Software Requirements Specification

For

Audarya

Version 1.0

Group no. IT#03

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Revision History

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| **Name** | **Date** | **Reason For Changes** | **Version** |
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# Introduction

This section gives a scope description and overview of everything included in this SRS document. Also, the purpose for this document is described and a list of abbreviations and definitions is provided.

## Purpose

The purpose of this document is to give a detailed description of the requirements for the “Audarya” software. 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 and our project mentor for its approval and a reference for developing the first version of the system for the development team.

## Document Conventions

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Users | Someone who interacts with the mobile phone application |
| Admin/Administrator | System administrator who is given specific permission for managing and controlling the system |
| Organization Owner | Someone who has a organization and wants his organization to be a part the Application |
| Web-Portal | A web application which present special facilities for organization owner |
| GPS | Global Positioning System |
| Stakeholder | Any person who has interaction with the system who is not a developer |
| DESC | Description |
| Application Store | An installed application on mobile phone which helps user to find new compatible applications with mobile phone platform and download them from Internet |
| GPS-Navigator | An installed software on mobile phone which could provide GPS connection and data, show locations on map and find paths from current position to defined destination |

## Intended Audience and Reading Suggestions

The remainder of this document includes four chapters. The second one provides an overview of the system functionality and system interaction with other systems. This chapter also introduces different types of stakeholders and their interaction with the system. Further, the chapter also mentions the system constraints and assumptions about the product.

The third chapter provides the external requirements in detailed terms and a description of the different system interfaces.

The fourth chapter deals with various functional requirements. Different specification techniques are used in order to specify the requirements more precisely for different audiences.

The fifth chapter deals with various non-functional requirements. It includes both security and performance related requirements along with specifying the attributes which ensure quality of the software.

## Product Scope

The “Audarya” is a GPS-based mobile application and is also made available as a website which helps people to find the closest recipient for their donations based on the user’s current position and other specification like intended age group, type of donation, type of organization to donate and more. The application should be free to download from either a mobile phone application store or similar services and can be accessed through its online website.

Owners of various non-profit organizations like NGO’s can provide their organization information only using the web-portal. This information will act as the bases for the search results displayed to the user. An administrator also uses the web-portal in order to administer the system and keep the information accurate. The administrator can, for instance, verify organization owners and manage user information.

Furthermore, the software needs both Internet and GPS connection to fetch and display results. All system information is maintained in a database, which is located on a web-server. The software also interacts with the GPS software which is required to be an already installed application on the user’s mobile phone and it makes use of Google maps for its website. By using the GPS-system, users can view nearest organizations to their location and get their address. The application also has the capability of representing both summary and link for detailed information about the organization.

## References

1. IEEE Software Engineering Standards Committee, “IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications”, October 20, 1998.
2. <http://www.cse.chalmers.se/~feldt/courses/reqeng/examples>

# Overall Description

This section will give an overview of the whole system. The system will be explained in its context to show how the system interacts with other systems and introduce the basic functionality of it. It will also describe what type of stakeholders that will use the system and what functionality is available for each type. At last, the constraints and assumptions for the system will be presented.

## Product Perspective

This system will consist of two parts: one mobile application and one web portal. The mobile application will be used to find organizations and view information about them while the web portal will be used for managing the information about the organizations and the system as a whole.

The mobile application will need to communicate to a GPS application within the mobile phone, which in turn communicates with a physical GPS device to find the location of the user. The GPS will provide the mobile application with locations of both the user and the organizations and their addresses. The functionality provided by the GPS will be embedded into the application in order for the user to be able to use the functions in the application in a seamlessly manner.

Since this is a data-centric product it will need somewhere to store the data. For that, a database will be used. Both the mobile application and web portal will communicate with different databases in slightly different ways. The mobile application and the web portal will add and modify data. All of the database communication will go over the Internet.

## Product Functions

With the mobile application, the users will be able to search for organizations. The result will be based on the criteria the user inputs. There are several search criteria and it will be possible for the administrator of the system to manage the options for those criteria that have that.

The result of the search will be viewed in a list view depending on what criteria included in the search. The list view will have one list item for each organization matching the search criteria and show a small part of the organization information so the user can identify the organization. In the view the users will be able to select an organization and get information of its location.

The web portal will provide functionality to manage the system and the organization information. It will also provide information about the system, for example show when there is a new update.

## User Classes and Characteristics

There are three types of users that interact with the system: users of the mobile application or website, organization owners and administrators. Each of these three types of users has different use of the system so each of them has their own requirements.

The mobile application or website users can only use the application to find an organization and give their feedback. This means that the user have to be able to search for organization, choose an organization from that search and then get its address and contact information by logging in first by providing some information about him/her. In order for the users to get a relevant search result there are multiple criteria the users can specify and all results matches all of those. Virtual points will be allocated to each user depending on their activeness in the system.

The organization owners will use the mobile application and the web portal. They will be able to register and manage the information about their organization, for example a description of the organization, contact information and their other details.

The administrators also only interact with the web portal. They are managing the overall system so there is no incorrect information within it. The administrator can manage the information for each organization as well as the options for both the mobile application users and the organization owners.

## Operating Environment

<Describe the environment in which the software will operate, including the hardware platform, operating system and versions, and any other software components or applications with which it must peacefully coexist.>

## Design and Implementation Constraints

The mobile application is constrained by the system interface to the GPS navigation system within the mobile phone. Since there are multiple system and multiple GPS manufacturers, the interface will most likely not be the same for every one of them. Also, there may be a difference between what navigation features each of them provide.

The Internet connection is also a constraint for the application. Since the application fetches data from the database over the Internet, it is crucial that there is an Internet connection for the application to function.

Both the web portal and the mobile application will be constrained by the capacity of the database.

## Assumptions and Dependencies

One assumption about the product is that it will always be used on mobile phones that have enough performance. If the phone does not have enough hardware resources available for the application, for example the users might have allocated them with other applications; there may be scenarios where the application does not work as intended or even at all.

Another assumption is that the GPS components in all phones work in the same way. If the phones have different interfaces to the GPS, the application need to be specifically adjusted to each interface and that would mean the integration with the GPS would have different requirements than what is stated in this specification.

# External Interface Requirements

This section provides a detailed description of all inputs into and outputs from the system. It also gives a description of the hardware, software and communication interfaces and provides basic prototypes of the user interface.

## User Interfaces

A first-time user of the mobile application should see the log-in page when he/she opens the application. If the user has not registered, he/she should be able to do that on the log-in page.

If the user is not a first-time user, he/she should be able to see the search page directly when the application is opened. Here the user undergoes a series of search options he/she wants to conduct.

Every user should have a profile page where they can edit their name, e-mail address, phone number and password. The “P” icon shows where the user can click to navigate to his/her profile page.

The user undergoes a series of search pages or slides which include options related to the type of donating product and intended age group. Each result item includes information about the organization including its address, a link to the organization’s web-page, only if it has one, and an information link, which provides a more detailed description of the organization.

The organization owners interact with the system through a web-portal and the mobile application. An organization owner should be able to register on the web-portal in order to log in and manage the organization information. She/he should also be able to log in through a mobile application and search through the received notifications.

An administrator should also be able to log in to the web-portal where he/she can administer the system by for instance editing organization or user information.

## Hardware Interfaces

Since neither the mobile application nor the web portal have any designated hardware, it does not have any direct hardware interfaces. The physical GPS is managed by the GPS application in the mobile phone and the hardware connection to the database server is managed by the underlying operating system on the mobile phone and the web server.

## Software Interfaces

The mobile application communicates with the GPS application in order to get geographical information about where the user is located and the visual representation of it, and with the database in order to get the information about the organizations. The communication between the database and the web portal consists of operation concerning both reading and modifying the data and same is the case between the database and the mobile application.

## Communications Interfaces

The communication between the different parts of the system is important since they depend on each other. However, in what way the communication is achieved is not important for the system and is therefore handled by the underlying operating systems for both the mobile application and the web portal.

# Specific Requirements

This section includes the requirements that specify all the fundamental actions of the software system.

## Functional Requirements

**User Class 1 – The User**

**ID: FR1**

TITLE: Download mobile application

DESC: A user should be able to download the mobile application through either an application store or similar service on the mobile phone. The application should be free to download. RAT: In order for a user to download the mobile application.

**ID: FR2**

TITLE: Download and notify users of new releases

DESC: When a new/updated version or release of the software is released, the user should check for these manually. The download of the new release should be done through the mobile phone in the same way as downloading the mobile application.

**ID: FR3**

TITLE: User registration - Mobile application and website

DESC: Given that a user has downloaded the mobile application, then the user should be able to register through the mobile application or through the website. The user must provide user-name, password and e-mail address. The user must provide a regularly used phone number.

**ID: FR4**

TITLE: User log-in - Mobile application and website

DESC: Given that a user has registered, then the user should be able to log in to the mobile application or through website. The log-in information will be stored on the phone or by the browser and in the future the user should be logged in automatically.

**ID: FR5**

TITLE: Retrieve password

DESC: Given that a user has registered, then the user should be able to retrieve his/her password by e-mail.

**ID: FR6**

TITLE: Mobile application and website - Search

DESC: Given that a user is logged in to the mobile application or on the website, then the first page that is shown should be the search page. The user should be able to search for an organization, according to several search options. The search options are Organization type, Specific donation and other. There should also be a free-text search option if any of the given search options does not meet the user requirement. A user should be able to select multiple search options in one search.

**ID: FR7**

TITLE: Mobile application - Search result in a list view

DESC:

* Search results can be viewed in a list. Each element in the list represents a specific organization. Each element should include the organization name, telephone number, type of organization, a short two-line description, a link to the organization’s web-page and an information link.
* There should be maximally 5 results displayed. If the result contains more organizations than what can be displayed on the screen at one time, the user should be able to scroll through them.
* The list view should include a header with different selectable sorting options.
* The list view should include a button that, when selected, should display different filtering options in a filtering menu.

**ID: FR8**

TITLE: Mobile application and website - Selecting the information link

DESC: A user should be able to select the information link, which is included on all result items. The link will direct the user to an information page, which includes a picture of the organization, the organization name, address, phone number, e-mail address and organization description.

**ID: FR9**

TITLE: Mobile application and website - Search by type of donation

DESC: A user should be able to select the type of product he/she wants to donate. The result is displayed in a list view by default.

**ID: FR10**

TITLE: Mobile application and website - Search by intended age group

DESC: A user should be able to select the intended age group for whom his/her product is more useful.

**ID: FR11**

TITLE: Mobile application and website - Search by organization type

DESC: A user should be able to select an organization type in a given list as input. The result is displayed in a list view by default.

**ID: FR12**

TITLE: Mobile application and website - No match found

DESC: If no match is found the user should be informed but kept on the search page in order to get the possibility to conduct a new search right away.

**ID: FR13**

TITLE: Mobile application and website - Profile page

DESC: On the mobile application or on website, a user should have a profile page. On the profile page a user can edit his/her information, which includes the password, e-mail address and phone number.

**User Class 2 – Organization Owner**

**ID: FR14**

**Feature: Create an account**

In order to create an account an organization owner should register on the web-portal

**Scenario: Required information for registration**

Given the organization owner wants to create an account and the organization owner does not have an account when the organization owner registers on the web-portal by providing user-name and password and address and e-mail address and phone number then the organization owner should be able to apply for verification

**Scenario: Full information for registration**

Given the organization owner wants to create an account and the organization owner does not have an account when the organization owner registers on the web-portal or by mobile application by providing user name and password and address and e-mail address and phone number and mobile number then the organization owner should be able to apply for verification

**Scenario: Confirmed registration**

Given the organization owner has applied for verification and has not received a confirmation e-mail after registration when the organization owner receives a confirmation e-mail then the organization owner should be able to log in

**ID: FR15**

**Feature: Organization owner log-in**

In order to use the system an organization owner should be logged in to the web-portal or mobile application

**Scenario: Successful log-in**

Given the organization owner wants to log in when the organization owner logs in with his/her account

Then the organization owner should be logged in as an organization owner

**Scenario: Retrieve password**

Given the organization owner wants to log in and has lost the password when the organization owner enters his/her email address in the “Retrieve password” form and submits the form then the organization owner should receive an email containing the password.

**ID: FR16**

**Feature: Manage information**

In order to manage information an organization owner should be logged in to the web-portal

**Scenario: Show fields for managing information**

Given the organization owner is logged in when the organization owner wants to manage information

Then the organization owner should be able to manage information in a form

**Scenario: Filling in mandatory fields**

Given the organization owner wants to fill in the mandatory fields of the form when the organization owner provides address and e-mail address and phone number and organization name Aand type of organization then the organization owner has filled the mandatory fields of the form

**Scenario: Filling in optional fields**

Given the organization owner of a organization wants to fill in optional fields in the form when the organization owner provides organization description and picture of organization and mobile phone

And website link then the organization owner has filled in optional fields in the form

**Scenario: Adding information with mandatory fields**

Given the organization owner has filled in the mandatory fields of the form when the organization owner submits the form then the information about the organization should be added

**Scenario: Adding information with mandatory and optional fields**

Given the organization owner has filled in the mandatory fields of the form and filled in one or more optional fields of the form when the organization owner submits the form then the information about the organization should be added

**Scenario: Deleting information**

Given the organization owner is logged in and information exists when the organization owner deletes information then the information should be deleted

**Scenario: Editing information**

Given the organization owner is logged in and information exists when the organization owner edits information then the information should be edited

**User Class 3 – Administrator**

**ID: FR17**

**Feature: Administrator log in**

In order to administer the system an administrator should be logged in to the web-portal

**Scenario: Successful log-in**

Given the administrator wants to log in when the administrator logs in with an administrator account then the administrator should be logged in as an administrator

**ID: FR18**

**Feature: Verify organization owner**

In order to allow a organization owner to use the system an administrator should be able to verify the organization owner

**Scenario: Verify a organization owner**

Given the administrator is logged in when the administrator verifies a organization owner then the organization owner should be able to log in and the organization owner should be notified by a confirmation email

**Scenario: Reject a organization owner**

Given the administrator is logged in when the administrator rejects a organization owner Then the organization owner should not be able to log in and the organization owner should be notified by a rejection email

**ID: FR19**

**Feature: Manage organization types**

In order to have a list of organization types an administrator should be able to manage the organization types

**Scenario: Add a new organization type**

Given the administrator is logged in when the administrator creates a new organization type then the new organization type should be added to the list of organization types

**Scenario: Editing an existing organization type**

Given the administrator is logged in when the administrator edits an existing organization type then the organization type should be updated in the list of organization types

**Scenario: Delete a organization type**

Given the administrator is logged in when the administrator deletes a organization type then the deleted organization type should be removed from the list of organization types

**ID: FR20**

**Feature: Manage products accepted by the organization**

In order to have a list of products an administrator should be able to manage the products

**Scenario: Add a new product**

Given the administrator is logged in when the administrator creates a new product then the new product should be added to the list of products

**Scenario: Editing an existing product**

Given the administrator is logged in when the administrator edits an existing product then the product should be updated in the list of products

**Scenario: Delete a product**

Given the administrator is logged in when the administrator deletes a product then the deleted product should be removed from the list of products

**ID: FR21**

**Feature: Manage organization information**

In order to manage organization information an administrator should be logged in to the web-portal

**Scenario: Add organization information**

Given the administrator is logged in when the administrator adds organization information then the information should be added to the organization

**Scenario: Delete organization information**

Given the administrator is logged in and information about a organization exists when the administrator deletes the information then the information about the organization should be deleted

**Scenario:** **Edit organization information**

Given the administrator is logged in and information about a organization exists when the administrator edits the information then the information about the organization should be edited

**ID: FR22**

**Feature: Manage users**

In order to keep track of the users an administrator should be able to manage the users

**Scenario: Edit an existing user’s information**

Given the administrator is logged in when the administrator edits an existing user then the user information should be updated

**Scenario: Delete/Inactivate an existing user**

Given the administrator is logged in when the administrator deletes an existing user then the user should be deleted

**ID: FR23**

**Feature: Manage organization owners**

In order to keep track of the organization owner an administrator should be able to manage the organization owners

**Scenario: Add a new organization owner**

Given the administrator is logged in when the administrator creates a new organization owner then the new organization owner should be added

**Scenario:** **Edit an existing organization owner**

Given the administrator is logged in when the administrator edits an existing organization owner then the organization owner information should be updated

**Scenario:** **Delete an existing organization owner**

Given the administrator is logged in when the administrator deletes an existing organization owner then the organization owner should be deleted and the organization information should be deleted

# Other Nonfunctional Requirements

## Performance Requirements

The requirements in this section provide a detailed specification of the user interaction with the software and measurements placed on the system performance.

**ID: QR1**

TITLE: Prominent search feature

DESC: The search feature should be prominent and easy to find for the user.

**ID: QR2**

TITLE: Usage of the search feature

DESC: The different search options should be evident, simple and easy to understand.

**ID: QR3**

TITLE: Usage of the result in the list view

DESC: The results displayed in the list view should be user friendly and easy to understand. Selecting an

Element in the result list should only take one click.

**ID: QR4**

TITLE: Usage of the information link

DESC: The information link should be prominent and it should be evident that it is a usable link.

Selecting the information link should only take one click.

## Security Requirements

**ID: QR5**

TITLE: Communication Security

DESC: Security of the communication between the system and server. The messages should be encrypted for log-in communications, so others cannot get user-name and password from those messages.

**ID: QR6**

TITLE: Organization Owner Login Account Security

DESC: Security of accounts. If an organization owner tries to log in to the web portal with a non-existing account then the organization owner should not be logged in. The organization owner should be notified about log-in failure.

**ID: QR7**

TITLE: Admin Login Account Security

DESC: Security of accounts. If an admin tries to log in to the web portal with a non-existing account then the admin should not be logged in. The admin should be notified about log-in failure.

**ID: QR8**

TITLE: Organization Owner Account Security

DESC: Security of organization owners accounts. An organization owner and IP address should not be able to log-in for a certain time period after three times of failed log-in attempts.

**ID: QR9**

TITLE: Admin Account Security

DESC: Security of admin accounts. An admin and IP address should not be able to log-in to the web portal for a certain time period after three times of failed log-in attempts.

**ID: QR10**

TITLE: User Create Account Security

DESC: The security of creating account for users of the system. If a user wants to create an account and the desired user name is occupied, the user should be asked to choose a different user name.

**ID: QR11**

TITLE: Organization Owner Create Account Security

DESC: The security of creating account for organization owners of the system. If an organization owner wants to create an account and the desired user name is occupied, the organization owner should be asked to choose a different user name.

## Software Quality Attributes

The requirements in this section specify the required reliability, availability and maintainability of the software system.

**ID: QR12**

TITLE: System Reliability

DESC: The reliability that the system gives the right result on a search.

**ID: QR13**

TITLE: System Availability

DESC: The availability of the system when it is used. The average system availability (not considering network failing).

**ID: QR14**

TITLE: Internet Connection

DESC: The application should be connected to the Internet.

**ID: QR15**

TITLE: GPS Connection

DESC: The application should be connected to the GPS device.

**ID: QR16**

TITLE: Application extendibility

DESC: The application should be easy to extend. The code should be written in a way that it favors implementation of new functions.

**ID: QR17**

TITLE: Application testability

DESC: Test environments should be built for the application to allow testing of the applications different functions.

**ID: QR18**

TITLE: Application portability

DESC: The application should be portable with Android.