Development of the Back-End Environment for a Ride-Parcel-Pooling Smart Phone Application

Background Information
Passenger and freight transportation is increasing at rapid pace, which is especially noticeable in big cities due to poor traffic quality and lack of space. Vehicle automation, digitalization and connectivity enable the operational combination of freight and passenger traffic. So far, these two forms of transport were treated independently from each other in previous research projects. However, the combination of both enables, especially in urban areas, to exploit unused capacity of passenger transportation for logistic services in order to optimize capacity utilization and reduce the overall mileage within the urban transport networks. With increasing connectivity, data availability and the rising trend towards on-demand mobility (ODM), the operational integration of ODM and city logistic, in the following denoted by Ride Parcel Pooling (RPP), becomes possible. This could improve the overall traffic situation and by that, reduce air pollution and noise emission, leading to a more livable city environment.

Task Description
This project includes the back-end development of a smartphone app for the Ride Parcel Pooling service. The app should be able to process transport orders and provide the drivers with routing information. The primary task is the development of the back-end, which provides and processes travel and parcel delivery requests, triggers existing fleet control algorithms and communicates information (derived from the fleet state and schedules) to the two front-end apps for customers and drivers, respectively. Code optimization and concurrency of processes are optional tasks that can be addressed after the primary task is completed. The Ride-Parcel-Pooling project includes another IDP, in which the frontend environment is developed. Therefore, coordination of two IDP projects to define the interface might be necessary.

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