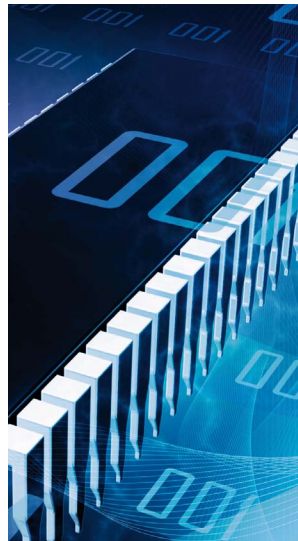


NEWSLETTER

SIMPLI-CITY - THE ROAD USER INFORMATION SYSTEM OF THE FUTURE



Innovative Eco-Driving Services

Marina Giordanino/CRF

The SIMPLI-CITY consortium partners are currently focused on developing a number of innovative eco-driving applications, which are built on the already realized SIMPLI-CITY framework, infrastructure and tools.

The centrepiece of the car based part of SIMPLI-CITY, the voice controlled PMA or Personal Mobility Assistant, which runs the applications, is responsible for safe driving according to official regulations allowing the driver to focus on the road. The voice interaction supported by the PMA facilitates the use of eco-driving applications enhancing the in-car user experience. The first eco-driving application, the "EcoRace", provides live feedback to improve users eco-driving style day by day. The service monitors the driving style progress in

real time, and in order to stimulate continuous self-improvement the application allows users to enter into a competition with themselves on their recurrent routes until they reach the highest possible eco-score.

The second eco-driving application, the "EcoContest", stimulates environment-friendly driving behaviour using gamification methodologies and user-engaging techniques. Within "EcoContest" each driver can compete with all others, trying to achieve the best eco-score in the social eco-drivers community. Once subscribed to the contest, the application automatically and transparently tracks the driven route and logs the required parameters of the car, allowing the user to concentrate on the actual eco-driving.

Dear Readers

Welcome to the fourth SIMPLI-CITY Newsletter. Our project is now in its final year, and a large number of impressive technical and scientific results have been achieved. Currently, the project consortium is extending the technical results, especially focusing on developer-friendliness and usability. Within this newsletter, you will find information about selected project results, with a focus on the Eco-Driving Contest use case and technical results in the fields of sensor data integration and service support.

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The Road User Information System Of The Future

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 318201.

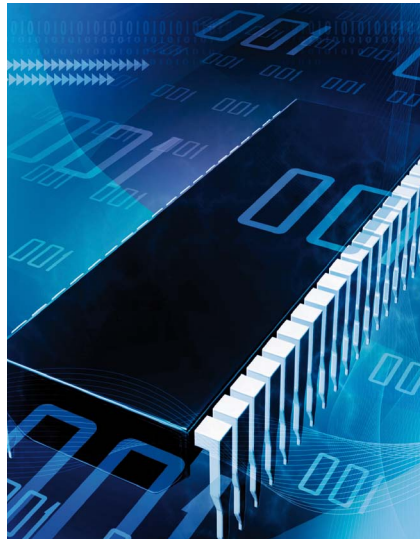


NEWSLETTER

SIMPLY-CITY - THE ROAD USER INFORMATION SYSTEM OF THE FUTURE

Sensor Abstraction and Interoperability Interfaces

Daniel Burgstahler/TU Darmstadt



The seamless integration and provision of mobility relevant data as a consistent service, which enables an easy and common access to heterogeneous data sources, is the essential precondition for the realization of a personal mobility assistant.

In SIMPLI-CITY, access to various heterogeneous data sources is enabled by a service layer that provides a common access. Supported are data streams, the direct access to single sensor values as well as historical data and also static data. Mobility relevant static data, such as, e.g. information about speed limits, bus schedules or open data traffic statistics, is usually located within a database and is only changed rarely. Data streams, for example, consisting of traffic

flow measurements, light signalling systems or information about free parking spaces. Used technologies vary from inductive loops to pressure sensors. In the best case already pre-processed data is available, e.g., the traffic flow in vehicles per time or the absolute number of free parking spaces within a specific parking garage, but also a sensor based higher granularity of the data is possible.

A simplified illustration of this SIMPLI-CITY service layer is given in the graphic on the next page. Common interfaces provide access to external information for PMA-Apps, as well as for Cloud-based services, and the information is returned in a common data format. The sensor abstraction layer is able to access external data using different tech-

niques, such as publish-subscribe-mechanisms, direct data access for single requests, and periodic polling of single data sources, and automatically wraps these data into a common data format. All data can be historicized and made available for later access or analysis.

A mobile device, i.e., the user's smartphone, plays a major role in this SIMPLI-CITY service layer. On the one hand, the device is the execution platform for the PMA-Apps, on the other hand the device itself is an important data source. Both, data from built-in sensors as well as user related data, can be used within the Apps, as well as be directly used within Cloud-based services. The base technology for this is a background service on the mobile device that provides a



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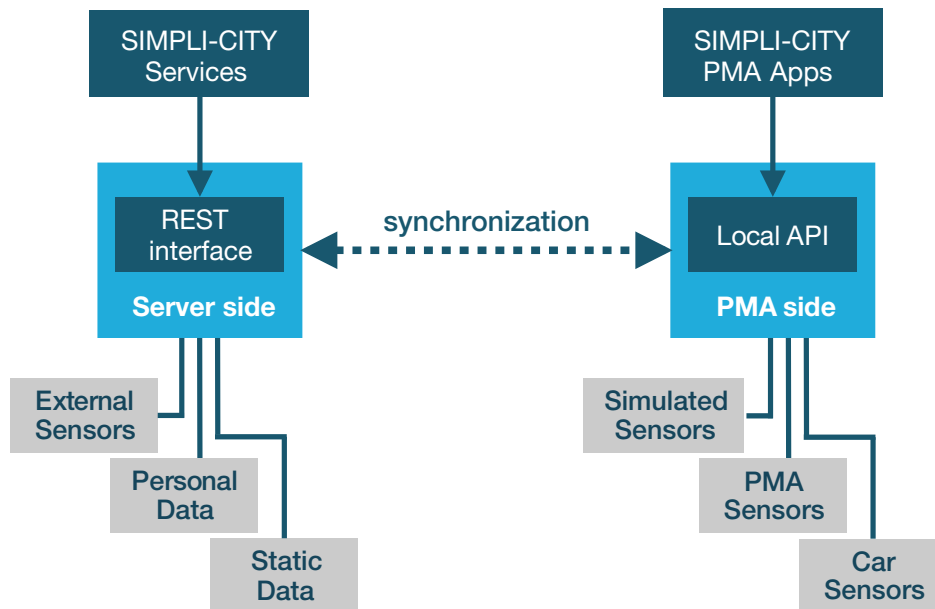
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T4.3 Sensor Abstraction and Interoperability Interfaces



common interface to access not only the built-in sensors of the mobile device, i.e., those in the user's smartphone, but also enables access to connected devices. This background service is amongst other things responsible for the communication with a connected vehicle that enables the integration of vehicle sensors that are also accessible as local sensors. Thus, Apps are capable to access all local sensors (i.e., built-in sensors of the mobile device, and connected devices), and retrieve sensor data in a common data format. The local background service communicates bidirectional with a complementary component on the server side, which allows access to the available sensors. The commu-

nication is realized asynchronously, with a messaging infrastructure as middleware in between. This allows a robust bidirectional communication even in situations with poor mobile connectivity. Since requests and responses are completely uncoupled, even an interruption of the connection can be handled adequately to ensure a robust and reliable information exchange.

From the technology side, this SIMPLI-CITY service layer builds on IBM's MQTT messaging protocol that was designed for highly scalable systems of resource restricted systems with a special focus on Internet of Things and connected cars.

In the realization of this SIMPLI-CITY service layer, every sensor in

the system is tagged with a unique identifier. By using this identifier, server based interfaces also allow access to local PMA sensors or sensors of a connected vehicle. Thus, all sensor data is linked to the SIMPLI-CITY overall architecture and is therefore accessible and useable for Cloud-based services.

Find more information about
Sensor Abstraction and
Interoperability Interfaces here:
<http://simpli-city.eu/deliverables>

> Contact the author:
Daniel Burgstahler

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SIMPLY-CITY - THE ROAD USER INFORMATION SYSTEM OF THE FUTURE

Contribution to the European wide service platform

Stefan Schulte/TU Wien

SIMPLI-CITY contributes to the technical development of the European wide service platform. The vision for this platform is, to provide mobility-related services leveraging cooperative systems. To reach this goal, SIMPLI-CITY supports developers with a powerful toolset to efficiently realize and sell their mobility-related service and app ideas by a range of methods and tools, aiming at data integration, service development, and end user interaction. The key result to actually run services within the European wide service platform is the development of the SIMPLI-CITY Mobility Services Framework, which is a full-fledged, next-general service platform, covering the complete service lifecycle.

The Mobility Services Framework applies and extends the OSGi specification, which provides a well-known and widely used dynamic component management system. By using this specification as the foundation for SIMPLI-CITY, it is easy to reuse and integrate SIMPLI-CITY software components within other projects, which apply the same technology. In general, the OSGi standard is not aimed at a particular use case scenario. It supports a large number of possible scenarios, but does not provide specific functionalities needed for mobile service consumption. Obviously, there is a need for such extensions, since mobile service consumption leads to specific requirements. To achieve this, SIM-

PLI-CITY provides several extensions to the OSGi specification, including a support of Push Messages, which allows providing mobile users with asynchronous informational updates without the need for periodic service requests. Another extension to the OSGi specification – the SIMPLI-CITY REST Proxy – provides a central interface for apps to invoke OSGi-based services, allowing (amongst other things) Quality of Service monitoring, fault tolerance, accounting, and logging.

Find more information here:
<http://simpli-city.eu/deliverables>

Upcoming Events

ITS Conference 2015, A Digital Strategy for Mobility

24th of April 2015, Brussels (BE)

Data for digitising transport, Mobility as a Service, and Connectivity and Automation will be discussed

> [Agenda and registration](#)

ICT-Emissions Final Conference

31 March 2015, Brussels (BE)

This conference will focus on results from specific real-world application cases in selected cities and several other topics

> [Link to website](#)

2nd European Conference on Sustainable Urban Mobility Plans

16-17 June 2015, Bucharest (RO)

For mobility planners and implementers from all over Europe

> [Link to website](#)



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