Design Document

Pinecrest People Mover

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Abstract

This document is divided into six sections: Introduction, System Design, Glossary, the Appendix and References. The introduction provides information in regards to the project. This information consists of explaining the problem definition, which includes the desire, expectation, and goal provided by the client, gives a description of the design methodology used, and provides a list of definitions and acronyms used in the document.

The System Design section provides a high level explanation of the system with the use of diagrams, descriptions of the hardware, software, data storage and security as well. The Detailed Design gives the description of the structure for each subsystem using static models and dynamic models. Also there is reference to the Code Specification on the Appendix C.

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# 1 Introduction

This section gives a brief indication about what is the problem presented by the community of Pinecrest in the person of our mentor and client. The have been using their trolley system called People Mover (PPM)

## 1.1 Problem definition.

Pinecrest government would like to design a Web tracker and a Mobile tracker to show residents routes, hours of operation, real-time trolley location (as a list and as an interactive map) and allow for automatic notifications for arrival at user’s favorite stops. The mobile tracker should work well on iPhone and android devices.

## 1.2 Design methodology used

The agile software development model is what is being used to develop the system. We specified the scope of the system, analyzed the use cases needed, and defined the functional and non-functional requirements in the Requirement Document (RD). In this Design Document, we will use the same analysis model from the Requirement Document to show the design objects, system architecture, and subsystem decomposition that will be part of the process. The agile system will guarantee that the documentation process is well designed but at the same time we are going to be involved in the developing process to get a fast delivery of the system to the client. The UML diagrams as part of the analysis model are required to aid in designing the system. The use case diagrams from the RD makes the creation of the class diagrams and sequence diagrams easier to define.

## 1.3 Definitions, acronyms, and abbreviations.

PPM: Pinecrest People Mover

SRS: Software Requirements Specification

UML: Unified Modeling Language

## 1.4 Overview of document

* Chapter 2 describes the System Design more focused in:
  + Overview
  + System Decomposition
  + Hardware and Software Mapping
  + Persistent Data Management
  + Security/Privacy
* Chapter 3 describes the Detailed Design of the system
  + Overview
  + Static model
  + Dynamic model
  + Code Specification
* Chapter 4 Glossary
* Chapter 5 is Appendix
* Chapter 6 is References

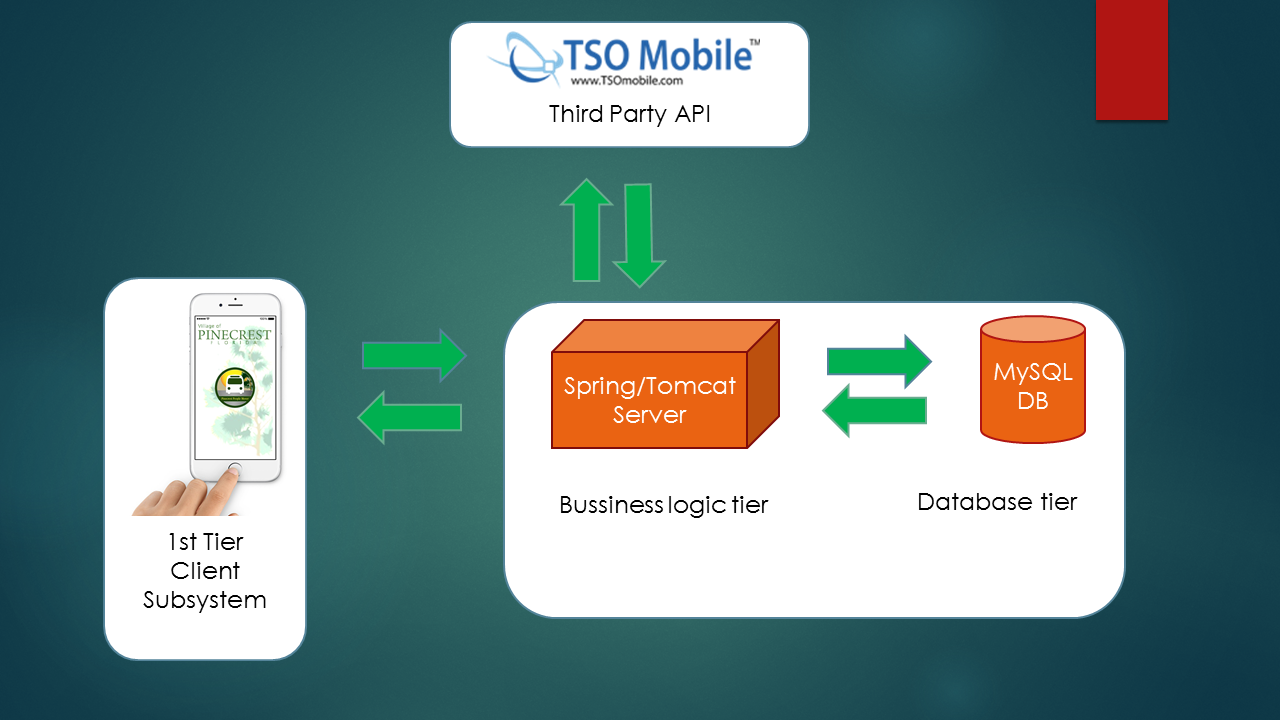
# 2. System Design

Along this chapter we will cover our system and subsystem design. We will present:

* High level description of the system design.
* Detail description of each of the major subsystems.
* Maps of the interaction between the hardware and the subsystems.
* Structure of the data to be stored.
* Authentication processes and security in general.

## 2.1 Overview

The design chosen to be used in our system is based in a three tier architecture. Given that our system has an important part mobile oriented, we thought that a light weight data processing would be beneficial, also this represents easier scalability and better handling of the security. Our system also implements a client server architecture given that our business logic and database reside in the same server and they exchange resources and services. The subsystem defined as client side is an application developed using Sencha Touch framework. The server subsystem is composed by a tomcat server with a resident web app using Spring Framework over Java and MySQL as database server The server subsystem takes care of the resources requested fromss the client subsystem, database processing and requests to a third party API that provide data of the trolleys as well.

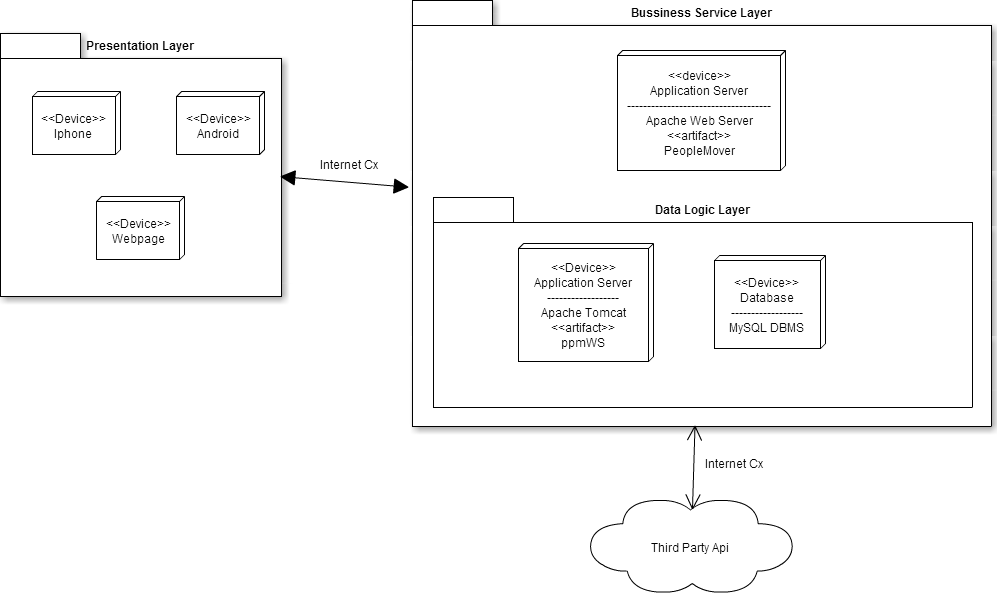


## 2.2 Subsystem Decomposition

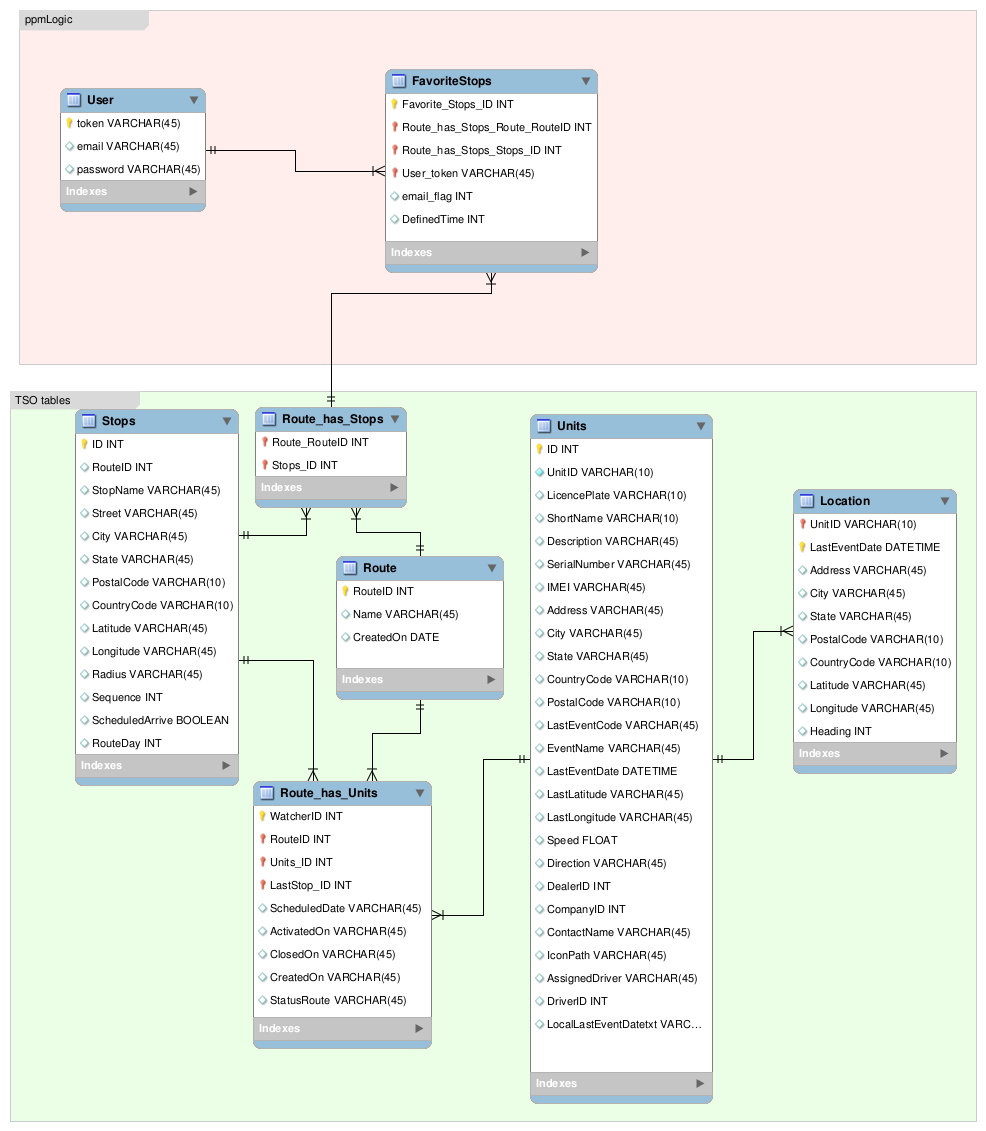
Our design is defined by …..

## Hardware and Software Mapping

The hardware and software mapping is shown below:



## 2.4 Persistent Data Management



## 2.5 Security/Privacy

– describe user authentication processes, encryption of data, and use of firewalls or security servers.

# 3. Detailed Design

Introduce the detailed design chapter (one or two paragraphs)

* 1. Overview – briefly describe the behavior and structure of each subsystem.
  2. Static model – detailed description of the structure for each subsystem. May include detailed class diagrams. Place diagrams (e.g., minimal class diagram, detailed class diagram per subsystem) inline. Use at least four (4) design patterns.
  3. Dynamic model – state machine diagram for the main control object in each subsystem. Include the design of the ***main algorithms*** used in the problem solution. Refinement of the sequence diagram from the analysis model. Place diagrams inline.
  4. Code Specification - describe the class interfaces (attributes and method signatures) and constraint (invariants, pre-condition and post-conditions) for the main control object in each system. Code should be in Appendix C.

1. Glossary - define terms used in document, especially domain specific terms.
2. Appendix
   1. Appendix A - Use case diagram for use cases being implemented.
   2. Appendix B - Use cases being implemented (from the RD).
   3. Appendix C – Documented class interfaces (code) for the subsystem(s) you will implement and the constraints.
   4. Appendix D - Diary of meeting and tasks.
3. References