Introduction

Background

Following the global trend of e-commerce, more and more businesses are starting in Kathmandu valley to cater to the changing needs of people. *Muncha.com* was the first of its kind in the world to provide a platform for friends and relatives outside of the country to send gifts to dear-ones in the country. Since then, shopping sites like *yeskantipur.com*, deals sites like *sastodeal.com*, buy-and-sell sites like *hamrobazaar.com*, *nepbay.com*, even online grocery shops (*metrotarkari.com*) and food-delivery services (*foodmandu.com*) have been operating in the valley.

In informal conversations with representatives from some of the aforementioned startups/businesses, it was found that the need for efficient delivery system was clear. Almost all such services have now resorted to managing their own delivery systems using vans, motorcycles and even bicycles. One of the major headaches of the current delivery system, we found, was in the case of a large number of deliveries one had to handle in a day, where an efficient route-plan was needed. In such case, all plans were made manually. As this method is prone to human errors, the use of computers in the process would obviously be helpful.

Objectives

- Support existing e-commerce systems in the valley
- Provide efficient and intelligent delivery planning system
- Help delivery workers keep track of their destination with a mobile app
- Reduce human errors in route planning
- Provide a one-stop solution to all the ecommerce and online businesses in the valley

Method of Study

For determining the most efficient way of completing our project as per the requirements and time constraints we have conducted a questionnaire survey. We will be getting help from the internet also. Our questionnaire survey includes the scope and requirements for our project.

Literature Review

With advancement in science and technology, people rarely walk to the shopping center to purchase items in most of the developed countries. In developed towns even greater than our country, one can shop online and get their item delivered to their doorsteps. In the recent years, the trend of online shopping has started in Kathmandu too. Dozens of online shopping centers have been established to provide ease to customers. They have promised for home delivery systems for the customers too. But the market finds a lack of efficient and managed routing system that can collaborate with online shopping partners across the valley. One of the startup *http://bitarak.com* has tried for the purpose but they are not still being able to manage the delivery system in the valley. For now, they are planning manually and are failing to incorporate computing as a substantial part of the process for efficiency and accuracy.

Summary of Progress

Process Analysis

As stated previously, we will be developing a web interface where the clients or e-commerce business authorities will login and forward their order through our API. The order credentials will consist of the source for delivery, destination to be reached, time and type of the delivery item. After receiving the order our system will analyze the route in the specified area to be followed for the delivery purpose. The back-end will calculate the most efficient route. During our analysis we found that for working on map, google map provides API for efficient calculation of road distances between different places in map rather than our aerial distance. We have also analyzed the need of marking the route need to be followed during delivery with certain color such that it will be easier to follow the route.

We have also analyzed the need of the application in iPhones too. So we need to develop the application to run across cross platforms. On summarizing we will be using iterative model of software development life cycle.

Scope Analysis

Upon analyzing about the scope and market of our project, we found that an effective delivery planning system is a must for many e-commerce business in the valley. Such business are not being able to provide their services efficiently due to lack of efficient planning during delivery. We have also found that number of online business sites are also increasing day by day. So that the scope of our project has also increased. We had planned for deployment of our project in online gift,

food, groceries etc. but during our analysis we found that delivery planning system has wide scope in courier and textile business too.

Budget Analysis

Being a software project we won't have much burden about the budget. The main resources required for our project are computing machines with development tools and mobile phones. We will also need stationery items during the development. Working in a group needs many meet ups. So there will be cost during travel too. The cost for snacks and refreshments also cannot be neglected. As Internet is a must for development of our project, we will spend some budget in data packages too. Analyzing these resources and materials we have estimated the cost for completion of our project to be about Rs.25000/-

Schedule Analysis

As upon our previous schedule, the project is expected to finish till August of this year. We had allocated about three weeks for research and study which we have almost completed. The time allocated for algorithm development was about two weeks. But it seems that we need to increase that time span a week more so that we can make a better and efficient algorithm to apply in our project. Then we will be moving towards API development for about a month. In other month we will be completing our web interface and mobile app development. Then we will have about half a month for debugging and testing.

	JAN-FEB	FEB-MAR	MAR-APR	APR-MAY	MAY-JUN	JUN-JUL	JUL-AUG	AUG-SEP
~~Research and Study~~								
Algorithm Development								
API Development								
Web and App Development								
Debugging and Testing								

Activity Analysis

Study and Survey

To study the scope, method and requirement of our project, we have conducted a survey with questionnaire and interview. We reached out to one of the online t-shirt store *threadpaints.com* and consulted about their needs for efficient delivery management. We enquired them about the hassles they are facing in delivery purpose and how a delivery management system as ours can help them. We prepared questionnaire about the credentials that they can provide to our system for delivering their items. We went through internet to find about the existing solutions in other cities of the world and for technical expertise too.

Functional Requirements and Tools

We have completed the study about functional requirements of our project through survey and querying in the internet. There is a requirement of efficient API to forward the delivery credentials to our system. We also concluded the need of friendly interface for the delivery boys to complete their job easily.

Talking about the tools, we will be using Django framework to develop our website. The constructed API will push JSON file to our back-end and the calculated route will be displayed. We will also use Javascript to deal with maps. For the mobile part, we will be developing apps in Java for Android systems and Objective C for iOS systems. We will be using MySQL for database handling.

Diagrams

The different diagrams for our project are attached below.

General Architecture

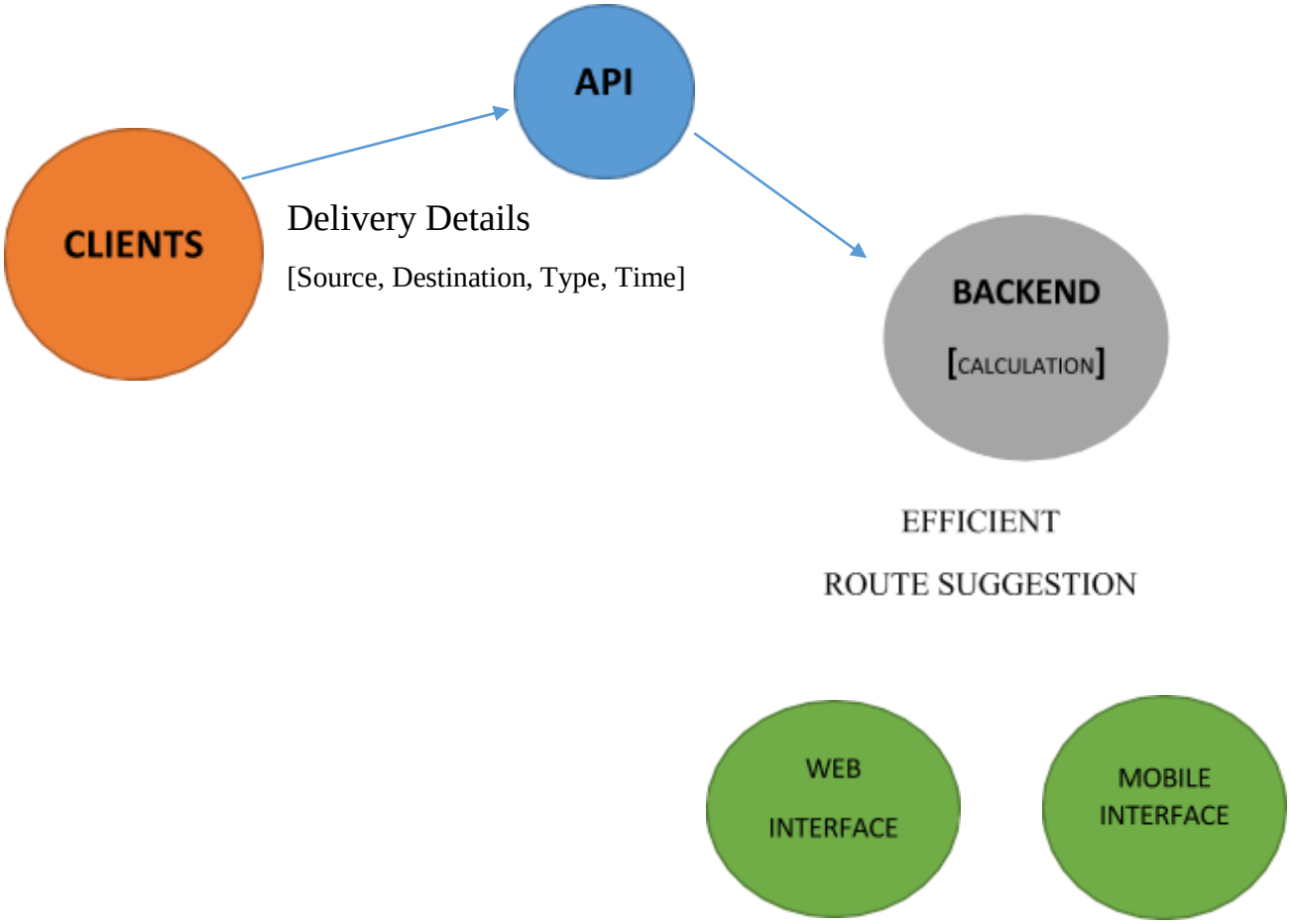


Fig.1: General Architecture of Delivery Management System

Use-case Diagram

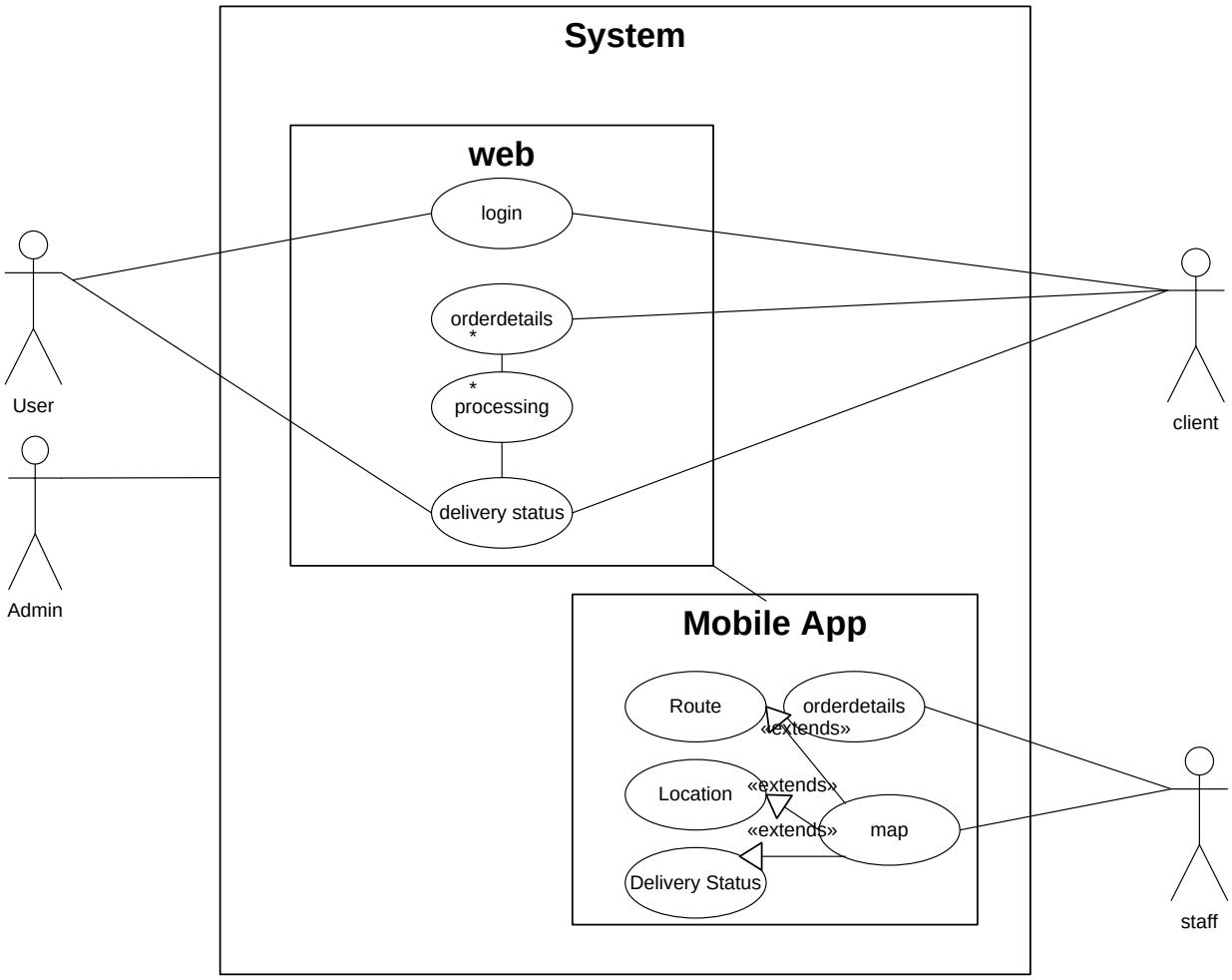
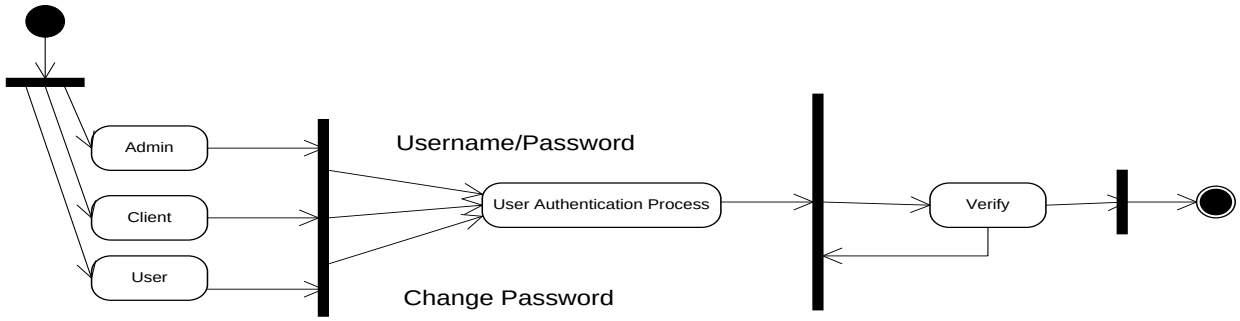
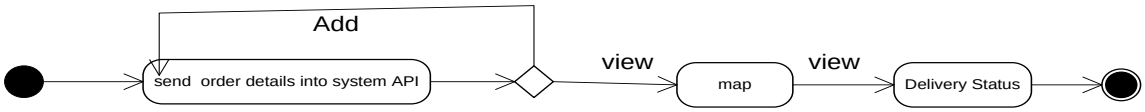


Fig.2: Use-case diagram for Delivery Management System

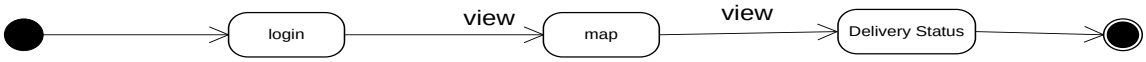
Activity Diagram



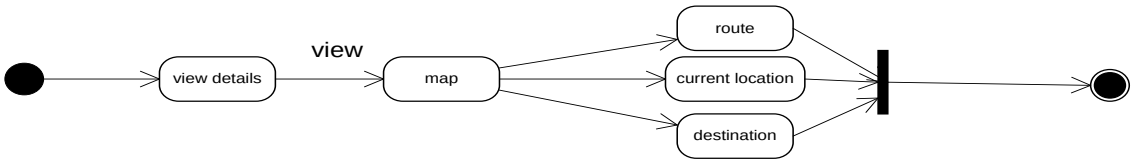
User authentication



Client activity Diagram



User activity diagram



Staff activity diagram

Fig. 3: Activity Diagram for Delivery Management System

Discussion

The study and research phase of our project has been completed. We did study on language to be used and practiced with tools and techniques to be used for the development of our system. We have conducted survey to analysis the requirements and scope of our project. Though study is required throughout the project we have generated basic idea about developing our project. We need to move forward to develop algorithm very soon and start coding. We have communicated with business houses for the testing of our system. We also gathered the requirements of the business houses which will be considered during the development of our system. Further communication from time to time will be conducted to make our system good enough to need their needs and requirements.

BIBLIOGRAPHY

http://wikipedia.com

http://bitarak.com

http://ktmcouriers.com

http://blog.flipkarma.com

http://djangoprojects.com

http://developers.android.com