Data4UrbanMobility: Data-Driven Mobility Services for Smart Cities

Elena Demidova*, Nicolas Tempelmeier*, Stefan Dietze*, and Maren Koch**

*L3S Research Center, Hannover, Germany
{demidova, tempelmeier, dietze}@L3S.de
**PROJEKTIONISTEN® GmbH, Hannover, Germany
koch@projektionisten.de

Abstract. Cities of the future have a growing demand in intelligent mobility services and infrastructure to support better mobility and enhance quality of life in urban areas. The goal of the Data4UrbanMobility project is to support this demand through aggregation and analysis of mobility-related data from heterogeneous sources, in particular data about events, public transportation infrastructure and usage, floating car data, as well as behavior and perception of users. While data is spread across heterogeneous institutional repositories, Web platforms and in particular the social Web, semantic technologies and machine learning methods will be exploited to enable the extraction and analysis of data.

1 Introduction

An increasing availability of urban data holds a great potential to facilitate efficient mobility services and infrastructure, for instance, through a better understanding of long-term trends (such as e-mobility) and their impact on transportation needs, or the correlation of mobility behavior in densely populated areas with influence factors such as weather, regional events or temporal fluctuations. Extraction, integration and analysis of heterogeneous mobility-related urban data is of interest to various stakeholder groups, including city inhabitants, city councils, providers of mobility services and public transportation. However, data is often sparse and stored in heterogeneous systems, hindering large-scale analytics across platforms. In this context, semantic technologies and open data sources provide a way for extracting, integrating and interlinking mobility-related information and provide a basis for further analytics. Particular emphasis in the Data4UrbanMobility project will be given to the joint analytics of event-centric Web data and social media data, including event metadata extracted from general and focused Web crawls and Twitter data with other mobility-related data sources such as information on public transportation, floating car data, information on city infrastructure and citizen feedback.

2 Project Goals and R & D Activities

The goal of Data4UrbanMobility is to develop data-driven methods and applications, which enable efficient planning, development, realization and use of in-
novative mobility services. Based on comprehensive regional and historical data, methods for data collection, information extraction, integration and analysis will be developed to facilitate prediction of mobility behavior and trends. Predictions will support innovative routing and traffic management services, as well as effective planning of mobility infrastructure, services, transportation and individual traffic. Fig. 1 presents a vision of the Data4UrbanMobility platform.

3 Project Exchange

Data4UrbanMobility is a new project, started in March 2017. At this stage, the main focus of the project is on formulating use cases, collecting requirements, and potential data sources as well as in analyzing of applicability of semantic technologies in the context of mobility data. Exchange with other projects regarding these aspects is of crucial importance. Among main contributions to the community is the creation of open data sources and methods, such as an open regional event knowledge base and associated methods.

4 Acknowledgement

Data4UrbanMobility project is funded by the Federal Ministry of Education and Research, Germany (BMBF).