

# Circular: Second hand market application

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**Abstract**—In Korea, Second-hand-market has been growing steadily. Because the consumer mentality due to capitalism, the new products are the norm, this leaves people with a lot of old things and no way of getting rid of them. In addition to this phenomenon, people are now connected with smartphones with spread of social medias. We can use these facts to develop a second-hand product trading application in the form of social media. With this application we will connect people who want to sell or buy second hand goods for a cheaper price to people who are closest to them.

**Index terms**— *Social Media, Second-Hand-Market, Mobile Application*

TABLE I  
ROLE ASSIGNMENT

Role	Name	Task
User&Customer	Nicolas Arnedo	Predicts the user's needs in the user's point of view. Also searches existing related studies and compares it with the project.
Software Developer	Moises Hidalgo	Focuses on the software used to implement the requirements needed to suit the user and building a viable app.
Development Manager	Lee MooHyeong	Supervise the development of both documentation and software. Ensure that user requirements are being implemented.

## I. INTRODUCTION

There are many problems with second-hand-markets. The biggest problem in the second-hand market is fraud. Examples include changing a seller's item to another item(which is useless) or selling an item that is not suitable for use. Such behavior will be prevented by subdividing the transaction process. All other transactions, except acquisition and handover confirmation, are carried out by Buyer's actions.

**(Ex:Sales Registration -> Deposit waiting or In sale -> Acquisition confirmation & Handover confirmation -> Transaction termination)**

To avoid this, people can just pay in cash once they meet the seller and are able to check the quality of the product they are going to buy. Another problem in the second-hand-market is personal information. Seller or buyer's personal information may be shared for the transaction, and such personal information may be abused. So the users of our application chat one to one with nicknames set by themselves. However, since one user can create multiple accounts, cell phone numbers are collected as personal identification information to prevent this. To help identify good and bad users we will implement a review section for each profile where users can leave a commentary of how nice the person was, quality of the products they sell and so on.

We also focus on buying used products for people living in the same district. This is because it is easy to determine whether a seller's item is defective by actually meeting and making a transaction. For this purpose, when a user looks for a product to buy, the options will be showed by which is closer, using GPS for this.

## II. REQUIREMENT

### A. Mobile Application

- 1) This application is for Android and IOS user's. This application implement geographically local second-hand-market platform.
- 2) User sign-up
  - a) Our application identifies users by mobile phone number instead of using ID and password. When user execute our application, after only one time certification process, can access user-specific database.
  - b) Only one people can create one account with their phone number, then they always stay logged in. Except application delete(First time user need to login)
- 3) Second-hand-products
  - a) The user can see the seller's products in a nearby district based on the user's location. This is done with GPS function in mobile phones. User's can also search for second-hand items they wish to purchase through the above search menu.
  - b) Users can register their second-hand product by clicking the '+' button on the bottom center of the Home screen or directly from their profile. This will take to a new screen where product information will be introduced.
  - c) When user's want to sell their used product, they must register the product name, price, photos and descriptions.(At this point, the seller's location is automatically registered with the post via GPS.)

#### 4) Cash

- a) This method will be used in person. We expect this to be the most commonly used payment method as it's convenient and not complicated. Also as it is second hand products we expect the majority of purchases to be under 100kwon.

#### 5) Transaction process

- a) Our transaction process consists of five steps. Sales Registration/Deposit waiting/In sale/Acquisition confirmation & handover confirmation/Transaction termination
- b) Sales Registration
  - i) User's can register used items by clicking the '+' button on the bottom center of the Home screen.
  - ii) Users must register user's selling product with the name, picture, description, and price of the product.
- c) Deposit waiting
  - i) As soon as the buyer clicks the 'purchase' button under the product, the transaction starts immediately.
  - ii) Buyer will need to move on to the next phase of the transaction by selecting one of the pre-set purchase options, 'Online Deposit(Goes to Deposit waiting)' or 'Offline Transaction(Goes to In sale)'.
  - iii) If the seller has set up an 'online deposit', the buyer shall deposit the balance in our application by the amount set by the seller.
- d) Acquisition confirmation & Handover confirmation
  - i) This transaction phase is simple.
  - ii) When the buyer takes over the goods and click 'acquisition confirmation' button, the seller enters the 'handover confirmation' process.
  - iii) When the seller receives the money and click 'Handover confirmation', the buyer enters the process of 'confirmation of acquisition'.
  - iv) This is a transaction process that is automatically entered when either the buyer or seller clicks the "Confirm Acquisition" or "Confirm Handover" button in the "Selling" process.
- e) Transaction Termination
  - i) This is the transaction process that applies to users who did not press 'confirm handover' or 'confirm takeover' during the previous transaction.
  - ii) If the relative buyer/seller presses the 'OK' button, the transaction will be automatically terminated.
- f) Review
  - i) After the transaction is closed, the seller and the buyer may review each other's manners.

- ii) These reviews are permanently stored in their profile and are public for the rest of users to see. Qualification will be made with 'Comment' and 'Star rate' attributes.

#### 6) Chatting System

- a) The Chatting system is a function provided by the application where buyer's and seller's can negotiate the price, when and where to meet up and further questions that may be necessary .

#### 7) Setting

- a) Users can set notifications to vibrate, sound, or silent.
- b) Users can manage their accounts and user information (Phone numbers/E-mails(Additional)).
- c) Users can block and manage other users with poor manners.
- d) Users can opt out when they decide not to use the application.

### B. Application Server

- a) When new users sign-up, they introduce their email, Phone Number(Essential), Nick-name(Essential), user Location(Essential), user ID(Essential) and password to the DB.
- b) When a user wants to sell a product, this information updates the DB. **Data:product Name (String), product Price (Integer), description (String), uploadedTime (days), image of product(stored in special storage)**
- c) When a transaction terminated, the records for that product are stored in the data of the past sold product (the seller) and the past purchased product (the buyer).

## III. DEVELOPMENT ENVIRONMENT

### A. Choice of software development platform

#### 1) Platform

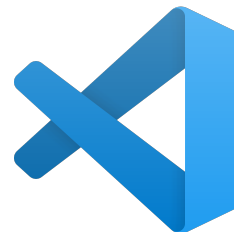


Fig. 1. Visual Studio Code

For Circular, we have chosen **Visual Studio Code** platform because the next reason:

- a) For Android and IOS development we will need React Native which is used inside VSC.
- b) Resources for development are widely available and at no cost.

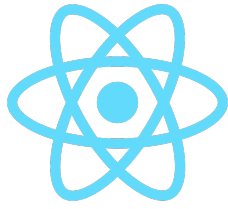


Fig. 2. React Native

## 2) Framework

For Circular, we have chosen **React Native** framework because the next reasons:

- It allows make one code that will work in both Android and IOS. This makes us available to a bigger clientele.
- We can learn a new framework and programming language that is used in the some of the most popular apps (instagram and facebook)

## 3) Programming Language



Fig. 3. javascript

For Circular, we have chosen **javascript** language because it is the one used in React Native framework. We have never programmed in this language so it will also be a good learning experience.

## 4) Cost Estimation

For the development of Circular, all of the resources used are either free of charge or have both free and paid options. Therefore, the development of Circular has required no cost.

TABLE II  
COST ESTIMATION

Product	Task Description	Cost
Visual Studio Code	Platform	Free
React Native	Framework	Free
Github	Code Repository	Free
Overleaf	LaTeX Documentation	Free

## 5) Development Environment

- Laptop
  - Moises Hidalgo
    - Processor : Intel core i5

- RAM : 8GB
  - Operating System : Windows 10 Pro/Linux
- Nicolas Arnedo
    - Processor : Intel core i7
    - RAM : 16GB
    - Operating System : Windows 10 home
  - Lee Moo Hyeong
    - Processor : AMD Ryzen 5
    - RAM : 8 GB
    - Operating System : Windows 10 Home/- CentOS 7

## b) Software

- Visual Studio Code Version 1.51
- React Native Version 0.60
- JavaScript Version 1.8.5
- Overleaf
- GitHub

## B. Software in use

### a) Karrot Market



Fig. 4. Karrot Market

- The application not only supports used goods transactions among residents in the region, but also supports advertisements in the region, revitalization of commercial districts in the region, etc.
- They also strive to keep smooth trading by preventing professional vendors from registering their products.
- User interface is a bit ugly and not very clean, we believe we can do a better job.

### b) Wallapop



Fig. 5. Wallapop

- Wallapop is a spanish buy and sell app. It has all the features that we would wish to implement in our app:
  - Easy to put a product to sell
  - Clean and simple user interface
  - Chat log with all the conversations with user's
  - User profile with star rating and reviews

#### IV. SPECIFICATIONS

##### 1) Welcome Screen

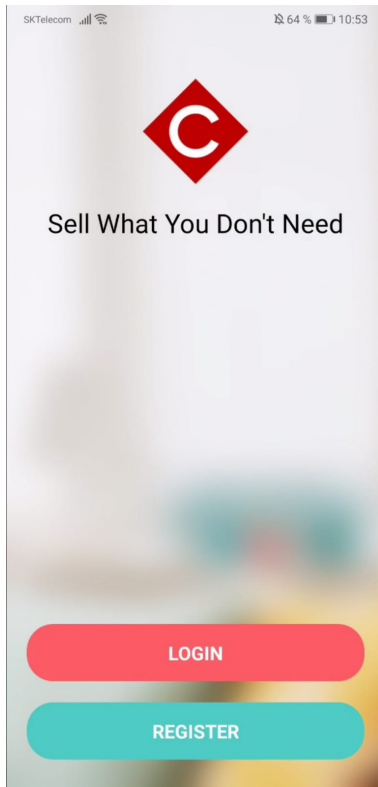


Fig. 6. Welcome Screen

The first screen user's will see when they download the app. Simple design displaying our logo and motto. At the bottom of the screen there are two buttons:

- a) Login If the user presses this button it will take him to the Log In screen where he can write his credentials. For user's to automatically log in to the app we would have to implement a backend server.
- b) Register New user's will have to register. By pressing this button they will be taken to the Register Screen where they can introduce the appropriate data to create a profile.

##### 2) Log in

This screen the user will have to introduce the following mandatory values: Email, phone number, nickname and password. Additionally he can introduce a

profile picture. Once he creates a profile he will be taken to the main page.

##### 3) Register

This is a very simple screen, like all of the apps, User will be required to introduce Nickname, Email or Phone Number, and password. If these are correct, User will be taken to the main screen of the app.

##### 4) Listing (Main)

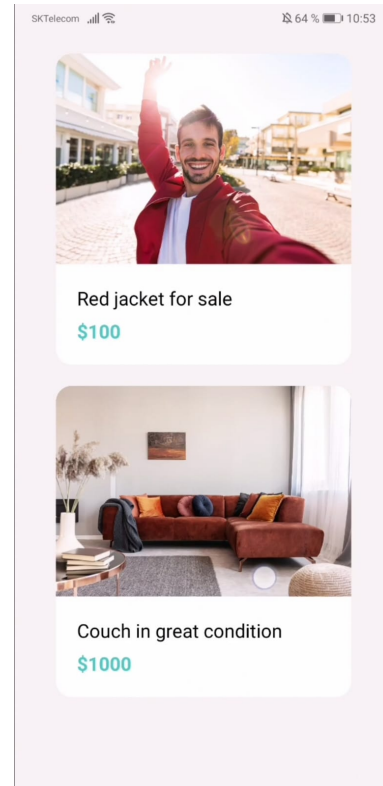


Fig. 7. Main Screen

The main screen of the app will showcase a list of products that are on sale. The features will be:

- The first products to appear will be the closest ones to our GPS location
- User will see an image, name and price of product
- Button on the top will sort products by categories
- Swiping up will appear a search bar with which we can look for specific products
- Plus button on the bottom center of screen will take to the Listing Edit screen
- Home button on the bottom left will return to main page, in case user applies filters
- Profile button on the bottom right will take to the user's profile screen

##### 5) Listing edit

From this screen user will be able to add a new product to the app. In this screen, the following information will be required:

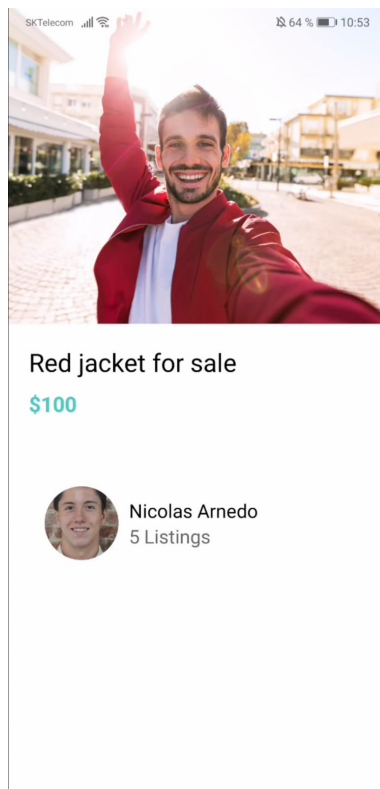


Fig. 8. New Listing Screen



Fig. 9. View Image Screen

- Pictures: user can introduce up to 3 pictures of the product
- Title: title of the product, the first thing buyers will see before clicking the product
- Price: how much the seller wants to sell it for
- Category: which category best fits the product being sold
- Description: a more detailed text about what the product is (model, size, etc) and in what conditions it is

#### 6) View Image

A close-up view of the image that is inside a product. An X on the top right will take the user out of the picture and the trash can on the top right eliminates the picture.

#### 7) Messages

A message log with all the user's with which we have had conversations. User will be able to select a conversation and go into it, see what they were previously talking about and send a text message.

#### 8) Profile

The profile screen will contain the profile picture of the user, nickname and email at the top. In the middle of the screen there will be three buttons:

- My Listings This takes the user to the products it is currently selling
- My Messages This takes the user to its messages

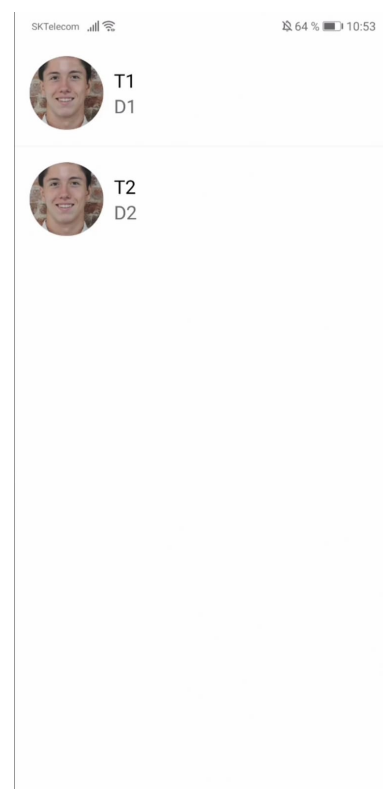


Fig. 10. Messages Screen

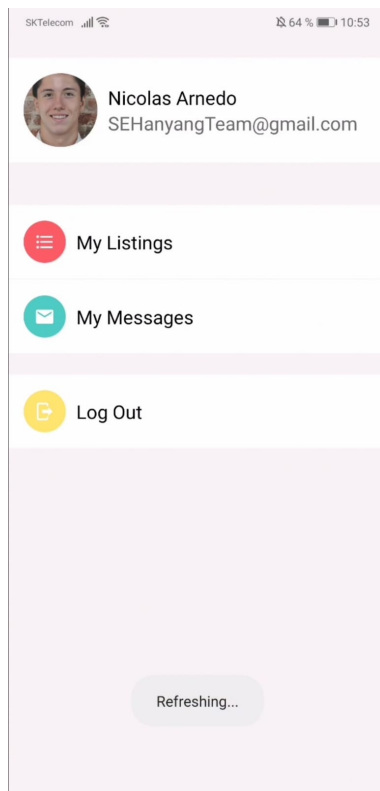


Fig. 11. Profile Screen

- log
- Log Out The user will log out of his profile