

NEW MOBILITY SERVICES

MANAGING CHANGE AND DISRUPTION

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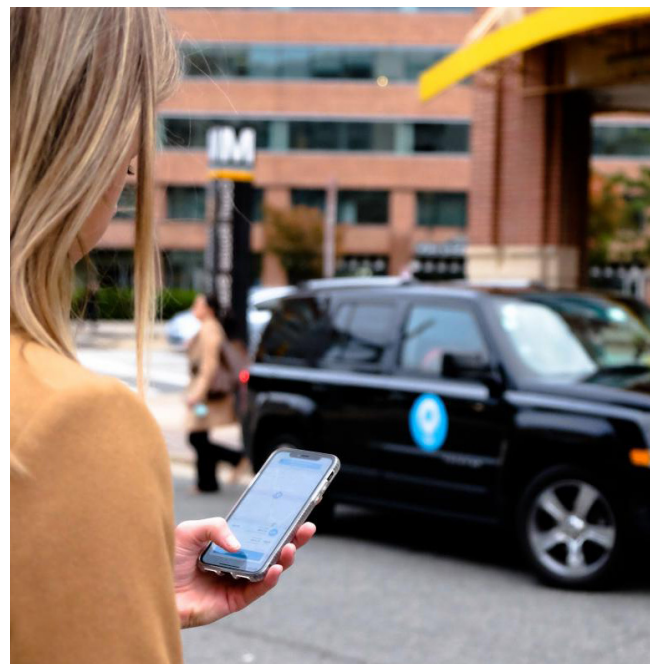
INTRODUCTION

Current technological developments have led to new mobility services. These services are contributing to the restructuring of urban mobility systems, just as motorised transport has done in the past. Technology has helped raise the public interest for shared goods and services. The notion of sharing journeys on an on-demand basis is now widespread practice. Such novel practices are fundamentally transforming cities and the way people move around, a trend that could accelerate if combined with the development of automated vehicles (AVs) and artificial intelligence (AI).

While technology and innovation should be seen as an opportunity to upgrade urban mobility systems into systems that better serve societal and political goals, interestingly the disruption and pace of change also generates fear and resistance. This can question our ability to harness the transition for a better future.

This paper aims to make sense of the change and disruption caused by new mobility services, and provides guidelines for managing the rise of this new mobility supply. It focuses on governance, especially the need for Public Transport Authorities

(PTAs) to manage the transition in the pursuit of a more sustainable city vision which is less dependent on the private car. It encourages PTAs to engage with new mobility services to complement public transport, and to use modalities such as regulation and legislation to foster sustainable business models.



MAKING SENSE OF CHANGE AND DISRUPTION

The emergence of innovative mobility solutions such as car-sharing, ride-hailing and bike-sharing, which are based on new technologies, businesses and operating models, represents an opportunity to better align urban mobility systems with global initiatives such as the United Nation's Sustainable Development Goals (SDGs). They can help to reduce car use and improve our ability to move around in a more sustainable way¹.

However, technology can influence society in ways we do not yet understand. This is why there is a general feeling of mistrust and uncertainty when it comes to new technological developments and their impacts. Changes and transitions are not always straightforward. They are influenced by contextual factors and conditions, but small changes can eventually become significant enough to cause a larger shift.

To understand better, current urban mobility systems originate from a socio-technical regime that promotes car-based mobility: the industry structure as well as policy and regulatory frameworks influence individual choices and travel behaviours to encourage commuter reliance on the car.

Yet, circumstances have changed with the rise of the sharing economy, based on digital interactions that increase the use of underutilised assets, and favours sharing practices. As it is now common for people to share goods and services via an app, services such as transportation aggregators have emerged. Even if ride-hailing companies constitute as a niche in the transport market, they seek to increase their share and provide services for mainstream customers. Technologies such as AVs and AI can support them, challenging the way cities traditionally plan and provide transport.

In other words, urban mobility systems are at a turning point where disruption and change will happen.

While disruption is often associated with new business models and opportunities, it cannot be said that urban mobility systems will always serve overarching societal and political goals. The risk of moving away from those goals is perceived as pressing as the changes are customer-led and follow bottom-up processes addressing individual needs. **With this in mind, what is the role of public transport in future urban mobility systems? Will new mobility services divert trips from or complement public transport?**



Recent research conducted in the US claims that the emergence of ride-hailing companies contributes to the decline of public transport. It estimates that for each year after the introduction of ride-hailing companies, we can expect heavy rail and bus ridership to decrease by 1.3% and 1.7% respectively².

Nevertheless, each city has its own specific conditions, and the level of disruption will vary. In general, we see that public transport ridership suffers where there is a heavy dependency on car travel. In the US for example, supply of public transport and population growth outstrips ridership growth, suggesting a decline in patronage. In the global south, citizens could not afford individual cars and public authorities struggled to deliver public transport, hence the emergence of informal transport, also referred to as paratransit, to fill the gap. In contrast, some cities in Europe like Vienna, Austria, implemented a coordinated package of transport and land-use policies that improved conditions for public transport and active travel, reducing the share of car journeys by a third. Asian cities such as Tokyo, Japan, and Seoul, South Korea, made the choice to keep investing in mass public transport in addition to highway infrastructures. Subsequently, change and disruption will not be homogeneous and will vary from city to city according to inherited conditions and local institutional response.

UITP believes in a sustainable scenario where public transport constitutes as the backbone of urban mobility systems and new mobility services are integrated to support a more sustainable city vision which is less dependent on the private car. It is clear that in some areas the demand might be better addressed with smaller vehicles and flexible routing rather than traditional fixed route services. Yet, such a sustainable scenario requires public intervention and poses a governance challenge.

The EU-funded GECKO project supports authorities in developing the most appropriate regulatory framework and governance model, through guidance, recommendations and case studies. The project's knowledge bank acts as a collaborative platform which reviews new mobility services and technologies and develops a more comprehensive guidance for policy makers.³



1 UITP, 2020. *New mobility and urban space: How can cities adapt?*. Available at: <https://bit.ly/3f2ZiwQ>

2 Graehler, M et al., (2018). *Understanding the recent transit ridership decline in major US cities: Service cuts or emerging modes?* Transport Research Board.

3 For more information: <http://h2020-gecko.eu/tools/knowledge-bank>

THE GOVERNANCE CHALLENGE

Cities are complex systems and making decisions on how they should evolve is an arduous task. To make sense of such complexities and subsequent governance challenges, the experience of emerging economies is relevant because their urban mobility systems have already been disrupted with informal transport. The historical development of this form of mobility can help us identify opportunities and hurdles already faced by many cities.

Cities in emerging economies and low income countries have evolved differently in comparison to Western economies. Due to economic circumstances and the lack of resources, many governments did not invest in rail and mass public transport infrastructures. At the same time, these cities were attracting a rural population in search for jobs and opportunities. Urban populations boomed and people often settled at the fringe of the urban territory. Planning capacities and public utilities could not follow the growth to provide basic services. As people could not afford cars, communities responded to the mobility needs, hence the emergence of small scale, unscheduled and often illegal services operated under for-profit schemes.



► Minibus depot in Amman, Jordan

This mode was also exacerbated by a series of choices in the traditional bus sector, especially regarding fares. Many cities adopted a flat fare structure which has apparent social benefits making the service more affordable for the poor. However, the fare was not set high enough to allow bus companies to cross-subsidise longer routes. In places where public budgets were low, this loss of revenue was not subject to public compensation and put pressure on the operation and maintenance of traditional buses. Many public bus companies went bankrupt and informal transport flourished to fill the gap.



This informal transport was encouraged by laissez-faire policies with the idea that the market could provide for mobility needs, which led to a different transport transition, nowadays dominated by low services quality and negative externalities such as safety, congestion and pollution⁴. If today's disruption and innovation are commonly associated with the market, this clearly neglects how public intervention and regulation has shaped the development of informal transport.

Looking at the informal transport experience, it is possible to point out the institutional mistakes of the past in order to manage the current disruption. Like informal transport, new mobility services might involve negative consequences if the institutional response is not adequate. These services also emerge in a grey space, with an informal or even illegal character and they rely on the technology to respond to changing needs. However, in most North American and European cities, their development clashes with existing regulatory framework and legislations, which could result in the ban of their services. Such a mechanistic response might affect cities competitiveness in the long-run as it stifles innovation and prevents urban mobility systems to evolve.

In such a complex and dynamic environment, experimenting, monitoring and evaluating are good practices to see if measures improve the sustainability of the urban mobility system. In this respect, UITP believes that some cities are better prepared than others, namely those that have established a Public Transport Authority (PTA).

⁴ UITP & SSATP, 2018. *Establishing a public transport authority (PTA) in African cities*. Available at: <https://bit.ly/3eGRL7D>

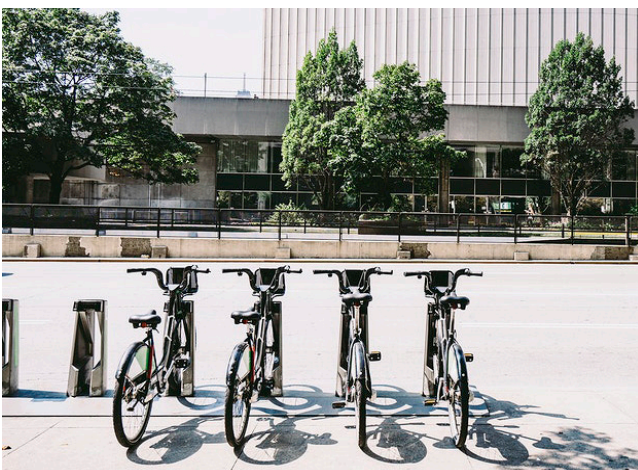
THE ROLE OF PTAS

Managing disruption raises institutional issues, questioning whether the public sector and the market complement each other to construct a better future. The public sector is made of numerous actors and agencies with various interests that act at several levels of government. Transport functions could be too compartmentalised over different administrations and jurisdictions that treat modes, infrastructures and services separately. In such a fragmented institutional landscape, a silo mentality dominates and public intervention is plural but dispersed, not necessarily coordinated or even contradictory.

In contrast, the market can be deemed more agile and able to provide for changing social needs. This is why in many places there are public policies aimed at not interfering with market mechanisms. Such a public versus private approach downplays how public policies continuously shape markets and new business models in order to make sure new services are aligned with sustainable mobility policy goals.

To overcome these two different approaches, there is a need to understand how the public sector and the market can bring together added value. On one hand, public interventions and regulation can sometimes be conceived top-down from the state to local governments along a clear chain of command. In addition to this vertical dimension, one can also identify bottom-up process by which cities' officials engage with markets and new players to make the places where we want to live. From this perspective, establishing PTAs increases the public capacity and therefore the possibility of public-private collaborations, developed horizontally at the local level.

PTAs remain a model of governance for many cities and that is why UITP believes that cities with an established PTA are likely to deal better with changes brought on by new mobility services.



For example, CRTM in Madrid, Spain, increased public transport ridership with fare and ticket integration. In Barcelona, Spain, Àrea Metropolitana de Barcelona applied a set of measures that foster active mobility, parking coordination and clean fleets, creating an environment that will encourage electrification in the near future. In Gothenburg, Sweden, Västtrafik and local decision-makers investigated different scenarios regarding the progress of technology and automated vehicles, as well as the risks and opportunities they involve.

Among these opportunities is the emergence of clean shared automated vehicles that would complement public transport. This consisted of delivering high quality public transport, penalising individual car use, providing special parking places for pooled vehicles and offering price incentives. The role of PTAs is to implement consistent transport policies to maintain sustainable urban mobility systems.

Where there is a PTA, there is often coordinated action.

PTAs represent an entity capable of structuring and adding value to urban mobility systems. Yet, in practice, this would depend on the level of integration of the PTA and to what extent they provide strategies which incorporate all modes and their impacts upon the mobility system. Again, cities are complex systems and transport should not be seen in isolation.

PTAs should take into consideration synergies between transport and strategic urban planning, land use and development⁵, working horizontally to maximize citizens' welfare. In turn, they are able to (re)negotiate governance frameworks along their vertical dimension, aligning both public and private stakeholders.

PTAs should also consider how to influence the demand for transport. These authorities could try to flatten morning, evening and other peak demand by encouraging new ways of working (different working hours, working from home...). And equally how to manage specific situations such as adapting the transport supply to reduced and different mobility needs.

Subsequently, when it comes to the selection of potential partners for collaboration the role of PTAs is to (re) introduce public agency, the cities' ability to construct the future with the market.

⁵ UITP, 2019. *The value of public transport: How to implement land value capture?*, Policy Brief. Available at: <https://bit.ly/2AOdhrA>

PTAs are the most advanced form of governance to integrate new players with conventional public transport. This is because they deliver consistent transport policies that shape sustainable business models. Yet, such policies are likely to be constructed from the bottom-up as evidence on the impacts of new services increases and uncertainty decreases.

GUIDING PRINCIPLES

In order to manage change and disruption confidently, UITP has singled out four guiding principles that mutually support each other to shape the urban mobility systems of the future.

PRINCIPLE 1: REDEFINING PUBLIC TRANSPORT SERVICES

PTAs ought to broaden traditional public transport services partly to emerging shared mobility services and autonomous vehicles. This will help to remain relevant to the customers and provide a reliable and attractive alternative to the private car. There is no reason to continue to plan, organise and deliver transport in the same way with the emergence of new mobility services. This is important because disruption is as much about entrepreneurship and new business models as the failure of traditional management practices.

Contracts based on detailed specifications can create a rigid framework that prevents public transport services from evolving. This indicates the importance of a partnership approach where both PTAs and PTOs work together towards increased ridership and modal shift⁶.

Where the tendering process is well established and deemed adequate, it might be advisable to let the PTA manage the relationship with new players. Such novel mind-set will naturally encourage PTAs to consider new service concepts and strategic collaboration with new players. The development of demand responsive transport (DRT) services is part of this picture.

The emergence of Demand Responsive Transport

DRT refers to on-demand, and often app-based, ride-sharing and ride-hailing. It is an IT-based shared transport service operated by a company with professional drivers with no fixed schedule, not necessarily fixed stops and dynamic routing. Vehicles can range from cars to large vans and shuttle buses. DRT serves multiple passengers independent from each other using dynamically generated routes, and may expect passengers

to go to common pick-up or drop-off points. DRT is either run as a complementary service to public transport or in competition with existing public transport lines by private companies. Private actors and entrepreneurs can take the initiative to deliver the service. Still, a promising practice is when public actors, such as the municipality, PTAs and PTOs work in partnership with entrepreneurs to define new mobility options for citizens.

A COMPLEMENTARY SERVICE

In Germany, DRT schemes are developed in several cities across the country such as Berlin, Hamburg, Hannover, Frankfurt and Stuttgart with the overarching goal of complementing public transport. At the moment there is no homogeneous legal framework for DRT which is subject to approval for concession either for car rental services or for public transport. In Stuttgart, DRT is viewed as regular public transport service which operates 76% downtown and 24 % outside the city with 9,749 passengers on average. The PTO is responsible for regulatory approval, control, drivers, branding and marketing, demand data, fleet management, customer services and ticketing while the private entrepreneur manages the platform and the routing, the fleet control, the app and technical aspects of ticketing. The project started in June 2018 as an experiment before being rolled out in summer 2019 with unified service area and expansion of service times in the evenings.



⁶ UITP, 2017. Governing for quality and performance, Action Points. Available for members at: <https://bit.ly/2Xn3L8d>

MEETING DEMAND WITH HIGH QUALITY SERVICE

In Australia, DRT pilots have been trialled in the state of New South Wales (NSW). Starting in November 2018, 11 pilot programmes were run in Sydney and outer Sydney metropolitan areas and 11 in rural and regional NSW. Four on-demand services are now permanent in Sydney and outer Sydney metropolitan areas, including Keoride operated by Keolis Downer and The Ponds service operated by Cooe Busways. Keoride services run in the Northern Beaches area and connect to transport hubs. It conducts more than 17,000 trips per month and has a high passenger satisfaction rate due to the quality and reliability of the service. The Ponds service operates in western Sydney suburbs from 5am to 9pm Monday to Friday and connects customers to three metro stations. Before the service was implemented, some commuters were parking up to 800 metres away from Schofields Station. It was also recognised as one of the fastest growing services globally by the technology partner, Via.



The development of DRT pilots across the world demonstrates actors' willingness to embrace change and engage with innovation. They do not view change as a threat but as an opportunity to enhance urban mobility systems and responding to social needs. This attitude should lead decision-makers to support new innovative solutions.

PRINCIPLE 2: CULTIVATING INNOVATION CLUSTERS

This principle emphasises the need for innovation. As mentioned earlier, urban mobility systems can be dysfunctional or insufficient in certain cases. New mobility services can be an opportunity to improve their sustainability. Still, the emergence of these services is not homogeneous and depends on the context. In some cities, innovation must be encouraged.

PTAs should be encouraged to engage in such processes, actively supporting the rise of new mobility services. Living laboratories and clusters of innovations where learning from failure leads to development encouraged. While such initiatives are local in essence, they should be scaled-up as benefits are identified and stakeholders learn to implement the service.

PUBLIC-PRIVATE PARTNERSHIPS TO ACCELERATE INNOVATION

Singapore has a growing population and economy, tight land constraints and a shortage of drivers. Customer expectations are also changing. In this context, the Land Transport Authority (LTA), Singapore's PTA, saw AVs as a way to enhance the value of public transport. Singapore set up a Committee on automated road transport comprising of public and private members which aims to develop AV technology, develop the industry and define the appropriate regulations.

Singapore is advocating for shared AVs for public transport, envisaging that the technology will complement existing public transport systems. This will be done by enhancing connectivity to major transportation nodes such as rail stations and bus interchanges, providing AV buses with fixed scheduled services and point-to-point mobility-on-demand services with dynamic routing capability in providing first-mile and last-mile connectivity.

With such a vision comes many uncertainties. Singapore has decided to facilitate the development of automated public vehicles and has implemented a regulatory sandbox. It passed the Road Traffic (Amendment) Bill in early 2017 to provide the Minister with the power to pass regulation over the use of AVs. Powers include the ability to exempt or modify existing provisions. Changes, if required, can be made quickly to adapt regulations in response to rapid developments in AV technology. In addition, the initiative consists of building capacities. On 1 August 2016, a cluster was launched to build up technical capabilities and knowledge in the testing and certification of AV capabilities, to facilitate the drafting of regulations to allow eventual deployment of AVs on public roads as well as to also operate an AV test circuit that will support AV testing and certification activities.

For LTA, it is important to lead the transition of AVs into the public transport network. A number of initiatives already in motion include mobility-on-demand trials, AV bus trials and roadside infrastructure trials. This includes engaging the industry and worker unions to prepare them for the transition to a driverless environment.



Singapore set up an innovation cluster to learn about AVs and shape their development in a sustainable way, so that their new mobility services serve overarching political and societal goals. An important aspect is the use of a sandbox regulation as an instrument. The AV regulation is not imposed top-down but co-constructed with all stakeholders from the bottom-up, hence an emerging character based on practices. This is an interesting point because the role of regulation is to manage innovation and foster sustainable business models.

PRINCIPLE 3: FOSTERING SUSTAINABLE BUSINESS MODEL

When a gap in the market has been identified, private companies can look to exploit new technologies and new ways of delivering services. But the problem is that their initial business models may not always be sustainable. They can evolve according to customers' feedbacks, global and local sustainable policy goals and regulatory response, but there is no guarantee that the new services will remain in place and may even exclude citizens.

Yet, if the new solution can contribute to reducing car usage and complement public transport, PTAs should consider whether to support the service to the point of providing financial compensations. If the service is valuable for the user, it should be able to finance itself with the resources it provides. PTAs could consider financial

support only if it is marginal or if the new service allows a reduction in the cost of traditional public transport.

Conversely, new solutions might bring negative impacts that must be corrected, requiring a revision of the business model. It is the role of PTAs to adopt regulation that will steer new players in the right direction. Additionally, such regulation could require changes in general regulations and in the legal system, which would require support from central or federal governments.

FIT FOR PURPOSE

In London, Transport for London (TfL) is committed to a series of goals that are set out in the Mayor's Transport Strategy. Notably this requires that, by 2041, 80% of journeys in London are by public transport, walking or cycling. Additionally, there must be no deaths on London's transport system and a 10% reduction in total traffic volumes.

The London PTA has several different roles and has sought to exercise these fairly. TfL is the regulator for London's taxi and private hire trade. When licensing vehicles, TfL must ensure they are safe for the passengers and driver, that the company operating them is fit for purpose and that the driver meets safety checks. TfL has sought some new legislation to deal with specific issues (for example, pedicabs which are human-powered taxi services), but has also sought to work equitably within the existing regulation as obtaining new regulatory powers is slow and uncertain.

As a strategic transport authority, TfL must also set out the policy framework in which these services operate. It does this through high-level policies such as the Mayor's Transport Strategy, but also by directly engaging with new firms and by being open-minded and encouraging innovation. For example, TfL has:

- Worked with new entrants to direct them towards areas where solutions are needed. For example, in locations with poorer public transport links
- Provided guidelines for new ride-sharing services, including shorter licenses
- Enforced requirements, rejected unfit applications and kept roads safe when new bike-sharing assets have caused obstructions

► Piloted demand-responsive services with the market

Overall TfL's approach is to ensure that new services meet the needs of customers and London as a whole.



As with London, Singapore is committed to a modal shift and leads an assertive public transport policy. Yet, LTA welcomed ride-hailing companies with a 'light touch' regulation that enabled the taxi and ride-hailing companies market to converge.

With the introduction of ride hail services it provided competition and enhanced the taxi services, which were forced to improve their services and to innovate to stay competitive. Previous to this, the taxi availability was poor during peak hours even though Singapore had one of the world's highest number of taxis per capita. With the increasing supply of ride-hailing services, all point-to-point service satisfaction levels improved. It was therefore positive in shaking up the taxi market, pushing it to become more customer-oriented. LTA observes and monitors how the market is reshaping after the introduction of ride-hailing companies. This is facilitated by a constant dialogue with ride hail and taxi unions, encouraging them to adopt technologies to improve operations. As a result, the ride hail market flourished.

LTA's stance is that the market should remain open and contestable, drivers should not be tied to any exclusive arrangements and that no single actor should dominate the market.

LIGHT TOUCH APPROACH

In Singapore, LTA's strategic objective is that 75% of peak hour travel is made via traditional public transport by 2030. By 2040, its walk, cycle and ride (WCR) peak hour journeys, or journeys that are public, active and shared modes constitute 90% of total journeys. LTA is therefore rapidly expanding its rail network as well as improving service reliability of its existing network, to ensure that a high quality public transport system underpins these targets.

Still, rail services are not door-to-door solutions. Due to the first and last mile problems, the car remains more attractive than mass public transport. This consideration led LTA to view the emergence of new services as an opportunity to decrease the population's reliance on individualised private transport.



To support this institutional process there is a need to bring evidence on the impacts of these new services and to continuously monitor and evaluate how they benefit or affect the city.

PRINCIPLE 4: MONITORING AND EVALUATING IMPACTS

New mobility services have diverse impacts which are influenced by local conditions. Local observatories monitor and evaluate the evolution of such services. The impacts of new services depend on both inherited conditions and also the institutional response.

Digitalisation and the proliferation of data should support PTAs' attitude and decision-making, providing real-time information on the way new services affect mobility systems and the city. Data should be shared for monitoring and evaluation purpose in order to enable PTAs to steer the urban mobility system in the right direction.

CONCLUSION

This paper underlines four organisational principles to manage change and disruption, highlighting the importance of public transport authorities. For PTAs, it is essential that mass public transport remains the backbone of urban mobility systems. New mobility services should be fully integrated with public transport and support a more sustainable city vision, less dependent on the private car. To achieve this sustainable scenario, PTAs need to experiment and embrace innovation while ensuring that the process leads to a more sustainable city by replacing private car use with active and shared modes potentially relying on autonomous vehicle technology. This requires the public and the private sector to collaborate to fully reap the benefits of new services.



RECOMMENDATIONS

REDEFINE PUBLIC TRANSPORT SERVICES

- Revise traditional frameworks for PTA delivery, especially those that divide PTAs and PTOs
- Ensure frameworks account for changing customer needs and allow responsive policy innovation
- Collaborate and utilise partnerships between public and private actors
- This should lead PTAs and PTO to consider a variety of new service concepts

CULTIVATE INNOVATION CLUSTERS

- Test, pilot and prototype
- Gather the whole range of stakeholders
- Focus on the very local
- Stimulate innovation: Learn by doing and understand that failure is still productive

FOSTER SUSTAINABLE BUSINESS MODELS

- Do not rely on all new players: Many are experimenting, their business models are not always sustainable
- Beware of a lock-in effect that would leave people without services
- Shape new players while building safety nets of diverse transport options
- Consider the provision of subsidies and compensation when necessary. For example, if subsidising the service results in a reduction in traditional public transport costs, or if the users contribution is not sufficient.

MONITOR AND EVALUATE IMPACTS

- Monitor how new plays affect the city directly and indirectly
- Give relevance to local observatories
- Take advantage of data, which should support this process by providing real-time information and evidence on the way new services affect mobility systems and the city.

This is an official Policy Brief of UITP, the International Association of Public Transport. UITP has more than 1,800 member companies in 100 countries throughout the world and represents the interests of key players in this sector. Its membership includes transport authorities, operators, both private and public, in all modes of collective passenger transport, and the industry. UITP addresses the economic, technical, organisation and management aspects of passenger transport, as well as the development of policy for mobility and public transport worldwide.

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