Software Requirements Specification

for

Online Food Delivery System

Version 1.0 approved

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Table of Contents

Revision History

Version	Date	Author	Description
1.0	April 14, 2025	Karan Goel	Initial version approved

1 Introduction

1.1 Purpose

This **Software Requirements Specification (SRS)** outlines the complete set of requirements for the *Online Food Delivery System*. It serves as the foundational reference for all *system design and development activities*, *verification and validation processes*, *project management and scheduling*, and *stakeholder alignment and approval*.

1.2 Intended Audience

This document is intended for multiple stakeholders:

- **Development Team**: for implementation reference and system behavior understanding.
- **Project Managers**: for planning, resource allocation, and timeline tracking.
- **Quality Assurance Engineers**: for deriving test scenarios and verification strategies.
- **Business Stakeholders and Clients**: for validating and approving the documented requirements.

Each audience segment may refer to different sections of the document based on their role-specific needs.

1.3 Document Conventions

To ensure clarity and consistency throughout this document:

- **Bold text** denotes key terms or interface components.
- *Italic text* highlights essential concepts or emphasis.
- Requirements are labeled systematically as follows:
  - **FRx.x**: Functional Requirements
  - **NFRx.x**: Non-Functional Requirements

This convention supports straightforward traceability during the development lifecycle.

1.4 Scope

The **Online Food Delivery System** is a fully integrated digital platform designed to seamlessly connect *customers*, *restaurants*, and *delivery personnel*. Its main subsystems and features include:

- *User Management*: Secure onboarding and authentication of three distinct roles—customers, restaurants, and delivery agents. Key features include **JWT-based session management**, **profile verification**, and **background checks**.
- *Menu Management*: Dynamic menu display with **real-time availability** (latency $\leq$ 500ms), supporting **dietary filters** (e.g., vegetarian, gluten-free) and **promotional content administration**.
- *Order Processing*: Comprehensive order lifecycle management, from **cart creation** to **delivery confirmation**, including **GPS-enabled tracking** (±50m precision) and enforced **status transition rules**.

- *Payment Services*: Secure transaction processing via **PCI-DSS compliant gateways**, supporting **credit/debit cards**, **digital wallets**, and **PayID/BPAY (Australia)**, with automated **receipt generation** and **reconciliation**.
- *Notification System*: Multi-channel alerts through **SMS**, **email**, and **in-app push notifications**, featuring configurable templates and latency $\leq$ 5s for time-sensitive updates.
- *Delivery Optimization*: Smart dispatch algorithms leveraging **real-time traffic**, **vehicle suitability**, and **ETA estimation** (±3 minutes) to improve delivery efficiency.
- *Feedback Mechanisms*: A dual-rating system enabling **1–5 star reviews** and **text feedback** for restaurants and delivery agents, enriched with **sentiment analysis** to support quality enhancements.

1.5 Product Overview

1.5.1 Product Perspective and Functions

The **Online Food Delivery System** is a standalone, full-stack solution designed for web and mobile platforms. It comprises four primary components:

The *Customer Interface* supports users in browsing restaurant menus, placing orders, making payments, and tracking deliveries in real time. The *Restaurant Dashboard* enables eateries to manage menus, handle incoming orders, adjust availability, and monitor performance analytics. Delivery agents interact with the system through a dedicated *Mobile Application*, which provides real-time updates on assigned deliveries, optimized navigation routes, and delivery confirmation tools. The *Admin Portal* offers centralized control, allowing administrators to oversee the platform's operational aspects, including user management, issue resolution, and system analytics.

Together, these modules form a cohesive ecosystem that facilitates end-to-end food ordering and delivery with efficiency and reliability.

1.5.2 User Characteristics

This system caters to a broad spectrum of users, each with distinct roles and technical proficiencies. **Customers**, typically aged 16 and above, may vary widely in digital experience, so the interface is designed for ease of use across all levels. **Restaurant staff** are expected to possess basic digital literacy sufficient for dashboard operations. **Delivery personnel** are assumed to be comfortable with smartphone-based apps and GPS navigation. Meanwhile, **System Administrators** are technically proficient users capable of managing backend functions, configurations, and data analysis.

1.5.3 Product Limitations

The platform is subject to several inherent constraints. It relies on third-party payment gateways, which may impact processing times and system uptime. Service availability is geographically limited to operational zones approved for delivery. Furthermore, real-time tracking is dependent on GPS accuracy and mobile network stability, which may vary by location and device.

2 Specific Requirements

2.1 Domain Requirements

The system shall adhere to the following regulatory and operational constraints:

REG-001	Compliance with local food safety regulations (FSANZ standards for Australia)
REG-002	Payment processing certification (PCI DSS v3.2.1 Level 1 compliance) with quarterly security audits
REG-003	Data protection compliance (GDPR for EU users, CCPA for California residents) with regional data sovereignty enforcement
REG-004	Accessibility standards (WCAG 2.1 AA) for all customer-facing interfaces

2.2 Functional Requirements

2.2.1 User Management

FR1.1	User registration shall support: • Email verification via SMTP with 6-digit OTP (valid for 10 minutes) • Mobile verification via SMS (Twilio API integration) • Social login (Google, Facebook OAuth 2.0)
FR1.2	Role-based access control shall implement: • Hierarchical permissions (Customer < Restaurant Staff < Admin) • JWT tokens with 30-minute expiry • Session logging for audit trails

2.2.2 Menu Management

FR2.1	Menu updates shall: • Propagate within 1ms across CDN nodes • Maintain version history (30-day retention) • Support bulk CSV imports ($\leq$5MB files)
FR2.2	Dietary tags shall: • Include 12 standard classifications (Vegan, Halal, etc.) • Display allergen warnings (peanuts, gluten, etc.) • Support custom restaurant-defined tags

2.2.3 Order Processing

FR3.1	Order status updates shall: • Push via WebSocket connections • Include geolocation coordinates (±50m accuracy) • Maintain 60-second refresh intervals
FR3.2	Order modifications shall: • Be permitted until "PREPARING" status • Require restaurant confirmation for significant changes • Maintain change history log

2.2.4 Payment Services

FR4.1	Transaction processing shall: • Utilize PCI-DSS compliant gateways • Support credit/debit cards, digital wallets, and PayID/BPAY (Australia) • Include automated receipt generation and reconciliation

2.2.5 Notification System

FR5.1	Notifications shall: • Be delivered via SMS, email, and in-app push • Allow template-based configuration per event type • Ensure latency $\leq$ 5 seconds for critical updates

2.2.6 Delivery Optimization

FR6.1	Dispatch optimization shall: • Leverage real-time traffic data and vehicle suitability • Estimate delivery time with ±3 minute accuracy • Auto-assign riders based on proximity and load

2.2.7 Feedback Mechanisms

FR7.1	Feedback system shall: • Support 1–5 star ratings for restaurants and delivery agents • Accept optional text comments for context • Perform sentiment analysis for quality improvement insights

2.3 Non-functional Requirements

2.3.1 Performance Characteristics

Requirement	Target Threshold	Validation Method
NFR1.1 – Peak Concurrent Users	100,000 users	Simulated load testing via Apache JMeter (1:10 write:read ratio)
NFR1.2 – API Response Time (p95)	$\leq$ 500 ms	Continuous monitoring using New Relic (5-min polling interval)
NFR1.3 – Order Processing Latency	$\leq$ 2 seconds (end-to-end)	Distributed tracing with Jaeger instrumentation

2.3.2 Reliability Standards

SLA-001	Maintain 99.99% monthly uptime, excluding pre-announced maintenance (max 4 hours/month)
SLA-002	Disaster recovery capabilities: RTO $\leq$ 60 minutes, RPO $\leq$ 5 minutes
SLA-003	Enable zero-downtime deployments for critical-path microservices

2.4 Technical Constraints

TECH-001	All services must be containerized using Docker and orchestrated via Kubernetes (with Helm charts)
TECH-002	Infrastructure must be provisioned using Terraform with support for AWS and GCP environments
TECH-003	Full-stack observability with Prometheus (metrics), Grafana (dashboards), and ELK (logging pipeline)

2.5 Integration Requirements

Component	Interface Protocol	Integration Requirements
Payment Gateway	REST API	PCI-DSS compliant, idempotent operations, OAuth2 authentication
Mapping Service	gRPC	High-throughput real-time traffic feed, secure channel (mTLS)
SMS Gateway	HTTP/2	Guaranteed 99.5% delivery success, retry logic, regional failover support

3 Appendices

3.1 Assumptions and Dependencies

The development and deployment of the Online Food Delivery System are based on the following assumptions and dependencies:

- Users possess access to stable internet connections on compatible devices (smartphones or web browsers).
- Third-party services such as payment gateways, mapping APIs, and SMS/email providers will maintain agreed-upon SLAs and performance levels.
- Restaurants and delivery agents will regularly update availability and status to ensure accurate real-time information.
- The system will be deployed in a cloud environment (e.g., AWS or GCP) with appropriate scalability and redundancy configurations.
- Regulatory compliance (such as GDPR, PCI-DSS) is contingent on up-to-date third-party certifications and implementation of recommended practices.
- Users will have basic digital literacy sufficient to operate the platform interfaces.

3.2 Acronyms and Abbreviations

Term	Definition
API	Application Programming Interface
CDN	Content Delivery Network
GDPR	General Data Protection Regulation
GPS	Global Positioning System
JWT	JSON Web Token
mTLS	Mutual Transport Layer Security
PCI-DSS	Payment Card Industry Data Security Standard
RPO	Recovery Point Objective
RTO	Recovery Time Objective
SLA	Service Level Agreement
SMS	Short Message Service
BPAY	Bill Payment System in Australia
PayID	Instant Payment Identifier used in Australia
FSANZ	Food Standards Australia New Zealand
WCAG	Web Content Accessibility Guidelines