PHASED EVOLUTION OF THE ATM ARCHITECTURE



WE DO NOT DEFINE HOW MODELS SHOULD EVOLVE. ANY DECISION WILL HAVE TO BE TAKEN BY RELEVANT DECISION MAKERS

SESAR 2020:
NEXT WAVE OF DIGITAL TRANSFORMATION

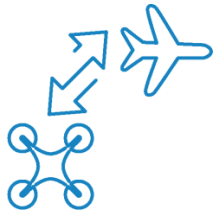
70+ projects under way

Exploratory research, industrial research, demonstrations

Virtual technologies

Mobile, terrestrial & satellite-based communications

Digital & automated tools

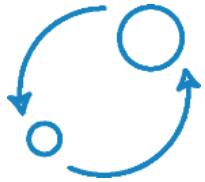


Higher levels of autonomy & connectivity

Video, synthetic & enhanced sensor tech

Big data analytics & open source data usage

System modularity



System flexibility

SESAR 2020: TECH IN THE PIPELINE

Augmented tower control

- A set of goggles with 3D matrix-like displays overlaid on the actual “out-of-the-window” view
- Enable tower controllers to manage traffic in low-visibility conditions
- Increases resilience at airports

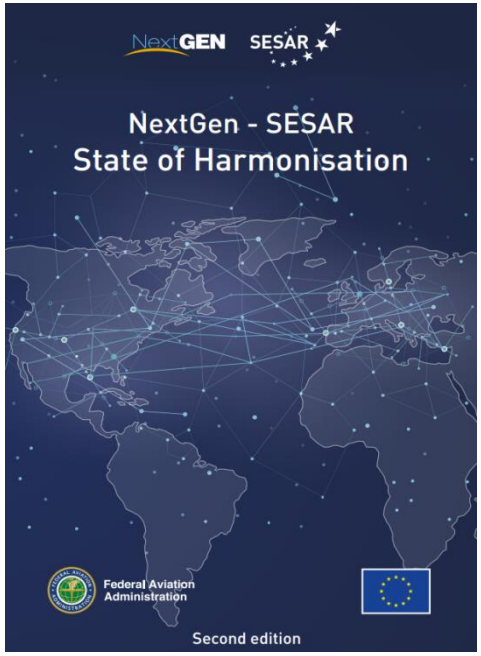
Cloud and virtualised service provision

- Decouples data service provision with physical infrastructure
- Rationalises infrastructure
- Provides contingency in case of system failure

Smart airport operations

- “APOC”, a real-time monitoring & decision-making support system
- Links airside and landside processes
- Delivers smoother passenger experience & greater flight predictability

GLOBAL INTEROPERABILITY CONTEXT



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FINAL WORD: DEVELOP & DEPLOY

"Technology is like a fish. The longer it stays on the shelf, the less desirable it becomes"

André Heller (Austrian author)

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Thank you for your attention!

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