



Supporting  
European  
Aviation



# Information Management and Artificial Intelligence

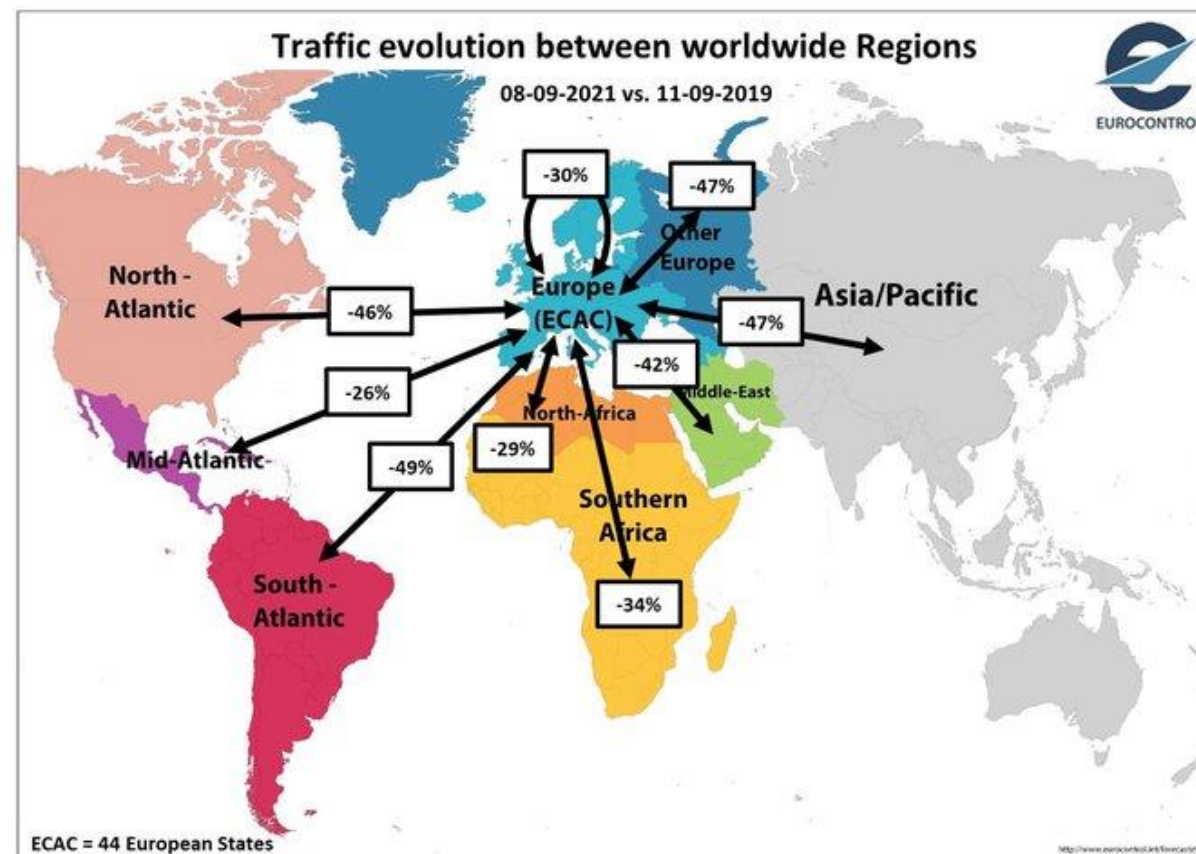
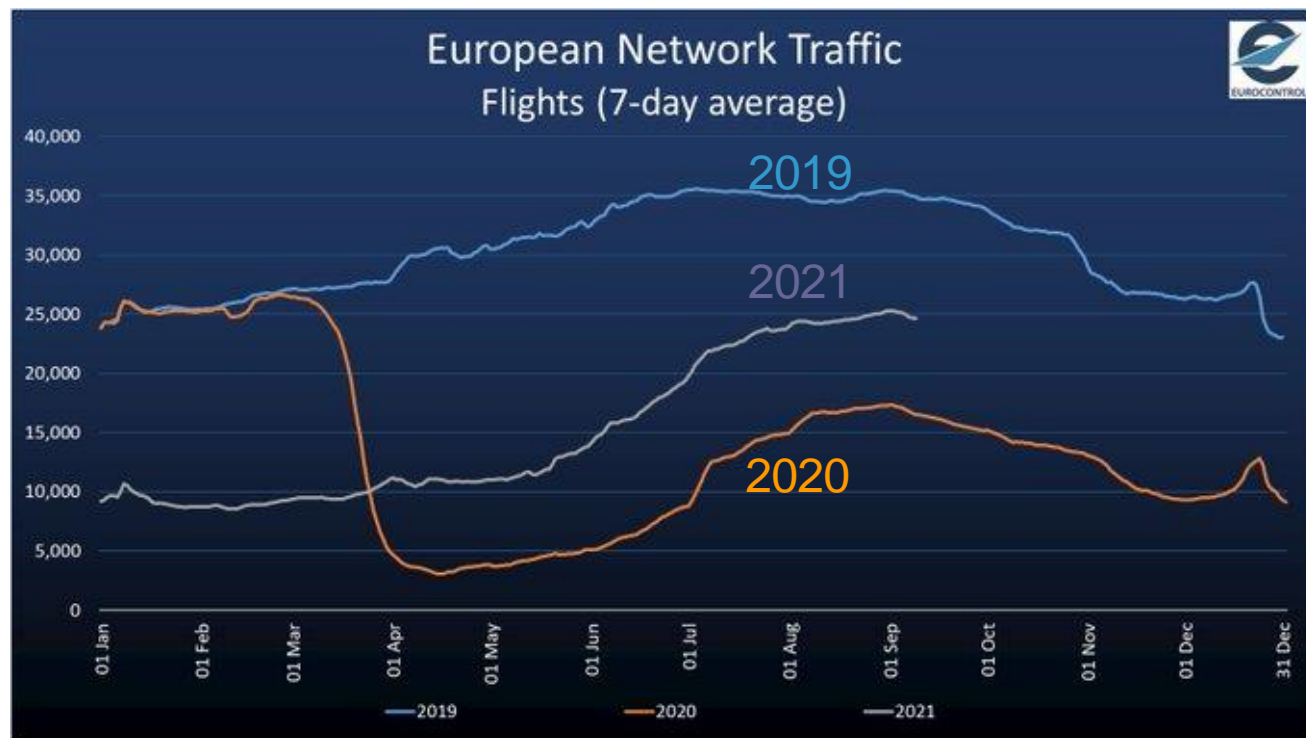
Paul Bosman  
Head of Air Traffic Management Infrastructure Division  
16 September 2021



NETWORK  
MANAGER



# Current traffic levels



# FLY AI

## Demystifying & Accelerating AI in Aviation/ATM

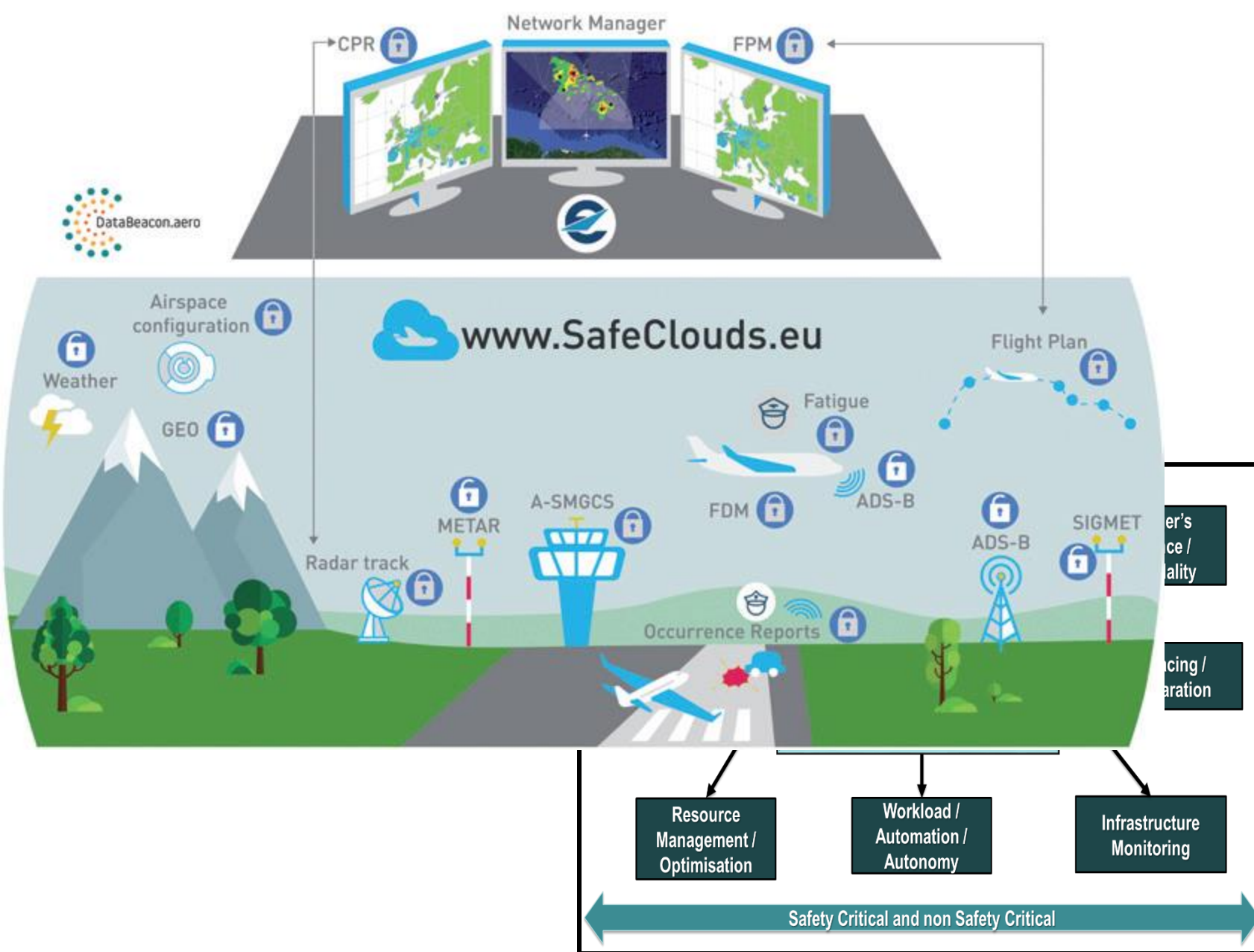
European Aviation AI High Level Group



WITH INPUTS FROM EDA MILITARY EXPERTS AND NATO ATTENDING IN AN OBSERVING CAPACITY



- Scope : Aviation/Air Traffic Management
- Focus : what we can do TODAY
- Demystify AI
- Promote AI based applications and its benefits
- Identify Business Challenges
- Recommendations to accelerate AI uptake



23-SESAR BigData4ATM Passengers behaviours understanding	22-EANS visual tracking in digital towers	21-EDA RPAS autonomous capability	11-DSNA Use of AI to optimise the sector configurations	10-THALES Airspace complexity	1- Heathrow passenger transfer improvement
	13-DFS final approach distance recommendation	13-DFS Climb trajectory prediction	15-ECTL/THALES Demand and capacity balancing	9-THALES traffic prediction	2- ECTL MUAC traffic prediction to optimise ATCo usage
23-SESAR MALORCA Speech recognition for ATCo	20-H2020 Safecloud rwy exit prediction (rwy occupancy optimisation)	16-SESAR/ Heathrow enhanced TBS with ML	13-DFS approach flight time prediction	8 -THALES FMS Validation	3- HONEYWELL Maintenance cost & fuel optimisation
23-SESAR DART data driven trajectory prediction	19-SESAR - HONEYWELL TCAS evolution	14-SESAR- HONEYWELL Airborne computer vision	7- ECTL Forecast improvement	4- ECTL GNSS monitoring	
23-SESAR INTUIT strategic trajectory planning	18-EDA Cyber situation awareness improvement	17-AIRBUS Automatic Take off Taxi and landing	12-ECTL Runway Operational Performance predictions	6-Heathrow Image recognition to detect Rwy vacation	5- ECTL Automated Flight Plan correction
Exploration			R&D		Deployment

# Seven Key Recommendations

## Data and AI-infrastructure framework

- A federated data foundation and AI-infrastructure should be established

## Research and Innovation

- Further exploration of the potential of AI in aviation/ATM should be strengthened in areas of:
  - high impact on aviation/ATM performance and environment
  - human-machine collaboration
  - safety-critical operations
  - safety intelligence tools and cyber threat intelligence services

## Validation and Standards

- Appropriate AI validation methods and tools should be developed as well as standards and guidelines

## Deployment

- The rapid uptake of AI-based solution in operations should be encouraged in the cybersecurity domain and non-safety critical operations
- European aviation/ATM actors should aim to reduce AI-developments time to market.

## Communication and Dissemination

- Communication on AI should be enhanced
- Dissemination of AI benefits and lessons learned should be strengthened
- AI aviation/ATM applications developments and deployments should be regularly scouted

## Training and Change Management

- An AI culture through training/re/upskilling and change management should be developed

### Happening already

- SWIM exchanges e.g. NM B2B, MET, ...
- Many free trajectory sharing websites
- EU regulations

### However

- No one-stop shop
- Large amounts gathering
- Data quality
- Techno vs domain expertise
- Cyber vulnerabilities
- AI techniques
- End-User-centric
- ....

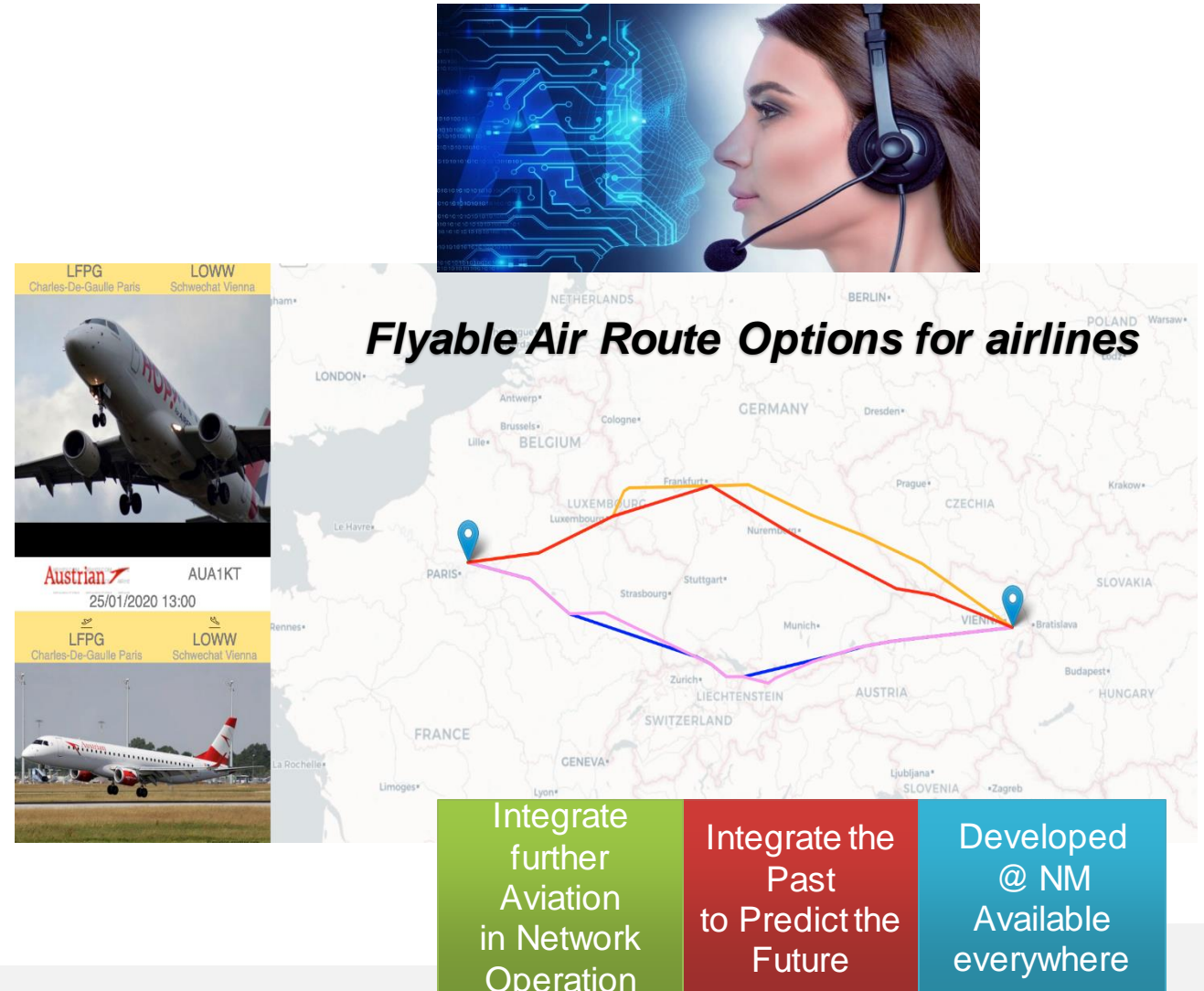


# At EUROCONTROL

## More than 30 new AI-based applications



- AI driven traffic flow management
- AI **explainability**
- Decentralised and secure AI infrastructure
- New AI-enhanced simulation tools
- AI driven capacity planning integrating meteo
- Enhanced predictions e.g. airport curfew
- **CNS monitoring improvements**
- Cyber resilience improvement
- **Enhanced forecasts**
- Runway throughput improvements

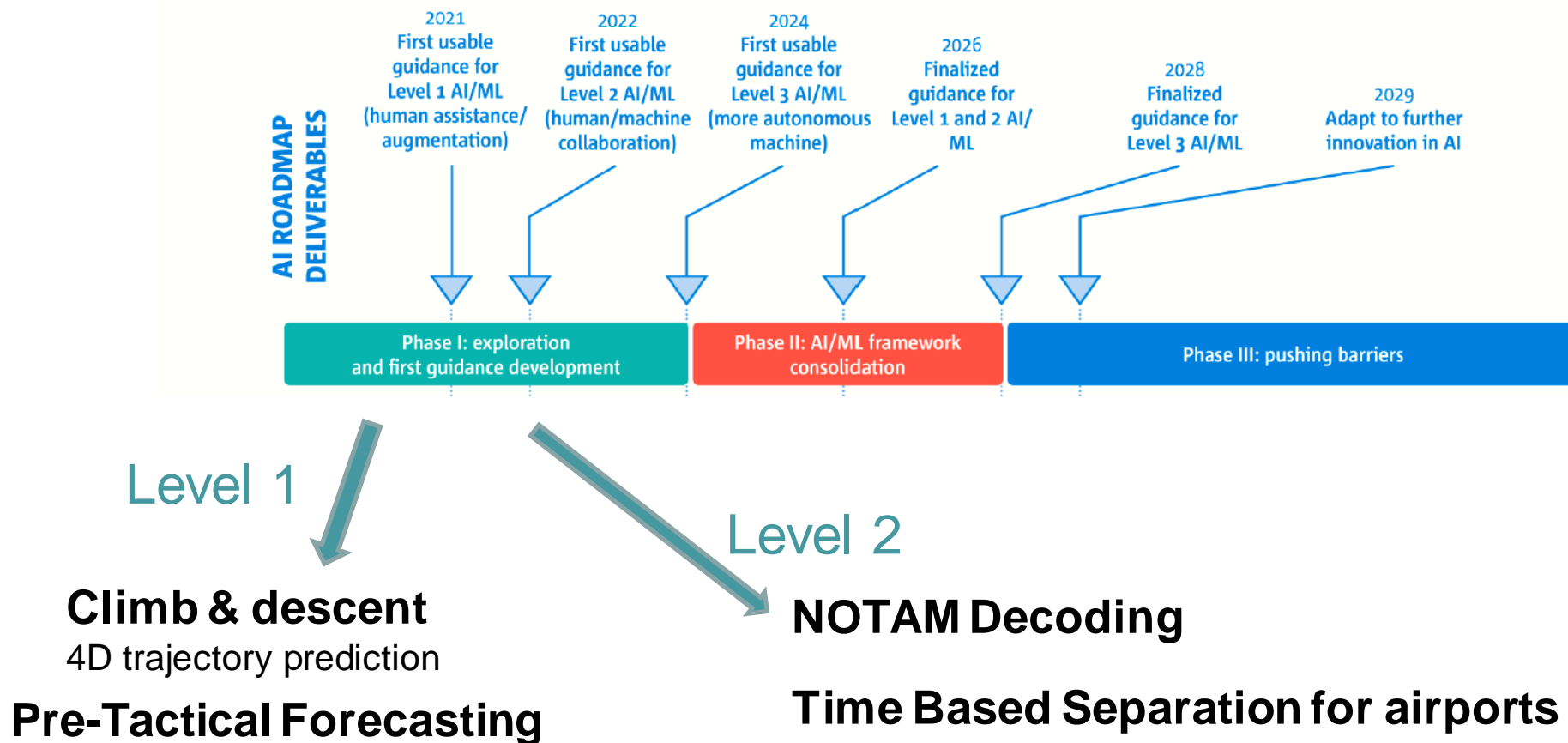




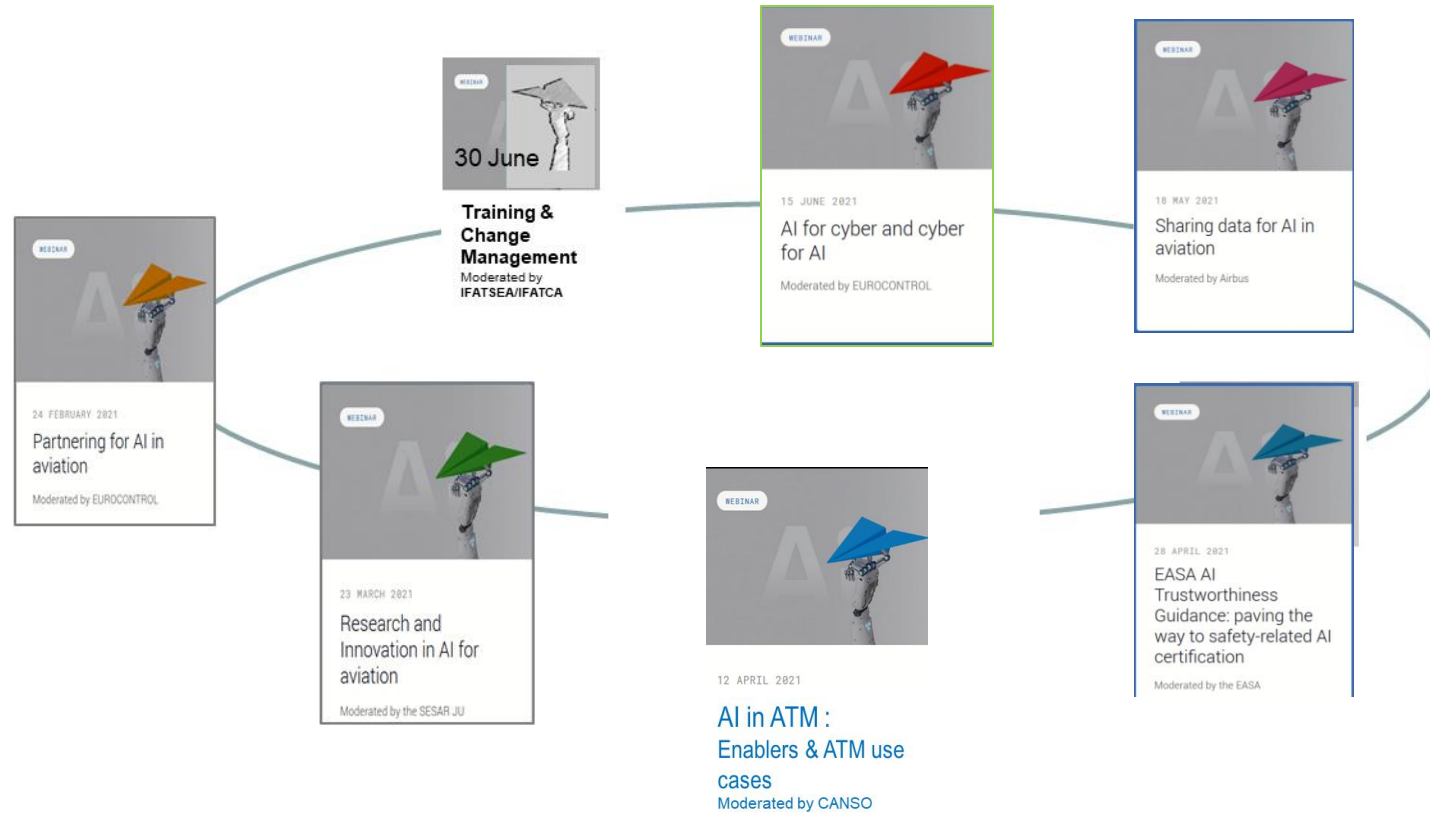
# Collaborating with EASA AI integration in NM systems



## EASA AI Roadmap timeframe and milestones



# 7 FLY AI webinars – February – June 2021



Thousands of participants

For recordings, links to white paper and guidance, use cases visit our websites :

<https://www.eurocontrol.int/fly-ai>

&

[www.eurocontrol.int/artificial-intelligence](https://www.eurocontrol.int/artificial-intelligence)



# The best prophet of the future is the past



## Unlock your data



# Thanks for your attention !

<https://www.eurocontrol.int/publication/fly-ai-report>

paul.bosman@eurocontrol.int

