

**AN ACTIVITY IN THE INNOVATION PARTNERSHIP PROGRAMME
– THE NEXT GENERATION OF TRAVEL AND TRANSPORT**



COMBINED MOBILITY AS A SERVICE IN SWEDEN

ROADMAP

FOR THE ACTION AREA COMBINED MOBILITY IN SWEDEN

TIME PERSPECTIVE: 2017–2027, WITH A FOCUS ON 2017–2020

This is the first revision of the roadmap for combined mobility as a service, which was first published in May 2017. This revision has taken into account developments that have taken place in this area as a whole, and what can be said to have been achieved within the roadmap during its first year. The plan is for the roadmap to be revised and evaluated on an annual basis. The roadmap's host organisations, which also make up the roadmap's steering group – the Swedish Energy Agency, Samtrafiken, the Swedish Public Transport Association, the Swedish Transport Administration and Vinnova – have contributed actively to the task of revising the roadmap, so that it can serve as a coordinating tool for each organisation's work in the area of Combined Mobility as a Service.

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BACKGROUND



The switch to a more sustainable transport system is a major challenge. Successively expanding and improving public transport as well as improving the conditions for pedestrians and cyclists are the foundations for guaranteeing the provision of socio-economically effective transport that is sustainable in the long term for citizens and businesses throughout the country. But this is not enough. New approaches are required. One such approach is to promote the development of combined mobility.



BACKGROUND



WHAT IS COMBINED MOBILITY?

In this roadmap, the term “combined mobility” (CM), also known as Mobility as a Service (MaaS), refers to services that combine several different transport-related services or combine transport services with other kinds of services – all the kinds of mobility you need in a service. CM/MaaS can be found at various levels. The roadmap has adopted a classification that has been used within Drive Sweden, see figure below. The focus of the roadmap is to promote the development of CM/MaaS services at levels 2 and 3, i.e. resale and packaging of transport services as integrated solutions, and to prepare for level 4, where policy and control instruments are also integrated in the service offering.

MaaS level 4 Integration of policy & control	Incentives and instruments (from the public sector) integrated in agreements and the service. The purpose is to steer towards the city's/public sector's objectives. Conditions for resale of the public sector's services.
MaaS level 3 Integration of agreements	Offer alternatives to car ownership. Subscription or packaged. Responsibility for the entire service. In relation both to customer and transport service provider. Combined payment for all services. Focus on household mobility requirements.
MaaS level 2 Integration of booking/ticket/ payment	Booking of and payment for services integrated in a service/app. No responsibility for the travel services, but for payment. Focus on individual journey A to B.
MaaS level 1 Integration of information	The services integrated at information level (e.g. multimodal travel planners). Users have agreements and relationships with various transport service providers. Separate payment solutions.
MaaS level 0 No integration	Separate mobility services. Users have agreements and relationships with various transport service providers. Separate payment solutions.

Customized by MaaS-level model, Drive Sweden (2016)

WHY IS A ROADMAP NEEDED TO PROMOTE COMBINED MOBILITY?

The approach from a social perspective is for the combination of several types of transport services to create better opportunities to shape offerings that meet citizens' actual mobility requirements, compared to a situation in which services are offered individually via different channels. For example, more people might be attracted to public transport and other journeys using shared resources if public transport were supplemented, for example, with access to hire cars, car-sharing, bicycle pools or taxis in easy-to-use, accessible services. This increased attractiveness could thereby result in the introduction leading to a reduction in the need to own and drive private cars, which would be positive for the transport system's social, economic and environmental sustainability. CM/MaaS also offers an opportunity to identify effective transport systems for non-urban areas for increased accessibility.

CM/MaaS entails a new approach to mobility and public transport. Pilots and analyses have shown that the concept might entail a need for the current organisation and allocation of roles within public transport to be revised, for example with closer cooperation between private and public operators as a consequence. Without making any claim to dictate the conditions for this, the roadmap aims to accelerate and facilitate the development of

sustainable CM/MaaS services, by such means as creating long-term conditions and clarifying the rules of play, as well as identifying effective business models for these operators.

WHY NOW?

Combined mobility services (CM/MaaS services) are being realised in part due to general global trends such as urbanisation, digitalisation and servicification, and in part due to transport-related trends such as increased costs of operating and developing public transport, an increased focus on sustainable transport and an increasing political desire to reduce the use of cars in and around cities. New technologies such as Big Data, AI and increased access to open data are paving the way for new, innovative services. Furthermore, self-driving vehicles, which in the longer term are intended to be able to eliminate the driver and thereby drastically alter economies of scale and operating economy, are a potential future catalyst for CM/MaaS services.

WHAT HAS BEEN DONE SO FAR?

The first version of the roadmap was launched in spring 2017. Since then, the development of CM/MaaS services in Sweden has been driven by a number of initiatives, many of which have a bearing on the roadmap's performance objectives for stage 1. The making available of the range of public transport services for third-party sales (19.1) has been prepared, by such means as several public transport authorities having started to adapt their ticketing systems to the Ticket & Pay standard, and a test being under way on the sale of tickets through a third party in Gothenburg through Västtrafik and Parkeringsbolaget. Samtrafiken has also worked together with public transport authorities to investigate how the range of tickets can be updated in order to better support CM/MaaS services. CM/MaaS services at levels 2 or 3 in metropolitan regions has not yet got started (19.2), but the prospects are good for this to be the case at some time during 2019, as several pilot launches have been announced for the autumn. Finally, the prospects of supporting the development of CM/MaaS services via policy changes have been analysed (19.3) via an investigation into which institutional conditions affect developments at present.

SOME TERMS AND HOW THEY ARE USED IN THE ROADMAP

The term *transport producer* refers to an organisation that offers transport, primarily of people. Examples include RPTAs (see below), taxi companies, hire car companies, bicycle pools, bus companies and personal goods deliveries.

The term *service provider* refers to an organisation that offers CM/MaaS services at some level.

The abbreviation *RPTA* stands for regional public transport authority, or a company that represents the authority.

The term *public transport* refers to subsidised public transport that has been procured.

The phrase *journeys using shared resources* refers to public transport and other kinds of transport services using shared resources, such as private bus routes, car pools, car-sharing, hire bicycles, taxis, hire cars.

The term *Combined Mobility/MaaS* refers to services that combine different mobility services that are needed to meet the mobility requirements of individuals/households in a cohesive service. This is not the same things as a combined journey with several different modes of transport or a multimodal journey.

VISION – MOBILITY WITH SHARED RESOURCES AS FIRST CHOICE



The long-term objective of the roadmap is that the norm describing the way we travel shall change from travelling alone in one's own transport resource towards what we refer to as: Shared Mobility. This means that the starting point shall be that journeys are made using shared resources, on a bike or on foot, if possible, and that people have access to cars in various forms when required.



IMPACT OBJECTIVES



THE FOLLOWING EFFECTS SHALL BE ACHIEVED BY 2027

- 50% of the Swedish population have the opportunity to choose sustainable travel using shared resources as an alternative to their own car.
- 25% of the Swedish population make regular use of shared mobility services.
- Accessibility has been improved within and between Sweden's regions.
- Growth and innovations in the area of combined mobility have resulted in new, sustainable services and business opportunities for Swedish companies.
- The implementation of CM/MaaS has contributed to a 15% reduction in the climate impact from the passenger transport system.

In addition to these impact objectives, CM/MaaS services are expected to result in a reduced number of parking spaces, reduced congestion and consequently better utilisation of the street environment, attractive cities/urban environments and increased accessibility in non-urban environments.



PERFORMANCE OBJECTIVES



2019

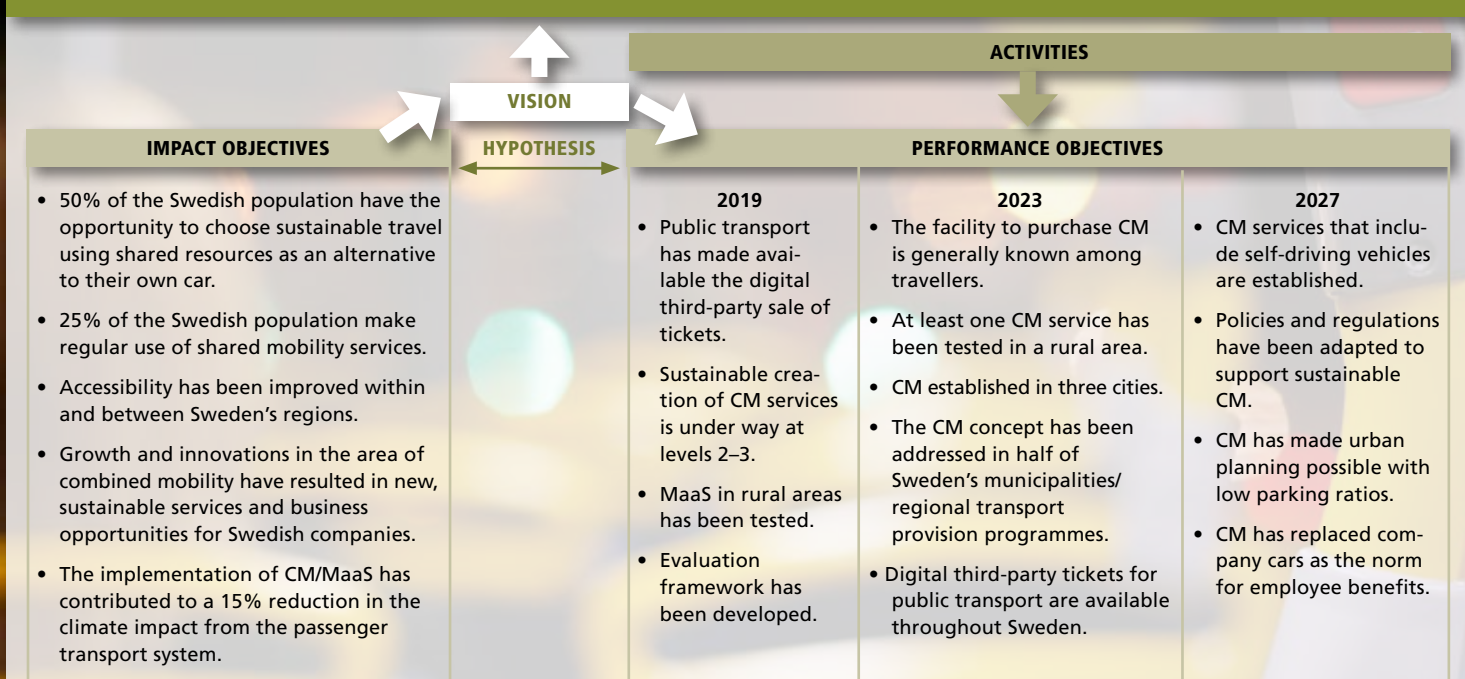
2023

2027

SHARED MOBILITY IS THE NORM FOR OUR TRANSPORT ACTIVITIES



VISION: MOBILITY WITH SHARED RESOURCES AS FIRST CHOICE



PERFORMANCE OBJECTIVES



2019

19-1	Public transport tickets in Sweden's three metropolitan regions shall be generally available for third-party sales, so that they can be searched for, combined, sold, distributed and validated in accordance with the Ticket and Pay standard.
19-2	Test new kinds of offerings and tickets, and investigate whether these make it possible for service providers to develop business models and offerings that result in new passengers and increased sustainable travel.
19-3	Initiate a harmonisation of the RPTAs' ticket products and business regulations in order to make it easier for CM/MaaS services to work in several different regions.
19-4	Data for more than 90% of all public transport journeys in Sweden is available via Trafiklab.
19-5	That data for the majority of Sweden's travel options using shared resources has been made available via a national access point for travel-related data.
19-6	Relevant policy areas have been identified in which a change in legislation or regulations can facilitate the implementation of Combined Mobility as a service and at least one policy pilot project has been completed to show the effects of a change to regulations.
19-7	Promote the sustainable creation of at least one CM/MaaS service at level 2 or 3 in each of the three metropolitan regions.
19-8	Establishment of pilots in an urban environment aimed at investigating alternative factors such as integration with goods transport operations, mobility hubs, citizen involvement, etc.
19-9	At least one CM/MaaS service has been tested under realistic conditions in a rural area.
19-10	Incorporate ongoing and future research into traveller behaviour with future pilot projects.
19-11	A developed framework of KPIs is used in various pilots to measure relevant effects and how they are achieved.
19-12	A knowledge base has been set up in which data on pilots and demonstrations is collated and used for research involving CM/MaaS.

2023

23-1	The public transport offering in Sweden is fully available and tailored for third-party sales and combined mobility services.
23-2	Public transport authorities must have started to investigate how vehicle stops and travel centres can be adapted for CM/MaaS services.
23-3	Commercial and public sector operators collaborate with open/available data sources.
23-4	CM/MaaS services, levels 2–3, are established in at least three cities and are being run with effective business models.
23-5	The CM/MaaS concept and its consequences and opportunities have been evaluated and investigated in at least half of Sweden's municipalities/Regions/Transport Provision Programmes.
23-6	CM/MaaS has resulted in more operators in the area of bicycle-sharing and car-sharing services.
23-7	The facility to purchase CM/MaaS services is generally known among travellers.
23-8	An accepted method of measuring effects of CM/MaaS services has been established.

2027

27-1	CM services that include self-driving vehicles are established.
27-2	Policies and regulations have been adapted to support sustainable CM/MaaS.
27-3	CM/MaaS services have facilitated the planning and construction of urban areas with extremely low parking ratios, and mobility is a natural element of the offering to residents in new and established residential areas.
27-4	Mobility services have replaced company cars as the norm for employee benefits.
27-5	CM/MaaS is the starting point for the establishment of new residential areas.
27-6	Most residents in cities use some form of CM/MaaS service instead of owning their own car.

STRATEGY FOR THE ROADMAP AND CONCEPT FOR IMPLEMENTATION



STRATEGY

The roadmap proposes overall measures intended to reduce the time until CM/MaaS services are introduced into the market in Sweden. The roadmap focuses on activities aimed at lowering barriers, filling gaps in technology, knowledge and policies, as well as stimulating development, if required. It does not claim to be exhaustive.

In order to achieve long-term effects from CM/MaaS services, the roadmap has been developed with a horizon of 2027, and is divided into three periods, see Roadmap (pages 14–25). It should be viewed as a living document. The demand for and social effects of CM/MaaS services are far from clarified, which is why it is important, at every stage, to evaluate the consequences and continually update the plan accordingly.



70%

stated that they would consider subscribing to an MaaS service on the condition that it meant their receiving certain discounts *)

STRATEGY FOR THE ROADMAP AND CONCEPT FOR IMPLEMENTATION



RELEVANT ONGOING ACTIVITIES

The activities described in the roadmap do not necessarily require national funding in order to be implemented. The majority have already been initiated and are under way, and in some cases they have already been funded. There are, however, activities that may be included as an important part of the roadmap, and where coordination is required. An ongoing initiative of this type could benefit from the roadmap's planned objectives and milestones, and it might be important to know at an early stage which variables and effects are expected to emerge from these.

We have identified a number of activities that have a bearing on this roadmap:

- The KOMPIS project, initiated by the Collaborative Group for the Next Generation of Travel and Transport, which is being run under Drive Sweden, is carrying out activities closely related to the roadmap for Combined Mobility as a Service with a view to coordinating and disseminating national activities within this area. Within the framework of KOMPIS, four projects have so far received funding from Vinnova to develop, test or evaluate CM/MaaS services.
- Within KOMPIS, a framework is also being developed to evaluate pilots and projects in the area of Combined Mobility as a Service, which is being made available to financiers, service providers and research. Evaluation data within this framework will also be made available for research and evaluation, so that the societal effects of CM/MaaS can be achieved on the basis of the broadest possible empirical data.
- Samtrafiken's project "Öppna Trafikdata" ("Open Traffic Data") was launched towards the end of 2017, and its purpose is to realise the roadmap that was developed during work on "Kraftsamling Öppna Trafikdata" ("Pooling Efforts for Open Traffic Data"). The effects of the project will benefit the development of combined mobility services in Sweden, while at the same time guaranteeing compliance with current EU regulations.
- Västtrafik's ongoing assignments and work to develop a delivery model for CM/MaaS.
- SLL's strategy for CM/MaaS that was processed by the Traffic & Public Transport Committee on 31/01/2017, when their role, approach and plan were confirmed.
- K2's project "Hållbara tjänsteresor" ("Sustainable Business Travel"), which will develop solutions for how new, smart and combined mobility solutions can be formulated so that an increased proportion of business travel takes place using public transport, walking and cycling, or offer incentives for travel-free meetings.
- K2's "Strategiskt case: integrerad mobilitet" ("Strategic Case: Integrated Mobility"); a series of reports dealing with the field of CM/MaaS from different perspectives.
- The Horizon 2020 project "iMove", where the Swedish actors Ubigo, RISE Viktoria and Västtrafik are among the partners, and where Gothenburg is one of four cities in which the project will be conducted with pilots for CM/MaaS services.
- The EU project "Civitas Eccentric", where Swedish actors such as the City of Stockholm, SLL and Ubigo are testing mobility concepts in Stockholm (Hammarby Sjöstad).
- The projects "Dencity" (Lindholmen Science Park) and "EC2B/ Brf Viva" (Trivector), which focus on mobility as an element of housing.
- The Swedish Energy Agency's initiative "A Challenge from Sweden, Sustainable Mobility as a Service", which is being implemented in order to stimulate the need for and development of new CM/MaaS services, primarily in the areas of Housing and Workplace.
- The feasibility study KOMILAND (VTI), which is funded by Vinnova and aims to identify needs, solutions and funding for CM/MaaS in rural areas and small communities outside cities.
- The Vinnova project "Kollaborativ kollektivtrafik" (IVL) ("Collaborative Public Transport"), which is testing shared travel services in collaboration with public transport.
- Research programmes and projects such as SAMS (KTH), IRIMS (K2) & MaaSifie (Chalmers).
- The report from Intermetra/Västtrafik/Samtrafiken that focuses on the customer and maps out various customer perspectives, needs and attitudes, and how these can be satisfied by Combined Mobility as a Service.
- The sub-project "Policy Support" within Drive Sweden's KRABAT initiative is working with design thinking methodology together with problem owners and policy owners in order to find solutions to specific issues in the area of policy and legislation for the mobility of the future.
- Most other research projects and pilots with national and/or private funding from organisations including Drive Sweden, Vinnova and the Swedish Energy Agency, e.g. Sustainable Mobility Services Södertälje and Predictive Movement. Projects in the launch phase in this area include, for example, Lindholmen Mobility Access (LIMA), which focuses on mobility services from an employer's perspective in Gothenburg, and "Mobilitet Barkaby" ("Mobility Barkaby") for comprehensive mobility services, which is to be established for a new district in Stockholm, Barkaby.

The roadmap for CM/MaaS in Sweden provides an opportunity for collaboration and coordination with the above initiatives and projects, and these may very well correspond with some of the highlighted activities in the roadmap, either wholly or in part.

ROADMAP – THREE PERIODS & FIVE AREAS OF ACTIVITY



PERIOD:

1. 2017–2020
2. 2021–2023
3. 2024–2027

AREAS OF ACTIVITY:

1. Business & digital infrastructure
2. Legislation, policy & physical infrastructure
3. Pilots & Implementation
4. Effects & consequences
5. Process management & establishment of collaboration platform



ROADMAP – THREE PERIODS & FIVE AREAS OF ACTIVITY



THE ROADMAP HAS BEEN DIVIDED INTO THREE PERIODS WITH THE FOLLOWING FOCUS

PERIOD 1: 2017–2020

The focus is on laying the foundations for CM/MaaS services and on putting in place the required agreements and technology into place, as well as identifying deficiencies and needs in definitions, policies and regulations. The majority of pilots and implementations of CM/MaaS services are also being conducted during this period, both with and without start-up stimuli.

PERIOD 2: 2021–2023

The focus is both on supporting upscaling and on both developing new services and improving existing services. New technology (such as self-driving vehicles) and services are opening up new opportunities, and regulations, legislation and policies need to be challenged. There will be a certain amount of consolidation as this area matures.

PERIOD 3: 2024–2027

Various levels of CM/MaaS services have been established and form a natural part of the offering of services for mobility. The market here is beginning to be consolidated and the services and companies that can really deliver value to travellers will survive. We have a “solid business” and a good balance between public and private sector actors. Attitudes and standards have changed, and it is now natural for journeys to utilise some form of shared resources in the first instance. Legislation, taxes and policies have identified ways of allowing commercial services that have been shown to be able to drive transport towards sustainability. Travellers can now participate in the “production” of shared travel themselves by sharing their own vehicles, their own journeys, without negative tax effects.

The company car norm has started to be replaced by the “mobility package norm” as an employment benefit, as tax legislation has been adapted.

ROADMAP FOR COMBINED MOBILITY AS A SERVICE

	Lay the foundations	Establishment	Change
1. Business & digital infrastructure	Make RPTA digital tickets available in cities Develop and adapt RPTA offering Make open data available Demonstrations & pilots under changed policy conditions	Support to other RPTAs for digitalisation Standard for roaming between services National access to digital tickets for public transport	CM/MaaS services contribute (with data) to knowledge of the transport system
2. Legislation, policy & physical infrastructure	Identification & focusing of legislation & policy barriers Demonstrations & pilots under changed policy conditions	Review of legislation for sharing services in the area of mobility Mobility as an employment benefit possible The construction & planning process uses mobility as a tool for reducing the need for parking spaces in residential areas	Legislation promotes sustainable mobility services Mobility as an employment benefit is the norm Reduced need for parking spaces in residential areas
3. Pilots & Implementations	Implementations in metropolitan regions Pilot projects in metropolitan regions Pilot projects in rural areas	Implementation of CM/MaaS in non-urban areas Pilots with integration into Policy (level 4) Pilots of CM/MaaS with autonomous vehicles	1 CM/MaaS services implemented with autonomous vehicles CM/MaaS is available commercially in all kinds of regions
4. Effects & consequences	Analyses of travellers and their preferences Development of framework and methods for impact analysis	Impact analyses of knowledge and data from pilots and services on mobility influence the shaping of society Dissemination of the use of framework	Knowledge of mobility influences the shaping of society
5. Process management & establishment of collaboration platform	Process management & coordination of roadmap Collaborative platforms	Dissemination of knowledge of CM/MaaS	CM/MaaS well-known and established

2017

2021

2024

2027



Business & digital infrastructure



In this area we have brought together activities that aim to enable the commercial and technical development of CM/MaaS services that are simple, attractive and reliable from a customer/traveller perspective in both purchase and design. The activities aim to create the conditions for service providers to develop a business that is sustainable in the long term and to move towards sustainable travel becoming a key element of CM/MaaS services. Important

component parts of this are access, regulations and standards. By 'access', we mean more or less coordinated access to the offerings of traffic producers as well as access to other relevant data sources of high quality. By 'regulations', we mean the creation of a clear and in certain cases harmonised set of rules for various actors. And by 'standards' we mean, for example, data interfaces, naming standards, information requirements for validation and business rules.

MAKE RPTA OFFERING AVAILABLE FOR THIRD-PARTY SALES

WHY?

Making RPTAs' ticket products available is a crucial element of enabling the establishment and development of CM/MaaS services in Sweden. This is why one key activity in the roadmap is for the public transport offering at least in Sweden's three metropolitan regions to be made available for third-party sales, and for a clear, long-term game plan to be defined for external actors.

OBJECTIVE!

- The public transport offering (ticket products) in Sweden's three metropolitan regions shall be available for third-party sales, so that they can be searched for, combined, sold, distributed and validated in accordance with the industry's standard (the Ticket and Pay standard).

DEVELOP AND ADAPT RPTAS' OFFERING FOR CM/MAAS SERVICES

WHY?

The potential of service providers to create attractive, packaged offerings is limited to what the constituent parts offer. As the regional public transport offering is expected to constitute the backbone in the majority of the CM/MaaS services, it is extremely important for the RPTAs, on the basis of customers' needs and societal value, to listen to the service providers' wishes and to adapt their offering for new, sustainable CM/MaaS services.

OBJECTIVE!

- Test new kinds of offerings and tickets and investigate whether these make it possible for service providers to develop business models and offerings that result in new travellers and increased sustainable travel.
- Initiate a harmonisation of the RPTAs' ticket products and business regulations in order to make it easier for CM/MaaS services to work in several different regions.

MAKE DATA AVAILABLE VIA AN OPEN, COORDINATED INTERFACE

WHY?

To benefit the development of combined mobility services in Sweden and to guarantee compliance with the EU's traffic data regulation, transport producers need to make quality-assured, reliable traffic data available via an open, collective interface.

OBJECTIVE!

- That data (vehicle stops/stations, routes, real time – planned traffic and disruption, positional data) for over 90% of all journeys in Sweden is available via the national Trafiklab access point.
- That the majority of data from Sweden's commercial public transport offering is made available via the national access point.
- Stimulate the making available of open/accessible data for other mobility services in addition to public transport.

ACTIVITIES AFTER 2020:

INVESTIGATE THE CONDITIONS FOR COMBINED NATIONAL ACCESS TO RPTAS' TICKETS

Strive to ensure that most of the digital tickets from Sweden's public transport offering can be accessed and used by third-party sellers for onward sale.

SUPPORT FOR OTHER RPTAS IN SWEDEN FOR DIGITALISATION OF DATA AND TICKETS

To support other RPTAs in Sweden in digitalisation and making available their offering for inclusion in third-party services.

INVESTIGATE THE POSSIBILITY OF A JOINT ACCESS POINT OR HARMONISATION OF TECHNICAL AND COMMERCIAL CONDITIONS FOR OTHER MOBILITY SERVICES WITHIN CM/MAAS

In due course, the development of CM/MaaS will be facilitated by the fact that different mobility services included in CM/MaaS can be accessed by third-party actors in a cohesive, standardised way.

DEVELOPMENT OF STANDARDS FOR ROAMING BETWEEN CM/MAAS SERVICES

In other words, that users of CM/MaaS services can utilise other CM/MaaS services when travelling across, for example, regional or national borders.



Legislation, policy & physical infrastructure



IDENTIFICATION OF AND FOCUS ON BARRIERS TO LEGISLATION AND POLICY FOR CM/MAAS

Within this area, we have gathered activities that adapt legislation and policies to the new types of services that are being developed in the field of CM/MaaS. This includes tax legislation issues for the sharing economy, views of earnings that have arisen due to shared resources, views of mobility insurance versus company cars within employment benefits, as well as issues such as parking ratios, granting of street space and infrastructure for pool cars, and not least the role of public transport and cities in relation to private service providers.

A number of activities have already been carried out at government level, e.g. the investigation into deductions for travel, the investigation into the role of taxis, the investigation into the sharing economy and work regarding definitions for pool cars, but these have not yet gone all the way with regard to the objective of making CM/MaaS possible. These issues are still included in the roadmap in order to show their importance for enabling the future upscaling of CM/MaaS services.

WHY?

It is no surprise that a journey in your own car is currently the norm for our transport activities. In area after area, the car is prioritised as a means of transport in legislation and regulations on charges. In the preparatory work for this revised roadmap, issues relating to regulations and legislation were identified as by far the biggest challenges for the development of CM/MaaS.

Tax reductions, parking benefits and congestion charges are currently included in the standard that company cars constitute. There is currently no corresponding way of offering subsidised mobility services to employees. A business market for CM/MaaS service should be able to create a basis for these services so that they can be passed on to bigger customers, including those in the private sector. In the same way that company car benefits have for many years provided the (Swedish) automotive industry with a solid customer base, the market for mobility services can be stimulated to establish this kind of change.

There are currently many actors that want to enable a greater distribution of car pools, both in cities and in more sparsely populated parts of the country. Micro car pools based on the hiring out of privately owned vehicles by commercial operators should be able to increase the utilisation rate of the current vehicle fleet, and to create access to cars for those who choose not to own one. Outdated hire car legislation and unclear VAT and tax rules currently represent obstacles to speeding up this piece of the jigsaw, which is a significant element of CM/MaaS.

CM/MaaS services are expected to result in mobility being offered in new ways, with public transport continuing to form the core, but with other mobility services also supplementing the offering. In the longer term, these new mobility services can offer a more cost-efficient, sustainable and accessible way of travelling. To support this development, the use of tax funds as an incentive needs to be studied and investigated. One aspect of this work is also to understand the role that public transport will play in future mobility.

OBJECTIVE!

- Carry out initiatives, dissemination of information and investigations in the area of regulatory innovation that are necessary to put the focus on the area of CM/MaaS, which is in many cases something that those who investigate, initiate and implement regulations are not even aware of.
- Research and development of knowledge regarding how subsidies and tax funds can be used in combination with CM/MaaS services in order to achieve the transport policy objectives and increased societal benefit.
- Relevant policy areas have been identified in which a change in legislation or regulations can facilitate the implementation of Combined Mobility as a Service and at least one policy pilot project has been completed to show the effects of a change to regulations.

DEMONSTRATION OF CM/MAAS SERVICES UNDER ALTERED POLICY CONDITIONS

WHY?

Several types of policies influence the attractiveness and areas of application of CM/MaaS services. Examples include, but are not limited to, the regulations for company cars, business travel and parking ratios. With the aim of investigating how policy changes might have been able to influence the potential for and consequences of CM/MaaS services, a demonstration of CM/MaaS services under altered policy conditions is proposed.

OBJECTIVE!

- **Demonstration of and build-up of knowledge regarding CM services under altered policy conditions. Conducted in collaboration with the planned national platform for policy lab. This will focus on the potential to test mobility as an employment benefit under realistic conditions.**

ACTIVITIES AFTER 2020

REVIEW OF LEGISLATION FOR SHARING SERVICES IN THE AREA OF MOBILITY

The work carried out in these areas during the initial period, together with knowledge acquired through the pilots that have been completed, generates knowledge for a review of both taxation on mobility as a benefit and income taxation on sharing services.

THE CONSTRUCTION / PLANNING PROCESS IN CITIES IS SUPPORTED BY CM-MAAS AS

A TOOL FOR MODIFIED PARKING STANDARDS

Cities and municipalities that implement flexible new parking standards in connection with new development now have, in the form of CM/MaaS, a tool that is acknowledged to be a complete, alternative offering from landlords and developers. Processes

and tools have been developed so that this can be included as long-term commitments to residents as there are fewer parking spaces.

DEVELOPMENT OF ADAPTED LEGISLATION AND REGULATIONS

During the third period there is political consensus that legislation and regulations will allow services that contribute to society's transport objectives. New international service providers are becoming established and are adapting to the Swedish regulations that are based on transparency as regards effects, consumer rights and policy integration in services, so that society, through these private mobility services, can influence behaviour and effects even if services are commercial. Mobility as an employment benefit is now the norm compared with company cars in most companies.

The service elements that were considered most attractive were the opportunity to plan, book, pay for and receive the ticket via one single digital interface ^{*)}



Pilots & implementations



LIVE IMPLEMENTATIONS OF CM/MAAS SERVICES IN METROPOLITAN REGIONS

Previous pilots, simulations and analyses show that CM/MAAS services can have considerable potential to create societal benefit. There is, however, still a lack of empirical experience as a result of the shortage of large-scale demonstrations and implementations with actual users as well as the actual use of actual services in actual contexts (including business models). Only when this takes place can live analyses supplement theoretical predictions. There are also examples in which incorrectly designed mobility services

can result in a negative societal benefit. Support is required both for the implementation of services that are (more or less) available at present, as well as pilots or “living labs” in order to further develop the services and try out new concepts. To guarantee the build-up of knowledge, data that is generated in part-funded implementations and pilots should be made available for research and analysis.

WHY?

CM/MaaS services that combine traditional public transport with other types of personal transport services for unit sales or packaged offers for inhabitants in metropolitan regions have, until now, been the central issue in discussions regarding CM/MaaS. For this reason, the level of maturity is also highest within CM/MaaS services of this type (i.e. levels 2 and 3) in respect of, for example, organisation, business model and technology (if not currently mature). The workgroup's assessment is that the sector in Sweden is ready for live implementations within this area. One possible national incentive is to announce start-up support for both selling parties and producers.

OBJECTIVE!

- Promote the sustainable creation of at least one CM/MaaS service at level 2 or 3 in each of the three metropolitan regions.

PILOT IMPLEMENTATIONS OF CM/MAAS SERVICES IN METROPOLITAN REGIONS

The purpose of this work package is to support innovation, development and testing of new CM/MaaS services, with the focus on the metropolitan regions. In addition to the types of offers mentioned in work package 3A, the packaging of personal transport services and “other”, and in different ways, also has the potential to expand the market share for travellers with shared resources. There are also several types of integrations that could facilitate more sustainable occasional journeys. These types of CM/MaaS

services have not yet, however, achieved the same degree of maturity. Initial initiatives have been taken for demonstrations, but there are still several steps yet to be taken. An investment is therefore proposed in a demonstration of such solutions.

This work package must be coordinated with other ongoing activities, such as Drive Sweden's and the Swedish Energy Agency's initiatives in this area.

WHY?

The development of CM/MaaS services for the metropolitan regions is of interest from several perspectives. These include the fact that the business potential for CM/MaaS services is greatest in these regions as they are relatively densely populated, and the congestion problems mean that there is a considerable need to reduce private motoring. In addition, a large proportion of the population live in these areas and it is also in these areas where population growth is expected to be highest. To reduce private motoring, CM/MaaS services need to meet many different transport requirements. Different kinds of concepts therefore need to be tested and evaluated.

OBJECTIVE!

- Establishment of “living labs in urban environment”. These should encourage and investigate alternatives including, although not limited to 1) integration with services for the transport of smaller goods (e.g. food products or waste), 2) better establishment of transport solutions with the physical planning around housing and tenant-right associations (e.g. through the establishment of delivery stations or mobility hubs).

One car owner in four stated that they would consider the option of “having access to a car” without owning one ^{*)}

87% of respondents also stated that there was no real justification for owning a private car in London ^{*)}

PILOT IMPLEMENTATIONS IN NON-METROPOLITAN REGIONS

The conditions for the roll-out of CM/MaaS services in smaller towns and rural areas differ from those in large towns cities, as both the range of transport services to integrate and the potential customer base are smaller. This results in, among other things, demand for a different structure when it comes to the offering and the business model for selling parties.

The need for public investment may be greater, with better availability of shared travel as the primary motive. There is, however, limited knowledge of the possibilities and effects.

WHY?

Combined mobility services can provide increased accessibility and mobility among residents in smaller towns and rural areas, without their needing to travel in their own car, and without increasing society's costs in the form of increased public transport. It may also reduce the need for two cars in the household, which is otherwise common.

OBJECTIVE!

- **At least one CM/MaaS service has been tested under realistic conditions in a rural area or a smaller town.**

ACTIVITIES AFTER 2020

PILOT PROJECT WITH SELF-DRIVING VEHICLES

Self-driving vehicles have the potential to act as a lever for shared mobility and CM/MaaS services, as this drastically alters the operating economy for transport producers.

PILOT PROJECT WITH CM/MAAS SERVICES AS POLICY TOOLS

Pilot project for CM/MaaS services at level 4, in order to demonstrate and test how policies and instruments can be integrated in CM/MaaS services.

IMPLEMENTATION OF CM/MAAS SERVICE IN NON-URBAN AREAS

Actual CM/MaaS services have been established in non-urban areas, e.g. rural MaaS. An effective model for sharing responsibility between the public sector, the non-profit sector and commercial actors has been identified, tested and found acceptance among relevant actors.

51%

felt that MaaS was not an alternative for commuting, while at the same time many felt that MaaS was an alternative for journeys relating to "other daily activities" *)



Effects & consequences



ANALYSIS OF TRAVELLER PREFERENCES AND TRAVELLER BEHAVIOUR

CM/MaaS services are as yet a relatively untested, theoretical concept. In a study conducted by Intermetra in autumn 2017, only 7.5% of respondents were familiar with the term “combined mobility” or associated terms. Evaluation and analysis of the initiatives that arise will be necessary in order to guide and accelerate developments.

Aspects that need to be evaluated include business models, technical standards, judicial aspects and consequences for, among others, society, the environment and traveller behaviour. Area 4 will therefore be carried out in close cooperation with other areas, in particular area 3: Implementations & pilots. Evaluation and the building up of knowledge take place primarily within research projects that have already been established.

WHY?

A transition to CM/MaaS from current travel patterns will require major changes, both for individuals and society. In order to better understand what both impedes and attracts individuals to new travel behaviours, it is necessary, together with selected traveller groups, to test new services with various combinations of mobility, as well as to initiate the dissemination of knowledge about what the new mobility can entail. Individuals tend to stick to habits and norms, which should be studied in particular in connection with different combinations of mobility services. In this activity, our hypothesis is that entirely new norms and habits regarding mobility will have been established in the mobility area by 2028.

OBJECTIVE!

- Obtain research and knowledge about traveller requirements and preferences that can be used to develop and improve CM/MaaS services.
- Research into traveller preferences is taking place within research projects that already have funding, such as Mistra SAMS and in connection with KOMPIS pilots. The results from this work package will be tested in KOMPIS pilots.
- Knowledge of traveller preferences is obtained from, for example, ongoing collaboration projects about travel habit surveys.

UTVECKLING AV RAMVERK OCH METODER FÖR EFFEKTANALYS

WHY?

In order to understand and monitor that the CM/MaaS services being developed do actually result in the fulfilment of the transport policy objectives, a framework is required for evaluation and follow-up. A database/knowledge base containing the combined knowledge from several different pilots and implementations will reinforce such analyses.

OBJECTIVE!

- The framework developed and KPIs are used in different pilots to measure effects, including environmental, economic and social sustainability, and for an analysis of how these effects have been achieved. Data from the various pilots and demonstrations is being compiled in the database/knowledge base. This data has started to be used in research into CM/MaaS.

ACTIVITIES AFTER 2020

IMPACT EVALUATION

Evaluation of the effects of implementations and pilots.
Continued administration of the knowledge base.

DISSEMINATION OF INFORMATION

Dissemination of the framework for broader adaptation and utilisation.



Process management & establishment of collaboration platform



PROCESS MANAGEMENT AND ESTABLISHMENT OF COLLABORATION PLATFORM

WHY?

The activities and “process stages” that have been proposed in this roadmap will simply remain a series of wishes unless these activities are coordinated and followed up in a structured and transparent way.

CM/MaaS is based on new types of collaborations between both public and private sector players, both during development and in marketing and operation. In order to create these ties, it is essential to have cooperation, understanding and trust. This does not appear out of thin air. Informal yet regular meetings have been one of the keys behind the development of MaaS in Finland. An open discussion forum with regular meetings for interested parties has therefore been established and is being utilised within the KOMPIS project. The purpose of the KOMPIS Meetups is to promote a climate of collaboration, the transfer of knowledge and transparency. Equivalent collaborative forums are being held within Challenge from Sweden – Sustainable MaaS, to create the conditions for CM/MaaS services in Sweden by means of bring together those with needs and holding Innovation competitions. There is also a collaborative forum within Samtrafiken on the issue of open data, standards and combined travel. This work area includes in the first instance identifying relevant actors and issues, and to use these forums as a basis for continuing the dialogue and collaborating on CM issues.

OBJECTIVE!

- **Initiation and coordination of activities during the period 2018–2020, as well as management and continual revision of the roadmap.**
- **Run and develop collaborative forums for actors within the CM/MaaS ecosystem.**
- **Implement activities in order to spread knowledge about CM/MaaS and the services that are covered in the roadmap. This includes, for example, various types of campaigns for the offers that have been developed.**
- **Dissemination of information about CM/MaaS services to the public and decision-makers. A plan for this will be developed by the collaborative platform during the period.**
- **Spread knowledge and information about CM/MaaS services to public transport actors, and strive to achieve a consensus on the role of RPTAs in future traffic provision programmes.**

Of the 84% with access to a car in a survey,
thirty per cent of respondents felt that
MaaS was an attractive alternative and

12%

that it was a very attractive alternative *)

ORGANISATION



The roadmap is intended to coordinate, stimulate and monitor the realisation of the roadmap's first period (2017–2020), as well as to lay the foundations for the ongoing work thereafter.

The roadmap will be developed and managed in a separate project in cooperation with relevant organisations. Even though the introductory activities focus in particular on the metropolitan areas, a national perspective is essential. It is also important to make use of and act as a catalyst for the ongoing work in, for example, the Stockholm region and the provinces of Västra Götaland and Skåne, as well as in more sparsely populated regions.



2017–2020

NEXT STEP



The execution of the roadmap commenced during the spring of 2017, and the content of the work packages has been specified in the majority of the ongoing initiatives by, among others, Vinnova, the Swedish Energy Agency, Kollektivtrafiken and the Swedish Transport Administration. Ongoing work aimed at establishing and further refining the roadmap is being conducted in collaboration with these organisations.

The workgroup that has drawn up the roadmap comprises:

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Those most positive about trying MaaS are young people, women, residents of cities and those used to using apps. The reasons cited were 27% convenience, 14% curiosity, 13% flexibility and 12% economy ^{*)}

Young people,
middle-aged &
elderly

Public transport
& combi traveller
and car drivers &
combi travellers

Digitally
mature

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ROADMAP

***) QUOTES AND STATISTICS ARE TAKEN FROM THE FOLLOWING REPORTS:**

http://www.k2centrum.se/sites/default/files/fields/field_bifogad_fil/integrerade_mobilitetstjanster_omvarldsanalys_4.pdf

https://samtrafiken.se/wp-content/uploads/2018/02/Intermetra-studien_Kombinerad-mobilitet-kundperspektiv-v5.pdf

<https://www.maaslab.org/>

**THE ROADMAP FOR COMBINED MOBILITY AS A SERVICE
HAS BEEN DRAWN UP AT THE REQUEST
OF THE GOVERNMENT'S INNOVATION PARTNERSHIP PROGRAMME,
NEXT GENERATION'S TRAVEL AND TRANSPORT**

