

The Beytepe Campus Map: A Mashup Application



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INTRODUCTION

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 (Yomralioğlu, 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).

APPLICATION DEVELOPMENT (cont'd)

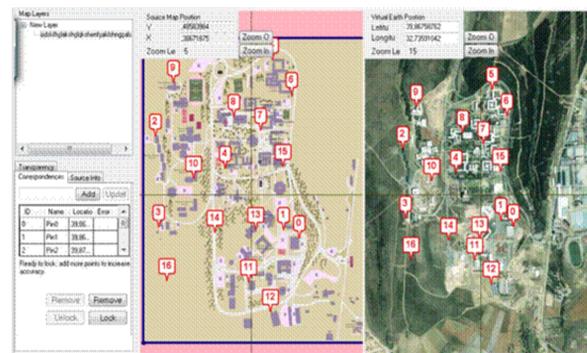


Fig. 1. Map Cruncher display image



Fig. 2. The Beytepe button

- We then gathered data about several different places on campus and tagged them on the map using CommunityWalk's place-pointing feature (CommunityWalk, 2008, Fig. 3). We added brief notes (dormitory capacities, pictures, phone numbers, etc.) about each place using explanation buttons.

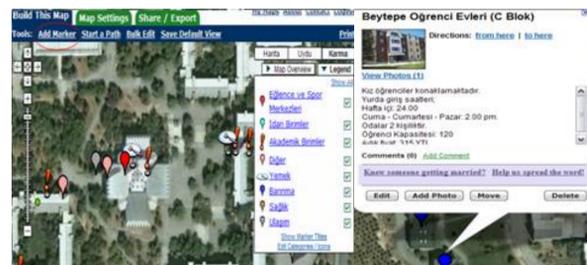


Fig. 3. CommunityWalk Application

- 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 reflected on Google Maps and the Beytepe Campus Map.

APPLICATION DEVELOPMENT (cont'd)

ID	Name	Location	Area	Category	Latitude	Longitude
3952191	Dişhekimliği	11. Fen Fakültesi	113	Academic Units	39.871203	32.756699
3952196	İç Hastalıkları	11. Fen Fakültesi	113	Academic Units	39.870303	32.756633
3952208	Yabancı Diller Yabancılar	11. Fen Fakültesi	113	Academic Units	39.869303	32.756633
3952211	Fakültesi	11. Fen Fakültesi	113	Academic Units	39.868403	32.756633
3952214	Genel Müdürlüğü	11. Müberraklık Fakültesi	116	Academic Units	39.868403	32.756633
3952226	Spor Bilimleri Yabancılar	11. Müberraklık Fakültesi	116	Academic Units	39.867503	32.756633
3956642	Mühendisliği	11. Müberraklık Fakültesi	116	Academic Units	39.868403	32.756633

Fig. 4. The Google Spreadsheets display image

- 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.

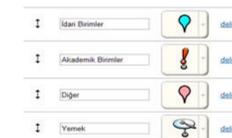


Fig. 5. Categories and icons

- To develop the mashup application using Google Maps API, we wrote the programming code using the Google Code Playground (Google, 2009b). We used JavaScript and JavaScript libraries to modify the user interface and added zooming features to display the detailed campus map.

CONCLUSION

The Beytepe Campus Map mashup application informs users about places on campus. Four different types of places are shown on the map along with explanations on the right-hand side of the menu. Populating the map with texts, pictures and video will make the map even more useful. Keeping data in a database facilitates fast and easy updating. The ontology we created allows us to categorize related places together. Users can query the map and find easily what they search for under 8 major items. The Beytepe Campus Map is available online at <http://www.beytepecampus.com>.

CONCLUSION (cont'd)

In summary, the new campus map is more functional. The user interface can be improved in terms of design and functionality 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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