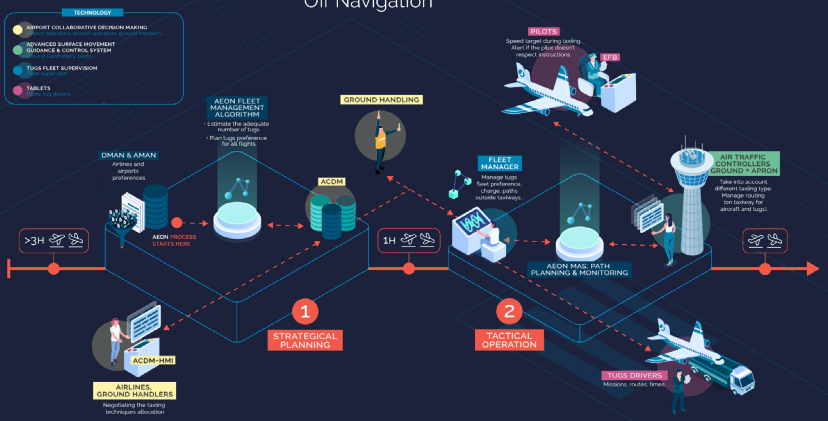
AEON

Advanced Engine Off Navigation



DESCRIPTION OF THE OPERATIONAL CONCEPT

AEON is a European project funded by SESAR Joint Undertaking that aims at innovating airport ground operations with more environmentally friendly taxiing techniques for the aviation sector.

The AEON project moves from the consideration that aircraft engines are highly efficient at the en-route phase, while on the ground they use much more energy than the one actually needed to move on land. Different technologies are being developed to address this problem and make taxiing operations more efficient. TaxiBots and E-Taxi systems, such as the WheelTug, are among the solutions that we will soon see in every airport when we will be waiting for our flight departure.

The AEON concept aims to integrate these promising techniques to overcome the specific limitations each one has and achieve the overarching goal of making ground operations more sustainable and eco-friendlier.

With this regard, AEON provides a solution that supports different ground operators (Air Traffic Controllers, Pilots, and Ground Handlers) with various tools in the strategic and tactical phase. Strategically, the AEON algorithm for fleet management will be integrated into the Airport Collaborative Decision Making (ACDM) to evaluate which taxiing technique is most appropriate for each flight.

Then, at the tactical phase, the algorithm for tug allocation and path planning, integrated into the Advanced Surface Movement Guidance and Control System (ASMGCS), will use the input of the first algorithm to help ATC and Pilots taxiing in a more efficient and climate-friendlier way.

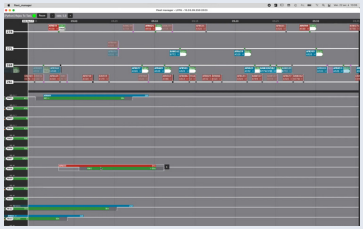
DISCOVER OUR PRELIMINARY CONCEPT OF OPERATIONS

TU Delft · ENAC · deepblue CONSULTING & RESEARCH · Schiphol Amsterdam Airport

ACDM and AEON Fleet Management Algo

The AEON algorithm for fleet management employed at the strategic level helps estimate the adequate number of Tug Vehicles (e.g., TaxiBots) to operate a given airport considering its specific traffic. The tool ensures the optimal tug allocation to each arriving and departing aircraft by considering the arrival and departure sequences. This algorithm will become part of the A-CDM portal to allow the different actors access the performed tug allocations. The decision will then be one hour before the Target Start-Up Approval Time (TSAT) to accommodate last-minute operational events.

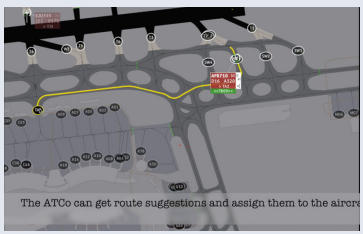
VIDEO EXPLANATION



ASMGCS and AEON Path Planning Algo

At the tactical phase, the AEON concept provides Human-Machine Interactions (HMIs) for ATC officers and pilots to manage the actual taxiing. The A-SMGCS HMIs will:

- identify the taxiing techniques of each aircraft,
- help define the taxi clearances, for towed departing aircraft that need to stop for the detaching process without creating congestions,
- give real-time updates on remaining taxi time to facilitate engines start-up procedure, and
- help reassign the Tug Vehicles when operational events modify the initial plan.



This project has received funding from the SESAR Joint Undertaking (JU) under grant agreement No. 892869.

aeon-project.eu @AEONProject1 @aeon-project