Transportation Management System

Developed by:
WONG Ka Chau, CHENG Lung Kin, HUNG Yu Ting, CHAN Kai Yen

Advised by:
Prof. Gibson LAM

Speed-Up

Overview

With the growing popularity of smartphone and tablet computers, people are spending more time online, including shopping. The significant increase in the number of online shoppers has boosted the logistics industry among local area while most of the current transportation management systems of the logistics company were designed for worldwide shipment. Therefore, our project aims to develop a transportation management system for small to medium-sized logistics company that ship freight in Hong Kong. It is designed to manage transportation daily operations and provide better services, decrease routing time to save the cost.

Objectives

In order to develop a practical transportation management system which fulfills a logistics company's daily operation using the NFC technology, the following requirements have to be achieved:
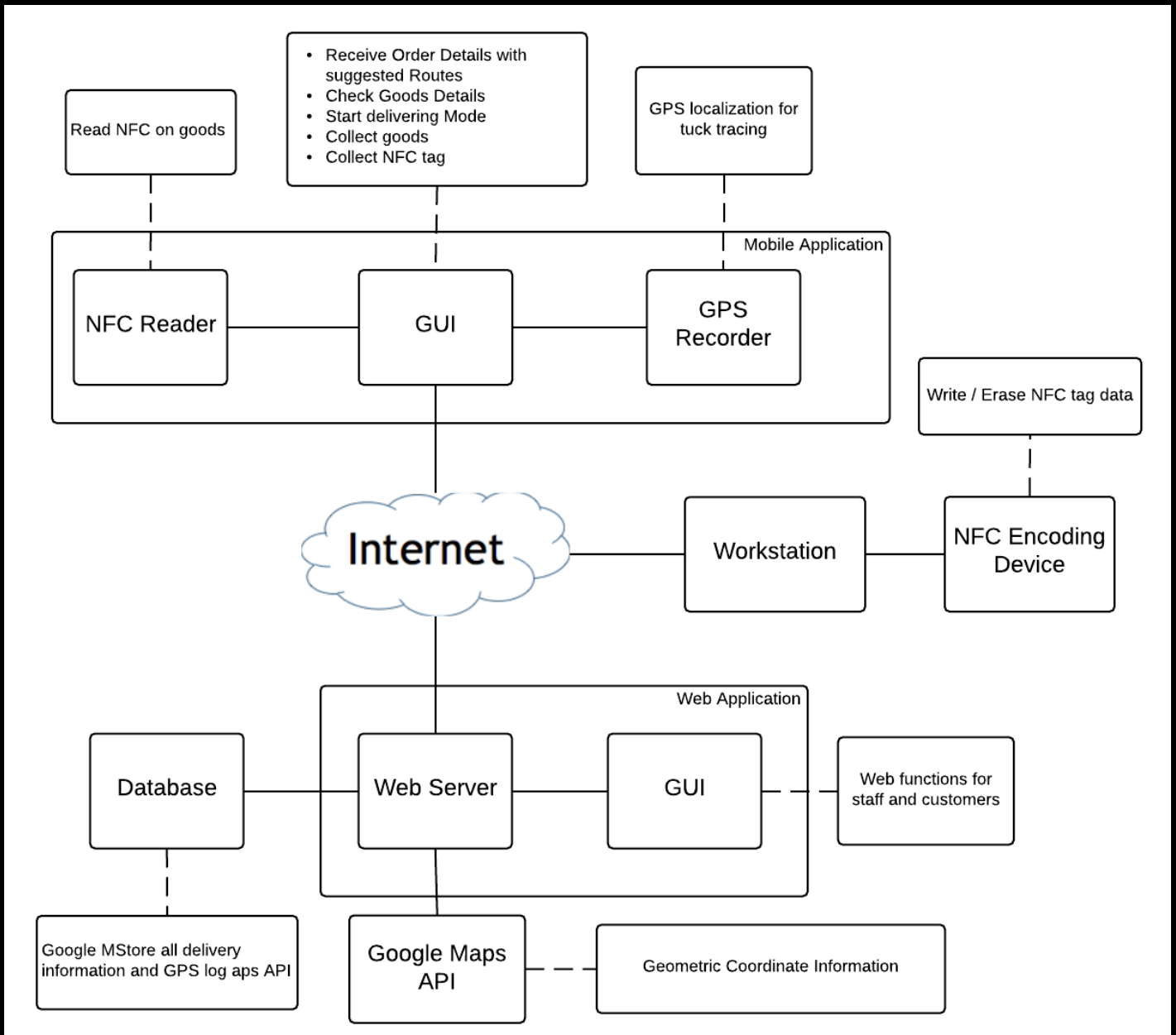
1. Manage the incoming and outgoing goods using NFC technology
2. Make suggested transportation route scheduling
3. Track goods using GPS information

What is NFC?

Near Field Communication (NFC) technology is applied to process the incoming and outgoing goods. It is known as a tool for wireless communication, allowing people to share information by tapping the NFC tag to the back of the Android-powered device.

System Design

- Receive Order Details with suggested Routes
- Check Goods Details
- Start delivering Mode
- Collect goods
- Collect NFC tag

Read NFC on goods

GPS localization for tuck tracing

Mobile Application

NFC Reader — GUI — GPS Recorder

Write / Erase NFC tag data

Internet — Workstation — NFC Encoding Device

Web Application

Database — Web Server — GUI — Web functions for staff and customers

Google MStore all delivery information and GPS log aps API

Google Maps API — Geometric Coordinate Information

The system consists of two parts, which are the web server and the Android application. The web server allows customer to obtain information of the goods such as the status, the location of the goods and the time to receive it. Staffs of the company can edit the freight information and perform scheduling through the server. The Android application is built for delivery drivers to deliver the freight to the customer. It is convenient for them to collect the goods, obtain the information of the suggested route and send it to the customer.

Implementation

Add new goods record

Delivery Scheduling

7 new record(s) are transferred to warehouse.

Hong Kong Island: 0

Kowloon: 1

New Territories: 6

Start Scheduling

Schedule the delivery list order

Speed Up

Obtain the GPS information of
the goods using google Map Api

Order ID: 1

Delivery Process: Collecting Goods

GPS Tracking Status: ○ On ● Off

NFC status: ● On ○ Off

No.	GOODS#	Address
1	2	Test
2	1	Shop 4A2, L4,
3	13	Shop 4A1, L4, FoodLoft
4	14	10/F, Chuang's London
5	15	G/F

Retrieve the delivery list and start delivering

Conclusions

In this paper, we have presented a shortest distance algorithm, aimed at saving time by looking for the route that having the shortest distance between two locations. The system has adopted the NFC technology and the GPS inside the smartphone to function. It is able to use NFC tag to manage the inventory that is more effective and the GPS can provide detailed information about the location of the delivery trunk. It is also an advantage of knowing whether the driver is efficient or not. Our work can be further extended in the following directions. Firstly, the current system only focuses on the main function that is the goods delivery. It was not consummate since it only had one function. There should be more details and more functionality can be added to the application such as navigation to make it commercially attractive. More than that, we can consider providing more services including urgent dispatch courier to make the system becomes more powerful.