DESIGN OF AN AUTOMATED FOLLOW-ME VEHICLE

CONTEXT: The future of aviation depends on achieving growth in a responsible and therefore sustainable way (ICAO). The current operational concepts of airports are stretched, with infrastructure and resources limitations impacting ground movements particularly. We need to work smarter, not build more of the same. This can be achieved through a so-called Advanced Surface Movement Guidance and Control Systems (A-SMGCS) **to guide airplanes around airports** (not unlike your car navigation), with Europe imposing a 2030 target for implementation at key airports.

USHER AI is a start-up aiming to conquer a conservative industry with this revolutionary concept, which focusses primarily on the guidance part of aircraft by means of automated follow-me vehicles, where the market was not able to deliver a feasible solution yet. Combining existing procedures at airports with automated vehicle technology, ensures flexibility while reducing implementation time and the associated costs. Ultimately Usher ensures fluent, deadlock-free routing of all ground movements to improve sustainability, capacity and safety. You will benefit from Usher AI's founders of over 40 years of experience in aviation and automation technology, and from their extensive network of partners.

THE ASSIGNMENT is to **design the automated Usherbot vehicle** which drives in front of an aircraft on the platform area of any airport during any weather circumstance or time of the day, the so-called regulated **follow-me** process. The vehicle is automated and designed to perform tasks that are given by the supervisory software (Usher) which interfaces with and receives instructions from an apron or ground controller to guide pilots. As the vehicle is going to be assisting air traffic controllers in guiding pilots to the appropriate destinations, they need to **meet requirements from the different user perspectives**. The vehicles operate in a complex, multi-stakeholder landscape, with many requirements.

To support the discussions with the industry, Usher AI is in need a vehicle design that indicates what the ultimate design should look like, as its form giving must unambiguously express its functionality to the various stakeholders. Your mission, should you choose to accept it[1], is to translate the existing requirements into possible design directions that meet the different user perspectives and provide insight into the functionality provided.

APPLICANTS are obviously among the most brilliant students in the history of this faculty. If this graduation assignment fits your experience, learning objectives, and most importantly your future ambition, contact Robbert Lohmann, Usher AI, robbert.lohmann@usher-ai.com or Elmer van Grondelle, e.d.vangrondelle@tudelft.nl

[1] Mission Impossible pun deliberately intended.