APOLLO UI

INNOVATIVE UI/UX SOLUTIONS

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Contents

Executive Summary

The aim of this project is to develop a mobile application for Rea Vaya's transportation system that addresses the issues faced by both new and old commuters, ultimately enhancing the overall quality of service. The proposed app will provide a user-friendly platform to facilitate easy travel account top-ups, card retrieval with existing funds, real-time bus tracking, and essential information dissemination.

Background and Context

Rea Vaya is a South African transit bus system that operates between Johannesburg and Soweto, with future plans of expanding its operations into other areas such as Alexandra, Rosebank and Sandton. It began its operations on the 30th of August 2009. This type of transportation became quite effective as the years went by since it managed to link several communities together and allowed customers to travel at affordable rates compared to the in/formal taxi transportation system such as Uber or Bolt. The bus system operates on a smartcard payment system as it allows users to tap in and out of the station at the start and end of their journey or transfer from one station to another as long as it is located within the same building.

The Rea Vaya transportation system is experiencing an influx of commuters which makes it susceptible to poor performance and as a result the quality of the service drops. As new commuters are introduced into the system, they often have to deal with new-fangled struggles such as finding places where commuters can top up their travel accounts, finding out that they cannot top-up their accounts while they have already tapped inside the station. At times, the cashiers that operate the top up stations are not available due to unforeseen circumstances. In that instance, the commuter is likely to be doomed unless they try to make their way into the station without being seen, which is illegal. These are some of the struggles that new and old commuters face when trying to use the bus system. Usual commuters are also subjected to several issues that tend to be difficult to resolve. A great example is what happens when a commuter has lost their card that has existing funds. A prevalent issue in this instance is, how do commuters retrieve their card and funds without having a travel card that is linked to them directly.

This raises challenges on the commuter’s side such as not being able to produce their last top-up slip as verification of the ownership of their card. If a card of a commuter is stolen, there is no known and easy procedure to follow to block and retrieve their card with existing funds. A secondary problem that commuters are faced with is not being able to track or determine when the next bus will arrive or depart a particular station. This creates a certain amount of inconvenience as it is difficult to see how far the bus is from their current bus stop should it happen that the commuter is in a hurry.

In summary, the primary problems are; commuters not being able to check their balance, not being able to top up their accounts online, and not being able to easily block and retrieve their cards. The secondary problem is that commuters are not able to track arrival and departure times of the bus in real time.

Problem Statement

Insufficient systems that allow easy and convenient usage of the RV transit system.

Symptoms

1. There is no accessible top up points outside business hours.
2. Commuters cannot top up their travel accounts once they have tapped inside the bus station without the risk of being charged an additional amount.
3. Cashiers that operate the top up stations are at times not available due to unforeseen circumstances hence unable to attend to customers that need to top up their accounts.
4. Commuters cannot top up their cards when a bus station is offline or experiencing loadshedding and generators are non-functional.
5. There is no known and easy procedure to follow to block and retrieve your card with existing funds.

Solution

As part of the project, a suitable solution or prototype will be built as a proof of concept with the intention of demonstrating the potential of the proposed solution and its ability to improve the existing user experience of the RV company. Economic models can also be used as part of research and financial tools to better understand the situation at hand as more data becomes available through the permission of the company.

The solution is to develop a prototype of the system that can be used to address the shortcomings of the existing system.

Mission Statement

Enhance transit experience, profits, and fairness in South African commutes.

Vision Statement

Efficient, secure, and sustainable transit connecting communities across South Africa.

Functional Requirements

1. **Travel Account Top-Up**

   Enable online payments as a seamless process for commuters to top up their travel accounts.

2. **Card Retrieval**

   Facilitate the retrieval of funds from a lost card and transfer them to a new one.

3. **Real-Time Bus Tracking**

   Utilise GPS technology to enable users to approximate the location of the next bus through the estimated arrival times at specific stations to reduce waiting times.

4. **Station Information and Announcements**

   Display essential station information, including top-up station locations and operating hours.

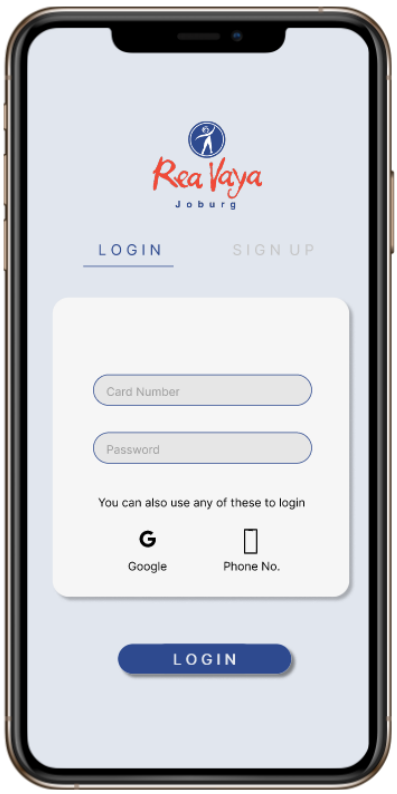
   Notify users of any service disruptions, delays, or important announcements.

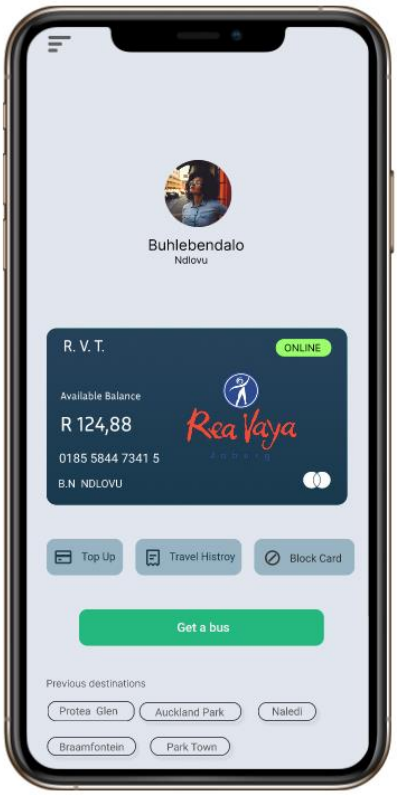
5. **Card Blocking**

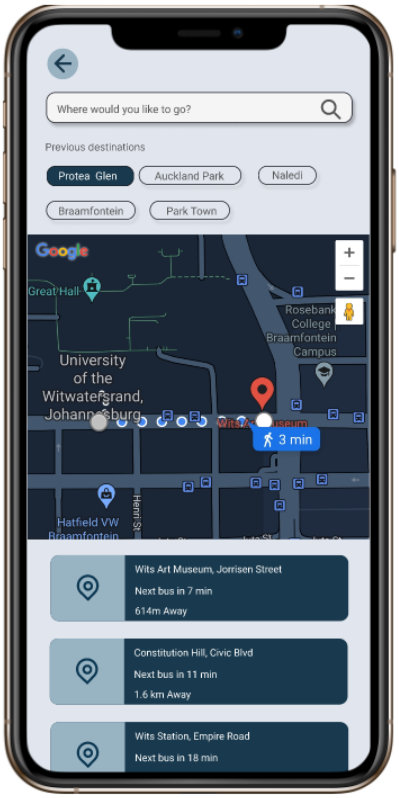
   Enable users to block their lost cards remotely to prevent unauthorized use.

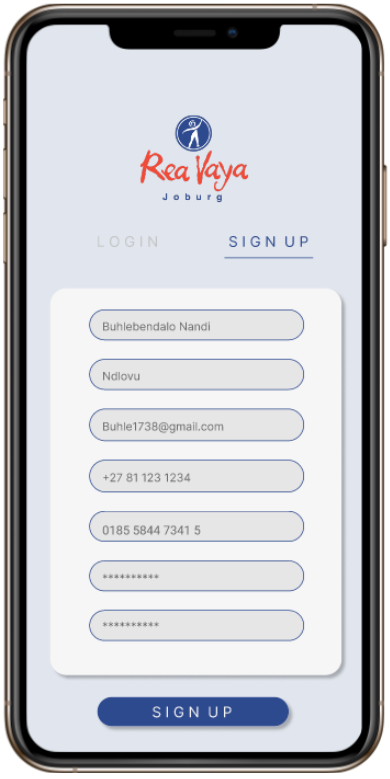
Mobile App Design Overview

This section aims to give a presentation of the initial design solution of the proposed mobile solution.









Non-functional requirements

1. **Performance**

   Ensure the system can handle a growing number of commuters without performance degradation.

2. **Security**

   Implement robust security measures to protect user data and prevent fraudulent activities.

3. **Reliability**

   Maintain a high level of service reliability to minimize disruptions to commuters.

4. **Scalability**

   Ensure the system can scale to accommodate the expansion into new areas.

5. **User-Friendly Interface**

   Create an intuitive and user-friendly interface for commuters to top up their cards.

Business Rules and Processes

1. **User Registration and Authentication**

- Commuters must register an account to access the app's features.
- Two-factor authentication should be implemented for enhanced security.

2. **Account Top-Up**

- Users can top up their travel accounts at designated stations or through the app.
- Minimum and maximum top-up amounts will be defined to comply with regulations.

3. **Card Retrieval and Blocking**

- Users must verify ownership through unique identifiers or previous top-up slips.
- A verified user can block and retrieve funds from a lost card.

4. **Real-Time Bus Tracking**

- The app will access real-time GPS data to display bus locations accurately.
- Estimated arrival times will be calculated based on bus positions and traffic conditions.

5. **Announcements and Notifications**

- Important announcements will be displayed on the app's home screen.
- Users will receive push notifications for service updates, delays, or disruptions.

6. **Privacy and Data Protection**

- User data will be handled in compliance with data protection laws.
- The app will adhere to industry best practices for data security.

Risk Register

“A risk register, or risk log is a risk management tool that’s used to identify potential risks that could affect the execution of a project plan. While the risk register is mostly used during the execution of the project, it should be created during the project planning phase” - projectmanager.com

1. **Application Adoption (High)**

Risk	Low adoption rate, resulting in insufficient use of the app.
Impact	Reduced effectiveness of the app in addressing the identified issues.
Mitigation	Implement a comprehensive user adoption and marketing strategy to promote the app's benefits and usability.

2. **Technical Performance (High)**

Risk	App crashes, slow loading times, or performance issues.
Impact	Frustrated users and decreased app usage.
Mitigation	Ongoing performance monitoring, regular updates, and optimization for different devices and network conditions.

3. **Resource Constraints (High)**

Risk	Insufficient resources (budget, personnel) for app development and maintenance.
Impact	Delays, reduced functionality, or project failure.
Mitigation	Adequate resource planning and regular budget reviews.

4. **System Integration (High)**

Risk	Difficulty integrating the app with existing systems or databases.
Impact	Reduced efficiency and data management issues.
Mitigation	Conduct thorough system integration testing and plan for data migration as needed.

5. **Application Compatibility** (Medium)

Risk	Compatibility issues on various mobile devices, operating systems, or screen sizes.
Impact	Reduced accessibility and negative user experience.
Mitigation	Rigorous testing on different platforms and regular updates to maintain compatibility.

6. **Security and Privacy Concerns** (Medium)

Risk	Data breaches or privacy violations within the app.
Impact	Loss of user trust and potential legal implications.
Mitigation	Implement robust security measures, encrypt sensitive data, and ensure compliance with data privacy regulations.

7. **Regulatory Changes** (Medium)

Risk	Changes in regulations affecting mobile apps, such as data privacy laws.
Impact	Non-compliance could lead to legal and reputational risks.
Mitigation	Stay informed about relevant regulations and adapt app features and policies accordingly.

8. **User Feedback Handling** (Medium)

Risk	Inefficient handling of user feedback and feature requests.
Impact	Missed opportunities for app improvement and user satisfaction.
Mitigation	Establish a feedback management process and prioritize feature enhancements.

9. **Scalability Issues** (Low)

Risk	Inability to scale the app to accommodate a growing user base.
Impact	Performance degradation and user dissatisfaction.
Mitigation	Scalability planning and regular performance testing as user numbers increase.

10. **Inadequate User Support (Low)**

Risk	Insufficient customer support channels for app users.
Impact	Increased user frustration and potential negative reviews.
Mitigation	Establish clear user support channels and ensure timely issue resolution.

11. **Competition and Market Changes (Low)**

Risk	Rapid changes in the mobile app market, including competitive offerings.
Impact	Erosion of user base and relevance.
Mitigation	Continuously monitor the market, adapt to emerging trends, and incorporate user feedback.

Key Performance Indicators

When implementing a mobile app as part of the solution for your project, there are several key performance indicators (KPIs) that can help measure the app's success and its impact on the overall project.

1. **User Adoption and Growth**

- Number of app downloads and installations.
- Monthly active users (MAU) and daily active users (DAU).

2. **User Retention**

- Retention rate (percentage of users who continue to use the app over time).
- Churn rate (percentage of users who stop using the app).

3. **User Satisfaction**

- App store ratings and reviews.
- Net Promoter Score (NPS) or customer satisfaction surveys.

4. **Performance and Reliability**

- App responsiveness and loading times.

- App crashes and error rates.

5**. Sales Metrics**

- Changes in total revenue generated since the introduction of the application.

6. **Security and Privacy Metrics**

- Number of security incidents or breaches.
- User data privacy compliance (POPIA).

7**. Retention and Engagement Over Time**

- User retention and engagement metrics measured over months to track long-term trends.

8. **Geographic and Demographic Metrics**

- User location and demographics to tailor marketing efforts and features.
- Performance metrics specific to different regions or user segments.

Keeping track of the above mentioned KPIs can help Rea Vaya and Apollo UI evaluate the app's impact on user experience, project goals, and the overall success of the solution. Depending on the project's specific objectives, It is possible to prioritize certain KPIs over others but that sorely depends on the engagement between the stakeholders. Regularly monitoring and analysing these key performance indicators will enable Rea Vaya and Apollo UI to make data-driven decisions to improve the mobile app and its contribution to the project's success.

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