The MaaS Manifesto: Smart data and accessing a city’s potential

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MaaS: Mobility as a Service

The integration of various forms of transport services into a single mobility service accessible on demand.
The last five years have proven that transportation is in the midst of a mobility revolution. Technological advancements and industry innovation are disrupting traditional systems and infrastructure at an increasingly rapid pace.

The introduction of alternative transportation providers such as ride hailing, on-demand shared transit, bike and scooter sharing companies is changing the way citizens move about their communities, creating new opportunities for public transit agencies and cities. The future of mobility has arrived and it’s here to stay, as customers embrace the power of choice.

Mobility-as-a-Service (MaaS) gives people customized, reliable and flexible transportation options by allowing them to search, book and pay for public and private multimodal transportation services. With the MaaS marketplace still evolving, defining and delivering an equitable solution for a yet-to-be-determined future is uniquely challenging. Public agencies need to lay a foundation and establish their place at the centre of the future urban mobility ecosystem.

It’s imperative that public transit agencies take a leadership role in this new mobility landscape to seize the opportunity to shape and lead the future of MaaS. Transit is the cornerstone of mobility within a community, providing affordable and accessible transportation for all citizens. As the MaaS market matures, transit providers must leverage their experience, their relationships with the community, and their partnerships with cities, local groups, and riders to maximize the benefits of MaaS for all. Agencies will need to revisit long-established norms and look towards the potential future needs of citizens and cities as they work towards redefining their transit services.
“A city is only **smart** if it can **solve** the basic problems of those living in it.”

Mayor of Panama City, José Blandon Figueroa

- Being able to easily get from A-B, plays a critical role in ensuring a population has access to its basic needs – to access education, work, healthcare, commerce and to connect socially.

- Seamless access to a city’s basic amenities, will unlock access to our more advanced psychological and self-fulfilment needs.

- Frictionless and accessible transport networks connect communities and fuels economic growth.
Can city infrastructures and services keep pace with the unstoppable march towards urbanisation and the demands on our transport networks?
• 2007 – The world’s population becomes more urban than rural
• 2017 – 54% of world’s population are urban dwellers
• 2030 – 60% of world’s population will live in cities
• Urban population by continent 2017: 81% North America; 80% Latin America & Caribbean; 74% Europe; 69% Oceania; 49% Asia, 41% Africa
Traffic speeds are falling in cities around the world
Congestion in major cities

New York City | Av speed - 11.2 kmp/h
Moscow | Av speed - 18.1 kmp/h
Los Angeles | Av speed - 20.5 kmp/h
London | Av speed - 16.2 kmp/h
Paris | Av speed - 15 kmp/h
Urban populations are rising across the globe.

Demands on existing infrastructures are increasing.

Traditional systems are creaking.

Average car speed in London was just over 8kmph in 2017*.

* Analysis by In-Car Cleverness in 2017
Like many global cities, London has been growing rapidly in terms of economic activity and population size, but this has led to ever-rising congestion and pollution. As well as getting people from A to B, cities’ roads and streets provide spaces where we can work, trade, meet, play, relax and exercise. So providing quick and reliable modes of transportation alongside well designed public spaces, thus striking the right balance between the mobility and place aspects of our streets, has a big impact on people’s quality of life.

“We need to make more efficient use of cities’ finite road network, by reducing our reliance on cars and instead creating a transport system centred on public transport, walking and cycling, and making the most of new technology. By enabling shared mobility and seamless multi-modal journeys, MaaS has a vital role to play in providing information to encourage people to make smarter travel choices and to lead healthier lifestyles, making our roads safer, more efficient and less polluted. Achieving this vision, however, will require bold thinking and far-sighted leadership from both politicians and public transport authorities.

Silviya Barrett
Research Manager at Centre for London
City leaders, transport providers, shared mobility pioneers must – rapidly – look to better ways to move their inhabitants across the landscape if we want to continue to thrive.
Let us imagine two very different futures...
Congested City 2030

Average driving speeds have been dropping in cities around the world as a result of increased congestion. Cities around the world have prioritized access and space for private cars over other, shared modes of transportation. If we carry on with business as usual, we can expect things to get worse, so what does a congested future look like?

- Data about multi-modal options not accurate or shared between providers, making journey planning and coordination difficult
- City planners continue developing streets with cars as the primary vehicle
- Lots of space allocated to parking
- Not enough space, or priority access, for public transport
- Few dedicated bike and scooter lanes
- Additional pollution from car
Grid lock
- Network at standstill
- No journey time reliability
- No ability to accurately plan journeys

Bus timetable
- Effectiveness of bus to reduce congestion & pollution is nullified
- Poor journey time reliability due to congestion
- Paying for public transport expensive and cumbersome

Pollution
- Increased by private, often single occupancy vehicles
- Lack of alternative, less polluting forms of transport
- Lack of shared ownership/responsibility for air quality

Bus stops
- No high quality RT passenger information
- No confidence buses will run on time
- Bus stops poorly positioned/used/maintained

Transport poverty
- Isolated communities equals huge social and economic cost
- Reduced work opportunities
- Reduced access to shops and spending

No car-sharing
- No incentive to reduce single occupancy private car use
- Lack of shared public amenity services & space

Congested City
- City taken over by private cars
- No shared space/public amenity
- Degraded public spaces/vandalism/crime

Car volume
- City taken over by private cars
- No shared space/public amenity
- Degraded public spaces/vandalism/crime

No Cycle Lanes
- Cycling dangerous and difficult
- Fewer cyclists increases car use and pollution
- Societal health benefits from cycling not exploited
In the fifties and sixties, urban planners designed cities around private cars. Brussels is a sad example of this: a beautiful city, torn by motorways cutting through neighborhoods. The result for Brussels is that of the 350,000 commuters coming into and leaving the city every day, half do so by car and often they are the sole occupant of that car. What’s more is that more than 97% of the time these cars stand still and occupy space. As a result, Brussels is not only one of the most air polluted cities in Belgium, but public space is scarce. Compared to Paris Brussels has half the people but double the parking space.

But I’m an optimist, as a politician it is not only my moral but also my professional duty. In urban environments of the future cars will be used and no longer owned. And the future is happening today, Brussels is on its way to become Europe’s capital for shared vehicles. According to industry the question is “when” rather than “if” to the next step: cities with only automated vehicles. But for me as a politician the most crucial to ask is “how”. How do we avoid a dystopian future in which private cars of today are simply replaced by private automated vehicles tomorrow? We would miss a unique chance at recovering much needed public space that is now occupied by cars. The future of any form of mobility is therefore “shared”. It’s up to city governments to redefine the role of public transport and partner up with the innovation in the field. Public transport needs to remain the backbone of a city. In the future, shared private automated services will have to connect to that backbone within a framework set out by city governments. If we can succeed at that, we will take another leap towards cities with more space to live and wander and a more easily flowing mobility. For mobility is not an end in itself but a means towards better living environments.

Pascal Smet,
Minister of the Government of the Brussels-Capital Region,
responsible for Mobility and Public Works
Seamless City 2030

A worker lives in the western-suburbs of her megacity. Each day she drops her kids off before travelling twelve miles across one of the densest and most used, multi-modal transport networks in the world, to get to her office job in a science park.

She is woken by her smart watch at 06:15, with an update on the quickest route to school and on to work.
- Possible crunch points are highlighted, and a preferred departure time provided
- In the case of severe network overuse, the alarm automatically resets to an earlier time

Today is OK. They set off on foot – realising it is quicker to walk as the busses are off-schedule – to the nearest mainline train station.
- Her app guides her on the safest and quickest route with the kids, automatically ensuring she arrives at the right platform
- She seamlessly registers into the transport network via her smartwatch which also ensures she pays the right amount every time

While on the train, her watch lets her know the quickest way to complete her journey for today.
- She disembarks the train a stop earlier than usual, and jumps on a local bus service
- She is guided by her app to the right stop and informed when to disembark

The children are dropped off well in time for their before-school activities, whilst she continues onto work. She is dropped off a little outside the science park and today timing is tight.
- She finishes the last mile using a bike from a local share scheme
- Once she gets to her building, she finalises the journey on her watch to pay in one simple transaction

The whole journey – including dropping off the children – has taken just under an hour – enough time for a coffee before work begins.
Seamless City

**Bus schedule**
- Priority given to buses means faster journey times than private cars
- Optimised to meet traveller demand with more convenient stops
- Accurate, easily accessible real-time information gives travellers the confidence to use public transport when changes happen/ things go wrong

**Metro link**
- Shared forms of transport seamlessly joined up:
  - Physical infrastructure perspective
  - Joined up services across different modes of shared transportation
  - Accessible passenger information
  - Journey planning data

**Cycle lanes**
- Safe, separated bike lanes encourage more people to use bikes
- Bike share schemes, green spaces and bike lanes integrated with other forms of shared transport so that bikes become the norm for last quarter mile journeys
- Accurate data on bike availability and cycle lanes encourages people to adopt cycling in the city

**Car Share**
- Prioritised over private car use
- Electric city cars reduce pollution
- Traveller information introduces the driver to the alternative shared forms of transport available in the area/ advises when there may be a better mixed mode route

**Green Space**
- Making the community the heart of the city
- Green spaces help to reduce pollution and provide healthy, pleasant places for people to spend time
- Green spaces interconnected, to encourage walking

**Bus stops**
- All data about the bus stop is accurate
- All schedule data presented accurately, schedule and in real-time
The days of beautiful places with ugly air quality are limited. Increased awareness of the negative impacts of congestion on public health, quality of place, and individual wellbeing means that understanding how people move around cities matters more than ever. So what does this mean for our cities?

Making better use of data to develop places that reflect changing patterns of mobility. This could mean using up-to-date travel time data to determine catchment areas, or identifying areas last-mile options are lacking.

Collaboration between developers, planners, architects and occupiers as successful places require a shared vision and strategy for sustainable and efficient mobility.

Ensuring the right infrastructure is in place from the outset, whether dockless bikes or electric vehicle charging points. Flexibility matters too – and better use of transport demand data can minimise the risk of investing in obsolescing infrastructure.

Using new levers to influence not just why end-users should travel to their destination, but how they do so. This includes working with retailers to offer rewards for those who arrive via active transport, or with office occupiers to promote agile working to smooth demand.

The result – healthier and happier citizens, high-quality places where people want to spend time and a city that is enjoyable and navigable in the immediate term, and sustainable and successful for the long term.

Kat Hanna
Associate Director, Urban Change at Cushman & Wakefield
The answer lies in MaaS

In the joining up of traditional and shared transportation systems which directly serve the needs of the public using them

New ways of thinking in transport and new collaborations are critical to ensure continued urban flow
The **MaaS** movement

- By 2030 is the value of the MaaS sector, globally, is expected to exceed $1 trillion.
- Which in turn will lessen our reliance on space-greedy, energy sapping, pollution producing individually owned cars.
- Contributing to the overall well being of many of our great cities and their populations.
The key enablers of **MaaS** are advances in technology and business models, more specifically the availability of smartphones and the true interoperability of transport networks.

Personalisation and **accessibility** will be key, as we seek increasingly seamless travel experiences.
The mobility revolution is underway
“Shared transport services, and the ability to individualise journeys, are the biggest developments development in urban transit since Karl Benz’s Benz Patent Motorcar had its first drive through Mannheim, Germany in July 1886.”
The big revolution
Technology changes everything

• Digital technology is already making it much easier to plan and personalise our journeys – we can map a route, call up a cab, pick up a shared bike, or pay for the bus from our phone.

• The same technology allows us to access live updates while we are travelling and adapt our route accordingly, allowing for work, entertainment, socialising on the journey.

• We are moving from a world of private car ownership to mobility as a service, where shared forms of transport are a key part of the mix.

• The detailed user demand information helps transport operators dynamically optimise the deficient performance of their networks.
• **Open data**, open systems and open APIs have all made MaaS possible.

• Possible for new entrants to the market to provide the kind of human-shaped transportation flow today’s city dwellers need to move from one place, and one transport mode, to another. They are forcing operators to rethink how they deliver services in order to compete.

• There is however, and enormous amount of data, often siloed, of varying complexity and quality that can either facilitate or inhibit new existing and emerging players.
While **technology** may be the key, **data** is the ultimate solution to total city access.
Playing to compete

• In a world where transport is now available at the touch of an app, operators have to re-think the way they deliver services in order to meet customer expectations.

• Public transport needs to evolve to achieve a customer experience that fits with the rise of on-demand and shared economy models – and this is where accurate data in real-time proves to be invaluable.

• Customers’ questions seem disarmingly simple, but require powerful data to adequately answer:

  “Which subway entrance is best? Where are crunch points? Which side of the road is the bus stop? Where is the nearest available bike? How do I even pay for all of this?”
Data will transform how we move across our cities

High quality transit & mobility data is critical to providing seamless multimodal travel.

Reducing the reliance on private car journeys.
Quality data relies on...

- More open data from governments, city authorities, public and private operators.
- Complete and accurate data from providers.
- Data which reflects the real time experience of travellers.
MaaS providers need transit data that accurately reflects the real-life customer experience as closely as possible.

By working with data experts that can leverage open and proprietary data to improve and augment schedule and real-time data, authorities and operators can deliver a single integrated dataset for entire cities across the world.

Then, and only then, can a unified **accurate dataset** be provided across a city, giving a total-city picture of transit options, in real time, to travellers seeking to move as quickly and seamlessly as possible.
Critical MaaS

Five key drivers to unlock the true potential in our megacities

• Infrastructure planning that encourages and prioritises shared mobility services, from public transport to bikes, in favour of privately owned cars.

• Encouraging the adoption of multi-modal shared transport services accurate, high quality data is essential.

• Putting in place incentives to encourage public and private operators to provide socially equitable services.

• Continue to make shared forms of transport as convenient as the car.

• Accurate, comprehensive passenger information accessible to all.