

SMARTCOMMUTE: ROUTE MANAGEMENT AND SIMULATION PLATFORM FOR TRANSMILENIO

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INTRODUCTION

"Public transport systems worldwide have rapidly adopted advanced technologies to enhance operational efficiency, user experience, and urban sustainability." [1]. With the imminent arrival of new technologies in Colombia and across the globe, the integration of advanced tools and systems into public transportation has become not only essential but inevitable. As urban populations grow and mobility demands increase, traditional public transportation systems face the risk of becoming outdated and inefficient. Previous solutions, such as real-time tracking, mobile ticketing, and smart card systems, have been implemented in various cities worldwide to improve service quality and efficiency. However, challenges remain, including limited technological infrastructure, high costs of implementation, and ensuring widespread adoption among users. Addressing these challenges is critical to preventing obsolescence and ensuring that public transportation remains a viable, sustainable, and user-friendly option for the future.

GOAL

How can the integration of advanced technological tools improve the efficiency and user experience of public transportation systems like TransMilenio in Bogotá? The advent of advanced technologies will not only enhance users' awareness of the public transportation systems available for their mobility but also empower them to manage their lives more effectively. A stark and sobering reality is that individuals waste a significant amount of their lives commuting on public transport. As noted, "On average, Americans spend 408 days of their lives commuting to and from work" [2] Taking all this into account, our primary initiative is to develop a functional prototype of a mobile application that simulates real-time route tracking, card recharging, and travel planning features, thereby improving the operational efficiency and convenience of public transportation for users.

PROPOSED SOLUTION

We have developed an application designed to streamline various services that can lead to inefficiencies for both the system and the user. This application incorporates six main functionalities: route and station inquiries, virtual card recharging, system issue reporting (such as detours or closed stations), travel planning with the ability to save user-defined locations, and a history of frequently traveled routes. These features are facilitated through various connections established between the user, the server (or our backend system), and the database of the transportation system (see Figure 1).

CONCLUSION

The development of the SmartCommute application represents a significant step forward in improving the operational efficiency and user experience of the TransMilenio system. By incorporating features such as real-time route inquiries, virtual card recharging, and travel planning with personalized locations, our solution addresses key challenges in public transportation. These functionalities not only reduce inefficiencies within the system but also empower users to make more informed travel decisions. The implementation of advanced technological tools within public transportation has the potential to drastically reduce time wasted commuting, enhance the reliability of services, and contribute to a more sustainable urban mobility model. As SmartCommute evolves, it aims to serve as a blueprint for further technological integration in public transport, ensuring a smoother and more efficient commuting experience for all users.

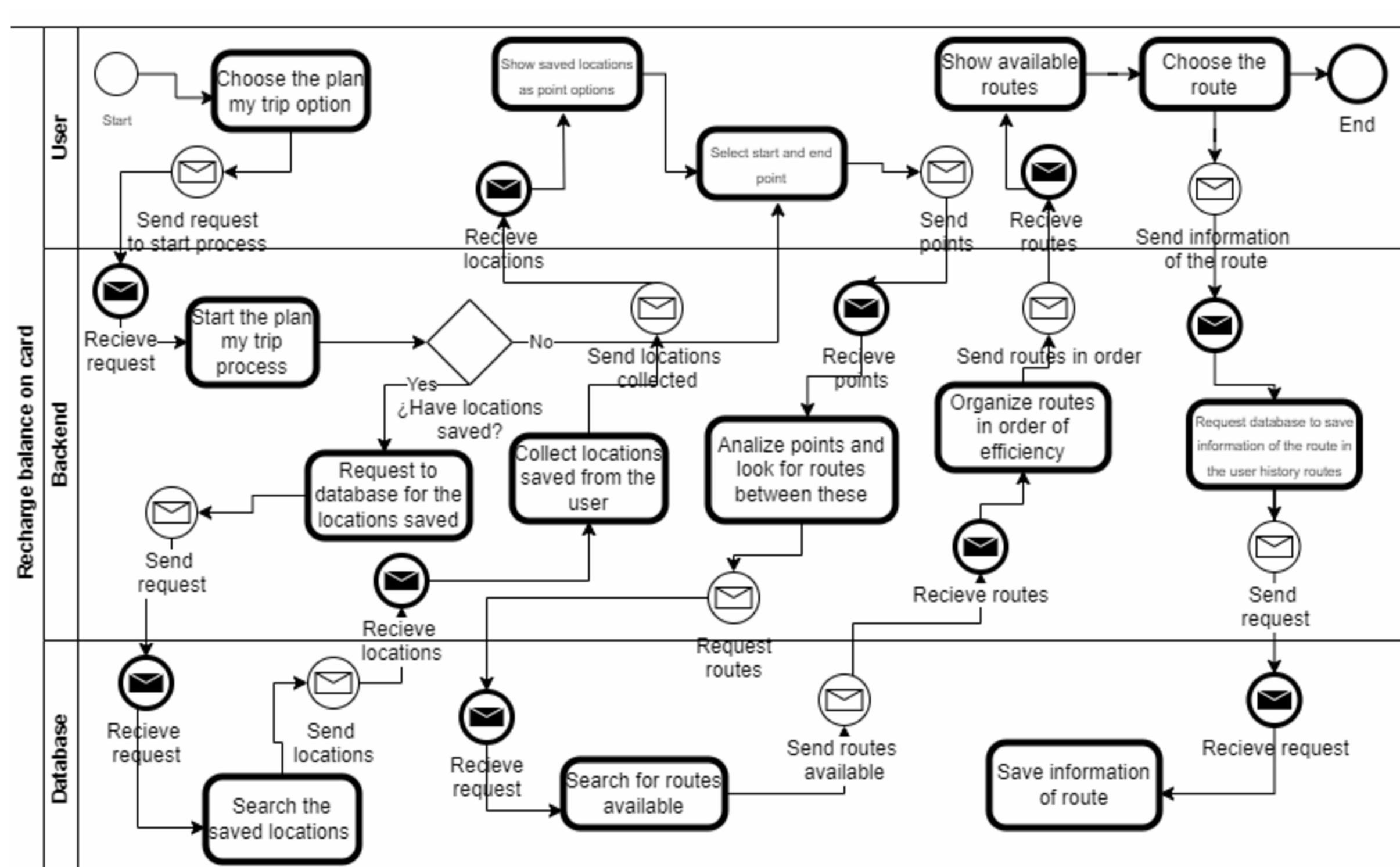


Figure 1: BPMN To make a virtual recharge to the system card

BIBLIOGRAPHY

- [1][UITP, "Transforming Public Transport through Technology", 2020]
[2][Mental Floss, "Educated Driver", 2022]