GreenerBuildings

An ubiquitous embedded systems framework for energy-aware buildings using activity and context knowledge

Editorial

In a system as GREENERBUILDINGS, the general principles of web service based architectures are applied. A web service is a self-describing, self-contained software module available via a network, including the Internet, which completes tasks, solve problems, or conduct transactions on behalf of users or applications. The promise of Web services is to build new distributed applications merging together the several functions of already existent ones.

Interoperability is one of the most important advantages gained with the use of services and their composition. Service composition involves two different issues: the synthesis (manual or automatic) is a specification of how coordinating the component services to fulfil a complex request, and the orchestration, that is how executing the previous obtained specification by suitably supervising and monitoring both the control flow and the data flow among the involved services.

Service composition has been the topic of a lot of research. In particular, state of the art approaches have adopted *planning-based techniques* (cf. D. Wu, B. Parsia, E. Sirin, J. Hendler, D. Nau. Automating DAML-S Web Services Composition Using SHOP2. Proc. 2nd International Semantic Web Conference (ISWC2003) and E. Kaldeli, A. Lazovik, M. Aiello. Extended Goals for Composing Services. Proc. 19th International Conference on Automated Planning and Scheduling (ICAPS 2009)) or *logic-based and synthesis/simulation-based ones* (cf. the Roman approach – D. Calvanese, G. De Giacomo, M. Lenzerini, M. Mecella, F. Patrizi. Automatic Service Composition and Synthesis: the Roman Model. IEEE Data Eng. Bull. 31(3): 18-22, 2008).

Prof. Massimo Mecella

CINI/UOR

At a Glance

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Contact

Project Coordinator

Oliver Amft (TU Eindhoven) - *amft@tue.nl*

Project Technical Manager

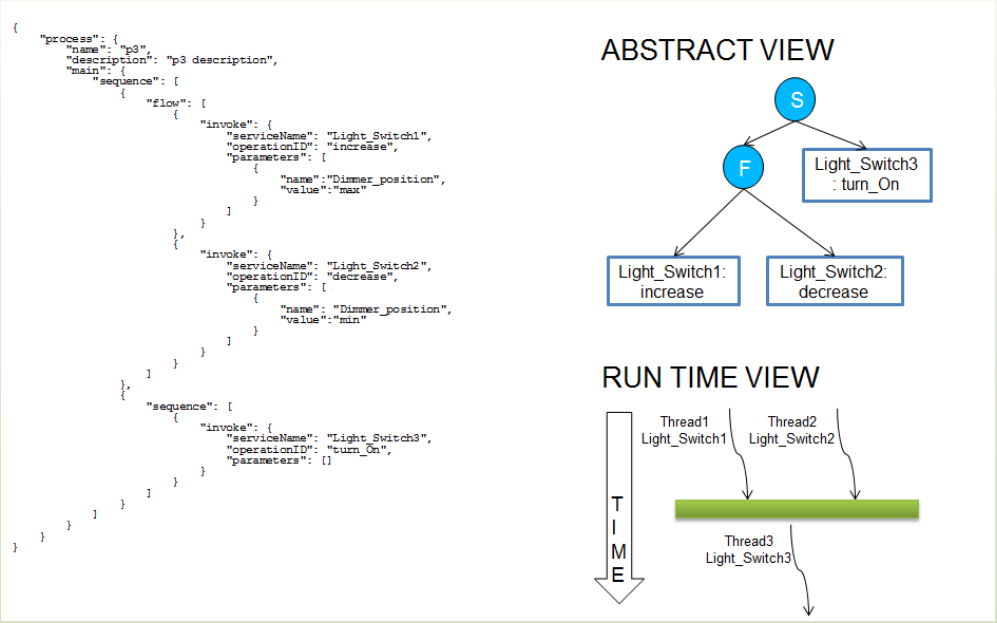
Marco Aiello (Univ. of Groningen) - *aiellom@cs.rug.nl*

Technical Approach

For the GREENERBUILDINGS project, we adopted a novel approach based on reducing the composition task to a constraint satisfaction problem (V. Degeler, A. Lazovik. Cost-efficient Context-aware Rule Maintenance. PerCom Workshops 2012: 608-612).

The result of a composition is an orchestration schema which describes which services have to been invoked, the control flow and the parameters for the services themselves.

Services are technically exposed as REST interfaces, according to pre-defined verbs which has been standardized in the Consortium. Hopefully, the approach can be extended to smart spaces in general and subject to further standardization activities.



Project Partners

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