



UNIVERSITY OF THE WITWATERSRAND

SCHOOL OF ELECTRICAL AND INFORMATION  
ENGINEERING

PRIVATE BAG 3, 2050, JOHANNESBURG, SOUTH AFRICA

---

# Taxi-cab Service Management System

---

*Front-End:*

Danielle Winter

Frederick Nieuwoudt

*Back-End:*

Stephen Friedman

*Student Number:*

563795

386372

360938

11 April 2016

**Abstract**

# Contents

<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	Project Overview . . . . .	1
1.2	Problem Statement . . . . .	1
1.3	Project Objectives . . . . .	1
1.4	Stakeholders . . . . .	1
1.4.1	Users . . . . .	1
1.4.2	Developers . . . . .	2
1.4.3	Project Manager . . . . .	3
1.4.4	Scrum Master . . . . .	3
<b>2</b>	<b>PART A: FRONT-END</b>	<b>4</b>
2.1	SRS . . . . .	4
2.2	SDS . . . . .	5
2.3	Prototype Implementation . . . . .	5
2.4	Product Backlog . . . . .	5
2.5	Sprint Planning . . . . .	5
2.6	Sprint Retrospective . . . . .	5
<b>3</b>	<b>PART B: BACK-END</b>	<b>6</b>
3.1	SRS . . . . .	6
3.2	SDS . . . . .	6
3.3	Prototype Implementation . . . . .	6
3.4	Product Backlog . . . . .	6
3.5	Sprint Planning . . . . .	6
3.6	Sprint Retrospective . . . . .	6

# **1 INTRODUCTION**

## **1.1 Project Overview**

## **1.2 Problem Statement**

The WitsCABS company owns a fleet of taxi-cabs and employs drivers for customer transportation within a city. The city is demarcated into service zones with a single taxi-stand in each service zone. Cab drivers wait for clients at their closest taxi-stand. Each driver has a smartphone, embedded with a GPS, maps and navigational tracking and access to the WitsCabs web application. A centralised Dispatch Control Centre (DCC) receives calls from customers and processes the new requests. WitsCABS requires the software application to organise their taxi-fleet, coordinate drivers and manage new job requests.

## **1.3 Project Objectives**

- Create the software requirements specification
- Create the design documentation for front and back ends
- Sprint planning and retrospective for front and back ends
- Implementation of prototype modules for the front end interfaces
- Implementation of prototype back-end modules
- Implementation of an Agile management technique

## **1.4 Stakeholders**

The project stakeholders are divided into Users, Developers, the Project Manager and the Scrum Master. The respective stakeholders and their roles are documented below.

### **1.4.1 Users**

Users are categorised into:

- Drivers

- DCC agents
- Customers

Drivers operate the taxi-cabs, are assigned jobs and pick up and deliver customers. They have access to a driver-specific front-end interface of the WitsCABS application and are able to specify when they accept a job or are on their way as well as state when they have completed a job. Drivers have access to the WitsCABS application through a smart-phone. They also have access to GPS and map navigation and are under navigational tracking.

DCC agents operate the WitsCABS call centre and have computer access to a DCC-specific interface of the WitsCABS application. They have the ability to add new clients to the database and can view active jobs.

Customers phone in to the DCC and provide their details, current location and destination. They are assigned a driver, told a likely departure time and given a cost for their journey.

#### **1.4.2 Developers**

Developers of the WitsCABS application are responsible for the front and back end implementation as well as documentation for the system. The developers are:

- Frederick Nieuwoudt (front-end)
- Danielle Winter (front-end)
- Stephen Friedman (back-end)
- Sello Molele (back-end)

Frederick Nieuwoudt and Danielle Winter implemented and documented the prototype front end for the system using *angular.js* and *Twitter Bootstrap*. A pair programming approach was used for the implementation.

Stephen Friedman implemented the back end prototype framework and documentation. Sello Molele contributed to the documentation.

### **1.4.3 Project Manager**

The project manager for the WitsCABS project is Danielle Winter. Their responsibilities include organising the development team and managing and integrating the documentation for the project.

### **1.4.4 Scrum Master**

The Scrum Master for the project is Frederick Nieuwoudt. Their responsibilities include managing the sprint backlog and sprint retrospective.

## 2 PART A: FRONT-END

### 2.1 SRS

The software requirements specification quantifies the scope and success criteria for this project.

The required elements of the front-end of the project as discussed in the SRS that were successfully implemented into the demonstrable prototype include:

- The log-in page
- The driver active job view
- The dispatch agent data entry form
- The dispatch agent active jobs view

With the inclusion of these modules into the prototype allows for the demonstration of the basic work-flow set out for the users of the application.

The modules that have yet to be implemented in future sprints that have been laid out in the SRS include:

## 2.2 SDS

## 2.3 Prototype Implementation

## 2.4 Product Backlog

Interface	Features	Expected Time (Days)
DCC	Active jobs panel	5
	Customer form panel	5
	Implement tabbed view (rather than panels)	1
	Automatic address completion using Google Maps API	5
Driver	Assigned job panel	5
	Buttons for "On the way" and "Job complete"	1
	Automatic update of navigation	5
General	Log-in page	5
	Log-in authentication	5
	Create basic interface framework	1
	Set up AngularJS customer directive	2
	Review user experience design (aesthetics using CSS)	5
	Set up google maps API	5

## 2.5 Sprint Planning

## 2.6 Sprint Retrospective

## **3 PART B: BACK-END**

### **3.1 SRS**

### **3.2 SDS**

### **3.3 Prototype Implementation**

### **3.4 Product Backlog**

### **3.5 Sprint Planning**

### **3.6 Sprint Retrospective**