

# Capacity Management based on the Integration of Dynamic Airspace Configuration and Flight Centric ATC solutions using Complexity

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**Abstract**— This paper presents a new capacity management concept where Dynamic Airspace Configuration (DAC) and Flight Centric ATC (FCA) are dynamically applied together during the Air Traffic Flow and Capacity Management (ATFCM) pre-tactical phase. An airspace delineation methodology is also introduced aiming at identifying when and where DAC or FCA can perform better. This methodology entails the establishment of a dynamic vertical boundary that divides the airspace in two different parts where DAC and FCA are deployed. In addition, the geometrical complexity metric has been considered to measure the traffic demand and the sector capacity as an evolution of the current use of entry counts or occupancy counts.

Three 24 hours scenarios over the Hungarian airspace have been simulated in order to validate the improvements, in terms of capacity and cost-effectiveness, that the dynamic integration of both capacity management solutions may provide in comparison with the two solutions deployed separately. Results show that when DAC and FCA are dynamically applied, a significant reduction in the number of overloads and underloads detected is achieved, what might lead to a higher capacity since more aircraft can be handled. Furthermore, a reduction in the controlling hours is also registered in this situation, what is translated into a better cost-effectiveness solution.