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Stacks on Stacks: Software Requirements Specification for Arivl

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1 Introduction

1.1 Purpose

The aim of the project is to reach a stage whereby users have the option of using Arivl completely seamlessly, without having to open the application.

1.2 Scope

Product Name: Arivl The aim of the project is to reach a stage whereby users have the option of using Arivl completely seamlessly, without having to open the application. Arivl will allow a boom to be opened when a user within range and has been verified, without the actual user having to do much to support this feature, giving about minimal user interaction having taken all security measures to enforce a safe and secure seamless action.

1.3 Definition, Acronyms, and Abbreviations

User - The person using the Arivl application. API - Application Programming Interface BLE - Bluetooth Low Energy

1.4 References

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1.5 Overview

The SRS shows the functional requirements of the system.

2 Overall Description

What Arivl (ArivlApp) entails is the ability to open homes, malls, and work with the swipe on a phone using Bluetooth. Once Bluetooth is activated, your Arivl device will search for the closest boom. On the boom is an ArivlBox and when the phone connects to the box, then the user has to swipe the phone. Arivl aims to take away the phone interaction. It will also be able to address building management (such as lights, switches, Air Cons, others as specified, when a person walks past certain areas).

2.1 Product Perspective

The SRS shows the functional requirements of the system.

2.2 Product Functions

R1. User must have the Arivl application installed on their phone.
R1.1 User must login into the Arivl application.
R1.2 User must be running Arivl application on their phone in the foreground.

R2. Arivl application must open a boom gate.
R2.1 User must be registered to system for access to users in front of boom gate.
R2.2 Arivl application must connect to Arivl Box and send a signal to request for boom gate to open.

R3. Arivl application user must connect to Arivl box through BLE.

R4. Communication between central and peripheral must be encrypted.

2.3 User Characteristics

The users are people who either have access or do not have access to a particular boom gate(s) in a residential estate(s) and/ or corporate offices park(s). These users should have a basic understanding of how to install and use applications. The user should know their smartphone number and have their phone with them.

2.4 Contraints

C1. Mobile must be Android API 18 and above to support BLE

C2. User must be in proximity

C3. User must be using a Samsung Android Phone

3 Specific Requirements

3.1 External Interface Requirements

3.2 Functional Requirements

R1. User must have the system installed on their phone.
R1.1 User must login into the system.
R1.2 User must be running the system on their phone in the foreground.
R2. The system must open boom gate.
R2.1 User must be registered to system for access to users in front of boom gate.
R2.2 Arivl application must connect to a peripheral device and send a signal to request for boom gate to open.
R3. The system must provide a means of secure communication between the central and peripheral device.
R4. The system should provide the administrator and interested stakeholders with a means of viewing the gate access history.
R5. The system should provide guests with a means of access to the gate.

4 Domain Model

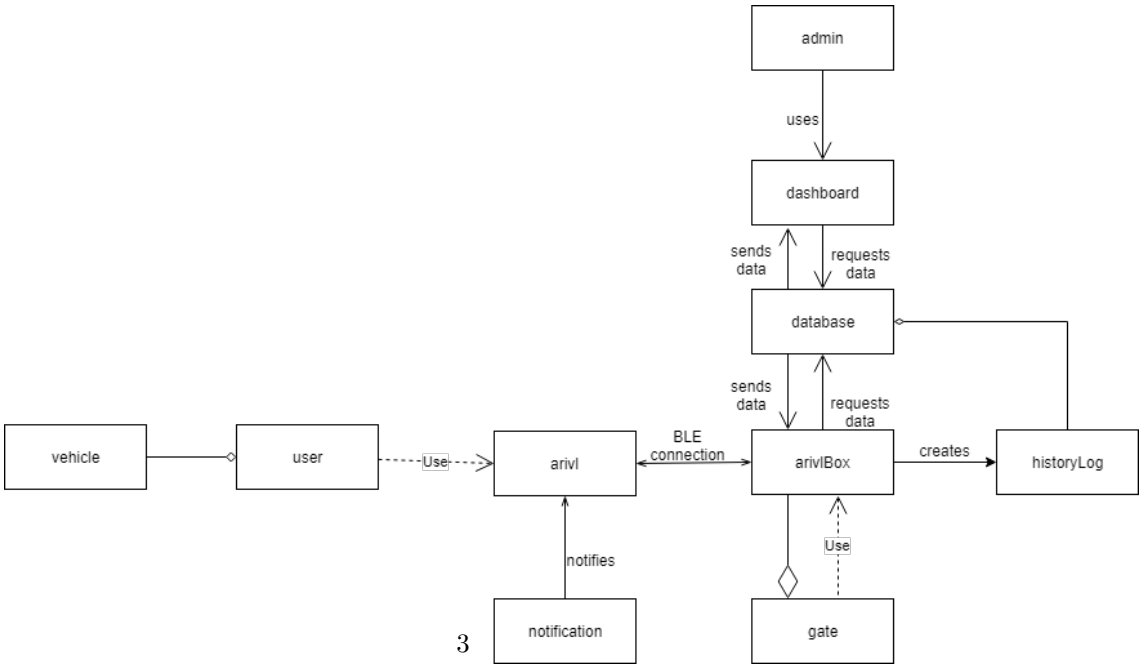

Figure 1: Domain Model

5 Architectural Requirements

Architectural Design
Our system follows an event-driven architecture where the system depicts state-dependent behaviour. The ArivlApp, the name of our Android application, firstly tries to connect to the ArivlBox using Bluetooth Low-Energy(BLE); if the user has access to that specific boom gate and if the ArivlBox is not connected to any other device, a button appears on the home screen of the application reading "Open Gate", which , when pressed, verifies the user's access to that specific boom gate and if the user is authorized access, the application sends a signal to the gate, requesting it to open the gate; consequentially, disconnects the user's ArivlApp from the ArivlBox. Furthermore, changing it's state from "closed" to "open" and hence, opening the gate. Moreover, as soon as the gate is opened, a timer for 5 seconds is started, as the time stops, the state of the gate is changed to "closed" and the gate is closed. This allows another authorized device to connect to the ArivlBox as soon as possible.

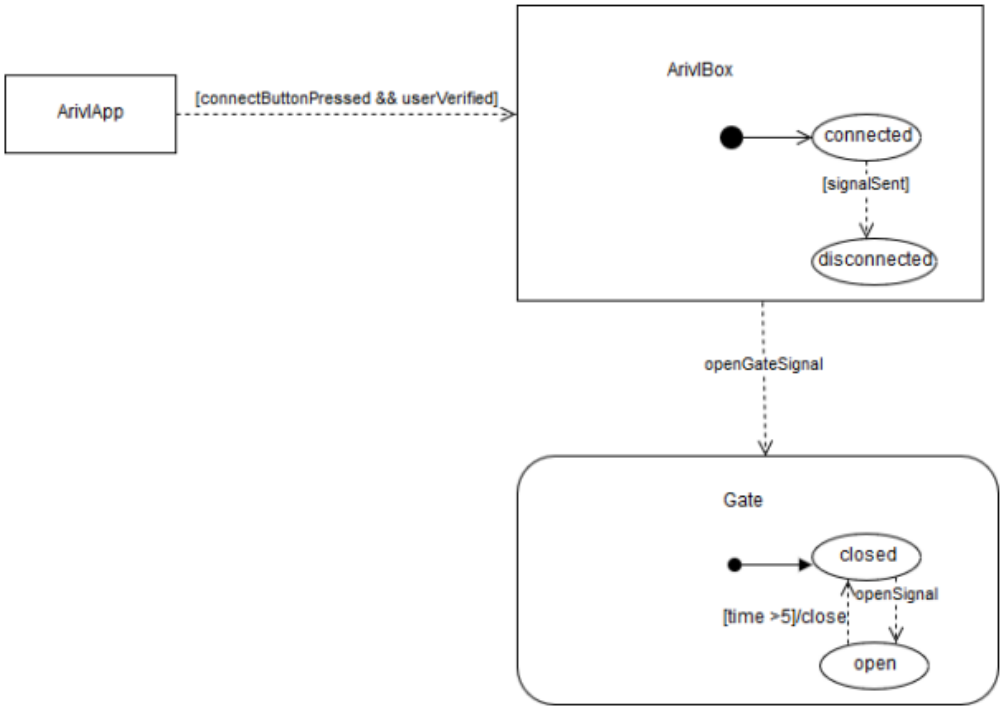

Figure 2: Architectural Design Diagram