

# USING BUSINESS MODELS FOR BETTER INTEGRATED MOBILITY

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#### INTRODUCTION

Combined mobility looks into ways of developing integrated mobility offers that can provide attractive alternatives for people to reduce their usage and ownership of private vehicles. In turn, this will benefit society and the planet.

This Brief outlines the importance of business models for better combined mobility, exemplified with a set of services and their key challenges for viable business models. Because without a viable business model, there will be no real service, just pilots. Without public actors enabling and framing the new services, there will be no sustainable modal shift. To achieve this, the public sector needs to consider business models and play the role of "strategic integrator". Cooperation and integration implies that providers need to adjust their business model.

The Business Model Canvas is a tool to understand and develop business models as well as identify critical challenges in the ecosystem. The common challenges identified are: High costs and low margins, broad set of partners, and competing with the private car.

This Brief does not intend to build complete business models nor to discuss governance or regulation. These are very much dependent on many factors and local conditions.



#### THE IMPORTANCE OF BUSINESS MODELS IN MOBILITY

#### WITHOUT A VIABLE BUSINESS MODEL THERE IS NO SERVICE

A business model describes how value is created, delivered and captured. Without a viable business model, a service will eventually stop, regardless of whether it is run by a commercial company or a public actor. A popular tool for designing, iterating and updating a business model is the Business Model Canvas, developed by Alexander Osterwalder and Yves Pigneur.

At the core of the Canvas for new services are the Value Proposition and Customer Segment boxes, in other words, what do we offer to a target group that can meet their needs and solve their problems better than their current solution? This means creating value for users, something they are willing to pay for in some way, either partly or wholly.



Figure 1: The Business Model Canvas (Source: Osterwaler & Pigneur)

Revenue streams can come from many different sources. Facebook is financed by advertisers while users get it for free (except for being "sold" to by the advertisers).

On the other side of the scale, e-scooter users have to pay for the service (though some services are subsidised by venture capital). Public transport users typically pay half of the cost, the other half being covered by taxpayers' money funnelled from the common good that public transport brings to the residents and the city itself.

Whatever the origins of the revenue streams, a service still needs to attract enough users. The mobility ecosystem brings a number of challenges compared to other markets, such as high setup costs in combination with low margins, a strong local context, the need for balanced public-private cooperation and a society that is designed for the dominant solution: the private car. A typical element of complex ecosystems is also that value can be created in one place but captured in another, meaning that the value chain is not so linear.

Without diminishing the success of Netflix<sup>1</sup> and Spotify, most mobility services are quite different from a global streaming service. It is important to understand the business model<sup>2</sup> and the ecosystem around it.

#### WHY THE PUBLIC SECTOR NEEDS TO CONSIDER AND 'PLAY' BUSINESS MODELS

#### To optimise business cases

Business cases collect evidence in a logical and coherent way, explain the contribution of a proposed investment to organisational objectives and help ensure that an investment is a good use of public funds.

We can look at the whole business case from a public sector perspective, where public transport is generally not driven by revenue but by the common good. A business case in this respect considers everything from how an investment supports the overall goals, cost versus benefit for society as a whole, and finally economic and financial aspects. In the case of new services and innovation, they might decide to engage in pilots to gather more evidence and optimise their business case.

### To frame and enable services and foster an integrated offer

Cities and public transport players really need to understand the business models of different services to steer them towards achieving the common good.

This could be done by leveraging the role of key partner that they have for most new mobility services and by accepting the proactive role of "strategic integrator or enabler".

1 Sampo Heitanen, CEO of Maas Global Limited, is often attributed the comparison of MaaS as being the "Netflix of transport." 2For a short video explaining business models, please see <u>here</u>.

#### Figure 2: A business case methodology (Source: Metrolinx of Toronto)<sup>3</sup>



#### **STRATEGIC CASE**

- Establishes 'why' a project should be pursued
- Determines the strategic value of addressing a problem
- Options are evaluated against strategic objectives



#### ECONOMIC CASE

- Establishes 'what the benefit to society' is in economic terms
- Assesses economic costs and benefits to individuals and society



#### **FINANCIAL CASE**

- Establishes 'how much the project will cost' in financial terms
- Assesses affordability and financial value for money
- Focuses on capital, resource and operating requirements for the corporation



### DELIVERABILITY & OPERATIONS CASE

- Establishes 'what is required to deliver and operate' the project
- Provides evidence on engineering viability
- May consider procurement strategies and deliverability and operating risks

For example, in tenders, new bike-sharing operators could be committed to cooperating with a local Mobility as a service (MaaS) operator, or their coverage area could be extended to the suburbs rather than to the city centre. Operators could be asked to share relevant data to help cities optimise their planning or policy enforcement actions for example, the Mobility Data Specification (MDS) standard that was first developed by the city of Los Angeles in North America.

In fact, business models normally concentrate on the value creation and delivery efficiency of a particular service and not on the efficiency of the integrated offer or the goal of sustainability. To address this, authorities may set the right rules and create the right incentives for the actors and users.

As the new services require an integrated approach, this has to be met with agility on the part of public transport players. They have to step outside their established silos and focus on the common creation of value. For authorities, it is strategic to build a framework for the development of the mobility ecosystem, within the different market conditions and local conditions that exist.

Preconditions for more sustainable business models in combined mobility are: Good public transport as a



3 For more guidance, check out the Metrolinx website

backbone, a cooperative mindset (also among different public sector agencies) and supportive measures (beyond funding and public space).

Otherwise pilots will never become larger systems because the services will not find their way onto the market.

#### UNDERSTANDING KEY BUSINESS MODEL CHALLENGES

The purpose of this chapter is to provide examples of how the Business Model Canvas (Figure 1) can be used as an exploratory and qualifying tool before deciding on if, how, and with whom to develop a new or adapted service. Not even a pilot should be launched without having a hypothesis on what a viable business model could look like.

Provided that the value proposition is vital for all services, this chapter shows the key areas that need to be solved for a set of services before moving on to the other parts of the business model. This also serves as a preliminary analysis of what needs to be in place before it is worth moving on to the next phase.

Every business model is different because it is embedded in a local context and depends on a variety of elements. However, it is possible to generalise the key challenges for each type of service. For this brief, we have considered three general services and analysed them along their macro urban-rural variability:

CONTEXT	URBAN	RURAL
Demand-responsive transport (DRT) or on-demand public transport	$\checkmark$	$\checkmark$
Mobility hubs	$\checkmark$	$\checkmark$
Mobility as a Service (MaaS)	$\checkmark$	

#### DEFINITIONS FOR THE PURPOSE OF THIS BRIEF



#### DEMAND RAPID TRANSIT

In this brief, we define Demand-responsive Transport (DRT) as "app-based/tech supported micro transit, complementing or replacing fixed route public transport". This means that in some way it will be part of or linked to the public transport network, covering a variety of cases such as: new service replacing low occupancy bus lines, first/last mile service, off-peak/ evening/ night-time service, premium or special needs (e.g. paratransit), temporary service, community transport.



#### **MOBILITY HUBS**

A mobility hub provides a focal point in the transportation network that seamlessly integrates different modes of transport including traditional public transport, multi-modal supportive infrastructure, and placemaking strategies to create activity centres that maximise access to mobility options and other resources as well as first/last mile connectivity.



#### **MOBILITY AS A SERVICE**

MaaS is defined as the integration of mobility services into one service/offer, including at least booking and payment (so not just information). This definition in itself comprises different types of MaaS depending for instance on value proposition (for example, travel planner- based pay-as-you-go targeting single trips - level 2 or subscription-based targeting "all" trips - level 3), target groups and operators (such as B2C, B2B for real estate owners, and so on, and B2G2C if offered by an authority).

#### **COMMON CHALLENGES**

#### High costs and low margins

Transportation is both an asset and a labour-intensive business. This means that efficiency, optimisation, and cost awareness is required on the left-hand side of the Business Model Canvas (Figure 1) and creativity in finding revenue streams on the right.

#### HIGH COSTS AND LOW MARGINS

It is no secret that most new mobility service actors are either losing a lot of money (Uber, Car2Go/ReachNow, MaaS Global etc.) or are barely profitable (some station-based car sharing operators and notably e-scooter companies). Public transport typically runs at a 50% negative margin. Many of the new actors have high vehicle costs, small margins due to competition or low willingness to pay for the service, and on top of this comes the high cost for customer acquisition. For a MaaS operator, acting as a middleman, this is even more challenging.

#### Broad set of partners

MaaS and mobility hubs are built on cooperation with various of actors. For a mobility hub, there is also a physical dimension involving property/landowners, real estate developers as well as retail and non-mobility service operators. Both MaaS and mobility hubs should make it easier for participating service providers to reach new customers, but the latter can also offer physical space, which is a scarce resource in cities.

#### **MOBILITY HUBS: PARTNERS**

The larger the mobility hub and the more closely it is intertwined with transport networks (such as central train stations, park & ride), the greater the complexity and number of partners involved. The nature of these partners can also be very varied, including real estate developers, petrol stations, parking garages and logistics companies. On the public side, it often requires the coordination of different entities and departments with different priorities, visions, and plans. It is therefore vital to establish a clear vision, process, and responsibilities with one identified leading organisation.



#### Competing with the private car

MaaS and DRT are competing with the convenience of owning or using the private car for "all trips" or the whole trip. **Mobility habits are considered to be one of the hardest behaviours to change.** This means that a service must be relevant, easy to use and reasonably priced, but also that it will take some effort to convince potential customers (customer relations and channels), something that needs to be done in a cost-effective manner since the margins are relatively small.

## MAAS: COMPETING WITH THE PRIVATE CAR

Io replace a private car, a MaaS solution does not just have to get customers from A to B, but rather from morning to evening, Monday to Sunday. In other words, it has to cover all mobility needs. This had an implication for the business model of the subscription UbiGo service when it was piloted in 2013, which also meant defining the customer as households rather than individuals and seeing shared and rental cars as key services alongside public transport. Replacing a private car means higher revenues and potentially higher margins per customer but also the highest value for cities as well as suppliers. A household that keeps their first or second car will most likely use it for most trips, if not merely to justify the high fixed costs.

#### BUSINESS MODEL PARTS AND THEIR MEANING FOR THE SERVICES

This subchapter highlights in what way different parts of the Business Models Canvas (Figure 1) are important for one or more of the five services.

#### Customer relations and potential cannibalisation

To build long-lasting relations with its partners, a MaaS provider must attract new customers, which can be expensive, and avoid 'stealing' existing customer from their partners, which is easier. Hence, effective customer acquisition is important, as are tools for communicating with users and analysing their behaviour. The latter applies also to DRT and mobility hubs.

#### **MOBILITY HUBS: BRANDING**

The branding of mobility hubs is very important for gaining visibility and creating a network of hubs. For example, "HUBS", in the north of the Netherlands has a big network covering two Dutch provinces and strong branding.

#### Revenue streams

DRT and mobility hubs, especially in rural areas, will rely on at least partial subsidies or being procured by a public authority. In urban areas there is a possibility to get substantial contributions from employers and real estate developers that have a lot to gain from limiting parking space, offering better accessibility, branding and healthier employees. The latter also applies to MaaS.

#### **MOBILITY HUBS: REVENUE**

As an example, in the city of Deinze, Belgium, the municipality ensures a guaranteed revenue to mobility service providers with an incentive for providers to bring their services to more rural areas and for the municipality to use their services and bring more customers in order to reduce the subsidy.

#### Key partners

All services rely on public-private partnerships and the "right" kind of regulation, but a MaaS operator also needs to attract transport service providers and mobility hubs need "physical" partners as well, such as property owners and real estate developers.

#### **MOBILITY HUBS: KEY PARTNERS**

Viilvoorde, Belgium, is a good example of the variety of key partners with two mobility hubs. One hub was started by Matexi, a real estate developer to make an urban renewal project more accessible, and another hub is around the train station, typically involving the partnership of the city, the public transport operator De Lijn, the railway company SNCB and the NGO MPACT, which promotes mobility hubs in Flanders. In Bremen, Germany, Mobil.punkt have roundtrip carsharing companies as key partners.

#### Key Resources and Activities

DRT relies heavily on technology such as algorithms for routing and sharing rides, fleet management and optimisation, data analyses, support and communication with both passengers and drivers. If the purpose is to replace or extend fixed route public transport, existing DRT or paratransit services, DRT could be seen as a way of making part of an existing business more effective rather than a new service. In such cases, it is natural to look at cost savings and increased flexibility and customer reach through digitalisation.

## DRT: KEY RESOURCES AND ACTIVITIES

In Le Havre, France, the metropolitan authority wished to extend an existing night-time service (based on two regular bus lines and three taxis) from three nights to seven nights for the same cost but with a more efficient offer. The answer of the PTO, a Transdev branch, was LiA de Nuit, a digital on-demand mobility service, that allows night owls or shift workers to move around 8 of the 17 towns that constitute greater Le Havre. For greater flexibility, the service is outsourced to local taxi companies using nine-seater shuttles. This DRT service is the result of a partnership and contract agreement between Transdev and Cityway, which developed the software for booking, routing and dispatch.



#### Value proposition and customer segment

A MaaS service must be able to compete with both car ownership and "do-it-yourself" solutions and must create value as a middleman. This requires technical and commercial integration, and the integration of relevant and attractive services, including public transport.

A service must match the needs of the customer, resolve the shortcomings of the current solution and, also hopefully make a profit (the matching can be done using a subset of the Business Model Canvas, the Value Proposition Canvas). This means that it is important to understand not only who the customer is, but also how the customer is defined.

As identified in Figure 3, a MaaS level 2, pay-as-you-go service offers routes and tickets to a traveller, solving the need to go from A to B. Key services are public transport and micromobility at standard price models and making money on commissions. A MaaS level 3 service targets car ownership and needs to cover a household's total mobility needs and may offer some kind of bundling or subscription. Key services, besides public transport, include carsharing and rental cars. The same person can be a traveller when visiting another city and "household manager" as a resident in their hometown.

### Figure 3: Characterising MaaS by its integration (Source: Sochor et al.)

MAAS CAN BE THE INTEGRATION OF...



### MAAS: VALUE PROPOSITION AND CUSTOMER SEGMENT

There are many business models for MaaS, for example:

- Jelbi, in Berlin, Germany, is a level 2, public MaaS service (operated by BVG)
- Whim, in Helsinki, Finland, is a level 2 and 3 commercial MaaS service (operated by MaaS Global)
- Skipr, in Belgium, is a level 3 B2B MaaS service
  offering mobility packages for employees.

#### FURTHER CHALLENGES AND CONSIDER-ATIONS PER SERVICE

With continuing reference to the Business Model Canvas (figure 1), this subchapter highlights further considerations for each of the five services.

#### DRT, Urban

DRT can contribute to many different, often social goals, whether replacing inefficient fixed route public transport, addressing specific needs or extending public transport's reach into underserved areas. This means that DRT in urban areas can also need subsidies, for example by including the ride in the public transport ticket, but "subsidies" can also come from private actors, such as employers/business parks, and so on (revenue streams/ partners).

#### **DRT: REVENUE**

In North America, some local leaders have explored creative alternatives to tax revenues in order to fund their transport services and have partnered with key stakeholders in their community — from corporations to foundations to universities. For example, the City of Birmingham, partnered with the Community Foundation of Greater Birmingham to fund and launch an on-demand pilot programme powered by Via and aimed at providing affordable transit in low-income communities.

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#### DRT, Rural

A DRT service in rural areas might have to be even better than a service in urban areas, since the relative competitiveness of the private car is higher outside cities (value proposition). Rural services will need a higher level of subsidy, but on the other hand, the cost saving compared to regular public transport could outweigh that (revenue streams/cost structure). The payment systems/ provider are a key element of the business model (channels/revenue streams).

#### **DRT: VALUE PROPOSITION**

In June 2019, the Capital Metropolitan Transit Authority of Austin re-launched its DRT service called "Pickup" in Manor, a fast-growing rural community some 15 miles east of Austin with an estimated 14,000 inhabitants. The new service replaces an existing fixed-route bus, and a single ride costs the same as single ride pass on the bus services. With limited access to other forms of public transport, the response to this service has exceeded expectations. As it is more affordable to live outside the city, people on limited incomes rely heavily on this service.

#### Mobility hubs, urban

A mobility hub is quite place-specific – is it part of a neighbourhood, a business parc or a shopping area? The space for all the shared services is of course a key resource and curbside management a key activity.

#### **MOBILITY HUBS: KEY RESOURCE**

Land is clearly a key resource for mobility hubs, especially in urban settings where land is rare and expensive. For example, in Hamburg, Germany, when looking at land, the "switch points" are mainly of two kinds: hubs near stations where the land is owned by the PTO, Hamburger Hochbahn (HH), and small hubs in housing areas where HH has partnered with real estate developers. The mobility hubs are part of a strategy that include a MaaS app, hvv switch.

#### Mobility hubs, rural

The relevance of a hub in a rural area depends on the accessibility by public transport and the conditions in the neighbouring larger city. If it is too easy to park inside the city, many people will drive their private car all the way instead of using the hub. The physical hubs need a digital layer, e.g., real time information and ticket purchase as part of the value proposition.

## MOBILITY HUBS: VALUE PROPOSITION

More generally, the business success of mobility hubs, urban and rural, depends on the opportunities for cross-selling between different services. More car-sharing, for instance, leads to more use of public transport. Also, other services linked to mobility hubs can gain from each other: such as food and beverages, advertising, parcel lockers, and so on. The quality of each service contributes to the other services. Mobility hubs are creating a shift from revenue linked to carownership and shopping in large shopping malls, to revenue linked to different mobility services and neighbourhood shops. This was found in Bremen, in a recent analysis of the impact of car-sharing as a key part of mobility hubs.



#### CONCLUSION

There is an opportunity for cities and regions to strengthen multimodality and provide door-todoor services as an attractive alternative to the usage and ownership of private cars. It is important that public actors enable and frame the new services to activate and accelerate a sustainable modal shift. For this, shaping business models is one of the tools that authorities can mobilise to create an integrated mobility system.

In this brief, we have explored mobility business models by looking at three types of services: DRT, Mobility hubs and MaaS. We have seen that the Business Model Canvas can be used as a tool to understand and develop business models.

These days, many pilots are designed to gain a better understanding of the impact of a new service and finalise a business case to justify public spending, if needed. It is important that there is a viable business model, ensuring that the pilot will live on as a real service and scale up to be able to integrate into the mobility provision. Individual business models normally concentrate on their own efficiency and not on the efficiency of the integrated offer or the wider policy goal of sustainability. Authorities can address this by setting the rules and creating the incentives for actors and users alike.

Finally, we suggest using the Business Model Canvas to identify and overcome critical challenges in the ecosystem and achieve a more integrated multimodal system with attractive and sustainable mobility services.



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