METU Community Services

Software Requirements Specification

v1.1

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Rebellion

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1. Introduction

This document includes the requirements of the project, named METU Community Service. Mainly; overall description of the project, specific requirements, data description, behavioural description and planning are mentioned in the SRS document.

1.1 Problem Definition

The problem that is being worked on, is that the reaching the necessary information is time consuming and inefficient. Regarding the campus life, being able to reach information about the campus events, weather forecast, venues, etc. from the same source is more desirable. The problem is the obligation of checking different sources to get different kind of information.

1.2 Purpose

The purpose of this document is to give a detailed description of the requirements for the “METU Community Service” project. It will illustrate the purpose and complete declaration for the development of system. It will also explain system constraints, interface and interactions with other external applications.

This document is primarily intended to be proposed to a customer for its approval and a reference for developing the first version of the system for the development team.

1.3 Scope

The final product will be a network-based mobile application which helps people to access campus services, such as places to eat, bus departure times, major event announcements, etc. The application should not convey wrong or outdated information since it is critical.

With this application, users will be able to save their precious time in their busy lives. Also, this application will get in handy for the users who are not familiar with the area. The information that will be provided, will be gathered and given from already serving systems.

One of the components of this application is taking the cafeteria information from the official cafeteria website of the university, which is given in the references section *[2]*. The application will be free to download from a mobile application store.

The ultimate goal of this project, is to apply this community service paradigm to any other community. The main objective of this project is to serve the people by supplying them easy access to services, through the application.

1.4 Definitions, acronyms, and abbreviations

The definitions of the terms, used in this document, are shown below:

Term	Definition
User	Someone who interacts with the mobile phone application.
Smart phone	A mobile phone that is able to perform many of the functions of a computer.
Application Store	An installed application on mobile phone which helps user to find new compatible applications with mobile phone platform and download them from the Internet.
DBMS	Database Management System
xcode	An integrated development environment containing a suite of development tools, developed for Apple for developing software for OS X and iOS.
Android SDK	Android Software Development Kit
Android	A mobile operating system based on the Linux kernel, that is designed primarily for touchscreen mobile devices.
iOS (iPhone OS)	A mobile operating system developed and distributed by Apple Inc.
METU	Middle East Technical University

Table 1. Definitions

1.5 References

[1] IEEE Software Engineering Standards Committee, "IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications", October 20, 1998.

[2] http://kafeterya.metu.edu.tr/

[3] http://metuevents.com/

[4] http://www.worldweatheronline.com/

[5] http://ring.metu.edu.tr/

1.6 Overview

The remainder of this document includes six chapters and the supporting information. The second chapter provides an overview of the system functionality and system interaction with other systems. In this chapter, constraints, assumptions and dependencies of this project are also mentioned.

The third chapter includes the requirements specification in a detailed way. Design constraints are also mentioned in this section.

In the fourth chapter, data objects that will be managed by the software are described. Also, the data objects and their major attributes are stated.

The fifth chapter basically describes how the software behaves when particular events are encountered. Further, state transition diagrams will be given so that the overall behaviour of the system will be depicted.

2. Overall description

The web based mobile application will be available for android and iOS platforms. The users will be able to access the information via internet through their mobile phones.

2.1 Product perspective

The application that we will implement is going to access the database of METU Academic Calendar and Cafeteria services in order to retrieve the data from those services. Moreover, the ring services and METU Culture and Convention Center are going to be accessed by the application to show users the information about daily events. For more information, a deployment diagram is shown below in Fig.1.

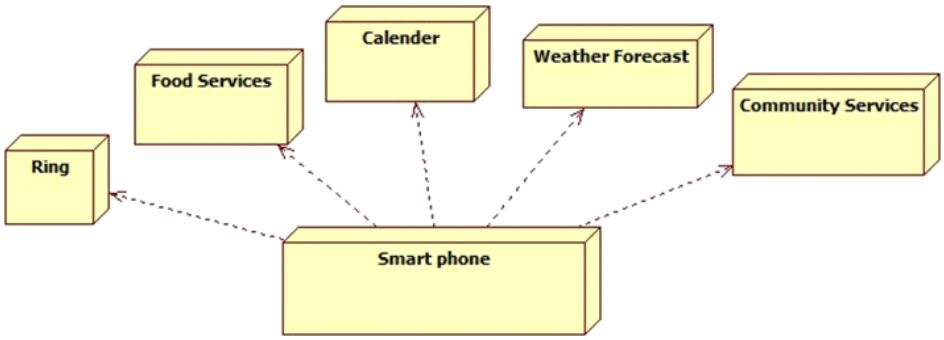


Fig.1. Deployment Diagram

2.1.1 System Interfaces

The System will have an interface that connects the user and platform operations, namely Android and iOS. The user interface will be perfectly easy to use for all people, meaning that the person who controls the mobile application will not have trouble running the operations.

2.1.2 User Interfaces

The User interface will basically consist of several buttons that lead to other service operations. For Example, if the user presses the ring service button the information about where the closest ring is will come to the screen. Of course operations like these will have to run in a rational time in order for the user to enjoy application.

2.1.3 Hardware Interfaces

The application will run on smart phones. Therefore, our hardware interface will basically be about them. The Android and iOS devices will be able to use this application.

2.1.4 Software Interfaces

The application will be developed on Android SDK and xcode for iOS. Moreover, a DBMS will be operational on regular basis for obtaining information like user accounts and data.

2.1.5 Communication Interfaces

The communication interface is going to be built on top of a messaging system where users will be able to send direct messages to each other. Also, there will be some channels for them to see and obtain information about concerning topics as they like, which other people can edit.

2.1.6 Memory

The project does not have serious memory constraints as most of the smart phones are very developed and have high memory space. The application will not be a high memory consuming one since it will be about obtaining information about campus.

2.1.7 Operations

The system is going to push notifications for some particular events and inform the user. Also, it will check the corresponding databases once a day for keeping its services up to date.

2.1.8 Site adaptation requirements

Almost every device which runs on Android or iOS platform should be able to install and use the application without a problem. Also, In the future if more universities and other relevant areas would be supported like METU, the application should be compatible with other resources that are used in here.

2.2 Product functions

The application will mainly operate these functions:

Transportation Service: This class will hold taxi and minibus addresses.

Food Service: METU Cafeteria will be handled as "cafeteria" and other restaurants and cafes will be represented as "restaurant". Restaurant data is stored in the "Restaurant" class.

Community Message Service: Broadcast announcements will be handled in this class. Only privileged users, such as METU BIDB, can do broadcast announcements (urgent messages such as water cut). If a user registers to system s/he can use Peer-to-Peer messaging service and join a group, otherwise s/he will get the broadcast messages. After the core components of this class are developed, we can add new features like friending, photo sharing etc.

Ring Location: This class will get the whole data from ring.metu.edu.tr.

Weather Forecast Service: Meteoroloji Genel Müdürlüğü API will be used for provide this service. This will show three days' weather data (temperature and weather condition).

Calendar Service: METU's official events, like announcements from OIDB or student societies will be delivered to the users. Users can get all information about an event. In addition to this we will get the data from metuevents.com for the unofficial events that concern METU people.

Map Service: The data will be pulled from map.metu.edu.tr. This aims to show users (mostly freshmen, people came to an exam) proper places of the classes and departments.

2.3 Constraints

-The developer will have constraints concerning the database access because there is no specific database location. All the service information that the application will use must fetch its data from a different location. Therefore, that will be a challenging task.

- Another constraint is the EGO service, which is currently not available to campus residents. Moreover we are not really sure how to get and use the information that is provided by EGO, in a case of agreement.

- Getting and showing the images that are fetched from the official cafeteria website of the university *[2]*.

- Also, the ring service part can prove to be difficult concerning getting the data from a map.

2.4 Assumptions and dependencies

The application will be developed on Android SDK and xcode for iOS platform. These platforms will play a crucial role in the process since they are operating systems that will run on smart phones.

Also, the software must keep up to date information about subjects like food service and weather forecast in order to be well operational.

3. Specific requirements

3.1 Interface requirements

The application has as many connections as the external services. METU ring service times and locations is one of the services that is linked with the application.

As developers we should get the ring data from METU servers, likely the other services that METU provides.

For calendar service in our application, also get data from METU servers, but in addition it will get social activities, student group announcements and public events. The informal data for our calendar will be taking from METU events website *[3]*.

Application gets the food data (open times in/near campus restaurants and menu information) from a portal website and METU cafeteria information from the official cafeteria website of the university *[2]*.

METU local weather service will be linked to the website given in the references section *[4].*

Communication service consists of two parts. The first part is for group communication. For this part we will prepare a database. And the second part is for general urgent announcements.

3.2 Functional requirements

3.2.1 METU Ring Service

This component of our application will show the METU map and ring routes. With the data, taken from the given website *[5]*, instant place of the ring service is demonstrated to user. Moreover, this function will have a property that it can inform user about if ring is near.

3.2.2 Calendar service

Users can reach all events, such as student societies' events, METU events, and external events that concerns METU people.

3.2.3 Food Service

Restaurant information can be viewed with this function. A user can reach the menu list and open hours of the restaurants either in campus or near campus.

3.2.4 Weather Forecast Service

Weather service gives the local METU weather information anytime.

3.2.5 Communication Service

The communication service consists of two parts. The first one is the group communication that can be either a department group or a student club group or etc. Announcements that belong to that group will only inform the group members. With the importance of the announcement, depending the user, alert of the application will be changed (this can be a pop-up message or negligible alert). Also the group conversation can be done with this function. The other part of this service is urgent announcements. Urgent notifications that concern the people of METU will be broadcasted to all applications, for example possible water cut or public incidents.

3.3 Non-functional requirements

The application has as many connections as the external services. METU ring service times and locations is one of the services that is linked with the application.

3.3.1 Performance requirements

A database and a server are needed to handle calendar events, group communications and user accounts. These systems will manage over a thousand connections at same time. But the data flow will be done only by strings (text communication), it will not be a problem for performance.

3.3.2 Design constraints

Internet connection should be enabled to reach the service information and database. The security will be handled by secure sockets and encrypted data transmission, also user accounts will help the privacy. The user preferences will stored into the main server. So that user can access the information that is chosen from any other mobile device.

4. Data model and description

4.1 Data description

The data objects are given with short explanations below.

Services: This class includes all kinds of services (ServiceItself and ServiceItself-SignUp-Necessary) and it keeps data about service name and service type.

ServiceItself: Describes services that can be accessed even though the user is not logged in.

ServiceItself-SignUp-Necessary: User has to login to access this kind of services.

Login: will be used for checking user's account whenever user tries to access signup-necessary services.

SignUp: will be used for saving the user information to our account database.

Contact Group: is a class that will be used for keeping necessary information about user.

Create Database: will be used for creating data base to keep necessary information.

Report Incident: will be used for incidents about the some features will be used in that application.

Request Help: will be used for contact group requests.

4.1.1 Data objects

Below, relationship between the data objects are shown.

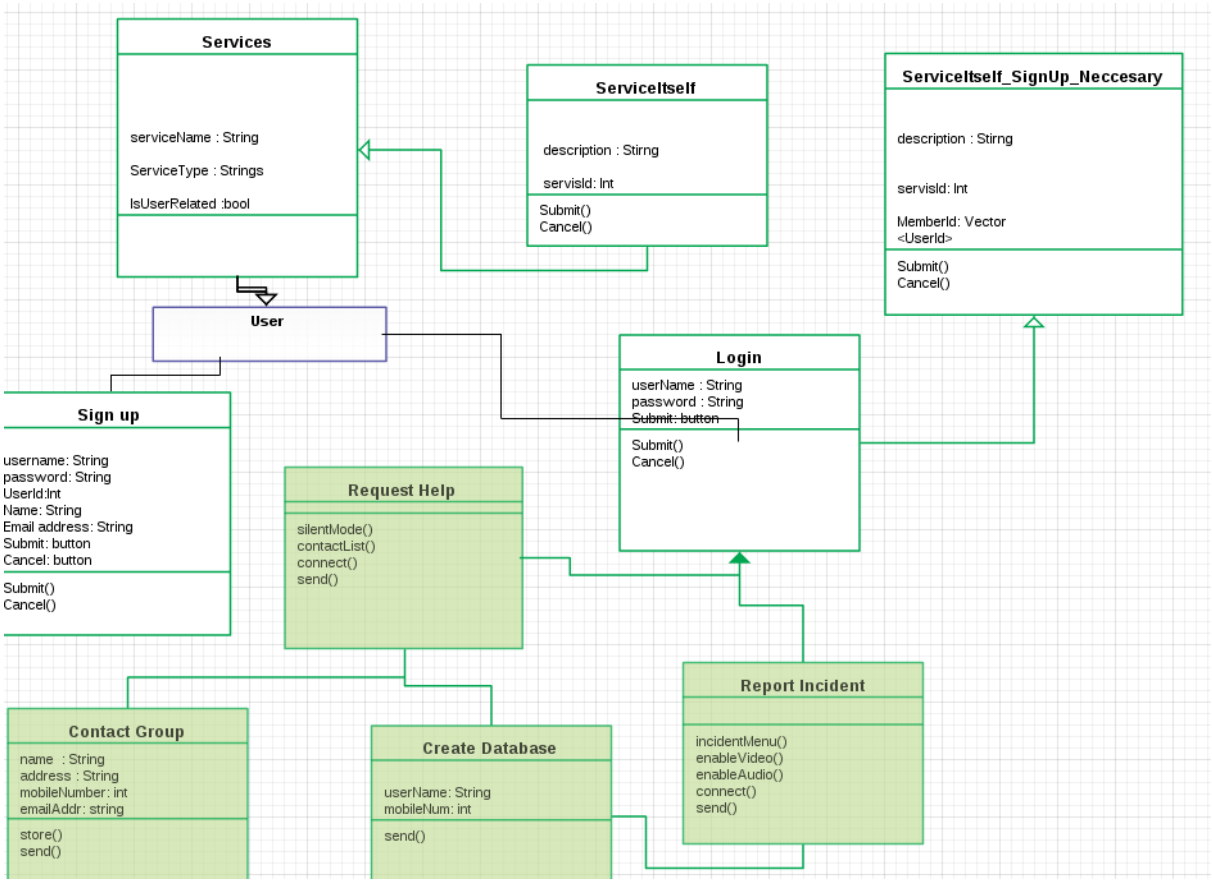


Table 2. Data Object Relations

5. Behavioural models and description

The software will behave as a guide inside the campus. For example, if someone who comes to our campus for the first time, he/she will be able to know where to eat and how to catch a bus via the application.

5.1 Description for software behaviour

These are the main events in our system:

The software will have the ability the show important information concerning the life inside the campus. This will be commonly about where to eat, what is the weather, communication with other people inside the campus, what is the current events that will happen inside the campus and the finding the closest ring service. This information is going to be able to the user in different interfaces. For example; the ring service can be shown as a map while the weather inside the campus is shown as animation.

5.2 State transition diagrams

The state chart diagram below in Fig.2. indicates the main states in the application. There are mainly five states which do some operation for guiding the user throughout the campus life. All of them are basically what you need fundamentally inside the university for people.

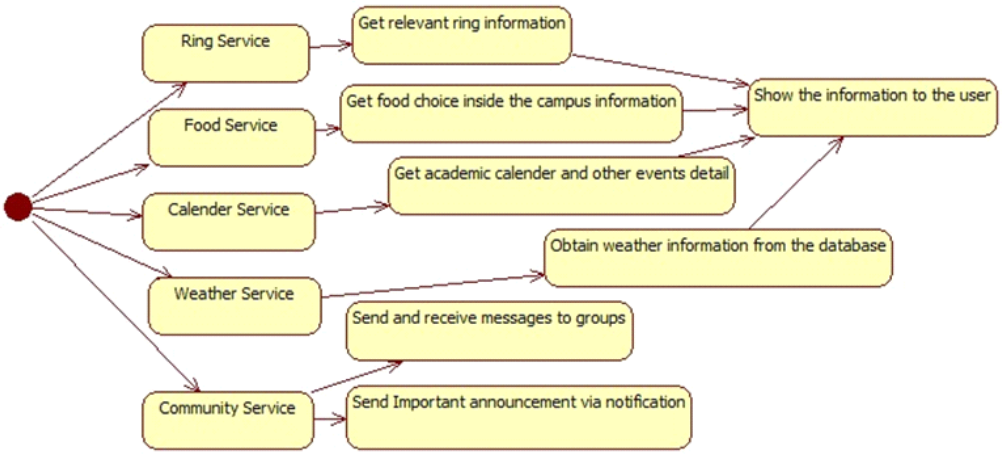


Fig.2. State Chart Diagram

6. Planning

6.1 Team structure

Our program consists of some routines-such as weather forecast, map, food - that became a main software. In short, our members take care of these routines individually. Mainly,

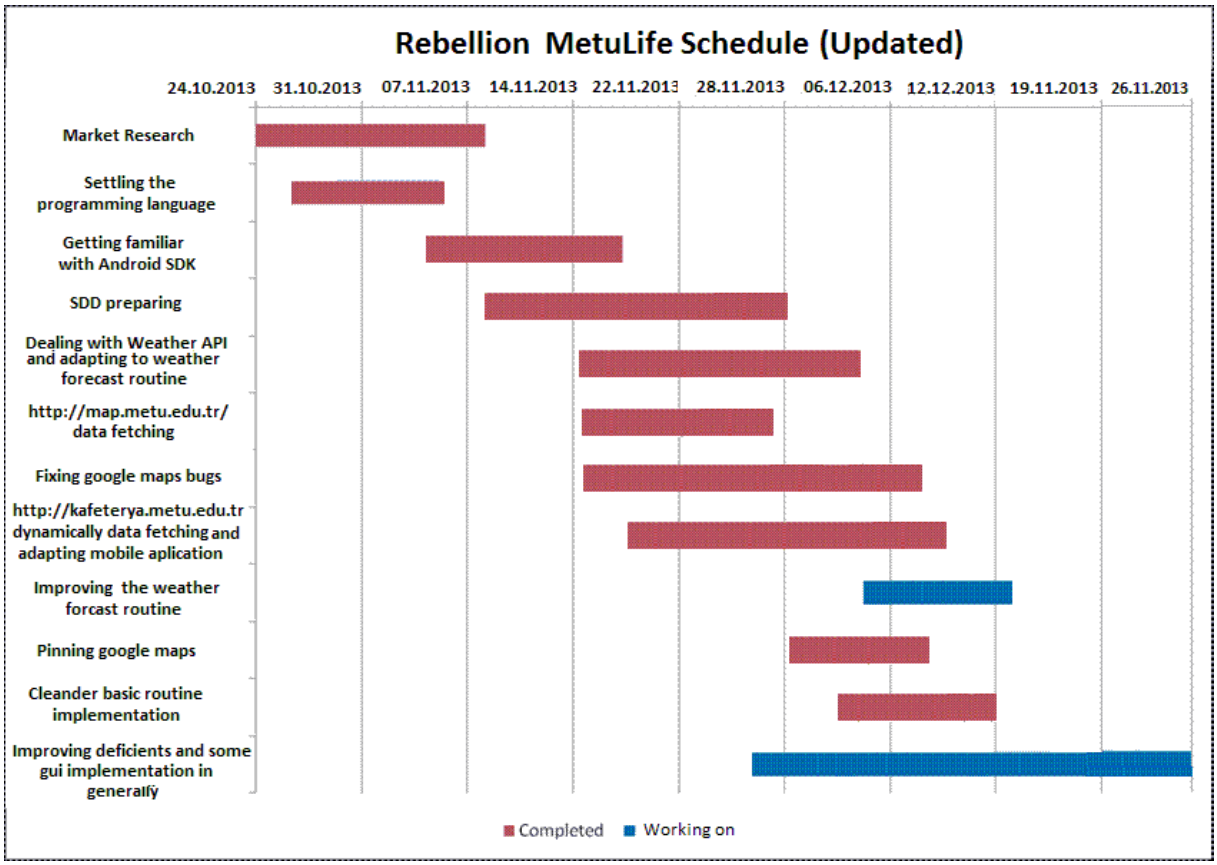
Barış Güvercin -> Calendar and map related implementations.

- Burak Çelik -> Weather Forecast implementation and as a team leader takes care of weakly staffs.
- Eren Deniz Çelebi -> food related implementations.

- Taylan Doğan -> map- and pin - related implementations.

6.2 Estimation (Basic schedule)

In this semester, mainly the design processes and the documentation processes will be dealt with. We have decided upon regular weekly meeting times to achieve our goals. The development and enhancement of the software will be the main focus in the next semester.



6.3 Process model

As the process model, iterative and incremental development will be used.

7. Conclusion

The reason for this document to be written is to show a complete description of the application system behaviour and the necessary requirements for developing the project. Some diagrams are added to finalize the idea of the process in order to have a clear understanding. The services that will be designed throughout the project is explained clearly and the related problems that might be experienced in the process are stated.