

# Public transportation with one single payment

## WHITE PAPER



## CLEARING VERTICAL COMPLEXITY TO CLEAR VERTICAL SIMPLICITY: OPENTOKEN FOR PAYMENT SYSTEMS

Talking about solutions will always be starting with nagging about the existing situation. So let's do that one fast so we can talk about the goodies.

Looking at the current technical base used in ticketing system in public transport and events I feel forced. Forced to use again tickets. Forced to use the next payment card in my wallet, which is already piling out. Forced to use some kind of system I need to understand, different off course in every city and in every country. We use payment systems to by a thing for another payment system to use for a third payment system.

Clients want to use the system they are using in daily live to pay their bills with products they understand and feel related to. No problem we would say: the operator or event manager understands. He wants to create products accepted by clients creating growth for their company. Wrong: he is working within a vertical integrated clearing complexity which we would like to evolve to Clearing Vertical Simplicity.

## THE PROBLEM OF TRANSITIONING BETWEEN TODAY AND TOMORROW

Today's a majority of companies across all sectors are facing the burden of their legacy systems, i.e. aging operational layer to perform their core business. This is the primary roadblock when talking about evolution or even worst innovation! The public transportation ecosystem carry as many legacy systems as actors evolved. This creates all kind of payment cards, which are "single-actor usage" and cannot be used somewhere.

You will find the urge to evolve and see great things already realized however with diversified solutions. Diversified between operators, hardware systems, ticketing systems, on line systems and all kinds of identifiers like bank cards, operator cards, chip cards. Companies are facing the restrictions of the hardware and software used of the current systems and the legacy systems. Think on working with millions of payment cards already in place for an operator, payed for by the consumer and your network of selling boots and ticket vending machines. Not easy to evolve to the new technology coming live. You will end up with different systems active on different regions within different contracts.

## WHAT-IF

- ▶ We would be able to use all existing identifiers to pay for a fare or ticket
  - I can use whatever card in my wallet to pay for my fare. Oooh, also possible with my NFC phone or my passports. Even better!
- ▶ We would be able to use the system over multiple operators in multiple countries
  - I can even pay my fares or events abroad on my holidays without the need to explore local payment solutions or systems
- ▶ We would be able to support any product you can imagine to develop?
  - Fantastic, but keep the products logical and supportive to the customers.
- ▶ We would have a solution to connect different operators systems by sharing the needed information being in full control of the owned data and information.
- ▶ We would have a solution in which we can divide exactly income from tickets and products used for multiple operators network and solve complex clearing and settlement issues.
- ▶ We can create a “industry standard” blockchain token for clearing to end customers and between public transportation companies
- ▶ We can create complex combinations in a network for loyalty programs

## WHAT IS BLOCKCHAIN?

The reduction of intermediaries between two actors of a business value chain is common argument for cost saving in business. This idea has been digitalized, so to speak, with peer-to-peer systems deployed over the Internet. Napster was the first service of its kind to allow a producer and consumer of content to create a direct communication channel.

Now we have Blockchain, a distributed system similar to a peer-to-peer one on many aspects.

Like the value of some crypto-currencies, the interest for Blockchain solutions is very high. All has started few years ago with the success story of Bitcoin, the first widely used self-managed payment system relying on its own currency, a crypto-currency. Behind the scene was Blockchain, working to create a consistent digital ledger of all transactions happening between service customers paying in Bitcoin.

Blockchain is primarily administrative application. In the sense that it records transactions in a unique way: an application has its own algorithms to initiate, verify, validate and store transactions. In Addition, when using a public Blockchain instance, the content become publicly accessible but this does not mean in clear readable text. Encryption algorithm can be used for the content in order to ensure the highest level possible of security. However one of the killer-features is the audit trail created by the usage of hash function, which links the information in order. Indeed, new information is added to a chain of previous information. This makes new forms of enterprise and financing possible. So a Blockchain is a shared and decentralized register, not to be falsified, not to be censored and accessible to its users.

Registers play a crucial role in the economy, starting with the Municipal Administration where I can get a passport and, in some country, a bank account. Blockchain can bring the same register to all the participants of a value chain, and with it the possibility for them to trade, in places where they are not yet. To do so, a Blockchain token is envisioned to unlock cooperation among current business actors in order to create a Blockchain application, which would be accepted by the industry for clearing issue between systems in transportation industry. To solve the potential currency issues the Blockchain application will use a token to avoid speculation. Blockchain is primarily administrative software. It records transactions in a unique way: a transaction is recorded with both parties and also in a public ledger. Due to its nature of encryption and technology used its information is ensured on the highest level possible. This makes new forms of enterprise and financing possible.

A blockchain is also a decentralized register. Not to be falsified, not to be censored and accessible to everyone. Registers play a crucial role in the economy: Thanks to the Municipal Administration I can get a passport and a bank account. Blockchain brings registers, and with it the possibility to trade, in places where they are not yet.

Finally, we believe in Blockchain because it is a coordination mechanism. A technology that simplifies collaboration between individuals and/or companies. Or rather: between peers, because they can also be machines. The Blockchain is the pre-eminently coordination mechanism of communities, the "commons"; the data stored in an (open) Blockchain are "of everyone and of no one". Blockchain seems to be able to play an important role in developing alternatives to platform monopolies such as Google, Facebook and Amazon.

## SMART CARDS, TOKENS AND NFC

Everybody's got many of them smart cards. The SIM of your cellular phone, your bank cards, credit cards, benefit cards, company identification cards, customer benefit cards, passport,... On these cards different types of structured information is placed with different types of security protocols and content. One thing is common: every card has a way to access the identifier of that card, just call it the way you can read which number of card it is and the provider of that card. NFC is a way that a mobile device can use to connect with systems. In our point of view using mobile devices as an identifier is just one of the ways to identify yourself, just as whichever smart card in your possession.

Why wouldn't we use ad random cards already in use by a customer for payments in a third system? There are some problems related to what seems a logical statement. It is not always that easy to read a card due to the way it is protected. We need to work with black and whitelists to be able to block fraudulent cards. The lists to be used in hardware payment systems are endless. Handling mass data however is exactly one of the strong points of Block Chain Systems. The operator will not be interested in all identifiers from all over the world, but mainly of those in your area and then even the once being your customers.

## WHAT IS THE SOLUTION WE BELIEVE IN?

A trustworthy back office relying on a Blockchain application in order to support the interaction possibility between operators and actors with their consumers to ensure the trustworthiness and credibility of this consumer and the identifier of his choice.

### ▶ We believe a consumer

- will have the possibility to choose his tokens to be used as an identifier of his choice in a blockchain administration, connected with his means of payment. A token can be a Blockchain token or physical cards in his possession

### ▶ The operators will use block chain methodology

- to upload the technical identifiers data for consumers needed for their region to prepare their systems to receive the payments of their customers. Due to this type of usage the lists needed for operational purposes can be minimized.
- To create control on cards and customers refused by their financial organization (black and white lists), thus keeping that control out of their local systems.
- To create the ability to accept offline with technical lists verified and in control ensured by the block chain methodology. Ticketing systems on vehicles are
- To communicate process used for usage of their travel and products
- Creating a “industry standard” blockchain token for clearing and settlement to end customers and between public transportation companies to optimise ridership and customer satisfaction.