

## Impact story

### Putting the AI in air traffic control

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The UK's leading air traffic control provider, NATS, has teamed up with the Turing to explore how the industry could evolve with the addition of pioneering machine learning.

- Flight movements above the UK are at an all-time high – and rising fast.
- Air traffic control (ATC) puts safety first, maintains contingency plans and juggles competing priorities.
- Advancing ATC is a key challenge to providing the robust transport infrastructure the nation needs
- NATS is working with the Turing's Data-centric Engineering programme and Edinburgh's computing centre, EPCC, to discover how machine learning (ML) can take ATC further.
- The complex, data-rich arena of ATC offers huge opportunities for high-impact developments in ML.
- Project researchers developed an open-source experimentation platform for AI-based ATC agents.
- The platform evaluates different ATC algorithms for real-time decision-making, with ML techniques ranging from optimisation approaches to reinforcement learning.
- The platform can go from two simulated aircraft to enormously complicated situations beyond the limit of human decision-making.
- Collaboration will deliver new and better tools and decision aids for air traffic controllers, and lay the groundwork for broader automation in the industry.

#### Impact

- Providing critical insights and novel approaches for the UK's premier air traffic control organisation.
- Enabling AI to spread its wings in commercial aviation, where there is huge potential for benefit.
- Open-source approach boosts science and practice not just for NATS and the Turing, but also for the wider ML community.

**“We can explore the potential of AI for our industry and it just would not have been possible without the fantastic team at the Turing.”**

Benjamin Carvell, Senior Researcher at NATS



The research is aiming to solve challenges that exist in practice, using data from real-world ATC scenarios. Image shows NATS's data visualisation of air traffic over the UK in one day.