DHBW Karlsruhe

Green Sprout
Software Requirements Specification

Version 1.0

Revision History

Date	Version	Description	Author
21/10/2024	1.0	First version	Green Sprout Team

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Software Requirements Specification

1. Introduction

1.1 Purpose

This Software Requirement Specification (SRS) provides a comprehensive collection of all specifications of the "Green Sprout" restaurant-finder application. It outlines the purpose, scope, and key details of the project. The SRS describes both functional and non-functional requirements necessary for the development and delivery of the application.

1.2 Scope

This project will be a web-based application.

The main actors of this application can include restaurant owners, reviewers, or general visitors.

The key features planned are:

- Visual Map: This map is the primary element of the user interface, displaying the area (e.g., Karlsruhe) and a set of location markers representing the restaurants at their respective locations.
- Restaurant Profiles: Each restaurant has a detailed profile that initially includes its name, type of cuisine, photos, overall rating, and existing reviews.
- Registering as a Reviewer: Users can create an account with their first name, last name, email address and a password of choice. This is necessary to gain the ability to publish reviews of restaurants and create lists.
- Creating a Restaurants List: Users can create lists with a title and a collection of restaurants of their choice.
- User (Reviewer) Profiles: Registered users have personal profiles featuring their name, profile picture, and a history of all the reviews they've written on the platform as well as their published restaurant lists.
- Adding a new Review: Each restaurant on the map will have an "Add a Review" option, allowing users to write a review, upload photos, and provide a star rating.
- Filtering Restaurant Searches: Users will be able to filter restaurants based on cuisine type and diet.

1.3 Definitions, Acronyms and Abbreviations

Abbreviation	**Explanation**
SRS	Software Requirement Specification
MVP	Minimum Viable Product

n/a	Not applicable

1.4 References

Title	Date	Publishing Organization
Green Sprout Blog		Green Sprout Team
Green Sprout Github Repository		Green Sprout Team

1.5 Overview

This Software Requirements Specification (SRS) document for the "Green Sprout" project outlines all the requirements necessary for the development of the restaurant-finder application. It serves as a comprehensive guideline for the design, development, and implementation of the application.

The SRS document is structured to cover both functional and non-functional requirements in detail. The document is divided into several sections:

Section 1 introduces the project, covering its purpose, scope, and relevant definitions. It also includes references to related documents and resources.

Section 2 provides an overall description of the product, explaining its context, user characteristics, product features, assumptions, and constraints.

Section 3 presents the specific requirements, both functional (such as map filtering, restaurant profiles, user registration, and reviews) and non-functional (usability, reliability, and performance). This section details each feature with pre-conditions and post-conditions where applicable, ensuring clear expectations for both developers and testers.

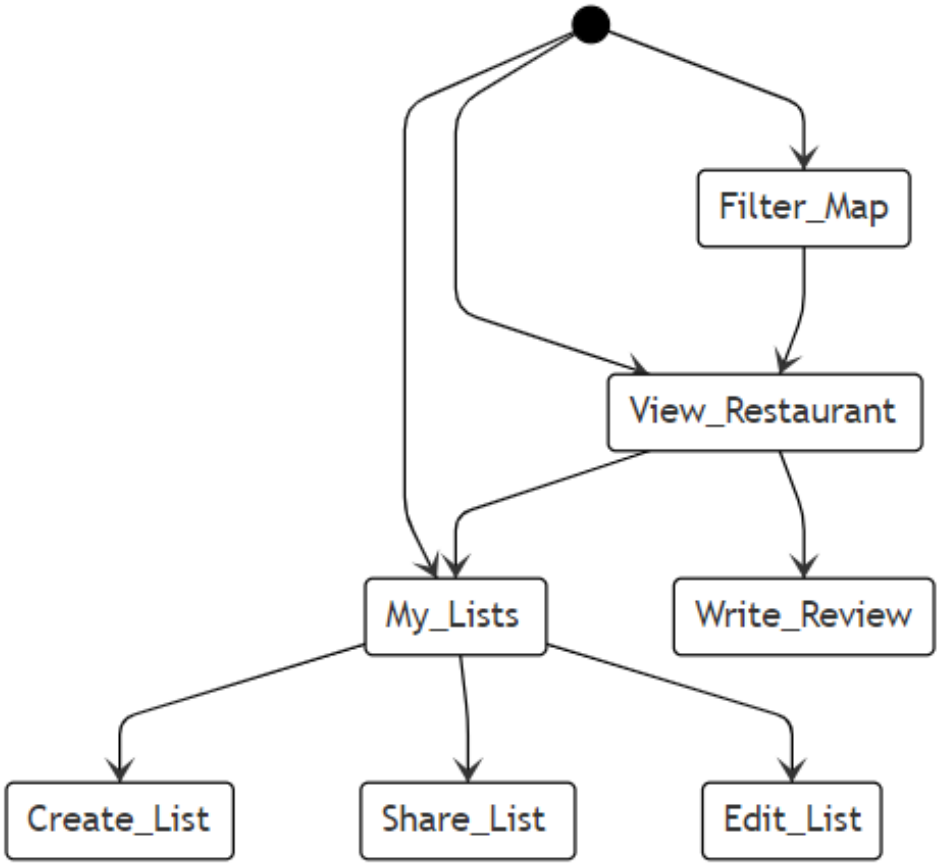
Section 4 includes supporting information and especially contact information about the team.

2. Overall Description

a. Product perspective:

Green Sprout is a restaurant-finder web-based application. The product is intended to serve as a comprehensive platform for finding, reviewing, and recommending restaurants within a specific geographic area, such as Karlsruhe. The platform allows users to register as reviewers, browse restaurants, and filter search results by cuisine type and diet preferences. They can also create lists with selected restaurants of their choice. The application aims to provide users with a rich visual interface and interactive map, helping users make informed dining decisions based on location, ratings, and reviews.

b. Use Case Diagram:



c. Technology Stack:

The technology stack of this project includes:

Scope	Technology
Frontend	JavaScript Framework (Vue)
Backend	Java - Springboot
Database	MariaDB

Project Management	Jira
IDE	IntelliJ/VS Code
Deployment	Github Actions
Testing	Divers

d. User characteristics:

Reviewers: Registered users who can write reviews, upload images, ratings to restaurants and create restaurant lists. They are primarily food enthusiasts who want to share their experiences.

General Users: Unregistered users or casual viewers who want to browse restaurants, view reviews, and explore the map without creating an account.

e. Requirement subsets:

Core Requirements: Features necessary for the minimum viable product (MVP) include the map, restaurant and user profiles, user registration, review submission, and filtering.

Additional Features: Future expansions could include the ability to create restaurant lists and add the ability to filter also for non-restaurant businesses (e.g., bars, shops).

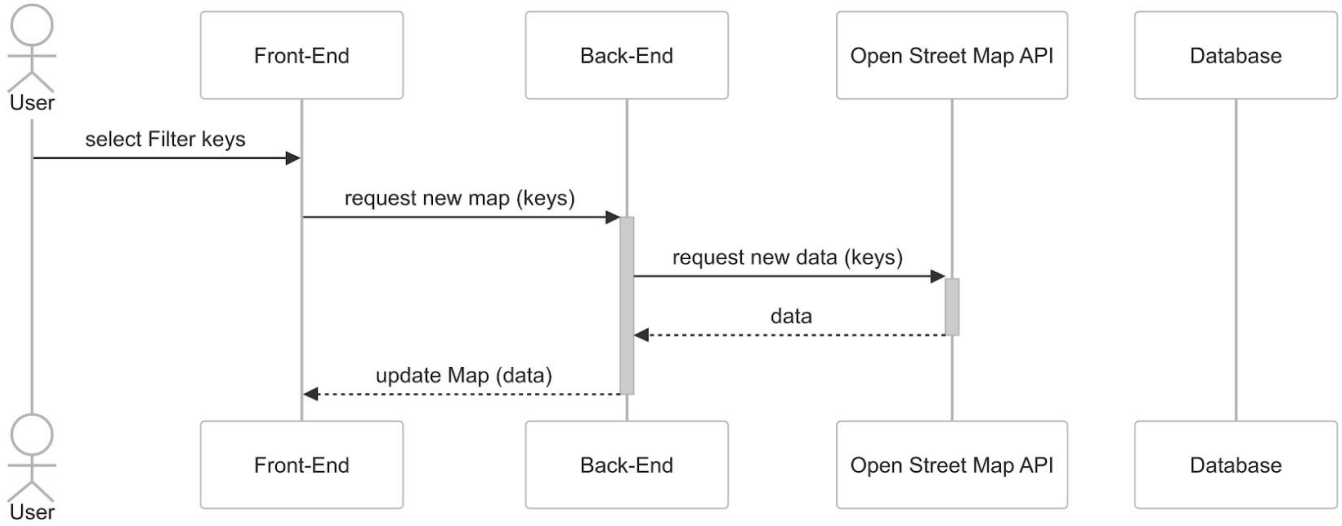
3. Specific Requirements

3.1 Functionality

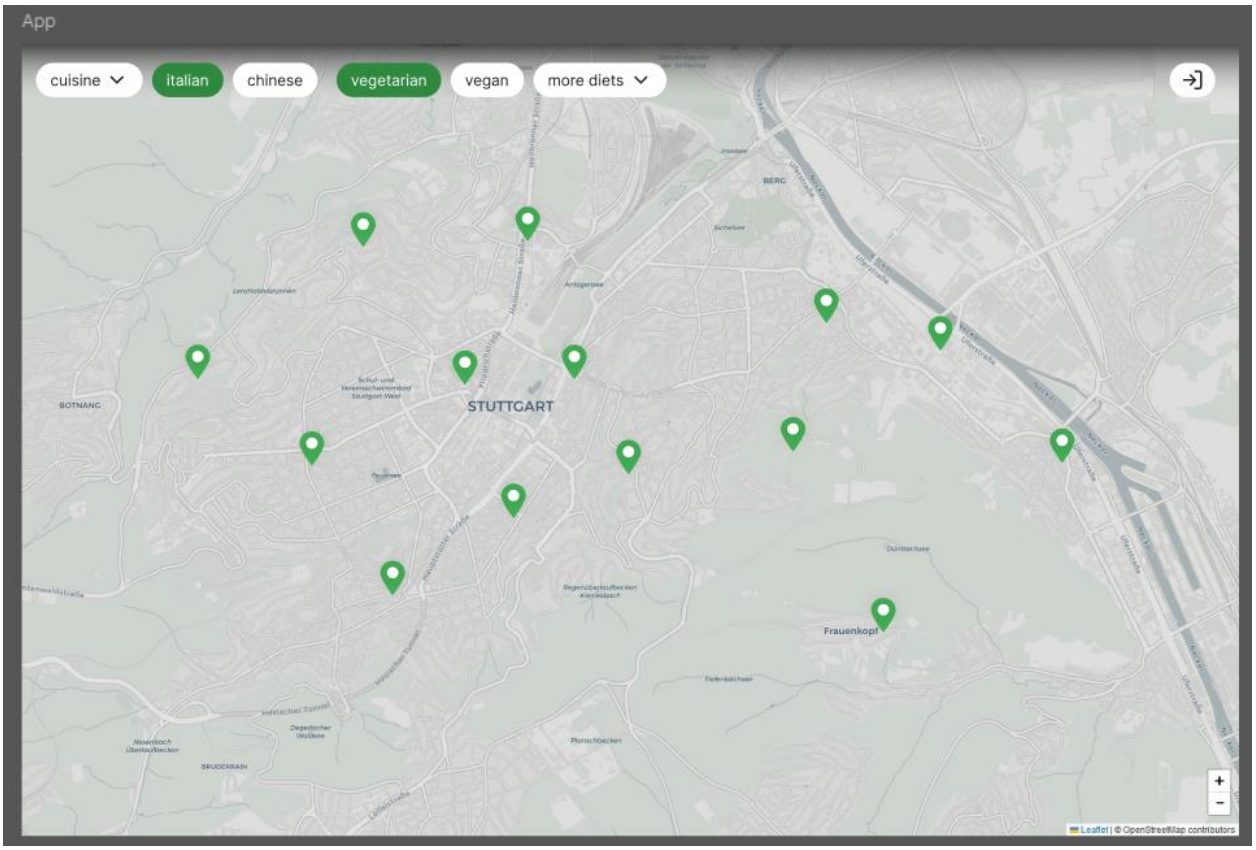
This section will explain the different use cases as seen in the Use Case diagram and their functionality:

1. **Filter map**
   This functionality gives the user the possibility to filter for specific keys like cuisines and diets.

   Sequence Diagram:



GUI Mockup:

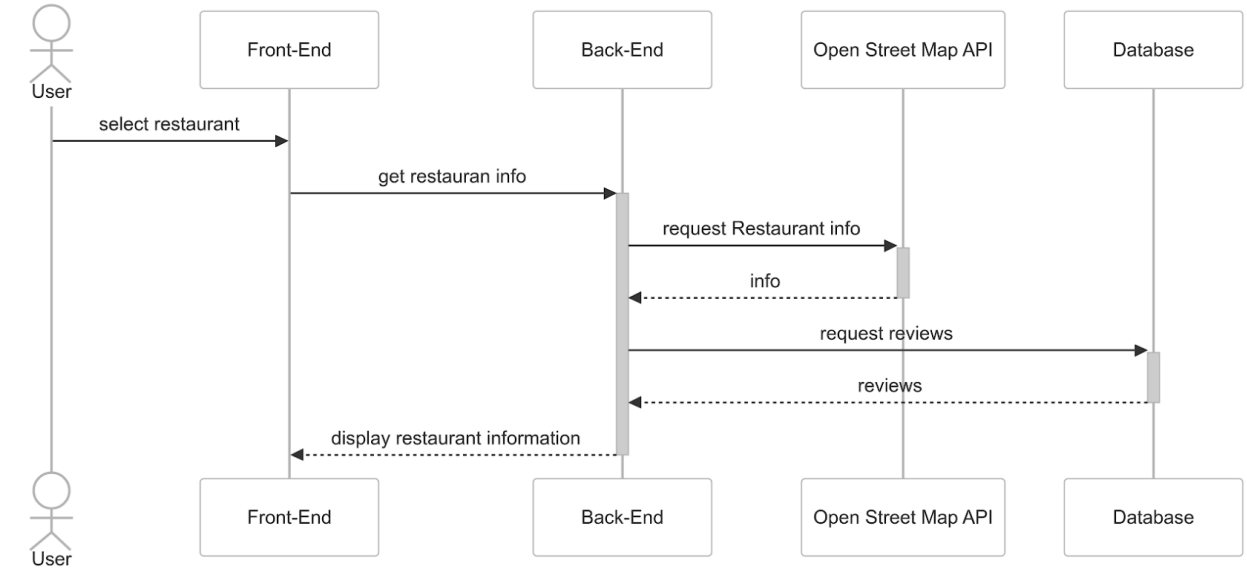


pre-conditions: The user opened the website and is in the initial map view and selected filters.

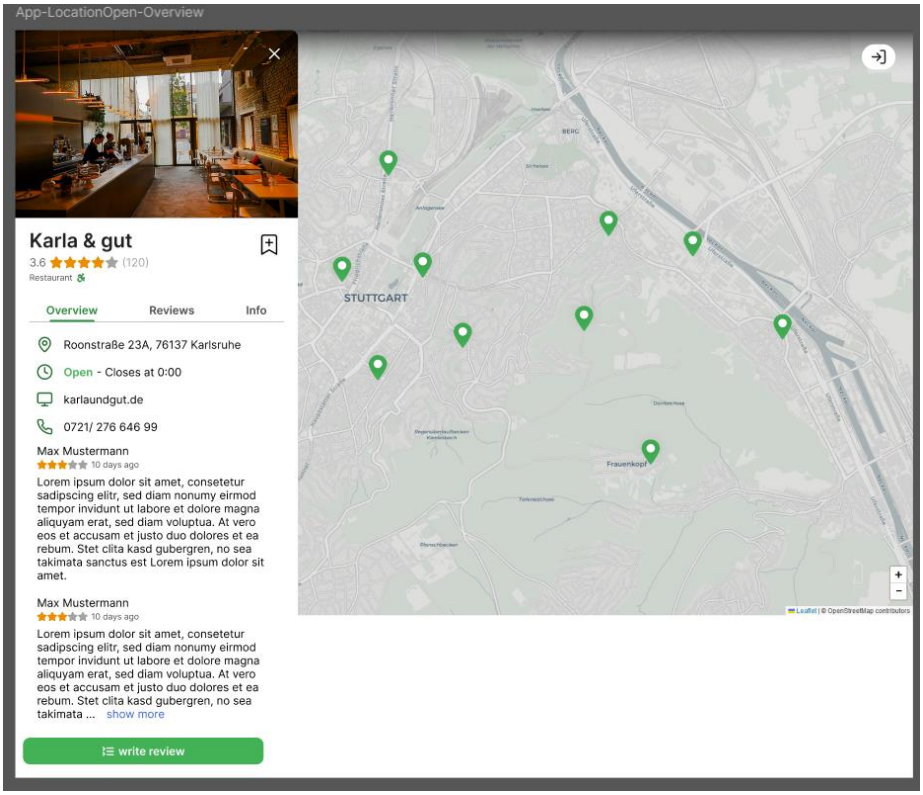
post-conditions: The map displays only the restaurants that match the selected filters.

2. **View restaurant**
   View restaurants shows the user information about the selected restaurant including name, cuisine, pictures, overall rating and existing reviews.

Sequence Diagram:



GUI Mockup:

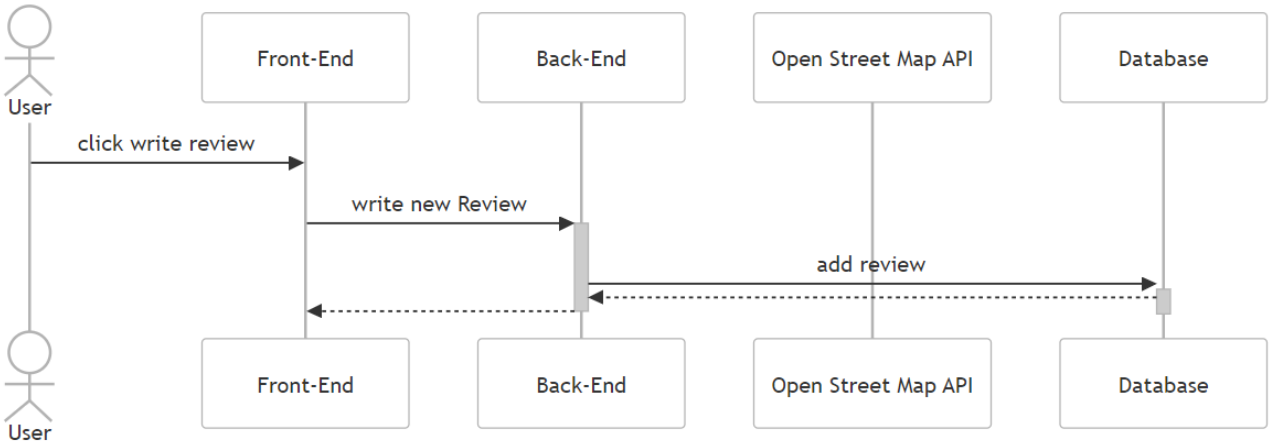


pre-conditions: Clicked on restaurant marker on the map.

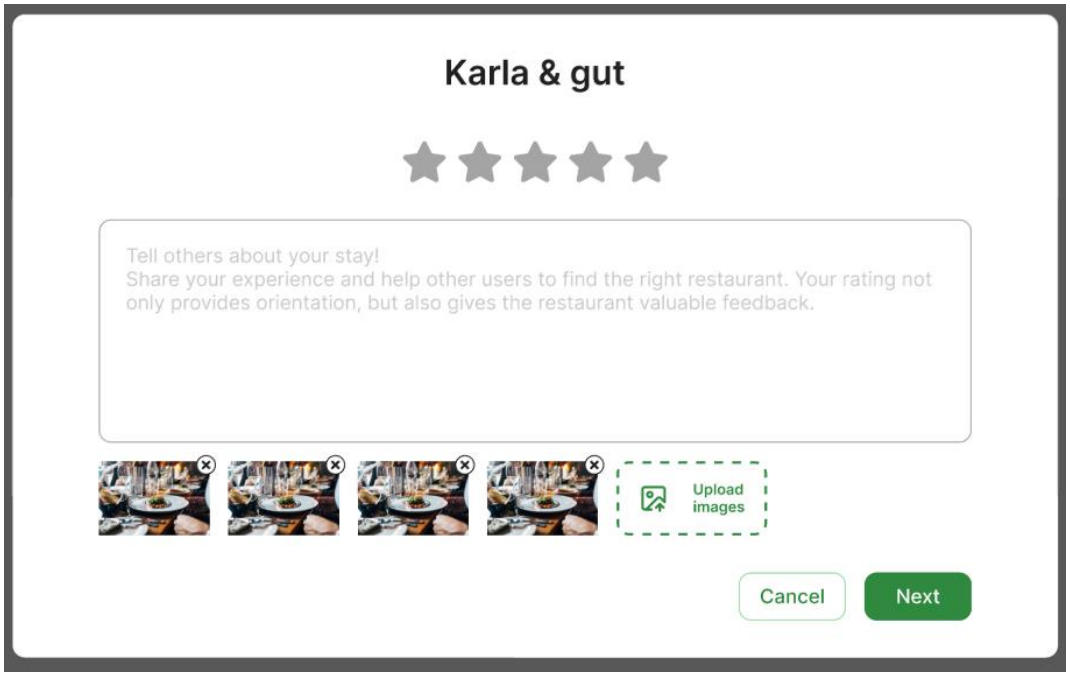
post-conditions: Side bar with restaurant information and reviews opens.

3. **Write review**
   A reviewer has the possibility to write a review for the currently selected restaurant. The review includes a rating and optionally pictures as well a review text.

Sequence Diagram:



GUI Mockup:



pre-conditions: The user is logged in and on the restaurant's profile page and clicked on “write review” button.

post-conditions: Pop-up window to write review opens.

4. **My lists (Soon)**
   With My list reviewers can find all of their lists in one place.

Sequence Diagram: -
GUI Mockup: -

pre-conditions: The user is logged in and has previously saved at least one restaurant or review to a list.

post-conditions: The user can view and manage all their saved lists in one place, with options to add, edit, or delete items from their lists.

5. **Create list (Soon)**
   With this functionality reviewers get the chance to save restaurants in a list. To remember their favorite restaurants or keep track of restaurants they want to visit.

Sequence Diagram: -
GUI Mockup: -

pre-conditions: The user is logged in and has access to the restaurant profiles.

post-conditions: The user can create a new list and add restaurants to it, with the option to name the list.

6. **Share list (Soon)**
   This functionality provides reviewers the option of sharing their list with other users.

   Sequence Diagram: -
   GUI Mockup: -

   pre-conditions: The user has created at least one list and is logged in.

   post-conditions: The user can share the list with other users via a link or other sharing options.

7. **Edit List (Soon)**
   Reviewers also need the possibility to remove restaurants from their list, change the name of the list or delete it if it's not used anymore.

   Sequence Diagram: -
   GUI Mockup: -

   pre-conditions: The user has an existing list and is logged in.

   post-conditions: The user can update the list by removing restaurants, changing the list name, or deleting the list entirely.

3.2 Usability

3.2.1 User Training and Learning Time

Normal Users (General Visitors and Unregistered Users): The application should be intuitive enough that a new user can browse restaurants, view details, and read reviews with minimal effort. No training should be required, and users should become proficient in basic tasks (e.g., navigating the map, searching restaurants) within a few minutes.

Power Users (Registered Reviewers): Reviewers who will frequently submit reviews, upload photos, and manage restaurant lists should become proficient in these more complex tasks after doing them once.

3.2.2 Task Efficiency

Restaurant Search and Filtering: Users should be able to filter restaurant searches by cuisine type or diet within 5 clicks or taps. The results should update in under 3 seconds on average.

Review Submission: Registered users must be able to submit a new review with a star rating and upload photos in under 3 minutes, assuming an average internet connection.

3.2.3 User Interface (UI) Standards

The UI should adhere to modern usability standards for web applications, such as providing a consistent layout across all pages, and easy-to-read fonts.

Interactive elements (buttons, forms, filters) should be clearly distinguishable with appropriate spacing and color contrast.

3.2.4 Error Handling and Feedback

Users must receive clear and concise feedback when an error occurs (e.g., invalid form inputs, failed review submission).

The system should provide confirmations for critical actions such as submitting reviews or creating new restaurant lists.

3.3 Reliability

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3.3.1 Availability

The system must be available 97% of the time.

Scheduled maintenance windows should be communicated to users in advance.

3.3.2 Fault Tolerance

The system must be capable of handling unexpected failures in the database, server, or network without causing a complete system shutdown.

3.3.3 Data Integrity

The system must ensure that user reviews, restaurant profiles, and other critical data are stored safely, even in the event of hardware failure, power outages, or software crashes.

Transaction management and database operations must follow ACID (Atomicity, Consistency, Isolation, Durability) principles to guarantee data integrity.

3.4 Performance

3.4.1 Response Time

The system must provide a response time of less than 3 seconds for all major user actions under normal conditions, including:

Searching for restaurants

Viewing restaurant profiles

Submitting reviews and ratings

In high load conditions, the response time should not exceed 5 seconds.

Actions involving media uploads (e.g., images of restaurants) should complete within 5 seconds for files under 5MB. For larger files, the system should notify users about expected upload time and provide feedback on progress.

3.4.2 Database Performance

Queries to the database (e.g., fetching restaurant details, reviews, or user profiles) must return results within 2 seconds under normal load and no more than 5 seconds under peak load.

Bulk operations, such as batch importing of restaurant data, should complete within 15 minutes.

3.5 Supportability

3.5.1 Coding Standards

The Green Sprout project will adhere to clean code principles and industry best practices, ensuring modular, maintainable, and scalable code.

All code will follow standard naming conventions, proper indentation, and include sufficient comments to enhance readability and ease future development.

Version control (Git) will be used to manage code changes, ensuring traceability and allowing for safe rollbacks when necessary.

3.5.2 Testing Strategy

A comprehensive testing strategy will be implemented, including automated unit tests.

All features will undergo testing across different desktop devices and browsers to guarantee compatibility and performance.

3.6 Design Constraints

Technology Stack: The application will be built using Vue.js for the frontend, Spring Boot with Java for the backend, and MariaDB as the database. These technologies define the framework and limit the design to what is supported by these tools.

Responsiveness: The user interface must be designed to work seamlessly across various desktop devices, adhering to responsive design principles.

Data Storage: The application will store user and restaurant data in a relational database (MariaDB), which constrains the design to a schema that ensures efficient querying and data integrity.

Security: All design elements must consider security measures like encrypted communication (HTTPS), authentication, and secure database access to protect user data and maintain privacy.

3.7 On-line User Documentation and Help System Requirements

The usage of the web application should be as intuitive as possible so it won't need any further documentation. If the user needs some help they should be able to contact the development team.

3.8 Purchased Components

We don't have any purchased components yet. If there will be purchased components in the future we will list them here.

3.9 Interfaces

The user interfaces to be implemented are:

Home Page – Displays a map with restaurant markers, search options, and featured restaurants.

Restaurant Profile Page – Shows detailed information about a restaurant, including images, reviews, ratings, and location.

User Profile Page – Displays user information, reviews they've written, favorite restaurants, and preferences.

Login Page – Allows users to log into the platform.

Register Page – Provides a registration form for new users to sign up.

Review Submission Page – Allows users to submit reviews and ratings for restaurants, including uploading images.

Create a List Page – Allows users to create a new list from a collection of chosen restaurants.

3.9.1 Hardware Interfaces

n/a

3.9.2 Software Interfaces

This application will be runnable on desktop browsers (Chrome, Edge, Safari, Firefox etc.).

3.9.3 Communications Interfaces

The server and browser will communicate using https protocol.

3.10 Licensing Requirements

n/a

3.11 Legal, Copyright, and Other Notices

We do not take responsibility for any incorrect data or errors in the application.

3.12 Applicable Standards

The development will follow the common clean code standards and naming conventions (see section 5.3.1 Coding standards).

4. Supporting Information

For any further information you can contact the Green Sprout Team or check our Green Sprout Blog. The Team Members are:

- Paula Kropfinger
- Valentin Wöhrle
- Jonas Schlösser
- Samuel Brekeller
- Safae Kartite