Research & Development Project Proposal

Project Title: A platform of errand delivery Service in the same city

based on crowdsourcing model

Client: Petteri Kaskenpalo

Lu Huijuan

Team Members: Cai Congyu 17985415

Shen Zhangyi 17989383

Ren Bin 17985271

He Ying 179849601

Mentor: Petteri Kaskenpalo

Lu Huijuan

Date: 09/12/2018

Version: V 1.0

Executive Summary

Our *A platform of errand delivery Service in the same city based on crowdsourcing model* proposal introduces the functions of our team software, which can bring customers' experience and practical needs for developing the software. This software provides convenience for both businessmen and individuals. It has the functions of issuing orders, receiving orders, evaluating and viewing individual orders.The software also provide platform management user information and order management for platform managers. It also covers the scope of the software development process, such as Java programming, server deployment, database operations, UI design, etc. The development time is 6 months and 6 hours per working day. We mainly use Eclipse and jQuery tools to develop software. The risk of such software development is that some functions may not be implemented due to time and technology constraints. We will give priority to the main functions: issuing orders, receiving orders. The budget for this project is about $14,000.

AUT UNIVERSITY | **COMPUTER +**
MATHEMATICAL SCIENCES

Bachelor of Computer & Information Sciences

Research & Development Project Proposal

Contents

1. Terms of reference

1.1 *Project purpose*

Crowdsourcing makes time for fragmentation more valuable. With the development of Internet and sharing economy, why can't we open the delivery service mode casually, since drivers can pick up and deliver customers on their way home? With the rise of UBER, crowdsourcing model based on mutual assistance behavior is becoming more and more popular.

This project is a crowdsourcing logistics platform based on mobile Internet and shared economy, which can attract full-time and part-time distribution personnel with free time, and provide real-time information push and the whole process of distribution monitoring service.

1.2 *Context of project*

In order to meet the following functional requirements, we need to develop a crowdsourcing model based on the same city job delivery service platform.

1.3 *Order Provider Application(Android):*

Users with delivery requirements can publish tasks through this application.

Order Providers have the following functions,
-Set up different service types (takeout, small package or large package) and other
-important information
-Release orders in missions
-Real time monitor(order status)
-Orders are finished

-Evaluate the service

1.4   *Deliverymen Application (Android)*

Deliverymen can download our Deliverymen Application to get orders and get rewards by completing these delivery orders.

Deliverymen have the following functions,
-Users need to upload ID cards (be reviewed by platform)
-Receive the order
-Pay deposit(according to the value of goods)
-Take and send the goods
-Finish the orders

1.5   *Platform (Web-Based)*

Collect delivery tasks and assign them to order receivers.
Order management
      -cancel the order
User management
      -Deliverymen(by star rank)
      -Blacklist(publish the wrong information of orders)

1.6   *Client Organization*

Our customer group can be roughly divided into two groups: one is that some people can not deliver goods to others in person for various reasons; the other group can help the former deliver goods to the receiver if they have free time to get some compensation.

Order providers
People who do not have time to delivery goods
People who is unwilling to delivery goods
People who want to delivery some thing urgently
……

Deliverymen
Undergraduates
Unemployed people
Drivers
Couriers
……

1.7 Problem/Needs the project aims to address

At present, many service industries, such as catering, supermarkets, dry cleaners and printing shops, have the characteristics of timeliness and separation of delivery addresses which are difficult to meet by traditional express delivery services. This project can alleviate this phenomenon.

2. Rationale for the project

2.1 The purpose of our project

Nowadays, no matter individual or merchants, they always have some goods to deliver, but some short-distance delivery in the same city using logistics express delivery is not suitable, because of the uncontrollable packing and timeline.

In order to solve the gap of this service, our project came into being at the moment. Some merchants can use this application to attract more customers and make more profits. For the order providers, the dry cleaner can return the clothes to the owner through our project. In this case, customers no longer need to go out to pick up clothes, so they will be more satisfied with the business. So merchants can make more profits by using our projects. Some individuals, they have some documents, items to be delivered. they need to make appointments for a free time for both or a person to leave to deliver these items. They can send out orders to other people willing to go out to help them deliver the items.

For deliverymen, they can help others to deliver goods and get profits by the way, or they can help others to deliver goods for the purpose of making money. These people can benefit from our projects.

2.2 Existing system

Now in the software mall, there are some applications with similar functions, such as MeiTuan Running Legs, UU Running Legs and so on.

Their main functions are roughly the same as what we can provide, but their scope of service is limited to delivering food and beverages.

2.3 Key opportunity

Although the functions of our project are somewhat similar to those of other applications, our scope ranges from delivering food and beverages to any legally

permitted items, which is one of our innovations.

Another competitive advantage is that we think this is a big blank market. With the development of science and technology, people can accomplish almost everything at home, but traditional logistics companies and Internet companies do not seem to cover the delivery of close-range goods.

3. Scope and Objectives

3.1 Project objectives

The objectives of the project is to develop two Android applications (order provider end and deliverymen end) and a back-end website for order system management. People who want to send something create new delivery orders, fill in the information and complete the orders. These orders will be displayed on the deliverymen end, and the deliverymen will decide whether to accept the order or not according to his own circumstances and wishes. Of course, we will have the service of locating recommended orders service. Order management system can deal with abnormal orders and prevent discredit users from using the software.

3.2 Scope Statement

According to Scrum (IT project management), the estimated duration of this process is 6 months. We will first determine the users requirement and complete the project design, such as E-R diagrams, data relational model, business process diagram and so on. According to the functions, we will complete the design prototype, then we will test the prototype, and constantly change the prototype of our project after some investigation. Basically complete the confirmation of the prototype, we will use Photoshop and Coreldraw to complete the design of the front-end page and the acquisition of icon pictures in Android. Then, we will use MVP model to build two Android applications and a web based order management system. Completing the project code step by step according to the user stories designed before. Finally, online testing is carried out.

3.3 Deliverable

3.3.1.project management design(Scrum)

We review the IT Project Management course and get a general grasp of the Scrum process through some other article and case studies.

Wikipedia：https://en.wikipedia.org/wiki/Scrum_(software_development)

case study: http://www.scrumcasestudies.com/

3.3.2.Needs Analysis

Through case study, we can understand the key points and process of demand analysis.

Business process diagram:
https://www.laserfiche.com/solutionexchange/how-to-diagram-your-business-process/

3.3.3.database design
E-R diagram: http://creately.com/blog/diagrams/er-diagrams-tutorial/
　　　　https://www.lifewire.com/entity-relationship-diagram-1019253

Data relational model:
https://learndatamodeling.com/blog/relational-data-modeling-tutorial/

3.3.4.UI design

Photoshop skills:
https://www.creativebloq.com/photo-editing/photoshop-secrets-812614

UI design principle: http://www.ambysoft.com/essays/userInterfaceDesign.html

3.3.5.Programming

MVP Model:
https://www.medtronicacademy.com/features/managed-ventricular-pacing-mvp-feature

JAVA: https://www.oracle.com/java/

Android SDK: https://stuff.mit.edu/afs/sipb/project/android/docs/sdk/index.html

Android Studio: https://abhiandroid.com/androidstudio/

Test: https://en.wikipedia.org/wiki/Software_testing

4. Project Method or Approach

4.1 Development Approach

1) Prototyping Approach

We design our prototype by using Axure 8.0, which is a well-liked in IT development tool. After that, we will discuss the design of our Android application software and web management system. User surveys are then conducted to adjust the location of a component and the structure of the interface.

2) UI design

We use Scrum frame (On Trello) to divide this project into 4 Sprints to complete software development. In Scrum, we use the product Backlog to manage product requirements. In backlog we add few user stories prioritize the development of high value requirements for customers (The main function is the function like Weibo and the Class Schedule). The Backlog's requirements selected by our Scrum Master (Lyu Jiaqi) are discussed, analyzed and estimated at the Sprint Planning Meeting to get the corresponding task list. Every Sprint takes for 4 weeks, Sprint Planning Meeting & Sprint Review Meeting are needed every 4 weeks, and we have Sprint Daily Meetings between the Sprint.

3) Development

· MVP Model

MVP (Model-View-Presenter) is evolved from the classical model MVC. Their basic ideas have something in common: Controller/Presenter is responsible for logical processing, Model provides data, View is responsible for display.

This model allows us to more clearly define the location of files, and to better communicate for multi-person tasks. In addition, for the later stage of testing, this model also makes it easier for us to test in modules.

· JAVA

Java is an object-oriented programming language. It not only absorbs the advantages of C++ language, but also abandons the concepts of multi-inheritance and pointer which are difficult to understand in C++. Therefore, Java language has two characteristics: powerful function and easy to use.

As the representative of the static object-oriented programming language, Java language perfectly implements the object-oriented theory and allows programmers to program in an elegant way of thinking.

Java has the characteristics of simplicity, object-oriented, distributed, robustness, security, platform independence and portability, multi-threading, dynamic and so on. Java can write desktop applications, Web applications, distributed systems and embedded system applications.

As a result, our project will use JAVA development language to implement Android applications.

· Android SDK

Android SDK(Android software development kit) is used by software development engineers to build a set of development tools for specific software packages, software frameworks, hardware platforms, operating systems, etc.

We will use it to perform functions that require complex code and algorithm.

· Android Studio

Android Studio is a development platform for Android released by Google. The system is based on IntelliJ IDEA. Similar to Eclipse ADT, Android Studio provides integrated Android development tools for development and debugging. Android Studio's development environment and mode are more abundant and convenient. It can support multiple languages, and also provide developers with testing tools and various data analysis.

· Apache-tomcat

Tomcat server is a free open source Web application server, which belongs to lightweight application server. It is widely used in small and medium-sized systems

and occasions where concurrent access to users is not very many. It is the first choice for developing and debugging JSP programs. In fact, Tomcat is an extension of Apache server, but it runs independently at runtime, so when you run tomcat, it actually runs as a separate process from Apache.

· Our order management system will use this server to display, add, delete and check the contents of the database.

· Navicat(mysql)

Navicat is a client query management tool for MySQL database, which makes it easier for us to use the database.

4) Test

· Monkey

We can use this software to complete the stress testing of Android software.

· UiAutomator

This is a very comprehensive automated testing software, of course, it can be applied to Android software development.
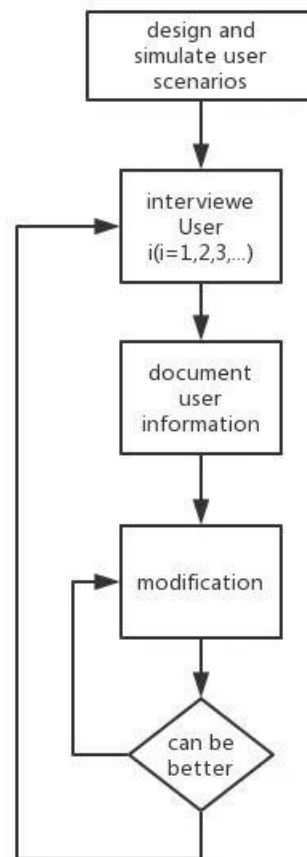
4.2 Tasks Involve

Fig.4.2   Flowchart about task

5. Project Plan

5.1 Gantt Chart

- Needs Analysis
  - Delieveryman Needs Analysis
  - Order Provider Needs Analysis
  - Management Platform Needs Analysis
  - Finsh Needs Analysis

- Design Database
- View Design
- Model Constructure
  - Register
  - Register Test
  - Login
  - Login Test
  - Personal Center
  - Personal Center Test
  - Delieveryman Design

- Delieveryman Design
  - View Mainpage
  - Order Receiving page
  - Payment
  - Distribution page
  - Order Finish page
  - Delieveryman Design Test
  - Delieveryman Design finish

- Order Provider Design
  - View Mainpage
  - Provide Order page
  - Order Provider Design Test
  - Order Provider Design finish

- Platform Design
  - Login
  - Register
  - Order Management page
  - User Management page
  - Platform Design Test
  - Platform Design finish

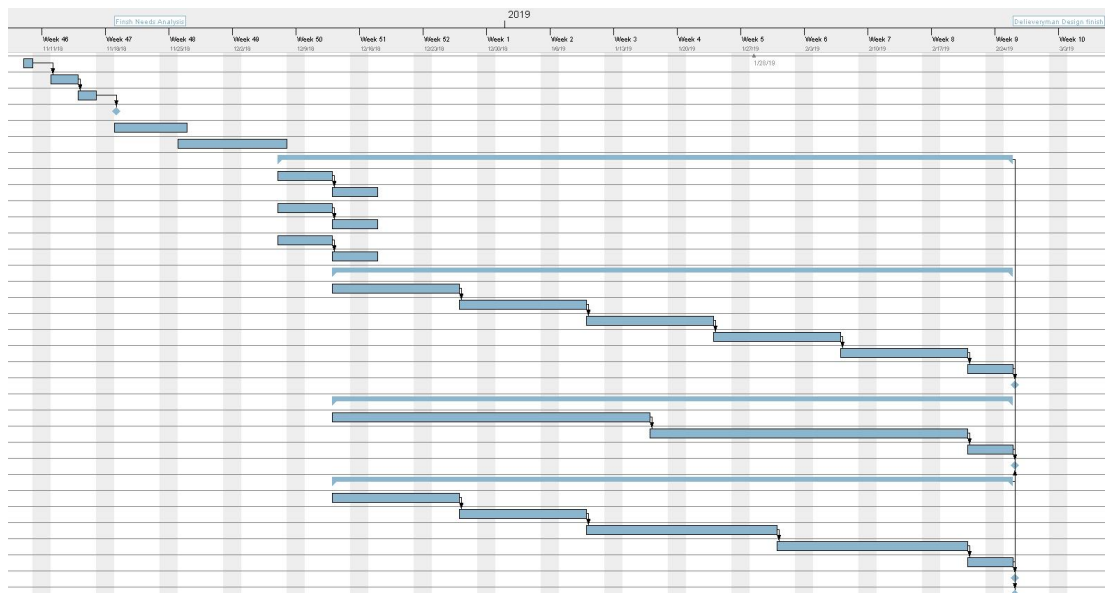Fig.5.1.1　A platform of errand delivery Service in the same city Gantt chart1

Fig.5.1.2　A platform of errand delivery Service in the same city Gantt chart2
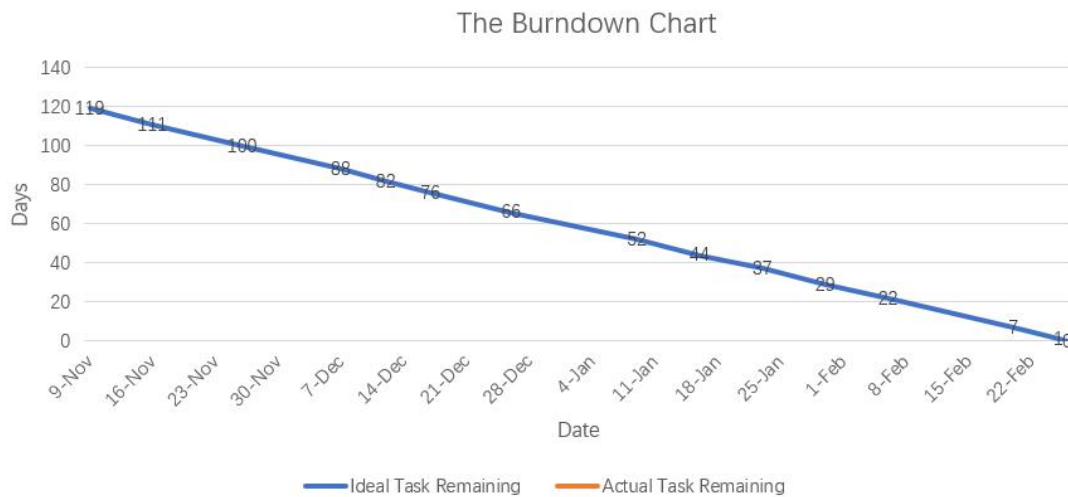
5.2 The Burndown Chart

Fig.5.2.1 A platform of errand delivery Service in the same city Burndown Char

6. Skills Analysis

6.1 Overview

In this project, we would complete an app including 2 ends, one is deliveryman end, the other is order provider end. Briefly speaking, we need have android developing technology, web developing technology and database management technology. The following table illustrate the basic developing tasks and technologies we need in this project.

6.2   IT-specific skills list

Developing task	Technology needed
Deliveryman app	Android development technology, UI design technology
Order provider app	Android development technology, UI design technology
Database and management web platform	Website development technology
Testing	Testing technology

Fig.6.2.1 A platform of errand delivery Service in the same city skill analysis

In our team, two team members will take responsible for developing app. They already take the android developing course have ever do some simple android app and do have a certain ability to develop an app.   As for the database and management platform, another two numbers will take responsible for it. They have proficiency in

website development. What's more, they also have taken the database related course, therefore, they are really familiar with the MySQL software and they can handle the database work.

There are another two parts of technologies that we may need time to learn and acquire. On the one hand, we comprehend little about testing. However testing is really significant in software development and we intend to spend one week to have a basic understanding about software testing, including testing basic process and testing technology. On the other hand, we also have a weak ability in UI design, though we have some PS technology and have a basic aesthetic feeling. Our plan is that we would analyze various kinds of related app, combining some of their design strengths, avoiding their design weakness and design our own website. Those plans are intended to finish before December 1st.

7. Estimate all costs incurred

In our project, we intend to buy a server or rent a cloud server and the cost is about 250 dollars. As for the developing cost, it may cost 8800 dollars. We estimate 25 dollars for every worker every day. Therefore the total cost is 25 dollars multiplying 4 multiplying 22 days multiplying 6 months. We estimate the maintaining cost is 150 dollars. As for the tutor guidance fee, we estimate 213 dollars per hour. The guidance hour is 2 hours per week and the total developing cycle is 5 months. Therefore the total fee is 25560 dollars.

Resource	Cost
Equipment (server, some API interface and so forth)	250 dollars / year
Developing cost	25 dollars / person * 6 * 22 days * 6 months =13200 dollars
Platform maintaining cost	150 dollars / year
Tutor guidance fee	213 / hour *2 *4*5 = 25560 dollars

Fig.7.1 A platform of errand delivery Service in the same city estimate all costs incurred