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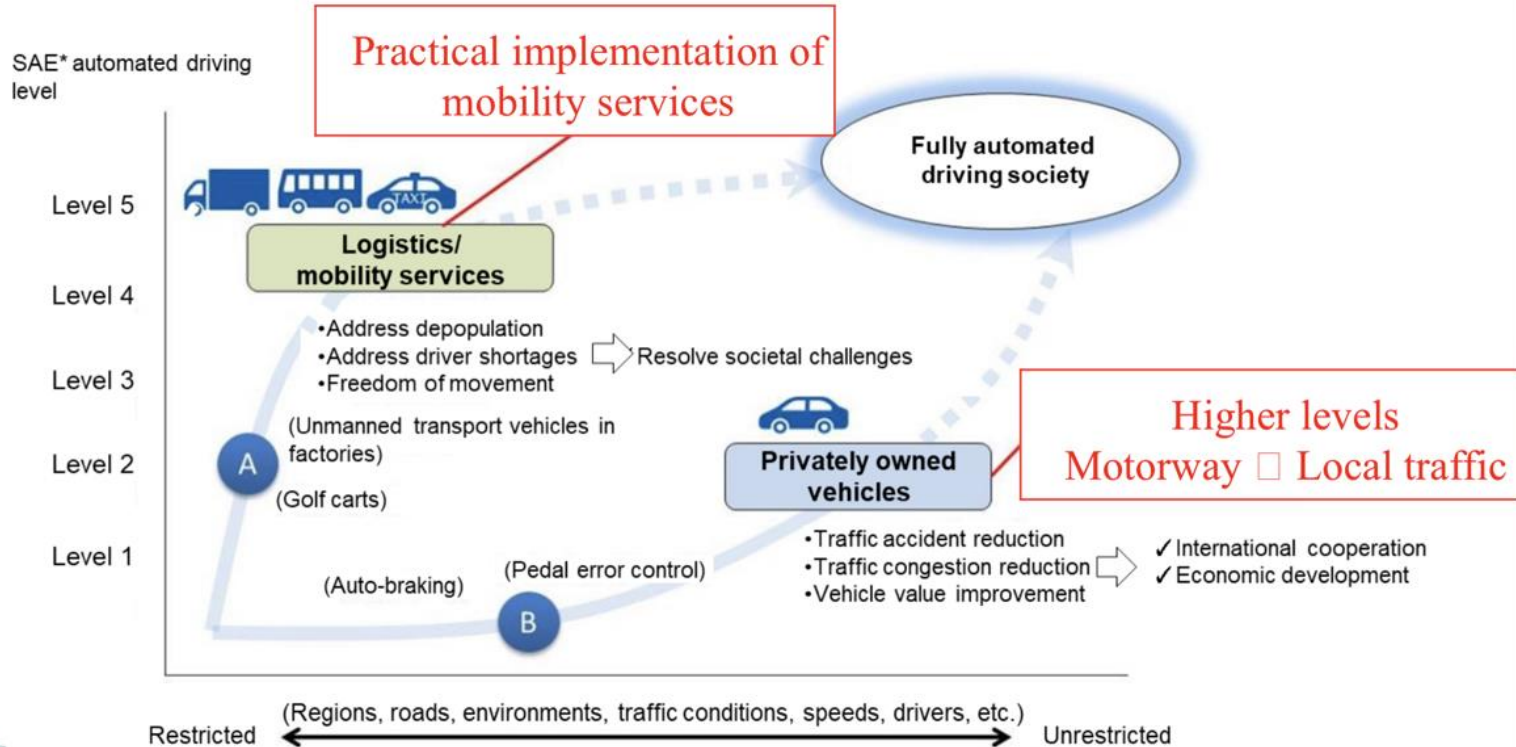


**Beyond testing, research and
vehicles – the future ingredients
and perspectives of automated
mobility**

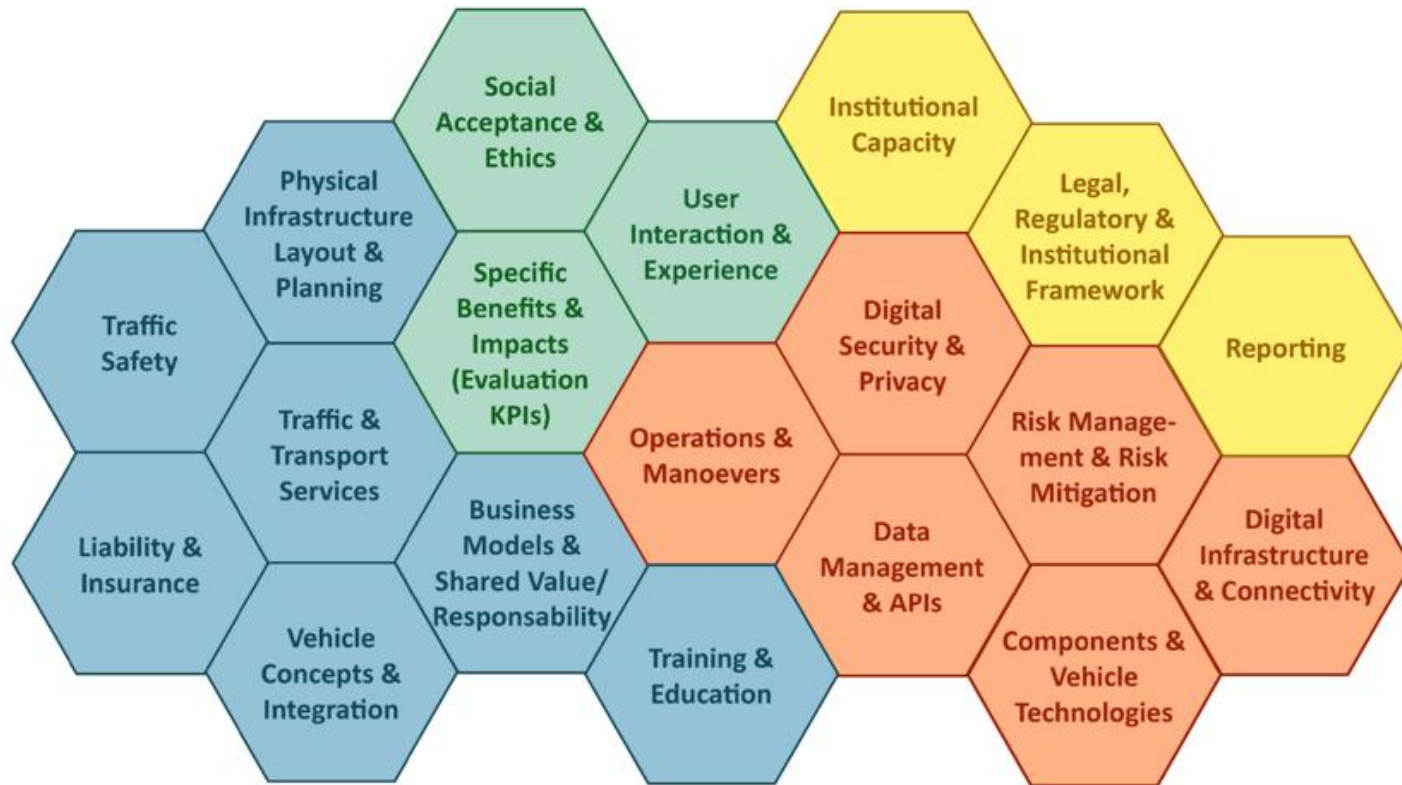
Martin Russ, AustriaTech

July 15th 2022, Zalazone

The 2 „main pathways of automated mobility“



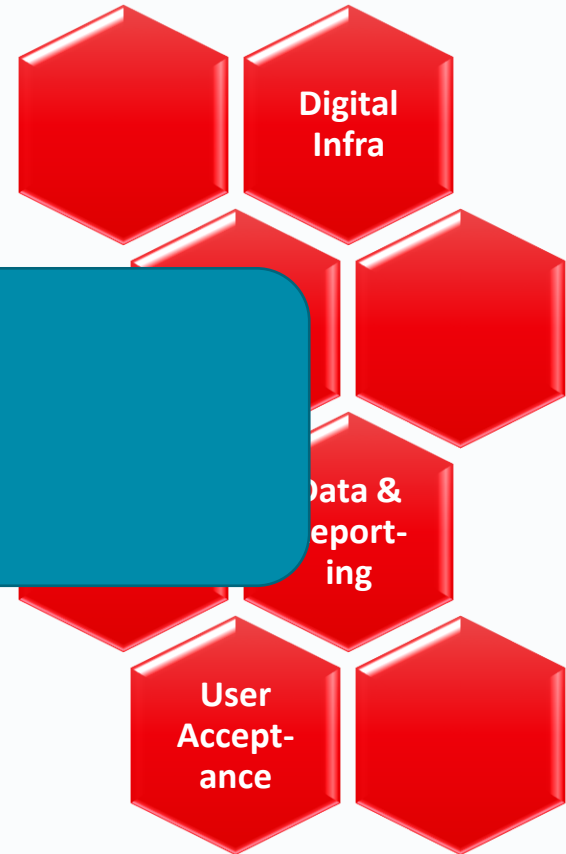
CCAM Building Blocks for integrated & automated Mobility



CORE ASPECTS...FROM EU MEMBER STATES

- A common **knowledge base** on building blocks → ARCADE
- Common pathway for **policy makers**
- Be specific **measure**
- Effective **business**
- Effective frameworks for **experiments**
- Aim for **consistency** and **interoperability**

Top Building Blocks:



Current framework for Testing



Automated vehicle for passenger transport



Automated vehicle for the transport of goods



Motorway pilot with automated driving on motorway on- and off-ramps and exits



Automated valet parking

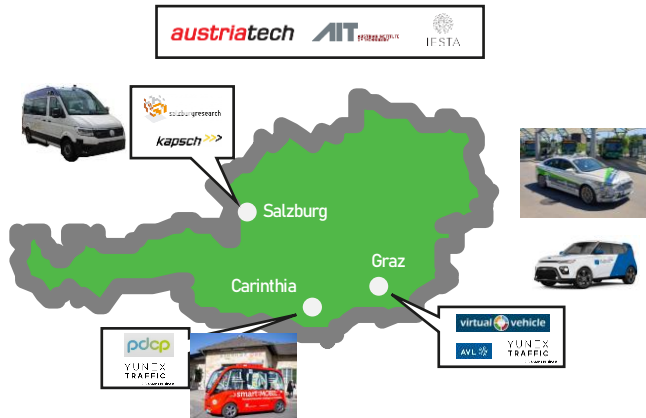


Automated working machine

Current State in Austria - Research

SHOW

- Demonstrations in Carinthia, Salzburg & Graz)



AWARD

- Hub-to-hub autonomous logistics



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- Demonstration with pupils and senior citizens



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Current State in Austria - Vehicles

- **Provision of test vehicles for the use in research projects for automated mobility**
 - Open platform and interfaces for the use by third parties in the area of research and development
 - Areas of application: personal mobility, freight mobility, working machines → support respective mobility services (no use cases focussing on individual transport)
 - Battery electric mobility
 - Use of cooperative, connected systems (V2X communication) on the basis of IST-G5 and cellular systems
 - Example: EVAN → e-Kombi VAN



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What is important? Automation = Connectivity, Integration & Cooperation



Determine priority use cases



Build & bundle competences



analyze & assess impacts



Conduct & foster dialogue



Cooperation & Connectivity through C-ITS



Analyse & understand data



Develop modules & building blocks



Traffic Safety & environmental impacts as primary premises

Perspectives: From testing to regular operation of automated vehicles

- EU ADS regulation
 - procedures and technical specifications for the type approval of motor vehicles with regard to their automated driving system (ADS)
 - focus on Level 4 shuttles, robot taxis, hub-to-hub, last mile etc. produced in small series
 - Member States still responsible for traffic rules and transport licensing
- Developments by French, German and Dutch governments to build a legal basis for the approval of Level 4 vehicles
- UNECE
 - Level 3: regulation 157 on traffic jam pilot and highway Chaffeur



Implementation on the local level

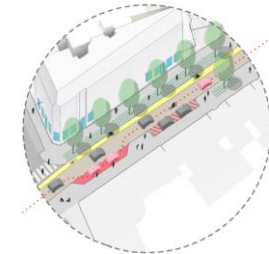
- Determination/Implementation of **operating areas/zones**
- **Integration of stakeholders and citizens** (dialogue with operators and service providers, information, consultation, co-creation?)
- **Integration** in current mobility goals and in public transport (pricing, accessibility, multimodal-hubs, open MaaS ecosystem, fleet management, optimising of pooling, reduce of empty running)
- New **requirements for operational safety** (from requirements for operators in vehicles to requirements for remote-operators)
- Integration in **public space** (parking, curbside management, hop-on/hop-off, charging infrastructure, digital infrastructure)
- **Data monitoring** for safety and operation + mobility issues



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Cities as hot spots of automation

Leading questions

- Which mobility offers and transport segments will **benefit from automation**?
- What's happening along **your curbs**?
Where should you provide **HUBs** for multimodal offers?
- Which **areas/districts** will benefit?
- Which options towards **re-use of (public) space** could this generate?
- What will be the **impacts** of new offers on **urban structures and functionalities**?



Foster **district-based offers**

Elaborate on Use-Cases and **their target-groups and spatial dimension**?

Urban fringe & axes as priorities

Automated Drivability (ODD +)

Define/**select your hot-spots** (by/for whom)

Optimize processes (waste, cleaning,...)

Prepare for „on demand“ early
(look into **planning needs**)

Guideline for cities - Act now! Automation is coming

Different impacts → potential benefits are not well-reflected in strategic city planning

- Interactions between **urban planning** and transport planning → distribution of public space, modal share, traffic management
- **Environment & road safety** as winners or losers? → Promotion of walking, cycling and public transport → automated vehicles as part of “Vision Zero”
- **Infrastructure** (digital & physical) → Change in investment costs, more efficient use, ODD, ISAD levels
- Involve **society** through dialogue, **information and awareness-raising** → increase acceptance, consistent mobility opportunities with environmental and health-conscious behaviour and affordability
- Allow **administration & the economy to benefit** → Make more efficient use of vehicles & space; push freight transport and logistics



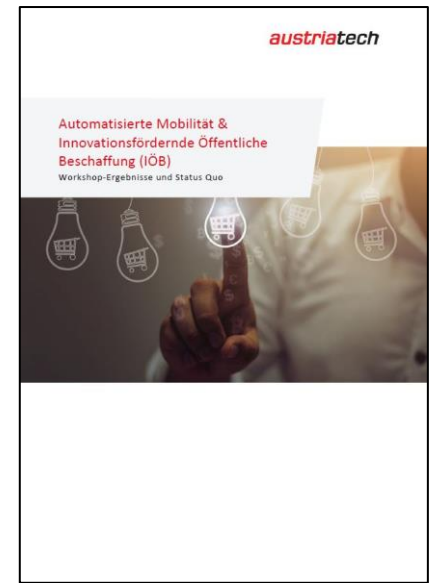
Guideline for cities

- Guarantee a **framework for systematic experiments** and learning
- Capacity building to **understand technological** aspects
- Demand the **data &** and **learn to use** them
- Take **lead on infrastructural** and organisational tasks
- Create **awareness** – develop a city based narrative



Guidelines for public procurement

- Recognition of potentials for level 4 AV services in personal and goods mobility
 - e.g. on demand service for first/last mile, micro-hub ...
- **Relevant factors:** cooperative systems, e-mobility, space for automated services (e.g. charging), regulation



Procurement options – System Elements

L-4 Services Building Blocks

**(A) Planning Tools
(Planning Dept.)**

**(B) Physical & Digital
Infrastructure Element
(IOOs)**

**(C) Fleet-MM. /
Operations-Centers
(PT/Service Op)**

**(D) Vehicles &
Components**

What we need to define



Elaboration of (functional)
(minimum) requirements for
the procurement process in
a selected scenario

Procurement Instruments & Processes (Innovation-Partnerships, Buyers Groups)

Pre-Commercial

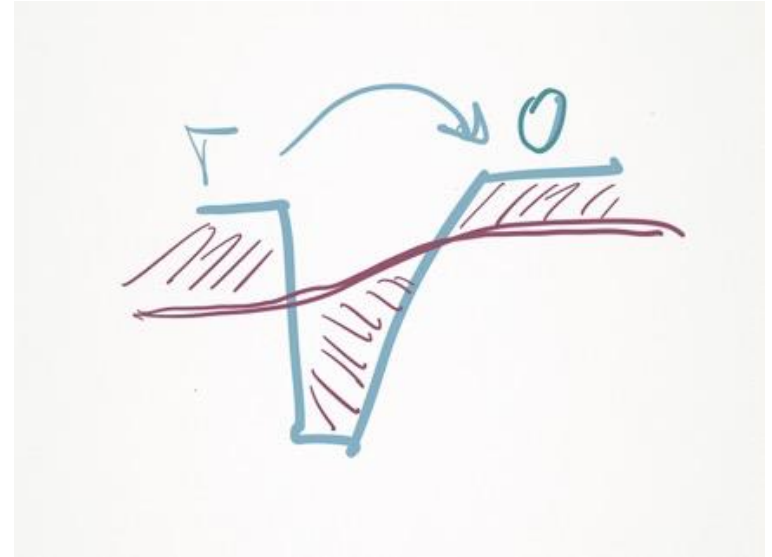
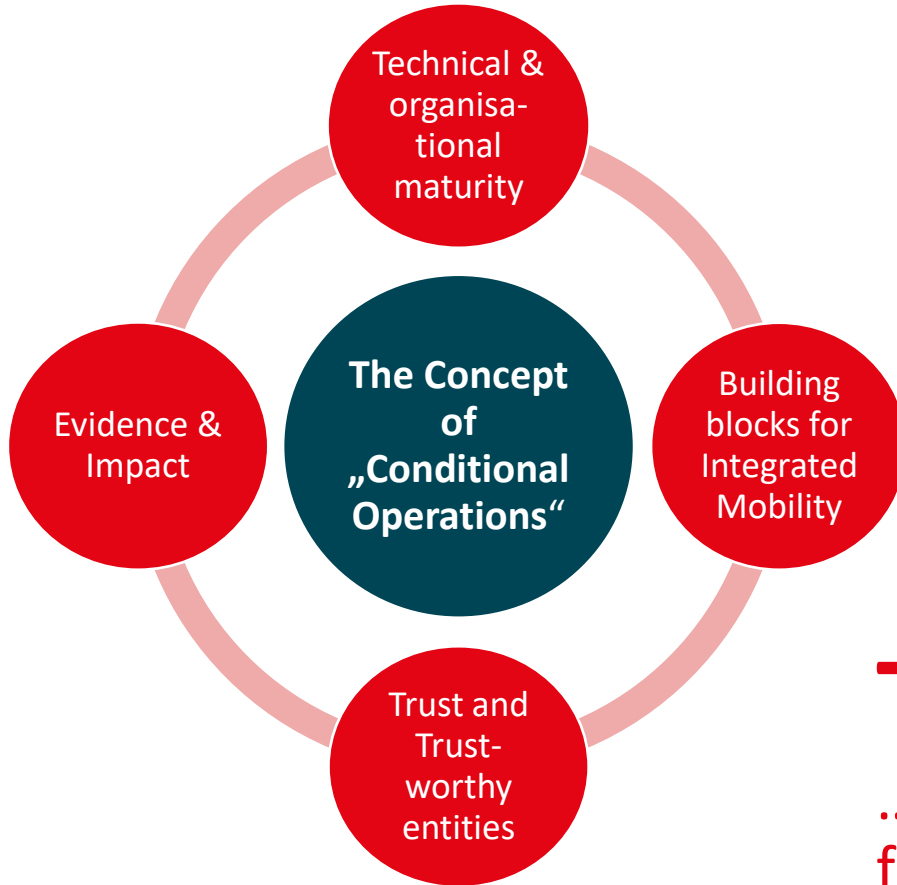
References
(SPICE, SAAM, LIMA,
FABULOS...)

Commercial

Technical Aspects & Specifications (Standards → ToR;

Infrastructure
(C-ITS/C-Roads; Curb
& Hub elements;
Mobile-NW)

Vehicles
(ADAS; special
purpose vehicles,
Vehicle types)



The Early Years....

...of Automated Mobility –
from testing towards operations

Conditional Operations

Special approval schemes combined with regulatory „sandboxes“

Trustworthy operators/ providers

Limited ODDs (common definition)

Continuous monitoring and „open analytics“

(Shared) Learning in complex environments



Outlook: Future Ingredients

- **Integration of AM in different policy goals**
 - Traffic safety &
 - Climate impacts of transport
 - New Business models and competitiveness
- **Clear Strategic priorities of the public sector (national, regional, cities)**
 - Climate-neutral last mile solutions, regional and city services for passengers and freight → link with electrification & on-demand/sharing
 - Collaboration: with industry, research, society
 - Build competences along value chain
 - Foster collaboration on European & international level
- **Implementation of EU ADS regulation – create added value**
- **New focus e.g. on remote-operation and monitoring – managing fleets will be key!**

What's next?



Thank You

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