

MIDDLE EAST TECHNICAL UNIVERSITY
DEPARTMENT OF COMPUTER ENGINEERING



CENG 491
PROJECT PROPOSAL

Team Name:

CoreTech

Project Title:

Internet Mobile GIS Implementation

Team Members :

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2. Team Information

2.1 Team Name

Name of the team is CoreTech (Abbreviation of Core Technologies).

2.2 Team Members

(Alphabetically ordered)

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3. Introduction and Project Scope

Today, there are various types of communication tools. While the new technologies are developed, some traditional ways of communication become old-fashioned and less preferred. Thanks to the digital technology, nowadays accessing information is very easy. As an important part of the digital technology, mobile devices provide people with position independent information access. The most popular mobile devices are mobile phones; however, their independency is limited by the quality and availability of GSM operators. At this point, Global Positioning System (GPS) arrives on the scene and serves position information at anytime, anywhere. GPS consists of at least 24 satellites in 6 orbital planes which covers the entire world. For this reason, it is impossible not to get location information by GPS. Due to these unique properties of GPS, it is embedded into various mobile devices such as Personal Digital Assistants (PDA).

Our project topic is Internet Mobile Geographical Information Systems (GIS) Applications. We are expected to develop a mobile GIS implementation. The main idea of the project is to connect to a server with PDA which has GPS connection and to display the processed visual data to the user. Localization information will be obtained by GPS connection at real time and map data will be obtained from the server. Up to this point, the topics mentioned are the infrastructure of the project. With this infrastructure, many applications can be developed such as field mapping, navigation, vehicle tracing system, tourist guides and even a golf assistant.

4. Our Project Topic

We are going to develop Location Based Information System. In metropolises keeping track of social facilities is possible via internet to some degree. However, as technology improves people tend to reach such information much more easily and quickly than every previous day. Immobile systems do not meet these demands of people.

4.1 Usage Area

As CoreTech, we propose a brand new solution to this problem which consists of a PDA, GPS and internet connection (wireless or GPRS). By the help of our application, users will be able to search the latest social events in the town. For example, user will run our application in his/her PDA which has both GPS and internet connection, then search for a cinema. His/her physical location is provided by GPS, then a list of nearest cinemas are displayed to the user. Movies on the screen are shown with their sessions. Moreover, the path to the selected cinema will be given in both written format and as a highlighted map.

Two different functions of our product:

1. Either, user can search the physical locations of social activities and then list all activities in that place (for example, user has already decided to go Armada Cinema Hall). This option is for users who are determined about the place of activity.
2. Or, user can search directly the name of the activity (for example, user has already decided to watch Memleketimden İnsan Manzaraları play) and then learn the physical location of the activity.

The social places that our product will include are:

- Cinema:
 - All movies in all cinemas are entered to database periodically,
 - When a new movie arrives, database is updated,
 - User can search movies according to session, name, type or a specific cinema hall,
 - If a movie search is done, results are shown from nearest to furthest Cinema Hall,
 - Movies are stored with ontological mapping according to their types, so that system makes offers to the user when user's selection is not available.

- Theatre:
 - Similar with cinema heading. Ontology is again in action according to plays' types.
 - This time, plays are updated less frequently according to movies.
- Sport Hall:
 - Consists of stadiums, basketball/volleyball arenas, tennis courts, etc. ,
 - All activities in all sport halls are entered to database periodically,
 - Activities are shown with their places and times,
 - Ontology is not applicable to such type of activities, because offering a basketball match to a person who wants to watch football match is meaningless.
- Concert Hall:
 - Music activities in popular concert halls (for example Saklıkent in Ankara) are kept in database,
 - User is able to search these activities according to their names and types,
 - Ontology is again in action, for example when a user wants to have information about Şebnem Ferah performance, an alternative rock band's concert such as Duman may be displayed.

Transportation System: Transportation system is embedded to all abovementioned areas. In both functions of our product, a physical location is returned. First, the path between the user and destination is displayed on the map. Then, possible transportation methods for that path are shown to user. These possibilities include buses, subways, Dolmuş, and taxis. Of course, taxi is the last option. In a huge city like Ankara, accomplishing this task is a very big project but since our application is designed for a restricted area, we can succeed it.

4.2 Usage Method

GPS is connected to PDA and PDA is connected to internet via wireless (if available) or GPRS. Physical location is sent to server. At this point, server maps the physical location with map data (from the map database) and address information (from the address database). These are bundled and provided as Web Service Endpoint. PDA is able to display this Web Service to the user. Since we are planning to use Web Services, we will easily port our application to internet and to anyone who requests via Web Service Definition Language (WSDL). Moreover, as a striking effect of WSDL, poor PDA will never need to make complex calculations. The things that will be done on PDA are just simple visual oriented processes like zooming in/out, scrolling, scaling, left/right/up/down rotation, multiple language support. User will be able to search locations by addresses or latitude/longitudes. Again there will be no load on PDA while processing search queries.

This is a very specialized application so it has to be reduced for a specific area. Because a giant database for addressing those places is needed. Size of the database in computer does not cause big problem but acquiring the physical locations of those places is a very time consuming problem. When completed, user will be able to search, for instance, the nearest cinema hall or a theatre play that he/she heard about. Then the path to found location will be given in both written format and as a highlighted map.

5. Conclusion

Internet Mobile GIS Implementation was our first choice so we are very pleased to have a chance to develop this project. This proposal is a result of our first impressions and research. Our formal meeting with our project assistant Oral Dalay is at 9.00 AM on Thursdays. We have already exchanged our contact information. As the time progresses, our ideas and plans will be shaped by the help of meetings.