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## Modern airport management – fostering individual door-to-door travel

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### Abstract

Airports are intermodal hubs and natural interfaces between ground transport and air transport. In a recent DLR project, an innovative approach is being developed to extend the concept of A-CDM and TAM not only to airport landside and terminal processes but to go even further and incorporate feeder traffic in the management of airport processes. Thus providing travelers with a real door-to-door service and letting airport stakeholders benefit from efficient airport management. The research prototype developed in this project will be depicted in detail and functional principles will be explained.

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*Keywords:* airport management; Passenger-Trajectory; door-to-door travel; efficient resource management; A-CDM; TAM; Optimode

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### 1. How to incorporate door-to-door travel in proactive airport management

Airports are not just places where airplanes land and take-off but they are also natural interfaces between ground transport modes and air transport. In the door-to-door travel chain it is not sufficient to just focus on a small part of the journey. Attention must be paid to the interlinking of transport modes and different phases of the journey. In recent years substantial improvement could be generated in the field of airport management especially for landside and terminal processes. Concepts like A-CDM (Airport Collaborative Decision Making) and TAM (Total Airport Management) show tangible potentials of improving efficiency and punctuality.

The Advisory Council for Aviation Research and Innovation in Europe (ACARE) has formulated ambitious goals for aviation research in their Flightpath 2050 (European Commission 2011). One of the goals directly affects the door-to-door travel time by claiming that 90% of travelers within Europe shall be able to complete their journey,

door to door, within 4 hours. However, the situation travelers have to face in today’s reality is very different from that. Services of airports, airlines and ground transport providers are not yet linked and there is a potential for improving the overall travel experience of the passenger and at the same time gaining efficiency of airport operations.

In a recent project called Optimode, an innovative approach is being developed at the German Aerospace Center (DLR) to extend the concept of A-CDM and TAM not only to airport landside and terminal processes but to go even further and incorporate feeder traffic in the management of airport processes. Thus the traveler gets a real door-to-door service and a reliable travel experience whereas airport operators and airlines benefit from a more appropriate and efficient resource management.

A research prototype system is developed within the Optimode project to provide advanced situational awareness of airport processes and passengers’ status in relation to their individual trajectory and the flights operating at the airport. The management system is validated within a virtual airport environment and a control center for managing processes by airport stakeholders.

1.1. Passenger-Trajectory

To incorporate the door-to-door travel chain of the individual passengers into the operational airport management, a concept was developed, introducing the “Passenger-Trajectory”. The Passenger-Trajectory takes up the principles of the trajectory based operations concept developed in the SESAR initiative (SESAR 2007) and puts the individual passenger at the center by monitoring and supporting the individual door-to-door journey. The introduction of the Passenger-Trajectory concept optimizes the movement of passengers in time and space by taking into account the constraints imposed by ground transport and airport schedules (i.e. rail arrival times, aircraft departure and arrival times) and the desirable departure and arrival times of the passengers from/to their origin/destination.

The Passenger-Trajectory defines the 4-dimensional points in space and time during the passengers’ travel chain for each individual traveler. This will require disclosure of travel plans by the traveler. In return he or she could receive more precise and reliable information about changes in schedules or interruptions. Moreover, the passenger can even be provided with a real-time connection management via an automated interface, e.g. via a mobile device.

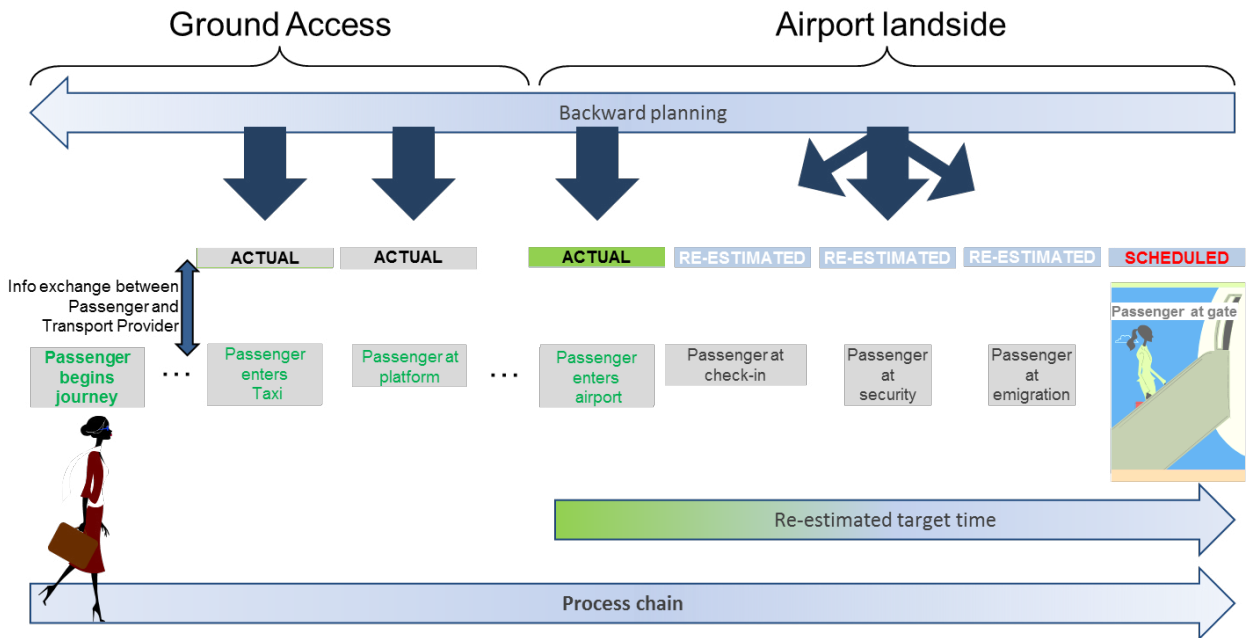


Figure 1: Principle of the Passenger-Trajectory

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