OpenMove: how Trentino opened public transportation data and benefitted of a mobile ticketing solution for free

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Abstract

Starting from 2013, the Italian province of Trentino released nearly 1500 open datasets and promoted the usage of them holding a competition called "Open Data Challenge". Developers and companies built dozens of useful applications for free: the first prize was awarded to OpenMove, which makes use of open geodata and now manages mobile ticketing for the entire public transport in the province, with no extra fees for Public Administration, that benefits of this innovation for free.

Keywords

open data, mobile ticketing, mobile payment, smart cities, multimodal mobility

1 Case study

Trentino – according to the annual research by Italia Oggi – is the Italian province with the highest life quality for the fifth year in a row and its capital has been featured by IEEE as one of the ten smartest cities in the world. During the last few years, the open data movement took root in this autonomous province and, as of 2015, Trentino has released nearly 1500 open datasetes, more than any other public entity in Italy. In 2014 the Province organised the "Open Data Challenge" competition, in order to award the best free applications making use of open data: dozens of developers and companies applied, with a high overall quality. The first prize went to OpenMove, a mobile ticketing solution that – starting from March 2015 – manages the entire public transport in the province: urban and suburban buses, trains, cableway and parking slots, offering its service to 530.000 residents and 5.000.000 unique yearly tourists, thanks to partnerships with all mobility providers active in Trentino, such as Trentino Trasporti (urban and suburban buses), Trenitalia (local trains), Consorzio dei Comuni Trentini (parking slots) and several other public and private companies. Thanks to an agreement with Trentino Marketing, OpenMove is also the reference solution for tourists, since it is integrated in the so-called "Guest Card", given to all tourists in the region. This results in a very significant first case for OpenMove: Trentino leads innovation in Italy and its best practises are emulated; this allowed OpenMove to be featured on major press and to be promoted by public institutions themselves, since open data is a sensitive topic. What is more interesting is the bottom-up innovation that sprang thanks to the Public Administration's decision to release open datasets: it becomes clear that not only people need data, but they can contribute to the entire community with new solutions for free, that otherwise citizenry would have paid and would have waited a long time to see in action. Trentino is just the first step for OpenMove: thanks to the standardisation promoted by the open data movement, transportation data tipically comes in a pretty standard format, allowing OpenMove (and other applications as well) to easily scale to new urban areas worldwide and to integrate new transport services.

2 Background and concept

Mobile ticketing is one of the biggest behavioural and market trends for the next 5 years. Nowadays the situation is very troublesome: more than 85% urban areas worldwide don't have a mobile ticketing app to pay for tickets for transport and parking. Today, Public Administrations either pay for third party proprietary apps (which focus only on a specific mean of transport and are with fees) or they develop their own technology (which is difficult to implement and maintain). No solution has a dominant position on the market since they are partial: this results in a very fragmented scenario for final users, who are not given added value compared with old fashioned coins. In fact there is no market leader and users have a hard time wasting time and money on disaggregated e-wallets.
OpenMove moves from this troubled user experience, willing to build an open platform suitable for every mean of transport and parking, with no extra fees for users. In order to catalyse the market and scale as fast as possible, OpenMove is free also for Public Administrations and mobility providers: we in fact realised that mobile ticketing apps have a huge marketing potential, since users are profiled and geolocalized and use the app on a daily basis. This is the perfect scenario for proximity marketing so we built an innovative revenue model: we supply Public Administrations with a ready-to-use mobile ticketing solution for free, monetizing on local merchants instead, which are enabled to promote their products in order to convey users within their shops. This is an incredibly cost-effective way also for small merchants to target their customers and to offer them valuable discounts on trips and parking.
We aim to be the ultimate solution to foster sustainable and multimodal mobility, aggregating different means of transport and parking and allowing users to pay for tickets with one simple tap.

3 Technical solution

OpenMove is a comprehensive solution for mobile ticketing with three declinations towards final users (to provide them with the capability of purchasing electronic tickets), mobility providers (which need a complete and stable solution to handle mobile ticketing in terms of setup and accountability) and local merchants (which are involved and are given the opportunity to run geolocalised advertising campaigns).
• Citizens are enabled to pay for all mobility services such as parking slots, bus, train, shuttle, carsharing, through the use of a mobile application freely available in the main markets. They may find trip information and handle their season tickets as well.
• Providers have available a ready-to-use mobile ticketing solution for free: thanks to a powerful backoffice, they may plan mobility, elaborate statistics and manage accounting. Ticket inspectors easily verify travel tickets and parking.
• Merchants have the chance to organise geolocalised advertising campaigns using a simple online portal. When users purchase promoted deals, they gain credit and travel for free.
OpenMove represents a great improvement in mobile ticketing, being a comprehensive and complete solution for the three players of mobility: the aim is to aggregate every mobility service, supplying providers with a turnkey mobile ticketing solution for free, offering a handy tool to final users and creating added value for local merchants as well, which run proximity marketing campaigns to offer geolocalised deals.

3.1 App for users

The app has a natural look and feel, is extremely intuitive to use and is available in four languages: it features an electronic wallet to be charged in several ways: credit card, PayPal and (as soon as they will reach significant marketshare) Google Wallet and Apple Pay. Credit cards are handled by our PCI-certified financial partner, allowing high security

yet ease of use. Built-in algorithmic engine matches geolocalised users and public transport timetables or parking spots to recommend the right trip or park: it's possible to buy single tickets, carnets and season tickets as well. Different fares for urban (calculated upon time), extra-urban (calculated upon distance) and parking areas are managed, even when there is no Internet connectivity, thanks to caching and realignment with our server. On board obliteration (when considered) is emulated simply yet effectively in two ways: buses are equipped with a NFC tag or QR Code sticked next to the ticket machine: people validate the ticket, approaching NFC-compatible smartphones or framing the QR Code with the smartphone camera.

3.2 Backoffice for providers

We supply public and private mobility providers with a ready-to-use mobile ticketing solution for free. The web platform we engineered allows to verify tickets sold in real time and elaborate statistics to plan urban and suburban mobility; OpenMove organise weekly financial statement and payment of the amount of tickets sold towards different mobility providers. We also deploy a web service with APIs layer for mutual integration with existing managing systems in use by providers.
Ticket inspectors verify easily and quickly tickets and parkings, thanks to a dedicated application. As for bus tickets, tickets show: origin and destination, obliteration timestamp, first name and last name of the user, optional rolling keyword, QR Code receipt with these data encrypted. The ticket inspector verifies at a glance above-mentioned information (displayed with animations and watermark to avoid illicit screenshots) or with a handheld device framing the QR Code receipt, which is instantly checked by the system. As for parking, we developed a proprietary OCR technology to instantly read car plates and check if parking is being regularly paid.

3.3 Portal for local merchants

Thanks to a web portal, merchants are enabled to create, customise and run proximity marketing campaigns. In fact, in the app, not only we are going to show users the mobility services around them, but we are prompting them the deals in the neighbourhood as well. Local merchants are enabled to organise geolocalised advertising campaigns to promote deals: users are geolocalised to convey them inside stores when they move (and so are willing to go shopping), and are profiled. Merchants have the opportunity to tune advanced filters to target their audience (sex, age), to optimise ads coverage (timespan, day of the week) and to engage only geolocalised users in a certain area. Big data are analysed thanks to an innovative recommender system to optimise funnelling and conversions, resulting in extremely effective proximity marketing campaigns: OpenMove matches the personal tastes of the users with the nearest deals around him. Even small merchants have the opportunity to promote niche and local products thanks to targeted campaigns. Users who purchase promoted deals redeem coupons thanks to a simple QR Code or NFC tag inside the shop and gain credit: thanks to OpenMove they travel and park for free. Please notice that we do not share with local merchants any of the profile or position data of our users. The recommender system itself takes care of sorting and showing deals on the app, preserving the privacy of our users.

4 Innovation

Compared with other mobile ticketing solutions, OpenMove features both technical and operational innovations. It is the only:
· Open and available for every mobility service (parking slots, bus, train, shuttle, carsharing, etc.). This is crucial in order to reach critical mass of users and being acknowledged as the reference app for payment of transport tickets.

· Completely free solution for users and providers as well. Solutions provided by competitors always come with fees to be paid both by final users and by providers. Particularly in this recession period, it is important for Public Administrations to count on a free ready-to-use solution they may adopt to offer a valuable service to their citizens.
· Involving local merchants, which can promote their products, allowing users to benefit from deals and gain credit to park and travel for free. Merchants have a cost-effective solution to advertise offers to targeted and geolocalised users. Users have the important chance to gain credit which they may use to travel and park, resulting in a win-win situation.
· With a super fast deployment: while other solutions take months of work, the implementation of OpenMove takes literally just minutes, thanks to the standardisation – in technical and operational terms – promoted by the open data movement.

The philosophy of openness that drives OpenMove, i.e. to be an open platform making use of open data and releasing open APIs, is absolutely unique. We want to revolutionize current paradigms in mobile ticketing, catalysing the entire market in using our service.

5 Social impact

OpenMove – as we describe in this section – has a positive impact for the entire society (people and Public Administrations as well), helps the environment and foster the promotion of local economy.
Mobile ticketing is one of the major trends nowadays: every municipality in step with the times needs to embrace this behavioural revolution, providing its citizens with a smart way to pay for tickets for transportation. Mobile ticketing makes easier to pay for services (because people won't need to find available ticket offices and to bring cash with themselves), discourages abusive travellers and helps tourists who don't speak the language and look for information.
Residents benefit from OpenMove on a daily basis, since it is a comprehensive solution for every mean of transport that allows them not to waste money and time downloading and charging several e-wallets to pay for different means of transport and parking. In fact, a mobile ticketing solution is much more effective when it satisfies different needs of users, who face everyday a lot of uneven and antithetical mobility services. Our goal is to organise all of them, aiming at a sustainable multimodal mobility formed by synergic services of immediate use. Thanks to the openness of OpenMove, we are able to catalyse all transport and parking services, providing users with a handy solution to enjoy new opportunities thanks to a super easy user experience and with no extra fees: they save money and time thanks to our cutting-edge micropayment technology.
Tourists can benefit of OpenMove as a simple point of access to find trip information and to pay with their currency with no worries: all of that, without any trouble due to language incomprehension, since OpenMove features multilingual capabilities, and without distress to reach the tourist office.
Public Administrations, especially in this decade, bump into very constraining spending reviews: OpenMove gives them a ready-to-use solution, they may adopt for free to become a so-called Smart City by all means, and to offer a valuable service to citizenry and tourists.
OpenMove, aggregating and suggesting the appropriate means of transport and parking, foster green sustainable mobility, made of combined multimodal services. Thanks to our recommender system we are able to advise users for more efficient trip solutions: we optimise trips and parking therefore we minimise the impact – in terms of carbon dioxide emissions – on the environment. Moreover, the regular usage of the app encourages virtuous behaviours to promote public transportations and multimodal trips made of

complementary means of transport which help users minimize wastefulness and maximize quality of the environment.
OpenMove is not limited to final users and mobility providers, but actively involves the third actor of mobility scenario: local merchants are responsible for a huge fraction of urban and suburban mobility. OpenMove is the one and only solution in the mobile ticketing scenario featuring local businesses, which are enabled to take advantage of an extremely effective advertising opportunity. Traditional advertising (newspapers, flyers, placards and posters) is expensive and makes hard to convert impressions to actual sales; OpenMove instead allows to run targeted campaigns taking advantage of user profiling and location to optimise conversions, since we match users' tastes with the best deals available around them. This means that even small businesses, which sell niche products or typical local products, can benefit from a cost-effective advertising channel to reach for its customers and convey them within the shop.
Finally, the deals featured by OpenMove come with a bonus credit granted by merchants, in order to pay for mobility services: users may park and travel for free, which is a highly appreciated added value they enjoy and capitalise.

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