Message Filtering Based
On Mobile User Context

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Abstract: We present an on-going research activity that aims to use mobile context-based reasoning for creating personalised messages filtering.

Keywords: Mobile devices, context, reasoning, services, service integration.

1 Message Filtering based on Mobile User Context

We present the current and on-going activities in a joint research project dealing with message filtering based on mobile user context. The envisioned approach is to model user context based on (i) interactions of users with services (e.g.: booking a flight), (ii) sensor data from users' mobile devices (e.g.: location) and (iii) inferred information using already collected data (e.g.: user availability). This contextual information is then used to weight or filter messages scheduled for the user.

The following short scenario description shall serve to exemplify the intended system behavior and functionality: Business-man Enzo is at the airport and his flight is scheduled at Gate T1 in two hours. Unfortunately the gate changes from T1 to T2. The system detects a conflict, because Enzo is heading towards the wrong gate and prepares *SMS message A* to be sent to Enzo telling him about the gate change. The system also prepares an advertisement *SMS message B*, because one of the shops present at Enzo's current location matches with the interests stored in his user profile. Since *message A* is crucial for Enzo's current context (i.e. to catch his flight), it has to reach Enzo at all costs. *Message B* would only be delivered to Enzo if there was sufficient time to do some shopping. Since he is busy heading towards the new gate, the message is not sufficiently relevant for him now and therefore discarded.

The proposed solution consists of two main building blocks: The first one provides mobile sensor information and management of services. It is developed by sayService, which has been established in 2009 as a spin-off of Fondazione Bruno

Kessler (FBK), a research center in the province of Trento (Italy) active in the area of Information Technology. The two main areas for the applications delivered by sayService are Enterprise service integration and integration of services available on the Internet.

The technological core asset of sayService is SMART, a software platform that supports the development, deployment and maintenance of software applications based on service integration and on the SOA methodology.

The second building block handling context elicitation and message filtering is the KnowSe [1] (Knowledge Services) framework developed at the Know-Center GmbH. KnowSe is interconnected with a multitude of knowledge sources as well as it is able to detect patterns [3] and provide knowledge services tailored towards a person's context. The exploitation of automatically created user profiles proved very useful within Know-Center projects like APOSDLE [2], in this project KnowSe will also incorporate the users' mobile context order to determine whether and when a message from an integrated service is to be sent to the user's mobile device.

Challenges

The following challenges are to be faced within the project: For the time being, KnowSe is mainly focused on desktop interactions. To cover the mobile aspects of this project, we plan to expand KnowSe by integrating additional mobile sensors gathering location, proximity, acceleration and so forth, into the KnowSe context reasoning framework. For the mobile context-based reasoning we plan to use a generic approach for matching the current user context with the message to be delivered. Special emphasis will be put on evaluating the approach in order to identify generally applicable ways for ensuring that no important message will get lost. Furthermore aspects of how to actually present messages to users will be investigated.

References

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