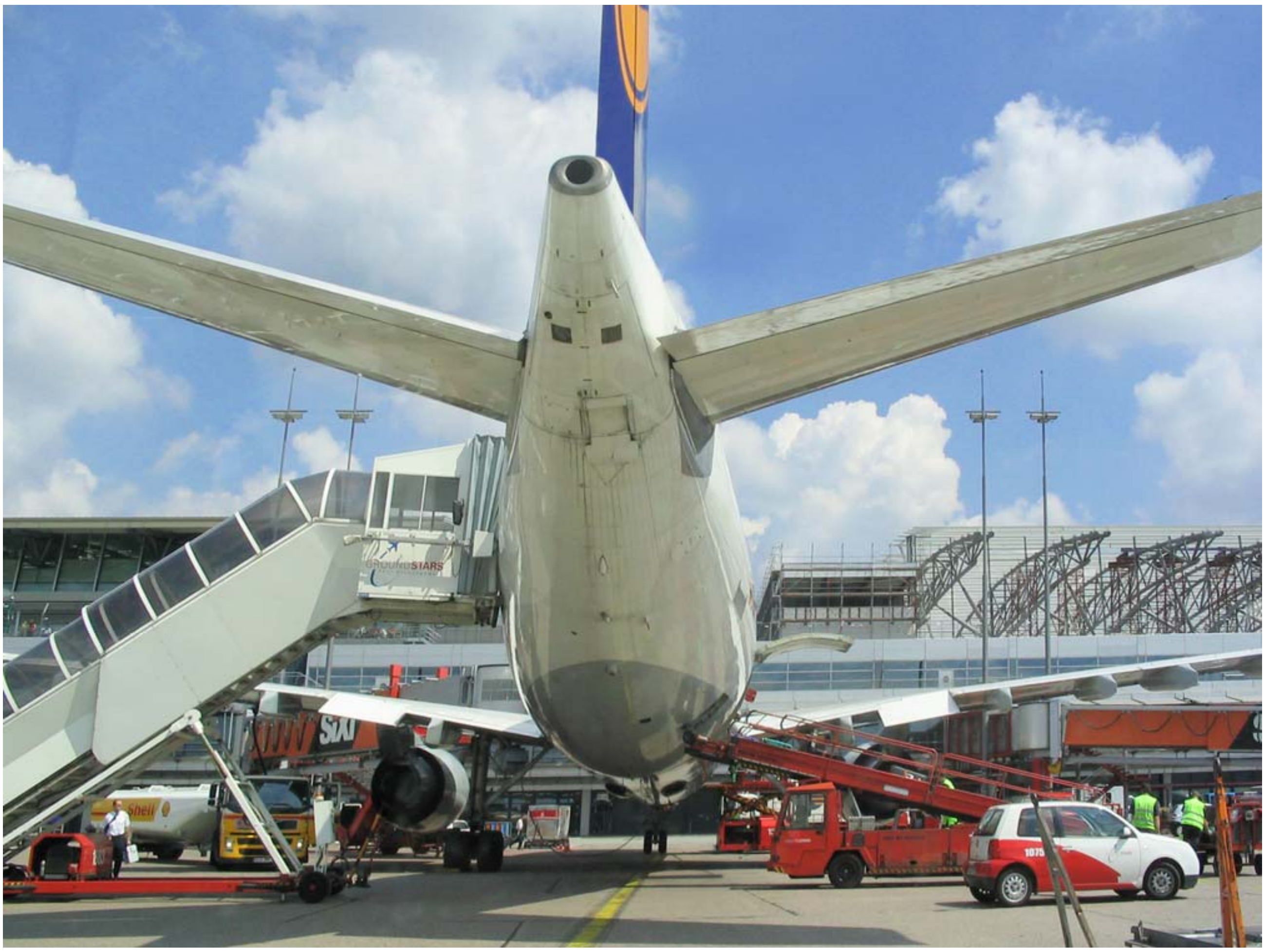
CARMA
CAR MANAGEMENT ON APRONS

Background

Airports become increasingly the bottlenecks of the future air transport system. In parallel to the physical expansion programmes, which are extremely time-consuming, the most efficient usage of the available resources is of utmost importance. As activities in the area of Arrival and Departure Management as well as the Surface Movement Management of aircraft are already well covered by different projects, CARMA will focus on the under-investigated area of the airport aprons. With growing air traffic demand ground handling companies, which are under pressure to provide a top service at reasonable cost, have to increase their cost efficiency in finding ways to service more aircraft with the same amount of resources (e.g. service vehicles and personnel) in the future.



Typical turnaround situation at airports

Goals

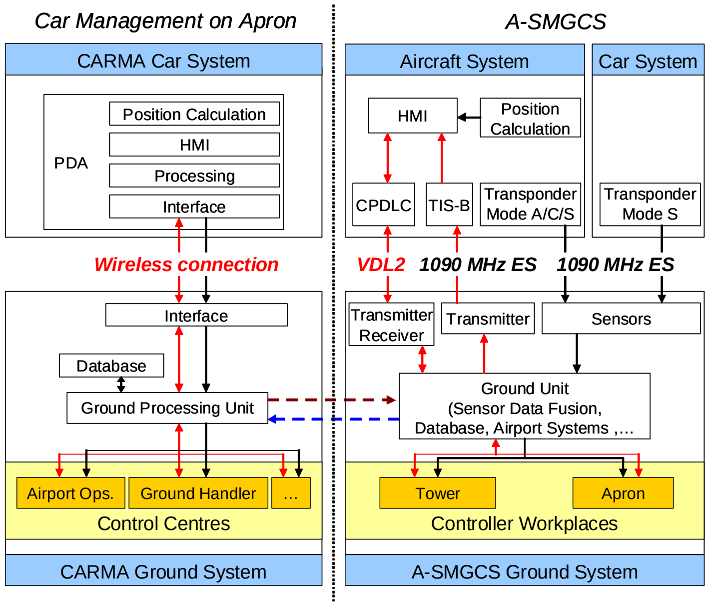
The objective of the CARMA project is the implementation of a cost-effective CNS-infrastructure for vehicles at Hamburg airport. It is dealing with transferring and processing of data and the presentation of information for more efficient and safe operations by considering the following tasks:

- Development of a concept and a functional model for
  - cost-efficient detection, monitoring and communication of vehicles on the apron,
  - applications to show vehicle information on a A-SMGCS display, to manage vehicles from stakeholder control centres and to assist drivers.
- Proof of the technical and economical feasibility to install a vehicle management system at Hamburg Airport
- Safety Case and Business Case for the vehicle management concept at Hamburg Airport
- Looking for capabilities in aircraft cabin design, to support an efficient turnaround processes

Besides the conceptual work, the installation of a prototype system will be realised.

Approach

The concept of A-SMGCS (at least the initial implementation levels) was proven to be mature from a technological and operational perspective. It gives the airport significant operational improvements in terms of efficiency under all weather conditions. The idea of the CARMA architecture is to use similar functional elements with a different technical realisation. In order to develop a cost-effective solution, suitable for a large number of vehicles, the focus is on the consideration of COTS-products (commercial off the shelf) like PDAs and the use of existing infrastructure at Hamburg airport.



While concentrating on technical feasibility, the recommendations from the project are the basis for an already launched follow on project "Wettbewerbsfähiger Flughafen" (Competitive Airport) of the German Federal Ministry of Economics and Technology, focussing on operational aspects.

Realisation

With partners from industry, ANSPs, research institutions and universities, CARMA has a wide variety of competences of different areas. The implementation and installation of the developed prototype system will be realised in a new research facility at Hamburg airport, currently build up by DLR, DFS and Hamburg Airport.

Further information: ***http://carma.ti5.tu-harburg.de***

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