Many universities have developed interactive and web-based campus maps. The spatial features of Geographical Information Systems (GIS) are usually incorporated in such maps, thereby facilitating visual searches. In addition to spatial features, a GIS consists of hardware, software, data, personnel and methods used to collect, store, process, manage, and analyze geographical data, run location-based queries, and present the results to users (Yomralıoğlu, 2000; Dinçer, 2008). A mashup application, on the other hand, enables us to compose, arrange and present textual, audio and visual contents drawn from multiple sources and present them through new user interfaces (Yee, 2008).

**PURPOSE**

The aim of this study is to design and develop an interactive, user-friendly and web-based Beytepe Campus Map to process visual queries and make it available through the Hacettepe University website.

**APPLICATION DEVELOPMENT**

- We chose Google Maps API to develop our mashup application, as it provides more detailed maps and higher resolution satellite pictures. In addition, Google Maps API provides maps with a wide range of scales beforehand and presents them to the user in an efficient manner. We used Google Maps API application builder to design the user interface for our campus map.

- We obtained the campus map currently used by Hacettepe University and replaced its green color with a more appropriate color tone to match the background of Google Maps and added the names of buildings located on campus onto the map.

- We used the Map Cruncher software of Microsoft (2009) to cut the map and paste it on to Google Maps for predefined granularity levels (Fig. 1). In addition to the standard buttons of Google Maps (map, satellite and hybrid), we added a new button to place the Beytepe campus map on Google Maps (Fig. 2).

- Next, we transferred the MS Excel data files that were generated by CommunityWalk to Google Spreadsheets (Fig. 4) so that data can be used by different browsers (Google, 2009a). The Google Spreadsheets application enabled us to mash up the collected data with the Beytepe Campus Map without writing “hard code”. In order to create a tree-like structure to display through the user interface, we arranged Google Spreadsheets data hierarchically (e.g., Academic Units - Faculties - Departments. New updates on an MS Excel-like interface can automatically be added to the map (Fig. 5). We used JavaScrpit and JavaScript libraries to modify the user interface and added zooming features to display the detailed campus map.

- We developed a simple ontology comprising eight categories, each with its own sub-categories to represent the places at the Beytepe Campus: Academic Units, Administrative Units, Sheltering, Nutrition, Health, Transportation, Entertainment and Sports Centre, and Others. We keyed in data for each category along with its icon to CommunityWalk (Fig. 5). We placed the ontology on the left-hand side of the user interface. We mashed up annotations and pictures linked to each place and displayed them on the right-hand side, along with a search button.

**CONCLUSION**

In summary, the new campus map is more functional. The user interface can be improved in terms of design and functionalism by adding new features. New applications can be developed to allow users to get access via their cell phones to the map wherever and whenever they wish to do so.

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