Location

Location information forms the base of most enterprise and consumer services, but most location-based services depend on a certain technology: e.g. a pharmacy finder service created by a mobile provider can only be used based on GSM triangulation, but not with other positioning solutions like WIFI or RFID. To overcome this, we provide device independent location handling, so location-based services are no longer wired to technologies. What is more, users can profit from the alternating or simultaneous use of their various positioning devices. This fusion of positioning technologies results in wider coverage and higher accuracy of the overall positioning service.

Environment

In case no information on the environment is available location-based services treat users as they were in a black box. In case of LBS, it is crucial to know e.g. the objects close to users, or the objects in the way between two users. Therefore, we integrated the environmental model (map of a site, arrangement of a building) into our framework so a particular location becomes environment-rich. Users and objects no longer remain in an empty box, but find themselves in a rich, real environment.
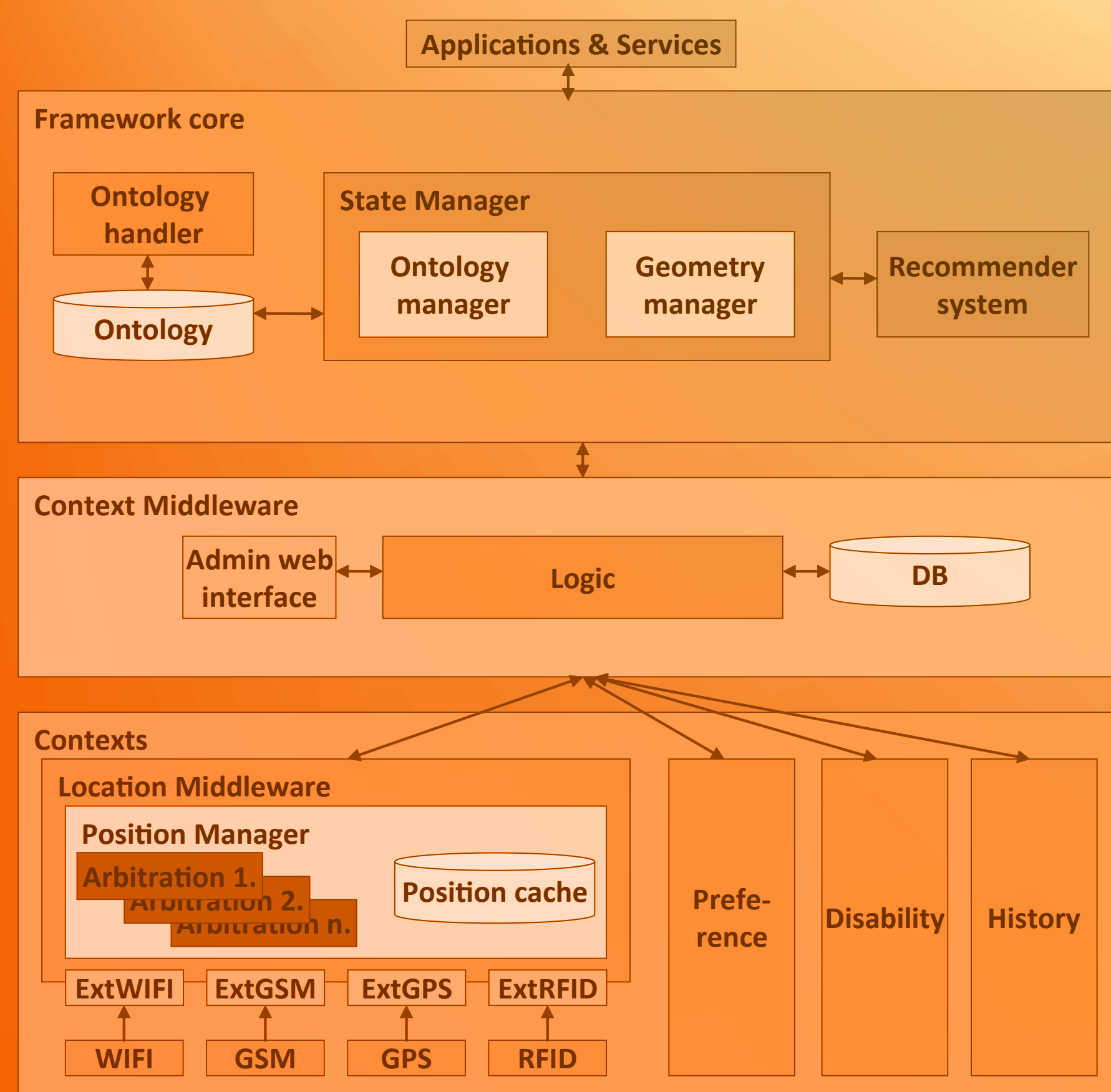
Contexts

For a location-based service, device independent positioning and information on the environment are indispensable but still not enough to provide intelligent context-aware services. A supply chain management system, an intelligent museum guide or other intelligent services take many aspects of the situations, characteristics of the participants and circumstances of the environment into account. Using and combining a wide range of contexts – e.g. disabilities and preferences of a user, level of ink in a cartridge, schedule of a manager, history of past actions and facts – is what enables us to build rich and interesting services.

Semantics

Applying semantic-rich approach to describe information has many advantages: as it defines the meaning of things and their interrelations, it allows the reuse of the knowledge and also machine processability. It also helps to preserve data consistency and to maintain a huge knowledge base containing much context information. Logical inferencing is also possible on the knowledge base. To benefit from all the above, we use ontologies to describe every piece of information.

Intelligent Supply Chain Management • Intelligent Resource Management • Awareness Critical Processes • Team Monitoring
Building Automation • Intelligent Transport Management • Remote Task Execution
Adaptive Group Control • Workflow Management • Distributed Production
Meeting Support • Personalized Entertainment & Advertisement • Automated Training
Ad-hoc Task Execution • Professional Guide Services • Ubiquitous Computing
Navigation Systems
Intelligent Environment Management

Building on our framework one can create intelligent location-based context-aware services as it provides the synergy of users' location data, context information (such as the users' history, preferences and disabilities) and the environmental model (map of a site, arrangement of a building), all described in a semantic way.

Intelligent Mobile Services

Fusion of Semantics, Context and Location

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