Shopping Recommendation App

Functional Specification

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Contents

Revision History

Date	Version	Description	Author
25/11/2013	1.0	Initial Draft	Ayhan Sahin
26/11/2013	1.1	Gantt Chart	Ayhan Sahin
10/11/2013	1.2	Started Function	Ayhan Sahin
11/12/2013	1.3	Supplementary Spec. Finish off Functions	Ayhan Sahin
12/12/2013	1.4	Metrics	Ayhan Sahin
13/12/2013	1.5	Final Document	Ayhan Sahin

1 Introduction

As the world changes, people's habits and behaviours are also changing. Ten years ago, we have not even heard of things has become a big part of our lives today. Effectively, people's shopping habits has also changed. Many people choose online shopping to buy their clothing, grocery etc. This is mainly because of great benefits of price comparison, time efficiency and ease of access to many things provided online. Shopping recommendation app is a mobile application that allows users to take advantage of online shopping while keeping their shopping behaviours traditional.

1.1 Purpose

The purpose of this document is to provide a detailed description of the functionalities of the Shopping Recommendation App. The document will cover each of the system's expected features, as

well as provide a prior flash of the User Interface. The document will also cover any external dependency that may occur such as hardware and software.

1.2 Scope

The main goal of the Shopping Recommendation App is to improve and shape up people's shopping experiences. The shopping recommendation application will provide users the local and regional search results. The will provide users the information that most of the online shopping websites fails to provide. The Shopping Recommendation app aims to contain as many as possible product listings and public recommendations in order to provide the best results to the users. It usually takes long time to visit each store explore items and carry out price comparison before buying it. Shopping Recommendation application aims to provide all these information to users before they go for shopping. The users will know where to go for, it will save them money and time. Because life is too short to waste time and money is scarce these days.

Shopping Recommendation App is intended for regular smartphone users who are willing to explore new applications add new experiences to their lives. The app is expected to be attractive to the power user for active usage. The current functionalities of the application establish a strong ground for possible future extendible features.

1.3 Definitions, acronyms, and abbreviations

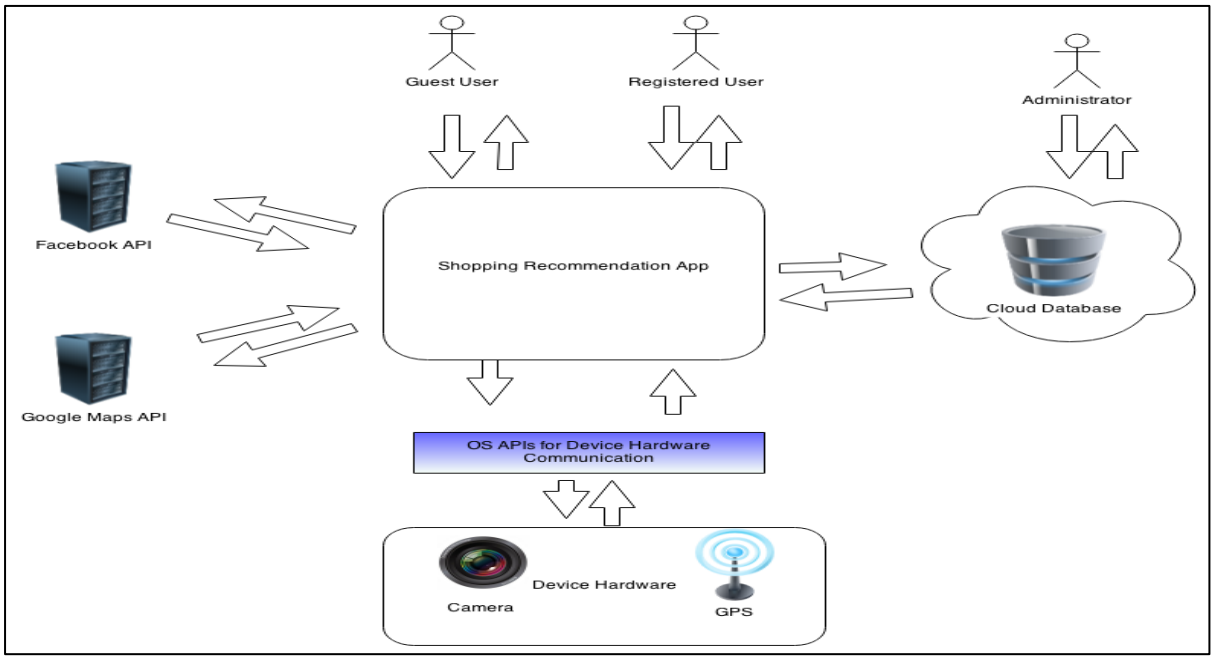
SRA	Shopping Recommendation App
GPS	Global Positioning System
UI	User Interface
API	Application Programming Interface

2 Overall Description

This section will provide a general description of the application in basic terms.

2.1 Product Perspective

The application context can be visualised as below shown diagram;



The system will be a single structure application. The application requires communicating with the device hardware for GPS and Camera functionalities. The GPS will be used for locating the user on the map. The camera will be used for taking pictures that will be added to the product description in the application. The content of the application will be stored on a central location, which all the users will establish a connection to request and update data. The user requires a internet connection to interact with the database. Google Maps and Facebook APIs will be used for improving the quality and the features of the application.

2.2 Product Functions

This section contains main functionality details of the purposed project. The orders of the functionalities are written in most important to least important.

2.3 User Classes and Characteristics

There are three types of users that will interact with the system. These users are registered users, guest users and the administrator. Each user type has different use of the system, guest users will be able to carry out minimum number of operations in the system such as searching a recommendation and ability to view the application main screen which all the feeds will be displayed. The registered user will be able to take advantage of all the system functionalities.

The system administrator will only interact with the cloud (server) side for managing system content and users.

2.4 Operating Environment

The application will operate on the smartphones with Ice Cream Sandwich 4.0 and above installed Android versions. The factor in the choice of Ice Cream Sandwich 4.0 and above versions is that the expected users.

2.5 Design and Implementation Constraints

The internet connectivity is a constraint for the application. The application requires interacting with the cloud database over the internet to fetch data. It is very important that the device has internet connectivity for application to carry out functionality.

The GPS is another constraint for the application functionality. There many device manufacturers for Android operating system. Manufacturers embed different kinds of GPS chips; the quality of the GPS chip embedded in the device will have an effective impact on the GPS accuracy. However the application will use different strategies to overcome this problem, such as using Wi-Fi connection to locate the current location of the device.

2.6 Assumptions

It is assumed that the product will be running on an Android device which will have sufficient system resources to run the application. The application will not function properly if the hardware resources were not sufficient.

2.7 User Documentation

2.7.1.1 Development Documentation

The development documentation will be documented in compliance with the Institute's requirements.

2.7.1.2 Introduction Materials

The introduction materials for the expected users as follows;

- A website set up for the users of the application which will contain necessary information for the promotion of the application.
- A short video prepared for the promotion of the application which will be also displayed on the webpage. The video will less than 5 minutes in length.
- A presentation will be taking place to describe the developed application and answer project related questions.

2.7.1.3 User Manual

The application user manual will be prepared at the completion of the implementation. The user manual will be available to the intended users as an e-book.

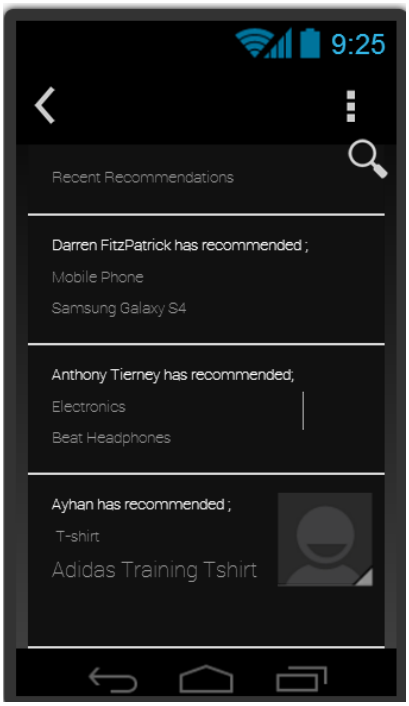
3 Specific Requirements

3.1 External Interface Requirements

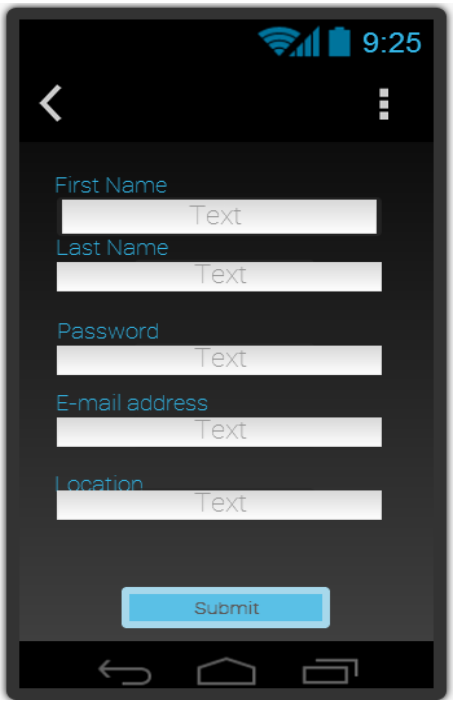
3.1.1 User Interfaces

The application user interface will embrace simplicity, it is purposed that the UI will be aesthetic and will have a same look and feel throughout the application. The user will be provided with a main screen at the start of the application. This screen will contain the latest updates of the recommendation that are taking place around the user's location. The diagrams are prepared to illustrate the purposed theme and look. However UI objects are subject to change during the implementation process. There are only 3 screens created for the illustration purposes.

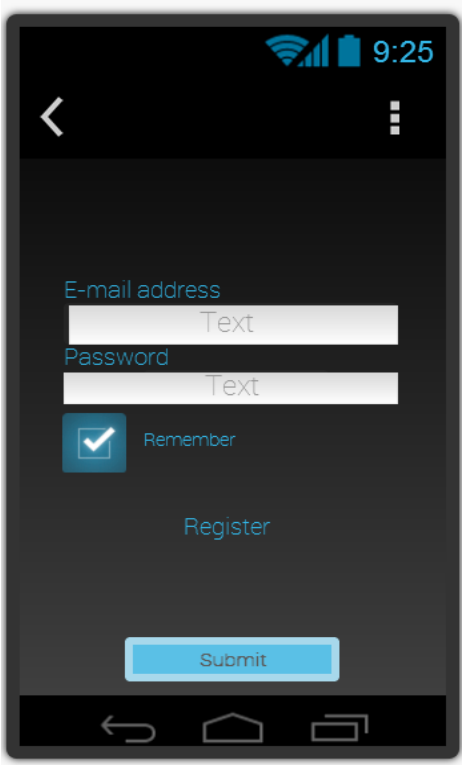
Main Screen



Registration Screen



Login Screen



3.1.1.1 Administration Interface

The application will contain an administration interface which will be used for managing users and content. The administration interface will be at the backend of the application where all the cloud storage takes place.

3.1.2 Hardware Interfaces

The application will have no direct hardware communication. The communication with the hardware will be established through use of provided operating system APIs and libraries.

3.1.3 Software Interfaces

The SRA is designed exclusively for Android smartphone operating system. The application requires Android Ice Cream Sandwich 4.0 and above.

The application will use provided APIs and libraries to establish a communication with the GPS to obtain geographical information.

3.1.4 Communication Interfaces

The application provides “Log in with Facebook” feature to its users. In order to facilitate this functionality the application requires establishing a direct communication with the Facebook server to access user’s Facebook profile information. The communication will be established once the user authorizes the through a pop up screen.

The application will also establish a communication with the Google Maps server for location purposes. The communication will be established through use of Google Maps API.

3.2 System Functionality

This section contains the functionality requirements of the Shopping Recommendation App.

3.2.1 Provide User Profile

The application will enable users to register to the system, which will allow users to take advantage of the full system functionality and features. The registered user will obtain a user profile which all the user activity will be related to.

3.2.2 In App Friendship

The application will allow users to add other users as a friend. The application will provide a search facility based on the email address. The result will be displayed in an appropriate manner. The users will be able new people and unfriend people from their friend list.

3.2.3 Product Listing Facility

The application will allow user to add a product to the system which will be stored on the cloud storage. The user is required to provide brief description and photo of the product to list the product on the system. This functionality also brings minor features to the app structure. These features are as follows;

3.2.3.1 Modify Listing

The users will be able to modify their existing listings at any time they wish. This feature is provided for the quality of the content. The user can correct false and misleading information as well as updating the information of the product.

3.2.3.2 Remove Listing

The users will be able to remove their existing listings at any time. This will eliminate possible misinformation which may occur if the product is no longer available at the described location.

3.2.4 Product Taxonomy

The application will prove a product taxonomy to the users which aims to make easier the process of searching and adding products. The basic product fields will be also included in the taxonomy; the users will fill the required fields to provide description of the product.

3.2.5 Product Recommendation

The application will allow user to suggest a product to other users of the application. The user can suggest a product to an individual friend or to the public users of the application. The product suggestion phase will be implemented in two different ways as follows;

- User can recommend a product to others by adding a new product to the system.
- User can recommend a product to others by using an existing listing in the system.

3.2.6 Product Search Facility

The application will provide a search facility in order to allow users to search for products based on the provided product criteria options. The application will display all the matching results. The results will be displayed on the screen as a point on the map.

3.2.7 Request/Ask Product

The application will allow users to request a product to other users of the system. The product will be listed in the "wanted" section of the application. The users can check the "wanted" section of the listing and recommend a product or place for the listing.

3.2.8 Reply to Request

The application will allow users to reply to a particular user request by adding a new product listing or using an existing listing.

3.2.9 Shopping List Facility

The SRA will provide a shopping list facility to the users that will allow users to create and remove multiple shopping lists. The application will allow users to perform search the entire shopping list, the available results will be displayed based on a map.

3.2.9.1 Add Item to Shopping List

The application will allow users to add new items to their shopping list.

3.2.9.2 Remove an Item from the Shopping List

The application will allow users to remove an item from their shopping list.

3.2.10 Import Facebook Friends

The application will allow users to add their Facebook friends as friends within the application if other person is also a user of the application. This functionality will be provided only if the user is logged in with their Facebook account.

3.2.11 Rating Facility

The application will provide a user rating system which will allow users to rate a particular user or a product. This functionality is expected to eliminate false and misleading information. The registered users are only allowed to rate a user or a product listing only if they are at the location of the product listing. The users with the higher rating will be seen reliable by the other users, where if a rating falls below a certain level the user profile will encounter some restrictions such as temporary ban.

3.2.12 Like Recommendation

The application will allows the users to like a particular recommendation; the listings with the higher likes will be displayed on the application main page.

3.2.13 Share Recommendation

The application will allow the users to share a particular recommendation on a social network. The application currently supports Facebook as a third party communication interface. The user will be able to share the listing through a system pop up screen.

3.2.14 Invite Friends

The application will allow users to invite their friends to the system. The user will provide a list of email addresses; the system will send an automated email to each valid email address.

3.2.15 Comment Posting

The application will provide a comment posting facility which will allow users to comment on a particular recommendation.

4 Supplementary Specification

This section intends to outline all the non-functional requirements of the application.

4.1 Functionality

Connectivity

The application should be able to connect to server at any time when the device is connected to the internet.

4.2 Usability

Localization

The application is designed with localisation in mind; it currently operates in English language, which is known to be a global language. However, it can support multiple languages once translation resources are provided.

Look and Feel

The application is designed to have same look and feel standards in each screen. The font types, sizes and colouring are standard across the application.

Feedback

The user will be often informed about the processes by using appropriate messages at an appropriate time. The application will also inform user about the errors.

Ease of Use

The application must have a simple layout and User Interface to allow easier use. It will be used often; it should be easily adaptable by the user. For example; the application registration screen should be kept as simple as possible that a power user can provide details less than 30 seconds to register. Simple UI will attract more users.

4.3 Reliability

Availability

The application should be available for use at any time the user requires.

Accuracy

The application should be providing the accurate search results. The GPS Location accuracy should between 5 and 50 meters on the map for search results. However this accuracy figures depends on the device which the application is installed.

4.4 Performance

Efficiency

The application must not use more than 10 per cent of system resources at any time.

Responsiveness

The application must be able to respond to the user with the search results in less than 30 seconds.

4.5 Supportability

Reusability

The application will be supporting automatic updates which will be taking place through the Android Market. The changes will be made and submitted to Android Market which will allow user to update their app without any hassle.

5 Project Metrics

The purposed product is required to be developed within the defined timescale. The project development phase should progress according to the plans. The following tables and calculations will provide better image of the required time for the project completion.

5.1.1 Information Domain Counts

Information Domain Characteristics	**Count**
Inputs	
Outputs	3
Inquiries	
Files	0
External Interfaces	4

Subjective Ratings

Each of the 14 complexity factors is rated subjectively on a scale of 0 to 5, as follows;

0: No Influence
1: Incidental
2: Moderate
3: Average
4: Significant
5: Essential

5.1.2 Weighted Counts

Information Domain Characteristics	Count	Simple Weight	Average Weight	Difficult Weight	Weighted Count
User Input	14	X3	X4	X6	**56**
Outputs	7	X4	X5	X7	**28**
Inquiries	4	X3	X4	X6	**12**
Files	1	X7	X10	X15	**10**
External Interfaces	4	X5	X7	X10	**28**
				Sum of Weighted Counts	**134**

5.1.3 Complexity Factors

Complexity Factor	Value
Reliable backup and Recovery Necessary	1
Data Communication Necessary?	5
Distributed Processing functions?	3
Performance Critical?	3
Run in an existing heavily utilised environment?	3
On-line data entry?	5
Transaction to be built up over several data entry screens?	1
Master files updated on-line?	4
Inputs, outputs, files or inquiries complex?	3
Code Designed to be reusable?	4
Conversion and installation included in the design?	3
System designed for multiple installations?	5
System designed for change and ease of use by the user?	0
Sum of Complexity Factors=**40**	

Function Points = Sum (Weighted Counts) * [0.65 + 0.01*Sum (Fi)]

Function Points = 134 * [0.65 + 0.01 * 40]

= 134 * 1.05

= 140.7 Function Points

The application will be written in Java programming language. The Java Programming language has SLOC/FP value of 52.6.[SLOC]

The figures of 52.6 and 140.7 FP will be used in order to calculate the number of lines of code for the project.

Lines of Code = 52.6 * 140.7

= 7,400.82 LOC

The above figures show the required number of lines for the completion of the project. The figures are average figures, the Function Point figures can be used to calculate further estimations. There will be more information provided about process success measurement in the Project Plan document.

6 References

[SLOC] Industry Data. 2013. Industry Data. [ONLINE] Available at:http://softwareestimator.com/IndustryData2.htm. [Accessed 13 December 2013].