

The art of modernising European air traffic management

Andreas Boschen, Executive Director, SESAR Joint Undertaking

Modernising Europe's air traffic management (ATM) is not just about technology, it's about mastering the art of transformation. Just over a year ago, Europe's ATM community agreed on a shared roadmap for the decades ahead. The European ATM Master Plan 2025 sets out a common bold vision: to make Europe the most efficient and environmentally friendly sky to fly in in the world by 2045 while keeping safety as the absolute priority. For many outside the sector, this may sound abstract or distant. However, the plan is not just a statement of intent. Twelve months on, the plan is actively shaping research priorities, investment decisions and the way Europe is preparing its skies for a more complex, digital and sustainable future.



The 2025 edition is the result of extensive stakeholder collaboration and marks an important shift. While earlier versions focused on defining concepts and solutions, this edition has expanded the focus to implementation. In practical terms, this means clearer priorities for development and deployment, stronger alignment with EU climate, competition and transport policies, and a sharper focus on transforming the underlying foundations of ATM.

The transformation outlined in the plan has significant value for the economy and society at large. A more efficient and reliable air transport system will enhance connectivity, thus boosting economic growth and development across the continent. It will also play a key role in the green tran-

sition in the sector. By 2040 there should be a return on investment of EUR 7 for every euro spent and up to 200 million tonnes of CO2 emissions will be saved. By 2050 these figures rise to EUR 17 for every euro spent and up to 400 million tonnes of CO2 emissions saved – equivalent to nearly three years of Europe's total aviation emissions.

The plan is a living roadmap, updated collaboratively by the ATM community to reflect technological progress, policy priorities and operational realities. One year on, progress is already visible in several concrete areas.

Moving the research agenda forward

One of the first tangible signs of implementation was the launch in 2025 of two funding calls (Wave 2) to bolster the SESAR research and innovation project portfolio. Worth several hundred million euros in combined EU and private investment, these calls represent the next wave of research and innovation aligned with the priorities of the Master Plan.

As a result of the Wave 2 calls, 42 new projects have been selected. Running between now and 2028, these projects will focus on advancing digitalisation, automation and sustainability in a coordinated way, targeting areas where progress is needed to unlock system-wide benefits rather



than incremental local gains. They address how to manage increasingly diverse traffic – from conventional aircraft to drones and future air vehicles – in a shared airspace while strengthening system resilience, including cybersecurity and the ability to cope with shocks such as extreme weather, geopolitical disruptions and sudden changes in demand. What is notable is not just the ambition of the Wave 2 projects, but the scale of interest the calls attracted. Record numbers of proposals were submitted, reflecting a shared understanding that the plan provides the reference point for investment and collaboration, and that Europe is moving decisively from ambition to delivery.

The launch of the Wave 2 projects also marks an important transition point for the SESAR programme. The current portfolio of 79 projects will progressively conclude over the next months, paving the way for the new Wave 2 projects.

The outgoing projects are feeding into a pipeline of more than 180 solutions covering all aspects of air traffic management, from airports and airspace operations to network management and supporting infrastructure. Of these, over 130 are already ready for implementation, and 80 have been successfully deployed. These solutions draw on a broad range of technologies, including artificial intelligence, satellite-based capabilities and advanced communications. The projects launched in Wave 2 will not only raise research ideas to higher technological readiness levels but also take forward new solutions in emerging areas. By advancing the most promising solutions, these projects aim to move them to industrialisation and deployment in line with the Master Plan.

Central to this progress are 10 digital sky demonstrators, which have either concluded or are nearing completion. These demonstrators act as precursors to deployment by proving – at scale – that research solutions work in real-world operational environments, while also delivering tangible benefits that pave the way for broader implementation. Looking ahead, further digital sky demonstrators could be launched in 2026, with Wave 3 expected to follow in 2027 under the current multi-annual financial framework.

Transformation in action

The Master Plan identifies 10 strategic deployment objectives (SDOs) to be implemented between now and 2035 to enable deeper and faster changes in the sector, from trajectory-based operations to greater levels of automa-



tion and dynamic airspace configuration. Among them is the new service delivery model (SDO8), which envisages an open cloud-based modular architecture for ATM in Europe, much like the evolution of mobile phones from fixed-function devices in the early 2000s to today's smartphones. Just as today's smartphone technology enables interoperable platforms and third-party apps, this model allows Europe's air navigation service providers (ANSPs) to choose individual services in a multi-vendor environment and to integrate them in their operating environment.

Crucially, the move to the cloud decouples critical ATM services from local site-specific infrastructure, thus opening the door to greater scalability, faster deployment and more consistent service quality across regions. Therefore, resilience is no longer tied to physical installations and continuity of operations is ensured even in the face of local disruptions. Instead of the multi-year timescales that have until now typified the regularity of the update cycle, the new model allows regular updates and patches, a shift that dramatically improves cyber resilience and system integrity. Ultimately, the model lays the groundwork for a collaborative service-oriented approach that mirrors the digital infrastructure already implemented in other safety- and mission-critical sectors like finance and energy. Europe's ATM upgrade is not only essential for its efficiency and security, it is relevant for Europe's sovereignty and technological autonomy.

One year after the adoption of the Master Plan, the service delivery model has become a focal point for collective action. Leading service providers and manufacturers have endorsed the model and work has intensified with stakeholders, in particular with EASA, to ensure that certification and assurance frameworks evolve in step with the technology. This shift matters because it underpins everything else. Without a more flexible and resilient digital backbone, it will be difficult to deploy advanced auto-

mation, integrate new airspace users and quickly respond to emerging threats.

Laying the groundwork for synchronised deployment

The successful roll-out of the new service delivery model and the other strategic deployment objectives outlined in the Master Plan requires a coordinated effort by all stakeholders: ground and airborne manufacturers, end users (ANSP, airports, airspace users), institutional players like the SESAR JU, the Commission, [EASA](#), [EUROCAE](#), EDA and [EUROCONTROL](#). With this in mind, one of the most important steps in the past year has been the start of preparations for a potential Common Project 2.

A Common Project is an EU implementing regulation that mandates the deployment of certain ATM technologies across the EU by a given deadline. The current Common Project 1 (CP1)¹ covers a wide range of areas, such as managing aircraft arrivals more smoothly and boosting airport capacity to reduce delays. The project also focuses on flexible airspace use, including better coordination between civil and military flights, and cross-border free route airspace to optimise flight paths. In addition, it promotes real-time information-sharing and collaborative decision-making across the network, ensuring all actors work from the same up-to-date data. These advances build on the foundation of SESAR solutions, generating operational improvements across Europe's ATM system.

With CP1 regulatory deadlines coming to an end in 2027, a Common Project 2 (CP2) is currently designed to go further by synchronising the deployment of technologies that create even greater impact for the network as a whole. CP2 aims to align air-ground connectivity, ground-based modernisation and the new ATM service delivery model in a cohesive package. This ensures that advances in one area – such as digitalisation or automation – amplify benefits across the entire system, from reduced delays to enhanced sustainability.

The SESAR JU is working with stakeholders to define the scope and content of CP2, with a proposal expected to be submitted to the European Commission in 2026. While the preparatory phase is ongoing, its importance is clear:

¹ [Commission Implementing Regulation \(EU\) 2021/116 of 1 February 2021 on establishment of Common Project One supporting the implementation of the European Air Traffic Management Master Plan provided for in Regulation \(EC\) No 550/2004 of the European Parliament and of the Council, amending Commission Implementing Regulation \(EU\) No 409/2013 and repealing Commission Implementing Regulation \(EU\) No 716/2014 \(Text with EEA relevance\).](#)

CP2 is not just about technology but about orchestrating a synchronised upgrade that ensures Europe's skies remain the most efficient, safe and sustainable in the world.

Beyond synchronised European deployment with CP2, the strategic deployment objectives will also be deployed by other means. They steer local roll-out, allowing solutions to be implemented incrementally to address specific operational or regional needs, and global roll-out, in which international interoperability and alignment are essential. This is particularly the case for trajectory-based operations and future air-ground connectivity, which depend on global standards and worldwide adoption to ensure seamless operations and to fully realise their benefits for airlines, ANSPs and the wider aviation network.

The wider research picture and the next horizon



Progress in the past year has not been limited to ATM. In June, SESAR JU teamed up with the Clean Aviation Joint Undertaking to launch the Aviation Research and Innovation Strategy (ARIS). Presented to stakeholders and the European Commission during the Paris Air Show, ARIS sets out how research and innovation can safeguard Europe's long-term competitiveness, sustainability and strategic autonomy.

Aviation is one of Europe's greatest industrial achievements – a sector that connects people, powers economies and drives technological leadership. It supports 15 million jobs and contributes €1.1 trillion annually to the EU economy. Within the sector, Europe leads the world in air traf-

fic management technologies, with 70% of global airspace managed by European ATM technologies. This leadership is a result of decades of collaboration and sustained investment in innovation by public and private partners.

But imagine a world where Europe no longer leads in aviation and ATM. What would that mean for the flights we take, the jobs in our communities and the technologies that make travel safer and cleaner? With global competitors investing boldly in civil and defence innovation, Europe's aviation sector is under pressure. If we want aviation to remain a strong pillar of Europe's competitiveness and sovereignty, we must act now – with long-term coordinated investment in research and innovation.

ARIS identifies three areas for investment: next-generation aircraft technologies; efficient air traffic management; and cutting-edge enablers such as advanced manufacturing and maintenance, and digitalisation including automation and workforce upskilling. It is estimated that a total funding of €66 billion is needed between 2028 and 2034 – with one-third (€22.5 billion) requested from the EU in dedicated funding and the remainder from member states and the private sector. To put this in perspective, €22.5 billion over seven years represents just 0.13 percent of the EU's annual GDP. This is a modest price for a return on investment that is immense – in skilled jobs and technological leadership, but also critically in meeting Europe's climate goals, securing global competitiveness and reinforcing sovereignty and economic resilience in a rapidly changing world.

The Master Plan and ARIS come at a time when attention is turning to the next EU multiannual financial framework (MFF) for the years 2028-2034. The European Commission has already signalled support for the sector with its listing of “clean and smart aviation” among the proposed moonshots for future research funding.² This commitment is essential if Europe is to safeguard its competitiveness and strategic sovereignty in a rapidly evolving global landscape. The moonshot also sends an important signal by explicitly recognising air traffic management as part of Europe's long-term aviation innovation effort. As the European Parliament and Council are now working intensely on all the proposals for the next MFF, we expect to see good progress and more clarity on crucial issues such as dual use and the link from research to deployment in the course of 2026.

² Proposal for a Regulation of the European Parliament and of the Council establishing Horizon Europe, the Framework Programme for Research and Innovation, for the period 2028-2034, laying down its rules for participation and dissemination, and repealing Regulation (EU) 2021/695.

We also expect the Commission to propose this year the continuation of Joint Undertakings as a successful means to implement innovation projects by public-private partnerships. The private members of the SESAR JU have already voiced their availability to continue the partnership.



The coming years will be crucial in delivering on the Master Plan's promises – transforming air traffic management, reducing emissions and maintaining Europe's leadership in aviation innovation. With CP2 on the horizon and ARIS guiding the way, the story of Europe's aviation future is far from over. It is just entering its next ambitious chapter.

More about the [European ATM Master Plan](#)