



Blockchain and the City Challenge Use Case 1 Summary

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GRAND LYON
la métropole

Mobility as a service

Use Case context: One customer and one trip for many companies

When a customer wants to travel from point A to point B using public transport, he or she usually uses different transport modes: plane, train, bus, taxi, bicycle, metro, and so on. For each of these transport modes, several companies offer similar services. So when planning the trip and buying tickets, the customer must patch together different transport modes and his different suppliers.

The opening to competition in French rail transport will amplify this phenomenon: customers will now have to choose which website to buy their ticket according to the route they want to take. The purchase procedure is therefore complex for a customer. We know that using public transports will help to fight against the global warming. But we still need to help people who want to use public transport and not discourage them with complex booking systems.

Some transport stakeholders are trying to resolve this issue by selling more and more services online. For example, it is already possible to buy a plane or bus ticket on the SNCF website or through the SNCF mobile app. But this is a hegemonic way to deal with the issue: it means one actor is taking control of the market.

Of course, transport companies would like to avoid the situation that hotels and booking companies have fallen into. It means not having contact with their clients and losing their capacity to create new services. This competition drives the different actors into a dead end.

In Lyon Metropole, "Trabool Pass" is a unique access medium for different public and private territorial services. It's an all-in-one pass that includes a multitude of subscriptions and as many offers and services for every user of territorial services. All services are centralized on the Trabool Pass (card or smartphone). Three types of services are considered:



1. Mobility services, such as public transports (Lyon public transport, TCL network), car pooling and bike-sharing, services linked to private vehicles (parking), and also electric vehicle charging stations deployed in the public space;
2. Cultural, sports and leisure services, such as access to municipal sport or cultural equipment (library, swimming pool, museum, and so on) and access to shows and sporting events. On this last aspect, we are conducting a study to include a ticketing system within our “Pass Trabool” service.
3. Daily life services, such as university services (university restaurant, university library, class rooms, etc.), dumps, school canteens, and daycares.

Although mobility services are available on a single medium, currently, the user defines a multimodal route and reserves the corresponding services. The user can't benefit from an end-to-end mobility service.

However, the project's implementation in a traditional centralized architecture raises some questions around governance, ID management and value share between all actors involved. This creates, for instance, difficulty setting up some use options (package deals, fidelity points, and so on). Of course, answers to these questions potentially impact every multi-services mobility projects, and go far beyond Lyon Métropole's project.

We believe that blockchain can help allow transport companies to exchange and share their transport offers without a third-party to rule the market. In the same time, blockchain can address:

- Decentralized identity. How to share customer data between transport companies.
- Single transport ticket. Note: there is no standard for ticket format and each company has its own validation mechanism.
- Simplified billing. Note: each carrier currently has its own backoffice functions.
- Insurance and liability in case of cancellation. Note: in France the law says the company that sells the ticket holds the guarantee and is responsible in case of cancellation.

Use Case expectations: Promote public transport usage and improve user experience with an innovative solution for transport companies, public authorities and clients.

Several strategies are possible. Here are two examples:

Scenario 1: Use blockchain to allow transport companies to exchange information about their transport offers, bills and tickets. In this scenario, each customer has a different account at each transport operator. The customer still uses his favorite website or favorite company. On his favorite website, he can buy his usual tickets but he can also buy tickets from other companies. Through his usual website, he can patch together different travels from different companies then buy his tickets. All the services are in the same place.

Scenario 2: Leverage blockchain to give customers access to all transport offers. Each customer has a unique account that allows them to purchase a ticket regardless of the



provider. The order, tickets and billing are processed through the blockchain. This scenario involves setting up a distributed digital identity for customers.

The proposed solution will have to meet the following needs :

- Roles and authorizations of each actor on the blockchain
- How to identify each actor in a secure way, especially if a distributed identity is implemented
- How to phase out third parties
- Data confidentiality especially with personal data (RGPD)
- Interoperability with the IT system. Warning: ticket booking systems, yield management, billing and ticket control system in trains must stay as they are.
- User experience

Assets requirement:

Hardware

- Tbf. SNCF will provide some data, specification and hardware as inputs

Digital assets

- No requirement on the Blockchain technology
- OS code preferred

Should you have any questions :

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