

Airbus quantum computing challenge helps advance sustainable flight

#QCChallenge #innovation

Toulouse, 10 December 2020 – Airbus has concluded its global Quantum Computing Challenge (AQCC) announcing the winning team of the competition. The Italian team at Machine Learning Reply - a leading systems integration and digital services company part of Reply Group - won the challenge with their solution to optimise aircraft loading.

Airlines try to make the best use of an aircraft's payload capability to maximise revenue, optimise fuel burn and lower overall operating costs. However, their scope for optimisation can be limited by a number of operational constraints.

By creating an algorithm for optimal aircraft cargo loading configurations, taking these operational constraints -payload, centre of gravity, size and shape of the fuselage- into account, the winners of the competition proved that optimisation problems can be mathematically modelled and solved through quantum computing.

"The Quantum Computing Challenge is testament to Airbus' belief in the power of the collective, to fully harness and apply quantum computing technology to solve complex optimization challenges facing our industry today," said Grazia Vittadini, Chief Technology Officer, Airbus. "By looking at how emerging technologies can be used to improve aircraft performance and boost innovation, we are addressing the advanced flight physics problems that will redefine how the aircraft of tomorrow are built and flown, and ultimately shape industry, markets and customer experiences for the better."

The winners are set to start working with Airbus experts, as early as January 2021, to test and benchmark their solution in order to assess how the mastering of complex calculations can tangibly impact airlines, enabling them, as predicted, to benefit from maximised loading capabilities.

With operations being made more efficient, the overall number of required transportation flights could be reduced, having a positive impact on CO₂ emissions, thereby contributing to Airbus' ambition for sustainable flight.

The AQCC was launched in January 2019, to drive innovation across the full aircraft life-cycle. By developing strong partnerships with the global quantum community, Airbus is taking science out of the lab and into industry, by applying newly-available computing capabilities to real-life industrial cases.

For more information on quantum computing and the AQCC:

<https://www.airbus.com/innovation/industry-4-0/quantum-technologies.html>

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