

Vendomatic Project

System-Wide Requirements Specification

Version 1.0

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Revision History

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1.1	<ul style="list-style-type: none">Convert all requirements to sentence formatNumber bullets are provided for each requirement.Add quantitative specifications to each header/sub-header	Ezgi Özkan Tuğçe Sözer	2023-04-09

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1. Introduction

This document presents the System-Wide Requirements Specification for the Vendomatic project, which aims to provide a comprehensive software solution for vending machine owners, operators, and customers to manage, monitor, and discover vending machines efficiently.

2. System-Wide Functional Requirements

2.1. Authentication and Authorization

1. Secure user authentication and role-based access control for different user types shall be provided (vending machine owners, operators, customers).
2. Owners shall be registered during the setup phase, and a single Vendomatic Software on the web platform shall have a single owner.
3. Social logins shall be supported only by the Vendomatic Mobile Application.
4. Username shall be the email of the user.
5. Passwords shall be at least 8 characters containing at least one letter and one number.
6. All inputs shall be both client-side and server-side validated.
7. Access to the system shall use OAuth 2.0, OIDC supported JWT token and Firebase as IdAAS to authenticate all users.

2.2. Data Storage and Management

8. Storage and retrieval of data related to vending machines, inventory, sales, and users will be secured via Apigee.

2.3. Alerts and Notifications

9. Notifications to inform users about inventory levels, maintenance issues, and system updates will be timely and relevant.

2.4. Reporting and Visualization

10. Customizable reports will be generated and sales analytics and inventory management will be visualized.

2.5. Logging and Auditing

11. The user activities and system events will be trackable via log files for security and troubleshooting purposes.
12. No password will be kept by the system, hence passwords won't be tracked.

2.6. Integration and Compatibility

13. Integration with various vending machine hardware, payment processing systems, and other third-party services will be seamless.

3. System Qualities

3.1. Usability

14. User interface for easy navigation will be intuitive and task completion will be efficient.
15. Design across platforms will be consistent (web and mobile).
16. For multiple languages and regions, localization support will be provided.
17. The app should provide clear error messages that help users to understand what went wrong and how to fix the issue.

18. The mobile app shall allow users to provide feedback on their experience from Google Play Store and App Store, to help improve the app over time.

3.2. Reliability

19. The system shall be available 7/24.
20. The system shall have a 98% transaction accuracy rate.
21. Mean time to repair shall be 1 hour.

3.3. Performance

22. The system shall load within 2 seconds and complete a transaction within max 2 seconds.
23. Cloud-based infrastructure provides on-demand scalability and can be more cost-effective than maintaining on-premise hardware.
24. The system shall allow 100 concurrent users for the first release.

3.4. Supportability

25. System updates and maintenance will be easy.
26. The system shall be compatible with IOS and Android.

4. System Interfaces

4.1. User Interfaces

4.1.1. Look & Feel

27. Design will be professional and clean.
28. Colors and styles will be brand-consistent.
29. Elements for an engaging user experience will be interactive and responsive.

4.1.2. Layout and Navigation Requirements

30. Organization of main functions and features will be clear.
31. Structure for easy access to sub-functions will be hierarchical.
32. Navigation patterns will be consistent and predictable.

4.1.3. Consistency

33. Design elements across the system will be uniform.
34. Terminology and labeling will be consistent.
35. Controls and interactions will be standardized.

4.1.4. User Personalization & Customization Requirements

36. User profile settings for personal preferences will be provided.
37. Views and data displays will be customizable.

4.2. Interfaces to External Systems or Devices

4.2.1. Software Interfaces

38. Integration with payment processing systems shall be provided.
39. Compatibility with various vending machine hardware and software shall be provided.

4.2.2. Hardware Interfaces

- 40. Various vending machine types and configurations shall be supported.
- 41. Communication with vending machine sensors and controllers shall be provided.

4.2.3. Communications Interfaces

- 42. Data transfer between the system and vending machines shall be secure and reliable.
- 43. Various communication protocols and standards shall be supported.

5. Business Rules

5.1 Inventory Management Rules

5.1.1. Low Stock Alert (IMR-001)

- 44. If the stock level of a product in the vending machine falls below the predefined threshold, a low stock alert to the vending machine owner/operator will be sent by the system.

5.1.2. Reorder Suggestion (IMR-002)

- 45. When the stock level of a product reaches the low stock threshold, the system will suggest a reorder quantity based on historical sales data and current trends.

5.2. Pricing Rules

5.2.1. Bulk Discount (PR-001)

- 46. If a vending machine owner/operator configures a bulk discount for a specific product, customers who purchase a pre-defined quantity of that product will receive a percentage discount on their total purchase of that product.

5.2.2. Time-Based Discount (PR-002)

- 47. If a vending machine owner/operator configures a time-based discount for a specific product, customers who purchase the product within the specified time frame will receive a percentage discount on the price of the product.

5.3. Customer Ratings and Reviews Rules

5.3.1. Rating Submission Restriction (CRR-001)

- 48. Customers can only submit ratings and reviews for vending machines they have used within the past 30 days.

5.3.2. Review Moderation (CRR-002)

- 49. All submitted reviews are subject to moderation by the system administrators before being published on the platform. Reviews that violate content guidelines will not be published.

5.4. Maintenance Rules

5.4.1. Preventive Maintenance Schedule (MR-001)

- 50. The system calculates a preventive maintenance schedule for each vending machine based on the machine's usage and historical maintenance data.

5.4.2. Maintenance Alert (MR-002)

- 51. If the system detects an issue with the vending machine or if a scheduled preventive maintenance is due, the system sends a maintenance alert to the vending machine owner/operator.

6. System Constraints

- 52. .Net and Flutter will be used.
- 53. Firebase which is a cloud-based platform developed by Google that provides a real-time database.
- 54. Support for major web browsers and mobile operating systems will be provided.
- 55. Compliance with industry standards and best practices for security and data privacy will be provided.

7. System Compliance

7.1. Licensing Requirements

- 56. Software licenses and user agreements will be enforced.
- 57. Intellectual property and trade secrets will be protected.

7.2. Legal, Copyright, and Other Notices

- 58. Compliance with applicable copyright, trademark, and patent laws will be provided.
- 59. Necessary legal disclaimers and warranties will be included.

7.3. Applicable Standards

- 60. Industry standards for usability, interoperability, and accessibility will be adhered to.
- 61. Compliance with data protection and privacy regulations will be provided.
- 62. The location is in WGS84 datum EPSG 3857 format compliant with the Google Map API.

8. System Documentation

8.1. User Documentation

The analyst will provide comprehensive user documentation, including a user guide for both the Vendomatic mobile application and web platform. This documentation will cover all features and functionalities of the system and will be available in digital format. The user guide will be written in a clear and concise manner, with step-by-step instructions and visual aids such as screenshots and diagrams to facilitate user understanding.

8.3. Release Notes and Changelog

Release notes and a changelog will be provided by the Project Manager with each new version of the Vendomatic system. These documents will detail new features, enhancements, bug fixes, and any known issues, allowing users to stay informed about updates and changes to the system.

8.4. Developer Documentation

Developer documentation will be provided for the Vendomatic system by developers, including technical details about the architecture, APIs, and coding standards. This documentation will be useful for developers who need to maintain or extend the system in the future.