WHITE PAPER

HOW TO ACHIEVE SUSTAINABLE URBAN MOBILITY THROUGH AN OPEN DIGITAL PLATFORM

COMTRADE

OVERVIEW

People are increasingly choosing to live in urban areas where they expect to enjoy higher quality of life and have access to modern technology and infrastructure. However, the current approach to urban mobility is failing to keep up with this demand. The combination of privately owned cars, public transport and other mobility options is not an optimal solution and does not provide all the benefits that are possible in today's digital age.

This white paper introduces a visionary concept where essentially all mobility options in urban areas are transformed into a service, enabling a better harmonization and optimization of all available transportation systems. The new model yields positive benefits in terms of costs, quality of service and most importantly the environment.

THE STATE OF URBAN MOBILITY SYSTEMS:

OVERSTRETCHED

The world population is largely city-based and this trend is expected to continue in the future. Fifty-three percent of the global population currently lives in urban areas and by 2050 this number is expected to reach 67%. In addition, the total number of kilometers travelled by urban commuters is expected to triple in the same amount of time.
Likewise, the number of journeys commuters make on a daily basis will grow massively. Today, a large number of commuters use privately owned cars to get around the city. As these trends continue, cities will have to play an active role in driving the future of urban mobility as existing mobility systems are close to reaching a breaking point. The capacity and efficiency of urban transportation systems will have to be improved.

Cities are facing a set of mobility challenges that they have never experienced before. The growing demand and need for transportation are having harmful effects on all aspects of the environment, including air pollution, noise and an increasing ecological footprint. Furthermore, people are frustrated by traffic jams, traffic security, deteriorating quality of life and convenience. The current state of mobility within urban areas is resulting in overstrained infrastructures, insufficient public transport capacities, increasing motorization and limited parking spaces.

Citizens around the world are growing increasingly concerned about the sustainability of their transportation systems. Ultimately, this will lead to the understanding and acceptance that the current transportation model is no longer sustainable and needs to be replaced with one that's more efficient, cost-effective and environmentally friendly. In some parts of the world, some people have already experienced and recognized the benefits of new concepts of urban mobility and are choosing services like car sharing, ride sharing and bike sharing.

BY **2050** » **67%**

OF PEOPLE WILL LIVE IN URBAN AREAS

OUR **MOBILITY SYSTEMS** ARE NOT BUILT **FOR THE FUTURE**

In most cities today, the mobility needs of the public are typically met through a combination of public transit and privately owned vehicles. This creates a gap in the coexistence of different transportation means.

Privately owned cars are still one of the key pillars of urban transportation systems.

However, in many respects, this is a suboptimal solution due to the following:

- Studies have shown that one shared car can replace approximately 8 to 9 privately owned cars. The lack of parking space, perpetual traffic jams and air pollution are caused mainly because most commuters still choose riding in their own cars rather than taking public transit or carpooling.

- Advanced ride-sharing options, which are typically not used today, can reduce the number of vehicles on the road, while effectively meeting the mobility needs of commuters. On average, in urban areas there are one to two persons in each car on the road, which means there is room for significant resource optimization.

- When purchasing a car, people are often choosing a car that is built for long-distance travel (holidays or business travel). However, for urban mobility this is not needed and using small electric cars would be equally convenient, while at the same decreasing pollution and taking up less space.

Our current mobility systems adapt poorly to the changing commuter demands and are not good at combining single steps of the travel chain into an integrated offering. The integration between different modes of transportation is limited, which creates the need for a more holistic approach.

To improve mobility, all stakeholders involved in the mobility ecosystems need to establish better collaboration.

The ideal mobility conditions in a city should be affordable, create less CO2 emissions, offer bike-sharing, car-sharing and ride-sharing services, guarantee frequent public transport, have minimal traffic jams and shorter travel times. Transportation of people should be well synchronized with transportation of goods. The city should have a good understanding of the mobility needs of its citizens and constantly adapt its infrastructure to meet those needs in an optimal way. Shifting our physical transportation services to the digital platform will enable us to make these necessary changes.

While the first digital platforms that enable Mobility as a Service (MaaS) are already out there, it is clear that the usage of these platforms will require a radical change in the commuters' behavior. For many, this will mean giving up privately owned cars and switching to a combination of various shared mobility services.

The nature of the digital platform is such that the value of the platform grows as the number of active users increases. Several studies have shown that better mobility in cities can be achieved by reducing the number of cars on the streets and making those cars part of an open platform so they can be used as Mobility as a Service.

Cities that recognize this trend and steer the development of urban mobility in the direction of advanced open, service-oriented platforms will be able to realize great benefits for their economy, communities and the environment.

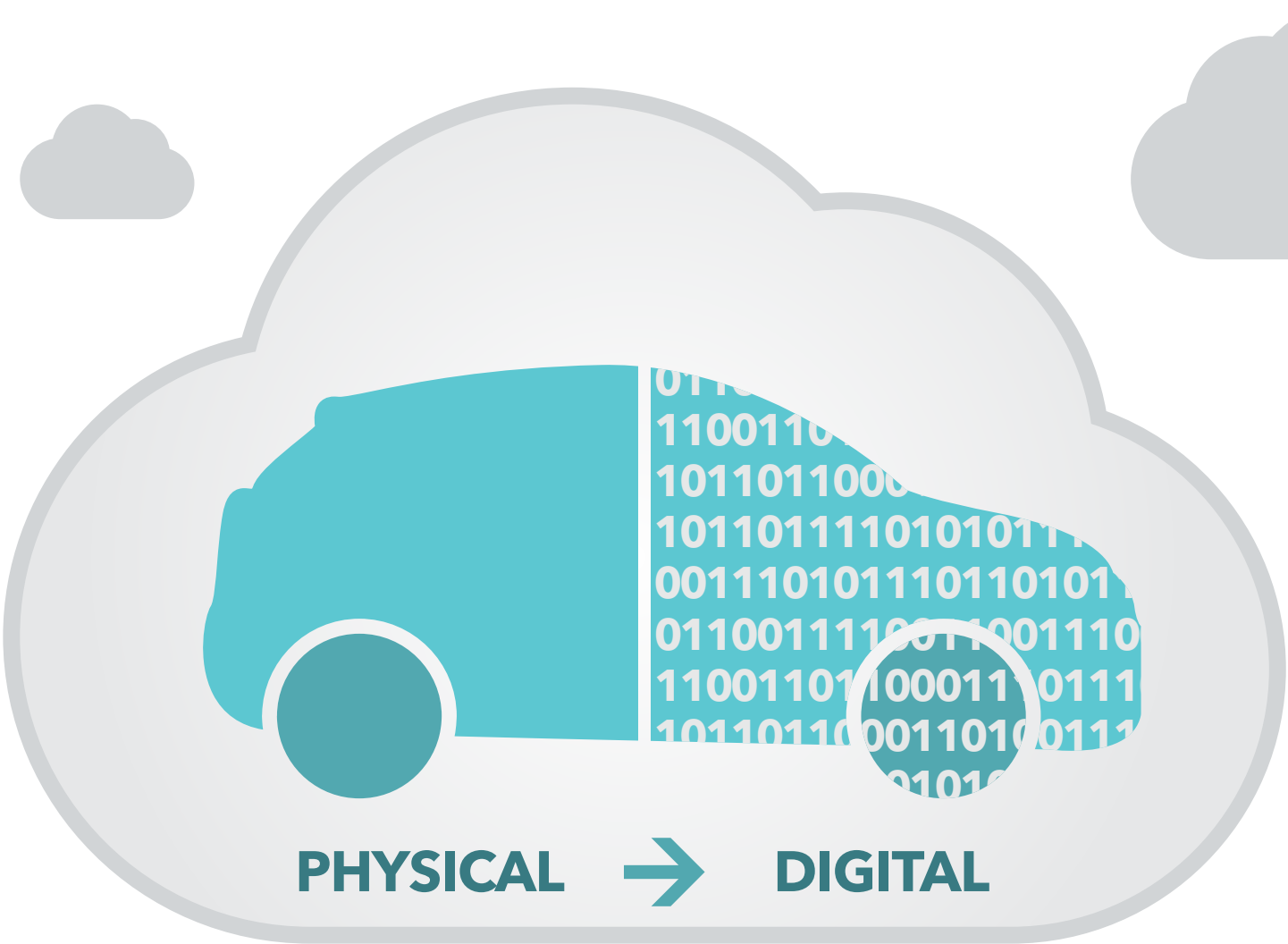
DRIVING INNOVATION: **FROM PHYSICAL TO DIGITAL**

The progress that's being made in IT mobility and cloud infrastructure enables us to move problems from the physical into the digital world and approach them in a much more effective and efficient manner. Urban mobility is one area that can benefit greatly from the innovations in the digital world.

For this to happen, cities need to recognize that in order to benefit from innovations in IT, mobility in urban areas needs to be delivered as a service. This will enable different mobility options to be integrated into a holistic digital platform that coordinates all means of transportation. This is one fundamental requirement that cities need to make in order to start optimizing their transportation infrastructures.

The new model can be a combination of public transit, privately owned mobility service providers and even privately owned cars. However, the city will be responsible for providing the necessary infrastructure to manage mobility services and incentivize commuters to use these shared services.

The future of urban mobility will belong to the environmentally conscious MaaS providers who can integrate their services into an open platform to provide a holistic approach to urban mobility needs.



URBAN MOBILITY TRANSFORMED: FROM **CAR-OWNERSHIP TO SHARED SERVICES**

In urban areas and major cities around the world, car ownership can be replaced by Mobility as a Service (MaaS) to bring numerous environmental, social and economic benefits. The following modes of transportation can all be integrated into a new MaaS transportation model.

CAR SHARING

Car sharing is a type of car rental service. What makes it different from traditional car rental services is that it is designed to be convenient for people who want to rent cars for short periods of times (a few hours or even just a few minutes) and pay according to usage. In other words, the fees are based on the duration of time the user has the car in their possession and the distance they travelled.

Car sharing has many benefits both for individuals and communities. For one, shared cars are a much better utilized mode of transportation as many individual can use one car in a single day. With less privately owned cars on the streets, there will be more available parking spaces, the environment will be less polluted and more people will be living active and healthy lifestyles.

RIDE SHARING

Ride sharing is promoted as a way to better utilize the empty seats in passenger cars and thus reduce fuel usage and transportation costs. The value of ride sharing lies in the fact that most passenger cars typically come with five seats while on average, only less than two individuals use the car at the same time. With ride sharing, more passengers can make use of one car and thus share the trip costs.

Ride sharing can serve areas where public transit system is scarce and not well developed. In addition to recurring commuter trips and scheduled rides, ride sharing services can also support one-time trips.

SHUTTLE / TAXI SERVICES

A shuttle/taxi service transports passengers from point A to point B. Usually shuttle services have designated drop-off and pick-up locations and vehicles run between these two points regularly. A taxi on the other hand is used for any desired route. Commuters can use these services for a fee.

PUBLIC TRANSPORT

The public transportation system is made up of busses, trams, underground metros and other modes of shared transportation.

BIKE SHARING

Bike sharing services enable commuters to pick up a bike at one location in the city and leave it at another location. This mode of transportation reduces noise and pollution and contributes to healthy lifestyles.

WALKING

By using Mobility as a Service, commuters end up walking more. This benefits the environment, communities and individuals.

SYNCHROMODALITY: **INTEGRATING ALL MOBILITY OPTIONS** THROUGH AN **OPEN DIGITAL PLATFORM**

The urban mobility model can be represented as an open digital platform in which there are two types of users:

A USER CAN ALSO BE A **PROVIDER AND CONSUMER** OF MOBILITY SERVICES.

There are several benefits of having a centrally governed open platform for urban mobility:

SERVICE PROVIDERS benefit from having a structured approach to mobility that allows them to integrate their services. They also benefit from having access to intelligence about the mobility needs and being able to optimize their services accordingly.

GOVERNMENTS can regulate the usage of suboptimal elements of urban mobility (for example, privately owned gas vehicles).

COMMUTERS benefit from a holistic approach to mobility that encompasses all different service providers.

Most importantly, the platform itself benefits from increased usage from both sides – consumers and service providers. This will largely increase the adoption rate of Mobility as a Service concept and also improve its flexibility and quality of service. Therefore, city governments need to play a crucial role in coordinating and harmonizing various public and private transportation options.

The open platform can be used to achieve synchromodality, which means that commuters will be able to see different transportation options that are available to them, with recommendations for the best combination of transportation to use (for example, bus and bike or walk and car share) – all via their mobile devices.

The digital platform economy ensures that as people start to recognize the benefits of Mobility as a Service, such as cost savings and pollution reduction, these services in turn benefit and improve over time. As more people begin using the new model, the quality of service of these transportation means will become better.

INTEGRATION OF TRANSPORTATION OF **GOODS & PEOPLE**

Mobility as Service can also be used to cover the logistics needs of the city. For example, in off-peak hours shared mobility services can be used for transportation of goods. In logistics, "last mile" describes the movement of people and goods from a transport hub to a final destination in the area. This "last mile" of transport presents a challenge and makes up 53% of all logistics costs. Through Mobility as a Service, these challenges can be minimized and costs significantly reduced.

THE ROLE OF **CITIES IN** HARMONIZING **SERVICE PROVIDERS**

Cities have a very important part to play in implementing and promoting MaaS solutions in urban areas. To make MaaS a reality, cities have to take an active role in coordinating and regulating different aspects of the implementation process. This also includes actively promoting the use of mobility services among citizens and tourists, as well as educating citizens about the benefits of MaaS. Some of these include improved health of citizens (less pollution, more walking and biking), less traffic jams, greener spaces and overall better quality of life.

One way that cities can encourage the adoption of MaaS is through the use of technology and mobile devices. To encourage citizens of all ages, but especially the younger generations, to use shared transportation services, cities can promote gamification where apps that measure CO2 emissions are installed on commuters' phones. For example, the app would show to the user how much CO2 emissions he/she is reducing by choosing a car sharing service and in this way encourage citizens to be more environmentally conscious.

ABOUT COMTRADE

Comtrade is the largest software development and IT solutions company in the Adriatic region. Among other business activities, Comtrade is working on research and development of advanced transportation solutions. Comtrade recognizes that technology can profoundly change the way we deal with transportation, especially in the cities. We can create a significantly improved commuter experience at a lower cost and with a huge benefit to the environment.

Together with its partners, Comtrade is working on an advance set of solutions that can eliminate the need for privately owned cars in the cities and replace them with a set of Mobility as a Service (MaaS) solutions, including public transportation, car sharing, ride sharing and shuttle services. These solutions would be accessible through an open digital platform. These technologically advanced and innovative solutions can be fully based on electrical vehicles and as such eliminate traffic-related air pollution in the cities, as well as reduce road congestion and significantly improve our mobility experience.

Comtrade partners with all relevant stakeholders to create environmentally and financially sustainable urban transportation system solutions on an open digital platform.

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www.comtrade.com/MaaS