The Urban Lab of Europe!

THEORICAL BACKGROUND
EDIT 16 FEBRUARY 2021
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CHAPTER 1 - ON THE IMPORTANCE OF DATA IN MOBILITY POLICY AND INNOVATION

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Introduction

The vision of a city in which Mobility as a Service (MaaS) offers citizens a 'genuine alternative to the private car[1]' is one towards which city planners are currently striving. There are generally two parts to the vision (put into practice by Ghent for example). First, reducing reliance on private cars through urban redesign (Barcelona's superblocks, Paris's 15-minute neighbourhood/city, Ghent's 'car free' centre, etc.) and rethinking work, such as making more use of teleworking. Second, putting in place alternative transport options, including public and/or private options to create a multimodal network, in which transport is provided as a service. Of course, shifting away from the private car, which remains irresistibly convenient in cities designed for cars, is a challenge. Studies conducted in the United States show that the use of public transport drops by up to 90 percent when passengers must walk more than half a mile to the nearest transit stop[2]. To compete the transport offer, public or private, MaaS must therefore offer complete and convenient journeys. In turn, this means developing an integrated network, in which the 'first mile/last mile' can be serviced by emerging mobility options, from shared EVs to various forms of micro-mobility. The key to making MaaS work is network integration (offering seamless journeys) and this in turn requires that information – i.e., data - (e.g., routes, schedules, wayfinding apps[3]) is made available to citizens.

Introduction

Data of course has always been essential for strategic mobility planning and policy. What is different today is the confluence of the new transport modes, the utility of 'big data' as strategic intelligence, the emergence of mobility data analytics, and the ubiquity of mobile devices. Intelligent mobility, defined as 'moving people and goods around in an easier, more efficient and more environmentally-friendly way[4]' is a complex coordination challenge. From developing the vision to building partnerships, from designing a network design to delivering MaaS services, the fuel needed to make a reality of intelligent mobility, both materially and digitally, is data. The UK Catapult initiative, for example, argued in 2015 that data would become a key driver of future transport planning[5]. Governments[6] [7] and cities, including UIA cities, have begun to take action to capitalise on the potential of data as a driver of new mobility services, including placing their data in the open domain, as Ghent has, for example. The intelligent mobility market is rapidly expanding, with an estimated global value of 900 billion by 2025[8]. Industry stakeholders, such as the World Business Council for Sustainable Development (WBCSD), also believe data sharing to be crucial to realising the vision of multimodal transport and has published guidance on the principles of data sharing. The International Road Federation (IRF) echoes this view[9]. In the EU the European Commission has also produced expert reports[10] and supported numerous projects in this area (SMILE[11], PETRA, CIVITAS[12], UIA Cities, etc.).

The sources and uses of data

Sources

Mobility data can come from conventional counters or surveys[13] but with big data many new categories and sources of data which contain exploitable location and travel data are becoming available. Sources of big data include smartphones, social media[14], TomTom, Vaze, Google, or other geolocation-based services. Sources can also include the public or private transport providers responsible for car-sharing stations, e-car charging points, bike-sharing stations, or car-pooling services. Data on activities such as cycling and walking is also essential, etc.

In summary, categories of data include, at least:

- Cartographic, weather data;
- Personal location data;
- Data on: transport schedules, fares and prices, network disruptions, planned events, real-time network capacity for people, vehicles & goods;
- Vehicle location data;
- Performance evaluation data from service users and non-users; third party service usage data; and payment/transaction data[15];
- Information about disabled access, lifts, etc. for improved inclusivity[16].

Uses

Data is used to inform (short and long-term) infrastructure/service planning and day-to-day traffic management by identifying patterns of mobility demand and by helping planners to understand a transport network's traffic flows and status. Data analytics can reveal unsuspected links and connections in mobility patterns, it can match weather patterns with traffic fluctuations, and can predict the traffic flows likely to be generated by changes in the weather or large-scale events, such as a football game or a concert. Data analytics can give insights into accidents or predict how voyagers might be affected by them. It can also predict air quality, etc.

Data is the essential ingredient in MaaS apps aimed at citizens but technological developments are also key to enabling information services. In this regard, API[17] technology is making it easier to merge information from different mobility services and modes of transport and other relevant sources (weather, travel alerts, etc.).

The 'true potential' of data to support mobility is still 'largely unknown'[18]. Nonetheless, the role of data in the emerging transport landscape is being hailed as a 'revolution'[19]. ICT enabling technologies are in general enabling unprecedented B2B, B2C, and C2C services. Industry experts believe that, in the field of mobility, open data (OD) platforms will be indispensable to intelligent multimodal transport and in particular MaaS[20], placing importance - for cities - on establishing mechanisms for data sharing and ensuring their mastery of ICT enabling technologies, for example.

Data platforms (aka portals) can support applications which can then easily make data available for specific uses, thus providing value to the city and voyagers[21]. Apps can include dynamic journey planning (optimum route generation) for example and can reduce travel times for voyagers. As part of an integrated approach, it is believed that data has the potential to disrupt the car-dominated transport model and to help reinvent transport services. For many industry observers, data is set to become 'nervous system' of future sustainable urban mobility systems[22], enabling cities, among others, to:

- Roll out Mobility as a Service (MaaS) with single ticket journeys across multiple modes;
- Contribute to city planning (land use), generally better inform city development policies;
- Optimise real-time traffic and parking management;
- Optimise the regulation, operation, and control of smart city infrastructure (multimodal platforms, public transport, including avoiding congestion caused by road works, etc.);
- Drive a modal shift in commuting/traveling towards lower-impact vehicles/alternative soft modes, thereby reducing pollution, pollution peaks, and increasing road safety;
- Help cities to deploy new access rules for private and public transportation and identify new streams of revenue;
- Enable the future integration of connected self-driving vehicles in multi-modal networks;
- Help to combat the spread of diseases (pandemic response);
- Evaluation. As travel experience is becoming a decisive factor in citizens' decisions to opt for one transport mode over another, it is important that cities gather user satisfaction data. Key Performance Indicators (KPIs) can support a people-centred approach to mobility. For example, the SMP 2.0 Sustainable Mobility Indicator set, developed by the WBCSD, includes soft indicators on journey experience, such as on "comfort and pleasure". In another example, the EU the Urban Agenda (2019) Partnership on Urban Mobility – Action 3 – highlights the need for a new "simple walking indicator" for improving urban accessibility. Rather than simply focus on journey time or walking distance to the nearest bus stop, consumer satisfaction should also be measured. As the collection of qualitative data is easy with sensors and smart phone applications, KPI indicators can generate feed-back on travel experience. Such feedback also helps service providers to understand the reasons why customers may be unhappy with a service, enabling them to address issues and improve their services.

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Data of course has always been essential for strategic mobility planning and policy. What is different today is the confluence of the new transport modes, the utility of 'big data' as strategic intelligence, the emergence of mobility data analytics, and the ubiquity of mobile devices. Intelligent mobility, defined as 'moving people and goods around in an easier, more efficient and more

environmentally-friendly way

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