

Mobility as a service, a new approach

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Abstract:

Megacities, the growing need for urban transit, the environmental transition, changing relations to mobility, digital platforms.... The RATP Group will soon face competition in a fast, changing transportation market in Île-de-France Region. In response to the aforementioned societal issues and to the needs of this urban region's inhabitants, the Group intends to become a leading partner of smart cities by switching its offer of mass transit toward mobility as a service (MaaS): door-to-door transportation, multimodal and digital with access to information in real time and to services during the full duration of the trip. This need seems relatively simple to clients but represents a major challenge for public transit operators: physical connections between modes of transit, the governance of data (open data as a common good), the distribution of added value, and the sharing of responsibilities among all parties in the ecosystem.

Who has not dreamed of living in a city with less pollution, less noise and fewer traffic jams and with a supply of transit services for easily moving from point *A* to point *B* and organizing the trip with a few clicks depending on what one wants and on the weather? The response to this multifaceted need is emerging in the form of mobility as a service (MaaS). Made possible by the increasing number of new means of mobility and the advent of digital platforms, MaaS signals a shift in the supply of transportation services, and it holds the promise of a "holistic" mobility, which will include other services.¹

In concrete terms, passengers will have a simpler mobility service for planning trips, purchasing tickets (if possible a single one for the whole trip), accessing various modes of transport, and being followed up in real time with proposals for alternatives in case of unforeseen events. All this will be provided by a single platform that offers an integrated, fluid service of mobility, a service so reliable and practical that it will convince people to give up making trips alone in their private cars.

Mobility as a service, a new approach to transit

MaaS, a deep societal trend, is upsetting the traditional transportation market. It is a major issue especially for cities that want a greener, more attractive supply of transit for inhabitants and, too, for public transit operators, who will be able to make new offers with third-party solutions as a fallback or substitute.

In Europe, the first services and experiments with MaaS have yielded convincing results that attest the potential of these new offers of mobility. In Gothenburg, Sweden, the startup UbiGo was the first such business that enabled people to organize a trip, make reservations and pay for

¹ This article, has been translated from French by Noal Mellott (Omaha Beach, France).

multimodal transportation (public transit, self-service bikes/scooters, carools, mobility services for the aged, self-driving shuttles) in the urban area. According to a study by Ramboll in partnership with MaaS Global, 50% of the users in Helsinki of the app Whim said they used their cars less; and ride-sharing leapt by an average of 200%. This study also sheds light on the contribution of MaaS to the environment. In particular, it helped save 20 tonnes of CO₂. Thanks to the MaaS app *Wien Mobil*, 47% of travelers in Vienna, Austria, have tried new modes of transit; and 21% use their own cars less. The French market has also latched onto MaaS. The RATP Group is offering the first such services in Annemasse and Mulhouse; and TransDev has launched a “mobility account” program for 900 persons. This account records the trips made and serves for a monthly billing of the precise consumption of mobility. As for the ticketing system, it depends on the chosen solution: a QR matrix bar code for public transit, a card for parking, this card plus a PIN number for unblocking a self-service bike, an application for cars, and, very simply, the person’s first and last names for borrowing a bike.

MaaS: A new user experience

In parallel to the first, promising experiments that are, for the time being, still in a proof-of-concept phase (owing to the number of users, the technology or the business model), the market of “shared mobility” should experience strong growth in the next two decades. Spending on these new forms of mobility and on MaaS for passenger transportation should rise from 4% in 2015 to 20% in 2040 — to the detriment of the private vehicle market, where spending will drop from 74% to 55% during the same period.

In the past few months, French public authorities have provided incentives for market players to work together on MaaS. These incentives have involved both legislation (the Act on Forms of Mobility) and funding (ADEME’s calls for MaaS-related projects). These strong signals are an encouragement for the strategic choices made in recent years by the RATP Group in favor of diversifying its range of solutions for mobility and creating new business opportunities thanks to the development of digital platforms.

Multimodal integration: New forms of mobility plus online platforms

To take part in these new business and technological models in the mobility sector, RATP Capital Innovation was set up in February 2017. This investment fund targets very small, small and medium-sized firms and start-ups. This business investor has staked out a position as a partner for following up on the development of the companies in its portfolio by mustering RATP Group’s know-how of business processes. The investments made by RATP Capital Innovation fit into a long-term strategy based on minority shareholding in the firms in its portfolio: new forms of mobility (smart, shared, connected...), innovative urban services, automated and robotized vehicles, innovations for making cities sustainable, and developments in digital technology in line with the concept of a “smart city”. Two years after its creation, this young subsidiary already holds shares in five firms: Communauto (a car-sharing service), Cityscoot (self-service electric scooters), Klaxit (a ride-sharing platform), CityZen Mobility (a network of chauffeurs for the “vulnerable”, in particular the elderly) and Zen Park (shared, connected parking).

For this multimodal offer to be fully effective for passengers, the RATP Group decided to invest in digital platforms. In January 2019, a first experiment was launched in Annemasse, Upper Savoy, by RATP Dev, Instant System (a startup) and RATP Smart Systems (a subsidiary of RATP Group specialized in ticketing and smart mobility systems). The offer of a multimodal service with the application TAC Mobilités groups general and real-time information on public transit in Annemasse (TAC network, car-sharing and trains, SNCF) and Geneva (the urban transit authority, TPG, CFF). This app provides a single gateway that delivers the e-ticket so that a passenger can obtain information and purchase tickets for traveling, all this via a single application. By September 2019, a second MaaS experiment conducted with Île-de-France Mobilités will involve two thousand Parisians. Other experiments with MaaS will be carried out in Brest and Angers, where RATP Dev has won bids.

Major challenges are lurking behind this response, which seems simple enough to passengers.

Interoperability

A first challenge arising from MaaS is technological. Cities, transit authorities, public and private transit operators (bicycles, scooters, vehicles for hire, car-sharing, carpooling, demand-responsive transport, etc.), suppliers, technology integrators, automakers and, too, the operators of applications like Citymapper, Google Maps and Uber... all are staking out positions on mobility as a service. The offers being made are of variable maturity, especially with regard to the technology used. Some startups do not have the means to finance access to their sales services. The goal is to move toward a standardization of apps so that it is easier to integrate various mobility services in existing platforms and improve interoperability, all this in order to propose trips to passengers via a fluid, low-cost service.

The quest for a fair business model

A second challenge is to find a profitable business model that produces an equilibrium between all players. In order to develop and offer passengers new, fluid services in mobility, it is necessary to work together in an ecosystem. This upends the value chain. Similarly to what happened in the hotel industry, the economic equilibrium risks being undone between producers and distributors. Mobility is crucial to economic development and social cohesion. How to see to it that the value created by distribution operations is ventilated out among all players on the value chain, including French and European startups and the public authorities in charge of funding infrastructures? How to see to it that highly capitalized newcomers (often high tech firms from outside Europe) not corner this added value?

Four business models are emerging:

- The REFERENCING MODEL. The MaaS platform processes a search for an itinerary and provides the customer with a link to an application used by a transportation company or transit authority for making purchases and being billed. The platform is paid a commission in proportion to the volume of referrals and/or under an agreement on referrals.
- The MARKETPLACE MODEL. The MaaS platform sells tickets under contract with transportation firms and transit authorities. It increases the contract price for sales to passengers and pays the price of tickets to transportation firms and transit authorities.
- The WHOLESALE MODEL. The MaaS platform purchases a large quantity of tickets from transportation firms and transit authorities and makes money by selling to passengers bundled services (offers involving more than one transportation firm).

- The MULTI-LISTING SERVICE MODEL (MLS). Transportation firms and transit authorities directly make offers and sell services to passengers and then, via a clearing house, ventilates the receipts among these players.

The wholesale model carries the most risks that the platform might come to hold a dominant position, which would roil the value chain. Besides monopolizing customer relations, the platform could then set prices for customers and put pressure on ticket-suppliers to lower the sales price of their tickets to the platform.

Open data

A major issue closely related to the business model has to do with open data. Given its commitments in 2012 to opening static data and in 2017 to opening real-time data, the RATP is a pioneer of open data in public transportation. Nowadays, open data have been paid lip service. A few players, mostly public transit firms, have opened their data. Without the cooperation and involvement of all stakeholders, open data will remain spotty. Private companies in transportation and in digital technology must fully and clearly embrace the sharing of data, in particular for developing mobility as a service. For everyone to profit from these new services, a movement is necessary toward reciprocity, impartiality and fairness in matters related to open data.

Let us distinguish between three types of data:

- DATA ABOUT OFFERS OF MOBILITY, open to all in compliance with the EU directive on multimodal information and ticketing systems (MMITS), but with participation fees for making the data available.
 - TRANSPORTATION DATA, both static and in real time. The RATP Group wants these data to be opened under contracted partnerships (in the regulatory framework of the Lemaire Act² and the EU's Public Sector Information Directive).
 - DATA WITH PERSONAL INFORMATION, for which the EU's General Data Protection Regulation (GDPR) requires a high degree of protection.

Only a win-win model for sharing data among public and private players will make it possible to offer innovative services to passengers and develop a quality public transit. The French framework act on forms of mobility addresses this issue.

Physical interconnections between modes of transit

A fourth challenge for MaaS arises along the physical, spatial dimension of urban areas. For MaaS, intermodality must be physically operational. This is a major challenge since the space used for mobility cannot be extended at the speed of digital technology, nor infinitely as this technology supposes. In particular, new urban hubs are needed for fluid, reliable connections between modes of transit so that passengers can move through surroundings with simple, recognizable signs and signals that make the system simple for them to use. This would respond to the expectations of commuters and of occasional travelers. Disappointments and difficulties in the transportation supply chain keep users from choosing public transit.

This vision for mixing transportation, urbanism and services calls for new forms of governance. The project Lumières Pleyel, an emblem of the Grand Paris Program in which several actors, including the RATP, are involved, sheds light on this aspect. Located in the suburb of Saint-Denis, on both sides of the future Pleyel station, Lumières Pleyel will, by 2024, be an enormous hub concentrating four subway lines of Grand Paris Express, line 13 of the Paris subway system and

² The so-called Lemaire Act: Act n°2016-1321 of 7 October 2016 for a "digital republic" available at <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000033202746>.

two lines of the Transilien network: 250,000 passengers will transit through it per day. Various modes of transport (with spaces for carpooling, car-sharing, bicycles and repair shops) will be grouped in a “mobility center” installed as near as possible to the public transit system.

Interconnecting modes of transit implies more sharing and new regulations for streets and roadways. On 23 May 2019, the RATP Group signed a partnership with MIT for a study on curbs. Why conduct research on the space between the sidewalk and a lane of traffic? This urban space is occupied by both persons (pedestrians, cyclists) and infrastructures (public benches, lampposts, garbage cans, bus stops, etc.). This research might help us improve the uses made of this space and its design. This urban space along the edge of sidewalks is strategic for public busses. It is a heavily used, multifunctional space deeply affected by new forms of mobility.

Toward the city as a service...

Beyond technology, business models and the problem of physically interconnections between modes of transit, MaaS opens several fields for exploration. Blockchains, for example, could be used to guarantee the security of transactions on the platforms that bring drivers into direct contact with passengers for the purpose of a new form of consumption, mobility-sharing. Smart data would make it possible to send passengers innovative offers and personalized services during their trips and to assess the effectiveness of MaaS in regulating traffic flows in given areas and modifying passengers’ behavior patterns. This would be of value to transit authorities. Smart data could be used to develop mobility on demand in response to users and their needs. Finally, we can even imagine that infrastructures with sensors could trigger a reservation of the next mode of transit in the passenger’s travel plans.

These are stimulating opportunities, rich with future prospects for the RATP Group, which will be a player in the competitive transportation market in Île-de-France Region in 2024. This global, fully changing environment represents an opportunity for matching the needs of passengers and of cities with the transit authority’s “mission of general interest” and for exploring the ways to develop our group. This opportunity could shore up the position of the RATP Group as a leading partner of smart, sustainable cities on the move toward Cities as a Service.