



SUPPORTING
EUROPEAN
AVIATION

CASE STUDY: BUILDING RESILIENCE THROUGH AIRSPACE TRANSFORMATION

**ECAC/EU DIALOGUE WITH THE
EUROPEAN AIR TRANSPORT INDUSTRY**

14 OCTOBER, PARIS



HEADLINES

OUR GEOPOLITICAL AND
OPERATING CONTEXT IN
NEWS HEADLINES!

**DISRUPTION IS NO LONGER
EXCEPTIONAL.
IT IS PART OF THE
OPERATING ENVIRONMENT.**

*“Belgium to hold security
meeting after drone sightings at
airports and military bases”*

NOVEMBER 6, 2025
@ THE GUARDIAN

*“More repatriation flights as
middle east airspace closure
strands thousands”*

MARCH 4, 2026
@ REUTERS

*“Lithuania’s Vilnius airport resumes
operations after suspected balloons
force traffic restrictions”*

FEBRUARY 17, 2026
@ REUTERS

*“Drones, Ai and white paint:
Europe races to protect
infrastructure from heat”*

JULY 15, 2026
@ REUTERS

*“Cyberattack disrupts
check-in systems at major
european airports”*

SEPTEMBER 20, 2025
@ ASSOCIATED PRESS

IS RESILIENCE SUCCESSFULLY ENGRAINED IN AVIATION, OR ARE WE FAILING TO ADEQUATELY ADAPT?

WE ARE BUILDING RESILIENCE TODAY

The aviation system continues to absorb and manage significant disruption.

BECAUSE WE HAVE INVESTED

In infrastructure, technology, network coordination, civil-military cooperation, people and preparedness.

BUT THE ENVIRONMENT KEEPS EVOLVING

Resilience must evolve with it through continuous airspace transformation.

RESILIENCE IS NOT A DESTINATION.
IT IS A **CONTINUOUS TRANSFORMATION.**

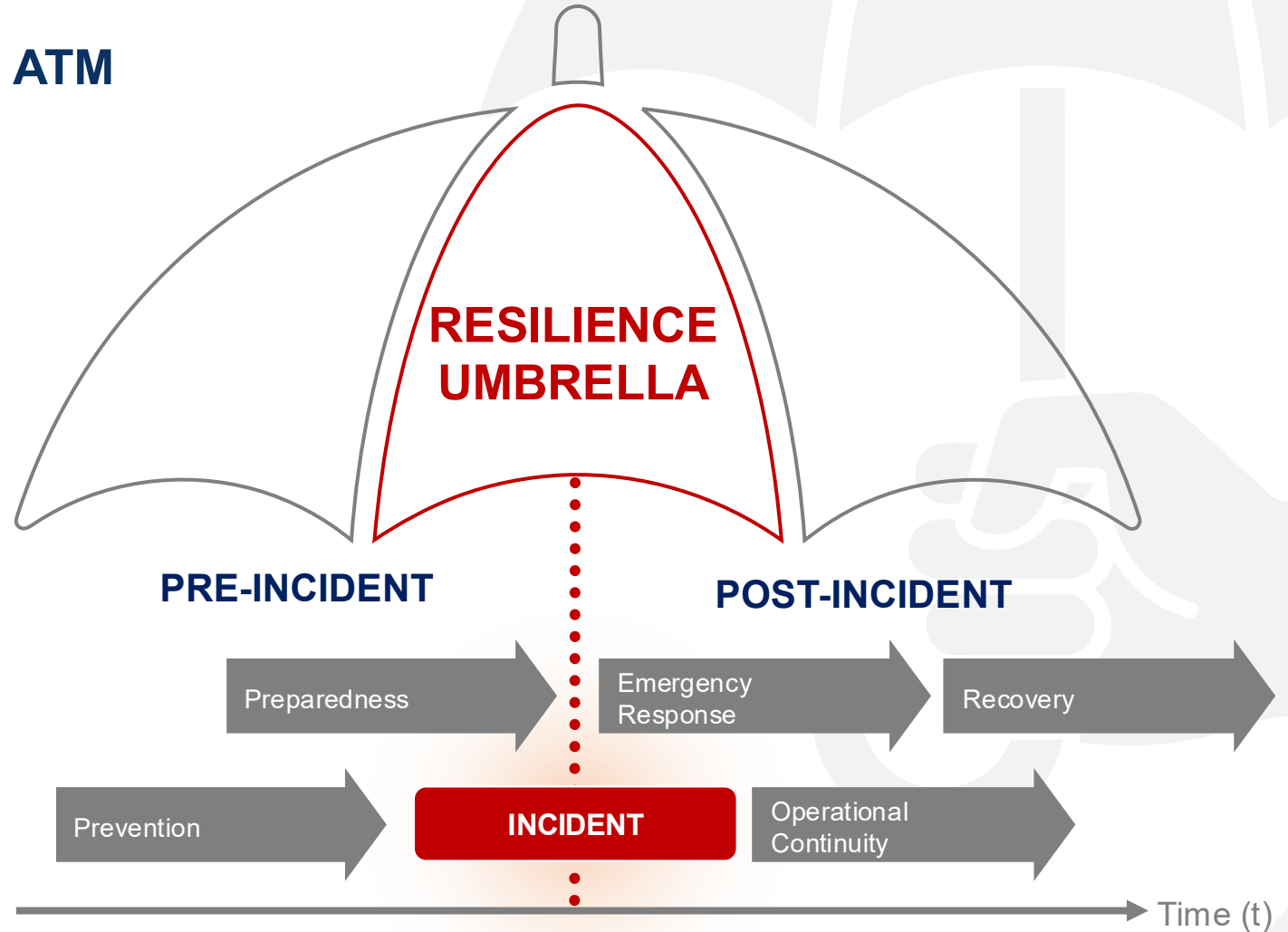
CYBER RESILIENCE: PREPARING FOR DISRUPTION, NOT ONLY PREVENTING IT

IMPACTS OF A CYBERATTACK ON ATM

- ❑ **Service disruption** or degradation
- ❑ **Loss of integrity or trust** in operational information
- ❑ **Cascading effects** across interconnected systems
- ❑ **Business and financial** consequences



Annual Report on cyber in aviation
by the EUROCONTROL European Air Traffic
Management Computer Emergency Response
Team – with contributors from 5 continents



CYBER RESILIENCE MANAGEMENT FRAMEWORK

Invest in People

Build a cyber-resilient aviation culture

Safety is already part of aviation's DNA. Embed cyber alongside safety in aviation culture, building awareness and competence across management, operational and technical staff.

Adapt Processes

Integrate cyber across aviation management and operations

Cybersecurity affects all layers of aviation: Decision-making → Management → Operations → Procedures → Services → Supply chain. Integrate Information Security Management Systems alongside other management systems.

Apply a Secure Development Lifecycle

Secure an increasingly interconnected aviation system

Aviation is moving towards more interconnected systems, new airspace users, and increasingly open, IP-based and interoperable interfaces. Security needs to be considered throughout the lifecycle. SECURE BY DESIGN → SECURE BY CONFIGURATION → SECURE BY OPERATION

Build a Trust Framework

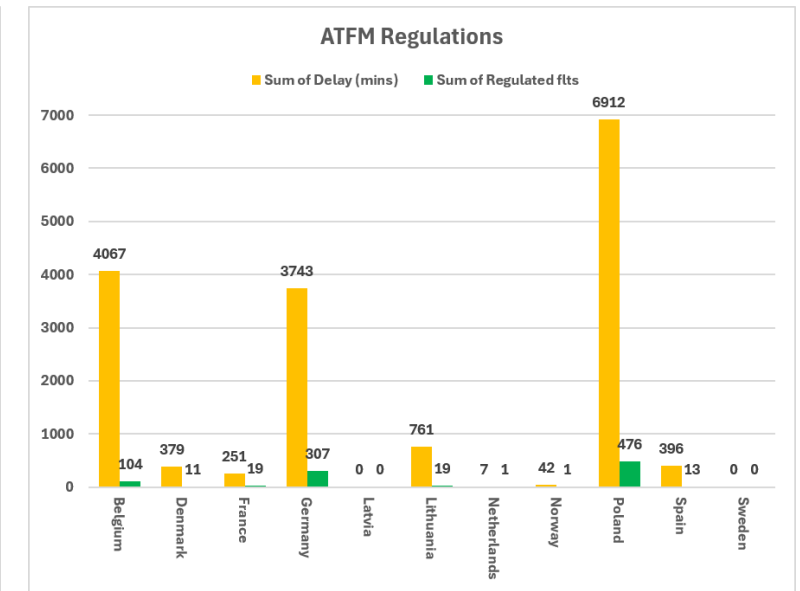
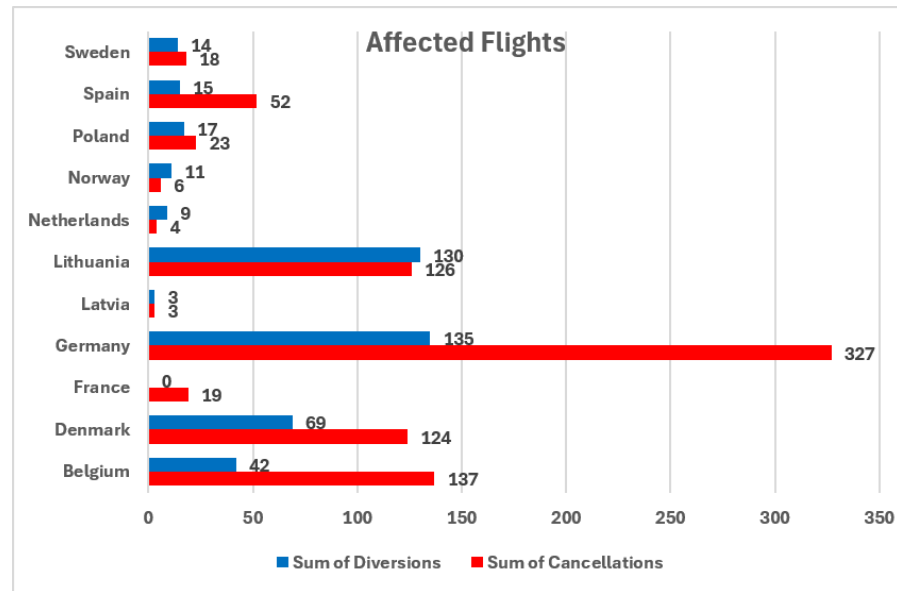
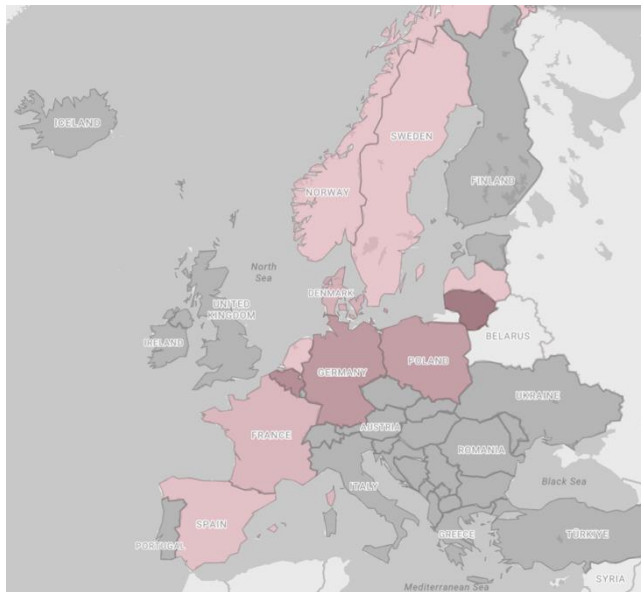
From national responsibility to cross-border resilience

Complement national responsibility with trusted cross-border, regional and Pan-European coordination and information sharing. Trust is a founding principle of aviation and an essential enabler of cyber resilience.

UAV INCURSIONS: EMERGING CHALLENGES TO OPERATIONAL RESILIENCE

UAVs (drones, balloons, unidentified) - 62 reported unauthorised UAV events in 2025*

Potential impact: Airspace restrictions • Delays • Diversions • Cancellations



EXAMPLE: BALLOONS | VILNIUS

15 balloon-related events in 2025*

126 cancellations | 127 diversions | 761 min delay

Particular challenge: difficult to detect → largely reactive response

**EUROCONTROL Network Manager data. Figures cover cases for which ATFM regulations were issued; balloon figures refer to Vilnius only.*

ACTIONS TAKEN:

- Improve detection and neutralisation
- Increase awareness of Flow Management Positions
- Distributed guidelines to operational stakeholders on how to manage impact on air traffic operations

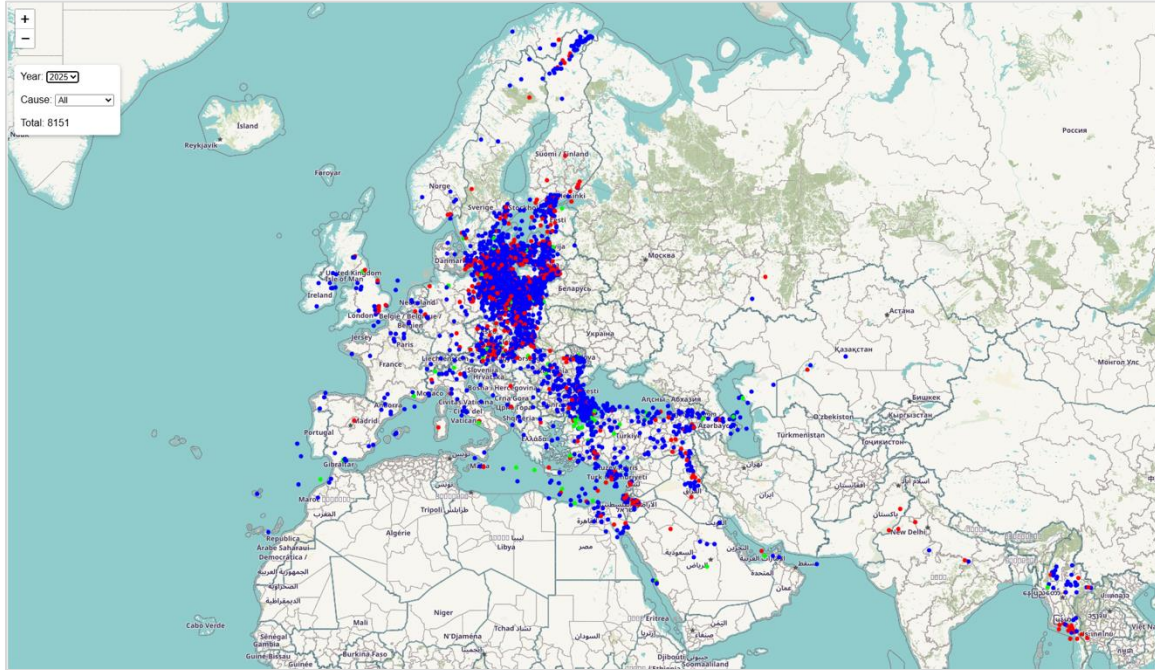
... MORE NEEDS TO BE DONE.

INFRASTRUCTURE RESILIENCE: GNSS INTERFERENCE

15,575 aircraft affected by GNSS RFI in 2025*

13,787 already affected by 31 August 2026*

**Data retrieved from Sherlock, EUROCONTROL's CNS Monitoring platform.*



8,151 GPS outages reported in 2025 through EVAIR
(EUROCONTROL Voluntary ATM Incident Reporting)

● Jamming | ● Spoofing | ● Unknown

IMPACTS OF GNSS INTERFERENCE



GNSS RFI IMPACT ON ALL CNS DOMAINS

Degradation of GNSS positioning and timing affects navigation, ADS-B, air-ground data link and ground system synchronisation.



HYBRID THREATS AND CYBERSECURITY

Increased connectivity and automation of CNS systems require security measures in civil and military infrastructure.



MILITARY MOBILITY

EU Military Mobility and CEF dual-use objectives rely on CNS infrastructure usable by civil and State aircraft.

EUROPEAN RESPONSE:
[EASA – EUROCONTROL GNSS RFI Action Plan](#),
published 26 March 2026.



BUILDING PAN-EUROPEAN RESILIENT OPERATIONAL NETWORK (RON)

Principles for the development of the RON Guidelines following ICAO Assembly 42 resolution

1

Common harmonised criteria, national implementation

- **EUROCONTROL** develops harmonised principles and design criteria with all stakeholders and institutional partners.
- **States** apply them, complemented by national and local constraints, including military requirements.

2

Single deliverable

- The **civil-military guidelines** will be integrated into the EUROCONTROL Guidelines on RON Planning and Implementation.
- **Civil and military requirements** are then addressed in one national planning exercise.

3

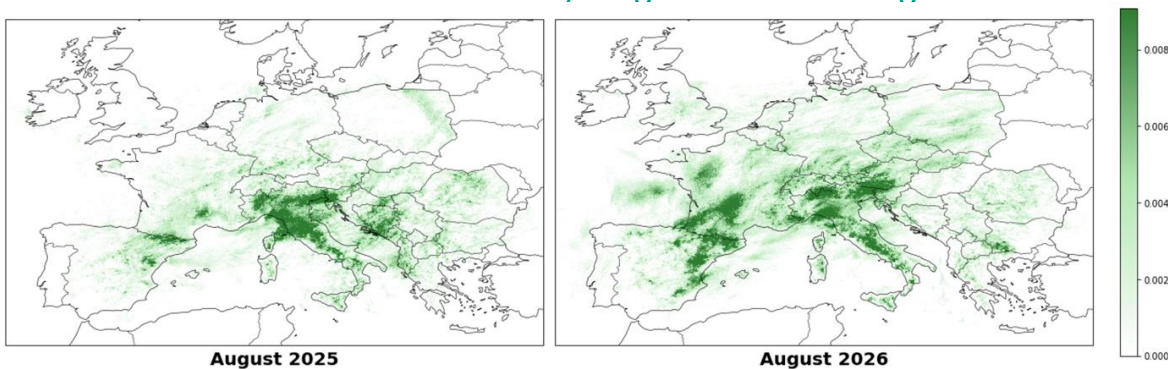
Sharing of existing infrastructure

- **Civil-civil and civil-military sharing** of infrastructure and data is considered before new installations.
- **Existing planning, monitoring and coordination** processes are used.

OPERATIONAL RESILIENCE: BUILDING CAPACITY & WEATHER RESILIENCE THROUGH STRENGTHENING NETWORK COORDINATION

The Weather Challenge:

Weather and Weather Delay August 2026 vs August 2025



Weather Surface:
47.2% More

Weather Enroute Delay:
29.5% More

Traffic Increase:
2.7% More

	MAY-AUGUST 2026 RESULTS			
	Delay Saving	Stability Improvement	Rerouted Flights	Days Activated
Weather	2,122,424	15%	5,482	83
Capacity	477,520	11%	1,873	37
Network Stability	470,940	15%	2,553	60
Total	3,040,621	14%	9,908	112

OUR RESPONSE

- Capacity and Weather Based Operations: Network-centric initiative to redistribute traffic based on the best available information within 24 hours through pre-agreed collaborative decision-making.

EUROCONTROL NMOC MET Desk

Aggregate forecasts → Assess Network impact → Integrate into ATFCM

Combining multiple meteorological sources to support coordinated Network action.

Benefits: Enhanced safety | Reduced delays | Greater Network stability

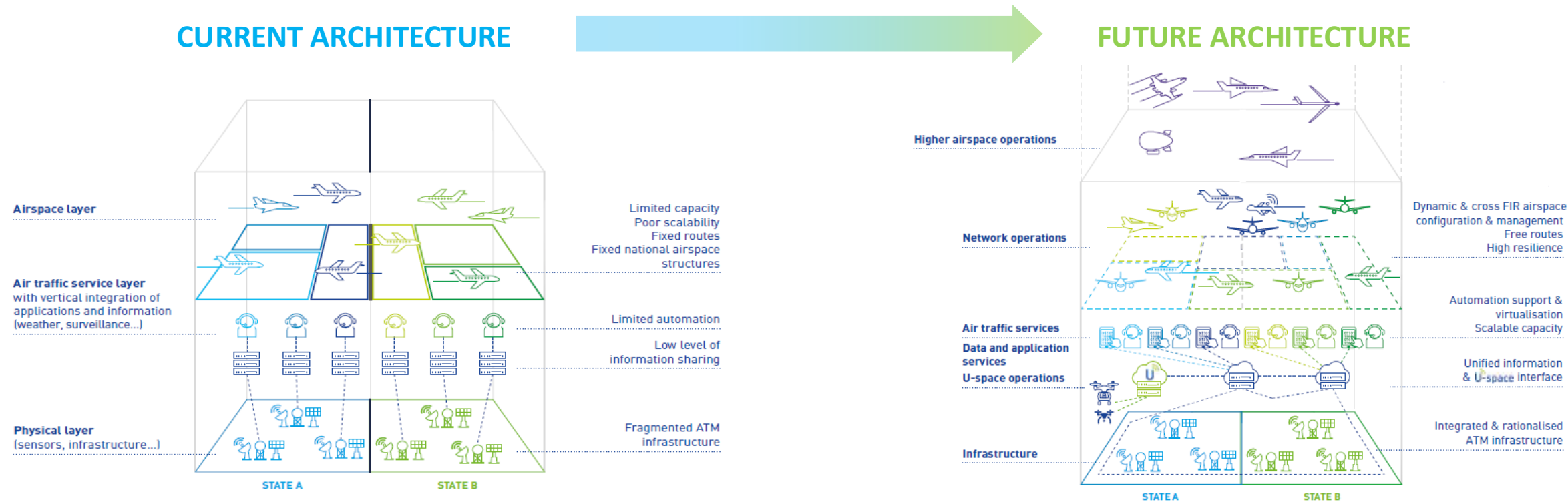
NMOC MET Desk analyses the situation in close coordination with NMOC Flow Management.

RESULTS

Approx. 10K re-routeings done by NMOC over 4 months:

- saved +3M minutes of delay
- 14% increase in network stability
- 395M euros cost reduction in European Aviation only in May to August 2026*.

BUILDING RESILIENCE THROUGH ATM TRANSFORMATION



ATM TRANSFORMATION:

preparing for a more complex future with a more integrated architecture connecting operations, information and services.

FUTURE INNOVATION FRAMEWORK MUST ADDRESS RESILIENCE.

RESILIENT FUTURE WORKFORCE



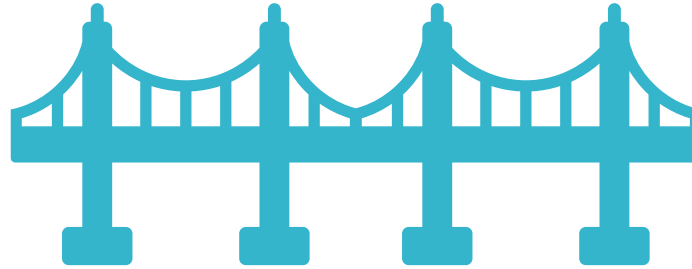
Building resilience requires continuous adaptation, not only of our systems and architecture, but also of the skills and capabilities of the people who operate them.

IMPORTANCE OF COOPERATION

Driven by
EUROCONTROL Trajectory 2030



Support to States
Programme (STS
Programme)



Driven by
National requirements



Strategic network needs

Complementing national approach
with network approach

National needs



ANSPs, Airports, Airlines, Regulators, Equipment Manufacturers, Ground Handlers, Standards,
ICAO, CANSO, EASA, ECAC, European Commission, European Defence Agency, ICAO



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THANK YOU!

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