

Accelerating Artificial Intelligence use in Aviation

Supporting
European
Aviation



AI at EUROCONTROL 2022



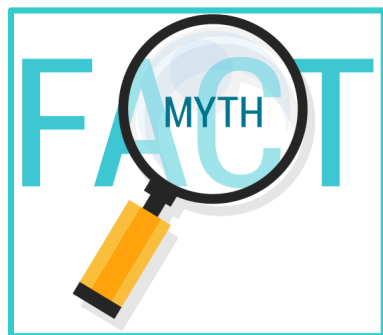
Paul Bosman
EUROCONTROL NM
Head of INFRASTRUCTURE
21 June 2022







FLY AI



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



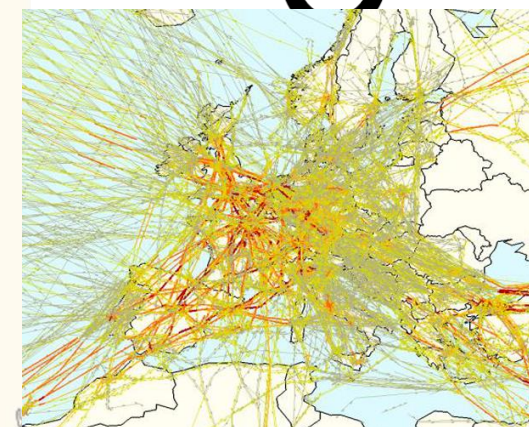
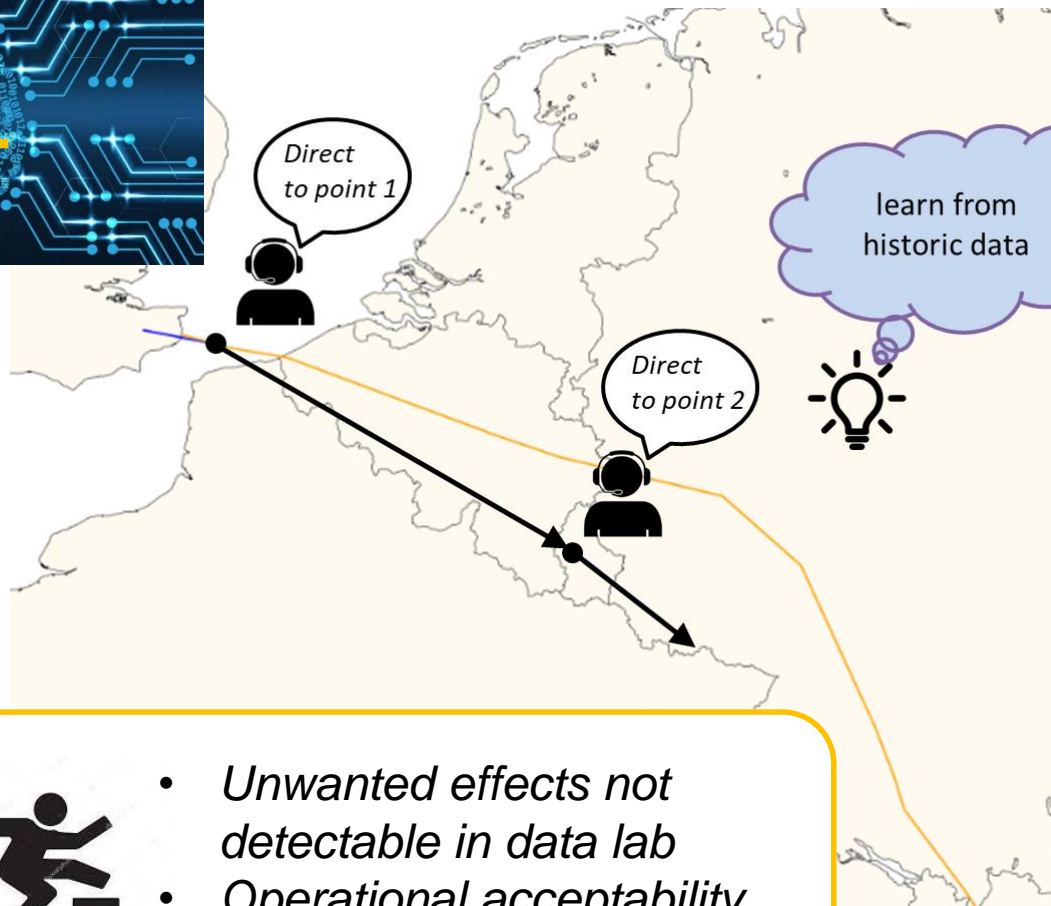
WITH INPUTS FROM EDA MILITARY EXPERTS AND EASA IN AN OBSERVING CAPACITY EUROPEAN DEFENCE AGENCY NATO OSAN

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

2019 : 26 AI Applications

MUAC – Traffic Prediction Improvements

✓ Jan 2018



ATM flow & capacity
Predictability
Optimisation



- *Unwanted effects not detectable in data lab*
- *Operational acceptability*

June
2021

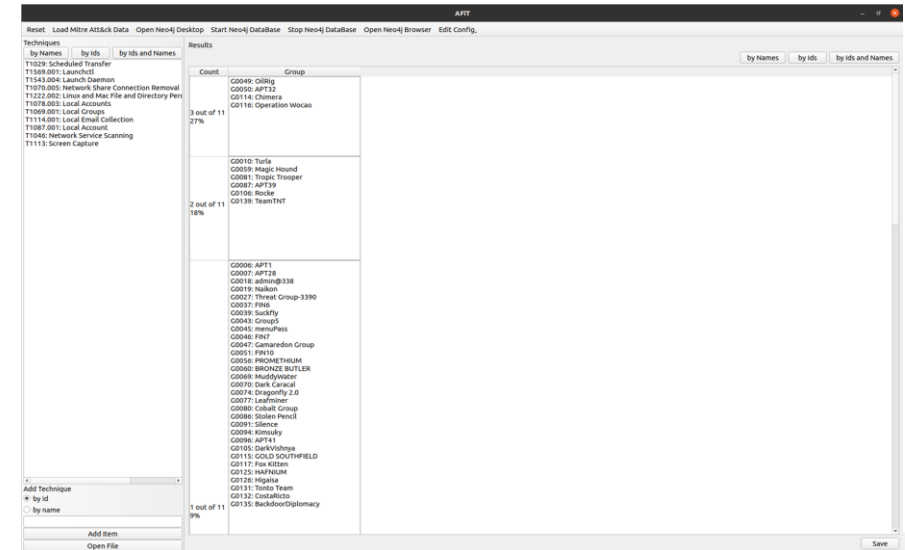
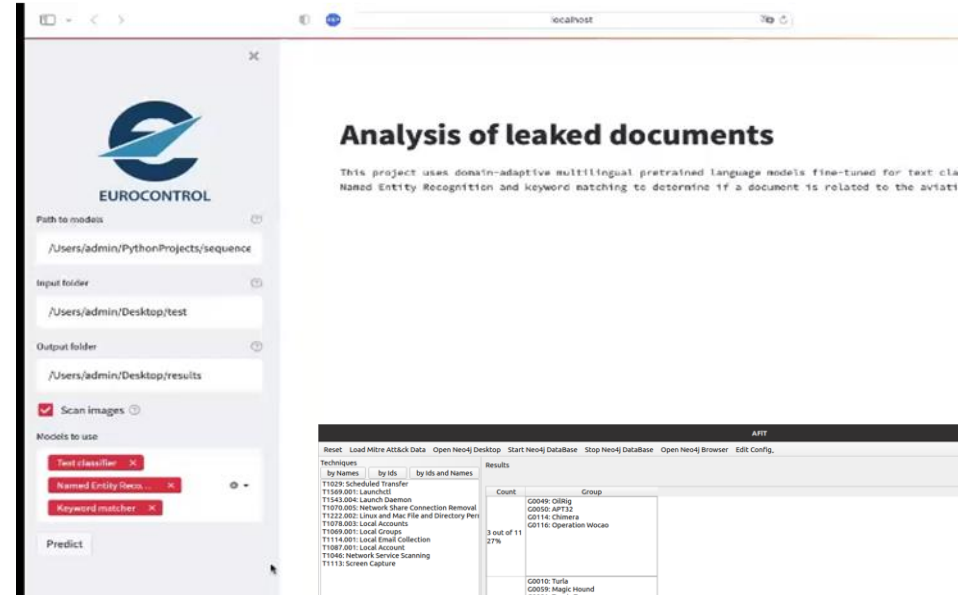
AI for CYBER - Leaked aviation documents



AI identifies if a leaked doc is aviation related



- 98-99% success rate
- Saves resources (~500 h/year of boring tasks)
- Focus on added-value tasks



And more to come :

MITRE ATT&CK – Started 06/2022

- Improve attribution of a cyber-attack

Password cracker – Initiated 05/2022

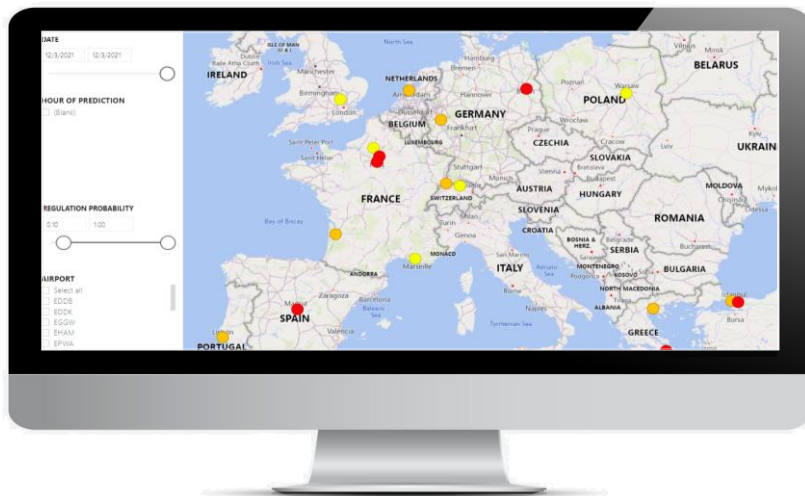
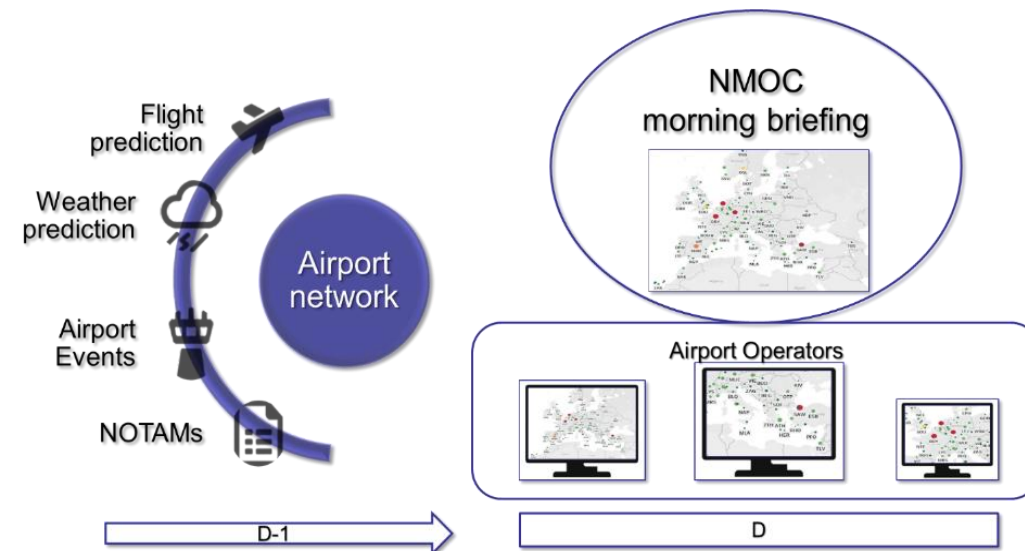
- Improve password cracking capability (pentest)
- Improve passwords – reject new passwords “too easy to guess”

April
2022

NM Regulation Outlook



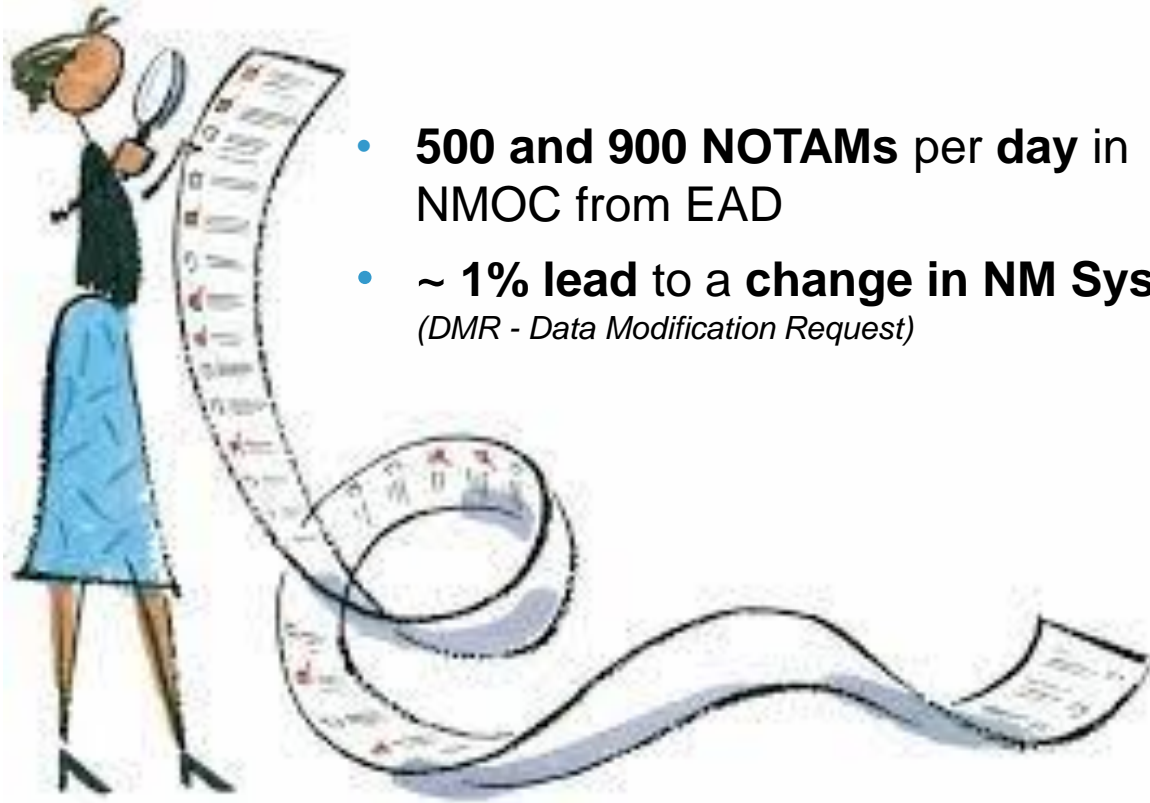
- Artificial intelligence tools to predict the likelihood of a regulation
- Using historical “normal” data to train the Machine Learning model: 2018 and 2019
- Focusing on the busiest 100 airports
- Predictions embedded in the Network Manager OPS Center Dashboard



- Decision support tool for the NMO Airport Function
- Foresees impact on Airlines/Airports => improves its management


**Autumn
2022**

Automation - NOTAM AI



- **500 and 900 NOTAMs per day** in NMOC from EAD
- **~ 1% lead to a change in NM Systems**
(DMR - Data Modification Request)

Machines prepares and Staff decides



1 - process NOTAM
2 - assign a probability to trigger a change in Airspace configuration in NM Systems
3 - score from A to F
4 - sort NOTAM per score



Accelerates NOTAM processing by OPS Staff





And ...

Traffic forecast

Automating flight plan p

Traffic predictions impro

Curfew infringement pre

GNSS monitoring: ionos

Reducing operational im

COAST with use of mach

Improving climb and des

Plus many mo



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