

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
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**SYSTEM REQUIREMENTS SPECIFICATION
CSE 4316: SENIOR DESIGN I
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**CLOUDERS
E-MARKET - A FULLY CLOUD BASED WEB APPLICATION**

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1 PRODUCT CONCEPT

This section describes the purpose, use and intended for the EMarket web application. EMarket web application is designed especially focusing to help the local business and people to sell their products. It is an classified-ad websites where the local people or business can post their ad of the products that the buyers can search and contact them to pay and get the item.

1.1 PURPOSE AND USE

EMarket is the cloud based web application designed to help the local people and business to uplift their financial situation during this COVID-19 pandemic. In this web application, users can post their items for sale or can buy what other offers. Similarly, there will be information available in the homepage to about the guidelines and safety measures that can be followed while contacting with the seller.

1.2 INTENDED AUDIENCE

This web application is not designed focusing for the particular customer rather it will be designed for the many people and local business i.e. overall class of customers. Thus, our product when released will be available for the general people.

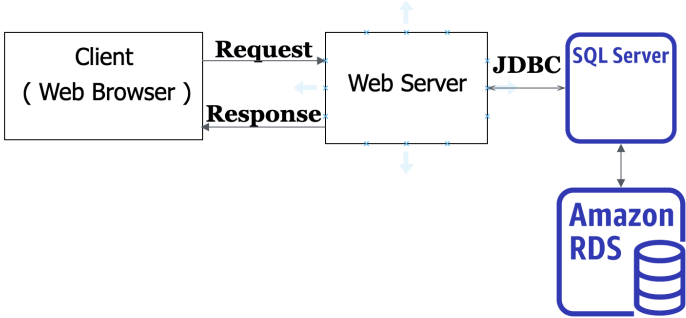


Figure 1: Client interaction conceptual drawing

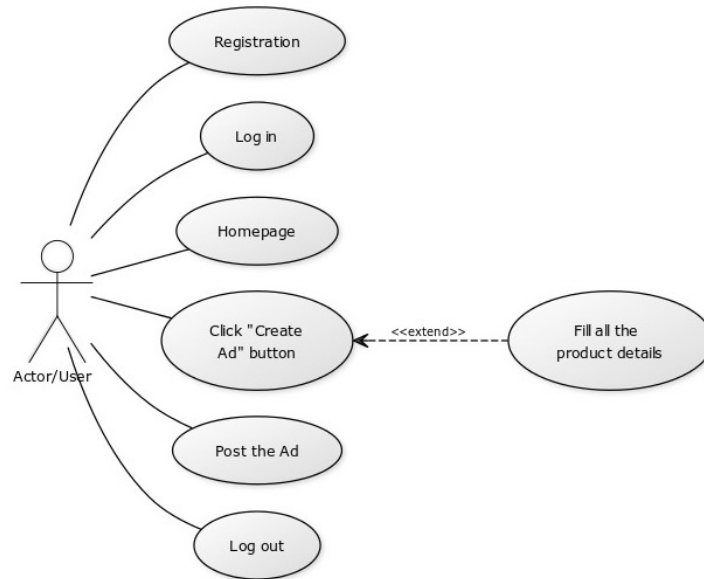


Figure 2: Use case of the client interaction

2 PRODUCT DESCRIPTION

This section provides a brief overview of the our product. Basically, E-Market is an ad based web application. The application focuses on helping and assisting the local business to sell their product. The key features and function of our ad based web application is described below.

2.1 FEATURES & FUNCTIONS

E-Market is an e-commerce web application. Mostly we are trying to help local business, especially in this period of global pandemic to keep running. The application allow the business can create an ad of their product, post their ad and list them on the application with specific product images, descriptions and prices. The database of the application will store the product information and make the product visible to users and sellers. The users or customer then can search the kind of product they would like to purchase or buy. The database will make the those searched items and similar items visible to the users. The user will be able to select the item they wish to buy and contact the seller based on based on the information available along with the products. The users can post the review of the products and contact the admin protocol to report fraud cases of the seller such that the admin take action against them. Users can sponsored their products in order to list their product at the top of the homepage and get more attention from many users.

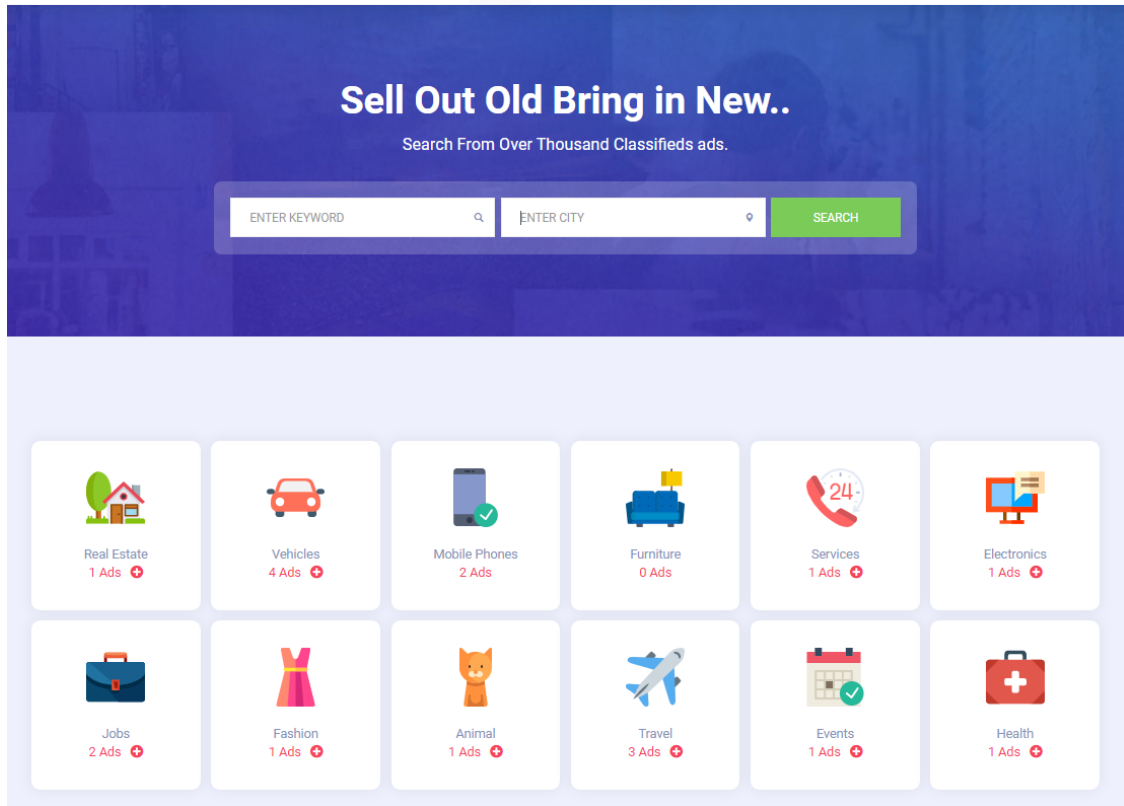


Figure 3: UI prototype of the eMarket

2.2 EXTERNAL INPUTS & OUTPUTS

Name	Description	Use
Username/Password (input)	In order to gain access of the account	It is used to authenticated and authorized users to add the products in order to sell and view their profile.
Logout (input)	Exit out of the system	After logout, the end users cannot add any products for sell and view their dashboard.
Registration Form	In order to register in the app to fully use all the services	It will be used by user such that they information can be saved in the database and can be retrieve during authentication and authorization as well as listing the products.
Click Add product button (input)	List the product for sell	User can use it and fill the concurrent in order to list the products for sale.
View (input)	It is the button available in Homepage	This is the features through which users can click it and see the product description and seller information.
Contact Seller	Pop of the Seller contact details	User will click this button through which they can see the details of the seller like phone number or email address in order to make the purchases.
Search product	search bar available to look for the item	It is used mostly to look for an item if the users wants something specific and quick.
Post comment	Review of the products In order to recommend the address while adding in users profile using USPS API	Users can post the review such that it will be useful for the others incoming users looking at the same products.
Address Recommendation		Sellers can add their address using USPS API such that correct address will be update in the system.
Zip Code Product Finder	Recommendation of the product based on the zip code	It is used to provide the convenience during shopping for the users to list the products based on the zip code provided.
Report	In order to contact admin for issues	It will be most used by the users to report the admin about the fraud cases that might come up through the users.

Table 2: External Inputs & Outputs

2.3 PRODUCT INTERFACES

This web application will be using the Spring Security as part of the security configuration for authentication and authorization. Initially, when the client or end-users will visit the site, the home page will be shown where the various products are listed for sale and categorized into different category. Users can see the product and view the details of the seller and contact too. In addition to this, if the user like to sell the product or add the comment for review of the products in our site, they need to register for it using the registration form available in the navbar. Users can also search the products based on the zip code or name of the products using the services available in navbar. Sellers can promote the application paying the little fees and it will displayed at the top of the homepage as the featured products.

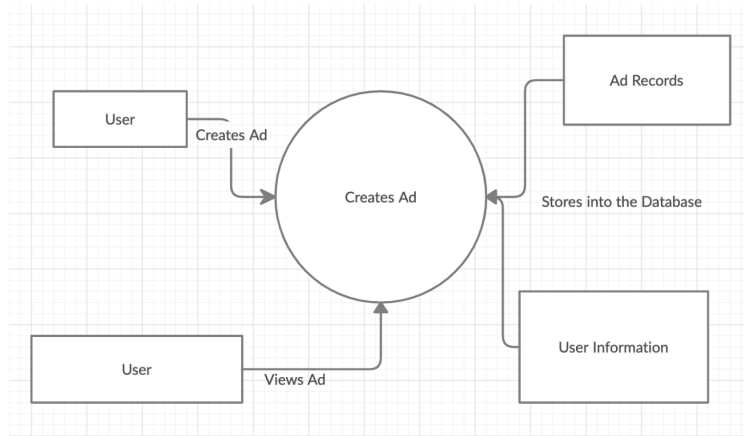


Figure 4: Data flow in the application

3 CUSTOMER REQUIREMENTS

E-Market primary focus is on the customer needs and requirements. This section contains the requirements with respect to the users of our application. The requirements described below are the functionality of application that customer would importantly expect from our applications. These are really important requirements as the customer needs are very important as they establishes clear and concise relationship with the customer and attract more people. Requirements specified below are not to be changed without specific agreement of the intended customer.

3.1 WEB BASED GUI WITH EASY USE INTERFACE

3.1.1 DESCRIPTION

The system shall have a simple and easy to navigate graphical user interface homepage for the users conveniences and use.

3.1.2 SOURCE

Customers

3.1.3 CONSTRAINTS

N/A

3.1.4 STANDARDS

N/A

3.1.5 PRIORITY

This requirement is of High Priority.

3.2 THE WEBSITE SHOULD BE STABLE APPEALING

3.2.1 DESCRIPTION

The application should be stable and shouldn't be crashing every time the users open the web page.

3.2.2 SOURCE

Team

3.2.3 CONSTRAINTS

The users should have the internet access.

3.2.4 STANDARDS

N/A

3.2.5 PRIORITY

High

3.3 PROVIDING SUBSTANTIAL INFORMATION ON THE WEBSITE

3.3.1 DESCRIPTION

The application shall have the option to display the information regarding the safety measures due to COVID-19, app information and what it is about, and other guidelines.

3.3.2 SOURCE

Team

3.3.3 CONSTRAINTS

N/A

3.3.4 STANDARDS

N/A

3.3.5 PRIORITY

Medium

3.4 REGISTRATION FORM

3.4.1 DESCRIPTION

The system shall have the registration form in order to register for the users to fully use the services provided in the application.

3.4.2 SOURCE

Team

3.4.3 CONSTRAINTS

N/A

3.4.4 STANDARDS

N/A

3.4.5 PRIORITY

Extremely High

3.5 AUTHENTICATION AND AUTHORIZATION

3.5.1 DESCRIPTION

The system shall authenticate and authorized the valid user credentials like email address and password that were used while registration.

3.5.2 SOURCE

Team

3.5.3 CONSTRAINTS

N/A

3.5.4 STANDARDS

N/A

3.5.5 PRIORITY

Extremely High

3.6 FORGOT PASSWORD

3.6.1 DESCRIPTION

The system shall have the option to reset the users password in case the user don't remember it.

3.6.2 SOURCE

Customer

3.6.3 CONSTRAINTS

N/A

3.6.4 STANDARDS

N/A

3.6.5 PRIORITY

Extremely High

3.7 USER DASHBOARD

3.7.1 DESCRIPTION

The application shall have the user dashboard to see the user status such as product they listed, seller-rating.

3.7.2 SOURCE

Customer

3.7.3 CONSTRAINTS

N/A

3.7.4 STANDARDS

N/A

3.7.5 PRIORITY

Medium

3.8 PRODUCT AND SELLER REVIEW FEATURE

3.8.1 DESCRIPTION

The application shall have product and Seller review option for the user such that it can help others while dealing with the same product or seller.

3.8.2 SOURCE

Team

3.8.3 CONSTRAINTS

N/A

3.8.4 STANDARDS

N/A

3.8.5 PRIORITY

Medium

3.9 SYSTEM COMPATIBILITY WITH ALL AVAILABLE BROWSERS.

3.9.1 DESCRIPTION

The system shall be compatible with all of the available browsers that is being used for web browsing.

3.9.2 SOURCE

Team

3.9.3 CONSTRAINTS

N/A

3.9.4 STANDARDS

N/A

3.9.5 PRIORITY

High

3.10 ADEQUATE PHOTOGRAPHY TECHNIQUES

3.10.1 DESCRIPTION

The system shall focus on giving customer the closest understanding possible of the product by providing high resolution photos and images of the products.

3.10.2 SOURCE

Team

3.10.3 CONSTRAINTS

The customer might sometimes upload low quality images so proper standardization shall be required.

3.10.4 STANDARDS

N/A

3.10.5 PRIORITY

High

3.11 NOTIFIED THROUGH EMAIL AND SMS

3.11.1 DESCRIPTION

The system shall allow option to notify the sellers if some buyers are interested and select the option like contact seller button.

3.11.2 SOURCE

Customer

3.11.3 CONSTRAINTS

The Customer might sometimes put on wrong contact information which might lead to sending of those information to wrong email address and phone number.

3.11.4 STANDARDS

N/A

3.11.5 PRIORITY

This requirement is of High Priority.

3.12 DISPLAY CONTACT INFORMATION OF THE SELLER

3.12.1 DESCRIPTION

The system shall display the contact information of the seller such that the buyers can contact them if they are interested to sell the product.

3.12.2 SOURCE

Customer

3.12.3 CONSTRAINTS

N/A

3.12.4 STANDARDS

N/A

3.12.5 PRIORITY

Extremely High

3.13 SEARCH THROUGH PRODUCT AVAILABILITY THROUGH NAME OR ZIP CODE

3.13.1 DESCRIPTION

The application shall have features through which users can search for the product they looking for using product name, category or zip code for user's convenience.

3.13.2 SOURCE

Customer

3.13.3 CONSTRAINTS

N/A

3.13.4 STANDARDS

N/A

3.13.5 PRIORITY

Extremely High

3.14 PRODUCT LISTING UPDATE AND DELETE FEATURES.

3.14.1 DESCRIPTION

The application shall update the product listing time to time to let the users know about new products and the remove all the expired ads.

3.14.2 SOURCE

Customer

3.14.3 CONSTRAINTS

N/A

3.14.4 STANDARDS

N/A

3.14.5 PRIORITY

Critical

3.15 PRODUCT DISPLAY IN THE HOMEPAGE BASED ON CATEGORIES.

3.15.1 DESCRIPTION

The application shall have display products based on their categories such that it will help users for easy navigation and select the products they want to buy.

3.15.2 SOURCE

Customer

3.15.3 CONSTRAINTS

N/A

3.15.4 STANDARDS

N/A

3.15.5 PRIORITY

Extremely High

4 PACKAGING REQUIREMENTS

EMarket is a web-based application and it will be delivered to users through the public domain on the web once the project is completed.

4.1 ACCESS THE APPLICATION THROUGH WEB BROWSERS.

4.1.1 DESCRIPTION

The application will be deployed using the AWS Beanstalk and Amazon Relational Database Service.

4.1.2 SOURCE

Team members

4.1.3 CONSTRAINTS

Users access to the internet and budget limitations to run the project for long-run.

4.1.4 STANDARDS

N/A

4.1.5 PRIORITY

Critical

5 PERFORMANCE REQUIREMENTS

EMarket needs to be efficient web based application that will allow users to look for the items and contact the seller in order to buy for it. Therefore, performance requirements plays a vital role in this project.

5.1 APPLICATION SHALL START WITHIN THE 5 SECONDS OF OPENING THE WEB ADDRESS.

5.1.1 DESCRIPTION

As the application starts in less than 5 seconds, customer should be able to navigate the homepage, lookup for the products and contact the sellers in order to buy for it. They can also register quickly in order to sell the products.

5.1.2 SOURCE

Customers

5.1.3 CONSTRAINTS

The internet plays an important role for the speed of an application to open.

5.1.4 PRIORITY

High

5.2 DATABASE QUERY SHALL BE DONE WITHIN THE MILLISECONDS.

5.2.1 DESCRIPTION

Retrieving users data for login and registration, displaying product info should be done within in the milliseconds in order to keep the users using our application. If the query are done too slow, users doesn't feel good and stop using our website.

5.2.2 SOURCE

Team Members

5.2.3 CONSTRAINTS

The speed of the internet should be fast enough for the app to run faster.

5.2.4 PRIORITY

High

5.3 DATABASE QUERY SHALL BE DONE WITHIN THE MILLISECONDS.

5.3.1 DESCRIPTION

Retrieving users data for login and registration, displaying product info should be done within in the milliseconds in order to keep the users using our application. If the query are done too slow, users doesn't feel good and stop using our website.

5.3.2 SOURCE

Team Members

5.3.3 CONSTRAINTS

The speed of the internet should be fast enough for the app to run faster.

5.3.4 PRIORITY

High

6 SAFETY REQUIREMENTS

This project is software based and doesn't require handling chemicals, sharp objects, lasers, or electrical components. If there were a need to use any of these equipment, the following requirements will be applied.

6.1 LABORATORY EQUIPMENT LOCKOUT/TAGOUT (LOTO) PROCEDURES

6.1.1 DESCRIPTION

Any fabrication equipment provided used in the development of the project shall be used in accordance with OSHA standard LOTO procedures. Locks and tags are installed on all equipment items that present use hazards, and ONLY the course instructor or designated teaching assistants may remove a lock. All locks will be immediately replaced once the equipment is no longer in use.

6.1.2 SOURCE

CSE Senior Design laboratory policy

6.1.3 CONSTRAINTS

Equipment usage, due to lock removal policies, will be limited to availability of the course instructor and designed teaching assistants.

6.1.4 STANDARDS

Occupational Safety and Health Standards 1910.147 - The control of hazardous energy (lockout/tagout).

6.1.5 PRIORITY

Critical

6.2 NATIONAL ELECTRIC CODE (NEC) WIRING COMPLIANCE

6.2.1 DESCRIPTION

Any electrical wiring must be completed in compliance with all requirements specified in the National Electric Code. This includes wire runs, insulation, grounding, enclosures, over-current protection, and all other specifications.

6.2.2 SOURCE

CSE Senior Design laboratory policy

6.2.3 CONSTRAINTS

High voltage power sources, as defined in NFPA 70, will be avoided as much as possible in order to minimize potential hazards.

6.2.4 STANDARDS

NFPA 70

6.2.5 PRIORITY

Critical

6.3 RIA ROBOTIC MANIPULATOR SAFETY STANDARDS

6.3.1 DESCRIPTION

Robotic manipulators, if used, will either housed in a compliant lockout cell with all required safety interlocks, or certified as a "collaborative" unit from the manufacturer.

6.3.2 SOURCE

CSE Senior Design laboratory policy

6.3.3 CONSTRAINTS

Collaborative robotic manipulators will be preferred over non-collaborative units in order to minimize potential hazards. Sourcing and use of any required safety interlock mechanisms will be the responsibility of the engineering team.

6.3.4 STANDARDS

ANSI/RIA R15.06-2012 American National Standard for Industrial Robots and Robot Systems, RIA TR15.606-2016 Collaborative Robots

6.3.5 PRIORITY

Critical

7 MAINTENANCE & SUPPORT REQUIREMENTS

7.1 IMPLEMENTATION OF THE NEW FEATURES AND BUG FIXES ON MONTHLY BASIS

7.1.1 DESCRIPTION

On the monthly basis, the source code will be revised with the implementation of the new features to provide for the users as well as minor or major bug that will occurs will be fixed and deployed for ready to use.

7.1.2 SOURCE

Team members

7.1.3 CONSTRAINTS

After graduation, it might be difficult for team member to keep working on the app and make sure it is compatible with growing technology.

7.1.4 STANDARDS

N/A

7.1.5 PRIORITY

Critical

7.2 MAINTENANCE AND SUPPORT TEAM AVAILABILITY

7.2.1 DESCRIPTION

On the homepage of the application, there will be option called as HELP MENU through which users can contact and report regarding the issues they will face while using the application. Similarly, they can also contact if they need support for navigating the application, to know more information about the application services.

7.2.2 SOURCE

Team members.

7.2.3 CONSTRAINTS

Customer will need internet access in order to contact with support team.

7.2.4 STANDARDS

N/A

7.2.5 PRIORITY

Critical

8 OTHER REQUIREMENTS

8.1 PROGRAMMING LANGUAGES

8.1.1 DESCRIPTION

The application shall be using Java as the core programming language in building and designing the application.

8.1.2 SOURCE

Team Members

8.1.3 CONSTRAINTS

N/A

8.1.4 STANDARDS

N/A

8.1.5 PRIORITY

High

8.2 FRAMEWORK

8.2.1 DESCRIPTION

The system shall be using the Spring framework, spring security as part of the security configuration.

8.2.2 SOURCE

8.2.3 CONSTRAINTS

8.2.4 STANDARDS

8.2.5 PRIORITY

High

8.3 API

8.3.1 DESCRIPTION

The application shall be using the API such as USPS API for address recommendation and to find the distance between the zip codes.

8.3.2 SOURCE

Team Members

8.3.3 CONSTRAINTS

Team members are not familiar with using the API and can result for few days of project delay.

8.3.4 STANDARDS

N/A

8.3.5 PRIORITY

High

8.4 FRONT END

8.4.1 DESCRIPTION

The application shall be using Thymeleaf, CSS, javascript, bootstrap as part of the Front-end component for the better user interface.

8.4.2 SOURCE

Team Members

8.4.3 CONSTRAINTS

N/A

8.4.4 STANDARDS

N/a

8.4.5 PRIORITY

High

8.5 DATABASE

8.5.1 DESCRIPTION

The application shall be using the Amazon Relation databases service in order to store the user and product information as well as to retrieve it quickly.

8.5.2 SOURCE

Mohan Karki

8.5.3 CONSTRAINTS

N/A

8.5.4 STANDARDS

N/A

8.5.5 PRIORITY

High

8.6 DEPLOYMENT

8.6.1 DESCRIPTION

The application shall be deployed on AWS Using AWS Elastic Beanstalk.

8.6.2 SOURCE

Mohan Karki

8.6.3 CONSTRAINTS

Some of the team members are not familiar with this and need some training.

8.6.4 PRIORITY

High

8.7 USE OF SOFTWARE TOOLS

The system shall be run using Intelij IDEA for the integrated development environment ,Git as the version control, and GitHub to share the code among the team members.

8.7.1 SOURCE

Team members

8.7.2 CONSTRAINTS

N?A

8.7.3 STANDARDS

N/A

8.7.4 PRIORITY

Critical

9 FUTURE ITEMS

This section lists all the requirements with a priority level of future.

9.1 COMPATIBLE IN EVERY KIND OF THE WEB-BROWSER AVAILABLE

9.1.1 DESCRIPTION

Currently, some of the web-browser will not support our application running effectively, so with the continuous updates and improvements, EMarket shall be running in all kind of available web-browsers.

9.1.2 SOURCE

Team Members

9.1.3 CONSTRAINTS

After graduation, it might be difficult for team member to keep working on the app and make sure it is compatible with growing technology.

9.1.4 STANDARDS

9.1.5 PRIORITY

Priority Level: Future

9.2 MOBILE APPLICATION

9.2.1 DESCRIPTION

Currently, this application is the web based but with the continuous involvement in it, app shall work in both android and iOS devices.

9.2.2 SOURCE

Team Members

9.2.3 CONSTRAINTS

Limited time during the project.

9.2.4 STANDARDS

9.2.5 PRIORITY

Priority Level: Future

9.3 PAYMENT THROUGH THE APPLICATION AND HOLD IT FOR A WHILE.

9.3.1 DESCRIPTION

Apps shall allow the buyers to pay for their products with in the application and the payment is hold until they receive the products.

9.3.2 SOURCE

Team Members ãionConstraints

9.3.3 STANDARDS

9.3.4 PRIORITY

Priority Level: Future

REFERENCES