D4.4 Report on four ‘Automation-ready Fora’

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1 Introduction

1.1 Automation-ready road authorities and participatory planning

CoEXist understands that automation-ready transport and infrastructure planning in cities are a key precondition for fulfilling the promises of connected and automated vehicles (CAVs). To ensure a positive roll out of CAVs and its alignment with local policy goals, authorities will have to play a key role and should take the lead with proactive planning approaches. This begins with planning, as early as possible, how the introduction of CAVs should unfold, to minimise the potential negative impacts and more importantly make the most of the opportunity to influence the paradigm shift into a more sustainable urban mobility vision.

Cooperative Connected and Automated Mobility (CCAM) can help to develop a transport combining high capacity collective and individual services that responds to citizens needs and delivers on public goals like accessibility, inclusion and liveability. And to do so, a broad participatory approach is key to ensure that CCAM is being deployed to the benefit of all and not the few. Effective working structures needs to be established, ensuring the active participation of citizens and key stakeholders, whilst steering institutional cooperation and coordination at different government levels.

Authorities should lead this path, discuss solutions and create synergies with various groups of relevant stakeholders, such as vehicle manufacturers, technology and transport service providers, and citizens.

Citizen participation helps to understand the needs of the future users of the system and to cater to them. For example, it is important to involve key groups such as schools, emergency services, cyclist groups or the mobility impaired in order to identify their specific needs and potential problems associated with CCAM services and automation-ready road infrastructure. Providing a platform for citizens to be heard, increases acceptability and furthermore, the perception of users gives an insight about the possible threats (e.g. reduction in the value of travel time, since it can actually be a productive time and increase comfort of CAV usage) and enhances proactive mitigation strategies (e.g. pricing schemes) by engaging citizens as part of developing a common solution.

Planning for AVs and reducing uncertainties also requires the involvement of stakeholders that are not traditionally part of mobility planning. Municipalities alone cannot solve mobility challenges and thus need to collaborate with mobility service and technology providers from the private sector. Engaging with OEMs, technology companies, and new mobility service providers is an important aspect in co-creating solutions that benefit all: businesses, government, operators, and people. This also helps in developing a common vision between often conflicting objectives of different organisations, when planning for the future of mobility in cities.

Similarly, CCAM based mobility needs a system approach and cannot be planned by transport authorities alone. Cross-department cooperation, including for example urban/spatial planning, environmental, economic affairs departments, is required. New institutional structures like horizontal working groups / departments or even cross-border urban mobility managers (that allow the integration and coordination of public transport, new mobility services and platforms), as well as new skills and competences, e.g. data handling and analysis, are needed to plan and introduce CCAM.

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In this way, through a cooperative and participative approach, cities and authorities will get a chance to have a better understanding of the topic, and increase their capacity to implement the right policies and regulations to support innovation and restrict unfair competition.

1.2 CoEXist's Automation-ready Fora

However, planning road infrastructure for a mode that does not exist yet (i.e. AVs) can appear rather abstract for urban mobility stakeholders who are not directly involved in the debate about automated vehicles.

Therefore, CoEXist has made efforts to facilitate a more informed and less technical public debate about what a city should look like with a growing number of AVs on the road network. Each road authority has organised an 'Automation-ready forum', discussing the project's results to local and national stakeholder groups, and receiving valuable feedback towards the development of automation-ready action plans.

All road authorities and their support partners have been free to decide the best format and timing for the event according to their local needs. This resulted in an interesting diversity of events, from small focus groups to larger event, and with distinct objectives and target audiences.

- Gothenburg hosted a broad number of stakeholders from national, regional and local level, aiming to raise awareness and steer cooperation towards the deployment of CCAM.
- Milton Keynes, decided to hold various workshops addressing specific citizen groups of key relevance to automated mobility, such as elderly and disabled citizens, young school students and the Milton Keynes Youth Parliament.
- Following its strategy as smart mobility living lab, Helmond has organised a forum with local public institutions and representatives, from policy makers to implementers, aiming to enhance coordination and knowledge exchange among the various research projects the municipality is involved in.
- Stuttgart, engaged with representatives of the different organisational units of the city's administration and local public transport operators, aiming to steer cooperation and to analyse institutional adjustment towards automation-readiness.

1.3 Report structure

This document reports on the 'Automation-ready Fora' hosted by CoEXist partner cities, describing their objectives and format, analysing their results and presenting the lessons learnt (sections 2 to 5). Finally, general conclusions and recommendations are derived (section 6).

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2 Gothenburg

2.1 Introduction

Gothenburg is situated on the west coast of Sweden with a strategic location between the capital cities Oslo and Copenhagen. With a population of 550,000 it is Sweden's second largest city. Gothenburg is the core and growth engine of the Gothenburg region which inhabits 1.1 million people. It is home to a variety of strong industries including AB VOLVO, Volvo Cars, SKF and Astra Zeneca as well as internationally renowned universities such as Chalmers and Göteborgs Universitet.

Gothenburg has just entered a phase of major transformation as the city will increase its population from 550,000 to 700,000 within the next 20 years. The bulk of that growth will take place in the most central parts of the city. Here 25,000 new apartments will be built, and 50,000 new jobs added to the same area.

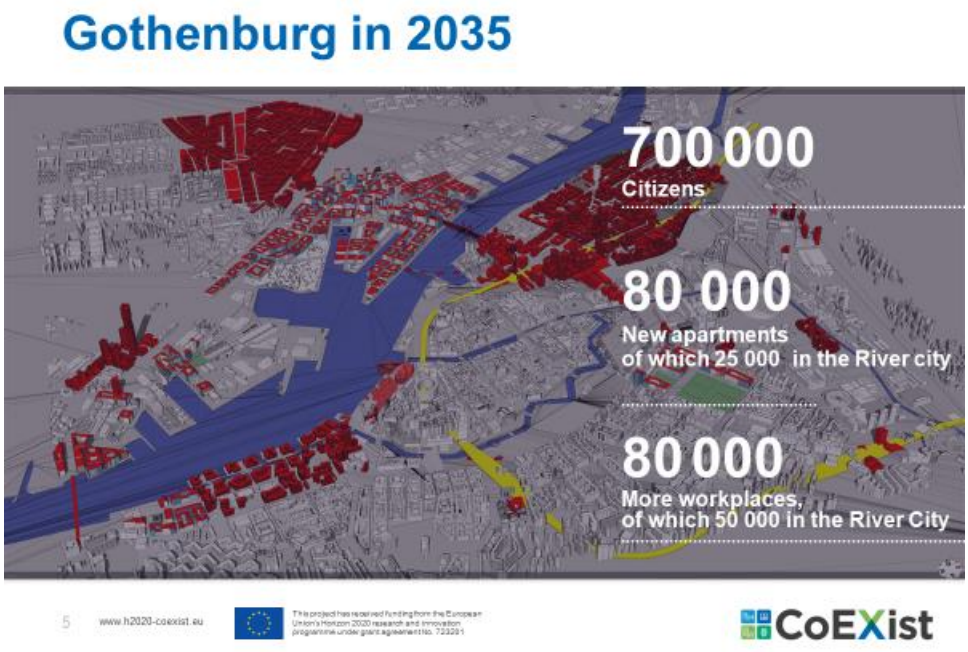

Figure 1 Gothenburg development plans for 2035.

This extreme densification will obviously put a tremendous load on the transportation system in the city. Conscious planning is important but will probably not be enough - innovation will play a key role to meet policy goals. CAVs and new mobility services will an integral part of the future transport system.

In Gothenburg, the city, the academy and the industry have a long tradition of working together, which has developed a strong collaborative innovation capacity. One important strategy for growing the city is to allow areas now under development to become living labs for the development of innovative transportation and mobility solutions, always with a strong focus on sustainability.

The Automation-ready forum in the city of Gothenburg was arranged at Lindholmen Science Park on the 11th September 2019 as a full seminar day on the topic of societal development and automated transports. It was jointly organized by CoEXist, City of Gothenburg and Drive Sweden.

Drive Sweden is one of 17 national strategic innovation programs supported by The Swedish Innovation Agency, the Swedish Energy Agency and the National Research Council for Sustainable Development. Strategic innovation programs are instruments established by the Swedish government to address complex societal challenges where there is a huge potential to develop sustainable solutions – requiring cooperation among several stakeholders to succeed.

Figure 2 Drive Sweden vision of future mobility.

Drive Sweden was launched in 2015, with the city of Gothenburg as one of the first members, as a cross-functional platform that drives the development towards sustainable mobility solutions for people and goods. Together, the partners of Drive Sweden, develop and demonstrate efficient, connected and automated transport systems that are sustainable, safe and accessible for all. Today there are some 100 partners from different sectors including Technology companies, Telecom, Vehicle manufacturers, Consultancy companies, Maas companies, Research institutes as well as Public authorities.

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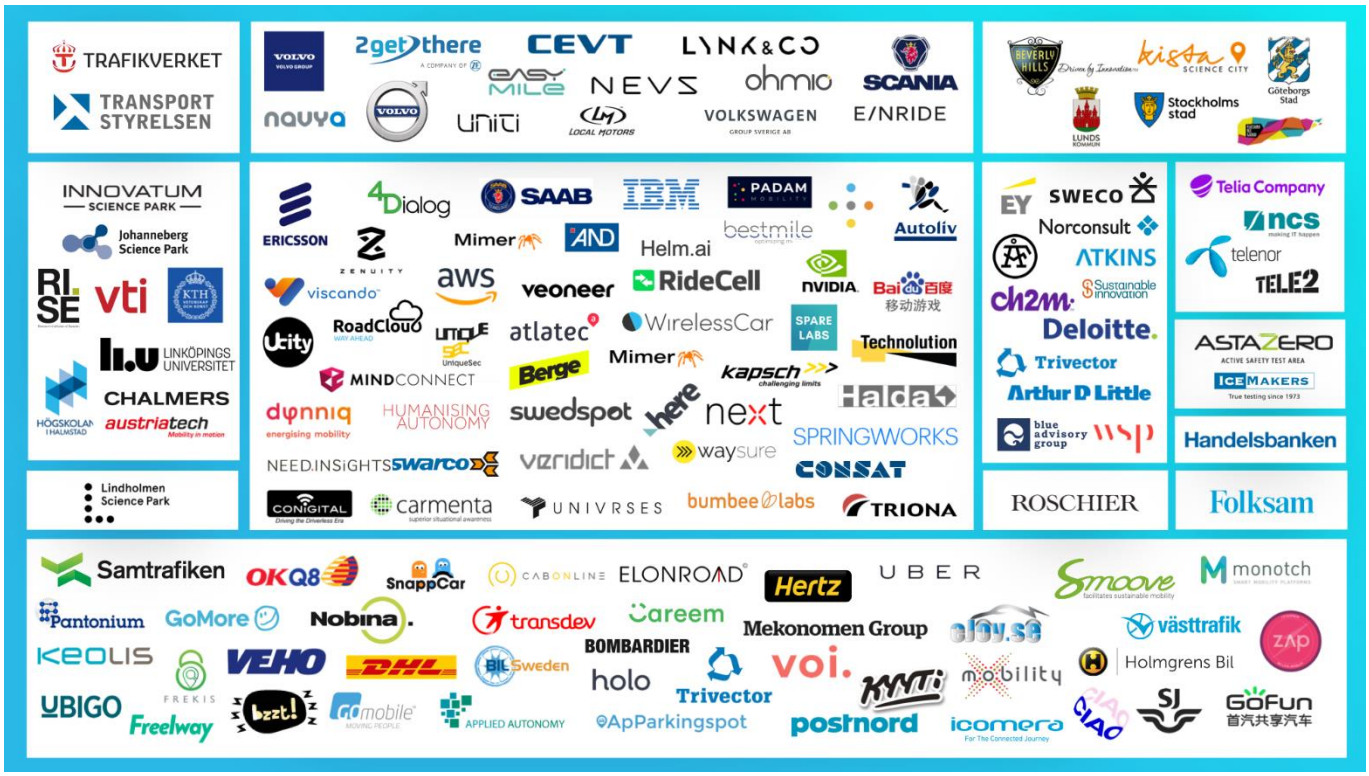

Figure 3 Drive Sweden partners.

2.2 Objectives

One of the core questions raised at the seminar was how cities can plan for a future where connected and automatic vehicles, CAVs, constitute a natural and integrated part of the urban transport system.The main objective of the forum was to raise awareness of CAVs amongst stakeholders such as national, regional and local authorities as well as other urban mobility stakeholders. The full seminar day was also part of launching the new Society Planning thematic pillar of Drive Sweden.

2.3 Scope and format

The seminar was organized in two parts:

10:00h – 12:00h

- **Welcome and introduction** – Moderator: Suzanne Andersson, City of Gothenburg
- **Collaboration for the development of the future transport system** – Sofie Vennersten, Program manager Drive Sweden
- **Future scenarios for self-propelled vehicles in Sweden** – Erik Almlöf, KTH
- **Development of future human-centred mobility** – Vaike Fors, University of Halmstad
- **A future with self-driving vehicles in Gothenburg - a basis for an in-depth overview plan for central Gothenburg** – Anna Svensson & Monica Wincentson, City of Gothenburg
- **Structure plan Kista - autonomous vehicles and automatic transport systems in physics planning** – Lukas Ljungqvist, City of Stockholm

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- **CoEXist - How do you plan to get the automated transport system of the family time? Introduction to this afternoon's workshop** – Mikael Ivari, City of Gothenburg
- **Panel discussion -** moderator and today's speakers

13:00h – 16:00h

1. **Workshop: How can cities become "automation-ready"?**
   Although technological developments are rapidly increasing, there are great uncertainties about how urban and traffic planning will be affected in the future. That is why CoEXist has developed an Automation-Ready Framework to help cities build their own ability to plan for a future with an increasing number of automated vehicles. At the workshop, a draft framework will be presented and subsequently worked on in group exercises.

In the morning session there were final presentations from a couple of projects co-financed by Drive Sweden. The Gothenburg City Planning Authority was one of the organizations on stage. The urban planners Anna Svensson and Monica Wincentson presented the results of a project where the interaction between autonomous vehicles and sustainable, long-term urban planning has been examined. The results are useful input in the current work with the new comprehensive plan for central Gothenburg. But the ambition to add the CAV-dimension into the planning process is still much of a travel into the unknown. Many questions still have rather vague answers. Can Gothenburg and other cities for instance count on that a CAV-revolution in the streets lead to a more substantial decrease in the need of parking spaces?

Figure 4 An illustration from Comprehensive planning for CAVs in central Gothenburg 2050.

Mikael Ivari, from the Urban Transport Administration in Gothenburg, concluded the presentations by introducing CoEXist objectives and activities, including the Automation-Ready Framework concept.

Figure 5 Mikael Ivari presenting the CoExist project.

As wrap up of the morning, the presenters were invited back on stage to participate in a panel discussing topics such as “how can the technological development support today´s mobility challenges in the cities?” and “how do we ensure an inclusive introduction of CAVs?”.

Then the afternoon session was completely devoted to a workshop of the Automation Ready Framework developed by the CoExist project. The workshop was structured around the five different mobility aspects in the framework. The idea was to support discussions and generate ideas of what actions or measures a city could or should initiate in order to be able to plan for the advent of CAVs. As an introduction Mikael Ivari presented the Framework concept illustrating it with examples from Gothenburg, including an self-assessment of Gothenburg’s Automation Readiness.

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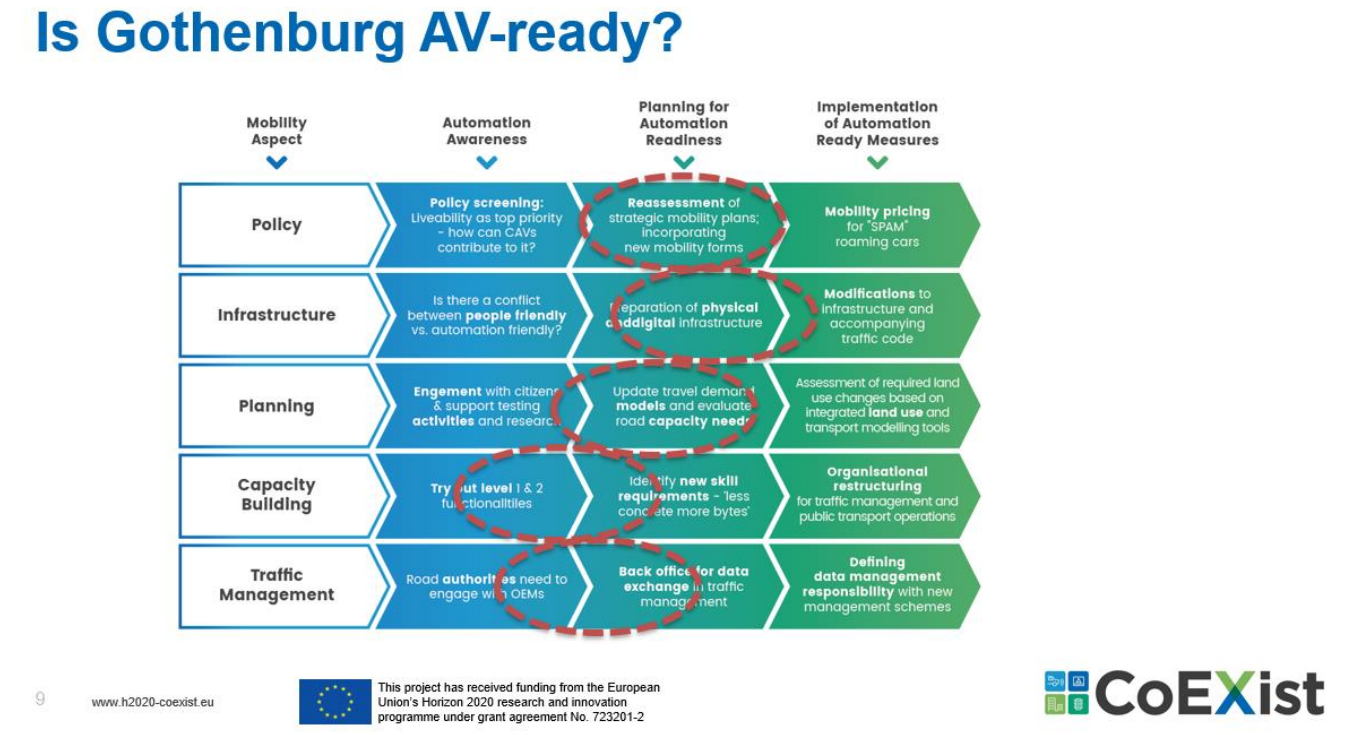

Figure 6 Self-assessment of Gothenburg's Automation Readiness using the Automation Ready Framework concept.

For the workshop there were five tables available in the room, one per mobility aspect. Each table was hosted by two persons acting as chairs leading the discussion of the single mobility aspect devoted to that specific table. The chairpersons had been notified in advance of the workshop and were already familiar with their role, the topic and the method.

At the start of the workshop, the participants were invited to choose a table of their own preference. This self-organizing setup resulted in five remarkably even sized groups at the five different tables! Then the five groups discussed their chosen topic for about an hour, concluding by prioritizing their top 3 measures.

DEL 1 POLICY	MEDVETEN	PÅGÅENDE PLANERING	IMPLEMENTERING AV ÅTGÄRDER
AKTIVITETER/ INITIATIV/ ÅTGÄRDER			

DEL 2 POLICY	MEDVETEN	PÅGÅENDE PLANERING	IMPLEMENTERING AV ÅTGÄRDER
AKTIVITETER/ INITIATIV/ ÅTGÄRDER			
TOPP 3 1) 2) 3)			

Figure 6 Example of template used in the workshop (Swedish only).

Then there was a short coffee break and after that the groups changed tables. The chairpersons did not change tables but “stayed with their topic”. The next round of discussion started with the chairs giving a short resume of the previous discussion including the chosen top 3 of the previous group. Then there were discussions for another hour before deciding up on the final top 3 prioritized measures of the given mobility aspect.

At the end of the workshop, all groups presented their top 3 measures in plenum to spur a common reflection. The workshop initiative was clearly welcomed by the participants as a lot of them expressed this publicly.

2.4 Participants

There was a large interest for the seminar. When planning and preparing for the seminar a maximum of 100 participants were expected. However, invitations were sent out in June and the seminar was fully booked already before summer vacations started. Since the capacity of the room at the venue was only 100 persons, the organizers had to reject a couple of dozens of potential participants. Despite this the participants still represented a broad array of different types of organizations ranging from national, regional and local authorities, industry, academia, research institutes, insurance companies and other urban transport stakeholders. Of the 100 persons attending, some 40 persons stayed the full day and thus participated in the afternoon workshop.

2.5 Results

The workshop focused on the mobility aspects of the Automation Ready Framework – policy, infrastructure, planning, capacity building and traffic management Several potential actions and measures were ideated by the participants but also a lot of discussion points, both recommendations and question marks.

The city of Gothenburg was involved with development of CAVs already in 2013 due to the Drive Me project initiated by Volvo Cars. It was early on very clear that there was a strong need for policy development in order to facilitate CAV testing and in the long run to allow for automated driving systems. In 2017 testing of CAVs in public roads was allowed in Sweden. The city of Gothenburg has worked closely with the Swedish Transport Agency to support this and has also developed internal processes to facilitate CAV testing in Gothenburg. At present the city has facilitated tests with cars, trucks, buses and service vehicles. There is also a Policy Lab initiative hosted by Drive Sweden where the city as well as several of of the attendees of the workshop are partners.

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Policy

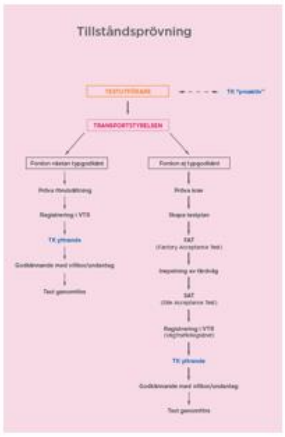

Figure 7 Examples of initiatives and measures from Gothenburg related to the Policy aspect.

At the workshop, the **policy** discussions were hosted by a legal expert, the former head secretary of the Swedish National Investigation “On the road to automation”. The investigation that also included proposals that later resulted in legal support for CAV testing in Sweden. The discussions ranged from balancing individual needs with societal objectives to pricing and procurement models.

When summarizing the top 4 most relevant discussion points in group discussions were:

1. The need for cooperation. Not everyone can do everything, but everyone can do something. We can learn from each other.
2. The need for national coordination, taking into account different needs of different cities.
3. Focus on end user needs rather than current behaviour.
4. Who is responsible for developing an automated city? What are the roles of authorities, public transportations providers, citizens, developers, etc.?

When it comes to **infrastructure**, the city has focused on developing digital rather than physical infrastructure. One reason for this is that new digital services, such as C-ITS services, can be deployed in a near future taking advantage of the increasing number of connected vehicles. Digital services are also relatively easy to scale and the functionality can expand according to the needs and capabilities of the automated systems.

Lessons learnt from CAV testing and the CoExist case studies suggest that some technical solutions clearly would benefit from physical infrastructure support. However improving the physical infrastructure in a large part of the road network is much longer process than expanding digital services.

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(Physical) and Digital Infrastructure

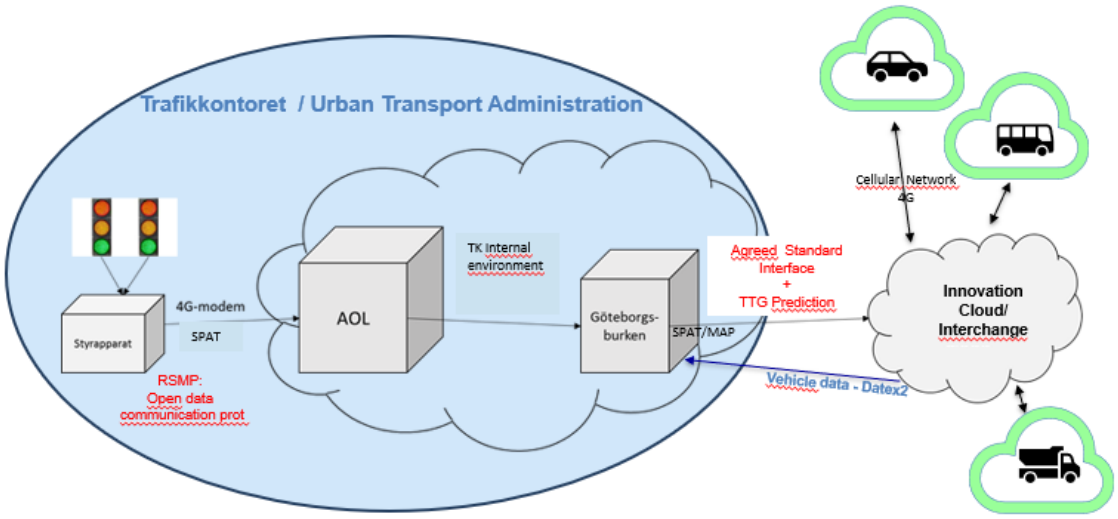

Figure 8 Example of pilot system architecture for providing C-ITS services such as Time To Green in Gothenburg.

The discussions related to infrastructure involved representatives from government, vehicle manufacturers, road authorities and consultants. One topic addressed was the need for cyber security as well as traffic safety. The interaction between the vehicle and infrastructure was another topic. Different companies use different development strategies, i.e. whether operation of the vehicles rely on the physical infrastructure or not. When summarizing, the top discussion points were:

1. Focus on needs rather than technological development. Cities should reflect on their strategies and visions. Infrastructure planning should take advantage of CAV development to reach goals.
2. Test beds are important to get a better understanding of possibilities and limitations with CAVs. Cities should facilitate demonstrations.
3. Cities should exchange information to get an overall better awareness. Organizations such as POLIS and Drive Sweden are valuable networking platforms.

The discussion about infrastructure also resulted in several tangible actions and measures that could be implemented. Geofencing, digitizing traffic regulations, connecting traffic signals, parking management, CAV-lanes and speed zone management were some of the suggested planning and implementation measures.

In order to plan you have to have the right tools and the right knowledge. Projects like CoExist are important initiatives to help enhance planning capabilities, developing tools and methods that support planning for CAVs. The user perspective is of uttermost importance for a public authority. This is why the city of Gothenburg also has engaged in the AHA (A Human Approach) project that involves and engages with the public. Based on people's everyday lives, future mobility services are prototyped and evaluated. The city has also started to assess long term impacts of new mobility services using multi-modal traffic models to analyse future Mobility-as-a service scenarios.

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The **planning** discussions was hosted by the project manager for the new comprehensive plan for the city of Gothenburg. A lot of the discussions involved different aspects of what makes a city liveable. What can we learn from history? What is considered liveable today and what will define liveability in the future?

When summarizing the top discussion-points were:

1. Define the vision. What do we want to achieve?
2. Cities should engage in demonstrations to support planning measures. What works and what does not work within the local context. Living labs to are useful to explore and to co-create solutions.
3. Recognize the different time perspectives of implementation. It is important to have an adaptive/iterative approach.

The discussion about planning also resulted in several tangible actions and measures that could be implemented. Test beds,living labs, scenario-based planning and parking management were some of the suggested planning measures.

The discussions of **capacity building** were facilitated by experienced open-innovation managers and involved participants from industry, academy and public authorities. The need for defining roles and responsibilities was one important discussion topic. This is something that the city is already exploring in several C-ITS projects involving national authorities and linking to European harmonization initiatives. There is a common understanding that the future transport system will be fuelled by data. The major uncertainty is how the eco system supporting data exchange will look like. A common vision is considered important even though actors supposedly have different objectives.

The top discussion points were:

1. It is important to define a common vision. What does it take to achieve it?
2. Implement a holistic work-flow. Learn from the industry and implement cross-functional teams to improve innovation in public sector..
3. Develop a transformation model that supports a modular approach.

The **traffic management** discussion included participants from several vehicle manufacturers and Maas companies as well as research institutes and consultancy companies. A lot of focus was put into the need for test beds and the need for a connected infrastructure. Services need to be harmonized on a European level and should support multi-modal travel. The top discussion points were:

1. What infrastructure needs to be connected? Where should a city start to deploy in order to facilitate a gradual introduction of CAVs?
2. Cities should offer access to infrastructure for testing purposes.
3. Cities should share data that enables multi-modal travel.

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2.6 Analysis and lessons learned

The workshop was very successful, and a lot of the participants expressed their appreciation afterwards. It was a successful launch of the new Society Planning thematic pillar of Drive Sweden. In addition to the valuable inputs from the workshop, it was also a great dissemination opportunity for the CoExist project, reaching 100 dedicated professionals from industry, academy and public authorities.

One of the main takeaways from the workshop was that continued and deepened cooperation between different actors is essential to support a sustainable development of CAVs. The everyday lives of our citizens must be the driving force in this development, not technology or individual behavior. To support this, clear and inclusive political visions need to be formulated.

The workshop also gave valuable input for near term initiatives and measures. As an example, the city has continued the user-centric approach in a follow-up project to AHA. This time with the aim to evaluate the prototyped mobility solutions in so-called living labs.

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3 Helmond

3.1 Introduction

In early 2000 the city of Helmond was faced with major traffic problems due to the growth of mobility. Various studies have been started to find out how the city could overcome those traffic problems. These studies resulted in different solution directions: the expansion of physical road infrastructure or a totally different direction, namely choosing to optimize the use of existing road infrastructure by innovative traffic management. Dynamic traffic management was on the rise in that period. The city did not want to reduce mobility opportunities for the citizens, but large scale of new infrastructure often led to an even greater growth of mobility and would have a negative impact on the environment and urban space efficiency.

The mere expansion of physical infrastructure would have entailed enormous costs and would not solve all traffic problems. Helmond had about 60 traffic control installations at its disposal, and so 60 potential traffic managers. Therefore, at this time it was decided to invest in innovative, dynamic traffic management.

When dynamic traffic management was also embraced nationally, almost all traffic control installations in Helmond were converted to network control installations, partly with the help of subsidy programmes from the State and the Province. This was the first major step Helmond had taken. By realising the network controls, network capacity increased without investing in new road infrastructure. Traffic problems remained at an acceptable level and accessibility was guaranteed in recent years.

3.1.1 City of Smart Mobility

The leading role in dynamic traffic management and its active approach as a Living lab for ITS pilots and showcases has given Helmond the name "City of Smart Mobility". The municipal traffic policy is based on a smart approach to mobility, moreover Helmond has an important economic ambition with Smart Mobility. The automotive industry, which in the past was also located in Helmond, was revived. This is visible in recent years in the (inter)national driving role that this top technology region fulfils in the automotive field. As a result, the municipality has a driving role in the expansion of the home base, the Automotive Campus in Helmond. With its mobility policy, the municipality is making an extra contribution to smart mobility by profiling itself as a testing ground or “living lab” for new mobility techniques and solutions. This will give many of the innovative mobility developments their first application in Helmond and will enable important experiences to be gained. CoEXist is such a project which try to investigate and anticipate on the arrival on automated cars. This project fits perfectly in this living lab and smart mobility strategy because Helmond can test the impact of these new mobility feature and by experience and learning about the impact the city can anticipate on their policy or their measures.

3.2 Objectives

Helmond has made a deliberate choice to actively host smart mobility pilots and showcases. The city believes in the principle of learning by doing and is convinced that innovative developments can be taken one step further by actually testing them together with the business community and educational institutions. Helmond participated in several national and European projects that are wholly or partly related to self-driving vehicles and CCAM (Cooperative, Connected and Automated mobility), with a clear focus on cooperative traffic systems and connected vehicles.

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By organising the Automation-ready forum in Helmond it is intended that all internal stakeholders of the municipality of Helmond, from policymakers to implementers, see the possibilities or impossibilities of self-driving vehicles, so they can set the objectives and measures for the future. Being a city of Smart Mobility and a living lab, the city of Helmond participates in several (AV)-projects. By participating in such projects, we as a city enrich our knowledge and stay up to date when it comes to new developments. Also, as a city we can anticipate and even influence developments on AV's or Smart Mobility. The city of Helmond believes these new developments bring changes to meet other city policies goals such as more accessibility, less pollution etc.

3.3 Scope and format

By organizing this Automation-ready Forum first of all the local, internal stakeholders will be informed about these AV-related projects that take place or have taken place in Helmond. But more relevant after this session local stakeholders will be informed about the ins and outs of the AV-related projects running in Helmond. The projects which will informed about are:

- MAVEN focuses on the cooperation between individual automated vehicles and an intelligent infrastructure specifically at signalized intersections and signalized corridors.
- AUTOPILOT brings together relevant knowledge and technology from the automotive and the Internet of Things value chains in order to develop Internet of Things-architectures and platforms which will bring Automated Driving towards a new dimension
- CoEXist develops "Automation-ready" transport models and road infrastructure for the coexistence of automated and conventional vehicles.
- FABULOS delivers a systemic proof-of-concept on autonomous last mile public transport as part of the urban areas' existing transport system, based on use of autonomous self-driving minibuses for transporting people.
- ISA deployment initiatives, as a quick win for road safety in the transition phase towards fully connected and automated vehicles

Attendees of the Forum will be informed by short project presentations by project participants of these projects. After this presentation the participants are better informed about the state of affairs and afterwards a discussion can take place about how to proceed.

In a workshop we want to discuss if Helmond is automation-ready? (Self-Assessment) What need to be done next for us as city of Helmond civil servants and what is the role of other partners. What is the role of AV's? Can/will a city with certain policies influence mobility change/modal shift? What do participants expect from automated vehicles (AV) and how will they look like in the future? Where will they drive (In the whole city of certain parts or only on certain roads) and with which functions? What infrastructure adjustments are necessary due to the introduction of AV's?

These were the kind of questions to be discusses in the Automation-ready Forum in Helmond.

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3.4 Participants

As introduced in chapter 2 the Helmond Automation-ready Forum focusses on local, internal stakeholders of the municipality of Helmond.

Employees of the municipality in the form of Elderman Traffic, Policymakers, Traffic engineers, Project leaders (of European or innovative projects, e.g. Brainport Smart District), Head of departments, Program-managers smart Mobility were invited. In the end, the Automation-ready Forum had twelve participants. Participants of the forum were mainly from the traffic department of the city of Helmond but in different roles such as Strategic Advisor Mobility, Senior Project Manager Smart and Green Mobility, City of Helmond, Innovation Manager Europe, Smartwayz.nl, Policy Officer smart mobility, Project Manager Automotive, Programme Manager Automotive Bereikbaarheid & Smart Mobility and Traffic-engineers

CoEXist

AV Forum 21-1-2020		
Naam	Organisatie	Handtekening
Gert Blom	Gemeente Helmond	
Tamara Goldsteen	Gemeente Helmond	
Marcel Unterberg	Gemeente Helmond	
Daniel de Klein	Gemeente Helmond	
Huib Raijmakers	Gemeente Helmond	
Josje Mooibroek	Gemeente Helmond	
Tineke Posno	Gemeente Helmond	
Marcel van den Elzen	Gemeente Helmond	
Astrid Appelhof	Gemeente Helmond	
Mareno de Graaf	Gemeente Helmond	
Ine Janssen	Gemeente Helmond	
Mark Smits		
Chris Bak		
Pierre van Veggel		
Kitty van Gastel	Gemeente Helmond	

Table 1. Attendance list

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3.5 Results

3.5.1 Pitches of AV-projects

First part of the forum were pitches of AV-projects. Project participants presented its AV-related project and at the end of each presentation they made a wrap up what the project could contribute for the city of Helmond and the lessons learned. In the next paragraphs there will be a brief recap of the presentation.

MAVEN focuses on the cooperation between individual automated vehicles and an intelligent infrastructure specifically at signalized intersections and signalized corridors.

Questions and discussion about this pitch were about clearance time and safety issues of traffic regulations (technical questions). Does the Maven system also take vulnerable road users in account?
How to implement such a system or make such a system exploitable, who should pay for it? Helmond invested already in smart traffic lights with communication possibilities so that Maven functionalities could be implemented in the Helmond Traffic System. Maven was mainly a technical project. Maven functionalities should be part of standard equipment of cars and then costs can be processed in total price of the car.

For Helmond MAVEN was important to better understand the relationship between CAVs and future traffic management, but it is also clear that a clear business model to operate a MAVEN-like system will not be ready on the market in due course.

AUTOPILOT brings together relevant knowledge and technology from the automotive and the Internet of Things value chains in order to develop Internet of Things-architectures and platforms which will bring Automated Driving towards a new dimension

Questions and discussion about this pitch were about the outcome for the Automotive Campus. Does it attract new business to the Automotive Campus? Not directly but because of this project and its user tests, the Automotive Campus has become better known. Also, citizens of Helmond which participated in user tests have a better idea of what's happening in the field of Smart Mobility. An outcome was also that although the Automotive Campus was a private area still permits were necessary from the national government (RDW) to drive and test with automated cars. That has to be taken in account by other future projects.

CoEXist develops "Automation-ready" transport models and road infrastructure for the coexistence of automated and conventional vehicles.

Questions and discussion on this pitch focussed on simulations and how they work and what's the difference between micro and macro simulations. First results of simulations showed that Automated vehicles do not always only provide a gain in travel time or will always make traffic better. Certainly not in the transition phase It might become worse first. Due to the mix of AV's and conventional cars. First results also showed that the smarter the AV the more profit they make.

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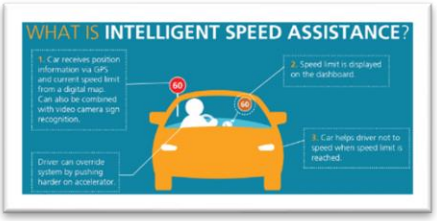
Automated vehicles need different information to drive and they must be connected.

FABULOS delivers a systemic proof-of-concept on autonomous last mile public transport as part of the urban areas' existing transport system, based on use of autonomous self-driving minibuses for transporting people.

Questions and discussion about this project focusses on the trajectory where this test should take place. Because it's a trajectory from a train station and the Automotive campus in mixed traffic safety issues and therefor permits will be very important. Permits from the Dutch national organisation RDW which coordinates tests with AV's are necessary and time-consuming that's why expertise of an external party is brought in. Forum participants are concerned about the trajectory which runs along a school, but it's also a change just to involve students in the project



Intelligent Speed Assistance (ISA) is an in-vehicle system that supports drivers' compliance with the speed limit. ISA is in fact a collective term for various different systems. Field trials and driving simulator studies show positive effects on speed behaviour and expect large safety effects. Helmond believes ISA is a quick win and a major contributor for road safety. ISA is already implemented as an option in conventional cars and is indispensable in Av's. AV's will drive on information such as speed limits.

Questions and discussions were about implementation and exploitation. In an invitation to tender, we as a city can demand that public transport companies have this system in their buses. Assurance companies should also invest in this deployment or implementation. In the upcoming Automotive Week which will be organised in 2021 ISA will be an important item to create more awareness. A precondition is good data management in order to be able to carry out ISA properly.

3.5.2 Workshop

After the pitches of the European AV-projects participants of the forum were asked several questions about AV's in general, The situation now in Helmond (self-assessment) and the future of AV's in Helmond. Pictures below gives an impression of the Automation-ready Forum.

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Figure 9: Impression of the Helmond Automation-Ready Forum.

3.5.2.1 Self-assessment

In the automation-ready framework (D1.1), a scheme was set up with a 3-phase distinction. The different stages do not correspond to a time period as different cities may be in a different phase depending on local circumstances. The phases can be overlapping, parallel and interlinked. The automation-ready framework aims to reduce uncertainty as cities go through each of the phases. Cities can use this scheme to do a self-assessment to see their current state and it can be used to investigate on which mobility aspect there is a gap or which mobility aspect needs attention or focus on.

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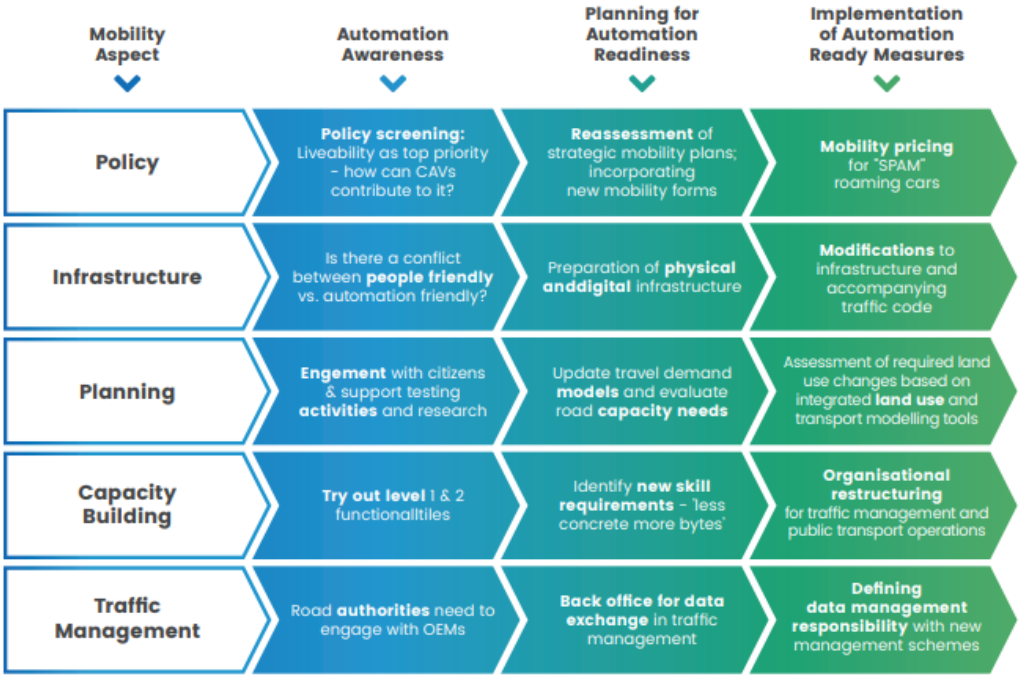

Figure 10: Example from the Automation-ready framework.

Above scheme was used as an example for the Helmond Automation-ready Forum. The diagram was translated, the columns and rows emptied and was refilled in a workshop (discussion)

	Bewust worden	Plannen	Maatregelen
Beleid			
Infrastructuur			
Organisatie			
Plannen			
Data			

Figure 11: Self-assessment diagram used for workshop.

The results of the discussion / workshop for each box in the diagram are further elaborated the following paragraphs below.

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3.5.2.2 Policy

Automation Awareness

In the current traffic policy plan are opportunities allocated to Smart Mobility and Automated vehicles to contribute to major goals such as more accessibility, less pollution. We are aware that developments and transitions towards more AV's will be almost certain. For this reason, we as a city are participating in different AV-projects with the aim of learning by doing and to discover the opportunities and challenges to implement in our policy. So we also noticed that it's necessary to use the outcome of participating in projects in a more focused policy and projects. The objective for City of Helmond is to translate the outcome of the project results and lessons learned into a clear strategy and policy towards a possible future with more and more CAVs in traffic.

Planning for Automating Readiness

Helmond is already planning for automation readiness regarding to road safety. Helmond believes that implementing ISA in conventional but also automated cars would be a great benefit and a quick win for road safety. Speeding is often related to road safety and ISA could contribute to objective and subjective road safety.

Implementation of Automation Ready Measures

Still it's unknown what AV's require to drive (in cities). There is no standard AV, there is even no AV (level 5) yet which is able to drive in cities. All OEM making their own AV-logic or driver assist functionalities (such as ADAS). So for a city at this time it is nearly impossible to anticipate and make policies regarding physical infrastructural measures for AV's.

3.5.2.3 (Digital) Infrastructure

Automation Awareness

Helmond believes that AV's, AV-functionalities or ITS-applications cannot do without communication. Therefor Helmond has implemented sophisticated communication-software in their traffic light systems. Because standards weren't set yet Helmond installed a Hybrid solution so that Wi-Fi-P (G5) but also cellular (4G) could be tested.

Planning for Automating Readiness

Installing iVRI's is also planning for automating readiness. Dutch iVRI is a Dutch standard traffic light which make it possible to exchange information between cars and traffic lights. This Dutch standard has been introduced in C-Roads. And also in C-Mobile we have developed a platform / architecture at EU level so that you can drive in principle with every app in every country. This too has been introduced in C-Roads. Information which could be necessary for AV's to drive in a city. Five characteristics of an iVRI:

- The traffic light is connected via the regular cellular telecommunications network;
- Technology and regulations (hardware and software) are disconnected;
- Regulations are tailored to the real-time traffic situation as much as possible;
- An iVRI provides data (such as time to green) for information services (for road users);
- Technology and interfaces are internationally standardized ETSI and therefore independent of suppliers of iVRIs, smartphones and cars.

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Figure 12: Helmond implementing the Dutch iVRI (Source: https://www.nm-magazine.nl/artikelen/talking-traffic-applicaties-voor-de-ivri/).

Implementation of Automation Ready Measures

In case of the implementation of the iVRI Helmond is already implementing an Automation ready measures. AV's can send and receive messages and adjust their driving behaviour on that information as was shown in het Maven project (www.maven-its.eu)

3.5.2.4 Capacity Building (Organization)

Automation Awareness

As an organization, Helmond has been actively involved in many smart mobility projects and pilots mainly with employees of the traffic department. Resulting from this, there is a lot of experience and knowledge gathered the last years. This is an important asset for the city and should be preserved.

Planning for Automating Readiness

Council members and politicians are informed on an ad hoc basis about the projects and developments, but it could be on a more regular base. In this way the city council will get a better insight in the impact of automated driving for the city and faster implement these deployments in city policy.

More consultation and cooperation is necessary with other authorities or companies such as Province, Region, but certainly also Public Transport Companies when implementing automated shuttles (Fabulos)

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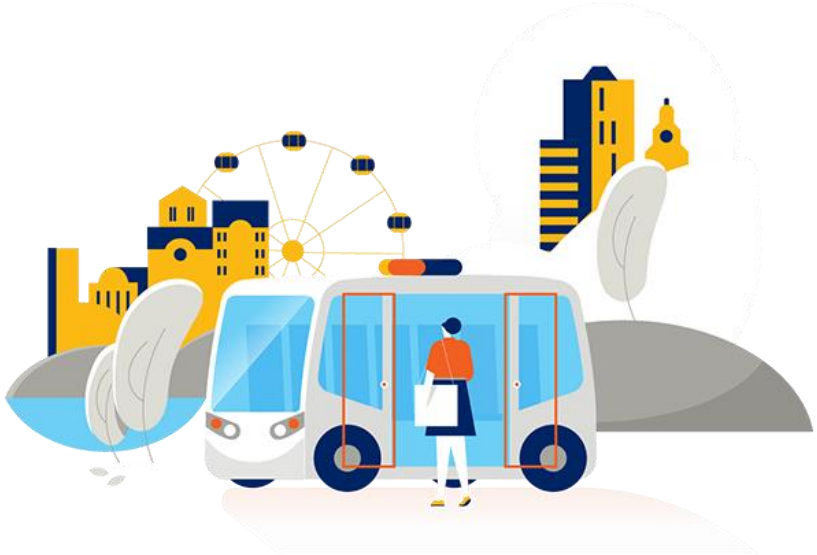

Figure 13: Helmond participating in Fabulos (source: https://fabulos.eu).

Implementation of Automation Ready Measures

It would be useful to exploit this experience and knowledge (lessons learned) among other departments so they can also could benefit from the changes and capabilities that AV's can bring. As an outcome of this Automation-ready Forum, it has been decided to have a regular (twice a year) city internal workshop regarding running smart mobility-projects and developments. In this way we make sure knowledge sharing and awareness about the topic will be increased also the staff directly working in the projects.

3.5.2.5 Planning

Automation Awareness

Helmond is aware of Av's coming to their city, that's why its participating in European projects with AV's and being a living lab for experiences.

Planning for Automating Readiness

Through projects, we try to gain insight into what is needed, what is coming our way, but much is unclear. By testing and participating we do gain a lot of experience to be able to focus more on future policies and plans.

In recent years policy has been fairly general and now there is a need to focus.

Implementation of Automation Ready Measures

Because it is not yet clear what exactly is coming our way and what the municipality wants to focus on, it is not really possible to take concrete measures. Wherever possible we do try to implement things that have been developed in projects in order to realise quick wins.

3.5.2.6 Traffic Management (Data)

Automation Awareness

Data and Traffic management are very important for AV's. Av's will not only drive on their own sensors but will also be depended of other information such as digital maps, traffic light information, weather information and so on.

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Lack of standardisation, harmonisation but also lack of clarity about what information automated vehicles need, also makes it difficult to optimise, store and make accessible data.

Planning for Automating Readiness

Helmond is starting a new program this year “De Digitale Stad” (the digital city). The whole city in a glass-fiber network, connecting sensors and an own data platform is a change to get and to provide more data regarding to traffic and Av’s.

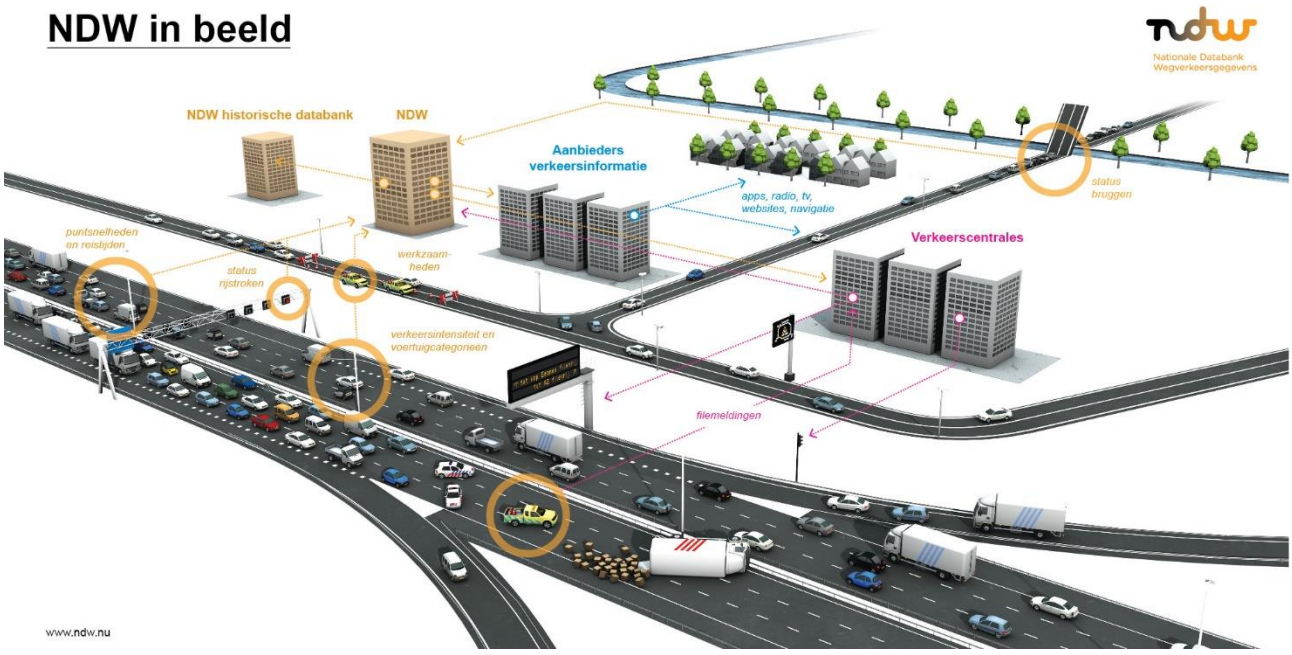

Figure 14: Example for data collection in The Netherlands by the NDW (source: ndw.nu).

Implementation of Automation Ready Measures

The conversion of traffic control systems to the aforementioned iVRi is in fact already a measure that has been taken because in this way vehicles can communicate with traffic lights.

3.5.3 Pros and Cons of AV’s

Participants were asked first to sum up the pros and cons of Av’s in general in their opinion; The following items were mentioned:

Pro’s

- Road safety (no human failure)
- Last Mile - accessibility
- Sustainability - contributing to a healthy city. Energy efficient, fewer emissions.
- Easy to use
- Social inclusion (you don’t need driver license anymore)
- Use of space - redesign of public space
- Economic profit - smarter organization of transport
- Employment - dealing with the shortage on the labour market

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Cons

- More (cleaner) transport movements (empty cars)
- Longer travel time
- Vulnerability/hacking – 4G / 5G
- Road Safety - less in the transition phase.
- Legal responsibility - business case
- Driver's license for self-driving vehicles? Refresh driving license - traffic rules

3.5.4 Automated Vehicles in Helmond

Forum members were asked what matters Helmond has to arrange or what Helmond should take into account with regard to AV's.

Revised expectations
Expectations are somewhat subdued. Development and introduction will be less rapid than was the idea a few years ago. Perhaps it will... won't drive all over town either, but only in sections or dedicated roads.

Involve a larger audience
Helmond can involve a larger audience, such as councillors (they have to make money available to implement or run projects), students, other governments, companies. Create more visibility in the city.

Quick wins
Helmond should participate in projects which can (quickly) contribute in city policy goals on road safety (ISA), mobility (last mile solutions, Social Inclusion).

Figure 15: A quick win for Helmond on road safety is ISA.

Organization
The organization must be in order, the expertise (gathered last years) and experts must be preserved. Continue to cooperate internationally and having a good network.

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Attract business to Helmond

Being a smart city and involved in many projects is also works as a magnet that causes companies to establish themselves on Automotive Campus in Helmond. So, it isn't only to contribute on traffic goals but also economic and employment goals were met.

Figure 16: The development of the Automotive Campus

3.6 Analysis and lessons learned

The Automation-ready Forum was very useful. Although it was only a forum among internal staff of the city of Helmond, participants liked the setup and the time to evaluate the past and ongoing projects and to discuss some goals for the future. Last years, there was due to several problems (organisation, time on policy update) too little time to organize such evaluating meetings.

The setup of this forum with presentations with ongoing projects and their findings was that positive, that this setup will be used in every subsequent intern meeting with people of the traffic department. Each meeting a project will be brought to the attention in order to create awareness among everyone and thus to be able to respond to the latest developments.

Quick wins/learning by doing

Our strategy the last years worked out fine on mobility but also in an economic way by attracting business to the city (to the Automotive Campus). It is important to maintain this approach in order to contribute to mobility and the economy.

Larger Audience

The European ITS congress in Brainport (Eindhoven/Helmond) held last year was good to show Europe but also the citizens (Public Day) what important developments took place in the city. In coming projects it's useful to involve more and more citizens and politicians to experience what these new technologies could bring them. A good start is the intended automotive week in 2021 which will be held on the

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Automotive Campus where again the latest state of the art technologies and developments will be shown to the public.

Organization

Being a city of Smart Mobility and participating in projects with all these new technologies requires a good and adequate organization that can handle all issues. Not only enough people but also experts are needed. There must also be a clear direction and focus, because the mobility spectrum is so large and broad that it is impossible for a relatively small municipality such as Helmond to put in infinite effort. Cooperation and coordination with other authorities would be useful in order to achieve joint goals.

No focus on only AV

Due to also the revised expectations, it is necessary not to focus on only AVs. Sometimes too many opportunities are attributed to new developments too quickly. So, it is necessary to test and learn and implement useful outcome. Mobility is predicted to change due to new technologies very fast the coming years. So, it is necessary not to focus on one part of the mobility-spectrum. It's not only automation but also new transport modes as MaaS, car-sharing, shuttles, peds and so on.

AVs no, CAVs yes

For the city, but also first results of CoEXist project show that AVs need to be connected to other vehicles and the traffic management system in order to contribute to a more sustainable mobility system. For this reason, the earlier investments of the city in C-ITS, such as the intelligent traffic lights, will not become obsolete, but on the contrary, are a sound base for future introduction of automated vehicles in the city of Helmond.

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4 Milton Keynes

4.1 Introduction

Milton Keynes is a rapidly growing city in the south east midlands of the UK. Conceived as a new town in the late 1960s the city has rapidly expanded to be a major UK city of around 300,000 people. The city is continuing to expand and has in early 2020 published its plans to expand further to around 500,000 by 2050.

One of the key guiding principles for the design and operation of the city has been the requirement for 'ease of movement' for all its citizens and visitors. This principle, seen as key to ensure continued social and economic development of the city. As the city continues to grow and pressure on its transport networks intensifies, the council (Milton Keynes Borough Council is the local authority with responsibility for highways and transport) has embarked on a detailed exploration of the use of Connected and Autonomous Vehicles (CAVs). The council has hosted several demonstrations and deployments of this emerging technology in the city over the past 5 years. These include the LUTZ pathfinder project – the first UK demonstration of self-driving vehicles on shared surfaces (Pedestrian pavements), The UK Autodrive project – a 3-year programme to deploy M1 saloon cars on the highway and low speed autonomous pod fleet operating within the city centre (on pavements). More recently the city has supported a small autonomous fleet of delivery robots and currently hosting an advanced POD operation trial (SWARM) and Human drive – an exploration of human interaction within self-driving vehicles.

Throughout the trials and demonstrations, the council has prioritised working with its citizens to understand their needs, views and concerns. Without support from its citizens, particularly those who may feel most threatened or impacted by the new technology then its successful deployment runs the risk of being delayed or stopped. It is therefore the primary focus of the Milton Keynes approach to managing the introduction and transition to Co Operative, Connected, Autonomous Mobility (CCAM) within the city is to understand and respond to all citizen's issues.

UK Autodrive (UKAD) - public attitude survey

The primary focus of the UKAD 3-year project was to develop and demonstrate connected and autonomous vehicles in the UK, with Milton Keynes and Coventry as the urban 'laboratories'. Within this programme was a study to identify and gain insights into public attitudes towards SDV's. Specifically, the public attitudes research work included a series of national surveys and regional and international fora. A forum of citizens was held in Milton Keynes in late 2017. This group was brought together using typical MK communication channels, and drew around 25 participants, which covered a wide but not comprehensive set of demographics. The parallel workshops in Newcastle, Leeds, Birmingham and San Francisco also suffered to a certain degree with a non- fully representative sample of participants. The national surveys whilst fully representative excluded younger (under 18) participants – this cohort are perhaps the people who will be using the technology in the near future.

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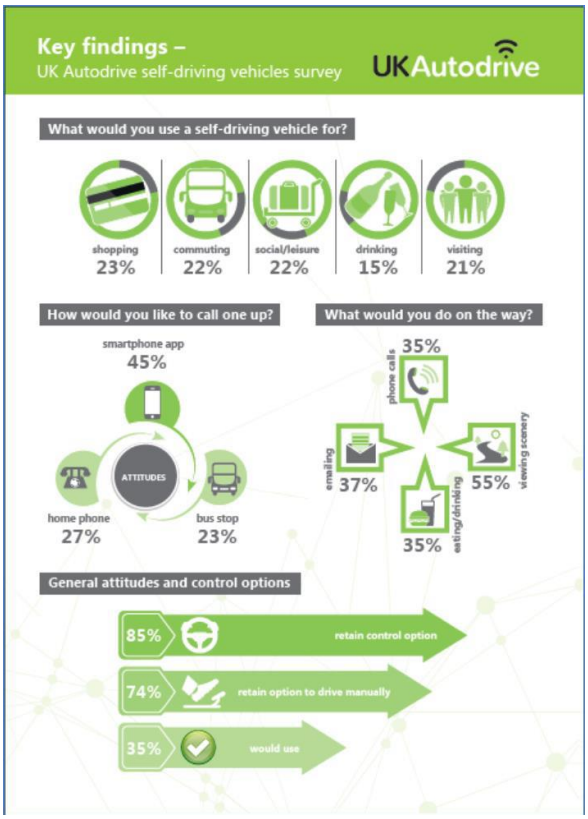
A facet of the national survey outputs was the views expressed by a significant number of respondents as to how others (mainly the elderly and disabled) might respond or benefit or be negatively impacted by the technology – well-meaning views were expressed on the behalf of others!



The full results and report from the UK autodrive public attitudes survey are published at www.ukautodrive.com

Reflecting on the excellent work produced by the UK autodrive project, and recognising the potential shortcomings helped define the approach Milton Keynes took to engaging with stakeholder for the CoExist programme. A series of workshop /fora were designed to target specific groups who would be critical to the development of future SDV initiatives in cities, especially for the transition phase. For Milton Keynes this was to work with younger people – those approaching adulthood and to using independently, transport systems, and older and disabled group with specific and in some cases specialist transport/mobility needs.

The approach to engaging and consulting with citizens is understood well in most if not all cities, with public authorities having great experience and capabilities in this area. What will be in future is perhaps the development of the expertise to consult on highly technical, emotive (controversial) technology without, certainly in early deployments much understanding of what the technology looks like it (most place do not have visible applications operating within their locality). There is also a need to engage with a non-technical audience, communicating accurately and clearly complex issues to a non-technical audience.

4.2 Objectives

The specific objectives of the engagement work in Milton Keynes was to target two groups of stakeholders based on the hypotheses:

1. That the current younger generation (ages14-17) would most likely be the first generation to use the emerging technology at scale and therefore their current views could be influential on its acceptance
2. Older and less able people potentially stand to gain significant benefit, but have specific requirements that need to be considered in the technology
3. Public authorities are likely to be less welcoming to the introduction of the technology unless it improves mobility for all its citizens

As discussed earlier, the response to the technology is fairly well understood via the significant work undertaken within the UK autodrive study. But this research had some gaps that need to be better

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understood. The general view from UK autodrive work could be summarised as finding that a significant proportion of the general population have yet to fix their views on the SDV _ around 75% are in the 'undecided' area of acceptance. Therefore, there is the opportunity to further inform citizens, providing targeted information and clearer explanations to help move this view to an informed and potentially mainly positive view of the technology and its capabilities develop further.

4.3 Scope and format

Three events were undertaken, using two different formats designed to maximise meaningful engagement and interaction with the two very different target audiences.

Event 1 – November 2018 and March 2019 Older Peoples Forum

With support from Milton Keynes Community Action team, a series of discussions were held with a mixed group of 32 elderly and disabled Milton Keynes citizens. Of these, 9 were affiliated to groups representing disability issues such as the local Centre for Integrated Living, RNIB, Bucks Vision, Hard of Hearing Support Group, Disability Advisory Group and Senior Voice at Age UK. Their mobility issues included things like strokes, asthma, visual impairment, hearing impairment, Parkinson's, Cerebral Palsy and amputees. Twenty of those people, including 2 representatives from RDM / Aurrigo, then attended a storytelling workshop to develop their response to the demonstrations. The workshop focused on developing a narrative based on a 'quest' which sought to unpick people's feelings, before, during and after their trial journey.

The format of the sessions was

1. An introduction to the technology, its capability, its deployment in Milton Keynes, and how and why the city was considering the technology. This presentation and discussion were led by Milton Keynes council's co-exist lead and support staff.

2. The group then met with a professional facilitator who was able to engage in a non- technical way to understand the 'feelings' of the group after the information was given. There was no presence from MKC or technologists at this session

3. The group was then introduced to an actual SDV (a POD operating in MK) Supported by the POD operators all the group were given a demonstration and ride in an SDV. They were accompanied by the facilitator, who then led a discussion about the experience, capturing the feedback in a series of 'stories' using the 'words' of the participants.

4. A follow up session was held with MKC/ Co-Exist representatives to hear views and discuss recommendation that emerged from the group.

5. A standalone report was produced by Community Action MK on the event and its findings this is available as an annex to this report.

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Figure 17: MK Passenger Pod being trialled/used by Older User (June 2018).

Event 2 - June 2019 – Schools' forum

As part of MKC engagement programme with schools in Milton Keynes a session was arranged with around 250 school children drawn from secondary schools in the area. The students, aged between 14 – 16 were brought together to hear about developments in mobility which could be adopted within Milton Keynes. Most were aware of the SDV demonstration being undertaken in the city.

Following the introduction, a group of around 30 students were asked to participate in a specific session.

1. The selected students were asked at the start of the session to complete a short survey about their views on SDV. The survey form is attached as an appendix. At this point the students had not received any other information about SDV

2. Following completion of the survey, a short presentation was given on the potential benefits and challenges of SDV. Further information was then given via the information boards (included in annex).

3. Following the information sharing session, a facilitated discussion was held for around 30 mins, views being recorded, and questions answered.

4. Finally, the survey was repeated in order to establish if views following the information sharing and discussion had changed.

Results of this are presented later in this report

Event 3 September 2019 – MK Youth Parliament

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Milton Keynes has established a youth parliament. This parliament is elected every 2 years by young people across the Milton Keynes area. Election is open to 11 – 18-year olds. The parliament is made up of 36 members.

As representatives of the wider young community, this group was approached to participate in a forum to discuss SDV. The session held was undertaken in the same way as the schools' event. The group tended to include slightly older young people, approaching the age when independent mobility is a greater issue, and to some a challenge.

The results from this session are included in the results section and are compared to the results from the parallel session with the schools' event.

4.4 Results

Older/ Disabled Person Event

The headline results from the group was perhaps 'frustration'. This frustration was based on the time it was taking to deploy the technology, and not fully understanding the benefits it could bring to older, less mobile citizens. They recognised fully the potential benefits and whilst they didn't dismiss the risks associated with the technology, they felt technologist and cities were being too cautious.

They also fed back that sometimes the technologist did not understand their needs and perhaps listened to people who spoke on their behalf rather than talking to them directly.

The experience of the actual demonstration was generally positive, but noted that the vehicles were not fully suitable for disabled people and that more work was need to adapt them to be fully accessible.

Figure 18: Initial mood map.

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Key extracts from the event:

Importance of Involving people and from the earliest possible point

Often, technology is designed, and policies written, without really involving people from the very beginning. There is often consultation which is timetabled into processes of getting strategies approved and endorsed, however this often happens towards the end of the development of a policy or procedure.

Engineers are thinking about the technology first and foremost, and may not necessarily think about how people, the users, will interact with the technology, or understand what its potential may be. There was an example of policy makers been told by technologists and other policy makers that people who were visually impaired would be frightened by the autonomous vehicles. Our experience shows that, whilst there was nervousness and anxiety from some, the overwhelming sense was of how important this technology could be. Taking the point that this technology has the power to be transformative for all, and providing mobility for all, we want to lobby for the early involvement of communities in designing innovation, and any other type of policy. Technologists can be wary of sharing the clunky technology, and we understand that, however it is at this point there is flexibility to build in change.

Technology is not always enough

There can be a sense that if we build technological solutions, people will be excited and drawn to them. In our experience that isn't always the case, the technological tools often require interpretation and translation and people often require support to understand the benefit they can bring. There is often an element of confidence building needed to attract people to technology and this comes with facilitation and capacity building support.

Marketing needs to be accurate

There was marketing material which described the Autonomous Pods Running round the streets of MK. This was different to the reality of the Pods being on a testing ground in a dedicated location in Central Milton Keynes.

Actual Pod Trial Experiences

The following testimonies from AV (POD) Trial Team revealed that some wonderfully positive and inspiring commentary.

- *I have a very full life. I'm a busy person with a lot to contribute to my community. I'm blind. I can't drive. I hate asking for help. I hate waiting for lifts. Autonomous transport – THIS is my dream come true. My freedom. My independence. I really want it. I want it now.*

- *I'm studying. I have school and lots of out of school activities that I enjoy. I have a prosthetic limb. It takes time to get from A to B, more time than it takes others and a lot of energy. I don't want to drive. Autonomous transport – I can see how this would work for me, a safer way to travel.*

- *We love travel. Nothing stops us skiing, abseiling, getting out and about. I'm visually impaired and my wife is a power=chair user. She drives me where I need to go. Autonomous transport – door to door, in a way that we could both travel together, that would be a dream.*

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- *I live in Central Milton Keynes. I've had Parkinson's for over 10 years. This affects my balance and mobility, principally by "freezing" which makes me rooted to the spot. My journeys are fairly short. I used to cycle but this is no longer safe because of my poor balance. Autonomous transport – I'm excited at the prospect of flexible, easy to use, travel for me and my family.*

- *I work full time. I have a family to take care of and life to enjoy. I'm an above knee amputee. I drive everywhere. Walking is exhausting. Autonomous transport – it will be convenient, energy saving (in both senses of the word) and comfortable.*

- *I'm retired. My friends encouraged me to come along today. I'm terrified, anxious that it'll be dangerous. Everyone has been scaring me with horror stories of computer driven vehicles causing death and destruction.*

- *I live and work in Milton Keynes. I gave up driving a few years ago, mainly because I want to live in a cleaner, greener world. Autonomous transport – Although I mainly walk everywhere, there are days when it's cold or raining when I'd love to catch a passing pod.*

Schools Event results:

The school-based event engendered a lively and constructive debate. Generally, the group was positive and engaged enthusiastically in the subject area. There was a noticeable shift toward a more positive outlook after the presentation, debate and discussion.

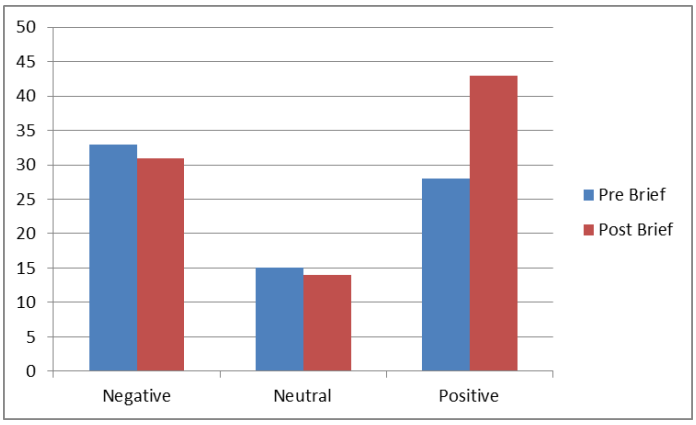

Figure 19: General attitude to AVs - this analysis combined the feelings in each category, and illustrates a general move to positivity across the group.

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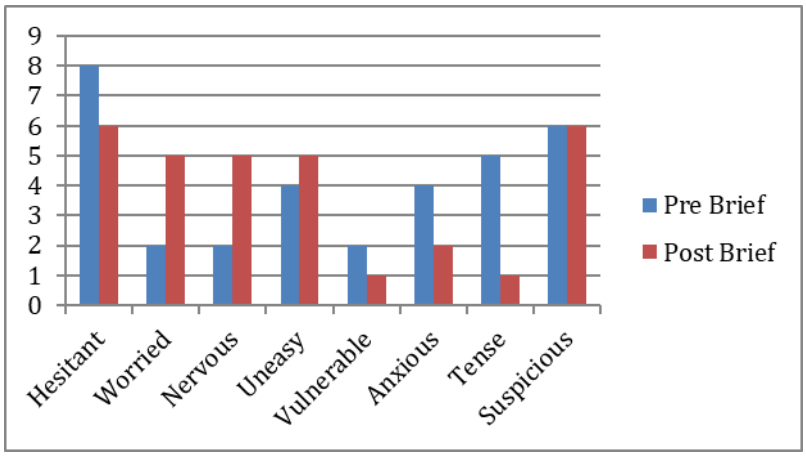

Figure 20: 'Negative' attitudes towards AVs – When considering each aspect of 'negative' sentiments there was a slight drop in overall negativity (table 1) but the overall view is that sentiments shifted between feelings

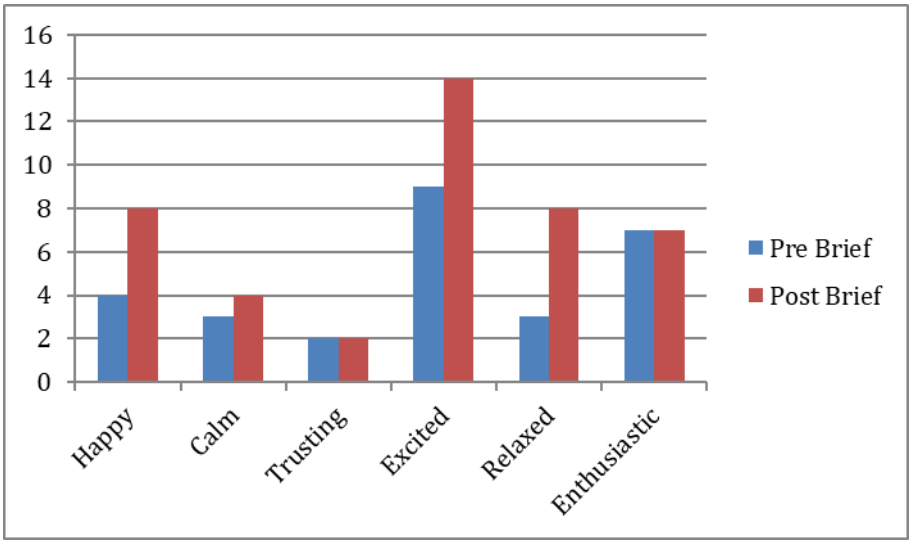

Figure 21: 'Positive' Attitudes towards AV. - in this analysis there was a more pronounced shift toward positive feelings. Interestingly, and in contrast to the national UK Autodrive surveys, the level of trust was a low issue - with no change

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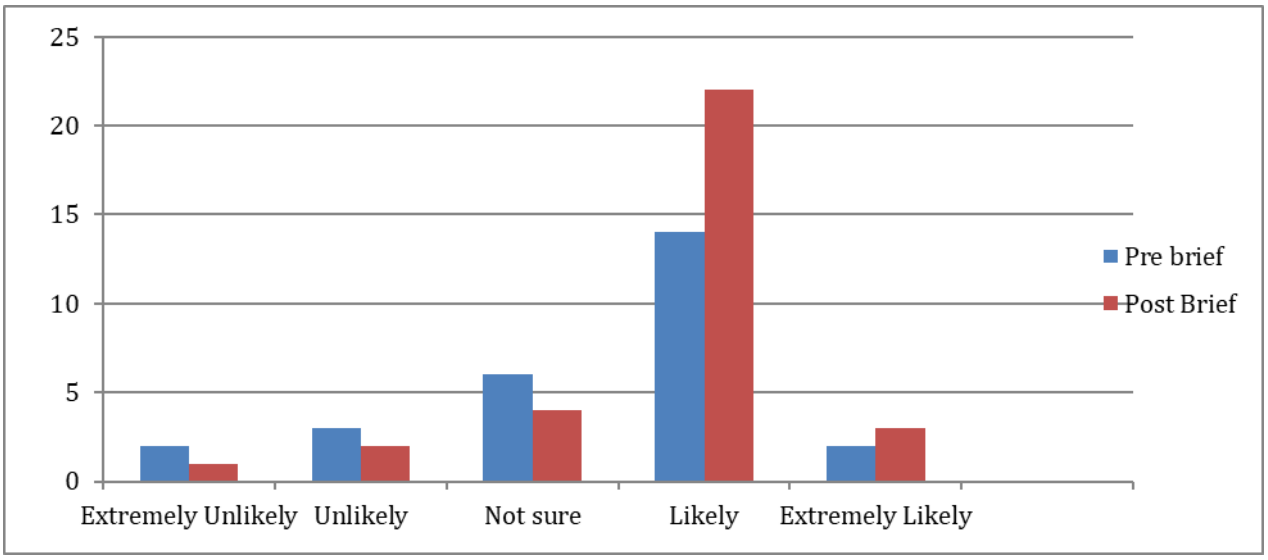

Figure 22: What is likelihood of AVs becoming widely used? Reflecting the overall positivity – this showed a definite shift towards the sense that AV would become widely used. In part it was felt that this was down to the group being exposed to the range of testing and activity that came across in the presentation material and discussion.

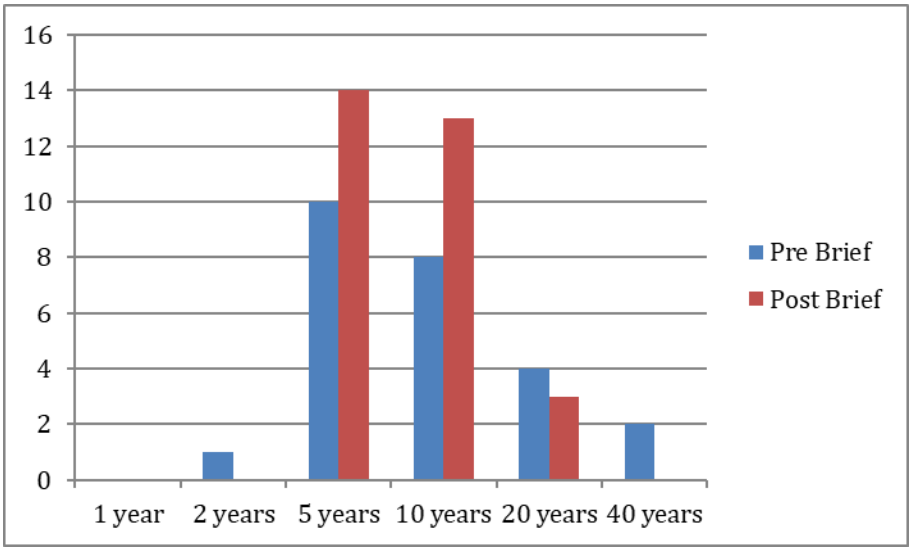

Figure 23: If likely, when do you think AVs will happen? The move to AVs was seen as quickening, again after the group was exposed to the range of testing and capabilities that are emerging now.

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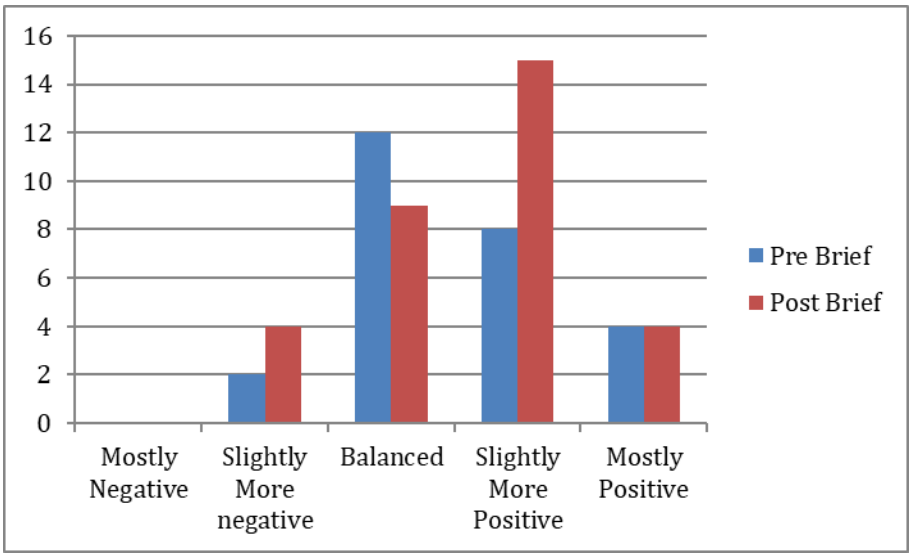

Figure 24: Do you think information about AVs is positive or negative – where as a greater number felt slightly more positive towards AV, a small number expresses a more negative view.

Youth Cabinet Event

A very engaged group, who recognised the potential importance for the city of this technology, particularly on how it could support young people. A familiar comment was around not needing to rely on others for transport – perhaps a trait of younger adults who rely on older family members or public services for transport. Overall however the shift towards a more positive outlook post discussion was less pronounced that the school event, with specific issues raised about hacking and personal security.

The survey feedback (graphical representation) was very similar in nature to the school's event, so not repeated in the main body of this report.. This results section does however illustrate outputs from the discussion session. The discussion content, captured from the conversations highlight a high level of relevant and deep knowledge of the subject, exploring details that were not brought up in the information sharing session. Perhaps, this presents evidence that the subject area is generally understood and offers insights into areas that need further investigation.

CoExist -Youth Cabinet Discussion Summary:

- Concern was raised about how expensive the pods would be to use + if autonomous vehicles would be affordable for the public. Someone mentioned that this is similar to the price of electric cars.
- Would the start-up costs be expensive up front and then as the services and the cars come into play the costs would balance out later on.
- Day to day costs of autonomous pods was questioned – would it be cheap to use, how would it work – would it be similar to a taxi service?
- When the autonomous cars are not in use where do they go in off-peak hours – removing parking might be an issue – could they use parking outside the city?
- If accidents occur who would be to blame?

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- How do the controls work – would the driver be able to take over to avoid danger and if so would they be able to take over in time to make a difference?
- Even if an accident occurred wouldn't the safety equipment in the cars be enough to protect the people inside (referring to the trolley car moral dilemma).
- One attendee drew attention to fact that autonomous vehicles could be really helpful for the last leg of journeys when people arrive in the city centre.
- Discussion also covered if it would be more convenient on the roads if every vehicle were autonomous or if it would be more dangerous if there was a mixture between autonomous and human drivers.
- How would drink driving work in autonomous vehicles especially if there was a self-driving option that people could turn on and off to avoid prosecution.
- Environmental benefits – could take people out of cars but would that place a strain on the grid if the vehicles are fully electric – we could ensure that the power is drawn from renewable sources.
- What about cyber security in relation to the technology in autonomous vehicles – control could be hijacked or data could be stolen. What will prevent this?
- How would this work with the public? What would the interface be like – an app would be really useful and easy to use.
- How do we regulate companies from developing faulty versions of the technology as the quality and pace of its development continues at this speed?
- How does the technology work – what networks enable it to work effectively – Wi-Fi, 4G or 5G.
- How do you make sure the connectivity and data that feeds into the system responds to real time events to ensure the service works in the best and most efficient way?
- Should we pursue co-existence on the roads as human error + car malfunctions could result in more drastic and dangerous situations?
- Further to this how do we manage the transition from old cars that aren't autonomous to a situation when everyone owns autonomous vehicles – what happens if people don't what to get rid of their old cars. How do we address and approach the culture change necessary for co-existing?

4.5 Analysis and lessons learned

4.5.1 Survey Approach

Two very different approaches were taken to engage with what in essence were two distinct groups of people. It is not uncommon for public authorities to tailor its approach to maximise meaningful input into consultation. Cities perhaps need to think about how they approach its communities and develop appropriate engagement strategies that facilitate meaningful input which provides the insights required and also give confidence to the stakeholder that views are being considered seriously.

The approach also wanted to ensure that the audience didn't feel as if 'minds were made up' and that the sessions tried to give a balance of views on AVs. This worked very well with the engagement with the older group, with an independent facilitator managing the engagement/events, and there was a good mix of discussions and activity that included input from experts and separate sessions where there was no outside involvement from people associated with the technology. This developed a level of trust and the ability of the participants to express their views without any 'pressure' from external experts.

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To a similar degree, the engagement with the younger groups were managed in a way that a balanced (non-biased) approach was taken designed to share and receive information. At no point in the discussions did it become evident that one view prevailed over another. In a sense this reinforced view from the major surveys undertaken in the UK Autodrive project that minds were yet to be made up and that this gave the opportunity for the promoters of the new technology to understand the positive and negative aspect that were expressed and respond to this, so that the technology could be developed to respond to stakeholder needs.

In terms of a survey approach it can be concluded that it worked in terms of securing views of the groups and this was achieved by two different approaches

4.5.2 Results

The outputs of the events are illustrated and discussed in the previous section.

When comparing this output with other work and engagement, in particular the UK Autodrive project and indeed several other surveys from the US and far east, the feeling is that there is a level of consistency in views developing, namely:

- The technology is found to be perhaps exciting and threatening in equal measures, but these views are limited to around 25% of respondents (polarised)
- For the majority, minds have not been made up.
- For the target groups in this research, there seems to be a slightly more positive outlook for the technology, and with some information, delivered in a non-biased structured way, can lead to slightly greater positive opinion being formed.
- The groups chosen as part of this project have been seen by some commentators as ‘a threat’ to the development of the technologies, without meeting the needs of older and younger generations, the technology may be delayed or engineered in such a way that it is less effective and not realise some of the benefit around increasing mobility opportunities for all

4.5.3 Conclusions

The engagement programme and events have achieved the following

- Without a comprehensive understanding of the needs and views of all local stakeholders it will be more difficult for local and national decision makers to embrace new technology that is fundamentally disruptive to current transport system and may indeed have short term negative impact until the technology matures.

- That bespoke methods can be adopted to engage with key stakeholder groups, and by using effective communication techniques, meaningful outputs can be achieved.

- Combining efforts with other studies and works in the area of interest can bring efficiencies and broaden knowledge.

It is up to the local area to determine the areas of interest and design specific engagement activities to meet the needs of the local area or specific outputs.

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4.6 Appendices

A number of information panels were used to support the focus group events. These panels covered a number of topic areas. The idea of the panels was to introduce a non-technical audience to the concept of autonomy, and how it may apply to mobility.

Exhibit 1

This introduces the potential (expected?) and well documented benefits of autonomous vehicles

Exhibit 2

This illustrates that autonomy is part of everyday life and is generally accepted in a number of areas due to benefits it brings

Exhibit 3

This gives a brief history of how self-driving vehicles have developed over time, illustrating that it is not a new concept.

Exhibits 4 and 5

These illustrate images / examples of private and public transport self-driving vehicles. A deliberate mix of existing and ‘concept’ vehicle are shown.

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4.6.1 Milton Keyes Fora - Supporting information

Exhibit 2

Everyday autonomy

Our cars are already becoming more autonomous, with features such as satellite navigation, cruise control and self-parking reducing the amount of driver input required

Electric, self-driving pods have been running successfully at Heathrow since 2011, moving along guideway tracks

The Docklands Light Railway in London has been operating without drivers for over 30 years

Our home central heating, security systems and kitchen appliances are now capable of learning our routines, and can be controlled remotely via our phones

At the warehouses of Ocado, the online grocery store, robots carry out the majority of the product collection process, with only a small level of human checking required

Automated appliances such as vacuum cleaners have been in our homes for some time

Our banking systems are highly autonomous, operating globally with high levels of cyber-security

The take-away deliveries industry is now highly automated, with order automatically assigned to delivery staff based on their predicted location and availability

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Exhibit 3

The history of self-driving vehicles

1939 General Motors' Futurama exhibit promises an automated highway system

1967 Cruise control introduced to the US market

1979 The Stanford Cart successfully crosses a chair-filled room without human intervention in five hours

1988 German researchers fit cameras, computers, and software to a Mercedes van and drive at more than 90km/h for 20 kilometres

1995 Researchers fit a van with computers and sensors and drive 1600 miles from Pittsburgh to LA. 98% of the journey is completed without driver inputs

2005 Five self-driving vehicles race through a course covering 132 miles through the Mojave desert

2010 Researchers drive 10,000 miles from Italy to China in a self-driving van with only minor human intervention

2015 Tesla offers autopilot on its vehicle - a feature that enables the vehicle to self-drive on certain roads - matching speed to traffic conditions and automatically changing lanes without driver input

2030 Self-driving vehicles take over from taxi and ride-sharing services?

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Exhibit 4

Self-driving cars

A concept by Toyota for a self-driving car including 'Yui' - an artificial intelligence that acts as a personal assistant on journeys

Audi claims the A8 will be capable of driving on motorways without any human intervention or observation as soon as laws allow it

Jaguar Land Rover's self-driving vehicles are being trialled on the streets of Coventry as part of the UK Autodrive project

Mercedes' concept of a self-driving vehicle allows for more sociable journeys

Rinspeed's self-driving vehicle concept integrates and emphasises ride sharing in city environments

Tesla's vehicles offer a level of autonomy to customers already - under human supervision, their vehicles can self-park and navigate motorway environments

Volvo's concept of a self-driving vehicle is currently undergoing trials in Sweden and can locate vacant car parks

Nissan's concept allows people to be more productive on the move

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Exhibit 5

Self-driving public transport

Sedric: Volkswagen's concept for a shared public service vehicle

The Gateway self-driving shuttle has been operating in public trials in Greenwich Peninsula, London

Waymo's self-driving two-seater has driven 4 million miles autonomously

IDEO has a concept for an 'office space on wheels' that can navigate a city on its own while occupants work or hold meetings

Navya's self-driving shuttle bus can travel back and forth along a two-mile route at the University of Michigan

The UK Autodrive pod developed by RDM. 40 vehicles will operate fully autonomously in a public trial to be held in Milton Keynes city centre during summer 2018

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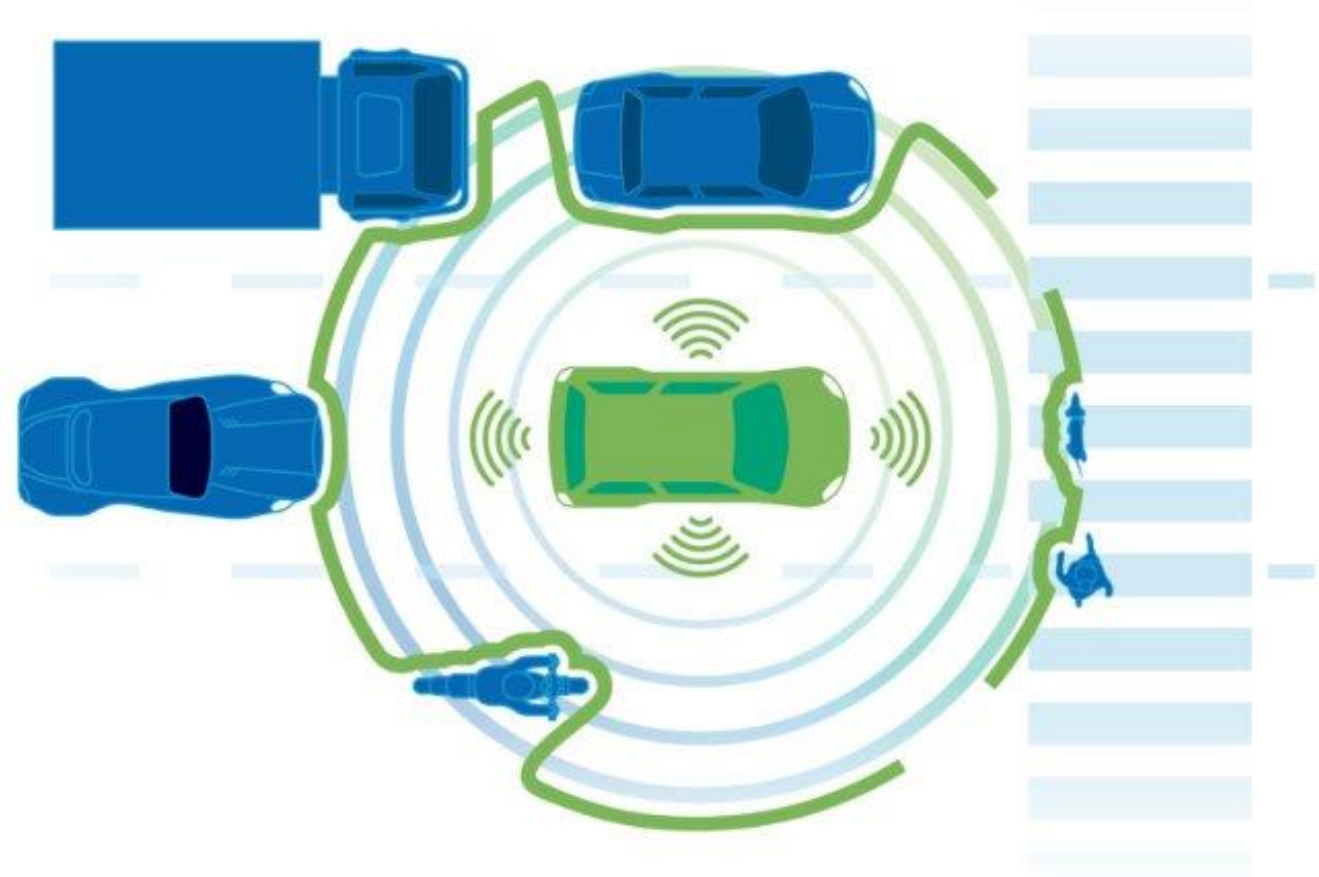
MILTON KEYNES FUTURES: 2050

CoEXist

Self-driving vehicles

Tell us what you think



1. Which words best describe your current view of self-driving vehicles? Circle all that apply							
Hesitant	Happy	Worried	Curious	Nervous	Calm	Uneasy	Trusting
Excited	Vulnerable	Neutral	Anxious	Relaxed	Tense	Enthusiastic	Suspicious
2. In your opinion, what is the likelihood of self-driving vehicles becoming widely used?							

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○ Extremely Unlikely	○ Unlikely	○ Not sure	○ Likely	○ Extremely Likely

3. If you think this is likely, when do you think this will happen? Mark along the timeline.

1 Year 2 Years 5 Years 10 Years 20 Years 40 Years

4. Has the information you've heard before today about self-driving vehicles been positive or negative?

○ Mostly negative	○ Slightly more negative	○ Balanced	○ Slighty more positive	○ Mostly positive

5. In a few words, under what circumstances would a self-driving vechicle be useful to you?

6. What might prevent you from getting into a self-driving vehicle?

7. Do you think self-driving vehicles would be **more** or **less** dangerous than vehicles driven by human and why?

10. Do you think self-driving vehicles would make the roads **more** or **less** dangerous and why?

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5 Stuttgart

5.1 Introduction

Worldwide, vehicle-technical, infrastructural, legal and ethical framework conditions for automated driving are currently being promoted or tested. Even though semi-automated functions such as automatic braking, parking assistants, longitudinal and lateral control or variable speed control have already become standards and are available for many new vehicles, it could still take several years or even decades before automated/autonomous driving (SAE (J3016) levels 4 and 5) becomes established in the market.

At present, there are still many questions about “how" CCAM services will be deployed. Nevertheless, it is expected that the market establishment of automated driving will take place gradually, and highly automated and ultimately autonomous vehicles, will find their way in the city.

The state capital Stuttgart shares the position of the German Association of Cities, which states that: “The automated/autonomous or networked driving will noticeably change urban traffic in the medium and long term. The course for automated/autonomous driving is already being set today. Here, active participation by the local authorities is important in order to exploit the opportunities of this technology and minimise the risks"[1]. Especially for the state capital Stuttgart, it is important from various perspectives to deal with automated driving in a timely and strategic manner and to take an active role.

Because of the experience gained in recent years and through the participation of the city in the EU project CoEXist, it became obvious, that the topic of AVs concerns the most different aspects of a municipality. Many factors have to be considered and included. Due to the multitude of different questions that have to be asked and answered in connection with this new form of mobility and the (new) tasks that have to be mastered, it is essential that the different organisational units concerned with their different responsibilities work hand in hand. In order to ensure the most constructive and effective cooperation between different authorities and responsibilities, the City of Stuttgart has had a working group, the "AG Mobilität" (Mobility Working Group), for years. The aim of this group of experts is a holistic, competent design of mobility as a contribution to a sustainable urban development strategy.

During CoEXist the organisational units have extended their level of expertise concerning automated driving. Therefore, the framework of the Automation-ready Forum was used to reflect the working methods of this expert group critically with regard to the Automation-readiness of the City of Stuttgart. Resulting need for change with regard to fields of action and essential measures should be specified and prioritised. This will enable the state capital to be as well prepared as possible and to react to future developments.

5.2 Objectives

The main aim of the Automation-ready Forum is to create a uniform, knowledge-based (results from use-cases and the actions done during the CoEXist project) understanding of the chances and possibilities

[1] Deutscher Städtetag (2018): Nachhaltige Mobilität für alle, Positionspapier

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but also of the risks of the deployment of AVs in a city. This includes the awareness and definition of the role and responsibilities of every affected internal organizational unit.

As a result, the working methods of the AG Mobilität will be reflected critically. For this purpose, the current state of Stuttgart administration is to be identified and critically reflected by the participants of the workshop. Based on the resulting need for change, recommendations for action will then be derived and developed in order to make the AG Mobilität, representing the entire city administration, "Automation-ready" in its processes and its ability to act.

Objectives of the Automation-ready Forum have been defined as:

- Joint critical reflection on the city's automation-readiness
- Concretise and prioritise the resulting need for change - especially concerning the AG Mobilität
- Measures are suitable for the Action Plan

5.3 Scope and format

The Automation-ready Forum took place in the form of an internal, moderated workshop, supported by Dr. Wolfgang Backhaus of Rupprecht Consult and Ms. Dr. Jana Spille, independent consultant.

As a first step, Wolfgang Backhaus conducted interviews with the Forum participants in the run-up to the event. The Automation-ready Forum consisted of the members of the AG Mobilität and thus of the different organisational units of the administration of the state capital as well as representatives of the local public transport (SSB). With this methodology, a cross-section of the organisation was represented.

During the interviews, systemic questions were dealt with along an interview guideline with regard to 8 design components (technology, organisational structure, tasks, decision-making system, information system, reward & control system, development & renewal system and human being) of systems. In this way, a transparent ACTUAL-picture of the "readiness level" of the city was developed within the framework of self-diagnosis/reflection.

In step 2, which also took place in preparation for the actual workshop, the interview results were condensed; statements of the different experts were derived and assigned to the various mobility aspects considered in CoEXist's Automation-ready framework:[2] policy, infrastructure, planning and capacity building.

[2] CoEXist: Deliverable 1.1 (2018). Automation-ready framework. www.h2020-coexist.eu/wp-content/uploads/2018/12/D1.1-Automation-Ready-Framework-Preliminary-version-1.pdf

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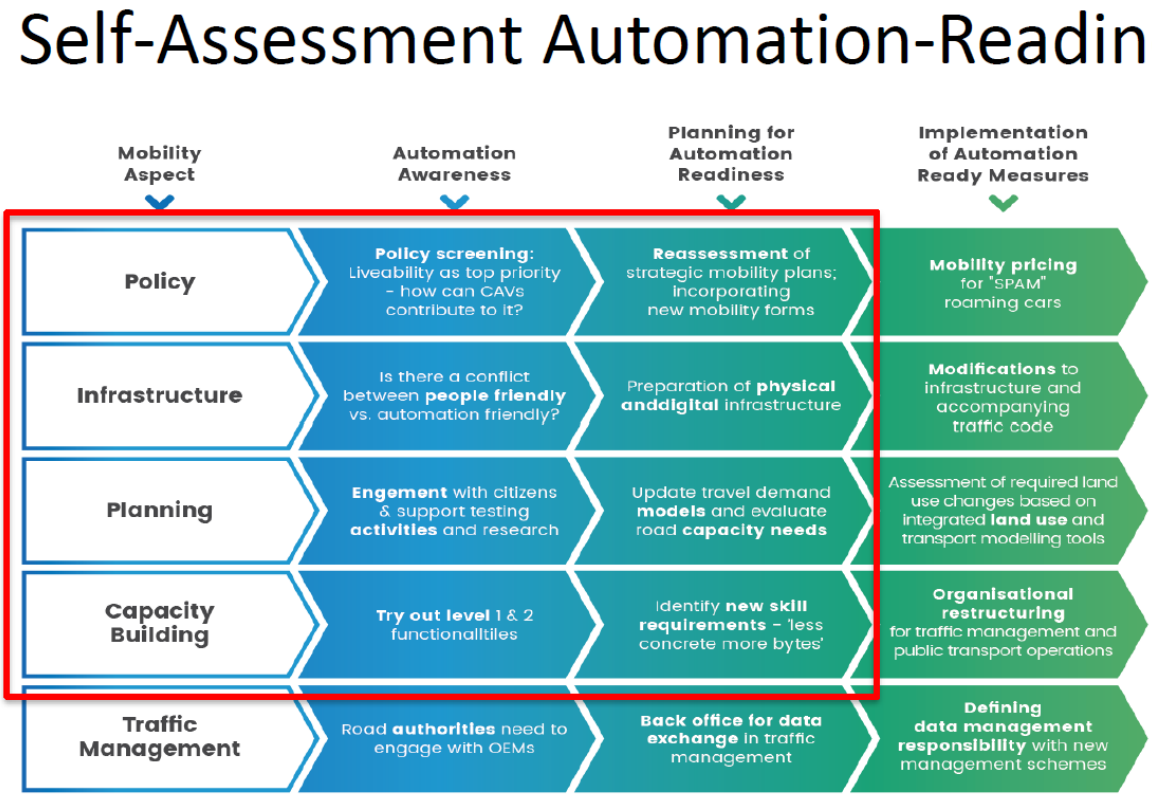

Figure 25: Stuttgart Automation-readiness self-assessment

On the day of the workshop, 24 January 2020, these statements, as a reflection, were opened to the entire round. They were analysed and discussed, working out where there may be still room for improvement. In addition, topics and challenges were identified as relevant.

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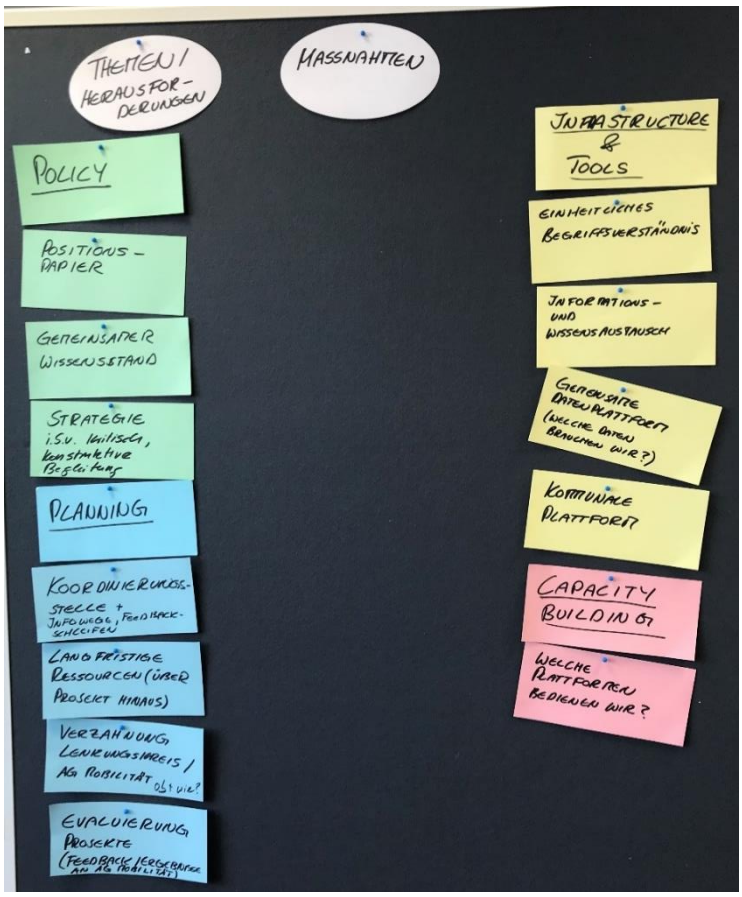
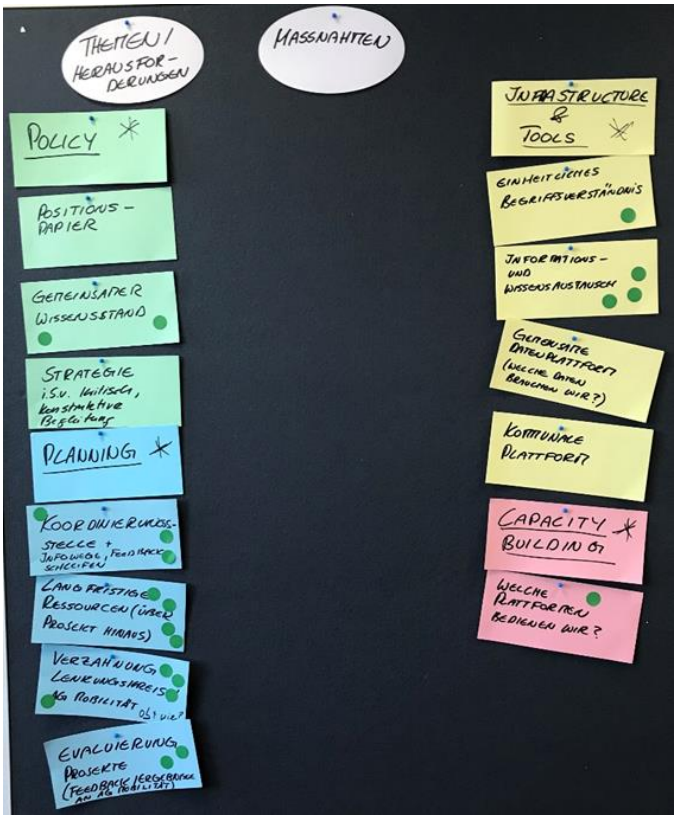
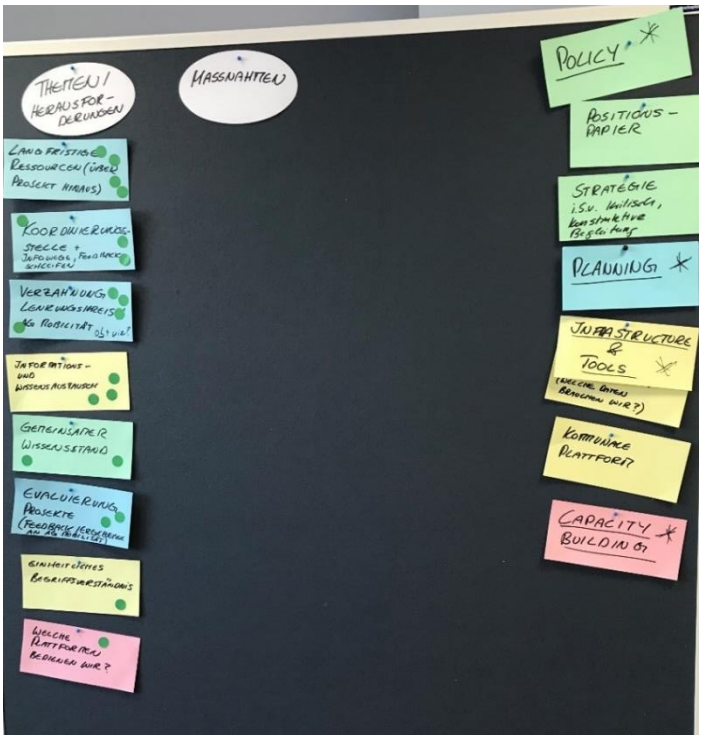
After the actual identification, the topics and challenges were assigned to the mobility aspects – policy, infrastructure, planning and capacity building.



The participants then prioritised the individual topics and fields of action by assigning green points to the individual index cards according to their importance.





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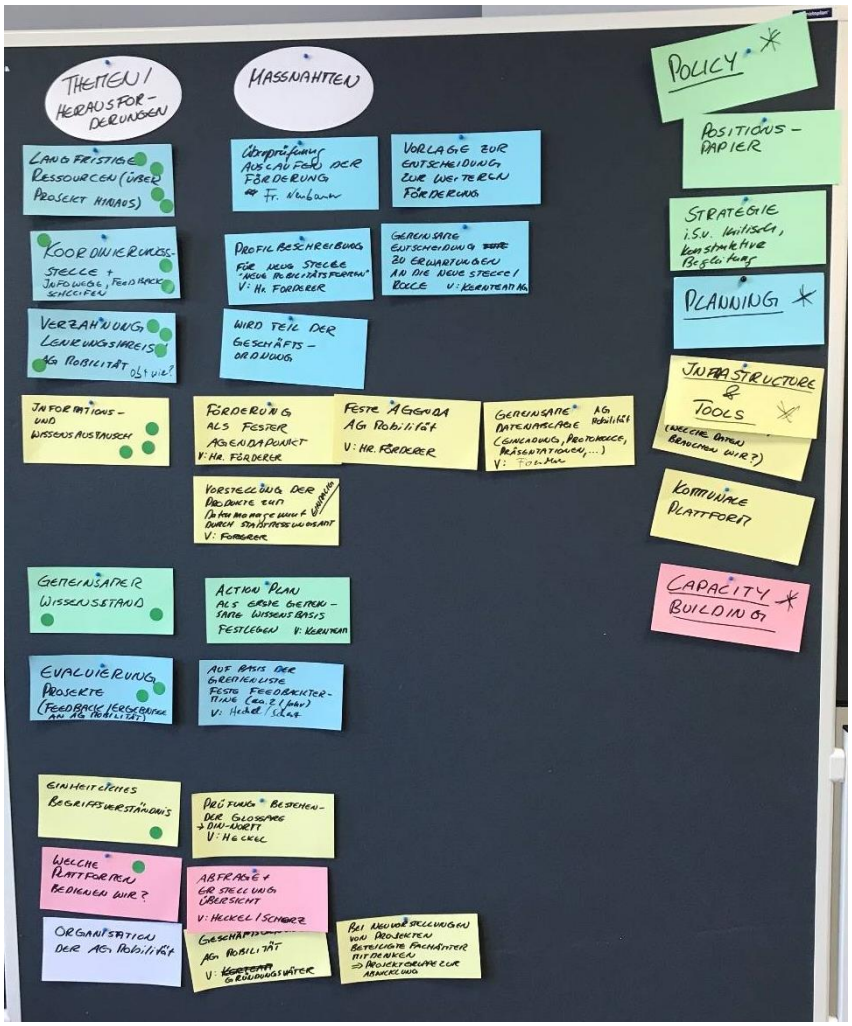
As a final and decisive step, measures and recommendations for action have been developed according to the prioritization. These includes, for example:

- The review of future funding possibilities to secure resources in the long term.
- The introduction and definition of a fixed agenda and common data storage to ensure the exchange of information and knowledge.
- Fixed feedback dates for the evaluation of projects.
- The review of existing glossaries to create a uniform understanding of valid terms.
- The establishment of rules of procedure for the AG Mobilität.



5.4 Participants

The participants of our Automation-ready Forum come from the following offices and institutions:

- Department for strategic planning and sustainable mobility,
- Department for public engineering (incl. road construction and traffic management infrastructure),
- Department for public affairs (incl. traffic management strategy and operations and traffic regulations),
- Department for urban planning (incl. transport planning),
- Department for business development,
- Public transport authority (SSB).
- University of Stuttgart

5.5 Results

Based on the interview the following leading aspects have been discussed and reflected on:

5.5.1 Policy: (embedding in an overall strategy, integration in SUMP)

- Common level of knowledge about the challenges, opportunities and
- Consensus on how to deal with CCAM in Stuttgart
- Embedding automation-readiness as specific topic of the sustainable urban mobility plan (strategy)

➔ The framework conditions of CCAM are still too uncertain for a coherent urban mobility strategy.

➔ Considering this, the position paper '*Nachhaltige Mobilität für alle'*, developed during the CoEXist project, is a stable basis for further steps up to automation-readiness and upcoming SUMPs.

5.5.2 Planning (with uncertainties and in a dynamic environment)

- High uncertainty of strategies and technical standards at industries / companies
- Political and social acceptance still unclear
- Conversion and development of urban infrastructure is a long-term process
- Administration has to work continuously and strategically on AV-Readiness

➔ Automation-readiness has to be understood as a continuous processing.

➔ Therefore, the continuity of resources (person power, knowledge, finances) is required.

5.5.3 Planning (integrated planning processes)

- Complexity of automation-readiness is a challenge for city administration as well as politics
- Various responsibilities in city administration have to be specified and to be coordinated with each other
- Needed decisions have to be prepared coordinated and properly

➔ Complexity makes high demands on the preparation of the topic for politics and society

➔ City administration needs experimental spaces to reduce uncertainties in decision making

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5.5.4 Planning (evaluation in planning process)

- Missing evaluation criteria for reflection on decisions taken
- Legitimation for transition from test to control mode

➔ Evaluation framework is missing to make decisions assessable
➔ Feedback-processes in AG Mobilität to be discussed

5.5.5 Infrastructure & tools (equipment with suitable technology and tools)

- Data and knowledge management
- Glossary required

➔ Uniform understanding of terms as challenge in terms of complexity of automation-readiness
➔ Data and knowledge management as challenge in terms of complexity of automation-readiness

5.5.6 Capacity building (know how)

- Know how in specific administration units is on a high level
- Know how concerning automation-readiness to be extended with proceeding
- Coordination of activities / strategies required

➔ Continuity and expansion of resources
➔ Transparency of resource availability in specific units

5.5.7 Capacity building (resources and coordination)

- Intensive exchange with other organisations / companies established (almost concerning technical aspects)
- Concerted exchange on a strategic level (e.g. legal framework, funding projects) necessary
- Strategic / coordinated approach for exchange of information required

➔ Centralised information / data management required
➔ Exchange with other organisations to be enlarged to other aspects of AV-Readiness
➔ Implementation of coordinator / overall management necessary

5.5.8 Conclusions and agreements

Following the derived results, specific agreements have been reached concerning the AG Mobilität. It could be confirmed, that the main role of the working group existentially is to enable a direct and binding exchange between the leading management of the specific administration units. Nevertheless, controlling and obligation have to be strengthened.

Existing AV-specific resources in administration units but also on a strategic coordination level have to be established continuously.

Finally, the developed position paper has been confirmed as basis for the Automation-ready Action Plan.

Within the interviews and in the end the workshop a self-assessment concerning the competences of the city administration has been conducted. Impressively, it could be shown that after the Automation-ready Forum the self-assessment achieved higher scores on all mobility aspects.

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5.6 Analysis and lessons learned

The Automation-ready Forum confirmed that the complexity of achieving automation-readiness, and how various competences and responsibilities in a municipal administration need to be addressed. Therefore, the activities of the specific units have to be linked and coordinated. A continuous exchange of expertise and activities has to be established. In addition, human and financial resources must be provided to guarantee a continuous work – concerning strategic, planning, administrative and technical aspects.

The basic prerequisite is that there is a common understanding of how a city wants to deal with AVs. Here it became obvious that the uncertainty about general conditions of AV are a challenge or an obstacle for a generalised strategic approach. In particular, the process is made more difficult by its complexity, which is currently hardly suitable for political decision-making. Nevertheless, the city can and will continue to promote concrete developments, e.g. within the framework of research project on traffic management technologies or data management. Following this strategy, important competencies are continuously developed; basic infrastructures are being established.

The Stuttgart strategy can be concluded as "By the time of defined standards the city of Stuttgart accompanies the developments on all levels - from legal frameworks to technical infrastructure - critically but constructively."

Based on the situation in Stuttgart the following lessons learned can be derived:

- Automation-readiness must be understood as a long-term process. This process is depending on various external settings, especially legal frameworks and company driven decisions on technical standards.
- A common understanding and reflection of all recently known chances and risks for AV driving in a city is needed as a basis for a knowledge-based proceeding.
- Concerning the complexity and dynamic of automation-readiness an overall working structure guarantees the necessary exchange of information, knowhow, or activities. Such a working structure enables a municipality to deal with dynamic settings and to work and agree on a strategic approach.
- Recently, pilot projects and test operations enable the successive development of competencies. At the same time, this approach addresses the framework conditions and standards still open (e.g. technical standards, legal framework).

Therefore, appropriate resources must be provided proactively, such as specific experts in various administrative units.

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6 Conclusions and recommendations

In the context of preparing the integration of CCAM into urban mobility while delivering on public goals like accessibility, inclusion and liveability, participation has been named as a key measure for Gothenburg, Helmond, Milton Keynes and Stuttgart. To urban mobility stakeholders, many of them not involved in the planning process for CCAM, the idea of a scaled-up scenario of AV integration into urban mobility might seem abstract. With this in mind, CoEXist cities hosted several 'automation-ready fora' to lead informed, less technical debates, using varying approaches and addressing different stakeholder groups, which resulted in diverse lessons learnt. These results have been incorporated in each city's 'automation-ready action plan' (see D4.6), but also provide valuable feedback on the analysis performed to assess automation-readiness and on the different stakeholder engagement strategies.

Gothenburg hosted a broad number of stakeholders from national, regional and local level, aiming to raise awareness and steer cooperation towards the deployment of CCAM. Through collaboration with a key actor at the national level, such as Drive Sweden, the event counted with to over 100 participants, including mobility professionals from industry, academy and public authorities. The importance of continued and deepened cooperation between different actors at all governance levels and areas of applications, to support a sustainable development of CAVs, was reinforced. With the goal to place inclusive political visions at forefront of policy development, participants were able to assess the city's automation-readiness and discuss priorities for future action, with a focus on user-centrism as driving force. Further, it was clarified that Gothenburg wants to continue to follow an adaptive and modular approach in planning for CCAM. For that, a comprehensive transformational model is required. Another aspect of Gothenburg's strategy is iterative demonstration/testing of technologies to gain expertise and experience step by step.

Following its strategy of being a smart mobility living lab, **Helmond** organised a forum with local public institutions and representatives, from policy makers to implementers, aiming to enhance coordination and knowledge exchange among the various research projects the municipality is involved in. One success of the event was that the format allowed for careful evaluation of past and current projects as well as for the definition of future projects' goals. In doing so, the stakeholders approved of maintaining the "learning-by-doing" attitude that enables the city to capture quick-wins along the way. It could further be clarified that future automation-readiness measures will emphasize a holistic perspective, including all transport modes, means of transportation and operational models. As a comparatively small municipality, Helmond has recognized the need to cooperate regionally, nationally and internationally in order to gain the expertise and know-how required. In the future, Helmond will host similar events to the automation-ready forum in order to enhance the valuable citizen and policy-maker participation. Further, by design of the quick-win approach, the process of planning for CCAM in Helmond will be characterized by a focus on C-ITS as new technologies in this field become market-ready earlier than AV-technology.

Milton Keynes decided to hold various workshops addressing specific citizen groups of key relevance to automated mobility, such as elderly and disabled citizens, young school students and the Milton Keynes Youth Parliament. Across the various groups of citizens, different engagement strategies were chosen. Exemplarily, some sessions included expert input from professional facilitators and others did not.

Generally, a balanced and non-biased approach was maintained

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and a key result across all sessions was that "minds are yet to be made up" when it comes to public perception towards CCAM: only about 25% of respondents had clear feelings of “excitement” or “threat” towards automated vehicles, while the vast majority had non-polarizing, undecided opinions. Some of the most positive opinions were articulated in sessions including neutrally communicated expert input. Generally, it could be concluded that inclusion of the elderly and younger generations like students is the only way to get a comprehensive picture of the citizen’s needs, which has shown to be a key strategic goal of Milton Keynes officials. Especially as benefits of CCAM are likely to start showing as the technology matures and not from the beginning on, understanding of user needs will define the strategy towards becoming automation-ready.

Stuttgart engaged representatives of the different organisational units of the city’s administration and local public transport operators with the strategic objectives of steering cooperation and analysing institutional adjustment towards automation-readiness. In an approach to tackle the organizational complexity of the number of institutional stakeholders, Stuttgart sees the coordination of activities, competences and responsibilities as a major step towards becoming automation-ready. Furthermore, an exchange of knowledge and expertise helps to lead to common understanding of "how a city wants to deal with AVs". Although the field’s complexity and uncertainty pose challenges for a generalised strategic approach to support decision making, the city assessed the resources, knowledge and structural framework required to enable proactive planning and address all aspects of CCAM “critically but constructively”. Stuttgart’s automation-ready forum has again clarified that becoming automation-ready is a very long-term process, with inherent complexity and dynamism. Therefore, clear working structures that foster exchange and a common understanding serving as a basis for “knowledge-based proceeding” will be established. Finally, Stuttgart will also expand test operations to help building competencies and addressing framework conditions such as technical and regulatory standards.

Taking the multitude of findings into account, one can summarize that user-centrism, knowledge exchange platforms, citizen inclusion, and organisation of working structures are the leading domains of automation-ready fora by the four CoEXist cities. The experiences present various formats and strategies to host such cooperative and participatory events, adjusted to the goals and priorities of each city. In this way, cities planning to conduct similar automation-ready fora, should consider local conditions, their needs, policy goals and target audience, to benefit from CoEXist lessons learnt and optimise results. However, it can be concluded that each of the examples given shows that a participatory approach is of significant value for any automation-ready action plan.

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