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Software Requirements Specification (SRS) for Locate a Socket

1. Introduction

1.1 Document Purpose

This document outlines the software requirements for the Locate a Socket web application. It serves as a guide for developers, testers, project managers, and stakeholders involved in its design, development, and maintainence.

1.2 Product Scope

Locate a Socket is a web-based platform created to help electric vehicle (EV) users locate charging stations easily. By utilizing location services, it allows drivers to search, access, and securely pay for EV charging stations. The platform aims to improve accessibility to charging points and promote the wider adoption of electric vehicles.

1.3 Document Overview

This document provides a well-structured overview of Locate a Socket, addressing its functionalities, requirements, and constraints. The sections include:

- **Section 2**: General system overview, including its purpose, core features, user roles, and operational limitations.
- **Section 3**: Detailed software requirements, including functional and non-functional aspects.
- **Section 4**: Additional references and supporting information.

1.4 Definitions, Acronyms, and Abbreviations

- **EV**: Electric Vehicle
- **UI**: User Interface

- **API**: Application Programming Interface
- **GPS**: Global Positioning System
- **SSL**: Secure Sockets Layer
- **OTP**: One-Time Password

2. Overall Description

2.1 Product Perspective

Locate a Socket is a location-based platform that integrates with mapping services and payment gateways to allow real-time discovery and booking of EV charging stations. The system is web-based, works across multiple browsers, and is optimized for mobile devices.

2.2 Product Functions

Locate a Socket offers the following core functionalities:

- User registration and authentication
- Searching and interactive mapping of charging stations
- Slot booking and reservation system
- Secure online payments
- User feedback and rating system
- Navigation support to charging points
- Real-time availability updates
- Profile and transaction management

2.3 User Characteristics

- **EV Drivers**: Users looking for charging stations and payment options. They are typically comfortable using web and mobile applications.
- **Charging Station Operators**: Individuals or businesses managing charging station availability, pricing, and operational details.
- **System Administrators**: Responsible for maintaining system security, user management, and platform functionalities.

2.4 Constraints

- Must be compatible with popular browsers (Chrome, Firefox, Safari, Edge).

- Requires integration with mapping services (e.g., Google Maps API) for location tracking.
- Payment processing must comply with PCI-DSS security standards.
- Charging station status updates must be provided in real-time.

2.5 Assumptions and Dependencies

- Users should have an active internet connection and a GPS-enabled device.
- Charging station operators will provide accurate and timely availability and pricing information.
- Transactions will be securely handled by third-party payment providers (e.g., PayPal, Stripe, banking gateways).
- Navigation and location tracking rely on third-party mapping services.

3. Specific Requirements

3.1 External Interfaces

- **User Interface**: Web-based, mobile-optimized UI with an intuitive layout.
- **Hardware Interfaces**: Compatible with GPS-enabled devices.
- **Software Interfaces**: Integrated with Google Maps API, Stripe/PayPal for payments, and notification systems.
- **Communication Interfaces**: RESTful API for external system interactions and email/SMS notifications for bookings.

3.2 Functional Requirements

- **User Account Management**: Registration via email, phone number, or social login with OTP authentication.
- **Charging Station Discovery & Navigation**: Search for stations based on location, price, and availability.
- **Booking & Reservations**: Allows users to reserve charging slots with confirmation.
- **Payment Processing**: Secure payment methods such as credit/debit cards, digital wallets, or UPI.
- **Real-Time Availability Tracking**: Prevents overbooking with live updates.
- **User Reviews & Ratings**: Enables users to submit feedback and rate charging stations.

- **Profile & Transaction Management**: Users can view past bookings, manage profiles, and track payments.

3.3 Non-Functional Requirements

- **Performance**: Supports up to 1 million concurrent users.
- **Security**: Ensures SSL encryption and AES-256 secured data.
- **Reliability**: System should have an uptime of 99.9%.
- **Usability**: Follows accessibility guidelines (WCAG 2.1) for an inclusive user experience.

4. Supporting Information

4.1 References

- IEEE Std 830-1998, "Recommended Practice for Software Requirements Specifications."
- Payment Card Industry Data Security Standard (PCI-DSS)
- Google Maps API Documentation
- OWASP Security Guidelines for Web Applications
- Web Content Accessibility Guidelines (WCAG) 2.1