

LOCATION AND CARTOGRAPHIC INTEGRATION FOR MULTI-PROVIDERS LOCATION BASED SERVICES

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Location Based Services (LBS) had been involved to deliver relevant information to customers anywhere at any time and thus based on their profile, context and geographical position.

Furthermore, the fast development of Location-Based Services Applications (LBA) on mobile devices, had allowed geo spatial data and functionalities to be shared in a distributed computing environment. However, the increasing number of heterogeneous geographical databases (GDB) covering the same area and the retrieval of accurate data/metadata for the requested service, will imply lots of reasoning processes and databases' access in order to avoid nearly-duplicated records on the screen.

Our ultimate goal is to generate automatically a unique multiple providers' portrayal v/s Google Maps, Bing and Yahoo maps which are examples of mono-providers web portals.

In this paper, we present MPLoM (Multi-Providers LBS on Mobile), a platform we developed in order to test data/metadata integration for geographic position, place names and semantic details ambiguities. At the visual level, and in order to achieve map conflation, we demonstrate the feasibility of building a new type of ontology which concepts are described by both semantics and visual attributes (icon, texture, color, etc.). To better serve this purpose, we propose an extension of Web Ontology Language standard: CartOWL.

After building the cartographic ontologies for each service provider, inference reasoning will take place to match all these proprietary ontologies towards a unique domain reference one. The matching of our prototype is done by a domain expert, from semantics integration to the cartographic one.

We also study the benefits of using geo web services instead of the unsafe direct access to GDBs, and advocate the creation of a semantic geo web services framework for an intelligent orchestration and integration from multiple providers.

Our conceptual framework, based on some fusion algorithms, ontology reasoning for cartographic interoperability and geo web services orchestration, had been implemented in some modular prototypes and tested for evaluation purpose.

Future enhancements are currently running to have a complete combined platform with a machine learning approach. The building/matching of cartographic ontologies and the location integration via geo web services will be done automatically for scalability purpose and better efficiency.