**INTRODUCTION**

In Ethiopia, the realm of transportation faces significant challenges that hinder accessibility, affordability, and efficiency for its citizens. The country's transportation system, crucial for connecting diverse communities, suffers from various issues arising from governmental and infrastructural limitations.

The recent global pandemic, the Corona Virus (Covid-19), highlighted the pivotal role of transportation in everyday life. However, the existing system in Ethiopia poses time-consuming hurdles for travelers. For instance, individuals from rural areas often must journey to the nearest city with a ticket office to secure their travel arrangements, significantly impacting their time and resources. Moreover, the uneven distribution of ticket offices across the country amplifies these challenges, creating an imbalance among citizens.

Financial requirements also pose a considerable barrier, particularly for those in remote areas, forcing them to allocate more funds for reservations and travel expenses. These challenges underscore the urgent need for modern technological solutions to streamline the transportation experience and bridge the gap between urban and rural communities.

The Selam Transport Route and Ticket Administration Platform recognizes these pressing issues within Ethiopia's transportation sector and aims to spearhead a transformative initiative. This project's core objective is to develop a streamlined and user-friendly platform that facilitates efficient route administration and introduces a cost-effective ticket reservation system. By leveraging technology, Selam endeavors to redefine the transportation landscape in Ethiopia, making travel more accessible, affordable, and convenient for all citizens regardless of their geographical location.

**THE CURRENT SYSTEM**

Current system of ticket reservation and administration may be different from one provider to another, but there is a basic similarity which makes us generalize the major functionality of the current system. In the current system customers should be presented (represented) in place to take tickets. Which follows the following processes.

1. Although there is a transportation service to their destination, they have to present earlier because of limited number of tickets.
2. They will take, paper-based receipt and keep that until they start traveling.
3. After having ticket, there must be on time, to travel.

From providers side, they manage their tickets, routes and employees using different manual and digital approaches

**USERS OF THE CURRENT SYSTEM**

Current system has the following users:

1. Travelers (Customers)

1. People who use public transportation to travel from one place to place.

2. Transport providers

1. Companies, that providers transportation to travelers

**Problems of current system**

The current system has the following major problems, which affects both customers and transport providers.

In the customers side, major problems are :

1. Since customers have to do multiple tasks, that require more time. Which is much time wasting.
2. In addition to time, money is another resource, which will be consumed more than necessary.
3. Even if, customers have enough time and money to reserve ticket, there is low chance of getting tickets.

In the transport providers side, the following points are major problems:

1. Inefficiency, since it is manipulated by ticket offices, not by every individual, which makes the system slower, that cause inefficiency.
2. Unavailability is another problem for providers, that caused as result of limited number of ticket offices in specific city.
3. Some of the major problems of the system is corruption let’s look the following case. Employees in ticket office reserve for the first 5 to 10 tickets, and hide from customers. At the mean time when late customer come to reserve ticket, they sold reserved tickets with additional payment, which is not aim of a company.

**Business role of the system**

Business role of the system In the use of platform, we have the succeeding business rules:

1. Customers should register in the platform
2. Customers must have an account in any of supported bank.
3. Customers should select and made payment explicitly
4. The transport company should create its employee and routes

**FUNCTIONAL REQUIREMENT OF THE CURRENT SYSTEM**

Functional Requirements Tena transport route and ticket administration platform has the following functionalities for customers and transport providers

**1. Customers**

1. must register
2. can appoint for ticket reservation
3. can reserve ticket
4. view travel history
5. receive digital receipt
6. receive SMS as a reminder
7. pay for a ticket, using online payment systems

**2. For transport provider**

This platform is for a single transport company.

1. an administrator must register in the platform as Admin.
2. an administrator should add ticker and route officers.
3. an administrator can deactivate ticket and route officers and employees
4. officers can log in and logout
5. officers should add their employee
6. can change password at any time
7. can reset password when forgot
8. An employee can log in and logout

**Use Case Model**

3.5.1. Actor identification In Selam transport route and ticket administration platform, we have the following actors

1. Customer

2. Administrator

3. Ticket Officer

4. Route Officer

5. Ticket Employee

6. Route Employee

**Use cases**

1. Register

3. Login/Logout

4.Check Route

5. Reserve ticket

6. Online payment

7. Receive receipt

8. Add administrator

9. Add officer

10. Add employee

11. Create route

**Use Cases**

**Use Case:** Register

**Use Case Number:** UC01

**Description:** Registration to the platform

**Participating Actors:** Customer

**Precondition:** Must have an internet connection and the platform browsers.

**Flow of Events**:

1. Customer opens the browser.
2. The platform will display the registration page.
3. The customer enters his/her first name, last name, phone number, sex, date of birth, region, zone, woreda, and password.
4. Then click the Register button.

**Postcondition:** The platform Sends verification code SMS to the customer phone number and saves data in a database as a non-verified customer.

**Alternate Condition:** If the customer enters incorrect data, the platform redirects to the registration page with an error message.

**Use Case:** Verification

**Use Case Number:** UC02

**Description:** Verify the customer

**Participating Actors:** Customer

**Precondition:** The customer must be registered.

**Flow of Events:**

1. A customer receives an SMS verification code.
2. The customer enters the code.
3. If the code is correct: The platform displays a validation message.

**Postcondition:** The platform redirects to the login page.

**Alternate Condition:** If a customer enters the wrong verification code, the platform redirects the verification page with an error message.

**Use Case:** Login

**Use Case Number:** UC03

**Description:** Authentication to the platform

**Participating Actors:** Customer, superuser, administrator, officers, and employees.

**Precondition:** The participant must be registered.

**Flow of Events**:

1. The user opens the browsers.
2. The platform will display the login page.
3. The user enters the username and password.
4. If the username and password are correct: The platform is directed to the home page.

**Postcondition**: The platform saves the data on a database.

**Alternate Condition:** If a user enters the wrong username and password, the platform prompts an error message and redirects to the login page.

**Use Case:** Update Profile

**Use Case Number:** UC04

**Description:** User updates their profile

**Participating Actors:** Customer, superuser, administrator, officers, and employees.

**Precondition:** User must be authenticated.

**Flow of Events:**

1. Then click ‘update profile’ button.
2. The user enters the new data and clicks the update button.

**Postcondition:** The platform saves the updated data to the database.

**Alternate Condition:** If the user enters incorrect data, the platform redirects to the update page with the wrong message.

**Use Case:** Change Password

**Use Case Number:** UC05

**Description:** Change the password for the user

**Participating Actors:** Customer, superuser, administrator, officers, and employees.

**Precondition:** The user must authenticate.

**Flow of Events:**

1. The user clicks the ‘change password’ button.
2. A user enters the new password.
3. The user confirms the new password then clicks the ‘change’ button.

**Postcondition:** The platform saves the change on the database and redirects to the home page.

**Alternate Condition:** If the user enters incorrect data, the platform redirects the change password page with an error message.

**Use Case:** Reset Password

**Use Case Number:** UC06

**Description:** User resets the password if he/she forgot their password.

**Participating Actors:** Customer, superuser, administrator, officers, and employees.

**Precondition:** The user must have an email account (for the customer phone number), and they should register to the platform.

**Flow of Events:**

1. User clicks the ‘reset password.’
2. They enter their email account and email password.

**Postcondition:** The platform sends the new password into their account if their email and its password are correct.

**Alternate Condition:** If the user enters the wrong email, the platform redirects the login page with an error message.

**Use Case:** Logout

**Use Case Number:** UC07

**Description:** Used to leave the platform

**Participating Actors:** Customer, superuser, administrator, officers, and employees.

**Precondition:** Initially, they must be on the platform.

**Flow of Events:**

1. The user clicks the menu button then the platform redirects to a menu page.
2. Then the user clicks the logout button.

**Postcondition:** The user leaves the platform.

**Alternate Condition**:

**Use Case:** View History

**Use Case Number:** UC08

**Description:** Customer sees his/her travel history

**Participating Actors:** Customer

**Precondition:** Customer must be authenticated and also, he/she uses the platform before.

**Flow of Events:**

1. Click the ‘view history’ button.

**Postcondition:** The platform displays the history page.

**Alternate Condition:**

**Use Case:** Check Out

**Use Case Number:** UC10

**Description:** Customer checks the route he needs.

**Participating Actor:** Customer, ticket employee.

**Pre-condition:** User must be authenticated.

**Flow of Events:**

1. User click check out button.
2. User enters the destination he wants and day.
3. Then he chooses from the list generated by the platform.

**Postcondition:** The platform displays the route requested by the user.

**Alternate Condition:** If the user enters wrong data (eg. Past date) or he wants the route already completed the platform redirected to check out page with error/sorry message.

**Use Case:** Cancel Ticket

**Use Case Number:** UC11

Description: User cancels a booked ticket

**Participating Actor:** Customer

**Precondition:** User must be authenticated.

**Flow of Events:**

1. User accesses the booked tickets section.
2. Selects the ticket to cancel.
3. Requests cancellation.
4. If within 2 days of the timeline: System processes the cancellation.

**Postcondition:** Ticket is canceled, and seats are made available for booking.

**Alternative:**If beyond 2 days of the timeline:

System displays a message notifying the user that ticket cancellation is no longer permissible due to the timeline restriction.

**Use Case:** Modify Ticket

**Use Case Number:** UC12

**Description:** User modifies a booked ticket

**Participating Actor:** Customer

**Precondition:** User must be authenticated.

**Flow of Events:**

1. User accesses the booked tickets section.
2. Selects the ticket to modify.
3. Requests modifications (change date, seats, etc.).

**Postcondition:** System processes the requested changes if within the permissible modification period.

**Alternative:** If outside the permissible modification period:

System prompts the user that modifications cannot be processed due to the expiration of the modification period.

**Use Case:** Postpone/Prepone Ticket

**Use Case Number:** UC13

**Description:** User changes the travel date of a booked ticket

**Participating Actor:** Customer

**Precondition:** User must be authenticated.

**Flow of Events:**

1. User selects a booked ticket for date modification.
2. Requests to postpone or prepone the travel date within available options.

**Postcondition:** System adjusts the ticket date as per the user's request if within the permissible modification period.

**Alternative:** If the desired date falls outside available options:

System prompts the user that the selected date is beyond the allowable range for date changes.

**Use Case:** Modify Route

**Use Case Number:** UC14

**Description:** Administrator/Route Officer modifies a route

**Participating Actor:** Administrator/Route Officer

**Precondition:** Actor must be authenticated.

**Flow of Events:**

1. Admin/Route Officer accesses the route management section.

Selects the route to modify.

1. Initiates the modification process, adjusting details as needed.

**Postcondition:** System updates the route information.

**Alternative:** If route modification conflicts with existing schedules:

System alerts the administrator that the modification cannot be applied due to potential conflicts with existing bookings or operational schedules.

**Use Case:** Cancel Route

**Use Case Number:** UC15

**Description:** Administrator/Route Officer cancels a route

**Participating Actor:** Administrator/Route Officer

**Precondition:** Actor must be authenticated.

**Flow of Events:**

1. Admin/Route Officer accesses the route management section.
2. Selects the route to cancel.
3. Initiates the cancellation process.

**Postcondition:** System removes the route and associated details from the system.

**Alternative:** If route cancellation affects current bookings:

System notifies the administrator of existing bookings on the route and requests confirmation to proceed with the cancellation.

**Use Case:** Refund

**Use Case Number:** UC17

**Description:** System refunds payment for canceled tickets

**Participating Actor:** System

**Precondition:** Ticket cancellation within the permissible period.

**Flow of Events:**

1. User cancels the ticket within the stipulated time frame.
2. System processes the refund for the canceled ticket.

**Postcondition:** Refund amount credited back to the user's account.

**Alternative:** If cancellation is beyond the permissible refund period:

System informs the user that a refund cannot be processed as it is outside the allowed refund window.

**Use Case:** Reward Consistent User

**Use Case Number:** UC18

**Description:** System rewards consistent users

**Participating Actor:** System

**Precondition:** User history of multiple travels (e.g., 10 times).

**Flow of Events:**

1. System monitors user travel history.
2. If the user completes 10 travels: System triggers the reward mechanism.

**Postcondition:** User receives the predefined reward (e.g., discount, loyalty points).

**Alternative:** If the user falls just short of the required number of travels:

System acknowledges the user's frequent travels and provides information about how many more travels are needed to qualify for the reward.