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PassDrop: Your Ride, Your Delivery

Software Requirement Engineering

Sec: **A**

Project submitted

By

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Software Requirements Specification

for

PassDrop: Your Ride, Your Delivery

Version 1.0 approved

Prepared by

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1. Purpose

The extensive Software Requirements Specification (SRS) for PassDrop: Your Ride, Your Delivery, with a 1.0 initial release, is served by this paper. As noted in this document, PassDrop might get more improvements and possibly get a new name. The development and possibly get a new name. The development team behind PassDrop relies heavily on the SRS as a point of reference. It also helps the project team understand the program's intended functions and requirements, allowing the development of optimum software

1.2. Document Conventions

This document's content was written using Microsoft Word and Times New Roman with a fixed font size of 12 points and a 1-line spacing. The text is simple, yet specific formatting guidelines have been used to indicate specific identifications. Notably, bold font is used for the document's headlines, while italics are reserved for displaying the hardware and software requirements necessary to run the PassDrop. Additionally, the italic typeface is used only to identify those who will be impacted by the program.

1.3. Intended Audience and Reading Suggestions

Project managers, subject matter experts, developers and requirements engineer are among the individuals for whom this Software Requirements Specification (SRS) document is designed. The PassDrop software has a number of target markets. The major objective of this text to give reader a complete understanding of the system that is being developed. To better comprehend the context and scope of the software's requirements, it is strongly encouraged that reader get familiar with the PassDrop prior to reading the paper

1.4. Product Scope

By seamlessly integrating customers, sellers, passengers, and digital lockers, the program "PassDrop" is an innovative solution that aims to transform package delivery procedures. The main goal of PassDrop is to maximize package delivery through effective route usage, providing consumers with ease and dependability. PassDrop supports company objectives of improving customer experiences, expanding service offerings, and bringing cutting-edge solutions that streamline activities and improve connectivity by providing real-time tracking, secure communication, and financial incentives for passengers.

1.5. References

Use Case Documents:

- Title: PassDrop Use Case Documents
- Author: PassDrop Development Team
- Version: 1.0
- Date: 26th August 2023

- Source/Location: On making

.

2. Overall Description

2.1. Product Perspective

This product we are starting focuses on developing a platform that will enable customers to facilitate goods deliveries to their desired locations. The innovative, stand-alone software system referred to as “PassDrop” aims to fundamentally alter the way goods are carried. It doesn’t replace any existing systems or add to an already existing product range.

Context & Origin

The concept behind PassDrop stems from the growing demand for effective and adaptable product delivery strategies. Traditional delivery methods frequently experience time and resource constraints, which causes deliveries to be delayed or fall short of expectations. By utilizing the untapped potential of passenger's itineraries and turning their travels into a means of product delivery along the route, our program strives to close this gap.

Relation to Larger System

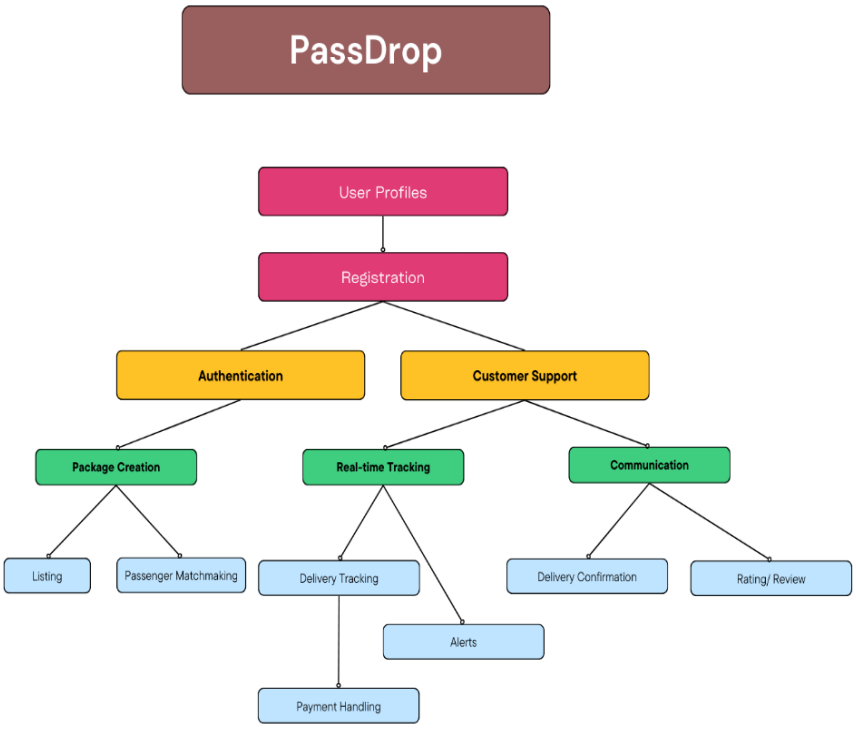
Despite being a stand-alone offering, PassDrop is also a part of a bigger ecosystem that includes passenger transportation and product delivery. PassDrop acts as the bridge connecting travelers with the beneficiaries of their intended products in this wider chain. It's vital to remember that PassDrop may interface with current transportation platforms to improve overall efficiency. It is not just a solo application.

PassDrop offers a novel strategy for overcoming the delivery problems that exist in the modern world. It is a distinct, stand-alone solution that blends in with the bigger picture of customer mobility and service delivery systems. With the help of this software, we hope to establish a mutually beneficial relationship between customers and the goods being delivered, optimizing operations and turning ordinary trips into productive ones.

2.2. Product Functions

- Registration and Authentication
    - Allow users to register accounts securely
    - Provide a reliable authentication mechanism for user access
- Package Creation and Listing
    - Enable users to create new delivery requests with package details
    - List available packages for passengers to select from
- Passenger Matchmaking
    - Match passengers with suitable delivery requests based on their route
- Real-time Tracking
    - Provide real-time tracking of packages and passengers journey progress
- Communication and Alerts
    - Facilitate communication between passengers and receivers
    - Notifications for important updates

- Delivery Confirmation
  - Allow recipients to confirm successful delivery and provide feedback
- Rating and Review System
  - Implement a rating and review system for both passengers and recipients
- Payment Handling
  - Handle secure and convenient payment transactions for deliveries
- User Profiles
  - Allow users to create and manage their profiles with relevant information
- Customer Support
  - Provie customer support channels for assistance and issue resolution



Here, is the simplified diagram illustrating major functions and their interconnection

2.3. User Classes and Characteristics

There are four user levels in the PassDrop: **Customer, Seller, Passenger and Digital Locker.**

2.3.1. Characteristics of User Classes

Customer:

- **Role:** Customers are those who will receive packages from particular seller.
- **Characteristics:** Customer can make delivery requests, offer packages information and specify recipient data. They may monitor the delivery status in real-time and get alerts when a delivery

is successful. Customers can also rank and comment on the overall delivery experience as well as the passengers

Seller:

- **Role:** Seller are individual or business who provide goods for delivery
- **Characteristics:** Sellers have the option to offer goods for delivery, choose pickup locations and include delivery instructions. They may keep tabs on the status of their deliveries and get a confirmation when it is accomplished. Sellers can evaluate and rank customers depending on how well they deliver.

Passenger (Deliveryman):

- **Role:** Passengers are individual who are traveling to specific destinations and can carry packages along the way
- **Characteristics:** Passengers can view available delivery requests that match their route. They have the option of taking or rejecting delivery jobs. Details about the package and the recipient are available to passengers. They are able to interact with clients and recipients and instantly update the delivery status. For deliveries that are successful, passengers will get some sort of reward point after certain amount of reward point, they can withdraw their money from the system.

Digital Locker:

- **Role:** Digital Lockers are secure storage points where packages can be stored temporarily.
- **Characteristics:** Digital Lockers facilitate safe package storage until the recipient can collect them. Through digital codes or keys, they allow safe access. When a recipient's parcel is ready for pickup, lockers notify them. With the special codes or digital keys issued upon delivery confirmation, recipients can access lockers.

2.4. Operating Environment

Hardware Platform:

- There will be a variety of devices, including desktops, tablets, and cellphones, that can access the program.
- It is made to function on both the iOS and Android platforms, serving a variety of consumers.
- On devices with different processing speeds, display sizes, and hardware setups, the software should function without any issues.

Operating Systems:

- PassDrop is compatible with iOS 12 and later on iOS-enabled devices.
- PassDrop is compatible with Android 8 (Oreo) and later on Android-powered smartphones.

- The Digital Locker will have windows 7 integrated with it.

Software Components and Applications:
- The software will seamlessly integrate with GPS services to allow for the tracking of people and parcels in real-time.
- To precisely show routes, pickup locations, and delivery destinations, it will communicate with map services.
- Integrating a payment gateway will make transactions safe and simple.
- User will receive updates, alerts and notifications from the software via SMS or push notifications.
- It ought to coexist harmoniously alongside well-liked messaging services for effective user interaction.
- User profiles, transaction histories, and other data may be stored via cloud storage services.

Security Considerations:
- To guarantee the security and integrity of user data and transactions, secure socket layers (SSL) will be used.
- Sensitive data, including user credentials and payment information, will be protected using encryption techniques.

2.5. Design and Implementation Constraints

The development of the "PassDrop" program will be significantly influenced by a number of factors. These elements will affect the options open to the programmers and guarantee that the software corresponds with the desired functionality, security, and user experience. These limiting elements include, among others:

Regulatory Policies:
- Observance of national and international laws governing data security and privacy.
- Adherence to delivery and transportation laws unique to each operating region.

Hardware Limitations:
- Ensuring that the software runs smoothly on systems with a range of memory and processing power.
- software that has been adjusted for various screen sizes and resolutions.

Interfaces to Other Applications:
- Safe transaction integration with payment gateways.
- Precise tracking through seamless interaction with map and GPS services.

Specific Technologies and Tools:
- Cross-platform development tools are used to guarantee iOS and Android compatibility.
- Putting in place real-time communication tools for alerts and notifications.

Security Considerations:
- The use of encryption techniques to protect user information and transactions.
- Processes for user authentication and permission to stop unlawful access.

Design Conventions and Programming Standards:
- Utilizing UI/UX design guidelines to deliver a dependable and simple user interface.
- Following best practices for maintainability and scalability in coding.

Language Requirements:
- Providing support for different languages to a worldwide user base.
- Ensuring that notifications and user interfaces are localized.

Communications Protocols:
- Putting in place reliable communication channels for tracking and warnings in real-time.
- Preserving data integrity when passengers, receivers, and lockers communicate.

Parallel Operations:
- Designing the system to manage simultaneous requests for delivery and passenger matching.
- Managing concurrent processes to guarantee system responsiveness and stability.

Maintenance and Support:
- The program must be maintainable by the customer's organization.
- supplying comprehensive documentation and instructions for troubleshooting and upcoming updates.

Third-Party Services:
- Relying on external services (such as GPS or payment gateways) could affect how readily available the program is in the event of a service outage.

2.6. User Documentation

The user documentation components that will be delivered along with the "PassDrop" software include:

User Manuals:
- Detailed instructions on how to use the features and functionalities of the software are provided in extensive guides.
- Users will be guided through the entire process, from registration to successful delivery, through manuals that cover the user roles of Customer, Seller, Passenger, and Digital Locker.

Online Help:
- Within the software interface, there is interactive help material.
- Help that is provided with consideration for the user's present actions and inquiries.

Tutorials:
- Videos or tutorials that walk viewers through typical chores and procedures step-by-step.
- Users will benefit from tutorials that will help them comprehend and use essential features.

FAQs (Frequently Asked Questions):
- A compilation of commonly asked questions and their answers.
- Designed to respond to common user questions and offer prompt solutions.

Glossary:
- A glossary of significant words and their meanings as they relate to the software and the subject.
- Helps users in understanding terms unique to the application and package delivery.

Troubleshooting Guide:
- A manual that helps users in resolving typical problems they might run into.
- Helps in fixing mistakes and solutions to technological issues.

Release Notes:
- Documentation outlining the improvements, problem corrections, and new features in each software release.
- Informs users of changes and enhancements.

Installation Guide:
- Information on how to install the software on various hardware and operating systems.
- Includes prerequisites, setup instructions, and installation processes.

Privacy and Security Guide:
- Information about the security precautions taken by the software to safeguard user information and transactions.
- Provides advice on how to use the application safely and privately.

Accessibility Guide:
- Details on ensuring that the program is usable by people with disabilities.
- Explains options and features that enhance usability for a variety of user groups.

2.7. Assumptions and Dependencies

Here are the assumed factors that could potentially affect the requirements stated in the "PassDrop" Software Requirements Specification (SRS):

Third-Party Components:
- Assumption: Successful integration with external parts like payment gateways, messaging APIs, map and GPS services, etc.
- Impact: Real-time tracking, secure payments, and communication may all be impacted if certain connections are broken or unavailable.

Internet Connectivity:
- Assumption: Users will have dependable internet access for conducting transactions, communicating, and tracking in real-time.
- Impact: Users might not be able to utilize the software efficiently in places with low or no internet access.

Hardware Compatibility:
- Assumption: It is assumed that the software will operate without a hitch on a variety of hardware, including smartphones and tablets.
- Impact: User experience and functionality may be impacted by compatibility issues on specific devices.

Localization:
- Assumption: The program will presumably offer localization and a variety of languages for users all over the world.
- Impact: User uptake in non-English-speaking regions may be constrained if localization is ineffective.

External Services:

- Assumption: The availability and accuracy of external services like map and GPS providers will continue to be guaranteed.
- Impact: Real-time tracking and navigation could be affected by service outages or errors.

Regulatory Compliance:
- Assumption: The program will abide by regional rules governing data privacy and transit.
- Impact: Failure to comply could result in legal problems and restricted usage in some locations.

User Behavior:
- Assumption: Users will presumably enter recipient data, package information, and delivery preferences accurately.
- Impact: Delivery problems or delays may result from inaccurate or incomplete information.

Market Acceptance:
- Assumption: The software will be adopted and used as intended.
- Impact: Low user adoption may result in platform underuse and revenue loss.

Security Measures:
- Assumption: The security mechanisms put in place will successfully safeguard user information and transactions.
- Impact: User data and financial information may be at danger if security measures are violated.

External Dependencies:
- Assumption: For notifications, the accessibility and dependability of external services like SMS gateways.
- Impact: Users could not get timely messages or alerts if certain dependencies fail.

Software Updates:
- Assumption: Users will presumably update their hardware to the necessary operating system versions.
- Impact: Limited functionality or compatibility difficulties may result from outdated operating systems.

3. External Interface Requirements

3.1. User Interfaces

The user interface of the "PassDrop" software product is designed to provide an intuitive and seamless experience for customers, sellers, passengers, and digital locker users. The software components for which a user interface is needed include:

1. **Customer Interface:**
   The user-friendly dashboard in the customer interface includes options for scheduling deliveries, monitoring item progress, seeing delivery histories, and making secure payments. Typical action buttons like "Schedule Delivery," "Track Package," and "View History" will be present on the pertinent screens. The PassDrop User Interface Style Guide is followed by the interface, assuring uniform design components, fonts, colors,

and icons. Clear explanations and recommendations for fixing errors are presented with error messages.

2. **Seller Interface:**
   Sellers have access to a special portal where they may handle delivery requests, list available packages for delivery, and update their profiles. Options like "List Package," "Manage Requests," and "Edit Profile" are available on the interface, which keeps a tidy appearance. Efficiency is improved by using keyboard shortcuts for routine tasks like submitting a package.

3. **Passenger Interface:**
   Passengers can check the packages that are available for delivery, choose which ones to send, and modify their trip plans. The UI places a focus on navigation and tracking in real-time. The delivery procedure is started by clicking the "Start Delivery" button, and it is completed by clicking the "Completed" button.

4. **Digital Locker Interface:**
   The interface for the digital locker makes package pickup easier. To ensure security, users are given a special code to access lockers. The user interface shows available lockers and notifies recipients when packages are delivered. Users can access their packages by clicking the "Retrieve Package" button, which is visible.

The user interface uses a constant color scheme, typography, and iconography in accordance with PassDrop's GUI guidelines. Screens are made to be user-friendly and responsive on a variety of devices, including computers, tablets, and smartphones. All of the application's help and support options, such as FAQs and customer care contact details, are available. To guarantee a flawless user experience, a separate User Interface Specification document offers thorough design specifications, screen layouts, and interactions.

3.2. Hardware Interfaces

The interfaces between the "PassDrop" software product and the hardware components of the system encompass both logical and physical characteristics. These interfaces ensure smooth interactions and data exchange between the software and the hardware.

Logical Characteristics:

1. **Supported Device Types:**
   Smartphones, tablets, and desktop PCs are just a few of the gadgets that can use the program. To provide a consistent user experience across devices, the user interface adjusts to various screen sizes and resolutions.

2. **Data and Control Interactions:**
   In order to access device functionalities like GPS for in-the-moment tracking and location determination, the software interfaces with hardware components. Control interactions include starting package deliveries, confirming deliveries, and entering specific codes to open digital lockers.

3. **Communication Protocols:**
   The software and external services, such map providers and payment gateways, use HTTP/HTTPS protocols for secure data communication. Standard NMEA (National Marine Electronics Association) protocols are used for location information in GPS data transfer.

Physical Characteristics:

1. **Mobile Devices:**
   For real-time tracking and coordinated package delivery on smartphones and tablets, the program makes use of device sensors (GPS, accelerometer) to identify location, direction, and motion.

2. **Desktop Computers:**
   Users who access the dashboard of the platform on desktop PCs can manage accounts and plan deliveries on a larger screen.

3. **Digital Lockers:**
   Sensors to detect locker occupancy and secure access mechanisms to give package recipients access codes are also included in physical digital lockers.

4. **Internet Connectivity:**
   For real-time tracking, communication, and data synchronization with external services, the software depends on internet connectivity.

5. **QR Code Scanners (Optional):**
   In scenarios where QR codes are used for locker access, devices with built-in cameras or external QR code scanners can be employed for package retrieval.

Users may easily engage with the "PassDrop" software product and employ hardware components for efficient package delivery, tracking, and secure access to digital lockers thanks to the logical and physical properties of these interfaces.

3.3. Software Interfaces

To deliver a seamless user experience and dependable operation, PassDrop communicates with multiple program elements and external systems. The enumerated software interfaces are as follows:

1. **User Interfaces:** Customers, vendors, travelers, and suppliers of digital lockers will all have user interfaces on PassDrop. Both mobile apps and online browsers will provide access to these interfaces. The interfaces will make it easier for users to engage, choose products, and place orders.

2. **Payment Gateway:** To handle safe and dependable financial transactions, integration with third-party payment gateways (such Bkash and Nagad) will be put into place. Sending payment information and obtaining confirmation or transaction status updates will be required for this.

3. **Mapping and Navigation Services:** Real-time delivery tracking, route optimization, and location-based services will be possible thanks to integration with mapping and navigation services (such Google Maps and Mapbox).

4. **Database Management System:** To store user information, product details, order histories, and other pertinent data, PassDrop will communicate with a database management system (such as MySQL or PostgreSQL).

5. **Messaging Services:** Users may receive SMS notifications about order updates, delivery status updates, and other pertinent information by integrating with messaging providers (like Twilio, for example).

6. **Email Services:** SendGrid's integration with email services will make it easier to send users order confirmations, receipts, and other communications.

7. **Push Notification Services:** To provide real-time changes and alerts to users' devices, mobile applications will employ push notification systems (like Firebase Cloud Messaging, for example).

8. **APIs and Libraries:** For features like geolocation, address verification, and product search, PassDrop may use APIs and libraries. The platform's capabilities are improved via these APIs.

9. **Operating System Compatibility:** To ensure a large user base, the platform will be interoperable with popular operating systems like iOS and Android.

10. **Web Browsers:** To facilitate seamless access from many devices, the platform's online interface will be interoperable with well-known web browsers (such as Chrome, Firefox, and Safari).

11. **Security and Authentication Providers:** To improve user data protection and guarantee secure logins and transactions, third-party security and authentication services may be employed.

These software interfaces are essential to PassDrop's smooth operation since they allow for data transfer, safe transactions, and trustworthy communication between the platform and its users as well as with other services.

3.4. Communications Interfaces

The "PassDrop" software product involves several communications functions to facilitate efficient package delivery, tracking, and user interactions. The requirements associated with these communications functions are as follows:

1. **Real-Time Tracking and Updates:**
    a. Requirement: Users must be given real-time tracking updates from the program regarding the package's present location and anticipated time of delivery.
    b. Communication Mechanism: For precise location tracking, use GPS data from mobile devices and integrate with mapping services (like Google Maps) through HTTP/HTTPS.
    c. Transfer Rate: Assure prompt updates with the least amount of delay to reflect precise package movement.

2. **Package Delivery Requests and Confirmations:**
    a. Requirement: Customers should be able to request deliveries and get confirmations using the program.
    b. Communication Mechanism: Communication Method: Users can request deliveries through the app's user interface, which uses HTTP POST requests to transmit information to the server.

c. Message Formatting: Message Formatting: To organize and send delivery requests and responses, use the JSON format.

3. **Digital Locker Access Codes:**
   a. Requirement: For access to digital lockers, the program should generate and provide individual access codes.
   b. Communication Mechanism: Access codes are created by the software and distributed to recipients by in-app notifications, SMS, or email.
   c. Security: To avoid unwanted access, access codes must be encrypted and secure.

4. **Payment Transactions:**
   a. Requirement: The program need to provide safe online payment exchanges.
   b. Communication Mechanism: To ensure secured and safe transfer of payment data, integrate with payment gateways using HTTPS as the communication protocol.
   c. Data Transfer Rate: To provide a seamless user experience, transactions should be executed quickly.

5. **User Notifications and Alerts:**
   a. Requirement: Users should receive notifications and alerts from the software on updates to their packages, delivery confirmations, and digital locker access.
   b. Communication Mechanism: Use push notifications for immediate alerts and email or SMS for critical updates as your communication method.
   c. Message Formatting: Notifications should be succinct and provide pertinent information.

6. **Data Synchronization:**
   a. Requirement: User information and package information ought to be synchronized across platforms and devices by the program.
   b. Communication Mechanism: Use cloud-based synchronization and storage services with HTTPS as the communication protocol to ensure data consistency.
   c. Synchronization Frequency: To ensure that the data is current, synchronize it frequently.

7. **Security and Encryption:**
   a. Requirement: Ensure the encryption and security of sensitive user data, including payment information and locker codes.
   b. Communication Mechanism: To ensure secure connection, data encryption, and user authentication, implement SSL/TLS protocols.

The "PassDrop" software package enables dependable, safe, and effective interactions between users, hardware components, and outside services by adhering to certain communication criteria, improving the platform's overall user experience.

4. System Features

The PassDrop platform encompasses several system features that collectively offer users a comprehensive and seamless delivery experience.

4.1. Feature: User Registration and Authentication

4.1.1 Description and Priority

Priority: High

Description: Users can use this feature to create accounts, securely log in, and modify their personal data. It guarantees safe access to the platform and to user information.

4.1.2 Stimulus/Response Sequences

→ User clicks “Sign Up” and provide necessary details.
→ The system verifies user data before creating an account.
→ User enters credentials to log in.

4.1.3 Functional Requirements

- **REQ-1:** The system must have areas for users' names, email addresses, and passwords during registration.
- **REQ-2:** The system will send a verification email to the user's specified email address after registration.
- **REQ-3:** The system must enforce password security and complexity requirements.
- **REQ-4:** Users must have a secure method to reset their passwords.
- **REQ-5:** The system must guarantee the safe processing and storage of user credentials and private data.
- **REQ-5:** The passenger who will deliver the product must register by his/her SSC/HSC certification including NID for security purpose.

4.2. Feature: Product Selection and Ordering

4.2.1 Description and Priority

Priority: High

Description: Users can utilize this tool to browse products, choose things, and place delivery orders.

4.2.2 Stimulus/Response Sequences

→ The user chooses desired items and adds them to the shopping basket.
→ User proceeds to checkout and confirms order.
→ The system generates an order ID, confirms the order, and provides an expected delivery time.

4.2.3 Functional Requirements

- **REQ-1:** A list of the available goods, complete with pictures, descriptions, and pricing, shall be displayed by the system.

- **REQ-2:** Before placing their order, users must have the option to add or remove goods from their shopping cart.
- **REQ-3:** The system will determine the order's total cost, including taxes and shipping fees.
- **REQ-4:** A distinct order ID will be generated by the system after order confirmation.
- **REQ-5:** A confirmation email with the order information and anticipated delivery date will be sent to users.

4.3. Feature: Real-time Order Tracking

4.3.1 Description and Priority

Priority: Medium

Description: Users can track the real-time and location of their orders

4.3.2 Stimulus/Response Sequences

→ User clicks “Track Order” and system will open the order tracking section.
→ The system retrieves the order status and location data
→ User can view the status and location on a map

4.3.3 Functional Requirements

- **REQ-1:** The Users can track their orders in a special portion of the system.
- **REQ-2:** The Users will have access to the current order status (confirmed, in transit, delivered), as well as the anticipated arrival time.
- **REQ-3:** The system will show an interactive map with the order's current location.
- **REQ-4:** If the order status changes, users will receive push alerts or SMS updates.

4.4. Feature: Product Management and Listing

4.4.1 Description and Priority

Priority: High

Description: Customers can browse and order from sellers who can list and control their products.

4.4.2 Stimulus/Response Sequences

→ By including descriptions and pictures, the seller can add new items.
→ Product information is verified by the system before being displayed in the product catalog.

4.4.3 Functional Requirements

- **REQ-1:** Sellers will be able to list information about new products, including name, description, price, and photos, in their online store.
- **REQ-2:** The system will verify and guarantee the authenticity of the information vendors offer about their products.
- **REQ-3:** The platform's product catalog shall display the listed goods.

4.5. Feature: Order Fulfillment and Communication

4.5.1 Description and Priority

Priority: Medium

Description: Order management, fulfillment, and customer interaction can all be done efficiently by sellers.

4.5.2 Stimulus/Response Sequences

→ Seller receives order notifications.
→ Seller confirms and prepares orders for delivery.
→ Seller communicates with customers regarding order status.

4.5.3 Functional Requirements

- **REQ-1:** Sellers must be notified of new orders and order information.
- **REQ-2:** The system will send a verification email to the user's specified email address after registration.
- **REQ-3:** The technology would offer avenues for vendors to connect with customers, responding to their questions and giving them updates.

4.6. Feature: Product Placement in Passenger’s Digital Locker

4.6.1 Description and Priority

Priority: High

Description: Direct delivery of purchased goods into the customer's Digital Locker by the seller simplifies the delivery process.

4.6.2 Stimulus/Response Sequences

→ Sellers access their dashboard and locate the specific order.
→ Sellers select the option to place the product in the passenger's Digital Locker.

4.6.3 Functional Requirements

- **REQ-1:** Sellers must be able to store goods in a passenger's digital locker for later retrieval.
- **REQ-2:** Through the secure interface of the system, Sellers shall have access to the Passenger's Digital Locker.

4.7. Feature: View and Accept Delivery Requests

4.7.1 Description and Priority

Priority: High

Description: The delivery requests that passengers want to fulfill might be viewed among those that are currently accessible.

4.7.2 Stimulus/Response Sequences

→ Passengers clicks "View Delivery" and the system will provide a list
→ Passengers access the available delivery requests list.
→ Passengers select and accept a delivery request.

4.7.3 Functional Requirements

- **REQ-1:** A list of available delivery requests will be accessible to passengers.
- **REQ-2:** A delivery request may be chosen and accepted by passengers.

4.8. Feature: Navigation and Route Optimization

4.8.1 Description and Priority

Priority: Low

Description: Routes are tailored for passengers in order to transport products quickly.

4.8.2 Stimulus/Response Sequences

→ Passenger receives the delivery address.
→ The system determines the best route based on distance and current traffic.

4.8.3 Functional Requirements

- **REQ-1:** Upon accepting a request, passengers will be given the delivery address and other information.
- **REQ-2:** The best path for delivering items will be determined by the system and provided.

4.9. Feature: Locker Setup and Management

4.9.1 Description and Priority

Priority: High

Description: Locker will be set up on different places that will be easily accessible by users. Users are able to set up and control their digital lockers to safely store supplied goods.

4.9.2 Stimulus/Response Sequences

→ Users access their profile settings.
→ The User navigate to the Digital Locker Section
→ User enters credentials to open or lock a Digital Locker window
→ A certain QR code or OTP code will be generated to unlock the Locker.

4.9.3 Functional Requirements

- **REQ-1:** Through their profile settings, users will be able to configure their digital lockers.

- **REQ-2:** The ability for users to add, remove, or manage objects in their digital lockers is required.

5. Other Nonfunctional Requirements

5.1. Performance Requirements

The following performance parameters have been established in order to guarantee the PassDrop platform operates at its peak efficiency. These specifications describe the anticipated capacity and response times for various usage scenarios:

1. **Response Time:**
   - Within an average of 2 seconds, the system must respond to user operations such logging in and placing an order.
   - Any user activity must get a response within 5 seconds at most.

2. **Concurrent Users:**
   - During peak hours, the platform must be able to support a minimum of 1000 concurrent users.
   - When handling this load, the system's performance must not noticeably decline.

3. **Order Processing:**
   - The processing of an order and the notification of the interested parties (customer, seller, and passenger) shall not take longer than ten seconds.
   - The system must be able to process at least 50 order requests per minute in cases of heavy traffic.

4. **Map Rendering:**
   - When a user starts a location-related action, the system must render and show map data in under a second.
   - Zooming and panning on maps must continue to be responsive and fluid.

5. **Notification Delivery:**
   - Order confirmations and delivery status updates, for example, must be transmitted to consumers' devices within 3 seconds after the trigger.
6. **Database Queries:**
   - Within two seconds, the system must run database queries and retrieve the required data.
   - Complex queries involving numerous tables of data must be finished in less than 5 seconds.

7. **Transaction Throughput:**
   - The platform must be able to perform at least 500 transactions per minute to guarantee seamless order placement and payment processing.

Delivering a seamless and effective user experience, especially during times of heavy activity, depends on these performance standards. The PassDrop platform will deliver a responsive and dependable service, meeting user expectations and ensuring a competitive advantage in the market, by meeting these specified performance requirements.

5.2. Safety Requirements

The PassDrop platform places the utmost priority on user and stakeholder safety. To guarantee a safe atmosphere for all participants, the following safety criteria are listed:

1. **User Verification:**
   - Customers, merchants, and passengers all have to go through a rigorous verification process to make sure their identities and backgrounds are secure and real.
   - In order to avoid unwanted access or data breaches, user data must be encrypted and maintained securely.

2. **Emergency Situations:**
   - Passengers will have access to an SOS button during deliveries, which will quickly alert the appropriate authorities and provide the passenger's current location.

3. **Traffic Rules and Regulations:**
   - To guarantee road safety and prevent any accidents or violations, drivers and passengers must obey traffic laws and regulations when making deliveries.

4. **Vehicle Condition:**
   - To reduce the risk of vehicle-related incidents, all delivery vehicles must undergo routine maintenance inspections and conform to safety regulations.

5. **Privacy Protection:**
   - Users' location and personal data must never be disclosed to a third party without their express permission.
   - To preserve users' privacy, the platform must adhere to data protection rules.

6. **Secure Transaction:**
   - To prevent unwanted access to sensitive payment information, all financial transactions done through the platform must be encrypted.

7. **Dispute Resolution:**
   - There must be a structure in place for disputes between buyers, sellers, and passengers to be handled fairly and openly.

8. **Safety Certificate:**
   - To ensure compliance with industry standards and legal requirements relating to data security and user safety, the PassDrop platform will be subject to safety assessments and certifications.

By upholding these security standards, PassDrop hopes to establish itself as a trustworthy and secure platform that puts the welfare of all of its customers first while offering quick and easy delivery services.

5.3. Security Requirements

One of the core tenets of the PassDrop platform is ensuring the confidentiality and privacy of user data and interactions. To create a strong security framework, the following security needs are defined:

User Authentication: Before using the platform, users must verify themselves using strong and distinctive credentials. MFA, or multi-factor authentication, can be used to increase security.

Data Encryption: To prevent unauthorized access, all sensitive user data, including personal data and payment information, must be transmitted and stored in an encrypted format.

Access Control: To guarantee that users have the proper access privileges based on their jobs (consumer, seller, or passenger), role-based access control (RBAC) must be implemented.

Secure Communication: Secure protocols must be used to encrypt all communication between users, drivers, and the platform to guard against data interception or eavesdropping.

Data Privacy: Users' consent must be sought before using their personal information, and personal information must be gathered and processed in accordance with data protection laws.

Vulnerability Assessment: To find and fix any potential security holes in the platform, routine security audits and vulnerability scans must be performed.

Transaction Security: To prevent financial fraud, payment transactions must be carried out through reliable and secure payment gateways.

User Tracking: For the sake of safety and accountability, real-time tracking of passengers, drivers, and delivery must be deployed, with the proper privacy protections.

Incident Response: To minimize the impact on users and data, a well-defined incident response plan must be in place to deal with any security breaches quickly and effectively.

Legal and Regulatory Compliance: The platform must abide by all applicable privacy and security laws to make sure that user data is handled legally.

Security Certifications: To show its dedication to security and user data protection, the PassDrop platform must go through security assessments and get the necessary certifications.

PassDrop hopes to gain consumers' trust by including these security criteria and upholding a secure environment for all transactions, data management, and user interactions on the platform.

5.4. Software Quality Attributes

The PassDrop project targets a number of software quality attributes in addition to the nonfunctional needs to create a stable and user-centric platform. These qualities contribute to the software's overall excellence and its capacity to live up to developers' and consumers' expectations. The following qualities have been determined to be essential:

Usability:

The system must have a simple, user-friendly interface that makes it simple for users to navigate and carry out tasks. User testing and surveys will be used to gauge usability, with a goal of achieving a minimum user satisfaction percentage of 90%.

Reliability:

PassDrop must demonstrate a high level of dependability by guaranteeing seamless operation and little system downtime. Over the course of a year, the system must experience an uptime of at least 99.9%.

Security:
To safeguard user data and transactions, the program must employ strict security procedures. PassDrop must pass recurring security assessments and adhere to accepted encryption and authentication standards.

Maintainability:
The codebase for PassDrop must be well-organized and well-documented to make future updates and maintenance simple. According to industry standards, a minimum code complexity level of 80% must be maintained to ensure code readability.

Performance:
The system must have quick response times and less latency in order to operate at peak efficiency. The platform must be able to support at least 1000 concurrent users without noticeably degrading its performance.

Portability:
PassDrop must be made to work effortlessly on a variety of platforms and gadgets, including mobile apps and web browsers. Major browsers and mobile operating systems must be compatible with the system.

Interoperability:
In order to support seamless connection with third-party services, such as payment gateways and map services, the program must have the required APIs and integration capabilities.

Testability:
To provide full validation of its functionalities, the program must be designed with an extensive set of automated tests. At least 95% of the codebase must be covered by the tests.

The development of a dependable, user-friendly, and effective platform that meets the needs of end users and developers requires the presence of certain high-quality characteristics. In order to produce a well-rounded and high-quality product, the relative preferences among these features are balanced while emphasizing usability, dependability, and security.

5.5. Business Rules

Operating Principles:

User Registration and Authentication
- The platform only allows users with active email addresses to sign up.
- Users must register with correct and current information.
- Using the registered email address and password, each registered user can access their account.

Delivery Requests
- Customers who log into their accounts can start delivery requests.
- Create and manage delivery requests are only available to registered users.
- For things they oversee delivering, sellers can receive and accept delivery requests.

Digital Locker Access

- Only those with a valid access code and the intended recipient are allowed access to digital lockers.
- Once the package has been successfully delivered and placed inside, users can access their digital lockers.

Payments and Transactions
- For secure transactions, customers must supply valid payment information.
- Once successful deliveries have been confirmed by the system, sellers and drivers can receive payment.
- Payments are processed safely and securely using techniques for industry-standard encryption.

Privacy and Data Security
- User data is kept private and secure, including payment and personal information.
- User data cannot be accessed or managed by anybody without authorization, even system administrators.

System Integrity
- The technology will recognize and stop fraudulent behaviors like phony deliveries and unlawful locker access.
- The program will undergo routine updates to stay current with the most recent security norms and technological developments.

User Feedback and Ratings
- Based on their experiences, users can rate and comment on merchants and drivers.
- Reviews and ratings should fairly represent the level of service received.

Communication and Notifications
- Users will get instant notifications for updates on their packages, delivery confirmations, and access codes for their digital lockers.
- Clear, timely, and pertinent notifications should be sent in response to the user's actions.

The actions and interactions of users, merchants, and drivers on the PassDrop platform are governed by these operational principles. They also establish the groundwork for the functional specifications that enact these laws and guarantee the safety and effectiveness of the experience for all parties involved.

6. Other Requirements

Database Requirements:

To keep track of user profiles, delivery requests, transaction histories, and access logs for digital lockers, the system must maintain a safe and expandable database. The database should provide effective data storage and retrieval, ensuring less downtime and quick responses.

Internationalization Requirements:

The system ought to be built to support various linguistic and cultural settings. To increase accessibility for a broad user base, user interfaces and notifications should be able to be translated into several languages.

Legal and Regulatory Requirements:
The system must abide by all applicable privacy and data protection rules to ensure the safe processing of user data. With respect to payments, deliveries, and transportation, the platform should abide by regional laws and regulations.

Reuse Objectives:
For ease of future upgrades and additions, the software components created for PassDrop should be modular and well-documented. To reduce the amount of work required to produce future improvements, code reuse and modularity should be prioritized.

Performance Requirements:
The system must be able to support numerous concurrent users to maintain peak performance even during periods of high demand. Response times for user operations including sign-ups, delivery requests, and locker access should fall within reasonable bounds.

Security and Encryption:
To protect user data, payment details, and communication routes, the platform should use encryption techniques. The software must have safeguards against unwanted access to user accounts and digital lockers.

Error Handling and Logging:
The system must have reliable error-handling capabilities to gracefully manage unforeseen events and give users understandable error messages. To track system events and user interactions for troubleshooting and auditing purposes, thorough logging should be implemented.

Documentation and Training:
To help customers use the platform efficiently, thorough user manuals and guidelines should be made available. System architecture, deployment processes, and maintenance requirements should be outlined in documentation for system administrators and developers.

User Support:
A user support system, such as a help center or customer service, should be available on the platform to help users with their questions and problems.

Integration Requirements:
For secure and dependable payment processing, the system should be able to integrate with third-party payment gateways. Delivery routes and expected delivery times should be accurately tracked through integration with mapping and geolocation systems.

Appendix A: Glossary

PassDrop: The cutting-edge software platform allows users to effectively initiate and manage products deliveries to chosen places, and travelers can fully profit from it by making deliveries while they are traveling.

User Levels:
- → **Customer:** The individual who request a delivery service and is the intended recipient of the package.
- → **Seller:** The entity responsible for providing the delivering the goods to the designated recipient.

- → **Passenger:** The individual who physically transport the goods from the seller to the customer's desired location.
- → **Digital Locker:** A secure storage compartment where delivered items are placed, accessible only by the recipient.

Delivery Request: A request made by a buyer to have products delivered by a merchant to a certain place.

Digital Locker Access Code: The recipient will be given a special code to access the virtual locker and get the delivered item.

Transaction: The exchange of money that takes place when a customer pays for a seller's delivery service.

User Interface (UI): The software's visual and interactive components, which enable user interaction with the system.

Database: A database that contains user profiles, transaction history, delivery records, and other pertinent data in a systematic manner.

Encryption: Data conversion into a secure format in order to guard against illegal access.

Error Handling: The system's ability to recognize and handle unforeseen events or problems to guarantee a positive user experience.

Geolocation Services: Services that use geographic coordinates to deliver precise location data.

API: A set of tools and protocols used to create software applications is called an API.

Data Protection: Methods and measures to protect user information and guarantee privacy.

Responsive Design: A design strategy that guarantees the software's usability and functionality on a variety of screens and devices.

Scalability: The capacity of the system to support increased user load without performance degradation.

Localization: The process of customizing software for various linguistic and cultural settings.

Third-Party Payment Gateway: A third-party service that makes it easier to accept safe internet payments.

Regulatory Compliance: Compliance with legal guidelines and criteria that control how data is handled and how software functions.

Support Mechanism: Facilities that support users with questions and problems, such a help center or customer service.

Key terms and ideas used in the Software Requirements Specification (SRS) for the PassDrop platform are defined in this glossary. It guarantees that all project stakeholders, including developers, have a clear understanding of the terms.

Appendix B: Analysis Models

Here is the Figure of how a Digital Locker might look like:

Fig: Digital 

Locker

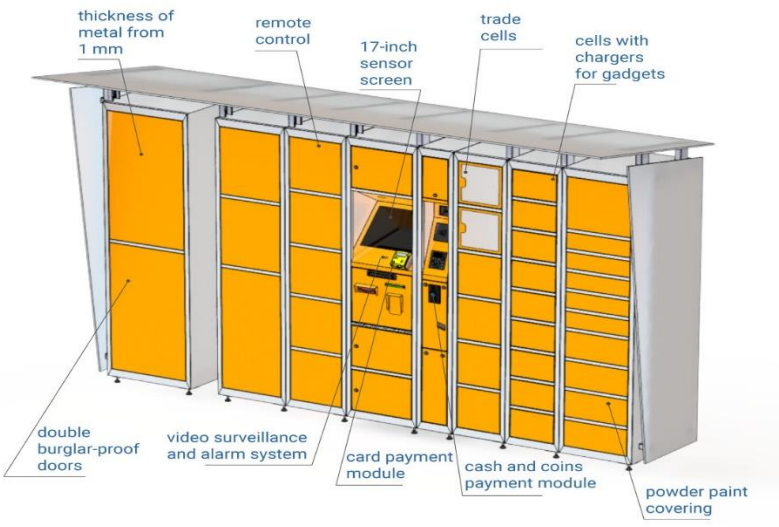
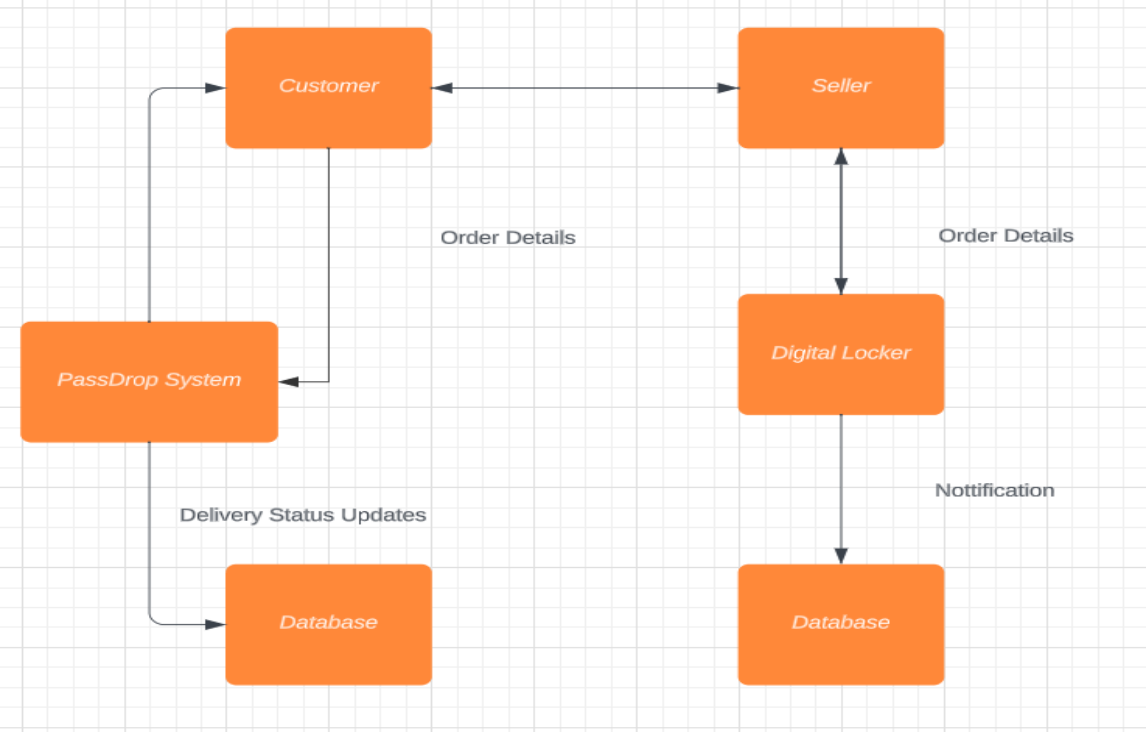


Fig: Digital Locker's Functionality

A Data Flow Diagram illustrates the flow of data and processes within the system, helping to visualize how information moves between different components. Below is a simplified DFD for the PassDrop system:

Fig: Data Flow Diagram



Appendix C: To Be Determined List

References to areas of the Software Requirements Specification (SRS) where specific details are pending are provided in the list below. During the development process, when new information becomes available, these TBD topics will be addressed and updated.

I. **TBD in Section 2.1: Purpose of the System**
→ Specific user interactions are described in detail.

II. **TBD in Section 3.2: Product Perspective**
→ Diagram illustrating major components and interfaces of the system.

III. **TBD in Section 4.1.2: Stimulus/Response Sequences**
→ human actions and system responses in a certain order for a given functionality.

IV. **TBD in Section 4.1.3: Functional Requirements**
→ Detailed functional requirements for specific features.

V. **TBD in Section 5.1: Assumptions and Dependencies**
→ Identification of external components or technologies on which the system depends.

VI. **TBD in Section 6.2: Performance Requirements**
→ Specific data transfer rates and acceptable response times.

VII. **TBD in Section 6.3: Security and Encryption**
→ Encryption algorithms and protocols for securing user data.

VIII. **TBD in Section 7.1: User Documentation Components**
→ Detailed components of user manuals and guides.

IX. **TBD in Section 7.2: Other Documents and Web Addresses**
→ Additional references and standards that the SRS refers to.

X. **TBD in Section 8.1: Interface Characteristics with Users**
→ Detailed specifications for user interfaces, including sample screen images.

XI. **TBD in Section 8.2: Interface Characteristics with Hardware**
→ Nature of data and control interactions between software and hardware components.

XII. **TBD in Section 8.3: Communications Functions**
→ Detailed communication protocols and message formatting requirements.

XIII. **TBD in Section 9: Operating Principles**
→ Roles and actions are clearly defined for various user levels and situations.

XIV. **TBD in Section 10: Other Requirements**
→ specifics of security measures, legal compliance, and database design**.**

XV. **TBD in Section 11: Glossary**
→ Additional words or abbreviations that might be used when developing.

This list will be updated and finalized as each TBD item is addressed and detailed information is provided.