



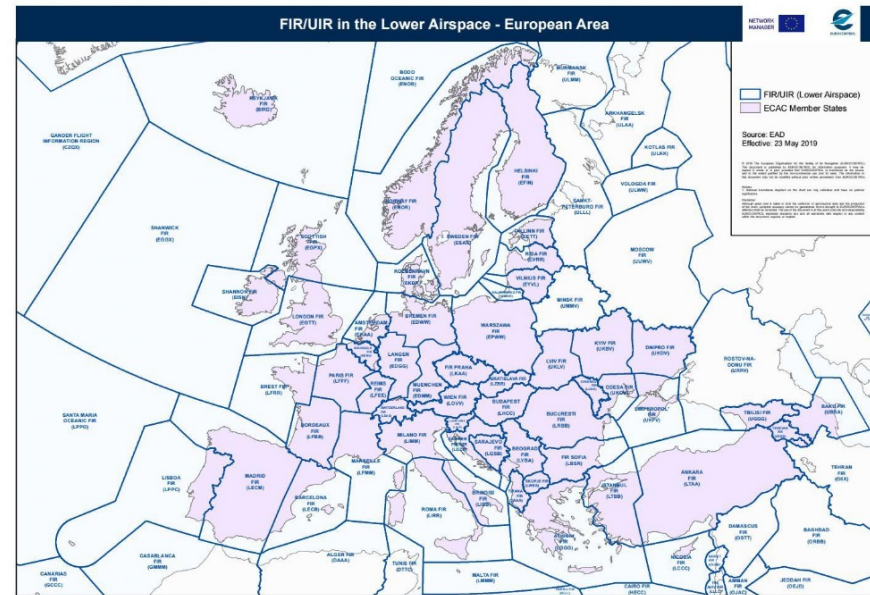
AI for the Aviation Network

Feb 2024 - Benjamin Cramet - EUROCONTROL

Photo Credits Pavel Danilyuk



What is Air Traffic Management





AI for the EURONCONTROL Network Manager

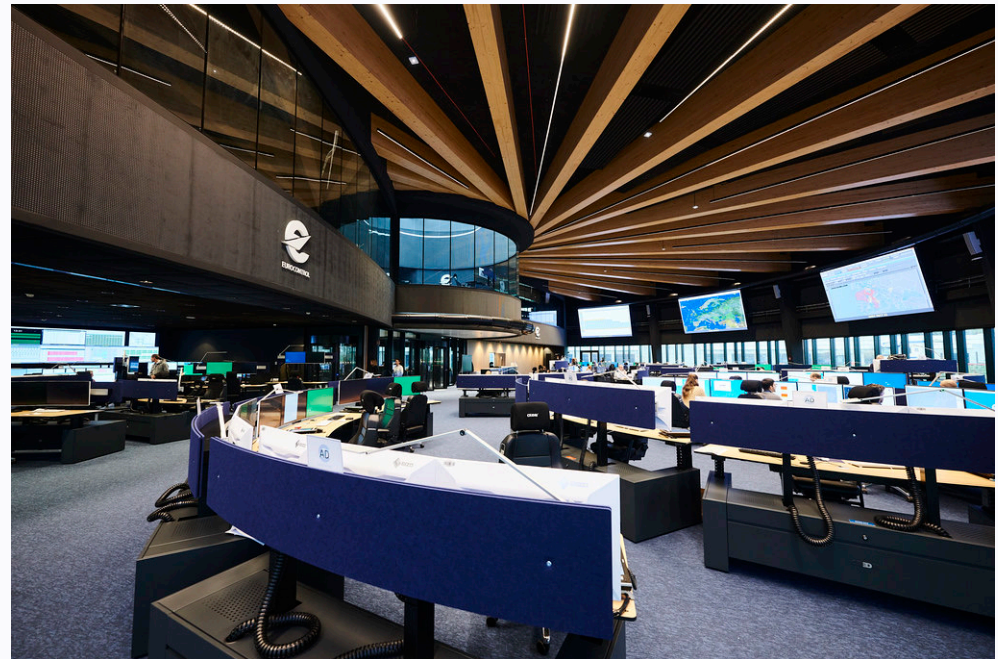


Network Manager is about improving performances

- Network Coordination,
- Capacity Management,
- Flow Management
- Airport integration
- Crisis Management
- Communication-Navigation-Surveillance (CNS)
- Aviation spectrum

And more (e.g) :

- Cybersecurity (EATM Cert)
- Information management





AI for the Euroncontrol Network Manager



iNM [2025]

Our fully digitalised Network

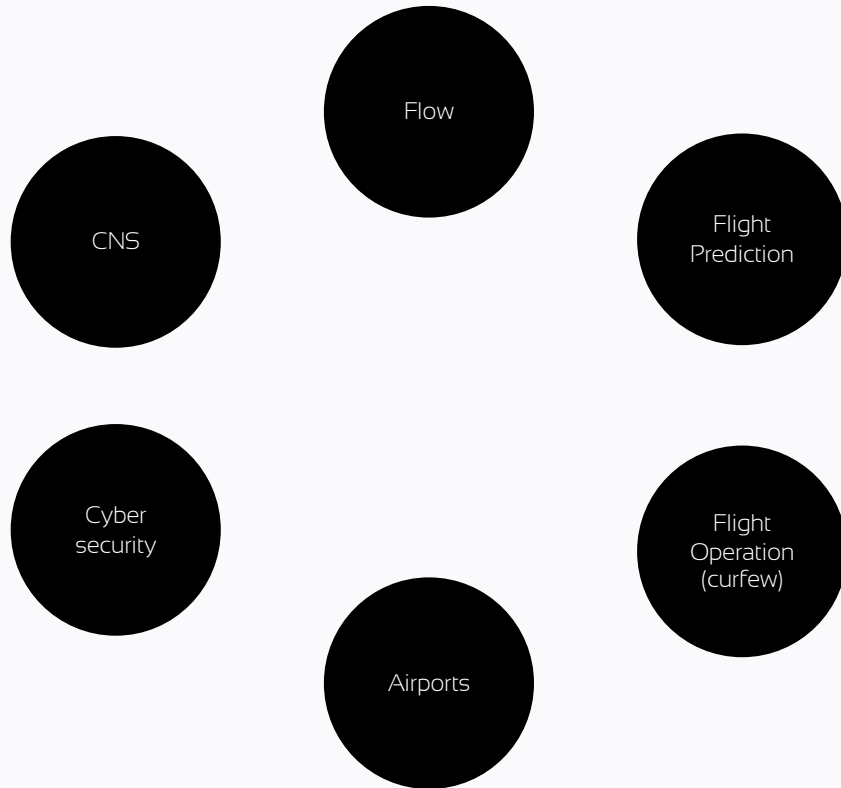
SUPPORTING EUROPEAN AVIATION



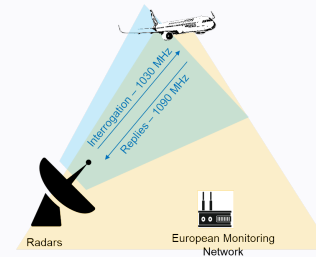
AI is a Key Enabler



AI for the Aviation Network



Working with
NM Operation Centre
Airlines
ANSPs
Airports
Cyber security experts



Class "H" Hover



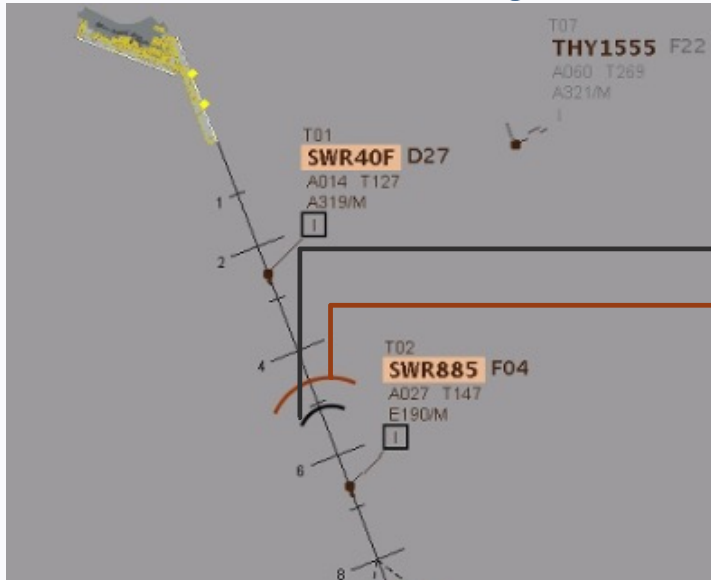
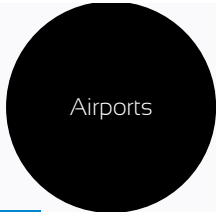
Class "S" Straight

Flight	Origin	Destination	Operator	Status
BA149	LHR	AMS	BA	On Time
KL1234	AMS	CDG	KL	Delayed
AF456	CDG	MAD	AF	On Time
IB789	MAD	LHR	IB	Cancelled
DL101	LHR	JFK	DL	On Time

and the second indicator is the ATFM delay right before departure.



TBS-COAST – High level view



Initial Target Distance (ITD) used by Approach Controllers

Final Target Distance (FTD) used by both Approach and Tower Controllers

COAST is the EUROCONTROL service that, based on SESAR eORD concept, provides airports with the ML-models built for them upon their meteorological and historical flight data

Retraining at each airport remains a **constraint** –
Optimisation / standardisation is an enabler

Flow

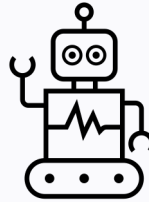
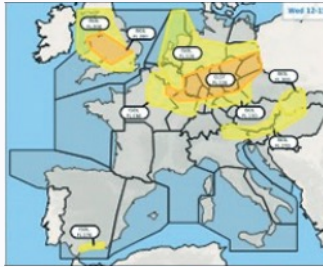
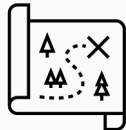
ISOBAR AI

Weather



Demand

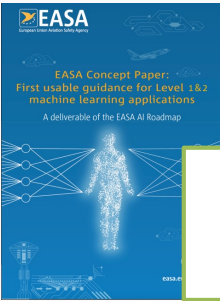
Airspace



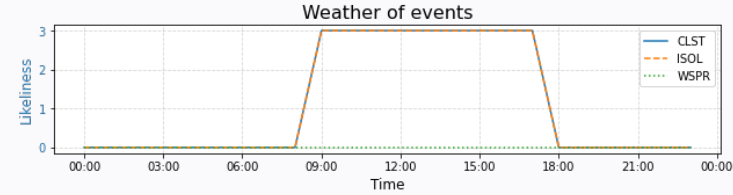
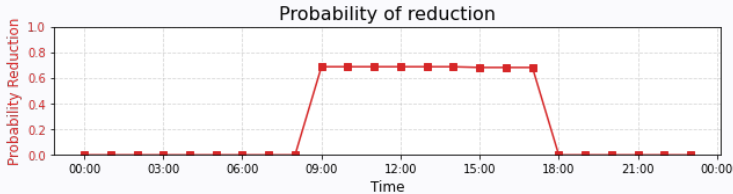
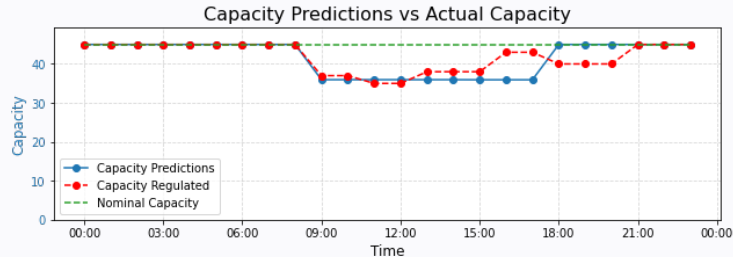
Categorisation

Predictor

Very likely	ISOL	CLST	WSPR
Likely	ISOL	CLST	WSPR
Less likely		CLST	WSPR
Occurrence of CB clouds	Isolated	Clustered	Widespread

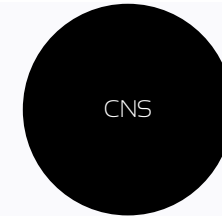


Level 1A





Towards fully digital ATM



Speech Recognition in Controller pilot communications

Will remain (e.g. emergency)

Significant progresses in speech recognition models (e.g. LLMs)

Many use cases (simulation, training, ops , safety investigation...)

Various models , various processes, performances

When certification required - standards required



Need for a standard (involving all aviation stakeholders)

Pilot / Controller taxonomy

Operational performances

Sensitive data management

Speech to context

VCS Frequency

Cyber-Security



Further deploy AI in a business driven way to **support operational needs**

Anticipate **regulation and standardisation**
(AI for aviation, upcoming standards) to **deliver safe AI**
benefits....

