ATp

SOLUTION TITLE

List of solution partners
(Lead underlined)

Project logo

sesar JOINT UNDERTAKING

Solution definition:

Technical definition: Free text.

Supporting Solution Exercises and dates:

- <EXE ID> <TRL-Phase> (<type of Exe>) <Exe Leader> (<Exercise Location>, <Target environment for validation>) <Start date> to <End date>

Example:

- EXE-001 V2 (RTS) NATS (Southampton, Heathrow TMA) 02- to 04-2021

Solution definition status
(Slide selector to the right
Red = Grant draft
Amber = In coordination
Green = Approved SESAR 3 JU)

TRL1 | TRL2 | TRL4 | TRL6 | TRL7/8

Target Release **Rxx/Ryy**

Maturity gate date — Maturity gate date

Maturity phase
(Achieved in Green
In-progress in Amber
Out of scope in Grey)

Release of each Maturity phase

Picture illustrating the solution

Flagship
(to switch from one flagship to another:
Right click + Sent to Back)

Level of Automation
(to switch from one level to the next one:
Right click + Sent to Back – refer to next slide or the Master Plan 2020 for more details)

Virtualisation
(Right click + Sent to Back to activate/ deactivate)

Artificial Intelligence
(Right click + Sent to Back
to activate/ deactivate)

Some new icons are still under coordination at programme level (
potentially new icons will be added for:
- CIV/MIL coordination
- Local/Network deployment decision
- Network impact
- Air/Ground sync
- Ground/ground sync
- Contribution to digitalisation (three steps: digitisation, connectivity & data sharing)

Anticipate some further changes to the template and see notes below)

Essential Operational Change (EOC: CNS, U-s, dA, iN, vS, TBO, dS, Atp, M^3)
(Change the text of the WordArt to the correct EOC – refer to next slide or the Master Plan 2020 for more details)

If the EOC is N/A put nothing

Innovation pipeline
(to switch from one strand of the pipeline to another:
Right click + Sent to Back)

List of KPAs addressed – KPAs should be taken from the DES Performance framework and U-space Companion document

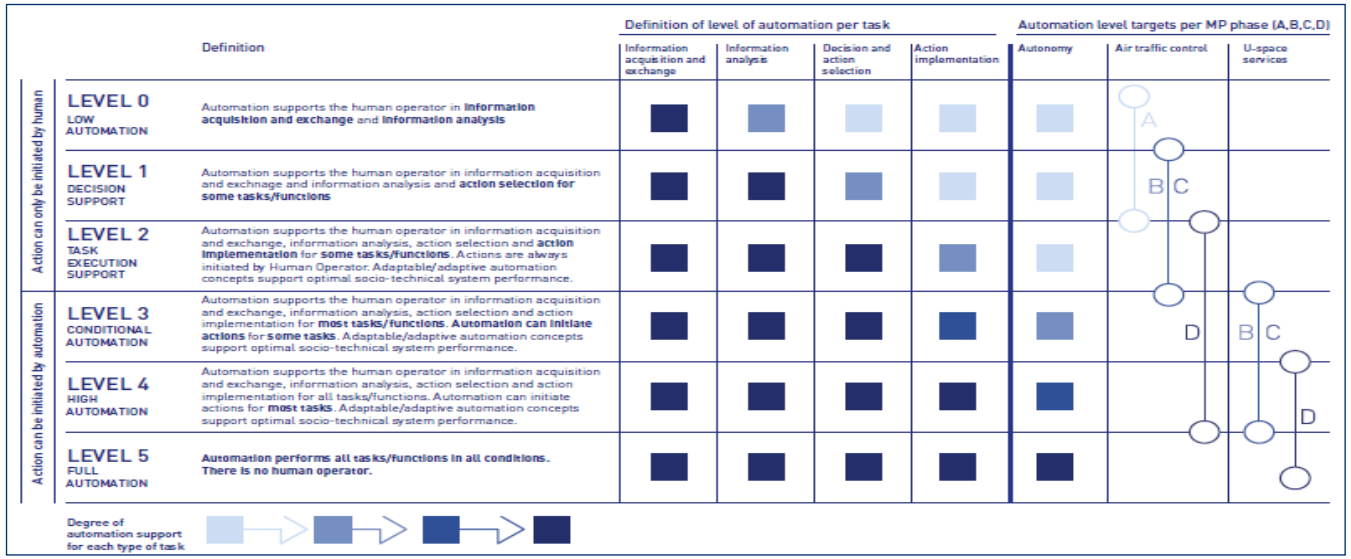
About EOCs, Automation Levels and Innovation Pipeline
(refer to Master Plan 2020 for more details)

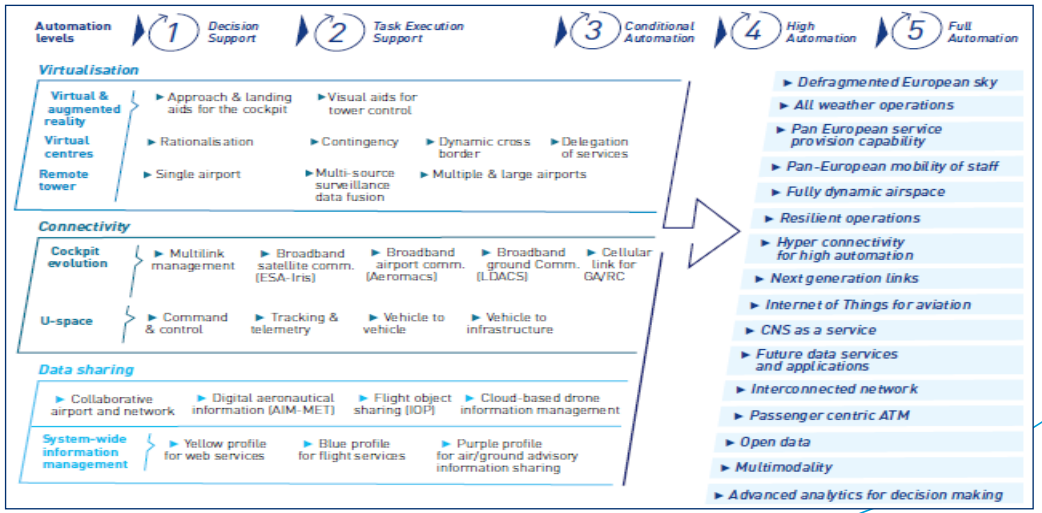
Essential Operational Changes EOCs

CNS	CNS infrastructure and services	U-s	U-space services	dA	Fully dynamic and optimised airspace
iN	ATM interconnected network	vS	Virtualisation of service provision	TBO	Trajectory -based operations
dS	Digital AIM and MET services	ATp	Airport and TMA performance	M³	Multimodal mobility and integration of all airspace users

Innovation Pipeline Strand

Automation Levels





SESAR DES Solutions (ER1, IR1) & DSDs (DSD1a, DSD1b)

Aviation Green Deal

0374
E-CONTRAIL Climate Quantification and Hotspot Prediction Service

UC3M, BIRA, KTH, RMI

E-CONTRAIL

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TRL1 | TRL2 | TRL4 | TRL6 | TRL7/8 | Target Release R15

31/05/2025

Solution definition:

E-CONTRAIL is an advanced AI-based service with a twofold functionality: first, it quantifies the radiative forcing attributed to contrails leveraging satellite imagery and, second, predicts climate hotspots in airspace where contrails form, enabling flight dispatchers, airlines, Air Navigation Service Providers, and the Network Manager to manage flight paths and/or airspaces to reduce the environmental footprint of aviation.

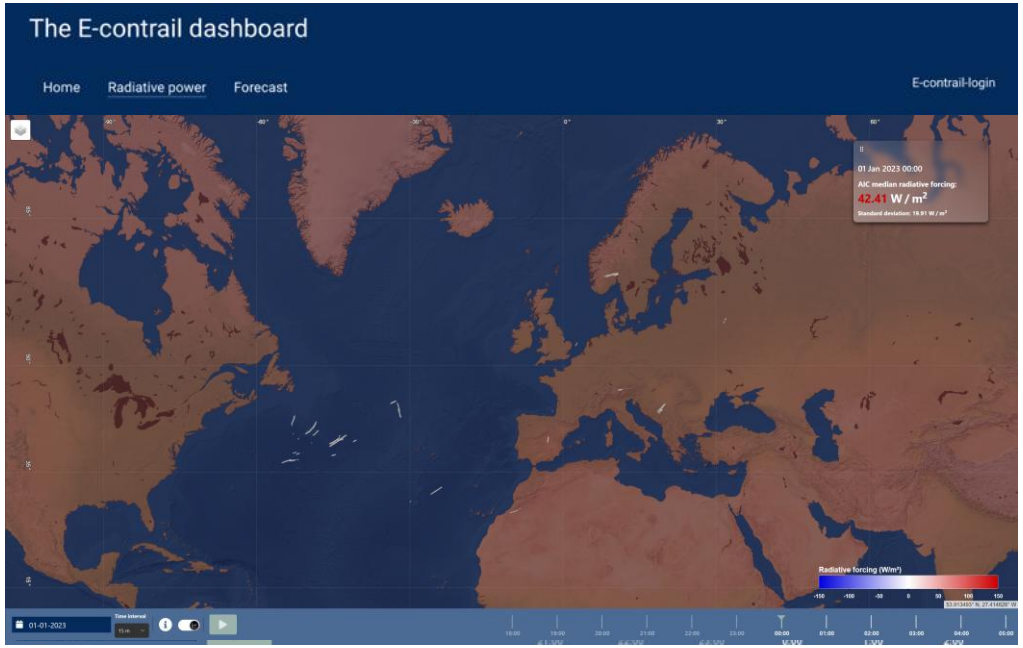
This solution provides an AI-driven models capable of: 1) quantifying the radiative forcing attributed to contrails leveraging satellite imagery on an historical time window (e.g., year 2023) and 2) predicting (up to 24 hours ahead of time) the volumes of airspace with conditions conducive to large global warming impacts due to contrails and aviation-induced cloudiness. The AI models, trained using historical data, including satellite observations, weather, and aerial traffic, offers, on the one hand, historical quantification of the climatic impact of contrails as detected from satellite images and, on the other, ahead of time predictions to help mitigate the environmental impact of aviation. A user-friendly visualization tool has been developed enabling regulatory bodies, flight dispatchers, airlines, Air Navigation Service Providers, and the Network Manager to better understand the climate impact associated to contrails and, thereby, manage flight paths and/or airspaces to reduce the environmental footprint of aviation.

E-CONTRAIL serves as a crucial step towards incorporating climate impact mitigation into the ATM Master Plan, aligning with SESAR's objectives for sustainable and efficient air traffic management. This solution focusses on two benefits : Environmental Sustainability (decreasing aviation's climate impact) and Regulatory Compliance (environmental regulations and carbon footprint reduction).

Previous SESAR solutions : FLyATM4E, ALARM, and ISOBAR

Supporting Solution Exercises and dates:

EXE-01 TRL1 UC3M (Simulation environment –no location-) 01 to 04-2025



The visualization tool can be divided into two visualization services: climate impact quantification and ISSR forecasting.

It can be accessed via this link https://econtrail-test.aeronomie.be/test

List of KPAs addressed – Environment (ENV)