

# ***AWARE Website***

## ***Web presence***

|                                |                                         |
|--------------------------------|-----------------------------------------|
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| Tomislav Radišić/FTTS | 6 June 2025 |

### Rejected by<sup>1</sup>

| Organisation name | Date |
|-------------------|------|
|                   |      |
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| 00.03   | 25 November 2024  | Draft  | Roland Guraly (SLOT)                 |               |
| 01.01   | 3 June 2025       |        | Andrej Kocsis & Roland Guraly (SLOT) |               |

<sup>1</sup> Representatives of the beneficiaries involved in the project.

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# AWARE

## ACHIEVING HUMAN-MACHINE COLLABORATION WITH ARTIFICIAL SITUATIONAL AWARENESS

# AWARE

This document is part of a project that has received funding from the SESAR 3 Joint Undertaking under grant agreement No 101167442 under European Union's Horizon Europe research and innovation programme.



## The text of the AWARE website

# 1 Introduction of the AWARE website and social media channels

## 1.1. The text of the AWARE website

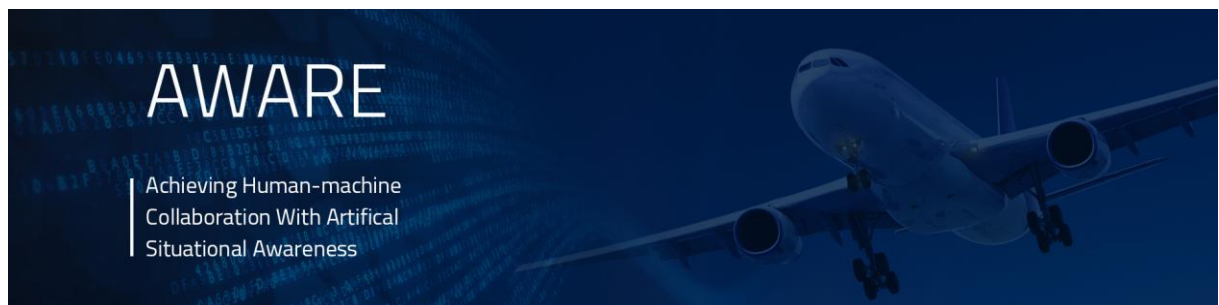
In the previous SESAR ER project, AISA (aisa-project.eu), we developed an artificial situational awareness system. The system, however, could not effectively collaborate with the ATCO because of several issues:

- it was unaware of the ATCO's intent and goals, so it could not provide timely support
- it lacked the human-machine interface (HMI) that could convey the information effectively, and
- it lacked any flexibility in adjusting the level of support.

The AISA project also had a website that provided sufficient information and supported the CDE activities. On the basis of the lessons learned from the previous project and taking into account the new developments in the field of web-design, we performed a new design of the AWARE project's website. During the design phase we analysed several other SESAR ER projects (especially the ones in the field of AI) and tried to develop a best practice tool from them.

The website is already available at: <https://aware-sesar.eu/>

Website banner:



### PROBLEM

Humans are trained to understand the capabilities, limitations, and functionality of the machines they use. **Machines**, on the other hand, **remain disconnected from humans and lack understanding of them**. In a complex environment the necessity for machines to comprehend the humans and to be able to close the loop of reciprocal understanding, grows more important.

### SOLUTION

The goal of the project is to enable human-machine collaboration by using an **artificial situational awareness system** which is enabling AI to anticipate and respond to human needs by understanding human intent and goals.

The project will develop and test an **AI Assistant Application** providing adaptable human-centric support to enhance air traffic controller's (ATCO) performance and to reduce ATCO's workload despite high task complexity.

## SOLUTION DESCRIPTION<sup>2</sup>

The AWARE project proposes a solution designed to enhance human-machine collaboration in the air traffic control environment. This solution focuses on establishing shared situational awareness and sets the groundwork for further ML-based automation in air traffic management.

At its core, the Artificial Situational Awareness system developed by AWARE gathers high-integrity information through aeronautical information exchange models. This information is used to construct a comprehensive knowledge graph that accurately depicts the traffic situation at either a sector or ACC level. The system goes beyond merely compiling factual knowledge; it also incorporates a knowledge-based system that manages and executes rule-based knowledge. This is achieved through a reasoning engine that operates on top of the factual data.

The Artificial Situational Awareness system significantly enhances safety in air traffic control. It acts as an additional safety net by reliably performing monotonous monitoring tasks. Moreover, it improves interoperability among various systems through enhanced data handling, a natural outcome of employing knowledge graphs for data management. In parallel, the system supports cost-efficiency and environmental sustainability by optimising resource usage and reducing unnecessary emissions through smarter automation. Lastly, the system contributes to increasing sector capacity. This is achieved by automating certain monitoring tasks and facilitating the integration of other automation systems, thereby streamlining operations in air traffic control.

## PROJECT OBJECTIVES

The general objective of the project is **to develop an AI assistant application** designed to support ATC operations by building a platform based on enhanced artificial situational awareness solution.

### 01

*To develop an enhanced artificial situational awareness system by implementing methods for assessment of AT CO's intent and goals.*

### 02

*To develop a method for the adaptable selection and implementation of actions that support ATCOs, utilizing both ML and non-ML tools.*

Supporting  
technical objective 1

---

<sup>2</sup> 2nd page after clicking on „learn more“.

*To develop the capability to track human visual attention in combination with other inputs and to give them semantics by putting them in context of the current traffic situation.*

Supporting  
technical objective 2

*Research the methods of identifying loss of situational awareness (ranging from inadequate selectivity to degraded 5A to complete out-of-the-loop state) and exploring options for bringing the human back into the loop.*

Supporting  
technical objective 3

*To define specifications for interoperability with other systems and roles in ATM (e.g. ATSEP, FMP) in order to explore benefits of artificial situational awareness system beyond ATC tactical operations.*

## **Consortium**

The AWARE consortium consists of participants from various fields. There are four universities, two ANSPs, an ATM system developer, an international organisation, and an SME. Our respective fields include ontologies and expert systems, data engineering and knowledge representation in ATM, risk modelling, trajectory-based operations, human-centred design, and ATCO training.

## **Results**

The general objective of the project is to develop an AI assistant application designed to support ATC operations by building a platform based on enhanced artificial situational awareness solution.

### **01**

*Develop the Artificial Situational Awareness Solution to TRL2*

### **02**

*We will improve on the capabilities of the Artificial Situational Awareness (ASA) System*

### **03**

*Develop a method for assessment of ATCO's intent*

### **04**

*Develop an AI Assistant Application showcasing the capabilities of the ASA solution in the HITL simulations experiment.*

### **05**

*Develop a method for adaptable selection and implementation of supporting and/or direct actions*

## **Expected Impact**

Safety

The system will provide an additional safety net by keeping ATCOs in the loop and developing strategies in the case of loss of situational awareness. Keeping the ATCO in the loop would prevent activation of other safety nets so we expect reduction of those alerts by 20%.

### Capacity

With ASA-based AI Assistant Application supporting ATCOs in performing their tasks or performing additional tasks autonomously, the amount of traffic that the ATCO can handle will increase. We expect significant increase in en-route capacity.

### Environment

and

### Cost-Efficiency

The system supports environmentally conscious operations by enabling smarter automation that helps lower emissions. It also brings cost benefits by improving the overall efficiency of air traffic control processes.

## 1.2. The screenshots of the website

### Main phases of the project

#### News

AWARE Showcased at Airspace World 2025 in Lisbon

AWARE and DARWIN Projects Hold Joint Workshop on AI Collaboration in Aviation

AWARE introduction video

Navigation:

**AWARE**

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[YouTube](#)

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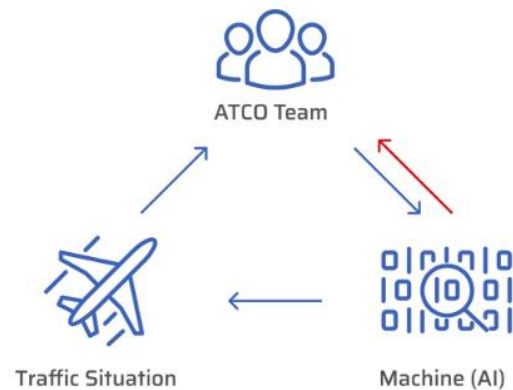
### Sections

Project introduction

## Project Introduction

### PROBLEM

Humans are trained to understand the capabilities, limitations, and functionality of the machines they use. **Machines**, on the other hand, **remain disconnected from humans and lack understanding of them**. In a complex environment the necessity for machines to comprehend the humans and to be able to close the loop of reciprocal understanding, grows more important.



### SOLUTION

The goal of the project is to enable human-machine collaboration by using an **artificial situational awareness system** which is enabling AI to anticipate and respond to human needs by understanding human intent and goals.

The project will develop and test an **AI Assistant Application** providing adaptable human-centric support to enhance air traffic controller's (ATCO) performance and to reduce ATCO's workload despite high task complexity.

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## Solution Description

The AWARE project proposes a solution designed to enhance human-machine collaboration in the air traffic control environment. This solution focuses on establishing shared situational awareness and sets the groundwork for further ML-based automation in air traffic management.

At its core, the Artificial Situational Awareness system developed by AWARE gathers high-integrity information through aeronautical information exchange models. This information is used to construct a comprehensive knowledge graph that accurately depicts the traffic situation at either a sector or ACC level. The system goes beyond merely compiling factual knowledge; it also incorporates a knowledge-based system that manages and executes rule-based knowledge. This is achieved through a reasoning engine that operates on top of the factual data.



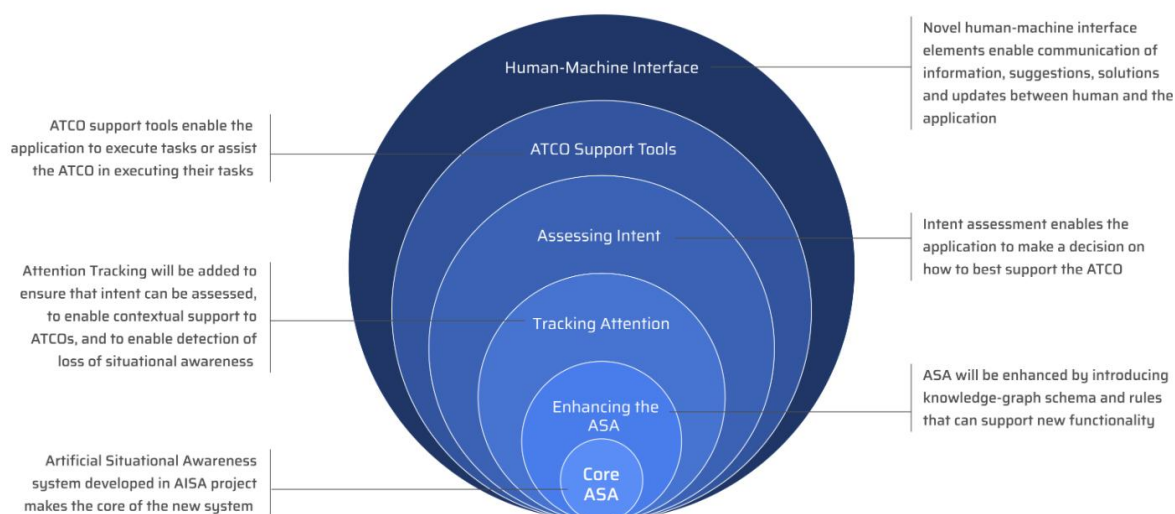


The Artificial Situational Awareness system significantly enhances safety in air traffic control. It acts as an additional safety net by reliably performing monotonous monitoring tasks. Moreover, it improves interoperability among various systems through enhanced data handling, a natural outcome of employing knowledge graphs for data management. In parallel, the system supports cost-efficiency and environmental sustainability by optimising resource usage and reducing unnecessary emissions through smarter automation. Lastly, the system contributes to increasing sector capacity. This is achieved by automating certain monitoring tasks and facilitating the integration of other automation systems, thereby streamlining operations in air traffic control.

Integral to the system are multiple machine-learning modules. These modules are adept at assessing probabilistic events, such as trajectory prediction or conflict detection. By synergizing the reasoning engine with machine learning capabilities, the system can effectively analyze complex interactions between objects, draw insightful conclusions, elucidate the reasoning behind these conclusions, and anticipate future states of the system.



The concept of the artificial situation awareness system



Project Objective:

## Project Objectives

The general objective of the project is **to develop an AI assistant application** designed to support ATC operations by building a platform based on enhanced artificial situational awareness solution.

**01**

*To develop an enhanced artificial situational awareness system by implementing methods for assessment of AT CO's intent and goals.*



### Supporting technical objective 1

*To develop the capability to track human visual attention in combination with other inputs and to give them semantics by putting them in context of the current traffic situation.*



### Supporting technical objective 2

*Research the methods of identifying loss of situational awareness (ranging from inadequate selectivity to degraded SA to complete out-of-the-loop state) and exploring options for bringing the human back into the loop.*



### Supporting technical objective 3

*To define specifications for interoperability with other systems and roles in ATM (e.g. ATSEP, FMP) in order to explore benefits of artificial situational awareness system beyond ATC tactical operations.*

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Results:

## Results

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## Expected Impact



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### Environment and Cost-Efficiency

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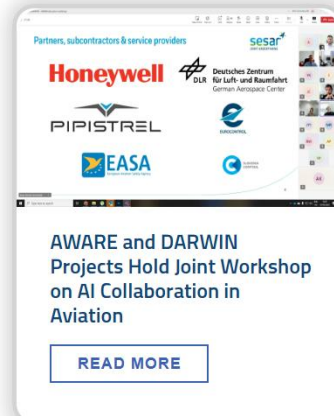
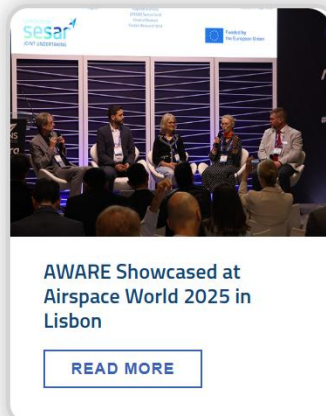
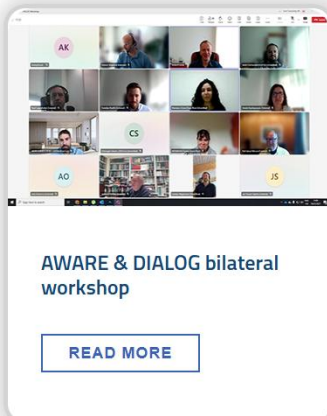
Main phases of the project:

## Main phases of the project



News:

## News



Since the project have more than three news during its lifetime a News subpage is created:

## News



**AWARE Showcased at Airspace World 2025 in Lisbon**

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**AWARE and DARWIN Projects Hold Joint Workshop on AI Collaboration in Aviation**

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**AWARE as Cluster 5 success story**

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**1<sup>st</sup> AWARE Advisory Board meeting**

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**Scenario Design Workshop**

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**ZHAW hosted the Winterthur workshop**

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**SESAR AI Flagship Workshops**

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**SAVE THE DATE**  
**SESAR Innovation Days 2024**  
12 - 15 November 2024, Rome

**AWARE at SID**

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**CONOPS Workshop (24 September)**

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**AWARE**  
ACHIEVING HUMAN-MACHINE COLLABORATION WITH ARTIFICIAL SITUATIONAL AWARENESS  
Project start date: 1 June 2024  
Closing date: 30 November 2026

**AWARE introduction video**

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**AWARE First Newsletter**

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**AWARE Project Kick-Off Meeting in Brussels**

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**Bounding Box Workshop**

[READ MORE](#)



**AWARE**

**Project Start**

[READ MORE](#)

The actual news article is presented on a separated page:

## Bounding Box Workshop

Tomislav Radisic, the coordinator of the AWARE project, presented the project at the Bounding Box workshop. The conference was held on June 14th, 2024, in IT Park, Osijek, Croatia. The Deep tech-focused workshop provided participants with insight into the project's plans and objectives.



**IT Park, Osijek**

Project details page:

**Name:** AWARE - ACHIEVING HUMAN-MACHINE COLLABORATION WITH ARTIFICIAL SITUATIONAL AWARENESS

**Grant Agreement number:** 101167442

**Project start date:** 1 June 2024

**Closing date:** 30 November 2026



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## Social media

As mentioned in the CDE plan, the project also has a LinkedIn page and a YouTube channel:

The LinkedIn page:

<https://www.linkedin.com/company/aware-atm-project/>

The screenshot shows the LinkedIn profile of the AWARE ATM Project. The header features a blue banner with a white 'AWARE' logo and a background image of an airplane. Below the banner, the profile name 'AWARE ATM Project' is displayed, followed by the tagline 'Enhancing human-machine collaboration by an artificial situational awareness system for air traffic management'. The location is 'Airlines and Aviation · Zagreb, Croatia', and it has '165 followers' and '11-50 employees'. A notification bell icon is in the top right. Below the profile information, there are buttons for 'Message' and 'Following'. A navigation bar includes 'Home', 'About', 'Posts', 'Jobs', 'People', and 'Insights'. The 'Overview' section describes the project's goal: 'The goal of the project is to enable human-machine collaboration by using an artificial situational awareness system which is enabling AI to anticipate and respond to human needs by understanding human intent and goals. While humans are extensively trained to understand the capabilities, li ... see more'. A 'Show all details' link is present. The 'Page posts' section shows two posts. The first post, dated 5 days ago, mentions a joint workshop between the AWARE and DIALOG projects. The second post, dated 1 week ago, is a video alert about TERN Systems being the 'Partner of the month'.

**AWARE**

**AWARE ATM Project**

Enhancing human-machine collaboration by an artificial situational awareness system for air traffic management

Airlines and Aviation · Zagreb, Croatia · 165 followers · 11-50 employees

Billy & 47 other connections follow this page

Message Following

Home About Posts Jobs People Insights

**Overview**

The goal of the project is to enable human-machine collaboration by using an artificial situational awareness system which is enabling AI to anticipate and respond to human needs by understanding human intent and goals. While humans are extensively trained to understand the capabilities, li ... see more

Show all details →

**Page posts**

**AWARE** **AWARE ATM Project** 165 followers 5d • 🌐

Yesterday, the AWARE and DIALOG projects held a joint workshop to exchange insights on human-AI teaming in air traffic control. We had fruitful ...more

**AWARE** **AWARE ATM Project** 165 followers 1w • 📺

New video alert! Meet our May "Partner of the month": TERN Systems – an Icelandic tech company delivering ...more

The YouTube channel:

<https://www.youtube.com/@AWARE-SESARERProject-s8s>



## AWARE - SESAR ER Project

@AWARE-SESARERProject-s8s · 13 feliratkozó · 5 videó

További információ erről a csatornáról ...stb.

 Feliratkozva 

Videók 



2:13

SESAR AWARE Project - Meet the team - Tem Systems 

47 megtekintés · 2 héttel ezelőtt



3:38

SESAR AWARE Project - Meet the team - UKSATSE 

42 megtekintés · 1 hónappal ezelőtt



2:34

SESAR AWARE Project - Meet the team - ZHAW 

57 megtekintés · 2 hónappal ezelőtt



1:43

AWARE Project at SESAR Innovation Days 2024 in Rome 

75 megtekintés · 6 hónappal ezelőtt



1:19

AWARE teaser 

124 megtekintés · 9 hónappal ezelőtt