

Challenges
proposed by

æ AirEuropa

BACKGROUND

connects
science meets business



For 40 years, Air Europa has evolved into a key airline connecting Europe with the Americas, Africa, and the Middle East from its hub in Madrid. As part of the SkyTeam alliance, it combines an extensive international network with quality service and a modern, efficient, and sustainable fleet of 60+ aircraft.

Its continued focus on innovation and network expansion enables Air Europa to offer an enhanced passenger experience that caters to all different segment needs.

AREAS OF INTEREST

ARTIFICIAL INTELLIGENCE

SUSTAINABILITY

DATA & ANALYTICS

SUPERCOMPUTING / HPC

Aina

 **Generalitat
de Catalunya**

CHALLENGE 1

TITLE

Quantum–Powered Digital Twin for Airline Network Resilience

DESCRIPTION

Airline operations are driven by highly interconnected factors including aircraft, crew, passenger flows, weather, airport constraints and air traffic congestion. The challenge is to develop a high–fidelity digital twin of the airline network, extending towards airspace modelling, capable of simulating and evaluating thousands of simultaneous what–if scenarios in real time.

The objective is to support disruption recovery while enabling predictive simulations that proactively identify and mitigate operational risks. The ultimate goal is to explore how quantum computing could transform decision–making in highly complex operational environments.

KEY WORDS

Quantum Computing • Airspace • Digital Twin • Optimisation • B2B



CHALLENGE 2



TITLE Intelligent Airport Stand Allocation and Scenario Impact Simulation

DESCRIPTION Airport operations are increasingly constrained by stand availability, infrastructure limitations, resource allocation and traffic congestion. The challenge is to develop a decision-support platform capable of optimising aircraft stand allocation while accounting for operational constraints such as contact versus remote stands, equipment availability and timing restrictions.

The objective is to assess the downstream impact of allocation decisions on delays and turnaround performance. The ultimate goal is to improve operational efficiency and resilience in highly constrained environments through simple interfaces and actions.

KEY WORDS Operations Research • Airport • Digital Twin • Simulation • B2B



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Generalitat
de Catalunya



Barcelona
Supercomputing
Center
Centro Nacional de Supercomputación



connects@bsc.es



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