WikiGIS: An Integrated Wrapper For Location Based Mass Collaboration[1]

Ofer Arazy and Arie Croitoru
The University of Alberta, Edmonton AB, CANADA
{ofer.arazy, croitoru}@ualberta.ca

In today's world, where mobility and connectivity are essential more than ever, location-related information and geo-referenced media are quickly becoming indispensable. Two recent technological advancements present new opportunities for location-based information systems: the first is web-GIS (Geographic Information Systems) tools and location-based services and the second is online mass collaboration. Building on these advancements, we have designed a new class of information systems: location-based mass collaboration systems. The design of WikiGIS – our location-based mass collaboration system concept – was guided by four fundamental dimensions: (a) **social**: enabling distributed groups to collaborate, (b) **information aggregation**: supporting the collection of information elements (in text, audio, or video formats), and the synthesis multiple elements into a coherent information product, (c) **spatial**: providing geographical reference for information and supporting geo-spatial data analysis, and (d) **temporal**: time tracking and temporal analysis.

Based on these considerations, WikiGIS wraps together three primary components (Fig. 1): a web GIS server (GeoServer), a discussion board (phpBB) and a wiki (Twiki). The web GIS server provides the spatial frame of reference and basic GIS functionality, such as support for multiple thematic map layers, map display controls (zoom, pan), symbology, and map annotation. In addition, the GIS server is responsible for hosting and maintaining the spatial database. The discussion board and the wiki are both based on php and are integrated at the database level. In order to maintain database consistency all components are based on the PostgreSQL database engine.
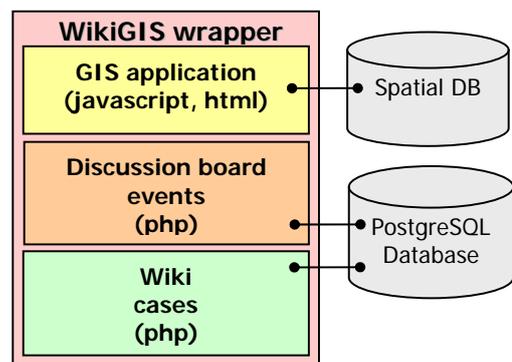

Figure 1: WikiGIS building blocks

A unique feature of the WikiGIS wrapper is that geographic information is fully integrated with both the wiki and the discussion board. Consequently, the geographic representation (i.e. polygons) can also be edited when a wiki page is revised. This approach allows maintaining a full record of the editing history of both the information and the related geographic representation. If the discussion board or the wiki need to communicate with the GIS map they do so by reloading the WikiGIS frame to pass the appropriate parameters to the GIS, which can adjust the map view accordingly based on this information. The discussion board and the wiki do not directly communicate with each other. Instead, they are related through the WikiGIS wrapper so that any changes made by one will be immediately reflected by the other. The GIS application uses AJAX to communicate with the wiki, and HTTP GET/POST requests to communicate with the Discussion forum and Geoserver. The WikiGIS interface supports three display modes using tabs that were designed to provide comfortable environments in different modes of operation.

---

[1] Additional details on our wikiGIS prototype can be found in the paper "Introducing Location-Based Mass Collaboration Systems" (Croitoru and Arazy, 2007) in the WITS 2007 proceedings.