

Lab 2 – TasteBuddies Product Specification

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1. Introduction

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to provide a detailed technical reference for the development of *TasteBuddies*, a dining recommendation platform. This document defines the functional, non-functional, and design requirements necessary for developers to implement the system effectively. It serves as a formal agreement on the software's capabilities, constraints, and interactions, ensuring consistency in development and ensuring clear communication between stakeholders. This SRS adheres to the IEEE 830-1998 standard and is structured to enhance traceability, maintainability, and verifiability throughout the software development lifecycle. This document is also tailored specifically for developers, focusing on precise implementation details rather than general societal impact or business strategy.

1.2 Scope

The TasteBuddies platform is designed to provide personalized restaurant and dish recommendations based on user taste profiles, dietary restrictions, and group preferences. By analyzing user input and leveraging data-driven insights, the system aims to enhance the dining experience by reducing decision fatigue and improving meal satisfaction. The platform will support group dining coordination by accommodating multiple preferences, offer real-time updates on restaurant availability and special offers, and provide structured, reliable reviews tailored to individual tastes.

The system will not function as a general restaurant review platform, as all recommendations will be personalized rather than crowdsourced. Additionally, TasteBuddies will not provide direct food delivery services or manage restaurant reservations beyond redirecting users to external

reservation systems. By defining these boundaries, the SRS ensures a clear understanding of the system's capabilities, allowing for efficient and focused development.

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1.3 Definitions, Acronyms, and Abbreviations

Crowdsourced Data: User-generated data on restaurant wait times, dish availability, and quality, among others.

Curated Reviews: Reviews presented and weighted based on users with similar Taste Profiles.

Daily Dish Report: Provides live updates from TasteBuddies and restaurants such as new reviews, specials, and dishes.

Data clustering: Grouping diners in a group that is more similar to determine taste profiles and recommendations

Dining Filters: Ability to filter restaurants by location, cuisine, occasion, and how busy they are.

Generic reviews: The issue of unauthentic online reviews, which the app addresses by focusing on personalized recommendations.

Google API: An external tool integrated into the app that provides real-time data on how busy a restaurant is.

Group Dining Algorithm: Algorithm that combines multiple users profiles and provides reviews for restaurants and dishes that best match the group preferences.

Group Indecision: Conflicting opinions and preferences of a group lead to more difficult decision making which causes delays.

High financial risk: The risk of losing/wasting money based on a decision.

ODU: Old Dominion University.

Overwhelming choice: An excessive number of options to choose from which makes decisions difficult.

Recommendation Algorithm: Algorithm that provides users with relevant recommendations based on their matched TasteBuddies, taste profile, and interacted content.

Restaurants: Venue that provides a sit-down dining experience where primary revenue is prepared food. It must have a nice bathroom.

Safe space: Space where people are free to express and enjoy their interest without fear of being judged.

Social engagement: Promote users to interact with one another and be involved within the community.

Super TasteBuddies: Taste influencers or food experts that have specialized knowledge and can recommend specific cuisines or dishes.

Tailored Recommendations: Personalized recommendations based on a user's taste profile.

TasteBuddies: Users with highly similar taste profiles which lead to improved recommendations based on aligned tastes.

Taste Matching Algorithm: A key Algorithm of the app that pairs users based on similar taste profiles.

Taste Profiles: Personalized profiles created by each user based on their taste preferences, such as preferences for spicy, sweet, salty, etc.

1.4 References

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1.5 Overview

The remaining sections of this Software Requirements Specification (SRS) document provide a detailed breakdown of the *TasteBuddies* system, including its overall description, specific functional and non-functional requirements, and design constraints. This structured approach ensures clarity for developers by outlining system capabilities, interactions, and implementation considerations.

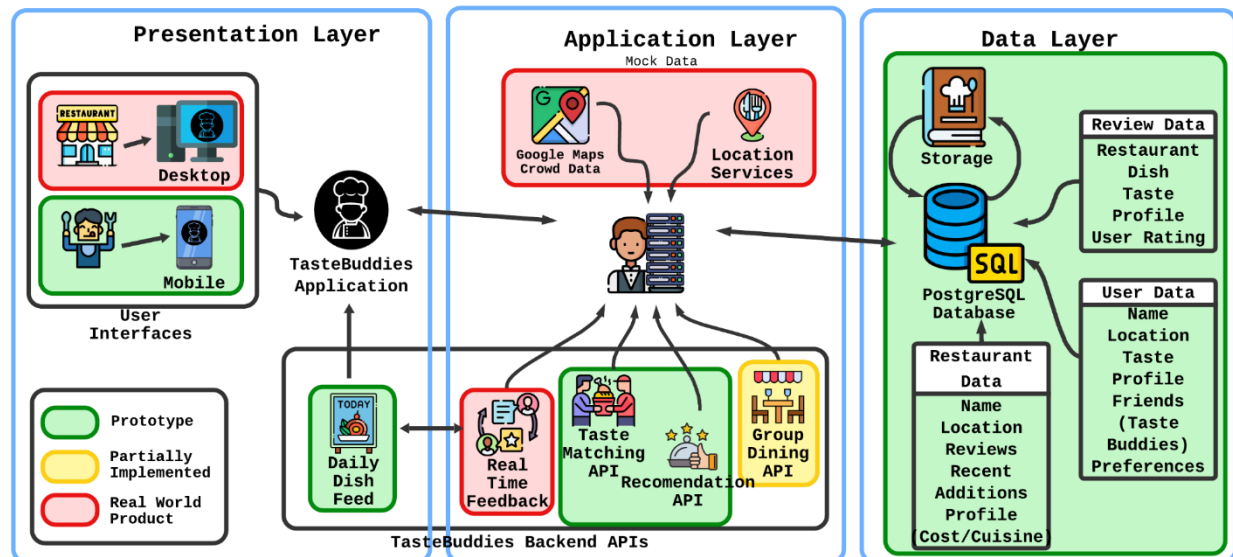
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2. General Description

2.1 Product Perspective

Third party software will be utilized to provide some functionalities for the prototype, such as Google API which will provide real-time insights into restaurant activity. Digital Ocean's virtual machine will host the database of the application. The architecture of the TasteBuddies prototype will have three tiers, which include a presentation layer, an application layer, and a data layer. This design is shown in Figure 1.

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Figure 1*TasteBuddies Prototype Major Functional Component Diagram*

Major components are displayed in figure 1 that entails the presentation layer, application layer and data layer. The presentation layer consists of the user interface, social features and dining filters. The user interface contains a smartphone application and a web application. Social features include TasteBuddies, SuperTasteBuddies and DailyDish feed, which contains new dishes and curated reviews. Dining filters in the major components use the location, food dish, and occasion in the presentation layer. The application layer includes a web server, user profile manager, taste matching algorithm, recommendation algorithm, group dining algorithm and location services.

The user profile manager contains user registration and login preferences. The group dining algorithm allows the pairing of other users for recommendations. The data layer offers a PostgreSQL database that provides user data, review data and restaurant data. Furthermore, the data layer also contains a storage and CDN that provides images, reviews and social posts. All the layers in the major component diagram help offer tailored recommendations for all users and

interactive experiences that keep users engaged and informed about the best dining options available.

2.2 Product Functions

Most of the features of the real-world product will not be fully implemented in the prototype. Due to assessing the capabilities of each feature, most of them had to be eliminated. Features that were eliminated include; login/authentication, community updates, dish validation, notification features, engagement features, data analytics, and trend reports. Other user mobile app features that were also eliminated were Follow TasteBuddy, Follow Restaurant, add kudos, post restaurant update, post dish update, notifications, rewards, adaptive taste profile personalization, restaurant filtering, dish filtering, rewards, badges and challenges. Partially implemented features were access permissions and preferences, social engagement, group restaurant matching, reviews, and Super TasteBuddies.

Functionalities that were fully implemented were account creation, taste profile, daily dish feed, dish recommendations, taste profile builder, taste matching, data privacy and security, and data backups. More components that were fully implemented include; TasteBuddies, add/find buddies, and taste profile. All of these features can be seen below in Table 1.

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Table 1*TasteBuddies Feature Description and Prototype Implementation*

Category		Features	RWP	Prototype	Additional Notes
Account Management		Account Creation	👑	👑	
		Login / Authentication	👑	Eliminated	
		Access Permissions and Preferences	👑	Partially Implemented	Access Permissions required for database
		Taste Profile	👑	👑	
Mobile App Features		Social Engagement	👑	Partially Implemented	Find friends only for group matching
		Daily Dish Feed	👑	👑	
		Group Restaurant Matching	👑	Partially Implemented	Implementation is time dependent
		Dish Recommendations	👑	👑	
		Taste Profile Builder	👑	👑	
		Reviews	👑	Partially implemented	Mock data for compatibility matching
		Community Updates	👑	Eliminated	
		Dish Validation	👑	Eliminated	
		Taste Matching	👑	👑	
		Notification Features	👑	Eliminated	
	Engagement Features	👑	Eliminated		
DataBase Management		Data Analytics	👑	Eliminated	
		Data Privacy and Security	👑	👑	
		Trend Reports	👑	Eliminated	
		Data Backups	👑	👑	
Category		Features	RWP	Prototype	Additional Notes
Expanded User Mobile App Features	Social Engagement	TasteBuddies	👑	👑	
		Super <u>TasteBuddies</u>	👑	Partially implemented	Hard coded
		Add/Find Buddies	👑	👑	
		Follow <u>TasteBuddy</u>	👑	Eliminated	
		Follow Restaurant	👑	Eliminated	
		Add Kudos	👑	Eliminated	
	Live Interactive Updates	Daily Dish feed	👑	👑	
		Add reviews	👑	Partially implemented	Mock data provided
		Post restaurant update	👑	Eliminated	
		Post dish update	👑	Eliminated	
		Notifications	👑	Eliminated	
	Recommendation Engine	Taste Profile	👑	👑	
		Read Reviews	👑	Partially Implemented	
		Taste Matching	👑	👑	
		Dish Recommendation	👑	👑	
		Group Restaurant Matching	👑	Partially Implemented	Implementation time dependent
		Rewards	👑	Eliminated	
		Adaptive Taste Profile personalization	👑	Eliminated	Need active data over time
	Search	Restaurant filtering	👑	Eliminated	
		Dish filtering	👑	Eliminated	
	Engagement features	Rewards	👑	Eliminated	
		Badges	👑	Eliminated	
		Challenges	👑	Eliminated	

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2.3 User Characteristics

The TasteBuddies web application supports three main user roles: general users called TasteBuddies, restaurant representatives, and administrators. TasteBuddies are everyday individuals who seek personalized food and restaurant recommendations. With basic-to-intermediate technical skills, they use the platform via web or mobile interfaces to create accounts, input taste preferences and dietary restrictions, explore tailored recommendations, and connect with others who have similar tastes. They also rate meals and provide feedback based on their experiences. Constraints for this group may include time-sensitive decisions, mobile usage on the go, and diverse dietary needs that must be accurately captured.

Restaurant representatives use the platform to manage their restaurant profiles and engage with potential customers. These users typically have moderate to advanced familiarity with web tools and dashboards. Their tasks include account creation and verification, updating menus, hours, and contact information, and responding to customer reviews. They may also promote loyalty rewards or special offers. Constraints for this group may involve operational time limitations, the need for up-to-date content management, and possible integration with existing restaurant systems such as booking tools.

Administrators are internal team members responsible for maintaining platform functionality, user security, and data integrity. They have advanced technical knowledge and handle tasks like resolving user issues, verifying accounts, keeping content current, and conducting data analysis on user behavior trends. Administrators must ensure compliance with privacy standards while monitoring system performance and ensuring up time. These user roles and their varying characteristics directly influence how TasteBuddies is designed, ensuring usability, scalability, and accessibility across all audiences.

2.4 Constraints

There are legal and technical constraints within the website application, due to data privacy regulations and unexpected app performance issues. The development and deployment of the TasteBuddies web application are subject to several technical and legal constraints. Legally, the application must comply with data privacy regulations such as the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA), particularly when handling user-generated content, personal preferences, dietary information, and account data. This requires the implementation of robust user consent mechanisms, data anonymization where appropriate, and secure storage of sensitive information.

Technically, the application may face performance limitations related to scalability, especially when processing large volumes of user preferences, reviews, and group coordination features in real time. For instance, unexpected app performance issues may include lag or delays during peak usage hours, slower response times when calculating personalized recommendations, or failures in syncing data across devices. These challenges necessitate the use of efficient database management systems, load balancing techniques, and performance testing throughout development.

Also, the system must be designed with cross-platform compatibility in mind, as users will access TasteBuddies through various devices and browsers, some of which may have limited support for newer web technologies. While there are no direct environmental constraints, accessibility standards such as Web Content Accessibility Guidelines (WCAG) must be adhered to, ensuring inclusive design for users with disabilities, which may place additional requirements on interface design and system responsiveness.

2.5 Assumptions and Dependencies

There are dependencies and third-party services such as the Google Maps API for real-time location and crowd data, as well as crowdsourced inputs for up-to-date restaurant and dish information. The application also relies on a SQLite database, and Flask to support frontend and backend services.