

Enhancing airport resilience and runway capacity

As demand for air travel grows it becomes essential for airports to enhance resilience and runway capacity, especially for those whose capacity is constrained at peak times and during disruptive conditions.

Intelligent Approach

NATS, the UK's leading air navigation services provider and Leidos, a leading technology provider, have developed a ground breaking airport solution called Intelligent Approach. With Intelligent Approach, air traffic controllers around the world now have the tools to safely optimise arrival spacing in all conditions and for all runway configurations, delivering capacity, safety and resilience benefits without the need for expensive changes to ground infrastructure. As demand for air travel grows it becomes essential for airports to leverage proven innovations to drive improved capacity, to do it quickly when capacity is constrained, and safely during disruptive conditions.

Intelligent Approach is operational at Heathrow Airport and designed to meet the needs of large and complex airport operations, or airports that simply need to increase the productivity of their runways. It has been designed in a modular way so that it can integrate with existing ATM systems allowing fast operational and financial benefits.

Intelligent Approach Modules

Intelligent Approach is made up of the following three core modules that can be tailored to the needs of the airport operation and provide benefits to airports, airlines and ANSPs.

- 1.** Distance Based Separation improves the consistency of approach spacing by providing controllers with a visual indication of the required separation between aircraft with optimised wake spacing rules.
- 2.** Time Based Separation provides resilience to headwinds by reducing the wake turbulence separation based on the live wind conditions and therefore improves operational and safety performance.
- 3.** Optimised Mixed Mode has been specifically designed for mixed mode runways to safely reduce inbound separation by taking account of departure runway occupancy.

Each module can apply any of the following wake turbulence separation criteria including:

- ICAO: The standard wake turbulence model
- RECAT: Enables increased capacity by optimising wake separations
- Pairwise: Enables significant capacity gain by taking account of individual aircraft wake pairings
- Custom: Any custom wake separation system approved for your airport

The far reaching benefits of Intelligent Approach

Intelligent Approach allows an airport to safely refine separations between aircraft to:

- Increase punctuality
- Enable improved landing rates to increase resilience and scheduled movements
- Allow increased passenger numbers with larger aircraft whilst maintaining landing rates

The use of Intelligent Approach positively impacts the entire airport operation. It enables more flights with fewer delays and reduces cancellations by maintaining a resilient and consistent landing rate. This results in benefits for all involved including:

- Improved on time performance and lower fuel costs for airlines
- Operational efficiencies for the airport to control costs by improved resilience and generate revenue through increased movements
- The effective management of controller workload for ANSPs
- The positive environmental impacts of lower fuel burn as a result of reduced airborne holding times
- Consistent delivery of increased capacity

All of which help to achieve the best customer experience possible.

Intelligent Approach: A proven solution at Heathrow Airport

Intelligent Approach has been in continuous operation at Heathrow since March 2015. The solution is continuously developed and was most recently upgraded to apply RECAT-EU separations in March 2018. Benefits* already achieved include:

- Average tactical capacity gain of 2.2 aircraft landings per hour in all wind conditions
- An improvement of 1.5-2.5% in airport punctuality
- An average saving of over 1,794 seconds per day in arrival separation on final approach – the equivalent to extending Heathrow's operating day by 29.9 minutes

* Tactical capacity gains quoted are for Heathrow which was already using 6 Wake Categories so may be higher for some airports. Gains are baselined against original distance based separation.

Find out more

If you would like to learn more about Intelligent Approach please email info@intelligentapproach.aero