



# Airspace Architecture Study

Skyguide Business Day 2019, November 2019

Founding Members



EUROPEAN UNION



EUROCONTROL

# Without some clear changes the delay situation will continue to deteriorate

## Major challenge for the ATM industry

- Latest long-term traffic growth scenario predicts **significant growth over the next 17 years** (up 50%)
- Summer 2018: **rapid deterioration in delays** linked to this growth in traffic
- Major challenge for the ATM industry:
  - **Need to adapt**
  - **Handle safely and efficiently**
  - **Economically acceptable costs**



Minutes average en-route delay per flight vs 0.9 minutes in 2017



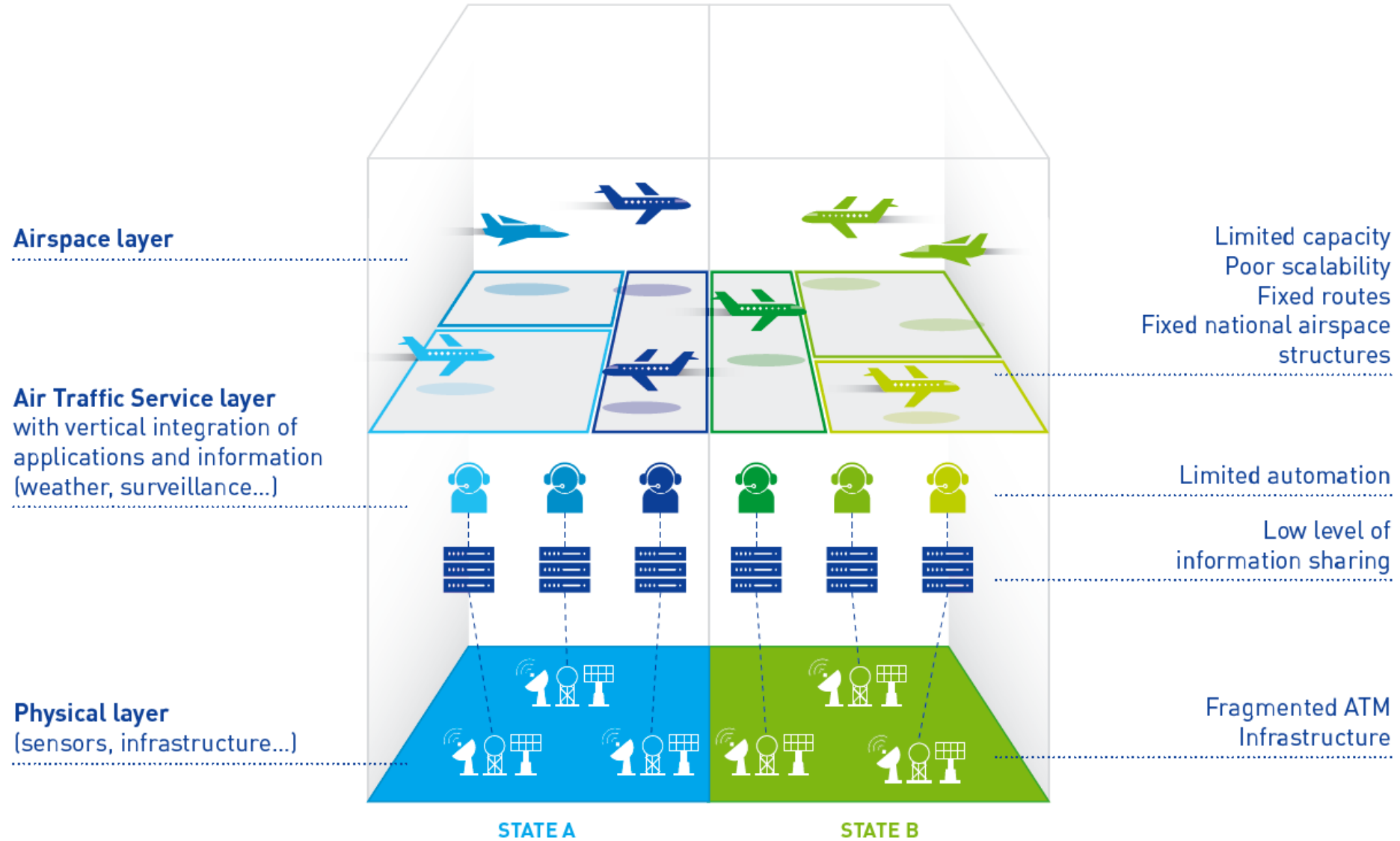
Congested Air Control Centres



Number of en-route delay minutes vs 2017

**Key simulation results reflecting a “do nothing” scenario at 2035 horizon performed by the Network Manager**

# The current airspace architecture is the result of national historical evolution and “vertical integration” of service provision



# The new proposed architecture: a Single European Airspace System



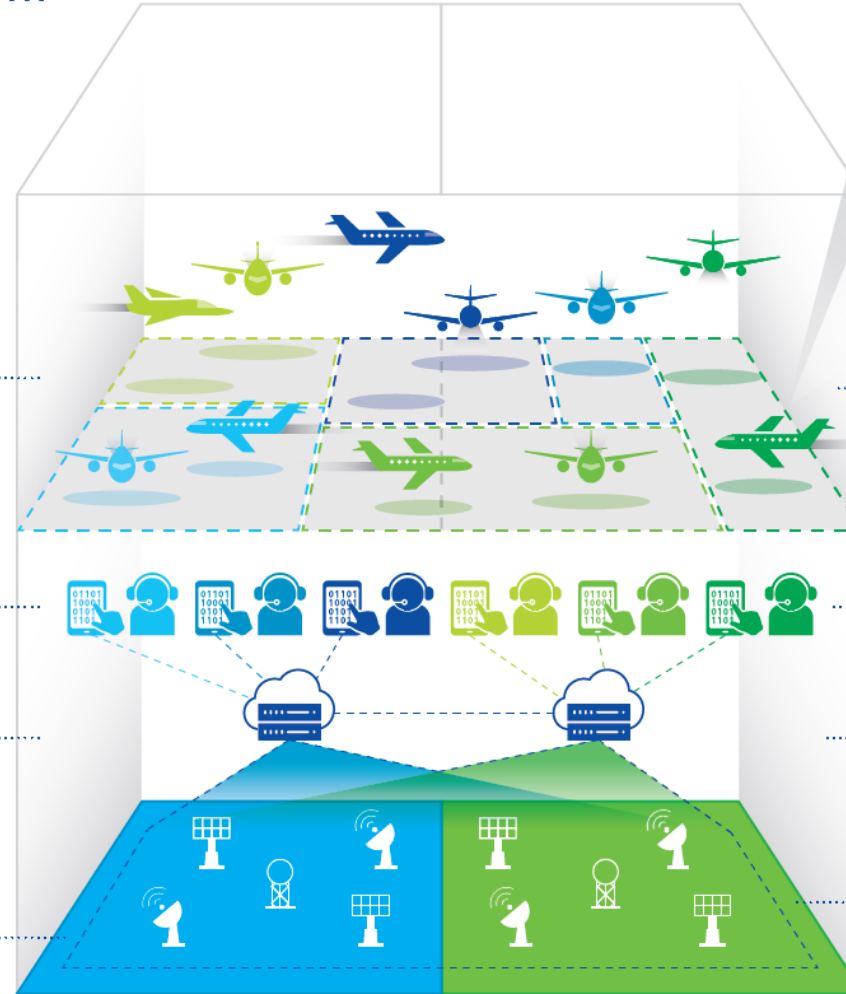
## Single European Airspace System

Network  
airspace operations

Air traffic services

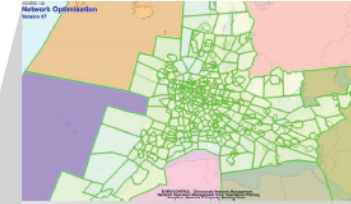
Data and application  
services

Infrastructure



STATE A

STATE B



Seamless operations  
Dynamic & cross FIR airspace  
configuration & management  
Free routes  
High resilience

Automation support &  
virtualisation  
Scalable capacity

Common data models  
Unified information

Integrated & rationalised  
ATM infrastructure

# This is not a new problem and cannot be solved with the same approach as in the past

## Regulatory



## Air navigation services



## Airspace



## Operations & technology



## Infrastructure & data services



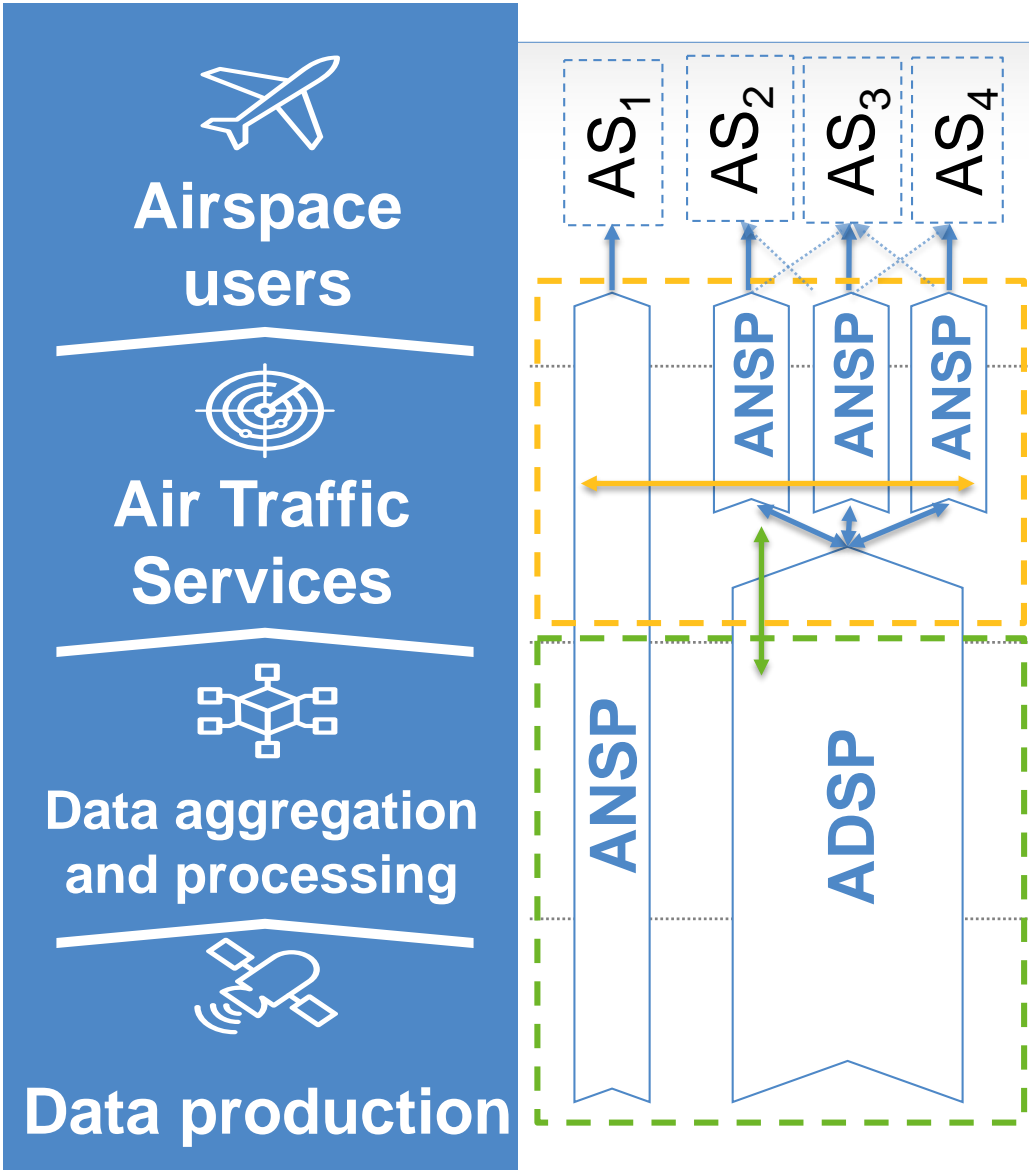
## FRAMEWORK DIMENSIONS

*Services are enabled by airspace and technology and dependent on the infrastructure & data services within a regulated environment*

## OPERATIONAL AND TECHNICAL DIMENSIONS

*Stronger linking between airspace, operations and technical evolution and measurement of the impact through simulations factoring in known deployments and roadmaps from the European ATM Master Plan*

# There are conditions to increase the chances of success and in particular to secure the implementation timeline



**CAPACITY-ON-DEMAND:** Increase the resilience of the ATM system through horizontal collaboration between ANSPs



**ATM DATA SERVICE PROVIDER – ADSP:** Promote a new Air traffic Data Service Provider model jointly servicing multiple ANSPs

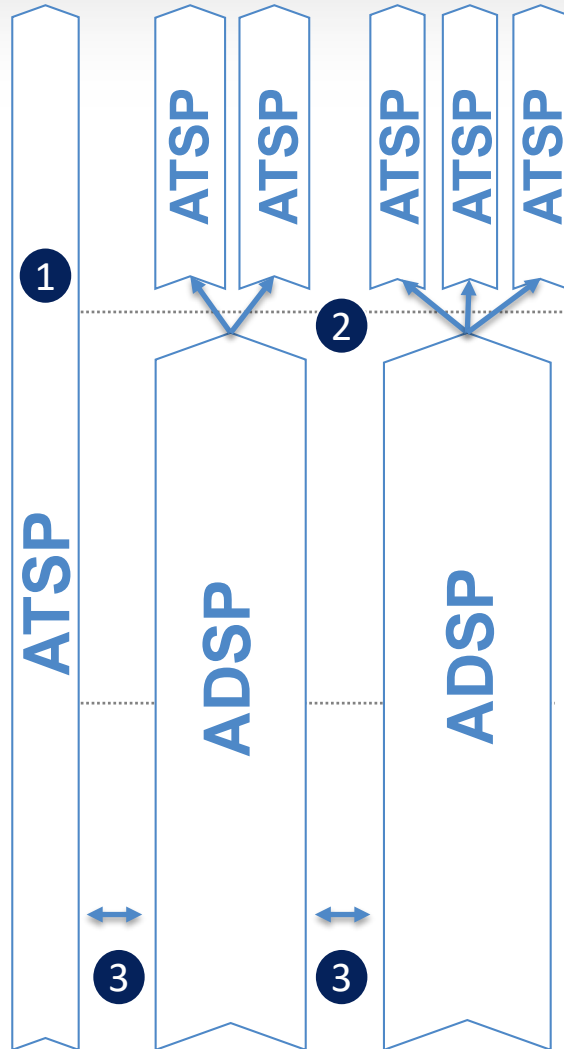
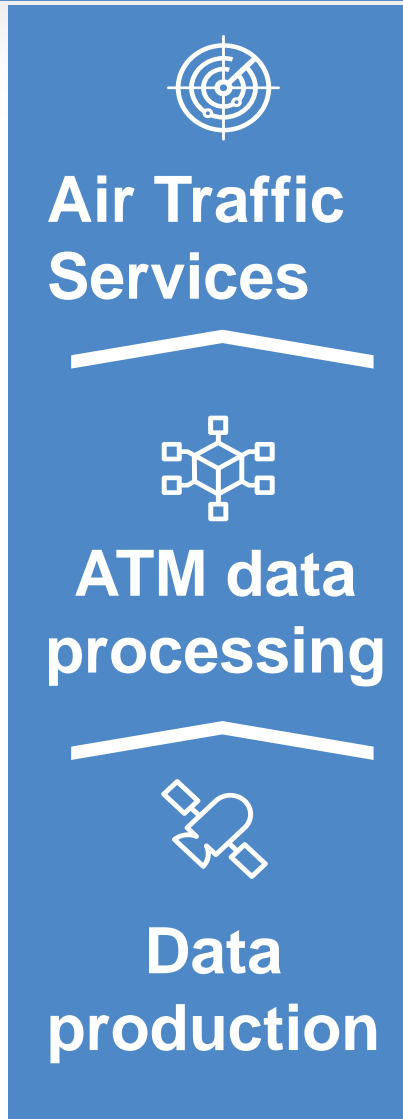


## REWARD EARLY MOVERS:

Reward actors that are the first to implement recommended improvements or that shift towards innovative delivery models



# In the new model, information data services could be provided by dedicated actors



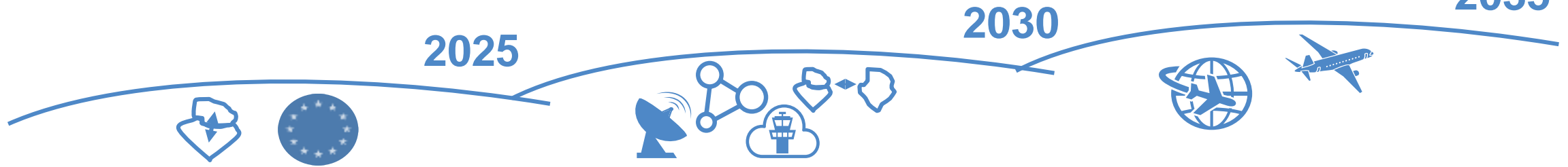
- 1 ATSPs can keep the **current vertically integrated model**
- 2 ATSPs **could** acquire their air traffic data services from a **separate provider on a voluntary basis**
- 3 **Providers** of ATM data services should be required to be **interoperable to exchange data**

Allowing ATSPs to freely chose their delivery model enabling the opportunity to:

- Defragment services
- Form alliances and/or specialised ADSP providers
- Foster collaboration between ATSPs
- Let each ATSP decide on the delivery model best suited to their specificities

# A possible way forward with progressive transition every 5 years

2035



- ECAC-wide implementation of **cross-border Free Route, air-ground and ground-ground connectivity**
- Launch **airspace re-configuration** supported by **Operational Excellence Programme**
- Set up an **enabling framework** for **ADSP**, **capacity-on-demand** service and **rewards for early movers**, first ADSP is certified

- Implement **virtual centres** and **dynamic airspace configuration** at large scale
- Gradual transition towards **higher levels of automation** supported by SESAR Solutions
- **Capacity-on-demand** arrangements implemented across Europe
- **New ATM Data service provision model** is implemented across Europe

- Transformation to **flight/flow centric operations**
- **Trajectory-based operations**
- **Service-oriented** air traffic management

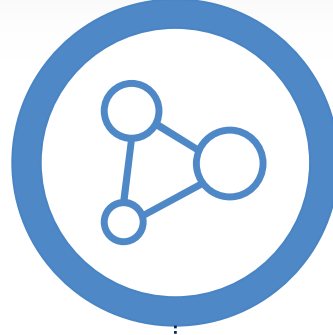


# Recommendations



1

Launch **airspace re-configuration** and **Operational Excellence** programmes to achieve quick wins



2

Realise the **de-fragmentation of European skies** through **virtualisation** and the **free flow of data among trusted users across borders**



3

Create a legal and financial framework that **rewards early movers**

# Focus is now moving towards putting implementation into motion



## NEW, under implementation

Focusing at **operational and technical** dimensions combining airspace optimisation and technology

The EC is progressing in parallel the set up of an **enabling framework** for **ADSPs**, **capacity-on-demand** services and **rewards for early movers**