CoEXist

Final Conference

Enabling "*Automation-Ready*" Transport Planning

#H2020CoEXist
@H2020_CoEXist

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 723201-2

CoEXist Virtual Final Conference - Part 1:
Automation-ready tools and impact assessment findings

Wednesday 25 March 2020

CET (UTC+01:00) — ***Moderator:*** *Siegfried Rupprecht, Rupprecht Consult*

13:45 Registration and technical support

14:00 **Welcome**, Siegfried Rupprecht, *Rupprecht Consult* & INEA (tbc)

Introduction to CoEXist, *Daniel Franco, Rupprecht Consult*

CoEXist tools

Automation-ready transport modelling and infrastructure assessment

14:10 **Overview of the CoEXist impact assessment approach and automation-ready transport (infrastructure) assessment tool**, *Johan Olstam, VTI*

14:25 Polls - Q&A

14:30 **Automation-ready modelling tools: microscopic traffic flow simulation**, *Charlotte Fléchon, PTV Group*

14:45 Polls - Q&A

14:50 **Automation-ready modelling tools: macroscopic travel demand simulation**, *Markus Friedrich, University of Stuttgart*

15:05 Polls - Q&A

15.10 **Toward the Development of Analysis, Modelling, and Simulation (AMS) Tools for Connected and Automated Vehicles (CAVs),** Rachel James, USDOT Federal Highway Administration (FHWA)

15:25 Polls - Q&A

15:30 *Break*

YESTERDAY

CoEXist impact assessment findings

Potential impact of vehicle automation in four cities, across eight scenarios:

15:45 **Helmond (NL): (i) multimodal signalised intersection and (ii) highway-urban road transition**, *Frank van den Bosch, city of Helmond*

16:00 Polls - Q&A

16:05 **Gothenburg (SE): (i) shared space; (ii) accessibility during long-term roadworks**, *Iman Pereira & Chengxi Liu, VTI*

16:20 Polls - Q&A

16:25 **Milton Keynes (UK): (i) drop off and waiting for passengers; (ii) priority at roundabouts**, *John Miles, University of Cambridge*

16:40 Polls - Q&A

16:45 **Stuttgart (DE): (i) network level travel time & mode choice; (ii) ridesharing**, *Jörg Sonnleitner, University of Stuttgart*

17:00 Polls – Q&A

17:05 **Lessons learnt & conclusions,** *Wolfgang Backhaus, Rupprecht Consult*

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CoEXist Virtual Final Conference - Part 2:
What next for Cities and CAVs?

Workshop: What next for cities and CAVs?

moderated by Siegfried Rupprecht, Rupprecht Consult

14:00 ***Welcome,*** *Siegfried Rupprecht*

14:05 **Automation-ready framework for city authorities**,
Wolfgang Backhaus, Rupprecht Consult

14:20 **CoEXist – Roadmap towards automation-ready cities**
Brian Matthews, Milton Keynes city council
Susanne Scherz, city of Stuttgart
Mikael Ivari, city of Gothenburg
Frank van den Bosch, city of Helmond

15 min per speaker (including 3min Q&A)

15:20 *Poll & self-assessment of automation-readiness*

15:30 **Interactive group discussion**
Key issues for cities, including change and expectations management, future proofing sustainable mobility policy, future proofing infrastructure investment and citizens engagement citizens.

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16:00 End of the session

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The webinar team

Moderator:
Siegfried Rupprecht

Project Coordinator:
Wolfgang Backhaus

Poll manager:
Marie Rupprecht

Question manager:
Daniel Franco

Technology manager:
Wolfram Buchta

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Poll question

Did you attend Part 1 of the CoEXist final conference yesterday?

- Yes
- No
- No, but I would like to watch the recording/review slides

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Question

What is the key feature of automation-readiness in your view?

Fill in your answer into your question box

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Capacity building for road authorities for the transition phase of co-existence of conventional and connected and automated vehicles

Wolfgang Backhaus, Rupprecht Consult

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What is CoEXist?

- **Programme:** EU H2020-ART05
- **Duration:** May 2017 – April 2020
- **Strategic Aim:**

  To bridge the gap between automated vehicles (AVs) technology and transportation and infrastructure planning, by strengthening the capacities of urban road authorities and cities to plan for the effective deployment of AVs

Enable mobility planning towards "automation-readiness", defined as:
The capability of making structured and informed decisions about the deployment of Connected and Automated Vehicles

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CoEXist approach

Automation-Ready Transport Modelling

Automation-Ready Road Infrastructure

Automation-Ready Road Authorities

www.h2020-coexist.eu

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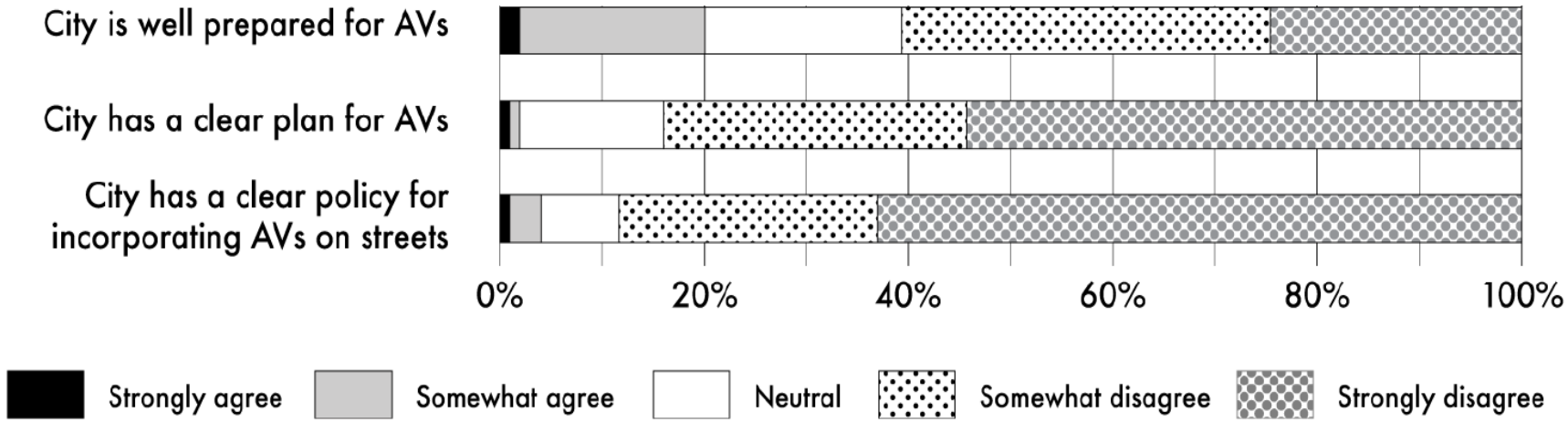
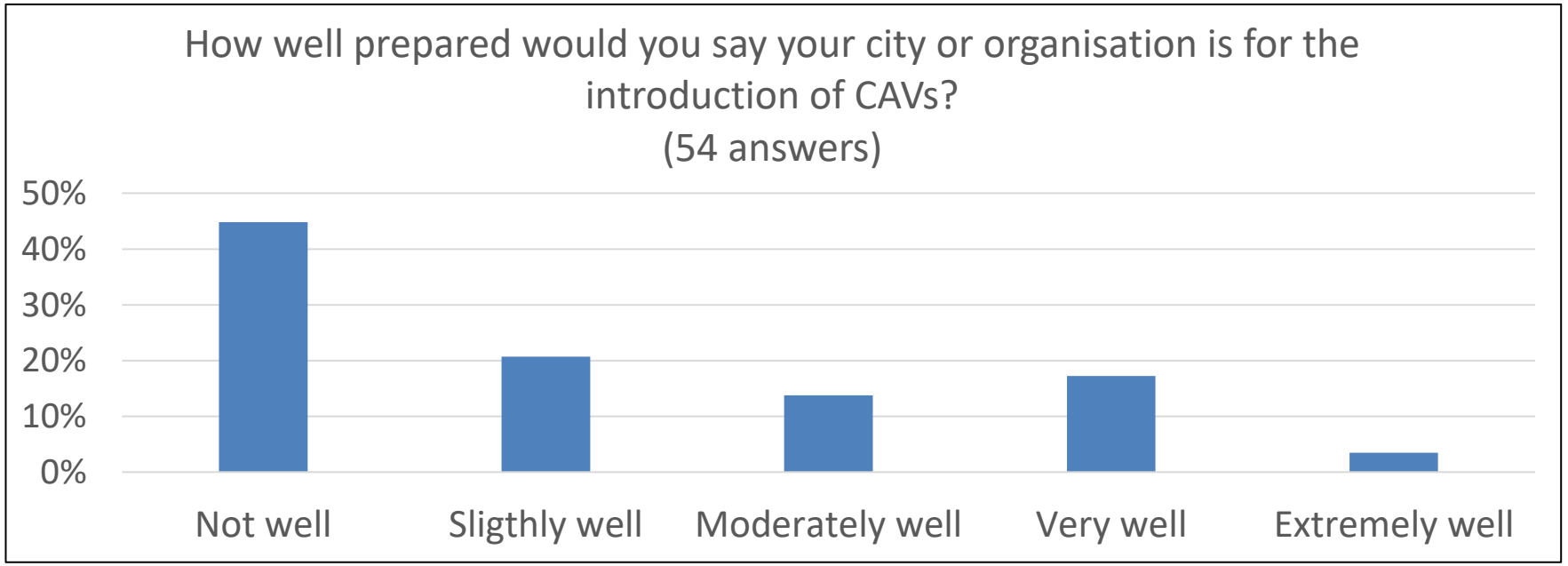
Need for guidance

Freemark et al. (2019):
Are cities prepared for autonomous vehicles? Planning for technological change by U.S. local governments
(120 US Cities)



CoEXist (2019):
Automation-ready Online Survey
(EU mobility stakeholders)

https://www.h2020-coexist.eu/survey



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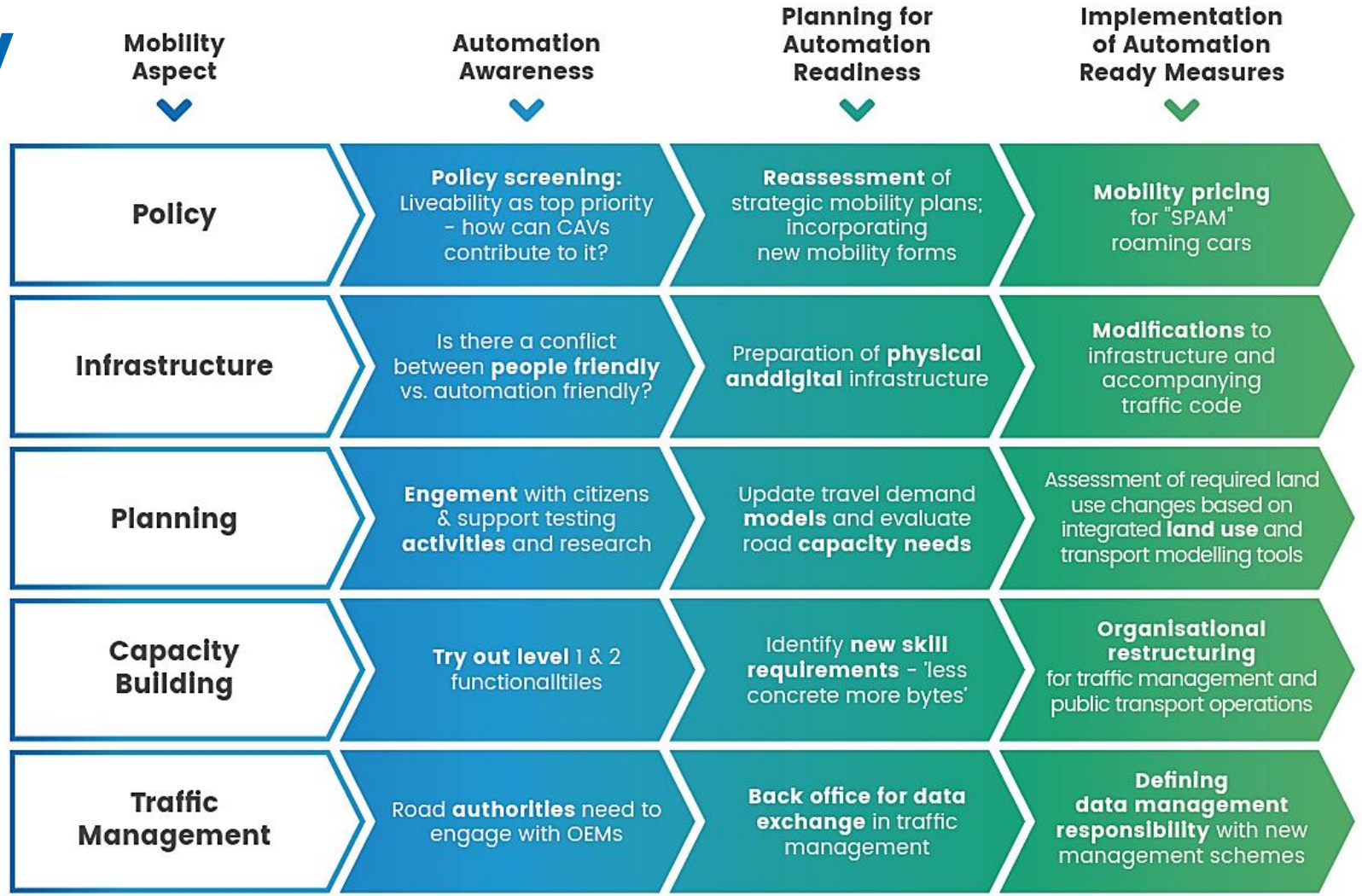
Automation-Ready framework

"Automation-readiness"
The capability of making structured and informed decisions about the deployment of CAVs

Reduce uncertainties through:

- Guidance on technology, analysis methods, impacts and measures
- Clear-headed and informed decisions about automation
- Automation FAQ for cities
- https://www.h2020-coexist.eu/resources/



Overview of the phases towards automation-readiness, with examples of measures and relevant questions to guide the analysis

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Automation-Re framework

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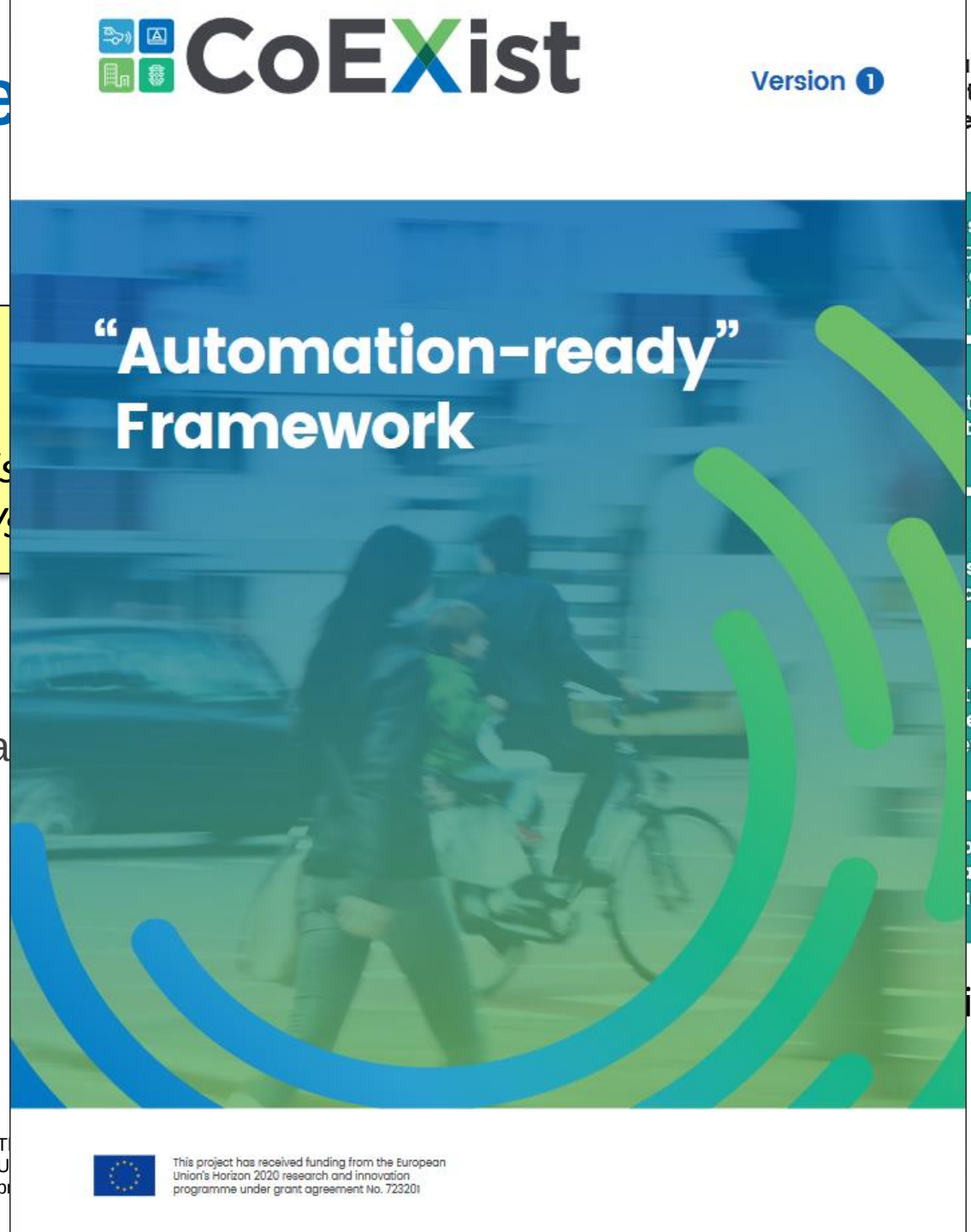

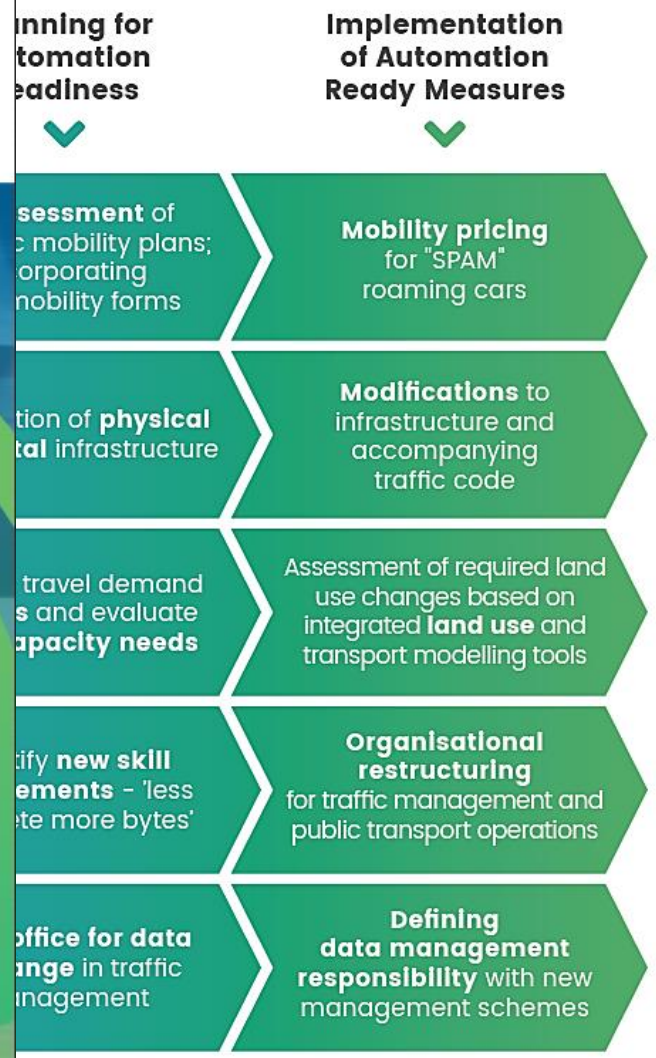

ion-readiness, with
ions to guide the analysis

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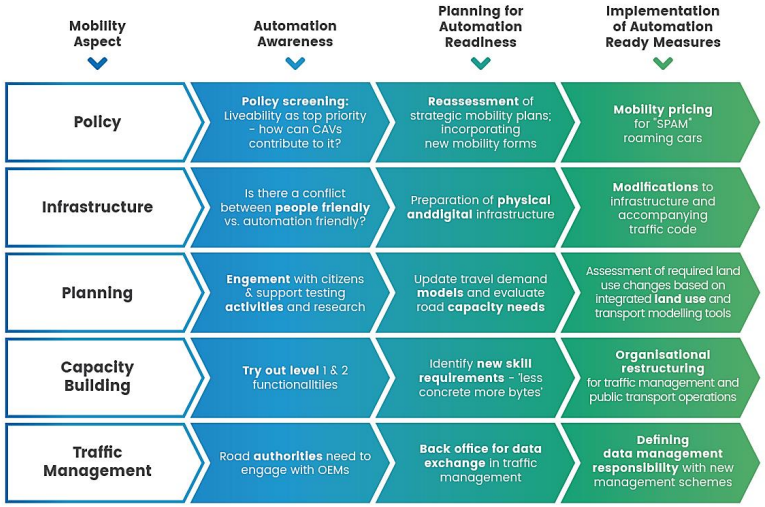
Phase 1: Automation awareness creation – Automation readiness self-assessment as basis



- Self-assessment
- Capacity development needs?
- How to communicate effectively with citizen's, stakeholders, between public sectors/institutions?
- Resources and tools required?
- Knowledge/data gaps?

Preparation and analysis

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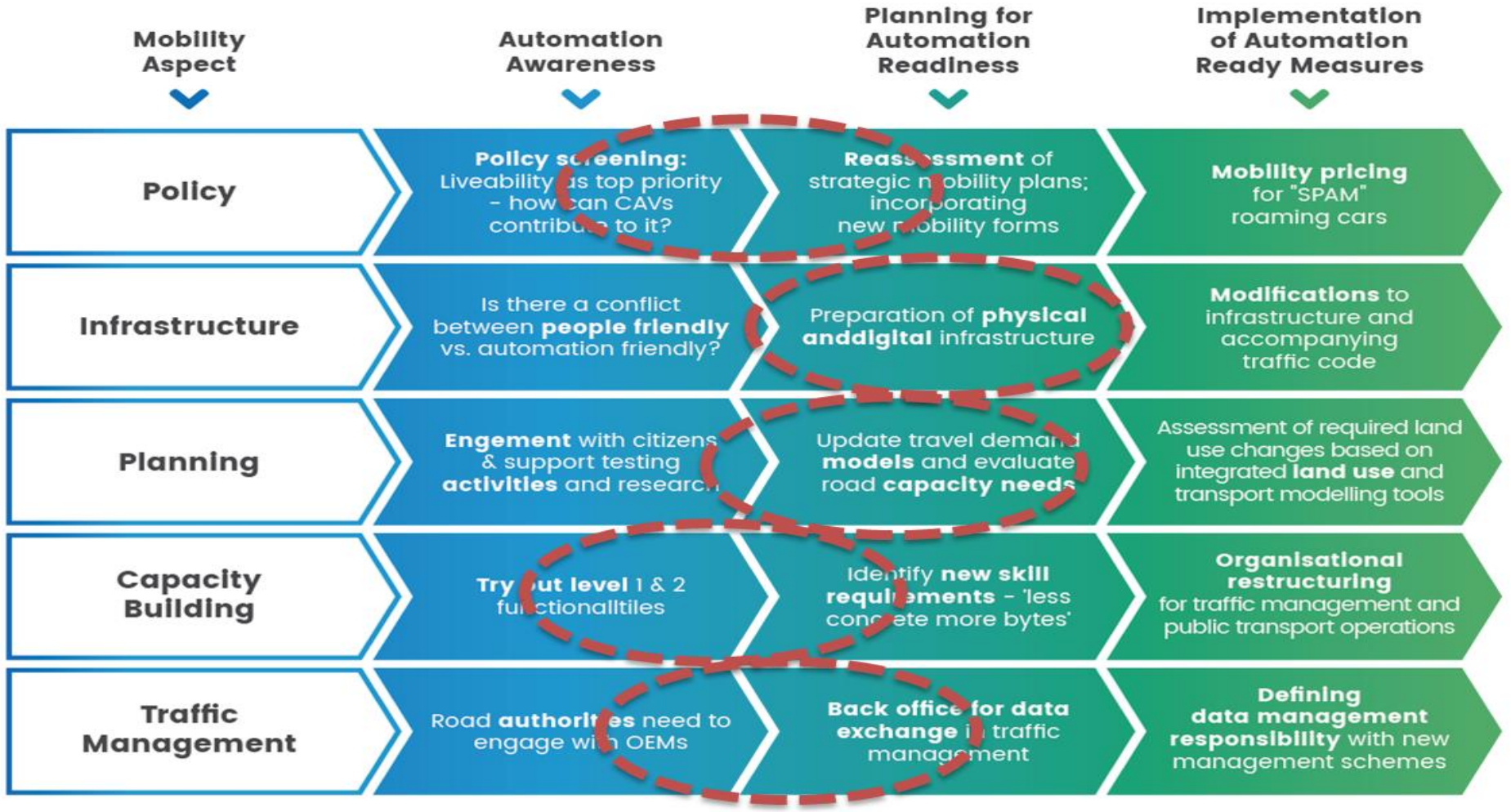
CoEXist automation-ready forum - Gothenburg



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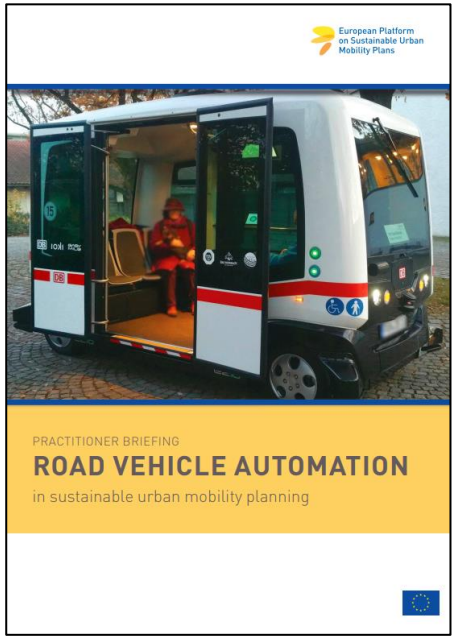
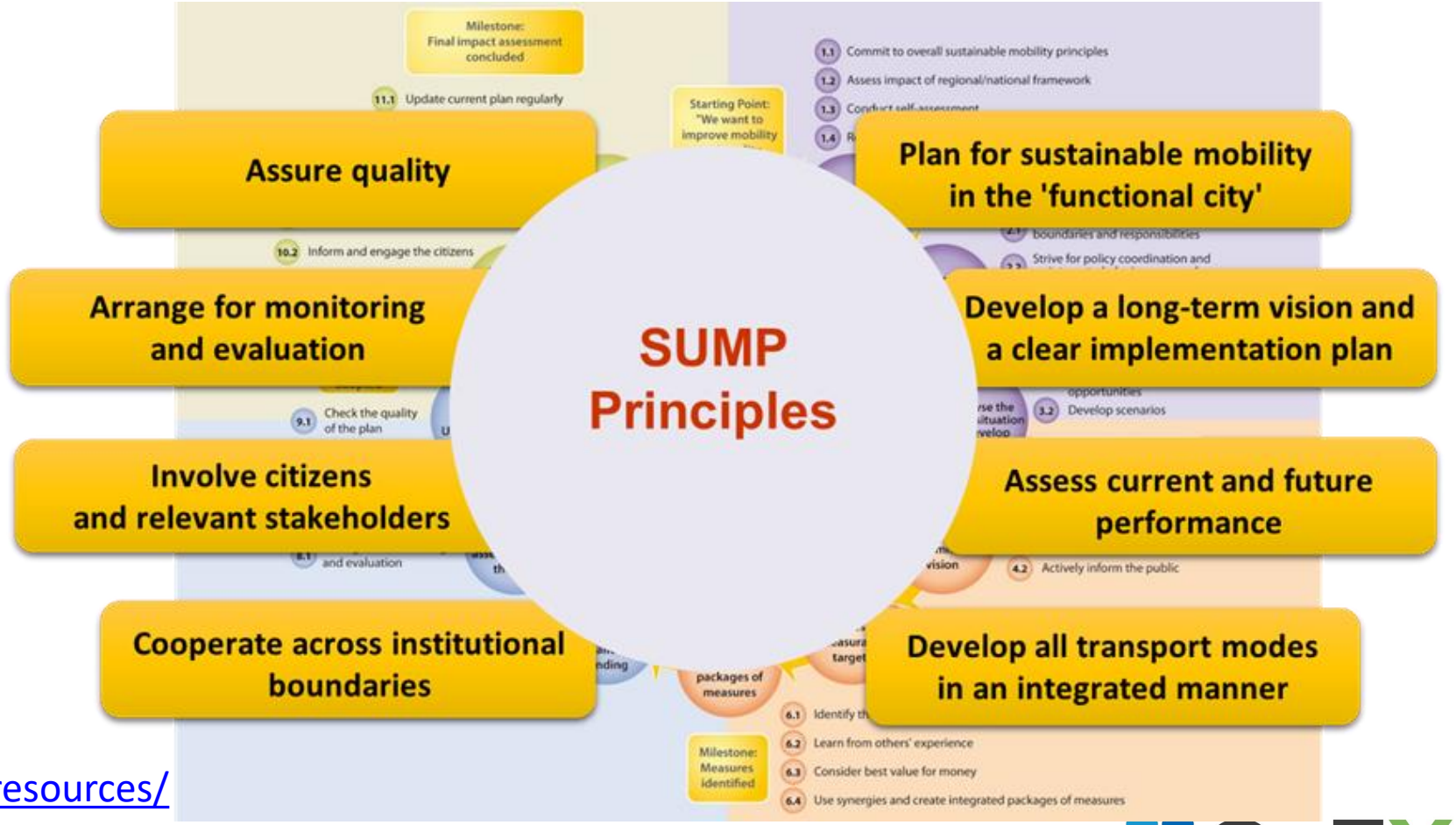
SUMP 2.0 Practitioner's Briefing

How to plan with uncertainties?





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References

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- CoEXist (2019). CoEXist Automation-Ready survey – preliminary results available. https://www.h2020-coexist.eu/coexist-automation-ready-survey-first-results-available/

- Freemark et al. (2019). Are cities prepared for autonomous vehicles? Planning for technological change by U.S. local governments. Retrieved from https://mobility.mit.edu/sites/default/files/Are%20cities%20prepared%20for%20autonomous%20vehicles_0.pdf

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Poll question

What are main obstacles for effective stakeholder cooperation and public participation when planning for Cooperative Connected and Automated Mobility (CCAM)?

- Low level of awareness about the CCAM
- Lack of political will
- Lack of interest in participation from citizens/stakeholders
- Communicating technical complexity of the topic (to citizens/authorities)
- Other (specify in the question box)

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Understanding the Role of CAM in an Growing City

Brian Matthews
Milton Keynes Council

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Milton Keynes

Content

- Policy Framework in UK and MK
- City Priorities and Challenges
- Approach - Urban Laboratory / Testbed
- Use Cases
- Working with Citizens
- Lessons Learned
- Next Steps

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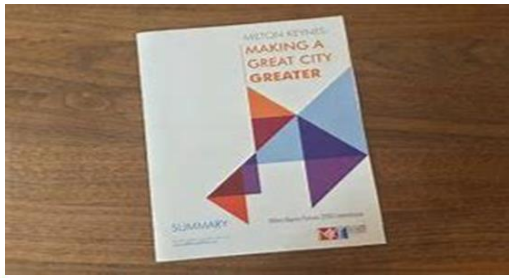
Policy Framework in UK and MK



Mobility Strategy for Milton Keynes 2018-2036 (LTP4)

Mobility for All

Strategy for First Last Mile Travel

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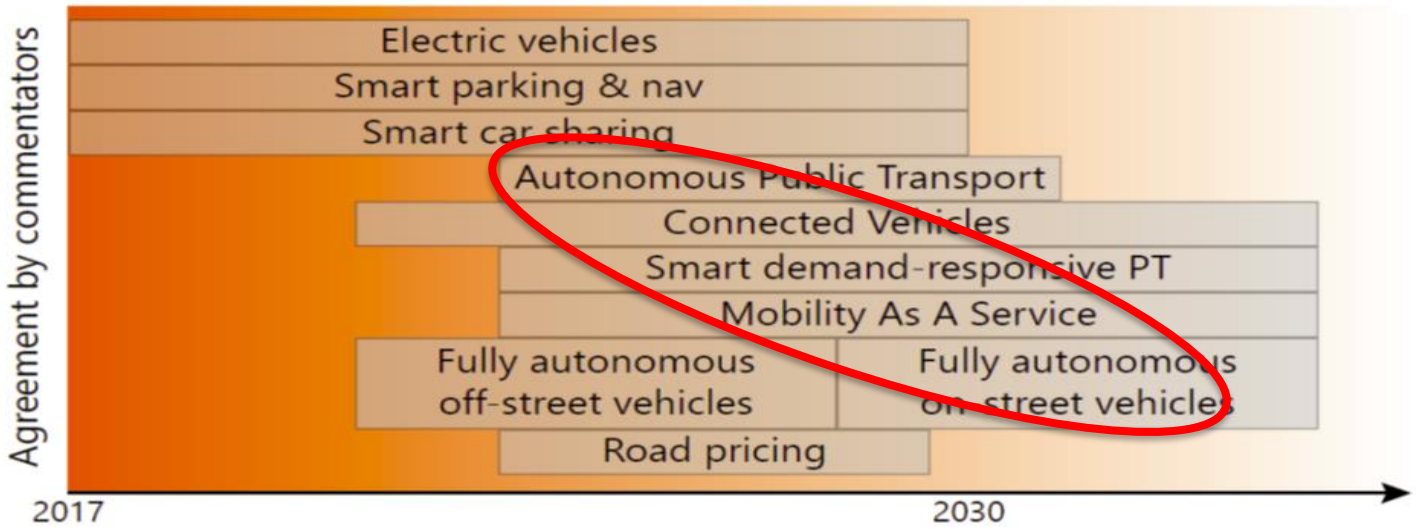
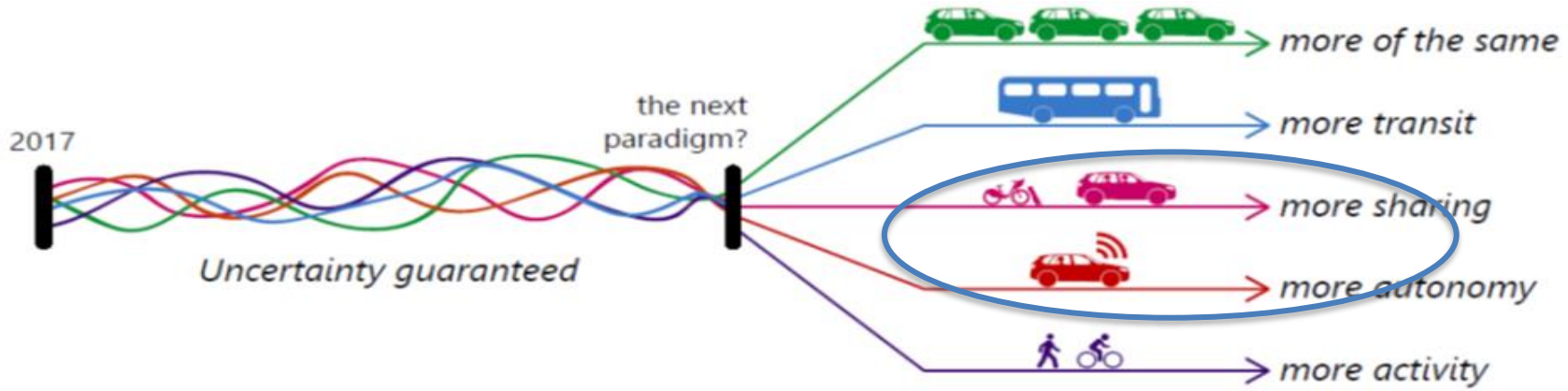
Priorities & Challenges



Priorities - Driving policy

- Safety
- Capacity
- Mobility for all
- Productivity



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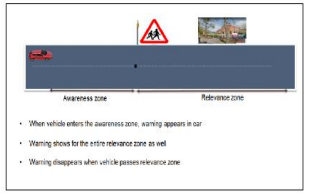
Approach – Urban Laboratory

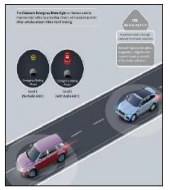
Green Light Speed Advisory

Collaborative Parking

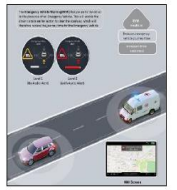
In-Vehicle Signage



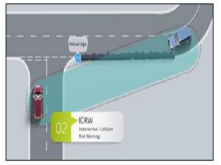
Electronic Emergency Brake Light



Emergency Vehicle Warning



Intersection Collision Warning



UKAutodrive

Autonomous & Connected

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Underpinning Research

Research programme established to supplement trials

Based on ‘answering’ important city focussed questions

Covering (prioritised)

1. Public Attitudes
2. Business Cases
3. Technology Development
4. Infrastructure Requirements

UNIVERSITY OF CAMBRIDGE

THALES

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City Use Cases: Co-Exist

Real propositions - which develops scalable approach to testing

Can a modelling approach be developed?

- **City Centre: Drop off and Pick – Up**

How can you use CAV capability to unlock city centre road space: Can it deliver efficiencies without causing gridlock

- **Uncontrolled Junctions**

How can sub urban roads support CAVs – What infrastructure changes – if any is required.

Support Project (Park AV) looking at business case

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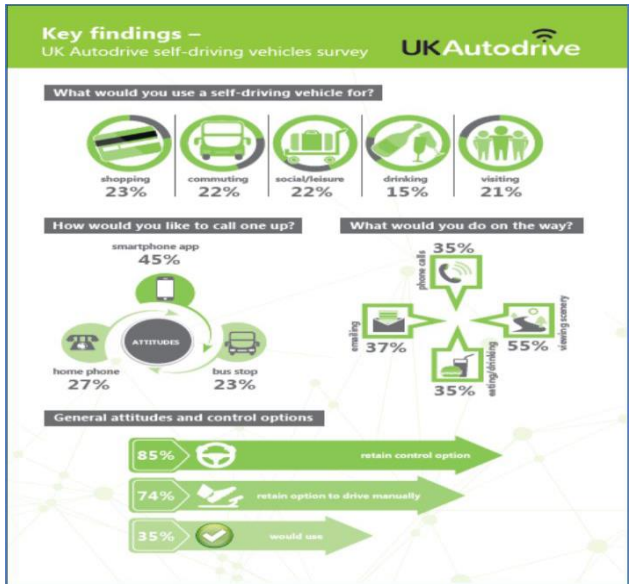
Working with Citizens



MILTON KEYNES FUTURES 2050

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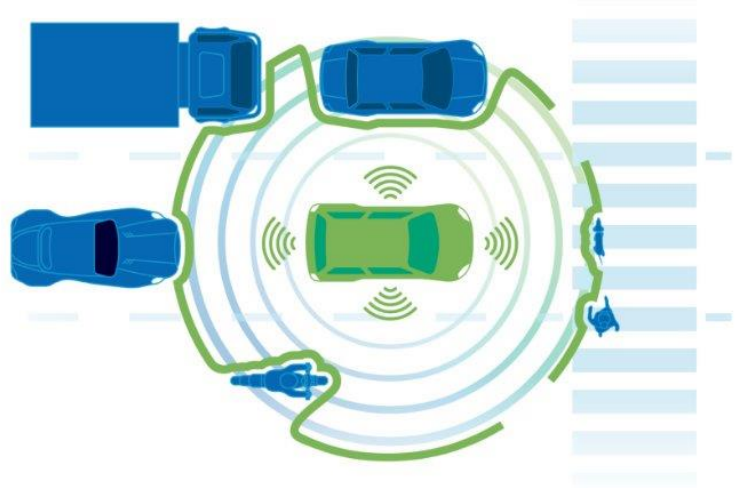
Self-driving vehicles

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

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Lessons Learned

Collaboration

Key to developing solutions, and business case

Set the agenda for trials based on city requirements

- Build consensus around supporting solutions to problems

It won't always work

- Innovation is risky, but failure can point to better solutions

Keep stakeholders informed

- Talk to citizens to build support and the solution design

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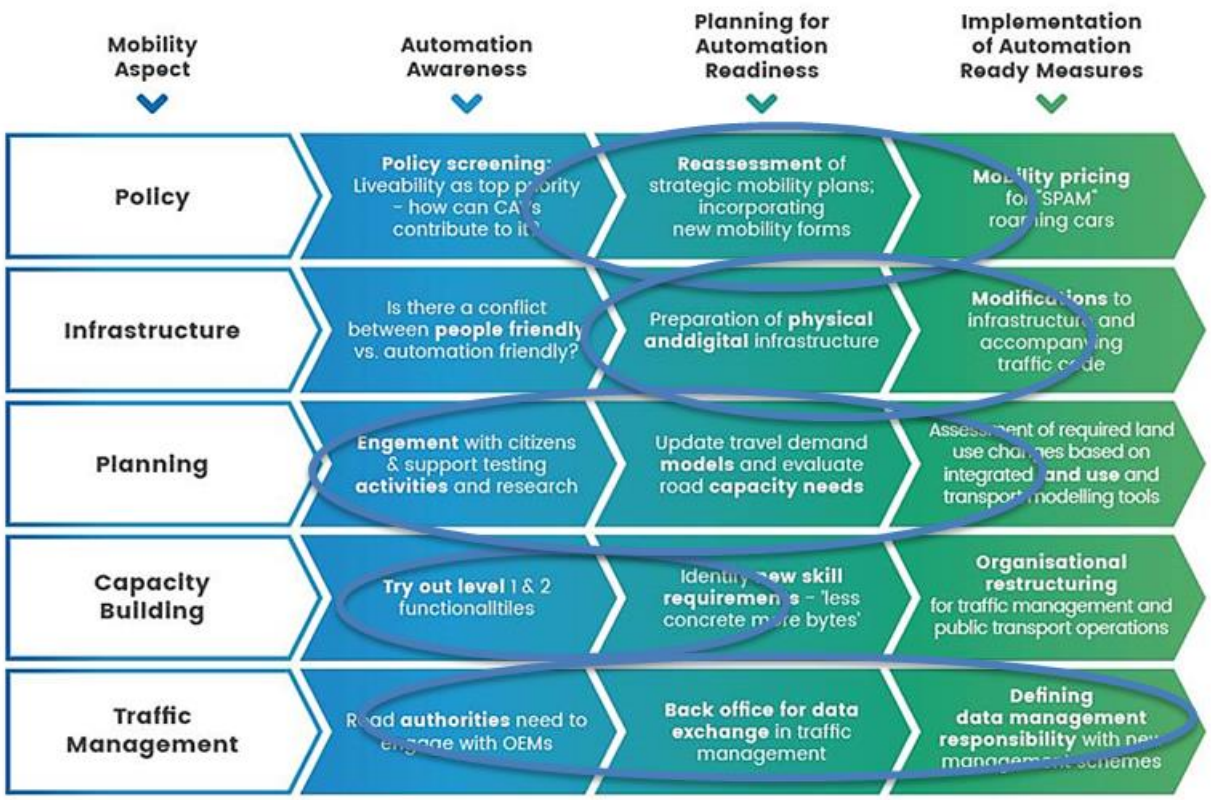
Next Steps
Self Assessment – Consolidate and plan ahead?



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Brian Matthews
Brian.Matthews@Milton-Keynes.Gov.UK

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Automation Readiness in the city of Stuttgart

Susanne Scherz, City of Stuttgart
Head of Road Traffic Authority

STUTTGART

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Welcome to Stuttgart

- State Capital of Baden Württemberg
- Good accessibility to highways,
  rail network, airport and water route

Some figures:

- inhabitants: 610,000
- workplaces: 470,000
- commuters: 260,000 p.d.
- incoming/outgoing vehicles 800,000 p.d.
- main roads: 500 km
- Centre of a polycentric region with 2.7 mio inhabitants,
  1 mio workplaces and 160,000 companies

Source: City of Stuttgart

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Starting point: Transport strategies

- SUMP (VEK 2030 + action plan), Green city master plan, Transport Development Plan, …
- Confirmed city goals “less emissions, congestion, stress” as well as the importance attractiveness for pedestrians and cyclists and liveable urban spaces
- Issue of AV addressed partly at present

⇨ How will AV change the traffic situation and urban spaces?

⇨ Will AV make transport in Stuttgart more efficient and more sustainable?

⇨ Is Stuttgart prepared for AV?

⇨ What is Stuttgart’s strategy?

The issue here is not whether we should be for or against the car. Instead it is a question of how we can construct and organise an efficiently networked mobility in our city. This is also and especially in the best interest of our car industry.

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Challenge: Transport planning

- **Reduction traffic volume / improvement modal-split**
  impacts of AV might be counter-productive (⇨ use case 7)
- **Traffic flow / capacities**
  impact not clear (⇨ use case 7)
- **PuT / ridepooling / ridehailing**
  chances for PuT providers but also stress scenario because of ride-hailing providers in level 5 scenario (⇨ use case 8)
- **Travel demand management**
  parking management might fail in future – alternatives?
- **Public space / road design**
  requirements unclear, e.g. areas for drop-on/-off zones
- **Public space / road design** will network for AV require road design not suitable to pedestrians, cyclists or attractive and liveable urban spaces

Source: City of Stuttgart

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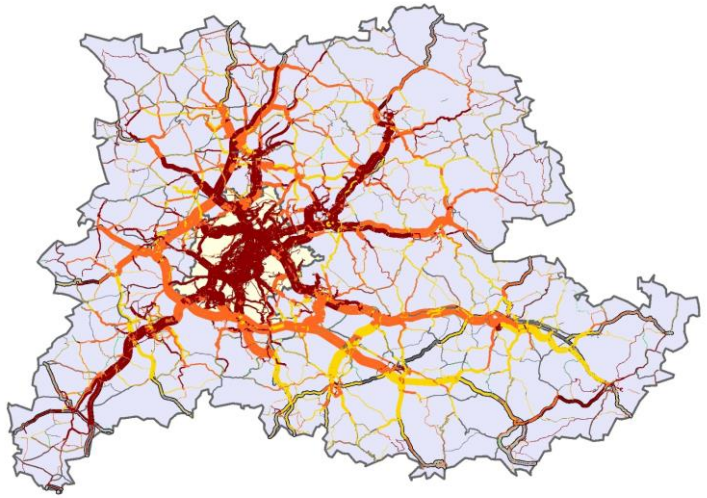
Findings: Transport planning

- According to use case 7 and 8 AV are a **challenge for urban transport planning** considering the goals ‘sustainable transport’ and ‘urban design’ in terms of an European City
- Advantages and practicability will **vary** heavily depending on **local conditions** (further research for use case 7)
- Although, there is a **high uncertainty** about impacts and requirements, AV have to be considered in upcoming **mobility plans**
- AV and their effects must be taken into account in **future legislative and standards procedures**. This applies e.g. to the planned liberalization of the Passenger Transport Act from the perspective of a **strong and efficient PuT in terms of services of general interest** (see use case 8 scenarios).

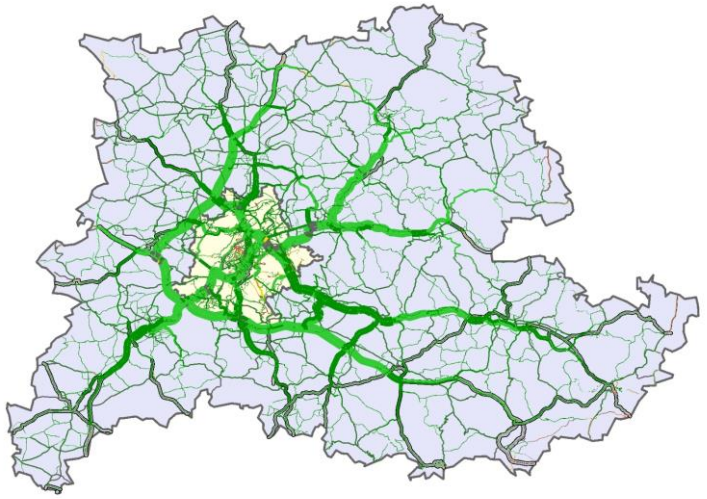
more car traffic



changes compared to base case

- ≤ 75
- ≤ 95
- ≤ 105
- ≤ 120
- ≤ 140
- > 140

less car traffic



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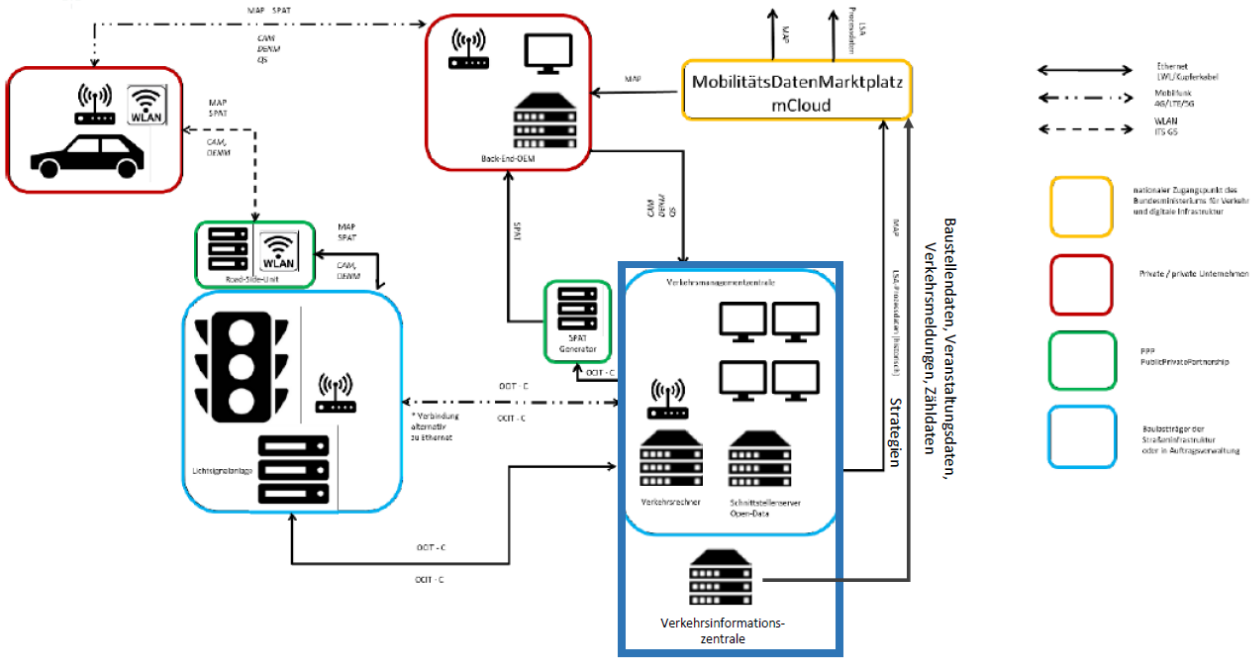
Challenge: Traffic management & control

- **Infrastructure / Car2X communication**

  which investments for infrastructure and systems are needed and reasonable with regard to company-driven and ongoing technical developments

- **Traffic management (strategies and operation)**

  cooperation strategies and interfaces for communication of strategies to be established and implemented



Source: OCA e.V.

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CoEXist

Findings: Traffic management & control

- **Infrastructure / systems** open numerous **possibilities** for traffic flow optimization, road safety assistance and traffic management, not only for car transport but also for PuT, security services, up to all modes.
- Stuttgart will pursue the strategy of "forward-looking market observation" and advance the **expansion of infrastructure / systems in accordance with the state of the art**.
- In the field of **traffic management**, the Integrated traffic control centre (**IVLZ**), will continue to play a **leading role** in the development of **strategies and standards**.
- Sufficient **resources** for investment, operation, maintenance and personnel have to be ensured.

Source: City of Stuttgart, Thomas Hörner

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 723201-2

CoEXist

Challenge: Automation-Readiness

Dept. Strategic planning and sustainable mobility	Strategic planning, Project management
Dept. Urban and transport planning	Urban and Transport planning, Traffic demand analysis, Road design, Planning drop on-/-off areas
Road construction authority	Road building and maintenance, Road markings and signs, Traffic lights, Data exchange
Integrated traffic management centre (IVLZ)	Traffic situation analysis, Planning of traffic management strategies, Traffic management operations, Real time traffic information, Data exchange
Road traffic authority	Traffic regulations, Traffic safety, Construction site management, Permit for passenger transport, Traffic surveillance
Dept. Business development	Contact for business and research, Project acquisitions, Project management broadband development
Dept. e-governement	Mobile networks coverage
Environmental Agency	Weather and environment data and forecast
Public transport authority (SSB)	Public transport planning and operation, Real time traffic data
…	…

- AV-Readiness is of **strategic importance** for Stuttgart in terms of transport planning and transport management strategies and as a business and research location.
- AV-Readiness addresses **various municipal organisations** with **specific responsibilities and competencies.**
- Technical, planning and regulatory requirements and frameworks are developing at **different speeds**.
- AV Readiness is of **varying importance** for the different departments and their daily work.
- AV-Readiness is a **complex process**.

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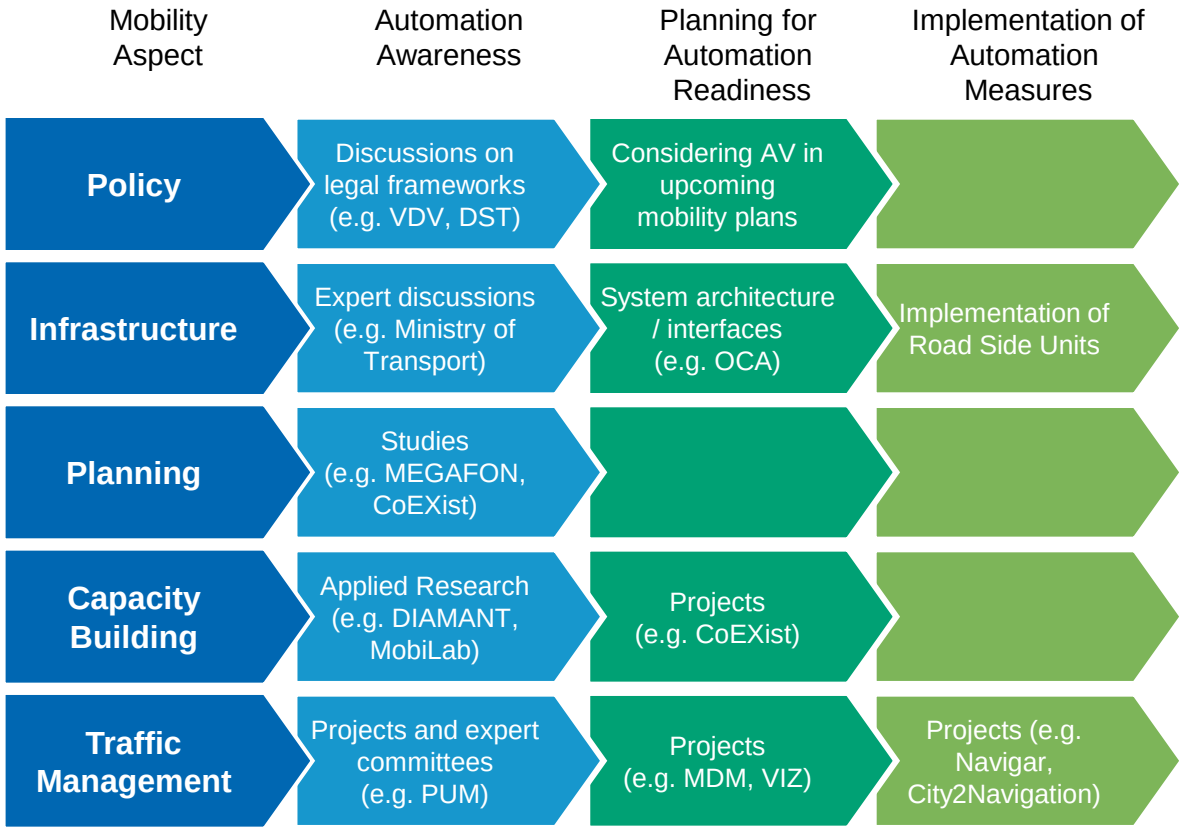
Findings: Automation-Readiness

- **Projects at various levels** are already being implemented in the fields of **infrastructure / car2x communication** and **traffic management** as well as in **PuT**. The area of transport planning is not yet affected in the course of daily work, as the framework conditions are too unclear.
- An **overall coordination** and an **implemented knowledge transfer** are essential due to the complexity and variety of tasks and competencies.
- An common **strategy** and **roadmap** for AV-Readiness is **needed**.



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Automation-ready Action Plan Stuttgart

- 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
- 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**.

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Automation-ready Action Plan Stuttgart

- 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.
- Currently, **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 and because of future tasks, appropriate **resources** must be provided proactively, such as specific experts in various administrative units.

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Susanne Scherz
susanne.scherz@stuttgart.de

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CoEXist Virtual Final Conference - Part 2:
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Workshop: What next for cities and CAVs?

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CoEXist

A journey towards automation readiness: past, present and future approach

Mikael Ivari, City of Gothenburg

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Six years ago

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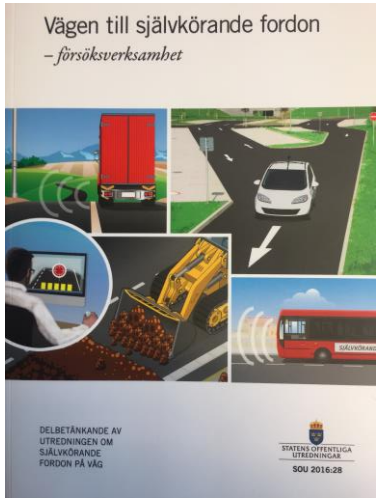
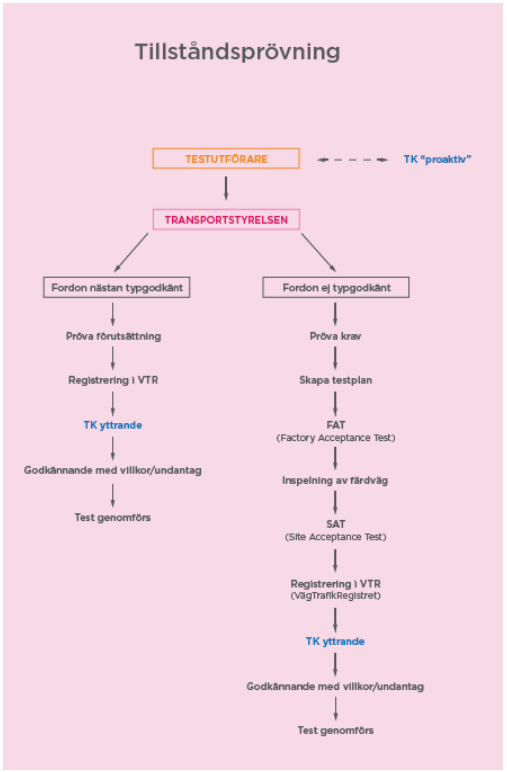
Policy





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Planning

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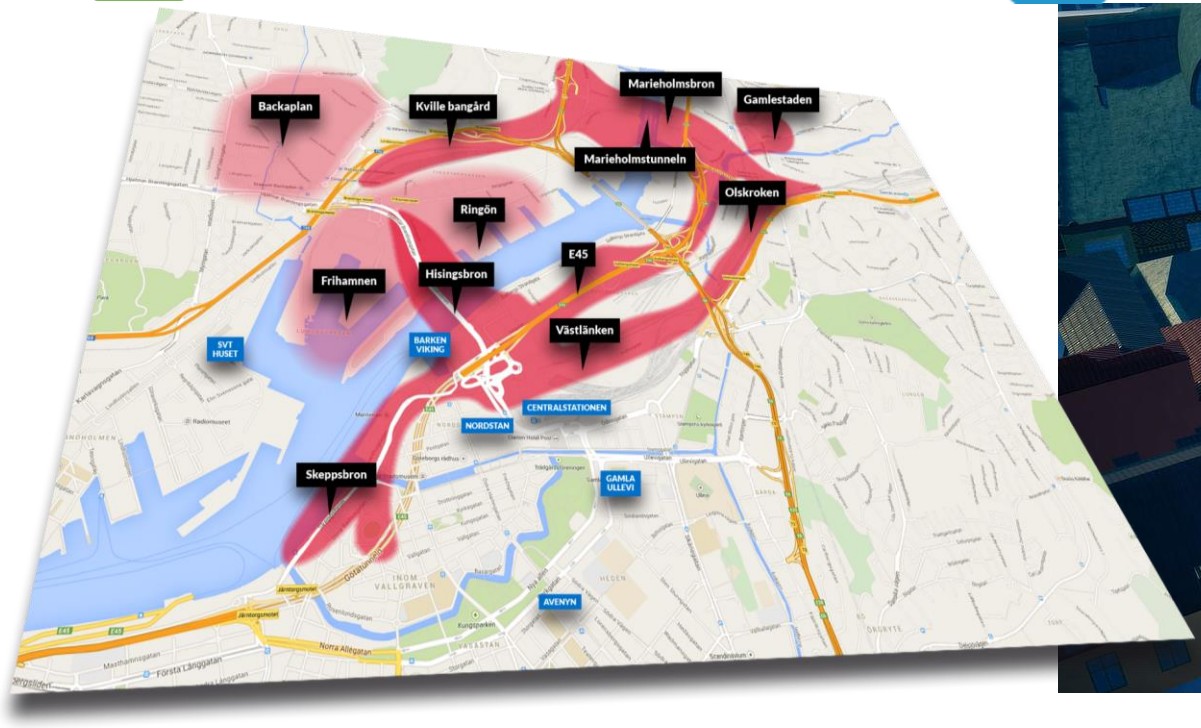
Gothenburg Use Cases



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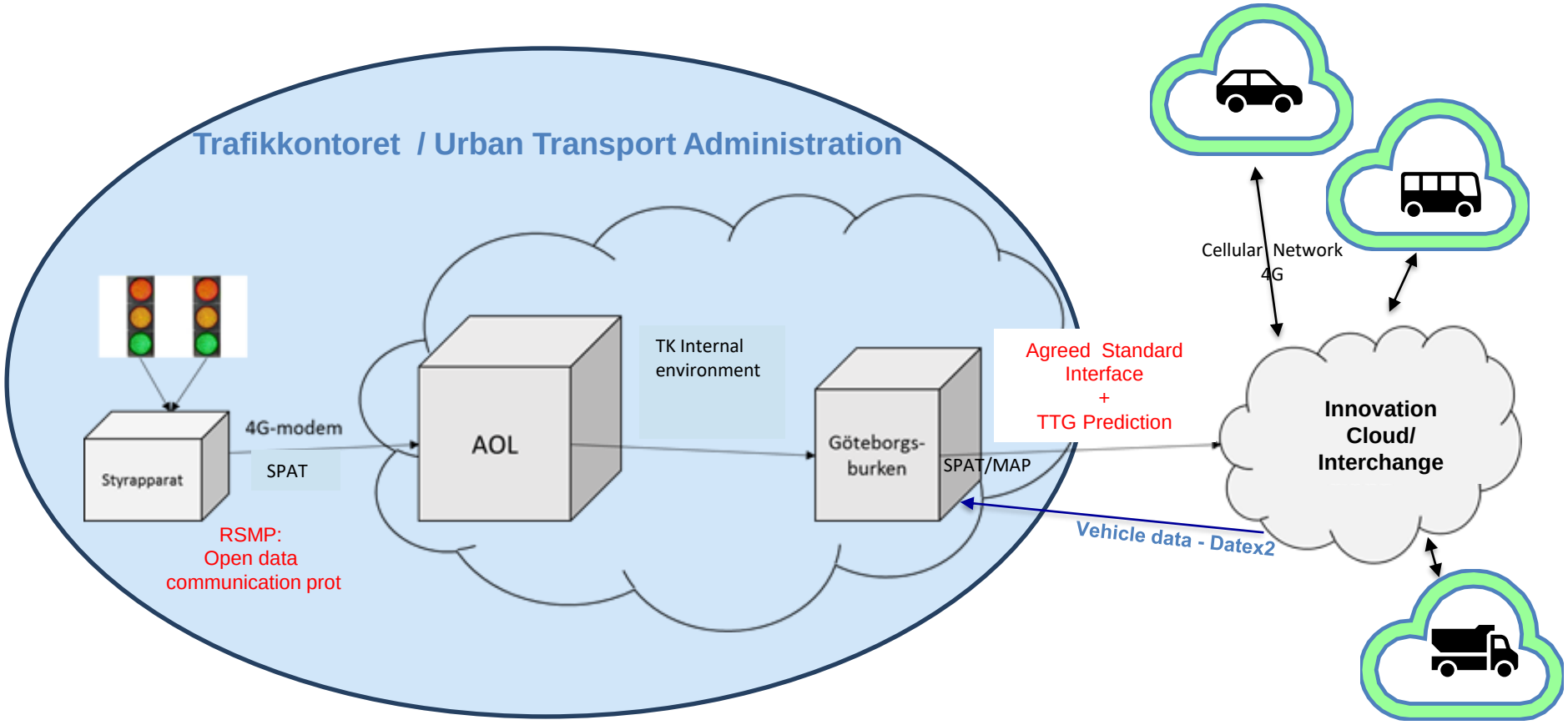
(Physical) and Digital Infrastructure



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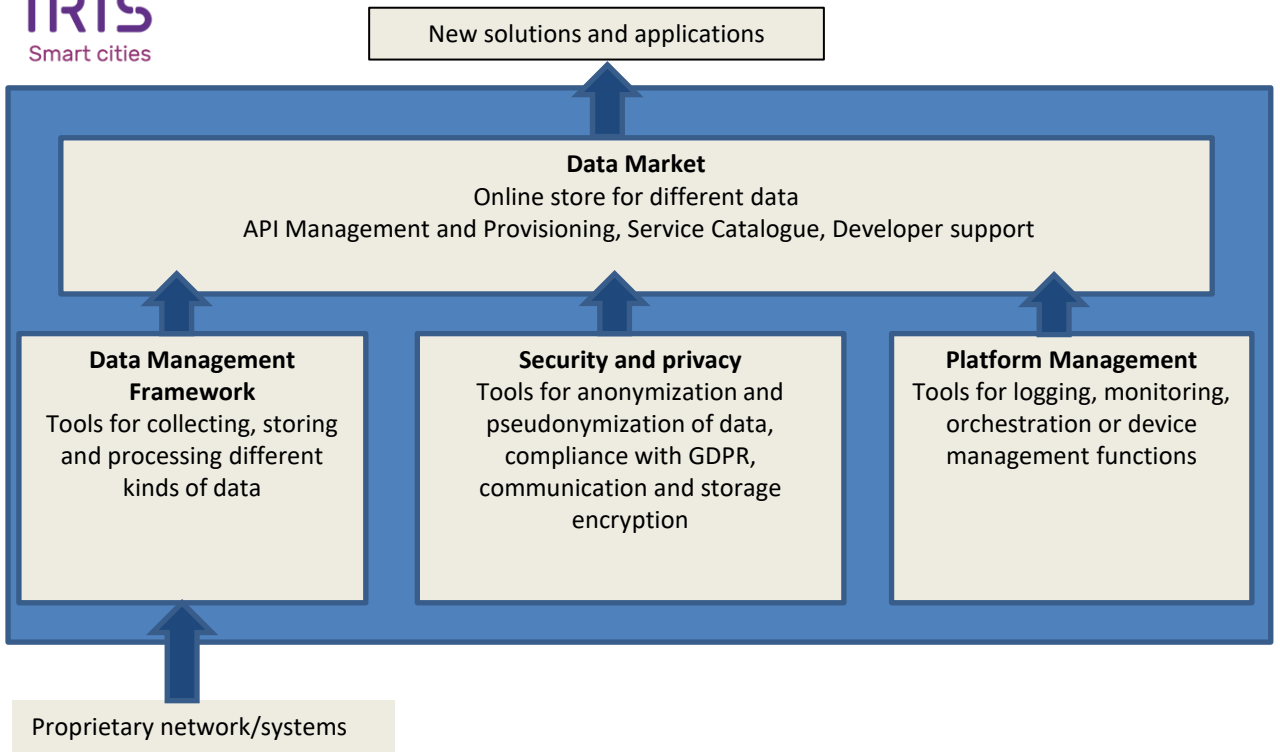
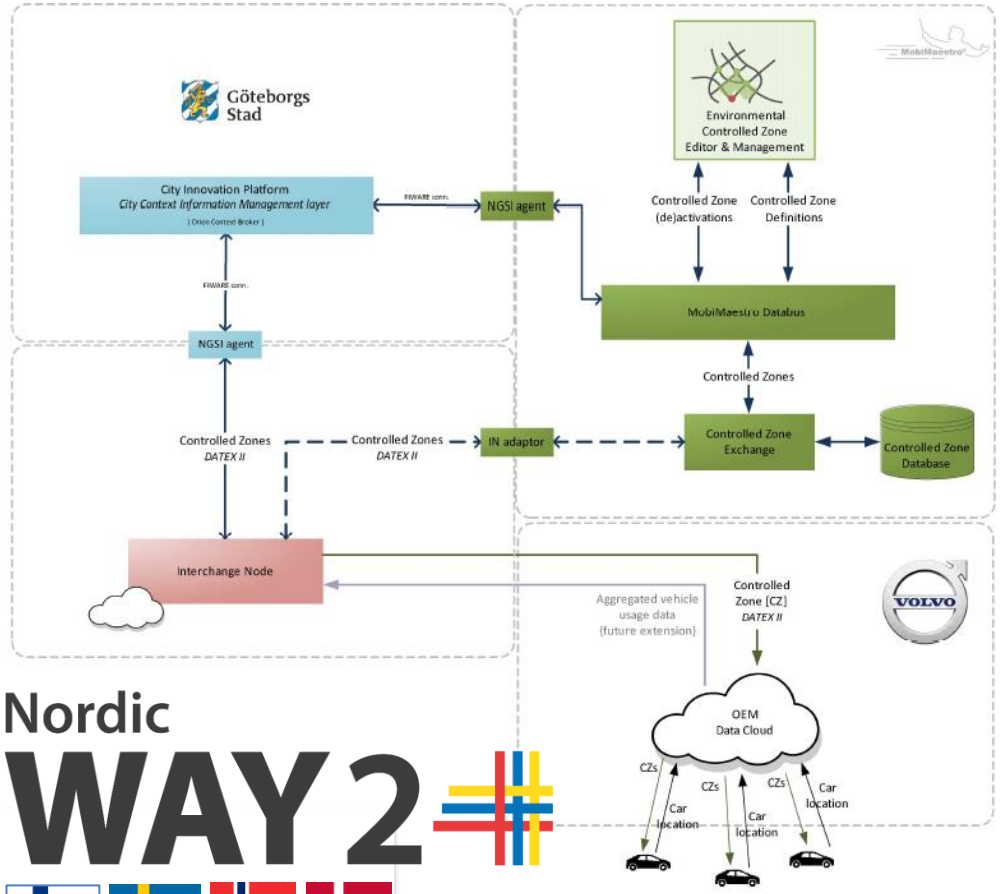
Capacity building

IRIS Smart cities





Nordic WAY 2

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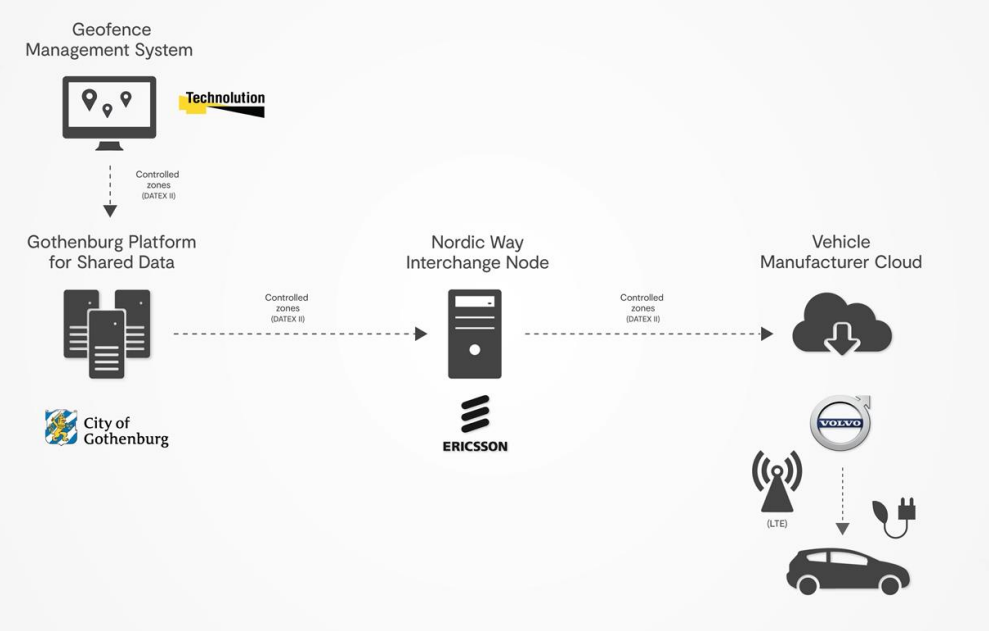
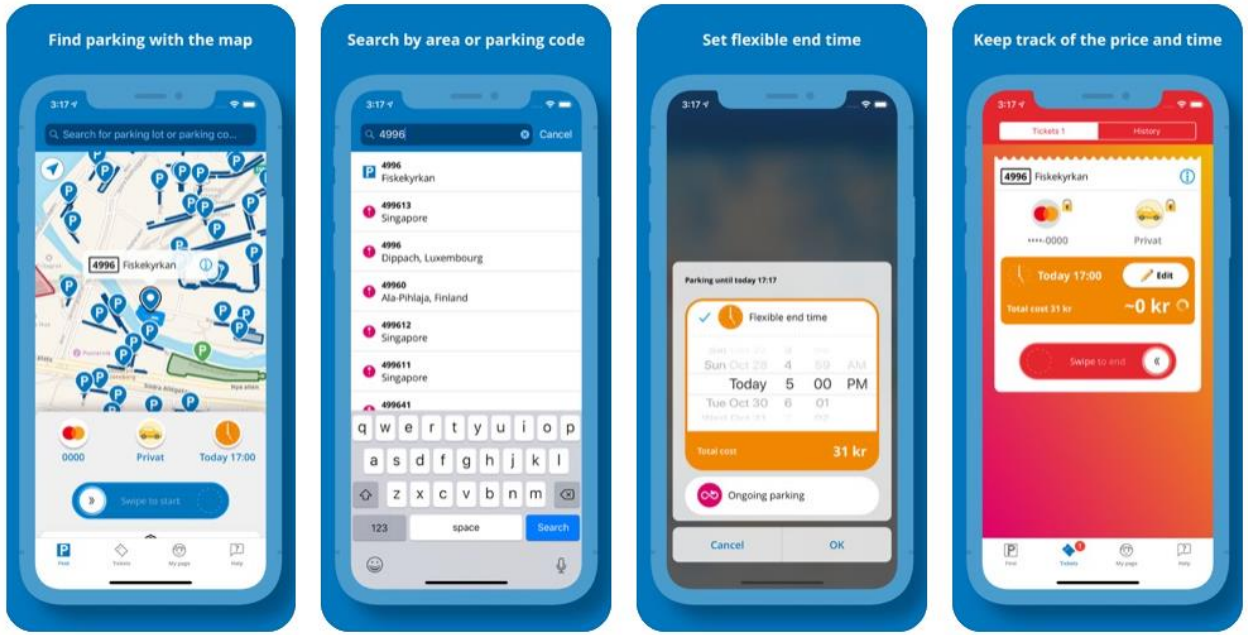
Traffic Management





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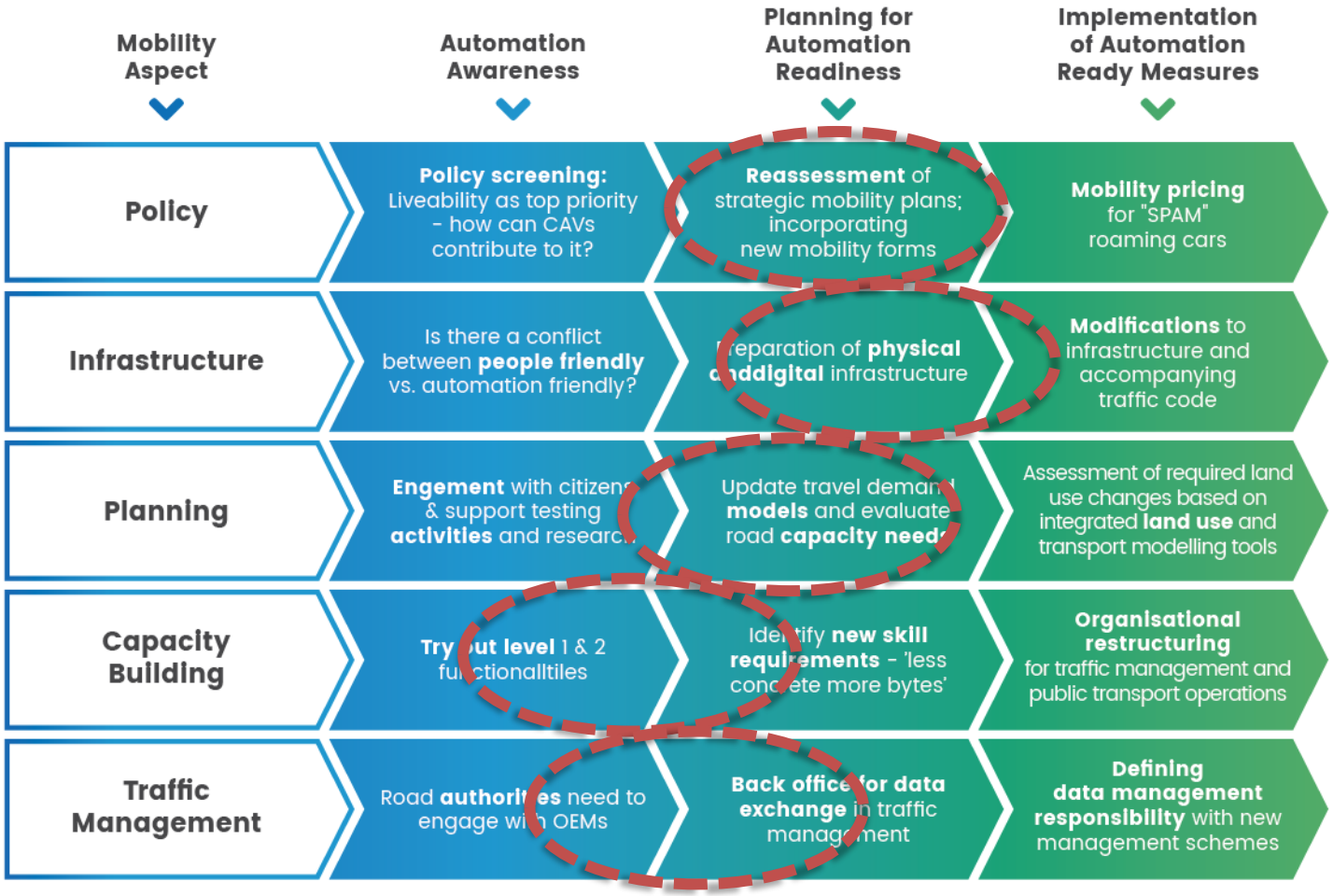
Is Gothenburg Automation-ready?



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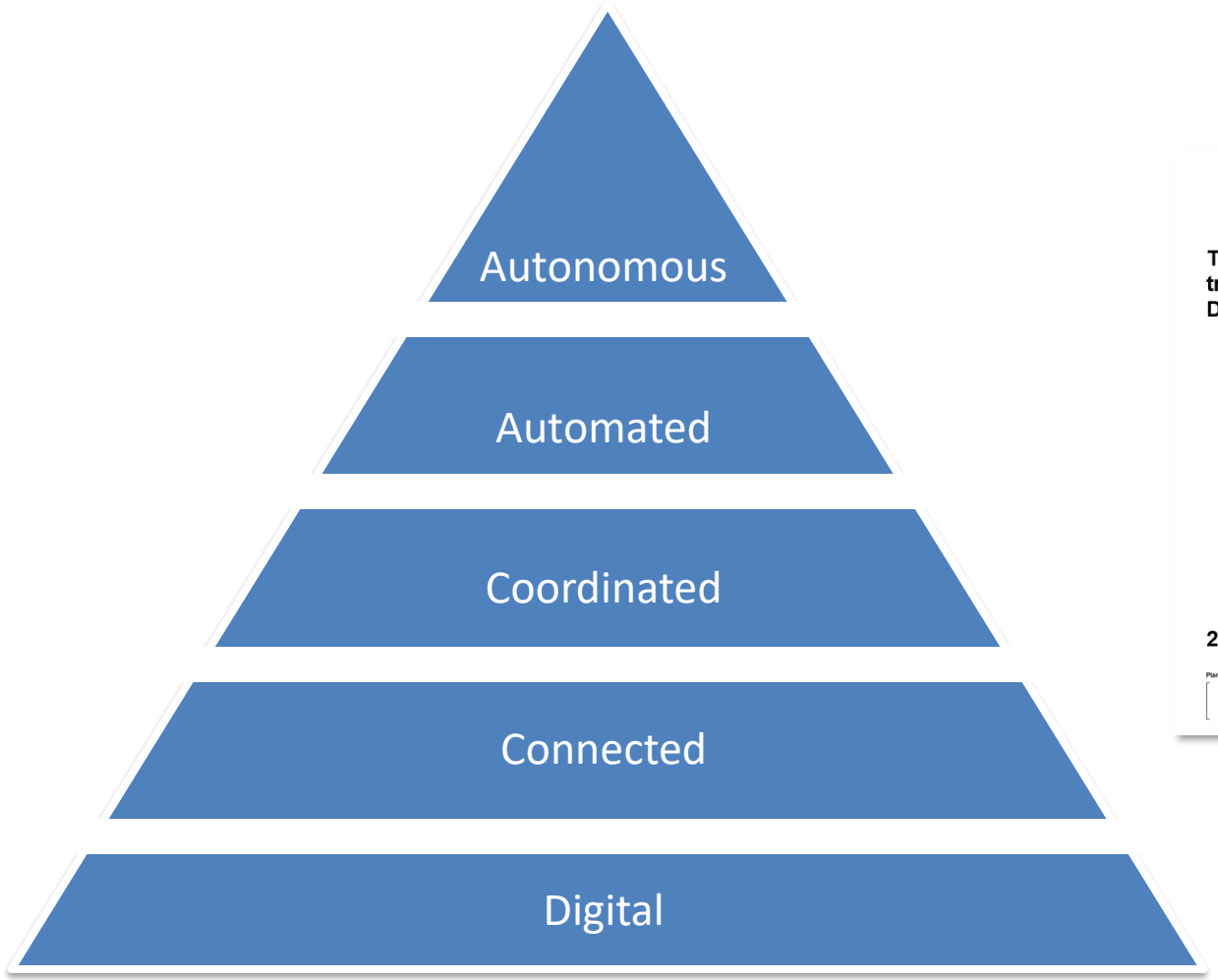
Our strategic approach




Göteborgs Stad

Trafiknämndens strategiska plan för trafikinnovation inom Elektrifiering, Digitalisering och Automatisering

2020 – 2023

Planerande styrande dokument

Vision
Program
► Plan

- Develop digital infrastructure
- Develop road authority services based on vehicle and/or 3rd party data
- Connect and prepare signal controllers for C-ITS services
- Facilitate CAV testing
- Assess and prepare for new CAV services

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City of Gothenburg

mikael.ivari@trafikkontoret.goteborg.se

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Automation-Ready Helmond

Frank van den Bosch, City of Helmond

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Current Helmond Policy

Helmond mobile 2005-2015

Optimizing the use of existing infrastructure

Helmond Connected 2016-2025

Urban traffic solutions technology driven: ITS

Active support of smart mobility pilots and showcases

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Today

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Test Road A270

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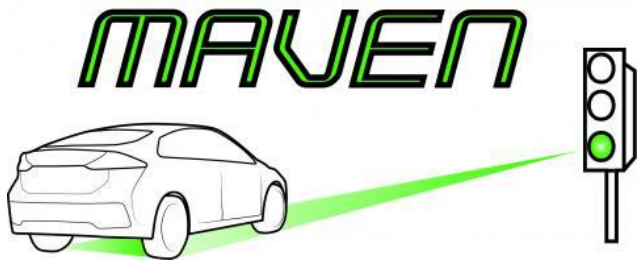
Participation in European Projects

FABULOS

AUTOPILOT

C-MOBILE

CoEXist



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Learning by doing

Triple Helix is very important

Helmond together with the business community and educational institutions invests to maintain and expand its head position in Smart Mobility.

Sustainable and Smart Mobility solutions

New Employment and Economically reinforcement

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Automation-ready Forum

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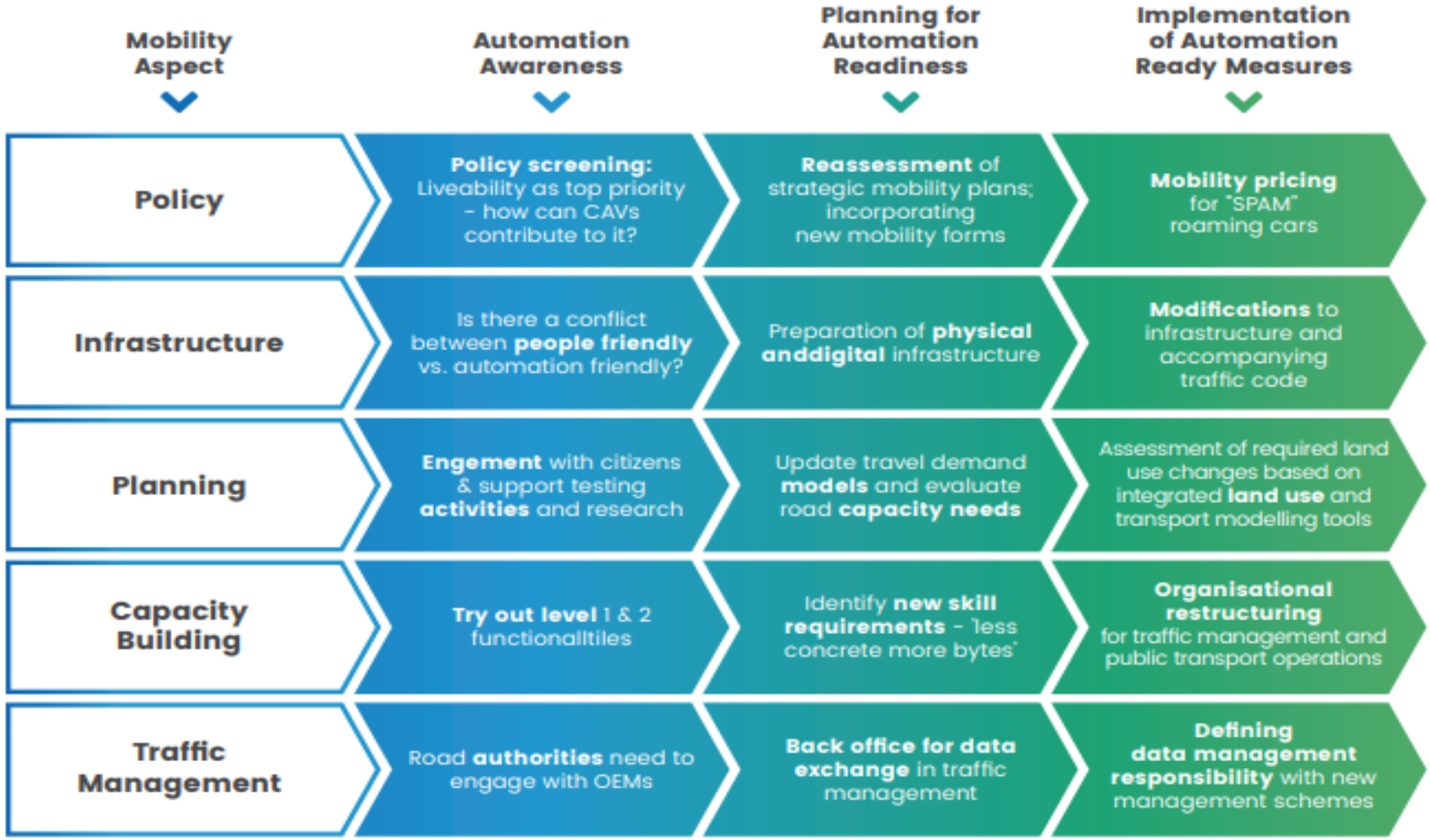
Self-assessment



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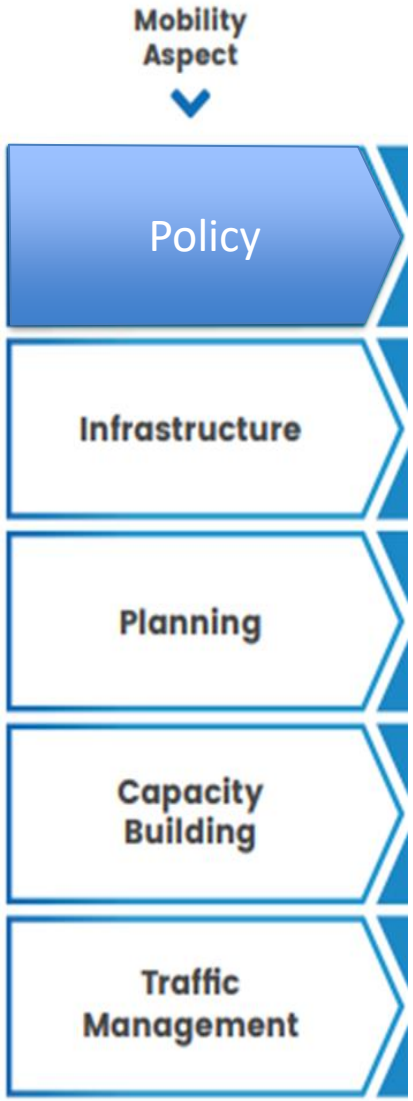

Automation Awareness

Participation in European projects
Learning by doing

Planning for Automating Readiness

Helmond believes in ISA to be a great benefit for road safety

Implementation of Automation Ready Measures

Still it’s unknown what AV’s require to drive (in cities) so it’s dificult to set measures

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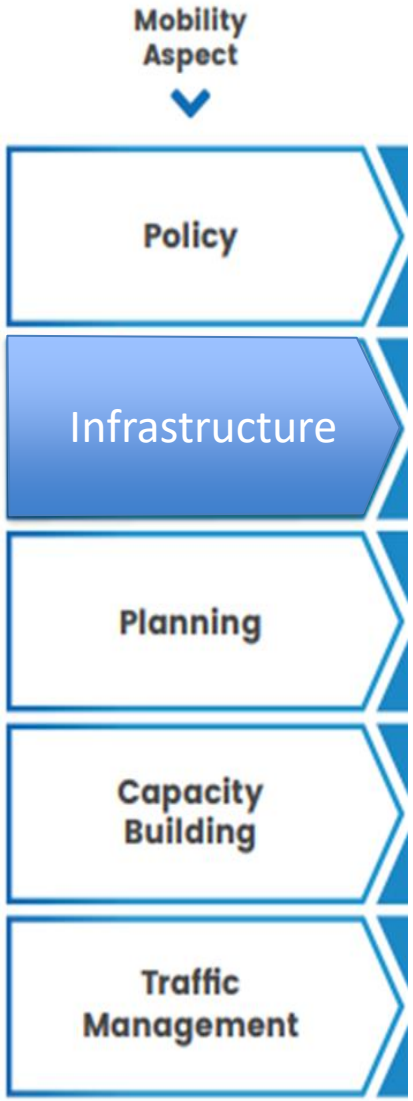

Automation Awareness

AV's or ITS needs communication that's why helmond invests in communication in traffic lights

Planning for Automating Readiness

Hybrid communication for traffic lights (G5 and 4G/ wifi and cellular)

Implementation of Automation Ready Measures

I-VRI which can send messages C2I and I2C

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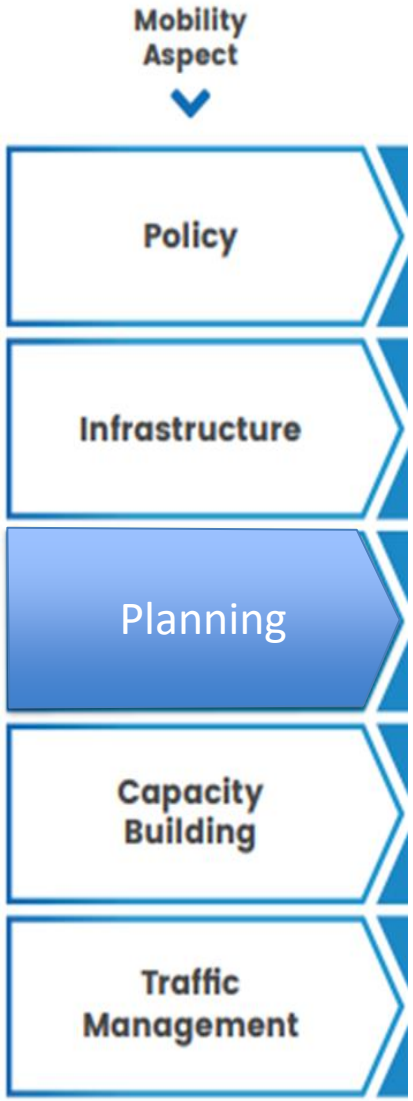

Automation Awareness

Participating in European projects with Av's and being a living lab for experiences

Planning for Automating Readiness

By participating in projects we gain experience and are able to focus more on future policies and plans.

Implementation of Automation Ready Measures

Wherever possible we do try to implement things that have been developed in projects in order to realise Quick wins

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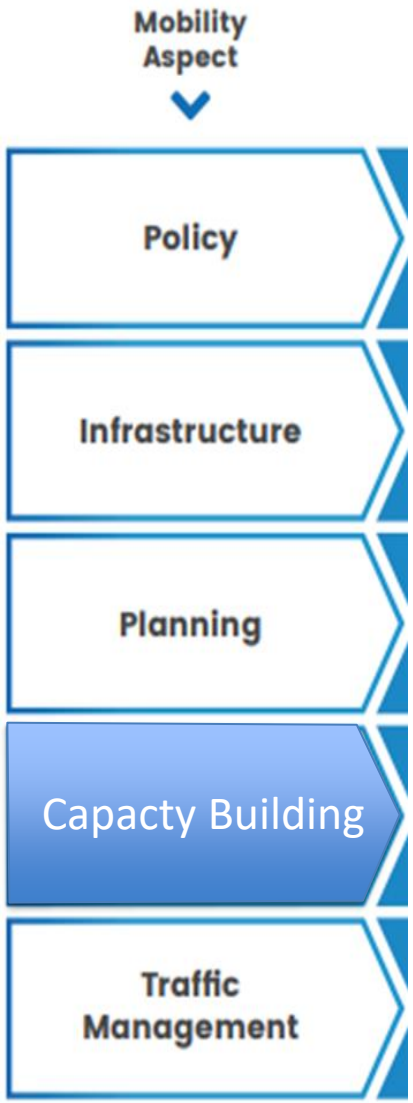

Automation Awareness

Participating in projects with mainly employees of the traffic department there is a lot of experience and knowledge gathered the last years

Planning for Automating Readiness

More consultation and cooperation is necessary with other authorities or companies

Implementation of Automation Ready Measures

Experience should be wider spread among politicians and other departments

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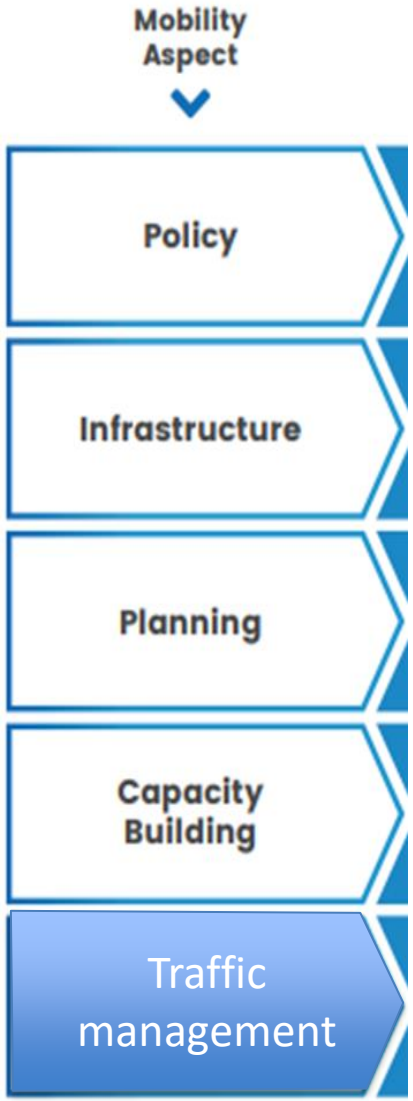

Automation Awareness

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

Planning for Automating Readiness

Helmond is starting a new program this year “De Digitale Stad” (the digital city). A change to get and to provide more data regarding to traffic and Av’s

Implementation of Automation Ready Measures

The implementation of I-VRI’s , where vehicles can communicate with traffic lights

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Lessons Learned and the coming years

- Revised expectations not only focus on AV
- Quick wins
- Involve a larger audience
- Organization
- Attract business to Helmond

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Gemeente Helmond

Frank van den Bosch
f.van.den.bosch@Helmond.nl

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Poll question

What are the three largest barriers to developing automation policies/strategies?

- Lack of knowledge (within own organisation)
- Low support from leaders (within own organisation)
- Insufficient resources (funding)
- Lack of knowledge (external, e.g. consultants)
- Low national government support

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Poll question

How would you assess the level of automation-readiness for your city or organisation?

- Extremely low
- Low
- Regular
- High
- Extremely high

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Interactive group discussion

Wolfgang Backhaus, Rupprecht Consult

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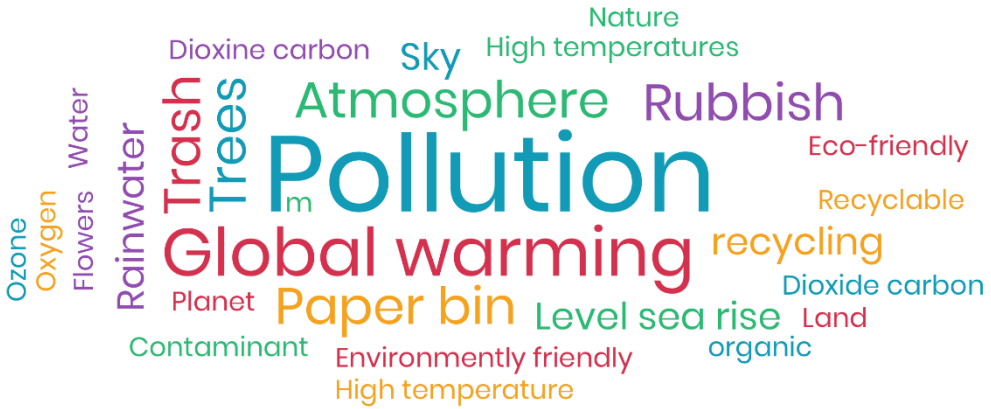
Mentimeter

- Go to www.menti.com on your computer, tablet or smart phone
- Enter the code (it will be shown on the screen shortly)
- Follow the instructions and participate!



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Lessons learnt and conclusions

Wolfgang Backhaus, Rupprecht Consult

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How to tackle the imminent disruption to mobility generated by CAV deployment?

- Authorities should look at planning for CCAM as an element of a more **fundamental change process: proactive action** to get ready for the challenges of conducting planning processes towards CAV deployment.
- Planning for CCAM should be **based on analyses of all modes** and supported by all **stakeholders** (and not on an SAE perspective).
- Transport and infrastructure planning through adequate tools: **automation-ready modelling functionalities** & **impact assessment** framework, with strategically defined **Key Performance Indicators** in relation to **local policy goals**.
- In addition to (old) risks, **new opportunities** for sustainable urban development arise – spur **flexibility** and create **room for experiments**.

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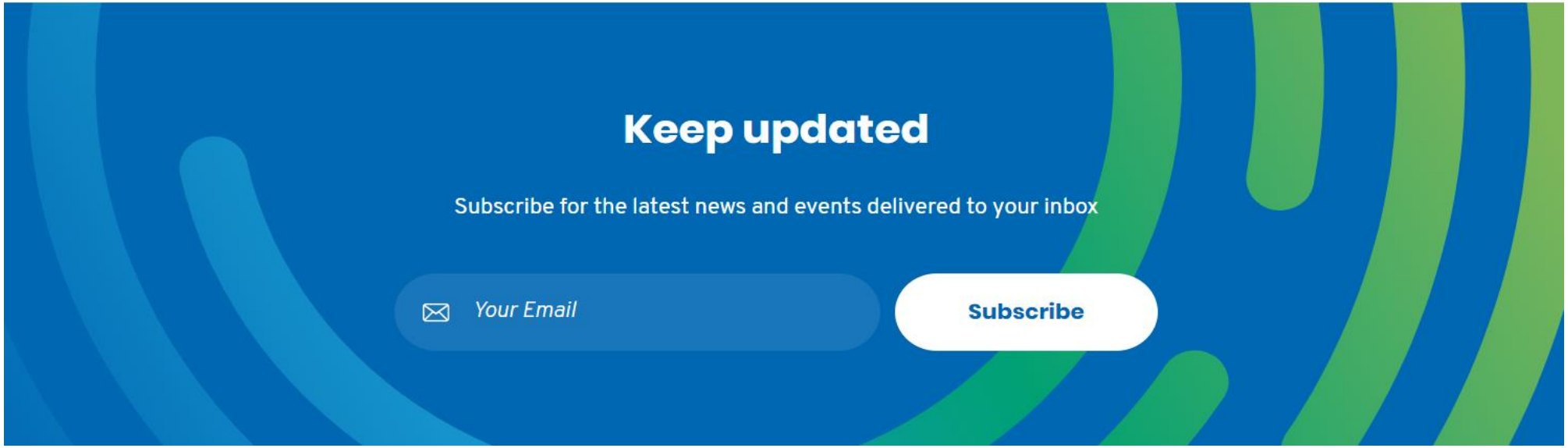
Next webinar!

Automation-ready road infrastructure assessment

Learn more from CoEXist's automation-ready infrastructure assessment tool and safety assessment methodology!

To be scheduled: **April 2020**
https://www.h2020-coexist.eu/events/#upcoming-events



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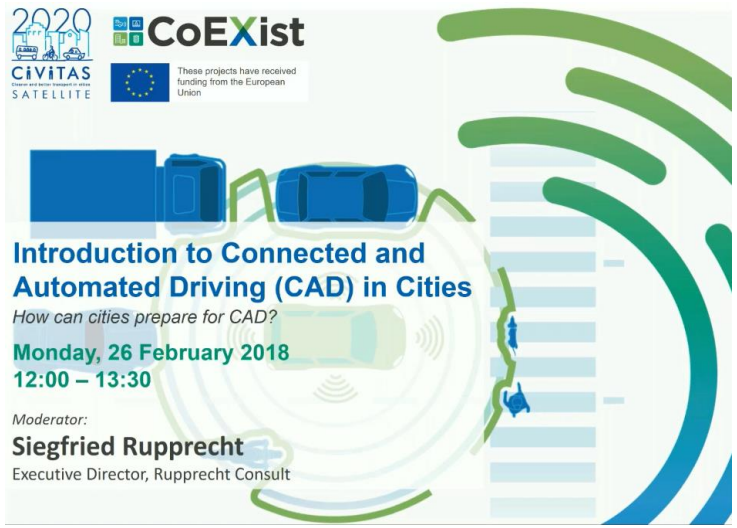
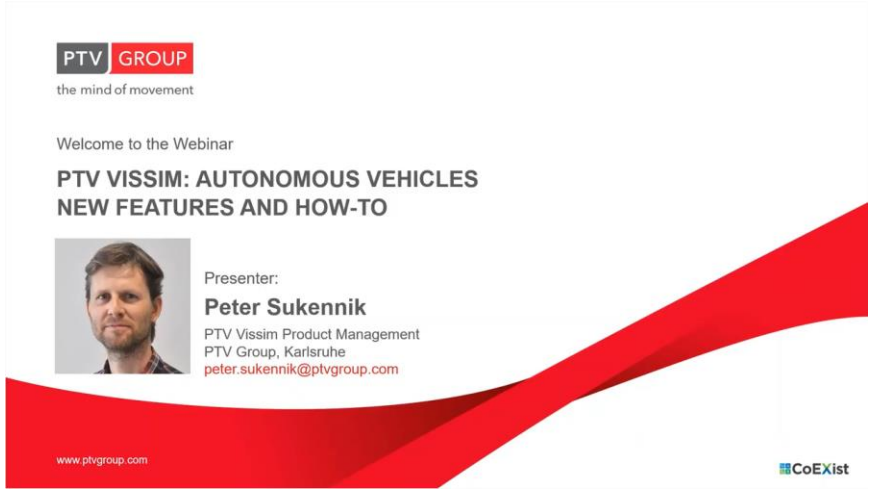
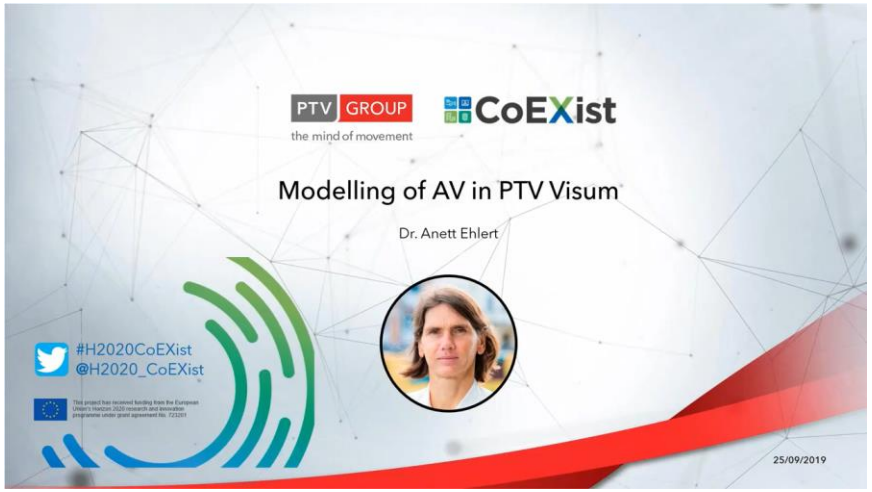
Learn more from CoEXist!

Find all our previous webinars in our YouTube channel at:

http://tiny.cc/CoEXist-Webinars







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CoEXist Partners

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Thank you for your attention!

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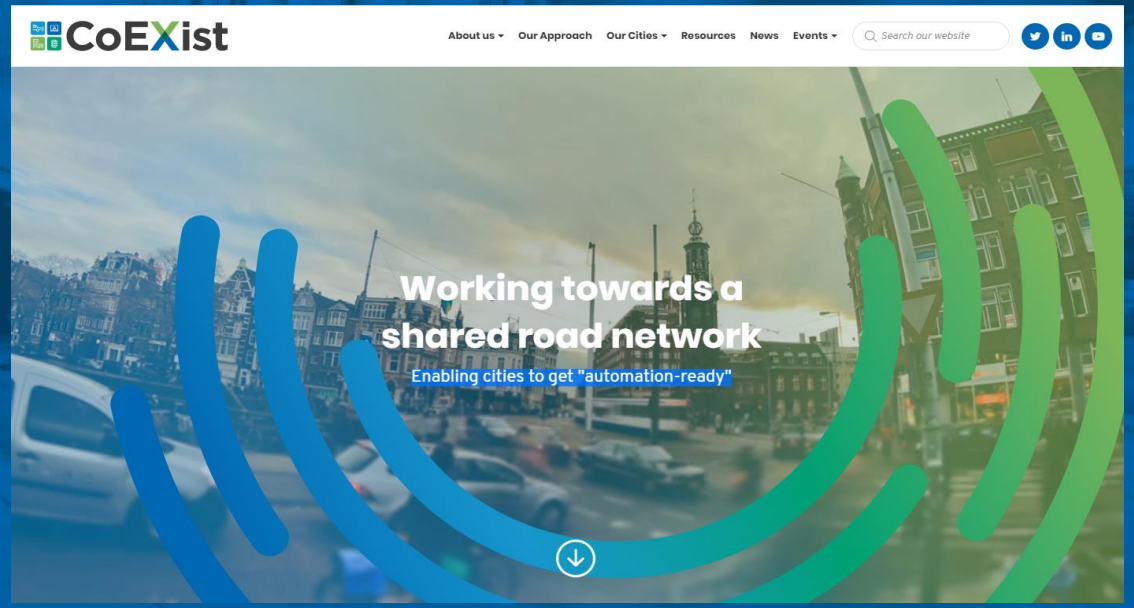

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