

Daniel Retkowitz: Software support for adaptive eHome Systems

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Datum der Prüfung: January 13, 2010

Veröffentlichung: Shaker Verlag, AIB-SE3, 358pp, 2010

Kurzfassung:

eHomes are environments in which complex cross-device functionalities are provided by services. So far such functionalities are not common in home environments even though a lot of application areas exist, e.g. in the fields of security and comfort or for medical surveillance and support of elderly persons.

For the development of eHomes a lot of challenges have to be overcome. Main aspects are the consideration of mobility and dynamics in eHomes that apply to both inhabitants and devices as well as the heterogeneity of services that results from the large number of available standards.

The dissertation provides a contribution in different areas and is specific to the application area of eHomes so that a specific support of the characteristics of eHomes is achieved.

The developed approach supports the composition and adaptation of services in eHomes while considering the challenges mentioned above. The structure of a service composition can be adapted while the system is running. This way changes which result from mobility and dynamics are taken into account at runtime.

For managing context information, service dependencies, and the current composition a global graph model and a model driven design process are employed which allows an easy access of all relevant data.

An important contribution is the runtime mechanism for dynamic adapter generation based on a semantic service description allowing to overcome syntactic incompatibilities. This way the interoperability of semantically matching services in a heterogeneous environment is achieved.

Finally the development of tools which support both the service development and the runtime of the eHome system are an important part of the work.