

SIT725 – Applied Software Engineering

TASK 2.1P Writing SRS document

Software Requirements Specification (SRS) for Locate a Socket Application

1. Introduction

1.1 Overview of the Software and Its Purpose

The Locate a Socket app is a handy web based tool that helps electric vehicle (EV) drivers find charging stations while they're on the go. It uses location services to give real-time updates on nearby charging options, directions, and how to pay, making the charging process much easier for EV users. The main goal of the app is to encourage more people to adopt electric vehicles by tackling one of the biggest challenges they face: finding available charging stations.

1.2 Identification of the Target Audience

The target audience for this Software Requirements Specification (SRS) document includes the development team, project stakeholders, product managers, and others involved in both the technical and business sides of the Locate a Socket application. The goal of this document is to make sure everyone is on the same page when it comes to understanding the application's functionality, features, and performance expectations.

2. Purpose

2.1 Primary Objective of the Software

The main goal of the Locate a Socket app is to help electric vehicle (EV) drivers easily find charging stations and make secure payments for their charging needs. By offering real-time information on station availability, the app aims to ease range anxiety for EV users and enhance their overall driving experience.

2.2 Intended Benefits for EV Drivers

The benefits for EV drivers include:

- **Convenient Location-Based Services:** Find charging stations along their route using GPS-based functionality.
- **Real-Time Availability:** Get up-to-date information about whether a charging station is available, ensuring drivers don't waste time at full stations.

- **Payment Integration:** Seamlessly make payments for charging through secure online payment gateways, improving convenience and reducing friction in the charging process.
 - **Route Optimization:** Get directions to the nearest available charging stations, optimizing their driving routes.
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3. Audience

3.1 Target Users

- **Electric Vehicle Drivers:** People who own or drive electric vehicles often need to find charging stations while they're on the road.
- **Fleet Managers:** Organizations that operate electric vehicle fleets requiring a tool to plan routes and ensure charging availability for multiple vehicles.
- **Charging Station Operators:** Providers of EV charging stations who may also use the platform to manage station data, availability, and payment processing.
- **Application Administrators:** Users responsible for maintaining the app, ensuring the accuracy of station data, and managing user accounts.

3.2 Stakeholders

- **Software Development Team:** Developers, testers, and designers who will create, maintain, and improve the application.
 - **Business Owners/Investors:** Those who are funding or overseeing the development and commercialization of the application.
 - **Payment Service Providers:** Third-party companies providing secure payment gateways for transactions.
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4. Overall Description

4.1 Comprehensive Overview of the Software's Functionality

The Locate a Socket application is designed to facilitate electric vehicle charging by offering a range of features:

- **Search for Charging Stations:** Users can search for nearby charging stations based on their current location or a destination entered into the system.
- **Real-Time Availability Information:** The app will display real-time availability, ensuring that users can find stations that are not already occupied.
- **Secure Payment Integration:** Users can pay for charging services via a secure and integrated payment gateway within the app.
- **Navigation and Directions:** The app will guide users to the selected charging station using maps and turn-by-turn navigation.
- **User Account Management:** EV drivers can create profiles to save preferred stations, payment methods, and trip history for better usability.

4.2 Explanation of How the Software Operates

The Locate a Socket application will work in the following way:

1. **User Login/Registration:** EV drivers will sign up or log in to the app using a secure authentication process.
 2. **Station Search:** Drivers will enter their current location or destination, and the app will provide a list of nearby charging stations, including station availability and details.
 3. **Station Selection:** Once a charging station is selected, the app will display real-time availability (whether the station is free or occupied).
 4. **Navigation:** The app will provide navigation instructions to guide the driver to the charging station.
 5. **Payment:** After charging, drivers can use the integrated payment gateway to pay for the service securely.
 6. **Feedback and Rating:** Users will have the option to rate their experience at the charging station, providing valuable data for other users.
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5. External Interfaces

5.1 Map Interface

The application will interface with mapping services like Google Maps or OpenStreetMap to provide users with location data, directions, and real-time traffic information. This is necessary to guide drivers to their selected charging stations.

5.2 Charging Station APIs

The app will integrate with APIs provided by charging station operators (e.g., ChargePoint, Tesla Supercharger, etc.) to fetch real-time data on charging station availability, location, and operational status.

5.3 Payment Gateway

The app will connect with third-party payment providers (e.g., Apple Pay, PayPal) to facilitate secure transactions for users when paying for charging services.

6. System Features

6.1 Search for Charging Stations

- **Description:** Users can easily find charging stations by looking up their current location or by entering a specific destination.
- **Functional Requirements:** The system will utilize GPS or allow for manual entry of your location to show you nearby charging stations. You'll get details like the address,

the type of connectors available, pricing, and real-time availability. It's designed to make finding a charging spot as easy as possible.

6.2 Real-Time Availability

- **Description:** The system provides real-time updates on the status of charging stations, clearly indicating whether each station is available for use, currently occupied by a vehicle, or out of service for maintenance or repair.
- **Functional Requirements:** Integration with station APIs to show accurate, real-time data on station occupancy.

6.3 Directions and Navigation

- **Description:** The app is designed to make your trip to the charging station a breeze. You'll get clear, step-by-step directions, and we'll keep you updated in real-time so you can enjoy a hassle-free journey.
- **Functional Requirements:** Integration with map services for real-time route guidance and turn-by-turn directions.

6.4 Secure Payment Integration

- **Description:** Users can securely pay for charging services through the app.
- **Functional Requirements:** Payment gateway integration for processing secure credit/debit card transactions.

6.5 User Account Management

- **Description:** Users can create, manage, and personalize their accounts.
- **Functional Requirements:** Account features will include profile creation, saving favourite stations, payment methods, and trip history.

7. Non-Functional Requirements

7.1 Performance Requirements

- The application needs to be built to handle up to 10,000 users at the same time. It's important that it runs smoothly and efficiently, so everyone can use it without experiencing any lag or issues.
- Response time for user queries (e.g., searching for stations, directions) should not exceed 3 seconds.

7.2 Security Requirements

- All sensitive data, including user profiles and payment information, must be encrypted in transit using SSL/TLS.
- Secure login features (e.g., two-factor authentication) must be implemented.

7.3 Reliability

- The application must be available 99.9% of the time, excluding scheduled maintenance periods.
- The system should be able to recover from failures within 5 minutes.

7.4 Usability Requirements

- The user interface must be intuitive, easy to navigate, and accessible for all users, including those with disabilities.
 - The application must support multiple languages and units of measurement (miles/kilometres, currency).
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8. Other Requirements

8.1 Platform Compatibility

The application must be compatible with all major web browsers (Chrome, Firefox, Safari, Edge) and should be mobile-responsive for use on smartphones and tablets.

8.2 Data Privacy

The application must comply with data privacy laws (e.g., GDPR) and ensure that users' personal data is handled with the utmost care.

References

- European Commission. (2020). *Electric Vehicles: An opportunity for the future of transport*. European Commission.
 - ISO/IEC 27001:2013. (2013). *Information security management systems — Requirements*. International Organization for Standardization (ISO).
 - Google Maps API. (n.d.). *Google Maps API documentation*. Google Developers.
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