

Abstract :

For a few years, the evolution of handheld devices and wireless and/or mobile networks has implied the development of new services and new applications dedicated to mobile users. Among these applications, we define the proximity applications concept. These applications allow to different users physically close to each other to share and locate available data. These applications are running in a strongly distributed and dynamic context in which the available information is distributed on the different terminals and is continually modified due to the mobility of the participants. In this context, existing localisation services have severe limits. Thus, we have proposed ISLANDS (Information and Services LocalizAtioN and Discovery Service), a localisation service adapted to mobility and data distribution. This service relies on our evaluation model for location dependent queries (LDQ). An example of LDQ is "which is the closest bus stop to me?". The proposed evaluation model allows to consider the mobility of users and specially their geographic localization during the query evaluation. This evaluation model has been optimized to be used in constrained environments. The evaluation process of a LDQ relies on several steps: among these steps, the evaluation of the geographic localization of client who submitted the query has to be performed. Today, the localization technologies are not always available: for example, GPS which is the most widespread solution, do not always run inside a building, thus, we propose a localization solution based on environment metadata. Our solution allows locating mobile users in an approximate way but with sufficient precision evaluate location dependent queries. This solution has been optimised to minimize the resource consumption of nomadic devices and to reduce the communications between participants. A prototype of ISLANDS has been implemented and demonstrated at the french database conference (Bases de Données Avancées - BDA'03). Thanks to this prototype, we validate d our propositions.

Keywords : Location Dependent Queries, Localization Service, Mobility