

Technical Report on TransmiApp CLI

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1. Business model:

Client segment

The intended users of the application are the various passengers of the Transmilenio system, such as students, workers, and even tourists. Given the current state of global technology, it is extremely necessary to provide a virtual guide to the public transportation system of one of the largest cities in Latin America. This will enable millions of users to better understand how the system operates, standardizing information for all people.

Value propose

The application will offer users a wide range of services, such as:

- Route Consultation: Users will be able to check which routes are currently in service, including their stops and schedules.
- Trip Planning: Users can plan routes between the stations they wish to visit, showing the most efficient route.
- Route History – Most Used: Users will be able to view their most recent journeys, along with the routes they use most frequently.
- Card Top-Up: Users can top up their system card from the comfort of their home using any of their virtual wallets through PSE.
- System Issues: Users can observe which stations are closed, which routes are diverted, or which are out of service for any reason.

Customer relations

The system will have the capability to adapt to the customer's needs through the use of personalized location saving, such as home, work, university, etc. This will allow users to plan their trips to frequent destinations from wherever they need. Additionally, it is clear that users often need to top up their card balance, and it is common for people to struggle to find a recharge point. The system will also allow them to conveniently use the funds from their virtual wallets.

Sources of income

Two major sources of revenue are planned:

- Small Commission on Virtual Top-Ups: A small commission will be charged for each virtual card top-up transaction, offering users the convenience of recharging their cards through the service.
- Future Expansion of Services: The platform will enable broader usage of the TransMilenio system, and in the long term, there is potential to negotiate with the main TransMilenio company to offer and integrate our services directly within their infrastructure.

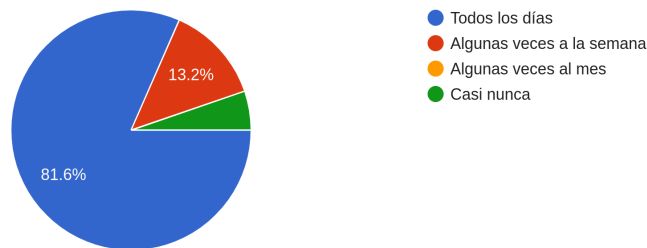
Key resources

- Technologies: System databases containing stations, routes, and journeys, along with backend logic.
- Developers: A team of developers to integrate the system into a virtual application.

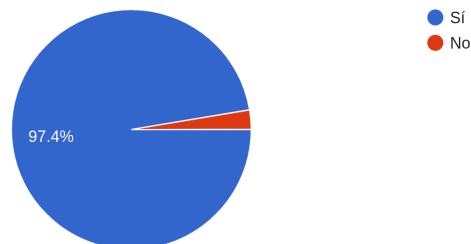
2. User stories:

The user stories were gathered through a Google Form created by the team. This form was designed to collect feedback from potential users regarding their needs and expectations for the app.

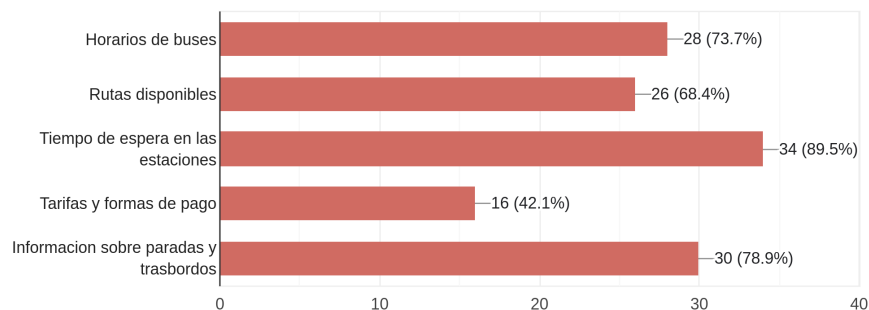
¿Con qué frecuencia utilizas el sistema de transporte TransMilenio?
38 respuestas



¿Tienes experiencia usando alguna aplicación de transporte público (ej. TransmiApp, Moovit, Google Maps, etc.)?
38 respuestas

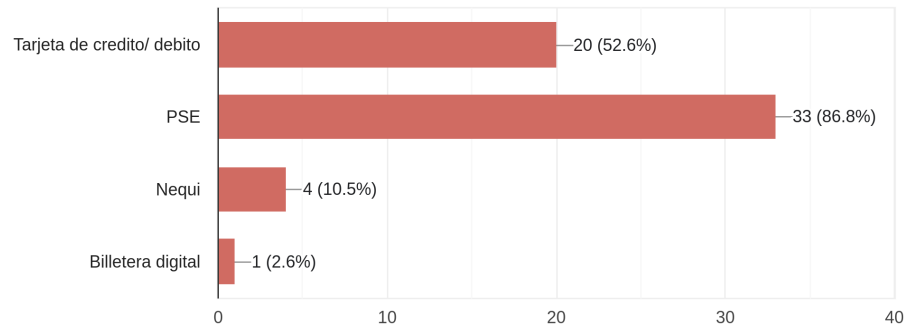


¿Qué tipo de información te gustaría consultar en una aplicación de transporte como TransmiApp?
38 respuestas



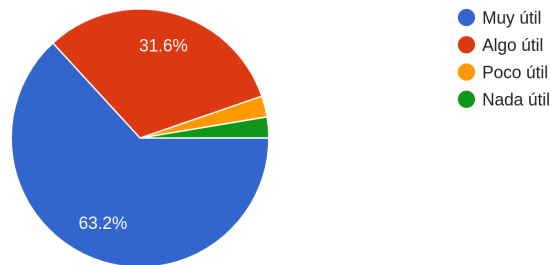
¿Qué métodos de pago te gustaría poder utilizar en la app para recargar tu tarjeta de transporte?

38 respuestas



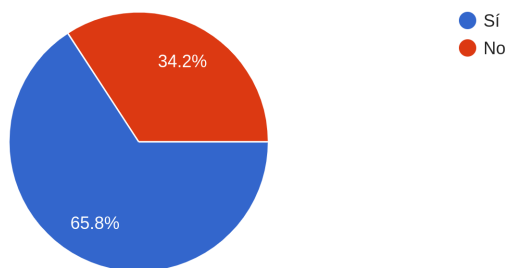
¿Qué tan útil te parecería una función que notifique cuando debes bajarte del bus?

38 respuestas



¿Has experimentado problemas con las aplicaciones de transporte que has utilizado?

38 respuestas

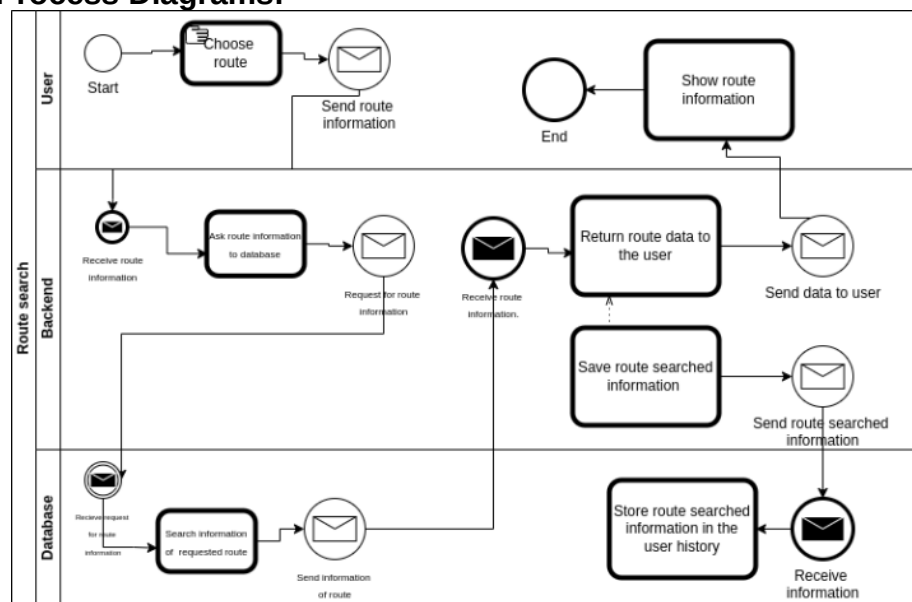


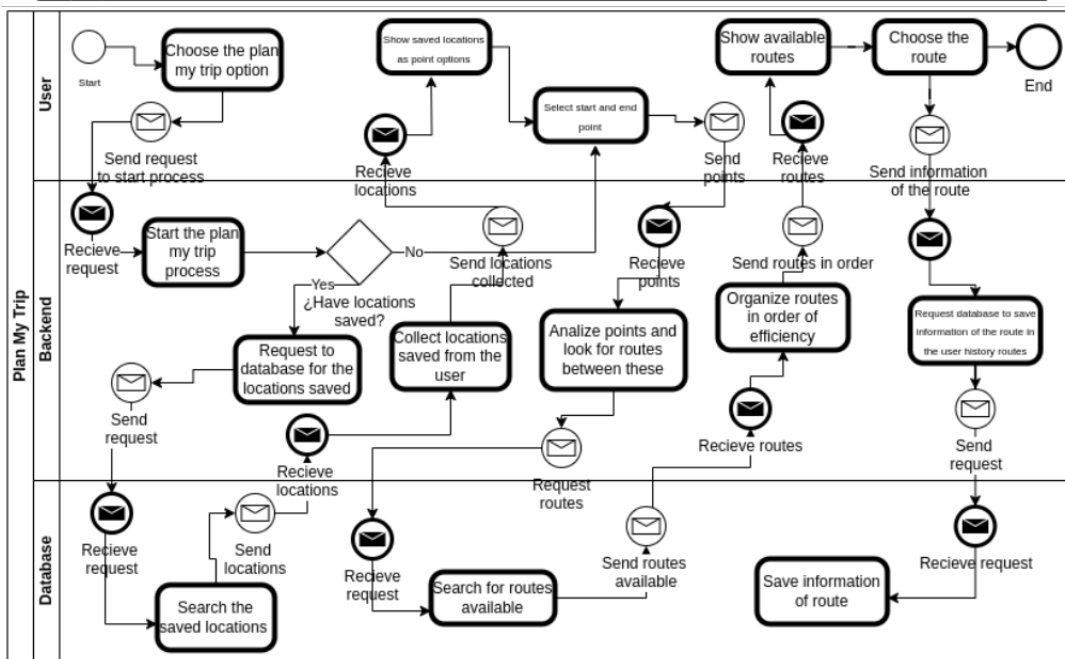
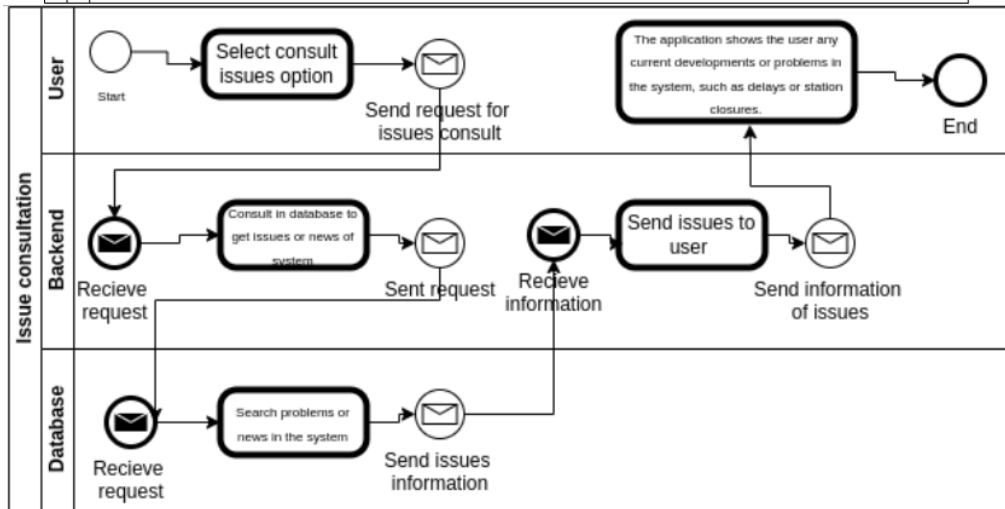
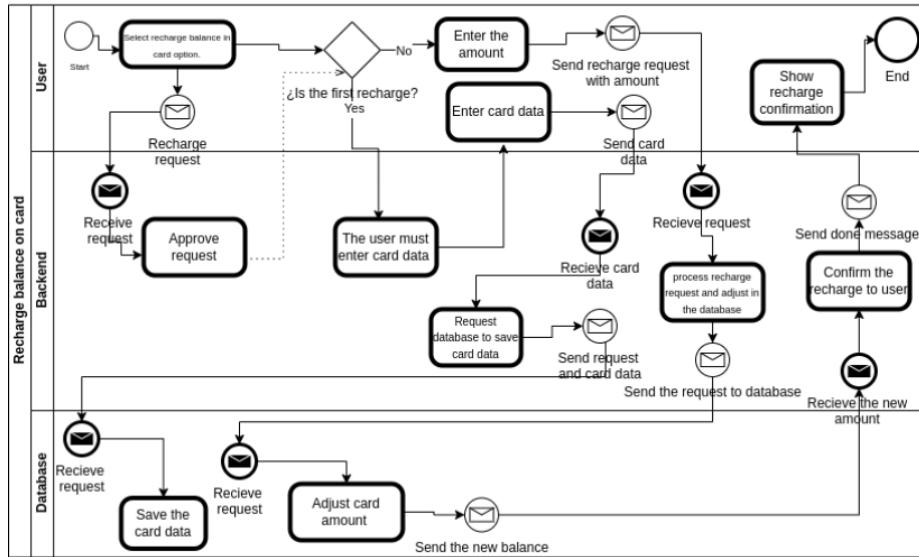
The responses provided valuable insights into the desired features and functionalities, which helped shape the development and prioritization of the application's core components. Below are the most relevant ones:

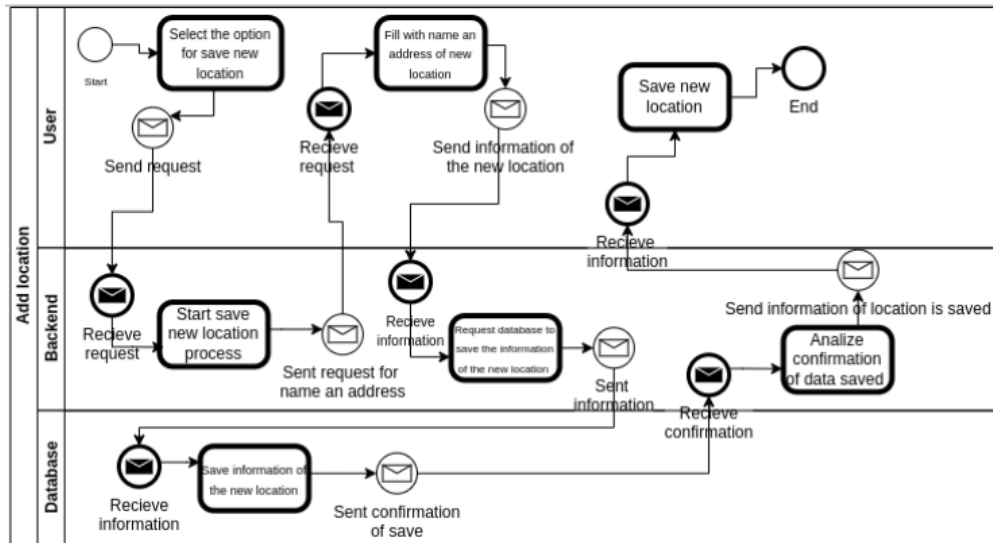
- **As a student who uses TransMilenio daily**, I want the app to notify me of delays or route changes, so that I can adjust my travel plans accordingly.
- **As a student and frequent app user**, I want real-time location updates for buses and my own location, so that I can navigate the system with precision and avoid delays.

- **As a student who rides TransMilenio daily**, I want to view accurate bus schedules and real-time arrival times, so that I know exactly when the bus will arrive and avoid long waits.
- **As a student who rides TransMilenio daily**, I want an app feature that suggests the best routes based on real-time traffic, so that I can avoid congested areas and save time.
- **As a daily TransMilenio user**, I want the app to remember my most frequent routes and suggest alternatives if those routes are delayed, so that I can optimize my commute.
- **As a student who frequently uses TransMilenio**, I want to recharge my transportation card through the app and receive instant confirmation, so that I don't face issues with delayed payments.
- **As a student who rides TransMilenio daily**, I want to see clear and accurate information on how full stations or buses are, so that I can choose less crowded options.
- **As a student and frequent app user**, I want to track my bus or TransMilenio in real-time, so that I know exactly where it is and can estimate arrival times accurately.
- **As a daily commuter**, I want the app to let me know if a station or route is closed due to protests or construction, so that I can plan alternative routes.
- **As a student and frequent user**, I want to report issues like bus delays or service disruptions, so that I can contribute to improving the system for all users.

3. Business Process Diagrams:







4. CRC cards:

BusRoute	
Responsibility	Collaborators
- Get bus route information	- TransportApi
- Save route search history	- RouteNotification

BusStop	
Responsibility	Collaborators
- Get information about the buses that pass by a stop	- TransportApi
- Save bus stop search history	- BusStopNotification
	- TravelPlanning

BusCard	
Responsibility	Collaborators
- Manage recharges of the user's transportation card	- User
- Check the current balance of the card	

RouteNotification	
Responsibility	Collaborators
- Notify changes to a specific route	- BusRoute
- Keep route status updated	- TransportApi

TravelPlanning	
Responsibility	Collaborators
- Plan the user's travel indicating which buses to take	- BusRoute
- Get the best route from a point of origin to a destination	- BusStop
	- TransportApi
	- SearchHistory
	- Address

BusStopNotification	
Responsibility	Collaborators
- Notify the user about closed stations	- BusStop
- Keep bus station status updated	- TransportApi

SearchHistory	
Responsibility	Collaborators
- Manage the history of searches performed by the user	- SearchEntry
- Store and retrieve search entries	- User
- Provide a way to filter history by type (routes, stops, travels)	

TransportApi	
Responsibility	Collaborators
- Connect to the database to obtain information on routes, stops, and buses	- BusRoute
	- BusStop
	- TravelPlanning
	- RouteNotification
	- BusStopNotification

User	
Responsibility	Collaborators
- Store the user's favorite addresses	- SearchHistory
- Store user transportation card information	- RechargeCard
- Access and manage your search and trip planning history	- Location

SearchEntry	
Responsibility	Collaborators
- Store details of a specific search, including type and relevant data (e.g. route or stops)	- SearchHistory
- Provide access to search data (such as route name, station name, etc.)	
- Provide a way to filter history by type (routes, stops, travels)	

Address	
Responsibility	Collaborators
- Represent a specific address	- Location
- Provide methods to manipulate and obtain address information	

Location	
Responsibility	Collaborators
- Define common location attributes	- User
- Provide methods to obtain coordinates and location type	- TravelPlanning
	- Address
	- Station

Station	
Responsibility	Collaborators
- Represent a transmlenio station	- Location
- Provide methods to manipulate and obtain information about the station	

5. Class Diagram:

