

Innovative take-off system could lead to safer, cleaner air travel

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A new approach to aircraft scheduling that uses computer models could allow a safe increase in airport throughput and reduce pollution.

The system under [development](#) would, for the first time, provide runway controllers with advice, based on state-of-the-art computer models, on the most efficient, safe sequence in which aircraft can take-off.

Currently, runway controllers carry out their demanding job using their own observations and mental calculations, with limited reliance on technical aids.

The system is being designed to take factors such as aircraft size, speed and route into account. Large aircraft create more turbulence, for example, and so the aim is to group aircraft together by weight category. The system would also cover aircraft taxi-ing to the airport holding point, as well as those already waiting there. Responding quickly to changing circumstances, it would provide runway controllers with instant advice.

By minimising the amount of time aircraft spend on the ground with engines running, the system would also reduce noise and fuel pollution affecting people living close to airports, and could save thousands of litres of aviation fuel.

The research could lead to a computer-based system that helps runway controllers make quick but effective scheduling decisions, generating a 10-25% reduction in delays affecting aircraft waiting for clearance to take-off.

The work is being carried out by computer scientists at the University of Nottingham with funding from the Engineering and Physical Sciences Research Council (EPSRC) and National Air Traffic Services Ltd (NATS).

The research project is being run in conjunction with Heathrow Airport Air Traffic Control and will be designed to deal with 'real world' constraints (e.g. runway controller workloads and holding point structure).

Professor Edmund Burke of the University's School of Computer Science and Information Technology says: "Reducing airport bottlenecks is good for passengers, airlines, the environment and people living close to airports. Our aim is to cut runway controllers' workloads while increasing safety as demand for air travel grows."

Source: Engineering and Physical Sciences Research Council

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