An open platform for modular mobility services

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MOTIVATION

The current digital revolution triggers innovation in personal mobility. It is difficult for developers of mobility solutions to gather the data needed. This data is available in a smart city, but it is not made accessibly to external developers.

This paper proposes a concept for the architecture of an open platform for modular mobility services. The developed concept for the architecture for the platform consists of:

• Data sources
• Layers of modular services
• Integration layer
• Solutions

THEORETICAL BACKGROUND

Digital mobility services

The current digital revolution triggers innovation in personal mobility as journey planning, ride-share matching, maps, navigation, etc. and use a variety of data sources.

Existing Mobility data & services platform

Platforms providing raw data through open interfaces [1], [2] and digital mobility services [3] [4] exist, but face current issues:

• Data sharing regulations
• The need to process the data
• Current standardized
• Not open services

ACCELERATOR

EXCELL TRANSPORT

Motivation

Small and medium-sized businesses often drive through the city and still have capacity for transporting goods. On the other hand, there are members in the crowd that have transportation demands not fulfilled by the standard transportation service providers. These unfulfilled demands result in a competitive disadvantage for small- and medium-sized businesses.

In order to match those demands and capacities for transportations, ExCELL Transport offers the possibility that users can request and offer transportations.

Development

ExCELL Transport is currently developed by TUM students under the supervision of the chair for information systems. The development of the first prototype was quite rappid due to the reuses of the platform services of TUMitfahrer.

In general the overall research approach follows the design science research approach [5].
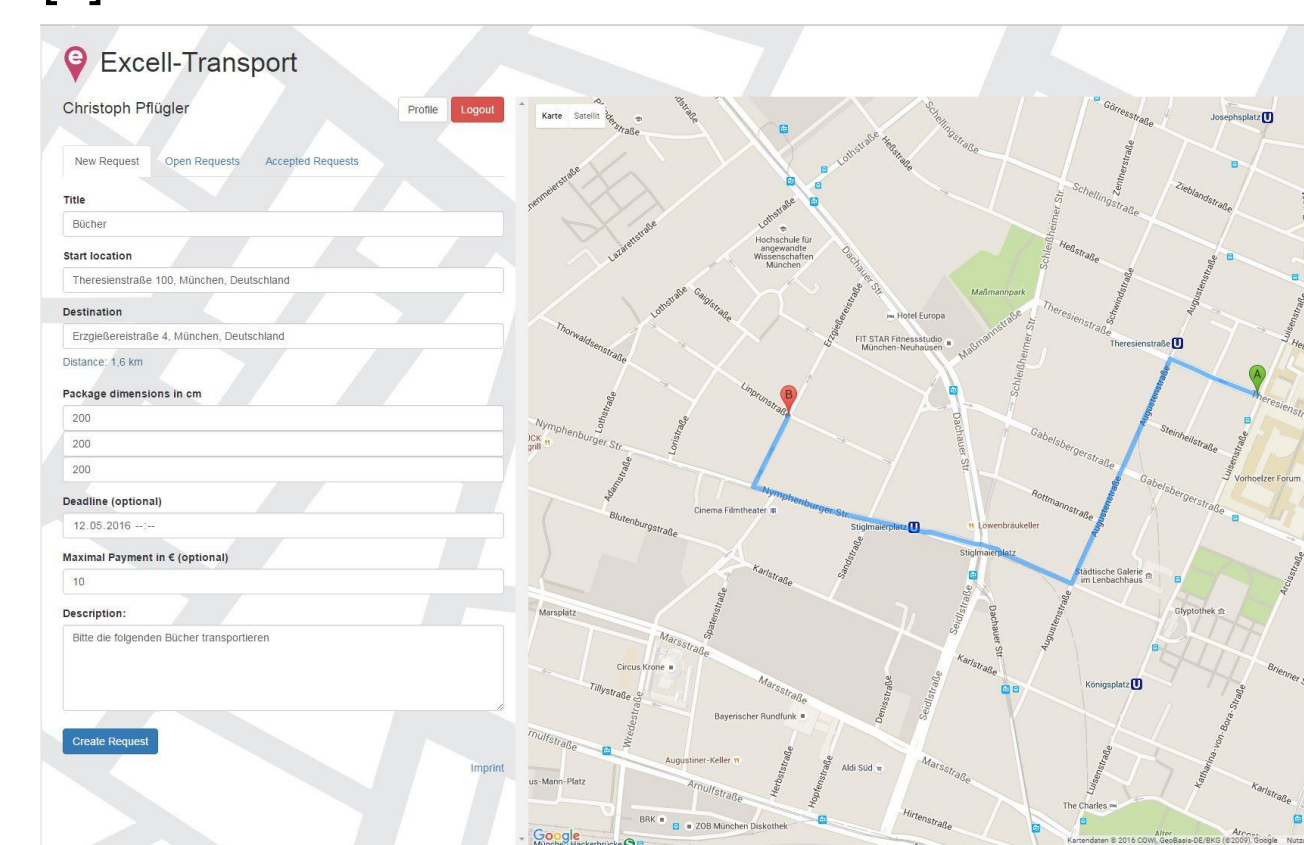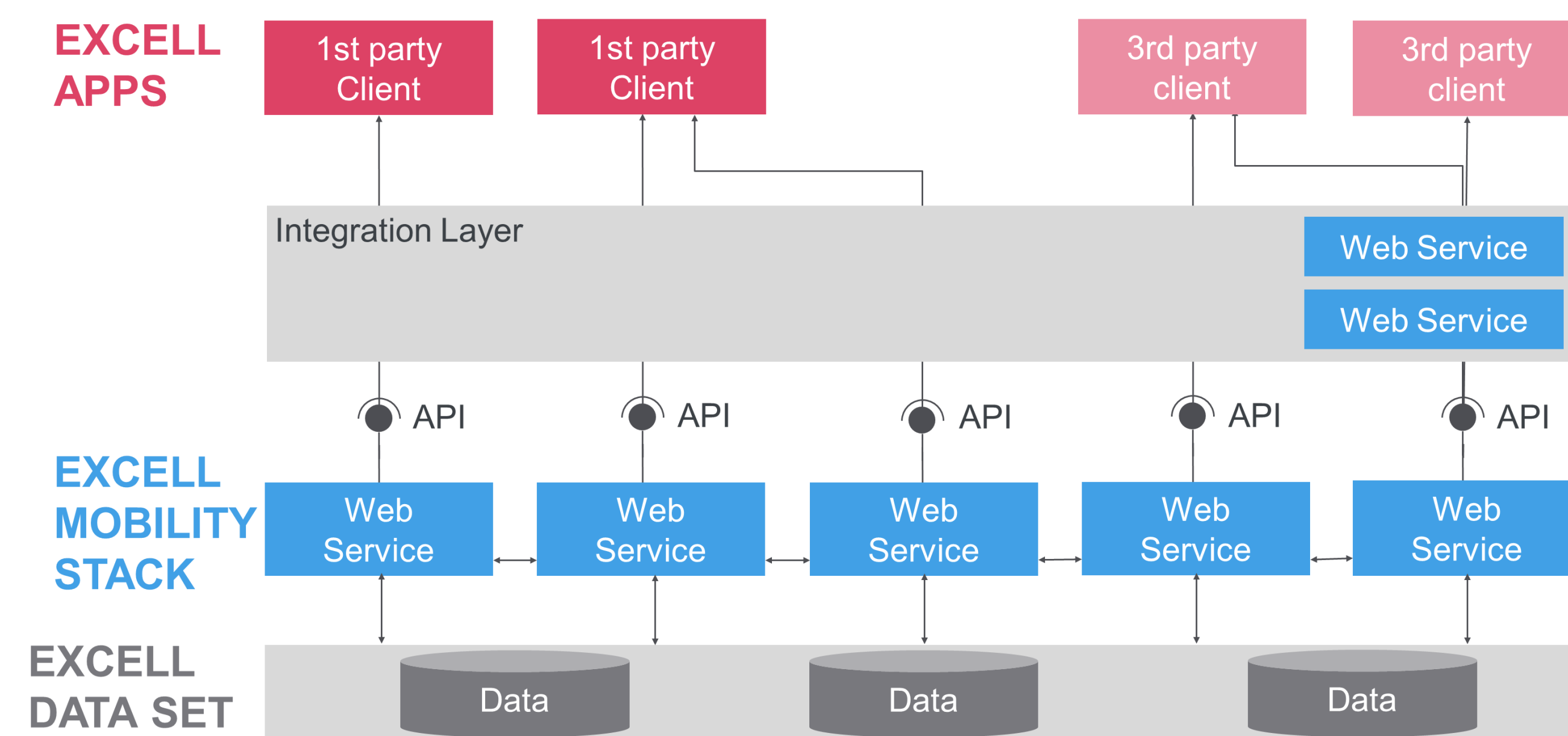

Figure 1: The modular architecture of the ExCELL platform.

Figure 2: WebApp – Create new request.

AN OPEN MOBILITY SERVICES PLATFORM

This platform offers several modular mobility services with different levels of granularity.

Data sources

Several different data sets. One data set could be floating car data, which can be generated through on board units within cars or through smartphone apps of drivers.

Services

The services at the bottom focus on analyzing and refining the data sources. .
The services on higher levels reside on services from lower levels. .
The services on higher levels, integrate the services below, using its results. .
These services also matches the results with the inputs of the users to deliver end user services.

Integration layer

This creates a secure and safe environment. This is the only way to access to the modular services. It regulates the amount of calls for services and manages the users.

Solutions

Created by the users of the platform, the solutions can be end-user services or other modular services inside or outside the platforms.

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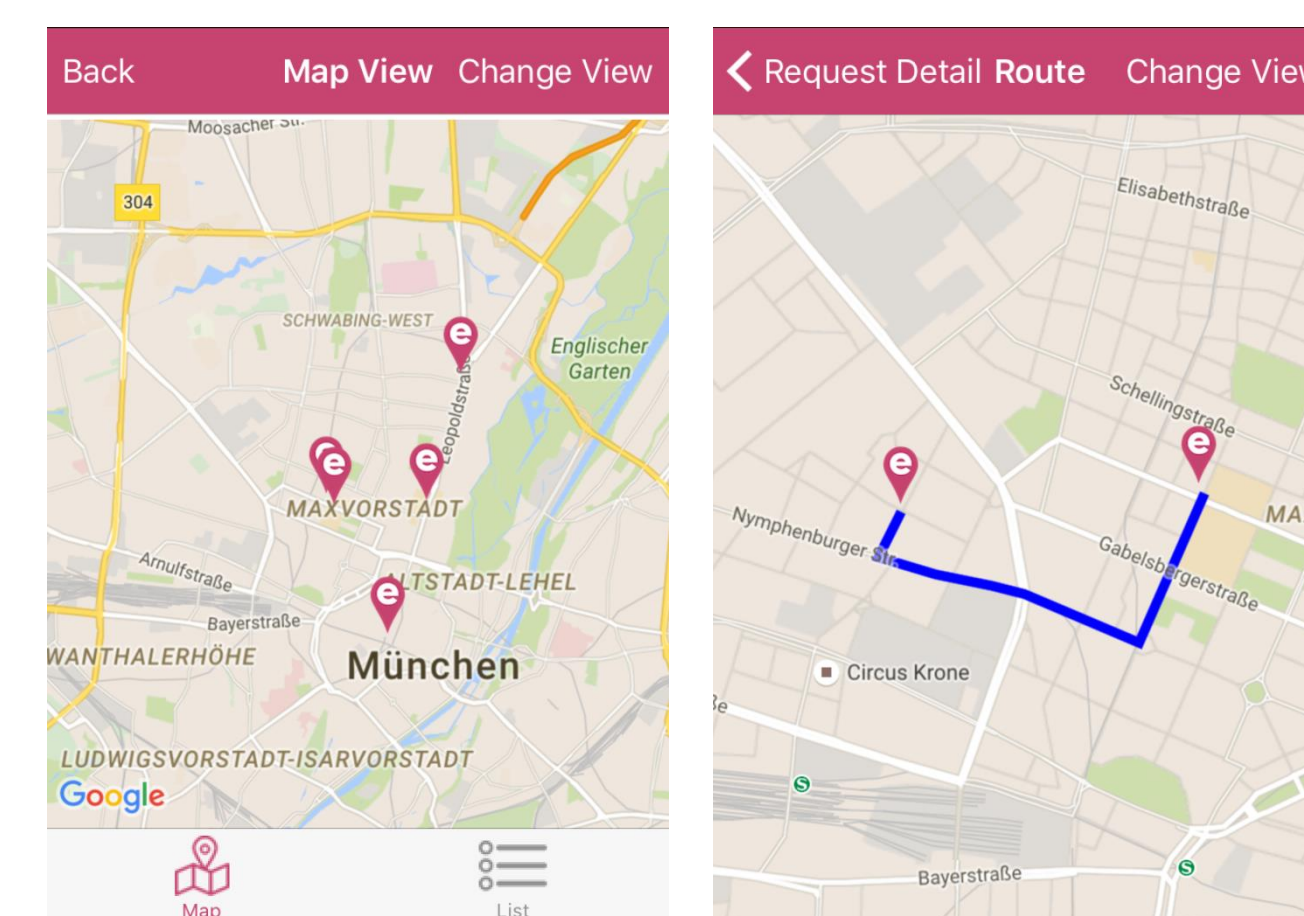
Figure 3: iOS App – Accept request and see routing.