

Software Requirements Specification (SRS) for "Locate a Socket"

1. Introduction

1.1 Document Purpose

This Software Requirements Specification (SRS) document outlines the functional and non-functional requirements for the "Locate a Socket" web application. This document is intended for developers, project managers, stakeholders, and testers involved in the design, development, and maintenance of the system. The aim is to create an application that helps electric vehicle (EV) drivers locate, access, and make secure payments for charging stations conveniently.

1.2 Product Scope

"Locate a Socket" is a web-based application designed to assist EV drivers in finding nearby charging stations along their travel routes. By leveraging location-based services, the application will allow drivers to view available charging stations, check station status, navigate to the station, and securely pay for the charging service. The goal is to create a seamless, user-friendly experience that helps accelerate the adoption of electric vehicles by solving the problem of charging accessibility.

1.3 Document Overview

This document provides an overview of the system, including functional and non-functional requirements, assumptions, constraints, and references:

- **Section 2:** Describes the overall product, including its perspective, functions, user characteristics, constraints, and assumptions.
- **Section 3:** Specifies the detailed requirements, including functional and non-functional requirements, as well as external interfaces.
- **Section 4:** Contains supporting references.

1.4 Definitions, Acronyms, and Abbreviations

- **EV:** Electric Vehicle
- **LBS:** Location-Based Services
- **UI:** User Interface

- **API:** Application Programming Interface
- **GPS:** Global Positioning System

2. Overall Description

2.1 Product Perspective

An online application called "Locate a Socket" helps users find the closest EV charging stations by integrating with GPS technology and location-based services. The program leverages third-party services to process payments securely and runs on both desktop and mobile platforms. Cloud-based backend architecture will allow for high availability and scalability.

2.2 Product Functions

"Locate a Socket" provides the following key functionalities:

- User Registration and Authentication
- Locate Charging Stations
- Navigation to Charging Station
- Real-Time Station Availability
- Secure Payments
- Charging History
- Favorites charging station history

2.3 User Characteristics

- **EV Drivers:** Individuals who own electric vehicles and use the app to locate and pay for charging stations. Most users will have basic to moderate technical proficiency.
- **Admin Users:** Responsible for maintaining station information, ensuring real-time updates, and managing payment configurations. Admin users should have a technical background in web administration and content management.
- **Customer Support Agents:** Personnel who assist users with inquiries, technical issues, and troubleshooting. They should have moderate technical proficiency, especially with account management, payment systems, and common user issues related to the application.
- **Station Owners:** Businesses or individuals owning charging stations. They may manage their station's visibility, pricing, and availability on the

platform. They are expected to be proficient in using online dashboards and payment systems.

2.4 Constraints

- The system must support all major web browsers (Chrome, Firefox, Safari, Edge).
- The mobile version must be available for iOS (iOS 14+) and Android (Android 8+).
- Secure payment gateways such as PayPal and credit/debit cards must be used.
- GPS accuracy may affect the location-based services.

2.5 Assumptions and Dependencies

- Users must have internet access to use the application.
- Location services (GPS) must be enabled on mobile devices.
- Payments will be processed through third-party services like PayPal or direct from credit/debit cards.
- Charging station availability will depend on the station's network API for real-time status updates.

3. Specific Requirements

3.1 External Interfaces

- **User Interface:** A web-based platform for desktop and mobile access.
- **Hardware Interfaces:** Compatible with devices that support GPS and internet access.
- **Software Interfaces:** Integration with third-party APIs for payments (PayPal, credit/debit cards), mapping services (Google Maps API), and charging station networks.
- **Communication Interfaces:** Supports RESTful API for third-party services, such as real-time charging station availability and secure payment processing.

3.2 Functional Requirements

- **User Registration & Authentication:** Users must be able to register and log in using their email or third-party authentication (Google, Apple ID). OAuth 2.0 will be used for secure authentication.

- **Locate Charging Stations:** The app should allow users to search for charging stations using their current location or by entering a specific location or route.
- **Real-Time Charging Station Information:** Charging station details, including availability, pricing, and connector type, should be updated in real-time.
- **Payment Processing:** Users should be able to securely pay for charging services using a credit/debit card, PayPal. Payment processing must comply with PCI-DSS standards.
- **Navigation:** Users should be able to view the charging station's location on a map and get step-by-step directions to the station.
- **Favorites & History:** Users must be able to save charging stations as favorites and view their transaction history.

3.3 Non-Functional Requirements

- **Performance:** The system must handle up to 10,000 concurrent users with minimal latency.
- **Security:** User data must be encrypted using AES-256 encryption, and payments should comply with PCI-DSS regulations.
- **Availability:** The application should ensure 99.9% uptime.
- **Usability:** The UI must be intuitive and accessible, with support for users with disabilities (WCAG 2.1 compliance).
- **Scalability:** The application must be able to scale with the increasing number of EVs and charging stations.
- **Privacy:** The system must comply with GDPR and other applicable privacy regulations.

4. Supporting Information

4.1 References

- PayPal API Documentation: <https://developer.paypal.com/docs/api/overview/>
- Google Maps API Documentation: <https://developers.google.com/maps/documentation>
- PCI-DSS Compliance Guidelines: <https://www.pcisecuritystandards.org/>
- GDPR Compliance Guidelines: <https://gdpr.eu/>