

Demo: Private Information AccessControl in Ridesharing Service

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Abstract—Ridesharing service provides possibilities of shared use of cars by several passengers and drivers through their mobile devices and allows the passengers to find the reasonably priced transportation means mostly in the regions with a lack of convenient public transport connections. Presented service consists of two parts: client application and ridesharing broker. Interaction between these parts reached through the smart space, based on the Smart-M3 platform. Client application is developed for Android operating system using its native Java programming language and libraries. It allows to input information about trip and send request for finding fellow-travelers. The information about trip consists of the start and finish points, date and preferences of the user. Application can show paths on the map, which is based on the information from the OpenStreetMap project. The map has two layers: layer with single path, and layer with ridesharing information. Both layers also have a supporting information like distance, time to the meeting, points of interests, etc. For the ridesharing service, a special broker has been developed. It allows users controlling access to their information, shared via the service. The access control broker is based on the idea of a context-based access control model, which provides the access control based on the user roles. These roles are assigned dynamically based on the user trust level and help to manage access to the resources. The trust level calculation is based on the participant's context, which includes attributes, identifying the user

(user ID and public key); user location; current date; device, which requests the information, etc. The example describes the following situation. Some passenger, woman 25 years old, is a tourist who finds transportation to the some attraction. For this purpose, she connects to the smart space for finding drivers with the ridesharing service. Except the information about the trip, she has preferences in the information sharing in the service. The tourist wants to share her private information (such as friends, birth date and birthplace) with female drivers only, who are younger than 35 years old. The ridesharing service finds two drivers: a man 45 years old and a woman 30 years old. Before a notification about joint trip will be sent to the passenger and driver, access control broker checks the access level of each user. It gathers context of the users, authenticates them in the service, calculates their trust levels, and assigns roles based on the predefined rules. Using the passenger's preferences, the access control broker assigns untrusted role to the male driver and restricts him to access the passenger's private information. The female driver satisfies all preferences and has a trusted role. Both drivers receives notification about joint trip and can read the common information about the passenger, but only the female driver may to get access to the passenger's private information. The passenger receives notification about all trips and can choose the best.

Keywords—Ridesharing, Smart-M3, Android.