



DEPARTMENT OF AUTOMOTIVE AND AERONAUTICAL ENGINEERING

Optimal Boarding Methods for Airline Passengers

Task for a *Project*

Background

Boarding methods have a great influence on turnaround time and direct operation costs of an airplane. The processes of boarding and de-boarding take part in the critical path of a turnaround. Therefore, a reduction in boarding time has a direct impact on the total turnaround time. As a result, several airlines currently apply boarding policies to optimize turnaround processes, while there is no clear identification of the best method. As an example, EasyJet uses a *free seating policy*, British Airways uses the *Back-to-Front* method and the *Window-Middle-Aisle (WMA)* method is used by United Airlines. There exist also combinations of different boarding policies, such as the *Block Boarding*, developed by Delta Airlines. Some software tools and mathematic models have been developed in order to simulate and analyze the boarding processes. These boarding policies and tools lead to an extensive literature with multiple results. This project is part of the aircraft design research project "ALOHA" (<http://ALOHA.ProfScholz.de>).

Task

The task of the project is to summarize and describe existing boarding policies as well as to identify the most suitable boarding policy for selected cabin layout configurations.

The task includes:

- Literature research on current boarding policies and tools for simulation.
- Detailed description and analysis of boarding processes and their characteristics.
- Identification and brief explanation of the main mathematical models used to describe boarding processes.
- Identification of the most suitable boarding policy for different cabin layout configurations.
- Listing of current available software tools that are able to simulate boarding processes.

The report has to be written in English based on German or international standards on report writing.