



AI-enabled tactical FMP hotspot prediction and resolution

Inside ASTRA

Dear readers,

Welcome to the first edition of the ASTRA newsletter!



Launched in September 2023, **ASTRA** is an ambitious **exploratory research initiative** under the Single European Sky ATM Research (SESAR) program. Our mission is to leverage **advanced AI technology** to predict and address **air traffic hotspots** much earlier than current methods, optimizing capacity and enabling aircraft to follow **greener, more efficient flight paths**. Our project will span 30 months, during which we will focus on developing innovative solutions and collaborating with key stakeholders in the aviation industry.

Through this newsletter, we will share regular updates on our **progress, key developments, and upcoming activities.**

Join us as we explore the future of air traffic management and innovation.
Subscribe to our newsletter and follow every step of the ASTRA project!

Overview

The ASTRA project is powered by a dedicated consortium of organizations, each contributing unique expertise. **Learn about the strengths and roles of our partners** and their **significant contributions** to the project by clicking the links below.



L-Università
ta' Malta

UM leads the ASTRA project, overseeing project coordination and actively contributing to key areas

[\[Learn more\]](#)



Deep Blue ensures ASTRA's human-centered approach with HCI and Human Factors.

[\[Learn more\]](#)



INGENAV defines ASTRA's operational concept and validates solutions with ATC operations and AI.

[\[Learn more\]](#)



Skyguide validates ASTRA's prototypes and provides operational data for AI training.

[\[Learn more\]](#)

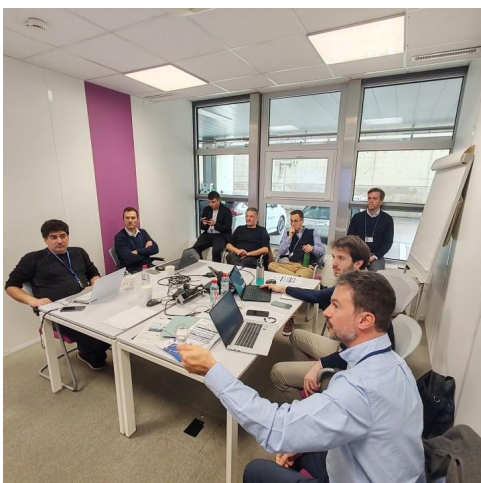


SkySoft-ATM leads ASTRA's technical development, including AI design and simulation.

[\[Learn more\]](#)

Latest news

Over the past year, the ASTRA project has engaged in various events to communicate its AI-driven solutions for air traffic management. Through workshops and conferences, we have fostered collaboration with industry stakeholders and gathered valuable insights. Below, we outline **key milestones** in our outreach efforts.



Identifying User Needs: Insights from the Workshop at Skyguide

In late January, we convened at Skyguide for an important three-day meeting. On the 23rd and 24th, we held a **Human-Machine Interface (HMI) definition workshop**, collaborating with **five external experts** to identify approximately **27 distinct user needs** for the ASTRA tool. These insights have informed the initial version of our **Functional Requirements Document (FRD)**, which will be available soon on our webpage and LinkedIn page.

On January 25th, we conducted our **first plenary consortium meeting** to review project advancements and work package statuses. This series of events concluded with a **technical workshop** on the 26th, marking a significant milestone in refining the ASTRA project and enhancing its impact on air traffic management. [\[Read further here.\]](#)



ASTRA unveiled: sharing insights on AI and Air Traffic Management

In February 2024, François Brambati, psychologist and Human Factors consultant at Deep Blue, a key partner in the ASTRA project, provided valuable insights in an interview featured on SESAR channels. He discussed the project's innovative approach to air traffic flow management, emphasizing how ASTRA leverages AI technologies to prevent airspace congestion. François detailed the technical aspects that make ASTRA a pioneering initiative in the realm of air traffic management, showcasing its potential to transform operational efficiency and enhance safety.

[\[Find out more here.\]](#)



Shaping the future of aviation: ASTRA's AI solutions at Fly AI Forum

The second FLY AI Forum took place on April 29-30 at Eurocontrol Headquarters in Brussels, gathering key stakeholders to discuss the integration of artificial intelligence (AI) in aviation. Hosted by Eurocontrol with partners like the European Commission and EASA, the forum highlighted innovative AI applications, including projects from SESAR.

The ASTRA project showcased its AI-based solution for Flow Management Position (FMP) personnel, designed to proactively identify and resolve airspace congestion hotspots. Project coordinator Jason Gauci noted the forum's value for promoting ASTRA and engaging with industry experts. [\[Details here\]](#)

ASTRA gains recognition for AI innovations

In mid-June, ASTRA received significant recognition for its innovative work in artificial intelligence (AI) for aviation. An important Italian newspaper wrote an article highlighting ASTRA's advancements, showcasing how the project is leveraging AI technologies to enhance air traffic management.

This piece not only focused on ASTRA but also featured insights from other pioneering projects utilizing AI in the aviation sector. It was well-received by both Italian and international audiences, further establishing ASTRA's position as a key player in the integration of AI within the aviation industry.

[\[Read more\]](#)





ASTRA's collaboration with other projects: HUCAN Workshop

The ASTRA project team attended the HUCAN workshop in Rome on May 14th and 15th, 2024, uniting key stakeholders from the SESAR research community. The workshop addressed certification challenges related to advanced automation and AI in air traffic management (ATM).

Participants identified critical certification issues and discussed ethical implications of integrating these technologies. Insights gained will guide ASTRA in developing AI-driven solutions that enhance safety and operational efficiency, reinforcing its commitment to innovation within the SESAR framework.

[\[Learn more\]](#)



Exploring ASTRA's vision – Access the video teaser

In early May 2024, ASTRA released a dynamic video teaser showcasing our innovative approach to air traffic management. Highlighting our commitment to leveraging AI technologies, the teaser emphasizes our goal of enhancing operational efficiency and safety.

This engaging visual tool aims to inspire collaboration among aviation stakeholders and promote the significance of our work. Watch the teaser

[\[Access the video here\]](#)



ASTRA at the SESAR JU AI Flagship Coordination Workshop

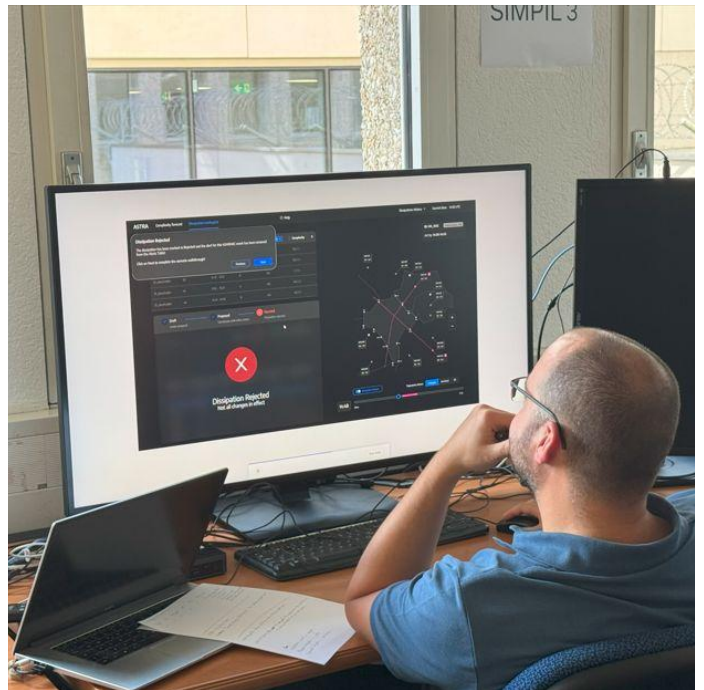
On September 20th, ASTRA participated in an online workshop organized by Engage 2 and S3JU, bringing together all SESAR projects under the AI flagship. Our representatives presented key objectives, followed by discussions on vital AI themes such as technical robustness, explainability, Human-AI teaming, and safety assessment. This collaborative event fostered valuable insights and knowledge exchange within the SESAR community.



Second Validation Exercise for ASTRA's HMI

In early October 2024, ASTRA conducted its second validation exercise at SkySoft-ATM's facilities in Geneva. Titled "Human-in-the-Loop Low Fidelity Simulation," this event allowed participants to engage with interactive prototypes designed to enhance ASTRA's Human Machine Interface (HMI) for ATCO Supervisors and FMPs.

The feedback gathered was crucial for refining the system's ability to detect and resolve tactical hotspots more effectively. This milestone brings us closer to developing an AI-powered tool that optimizes air traffic management while minimizing environmental impact. Thank you to all participants for their valuable contributions!



Upcoming events



ASTRA

SESAR Innovation Days 2024

ASTRA will participate in the SESAR Innovation Days 2024 from November 12th to 15th in Rome, Italy. This event highlights key advancements in air traffic management research, and we look forward to showcasing our results and engaging with the research community.

[\[For more information\]](#)

AI Flagship Workshop in Rome

ASTRA will participate in the 2nd AI Flagship Workshop on November 11, 2024, in Rome, ahead of the SESAR Innovation Days (SIDs) 2024.

This event will bring together SESAR-funded projects and industry experts to discuss advancements and foster collaboration in air traffic management.

[\[Discover more here\]](#)

Upcoming plenary session

We look forward to our meeting in Rome on November 12 for the upcoming plenary session. This meeting is vital for aligning our goals, discussing project progress, and strengthening collaboration among SESAR projects as we advance air traffic management.

Stay tuned for updates and insights from the session that we will share with you

Stay in touch with ASTRA



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