University of Bonn

MA-INF 3232

Lab Enterprise Information Systems

Requirements Specification Report

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1 Introduction

The main purpose of this document is to give a scope description of the system which is related to developing an open vocabulary for future-oriented mobility solutions and implementing daily life solution for clients who can use this vocabulary.

1.1 Purpose

This document provides detail description of software requirements for this project. This document is prepared for both stakeholders and the developers of the system.

1.2 Scope

1.3 Definitions

- SPARQL - SPARQL Protocol and RDF Query Language
- GPS - Global Positioning System
- User -
- OWL -
- RDFSchema -

1.4 System Overview

Foreground overview; Firstly application offer user to select what kind of filling station that user wants to search. User either can select the followings; Filling station type: Fuel station or battery station. If user does not choose any application will give a warning that user needs to select one of them. After that according which filling station that user choose application will show the facilities of filling stations. These are; For Fuel station; Location: Cologne, Bonn or current location. Fuel Type: Adblue, Autogas, Biodiesel, Compressed natural gas, E85, Ethanol, Excellium diesel, Excellium super plus, Hydrogen, Liquid gas, Liquid petroleum gas, LKW diesel, Maxx motion diesel, Maxx motion super 100, Methane, Petrol, Super(E5), Super(E10), Super diesel, Super plus, Ultimate diesel, Ultimate super, VPower diesel or VPower racing. Parking Facility: Y/N Washing Facility: Y/N Station Height: Trucks or Construction vehicle. WC: Y/N Shopping Facility: Y/N Wheel Chair:

Y/N For Battery station; Location: Bonn or current location. Plug Type: Combo plug, CHAdeMO plug, EU Domestic plug, Schuko plug, Type1 plug, Type2 plug or Type3 plug. Access Type: Brands customers, Customer of Premise, Employees only, Identified person, Combo plug, Inhabitants only or Open to all users. Identify Type: Access code, Badge has to be ordered, Badge is available, Credit card, Key, Mobile application, Phone call, Text message, None or Other. Charge Type: Free charging or Paid charging. Booking Type: Impossible, Mandatory or Optional. Application will return the results based on chosen criteria. After the user selection, list of filling stations will show. User can click location button to see where the filling station is. And also can display the shortest way from current location to filling station. On the other hand user can click the search results to get the detailed information about filling stations. Background overview; The system that is created is to show the functionality of the new vocabulary that is developed. It is written in Java on Eclipse, works on web browser, mobile as well as pads. Application uses data from GeoSparql. It has a connection with Geosparql service. This implemented in Java Spring. It queries on GeoSparql and returns the results. These results stores as turtle format in the server side. Application has also client side which shows the query results within the proper format. Data exchange between client and server side is implemented with JSON. After implementing data connection between client and server, query results which is stored as turtle format converted to JSON.

2   Overall Description

2.1   Product perspective
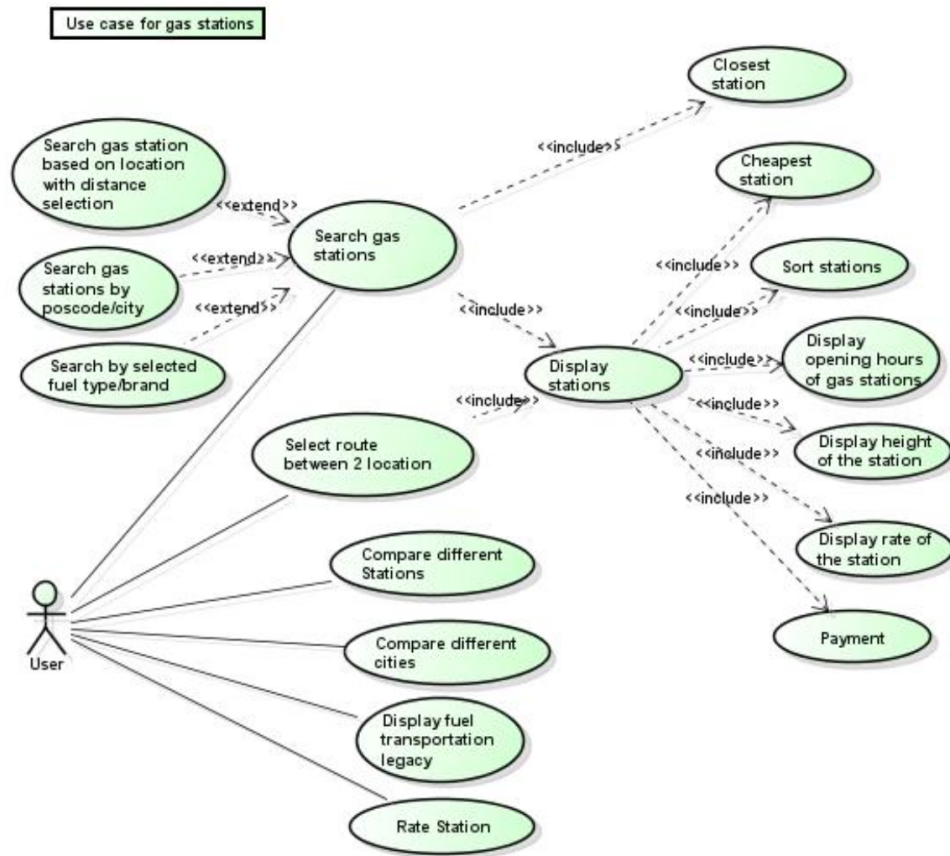

Figure 1 - For Gas Station
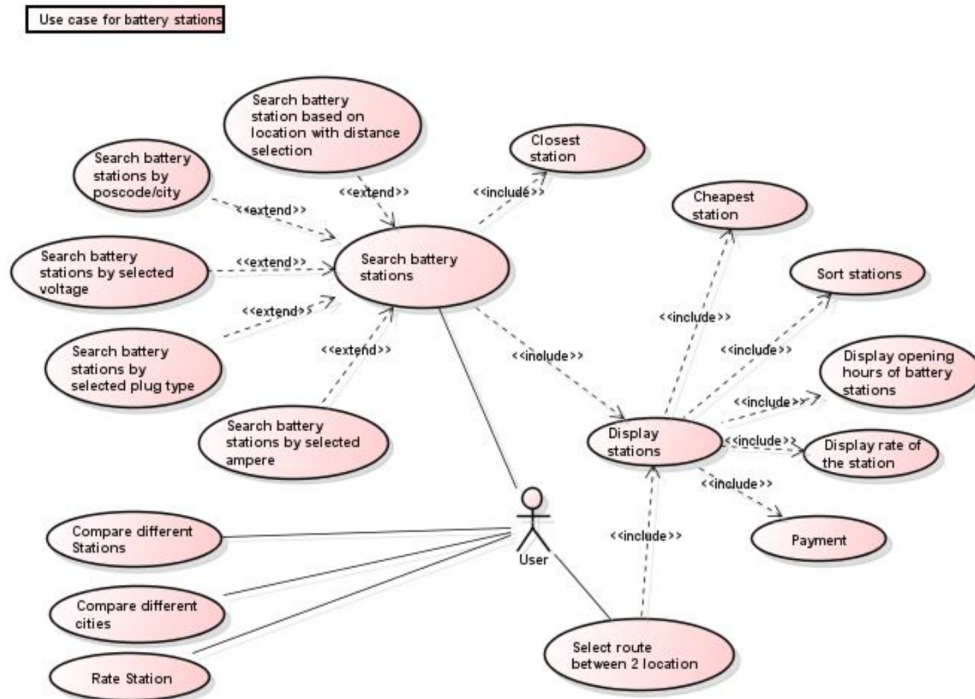
Figure 1 - For Electrical Plugin Station

3 Specific Requirements

3.1 Functional Requirements

In this section, detail description of functional requirements is explained. These requirements shape the core of the system functionality.

- Functional Requirements:

  1. The system allows the users to search for gas station.

  2. The system provides the choice of searching a gas station by selecting the specific town/city or postcode.

  3. It also allows the searching of a gas station related to the current position of the user.

     - It uses GPS to determine users' position.

  4. Another option of our system is searching by selecting the required fuel type/brand.

- After the search(in every situation), it displays the gas stations, the opening hours of each gas station, the available payment types, the maximum height of the vehicle that can enter the station and the popularity of the station based on the rating of the customers.

- It gives the opportunity to sort the results.

- This can happen either by cheaper fuel price or by closer gas station.

5. It displays the fuel transportation legacy rules, depending on which country the user is traveling, using GPS.

6. It gives the opportunity to the user to compare two gas stations.

7. It allows also to compare two cities in terms of fuel prices.

8. Based on a predefined route, the system is able to filter the adjacent gas stations along its way.

   - After that it displays the gas stations along this route.

9. It is possible for the user to rate any gas station which has visited.

10. The system allows the users to search for battery station.

11. The system provides the choice of searching a battery station by selecting the specific town/city or postcode.

12. It allows the searching of a battery station related to the current position of the user and the minimum distance from it.

    - It uses GPS to determine users' position.

13. The system provides the option to search a battery station depending on the plug type.

14. The system provides the option to search a battery station depending on the voltage.

15. The system provides the option to search a battery station depending on the Ampere.

    - After the search(in every situation), it displays the battery stations, the opening hours of each battery station, the available payment types, the maximum height of the vehicle that can enter the station and the popularity of the station based on the rating of the customers.

    - It gives the opportunity to sort the results.

– This can happen either by cheaper price or by closer battery station.

16. It gives the opportunity to the user to compare two battery stations.

17. It allows also to compare two cities in terms of battery stations' prices.

18. Based on a predefined route, the system is able to filter the adjacent battery stations along its way.

– After that it displays the battery stations along this route.

19. It is possible for the user to rate any battery station which has visited.

3.2 Non-Functional requirements

The following non-functional requirements describe the qualifications of the system's functional requirements. These qualifications are interoperability, reliability availability, performance and usability of the system.

- Non-Functional Requirements:

1. The system shall help the user to avoid making mistakes during the selection of fuel type/brand, electricity plugin, electrical vehicle's Ampere and voltage

2. The system shall help the user to avoid making mistakes during entering geographical location.

3. The system shall be used by people with no training, and possibly basic understanding of English.

4. The server-side system is developed using MVC Architecture design.

5. The server-side system is developed by Java Spring Framework.

6. The client-side system is developed by using Apache Cordova.

7. The system supports web solutions and hand-held devices.