# SOFTWARE ENGINEERING ANALYSIS AND DESIGN

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Project: FuelMe



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Table of Contents

1.EXECUTIVE SUMMARY3

1.1 Project Overview3

1.2 Purpose and Scope of this Specification3

2.PRODUCT/SERVICE DESCRIPTION4

2.1 Service description4

2.2 Product description4

2.3 User Characteristics................................................................................................................................4

2.4 Assumptions...........................................................................................................................................8

2.5 Constraints.............................................................................................................................................8

2.6 Dependencies.........................................................................................................................................8

3.REQUIREMENTS........................................................10

3.1 Functional Requirements......................................................................................................................10

3.2 Non-Functional Requirements..............................................................................................................14

3.2.1 Product Requirements........................................................................................................................................14

3.2.1.1 User Interface Requirements...........................................................................................................................14

3.2.1.2 Usability...........................................................................................................................................................15

3.2.1.3 Performance....................................................................................................................................................16

3.1.2.4 Manageability/Maintainability........................................................................................................................16

**1.Executive Summary**

**1.1 Project Overview**

Are you tired of being stranded on the side of the road because you ran out of gas? Are you tired of waiting in long lines at the gas station just to fill up your tank? Well, "FuelMe" has got you covered! With just a few taps on your phone, you can have one of our vehicles loaded with premium fuel sent straight to your location. No more walking to the gas station in the rain, no more dirty bathrooms and rude attendants. With "FuelMe" you can enjoy high-quality, untainted fuel delivered right to your doorstep. Plus, think of how cool it will look when they see a vehicle with "FuelMe" logo on it pull up to your location. So why waste your time at the gas station when you can have fuel delivered to you like a boss with "FuelMe"!"

“FuelMe” is a project that aims to develop an application for a fuel delivery company. This application will allow customers to place and track their order and make payments through the application. This application will also allow the company to manage and track their fleet of vehicles,track inventory and notify distributors whenever they are needed.

This application will be easliy accessible for anyone with a mobile device and internet connection, allowing for simple and convenient ordering with just a few clicks.

**1.2 Purpose and Scope of this Specification**

The purpose of this fuel delivery application is to simplify and make the process for customers as easy as possible to request fuel delivery and monitor the status of their order while also giving the company the ability to oversee their vehicle fleet and keep track of their inventory.

The scope of this fuel delivery application will include the following features:

• A user-friendly interface for customers to place orders and track them

• A system for managing and tracking the company's fleet of vehicles

• A system for monitoring and tracking inventory

• A system for accepting and processing customer payments

• The application will be designed for use on both web and mobile platforms

• The application will include a secure login for customers to access their account and track deliveries

**2.Product/Service Desciption**

**2.1 Service Description**

Our fuel delivery application is a service that allows customers to easily place orders for fuel deliveries and track the status of their deliveries in real-time. The service is typically accessed via a web or mobile application and provides a convenient and efficient way for customers to manage their fuel needs. With the application, customers can schedule a delivery at a convenient time and location, choose their preferred type of fuel, and pay for their order securely and efficiently. The application also allows the customers to track their order status and see an estimated time of arrival for their delivery.

**2.2 Product description**

The product is intended for individuals and businesses that rely on fuel deliveries, such as construction companies, farming operations, and emergency services. The product is also useful for customers who live in remote areas and have limited access to fuel stations, or for those who prefer the convenience of having fuel delivered to their location.

**2.3 User Characteristics**

This application is intended to be used from the following users:

• **Guests** ( no login required)

Guest users have limited access to the application's features and functionalities compared to registered users. Guest users are able to view the fuel delivery company's pricing, services, and delivery coverage area, but they are not able to place an order or track the status of a delivery. Guest users are also able to contact the company’s support if they have any questions but their information will not be saved for a future reference.

• **Registered Users**

Registered users are guests that have created and verified their account. Registered users have access to a wider range of features and functionalities compared to guest users.

Registered users are able to:

• Place orders for fuel deliveries:

(Registered users can place orders for fuel deliveries and select their preferred type of fuel, delivery location, and delivery time)

• Track delivery status:

(Registered users can track the status of their deliveries in real-time and see an estimated time of arrival for their delivery)

• Manage account information

(Registered users can update their account information, such as their contact information, delivery location, and payment information)

• Manage payment and billing information:

(Registered users can securely store their payment information and view their billing history)

• Access order history:

(Registered users can view their order history and see past deliveries)

• Receive special offers and promotions

(Registered users may receive special offers and promotions from the fuel delivery company)

• Receive customer support

(Registered users can contact the fuel delivery company for customer support and have the ability to save their contact information for future reference)

• **Delivery Team**

The delivery team consists of a group of workers that are responsible for delivering fuel to customers. The delivery team users have access to specific features and functionalities within the application that are tailored to their role.

The delivery team is able to:

• View and manage a schedule of deliveries

(The delivery team can view the schedule of upcoming deliveries and update the status of deliveries as they are completed)

• Manage fleet and inventory

(The delivery team can view the status of the fuel delivery company's fleet and inventory levels in real-time, and update the information as necessary)

• Communicate with customers

(The delivery team can communicate with customers via the application, to provide updates on delivery status and resolve any issues that may arise)

• Route optimization

(The delivery team can optimize the routes of their deliveries and make adjustments as necessary based on traffic or other factors)

• **Fleet Managers**

The Fleet Manager team consists of a group of individuals who are responsible for managing the company’s fleet of vehicles. The Fleet Manager users have access to specific features and functionalities within the application that are tailored to their role.

Fleet Managers are able to:

• View and manage the fleet

(Fleet Managers can view the status of the company's fleet of vehicles in real-time, including the location, fuel level, and maintenance status of each vehicle. They can also assign vehicles to deliveries and make adjustments as necessary)

• Track vehicle usage

(Fleet Managers can track the usage of each vehicle, such as the number of miles driven and the fuel consumption, and use this information to plan for maintenance and replacement)

• Manage vehicle maintenance

(Fleet Managers can schedule and manage maintenance for the company's fleet of vehicles, such as regular service and repairs)

• Manage drivers

(Fleet Managers can manage the drivers' schedules, assign deliveries, and monitor their performance)

• **Customer Support**

The Customer Support team consists of a group of individuals who are responsible for assisting customers with any issues or questions they may have related to company's products or services. The Customer Support users have access to specific features and functionalities within the application that are tailored to their role.

Customer Support is able to:

• View and access customer’s information

• View and access delivery information

(update or make changes)

• Manage emails, calls & messages

• **Admins/ HR**

The Admin/HR users consist of a group of individuals who are responsible for everything in the application. Admins/HR have the highest level of access and privileges within the application.

Admins/HR are able to:

• Manage and access all data

(financial information, inventory data, customer information)

• Manage delivery routes & schedules

• Manage other users (assing and manage roles and permissions of the other users)  
• Manage backups, set up integrations & troubleshoot any issues

• Create & Modify application’s rules, policies and settings

**2.4** **Assumptions**

• It is assumed that every user has a smartphone or/and a computer with an internet connection.

• It is assumed that the users have basic knowledge of smartphones.

• It is assumed that the users know how to navigate in the application.

• It is assumed that the users have an email account.

• It is assumed that the information provided by the users is confidental.

• It is assumed that all the workers go through proper training.

• It is assumed that the company has made a business and financial plan.

• It is assumed that the company has an active bank account which is used to pay the employees.

• It is assumed that every employee in the company has his/her own account created by the system Admin.

**2.5 Constraints**

• All users must have basic knowledge in order to not make any mistakes.

• The system can only be accessed through a stable internet connection.

• All users must login or/and sign-up with only their personal information.

• The application is designed in different sections where each user has access to the corresponding role.

**2.6 Dependencies**

• The customer must be logged in to have full access to all the functionalities.

• The customer must have internet access at all times.

• The customer can not make an order unless he/she is logged in.

• The order can not be completed unless the payment goes through.

• The order can not be completed if inventory is not available.

• The order can not be completed unless the user confirms his/her location.

• All users must have their assigned role in order to view and access all the features and functionalities in the application.

**3.Requirements**

**3.1 Functional Requirements**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Req # | Requirement | Comments | Priority | Date reviewed | SME reviewed/approved |
| R\_01 | The application will offer different views for different type of users corresponding their roles. | Depending on the role of the user,the application will show different views. | 1 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_02 | A user can access the application eventhough he may not be registered. | The users will be able to access the application without being registered but with limited features. | 1 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_03 | Users should accept terms & conditions to proceed with the registration. | To create an account all users must accept terms & conditions. | 1 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_04 | Users must log in with their own personal information. | All users should use only their own email & password. | 1 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_05 | Users must complete full verification after creating their account in order to make a purchase. | When an account is created all users will receive a verification email. | 1 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_06 | All users with a higher role must verify their account with an ID. | Part of the verification process for workers. | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_07 | The application should allow users to give feedback. | Rating will be between 0-5 stars. | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_08 | The application will have a searching feature for all users. | The search bar will allow all users to navigate more easily. | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_09 | All users with higher roles will have a different menu which will show them more details. | All workers will have a different application menu to navigate easier and have more details | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_10 | The system should allow users to auto log in if they allow the application to save their information. | All users will be able to save their log in information to save time.This will include their email & password. | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_11 | The application will allow all users to add a profile photo and nickname. | All users can add a profile photo and a nickname in their profile. | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_12 | All admin users can access and modify everything in the application. | Admin users have full access in the application and they can add,remove or modify information if needed. | 1 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_13 | All users with a higher role can access customer’s information if needed but not all can modify it. | Workers will be able to read customer’s information such as type of fuel & location. | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_14 | To make an order all users must turn on their location. | All customers must turn their locations on for the delivery teams. | 1 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_15 | All users will be able to contact customer support if they have any questions. | Customer support will be available 24/7 and all users can contact them. | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_16 | All users will receive updates regarding their orders. | After customers place an order they will be able to see their delivery. | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_17 | All users will have the option to repurchase their previous order. | If a customer wants to order the same product again he will be able to use the “repurchase” menu. This will save him time. | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_18 | All users will receive a copy of their receipt to their emails. | After a purchase a receipt will be sent automatically to the customer’s email. | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_19 | All users will be able to link their prefered payment method. | Payment methods include all types of credit cards or any other type of payments (paypal,skrill etc) | 1 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |
| R\_20 | All users with a higher role will be able to work with each other and see order’s progress. |  | 2 | 19.01.2023 | A.Sinani  K.Ali  G.Domnori |

**3.2 Non – Functional Requirements**

**3.2.1 Product Requirements**

***3.2.1.1 User Interface Requirements***

All UI requirements:

• Login/Registration

(Users should be able to create an account or log in to an existing account)

• User account management

(Users should be able to edit their account information, such as shipping address, and change their password)

• Order placement

(Users should be able to select the type of fuel they need, the quantity, and the delivery location)

• Order tracking

(Users should be able to track the status of their order, including delivery time and location)

• Order history

(Users should be able to view a history of their past orders)

• Payment

(Users should be able to enter their payment information and submit the order)

• Notifications

(Users should receive notifications of order status updates, such as when the order is confirmed, dispatched and delivered)

• Customer support

(Users should be able to contact customer support if they have any issues or questions)

• Rating and feedback system

(Users should be able to rate their experience and provide feedback)

• Maps and route optimization

(Users should be able to view a map of the delivery route and optimize the route for the fastest delivery time)

***3.2.1.2 Usability***

These are considered some key requirements for the usability of the application.

• Easy navigation

(The interface should be easy to navigate and intuitive to use)

• Responsive design

(The application should work well on various devices, including smartphones and tablets)

• Simple ordering process

(The order placement process should be straightforward and easy to complete)

• Clear instructions

(The application should provide clear instructions for users to follow)

• Error prevention

(The application should prevent common user errors and provide clear error messages if they do occur)

• Fast loading times

(The application should load quickly, even on slower internet connections)

• Consistent layout

(The layout of the interface should be consistent throughout the application, making it easy for users to find what they are looking for)

• Accessibility

(The application should be accessible to users with disabilities, including screen readers and keyboard navigation)

• Search and filter options

(Users should be able to search and filter through the products and orders easily)

• Feedback and rating system

(Simple and easy to use)

• Map and route optimization

(Intuitive and easy to understand)

***3.1.2.3 Performance***

These are considered some key requirements for the performance of the application.

• Fast order processing

• Real-time tracking

• Reliability

• Integration with the fuel supplier or third party logistics providers should be seamless and real-time updates should be provided to the users.

•Accurate and real-time fuel price updates should be provided to the users.

• The application should be able to handle peak traffic, with minimal delays and error.

• The application should be able to handle large number of orders and deliveries.

• The application should be able to provide detailed analytics and reports on the performance of the delivery service.

• Security

(The application should protect user data and financial information, and ensure that all transactions are secure)

• Offline functionality

(The application should be able to function even if the device is offline and should automatically sync data when the device is back online)

***3.1.2.4 Manageability/Maintainability***

**Monitoring**

Monitoring is an important aspect of any fuel delivery application, as it allows the application to be tracked and maintained efficiently.

• Performance monitoring

(The application should be able to monitor its performance and identify any issues that may affect the delivery service)

• Service availability monitoring

(The application should be able to monitor the availability of the service, and ensure that it is always up and running)

• Log monitoring

(The application should be able to monitor and analyze logs, which can help identify issues and improve the delivery service)

• Alerts and notifications

(The application should be able to send alerts and notifications when there are issues that need to be addressed)

• Automated testing

(The application should be able to perform automated tests to ensure that it is working correctly, and that the service is meeting the requirements)

• Integration with third party tools

(The application should be able to integrate with other monitoring tools, such as log analyzers, performance monitoring tools, and incident management systems)

• Monitor the fuel level of the tank trucks in real-time

Monitor the fuel delivery route optimization in real-time, and adjust it if necessary

**Maintenance**

Maintenance is an important aspect of any fuel delivery application, as it ensures that the application remains functional and efficient over time.

• Software updates

(The application should be able to receive software updates to fix bugs, improve performance and add new features)

• Data backup

(The application should have a robust data backup system in place to ensure that user data and order information is protected in case of any issues)

• Database management

(The application should have a database management system in place to ensure that data is stored and retrieved efficiently)

• Security

(The application should have a security system in place to protect user data and financial information, and ensure that all transactions are secure)

• Performance optimization

(The application should be optimized for performance, to ensure that it runs efficiently and can handle a large number of users and orders)

• Monitoring and troubleshooting

(The application should have a monitoring system in place to identify and troubleshoot any issues that may affect the delivery service)

• Fleet maintenance

(The application should be able to monitor and schedule maintenance for the delivery trucks, to ensure that they are running efficiently and safely)

• Fuel inventory management

(The application should be able to manage and monitor the fuel inventory, to ensure that there is enough fuel to meet the demand)

• Regular testing

(The application should be tested regularly to ensure that it is functioning correctly and that the service is meeting the requirements)