



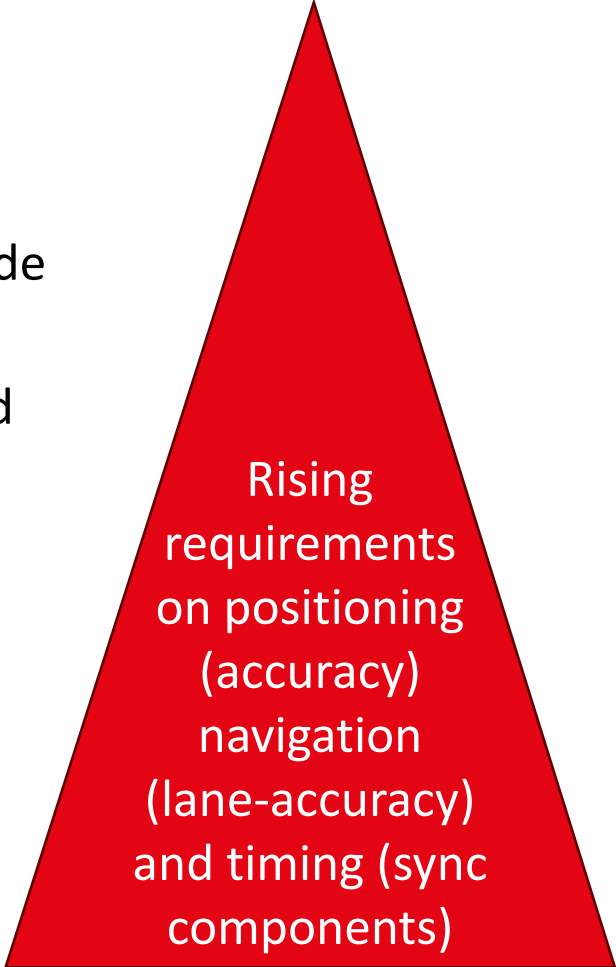
PNT meets Mobility

Mobility Landscape Austria

Martin Böhm, AustriaTech

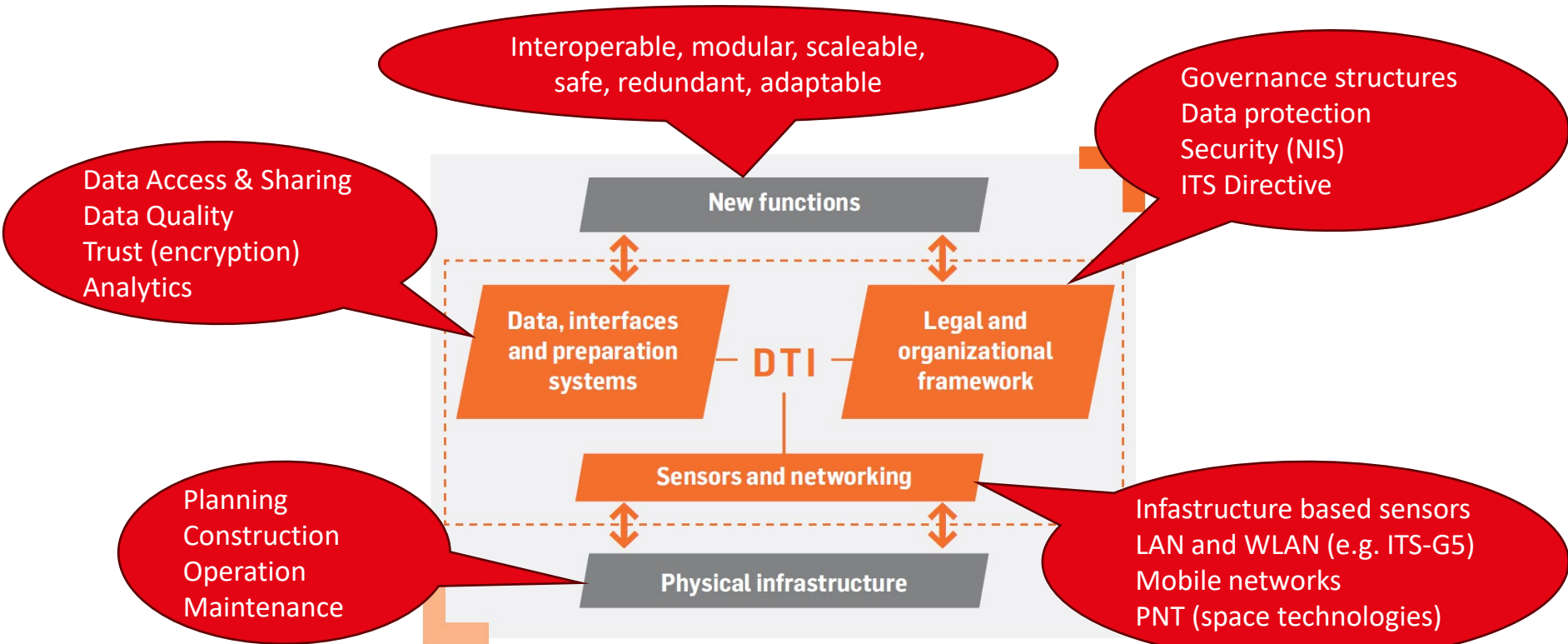
PNT and Mobility

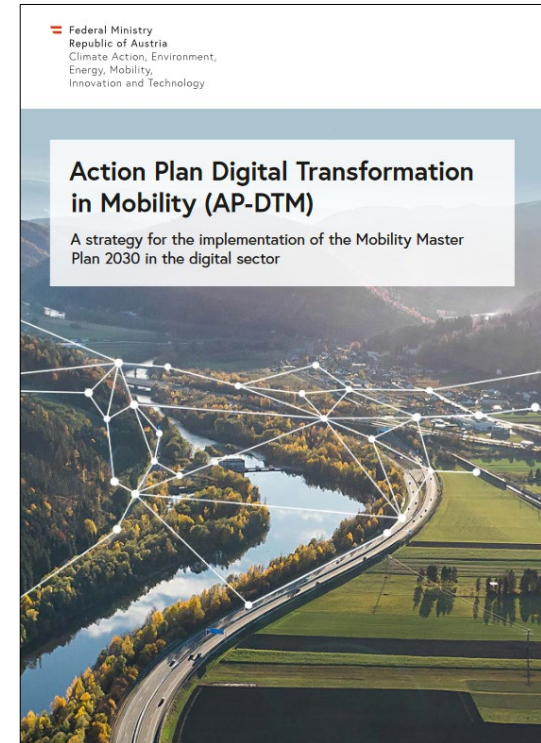
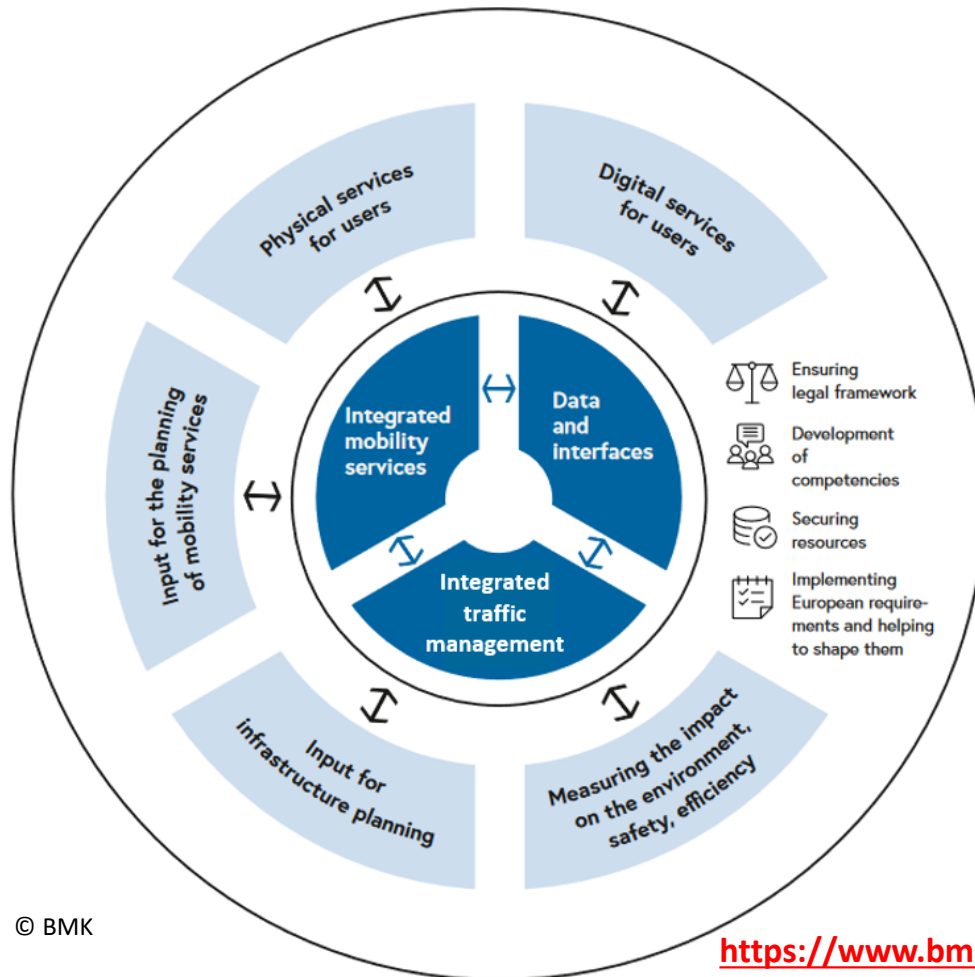
- 1996: the **first in-vehicle navigation system** approaches the Austrian market (TMC services provide traffic information services)
- 2006: first smartphones are available (location-based services, **first multimodal traveller information services**)
- 2020: **first connected vehicles** are commercially available and exchange data (starting point is data exchange with the infrastructure operator)
- 202x: **first automated vehicle** is in permanent operation



Rising
requirements
on positioning
(accuracy)
navigation
(lane-accuracy)
and timing (sync
components)

Digital Transport Infrastructure - components

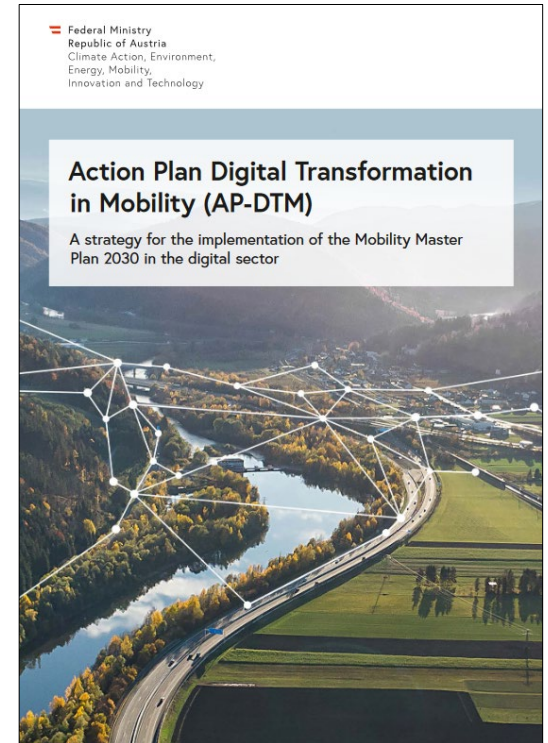




Data and interfaces

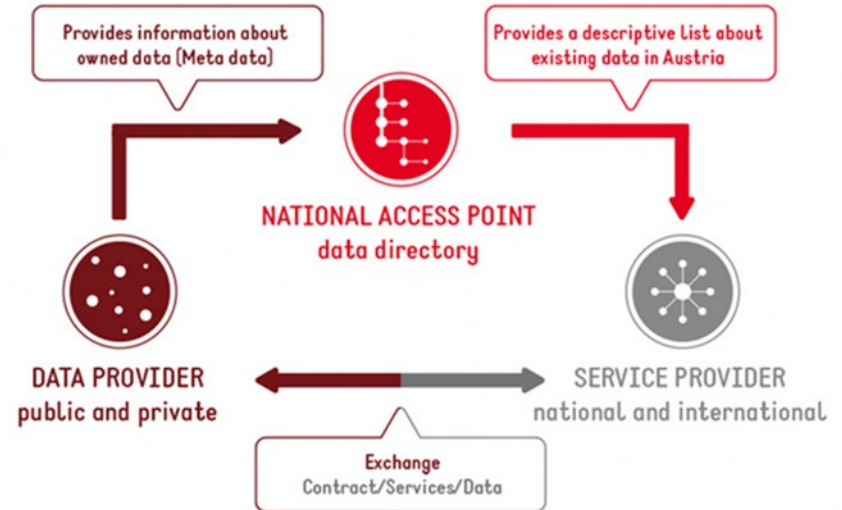
Optimal use of mobility data

- Ensuring the provision of basic data relevant to mobility
- Using data to build evidence
- Designing the National Mobility Data Space
- Cross-sector strategy on digitalisation and data spaces



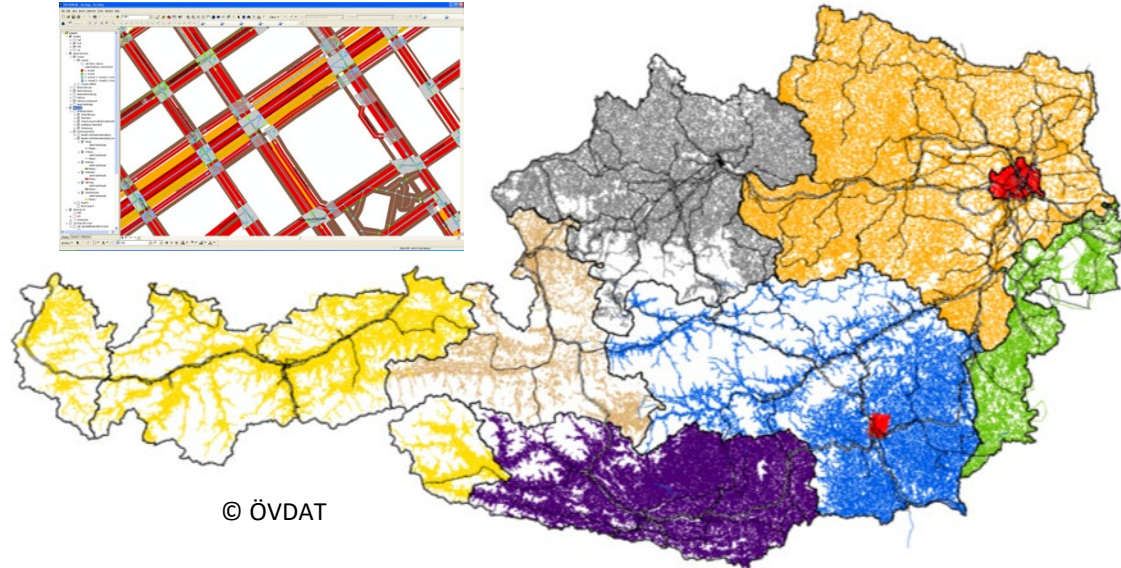
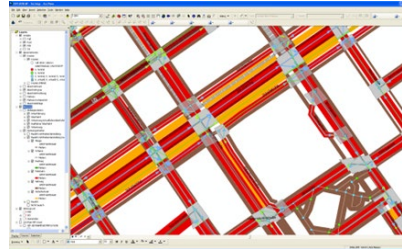
Data and Interfaces – National Access Point

- Based on the European ITS Directive AustriaTech operates one National Access Point to mobility relevant data (www.mobilitydata.gv.at)
- EU-wide harmonisation within NAPCORE
- Standardised meta-data mobilityDCAT-AP
- 94 datasets
- 36 data holders (public and private)



Data and Interfaces – Graph Integration Platform (GIP)

- Already in 2008 Austrian administrations and infrastructure operators started to setup an Austrian-wide multimodal transport graph
- Constantly updated in a decentralised structure
- GIP data is available as Open Government Data (OGD)
- enables a nationwide supply of high-quality transport services
- Forms basis for innovative future services



© ÖVDAT



Data and Interfaces – Echtzeit VerkehrsInformation Straße (EVIS)

- Since 2022 a permanent cooperation (counties, cities, ASFINAG, auto touring club, ministries) operates one Austrian wide real-time traffic situation information system
- EVIS AT provides information on
 - planned events
 - unplanned events
 - actual traffic state
 - prognosis
 - Floating-Car-Data (FCD)
 - traffic regulations



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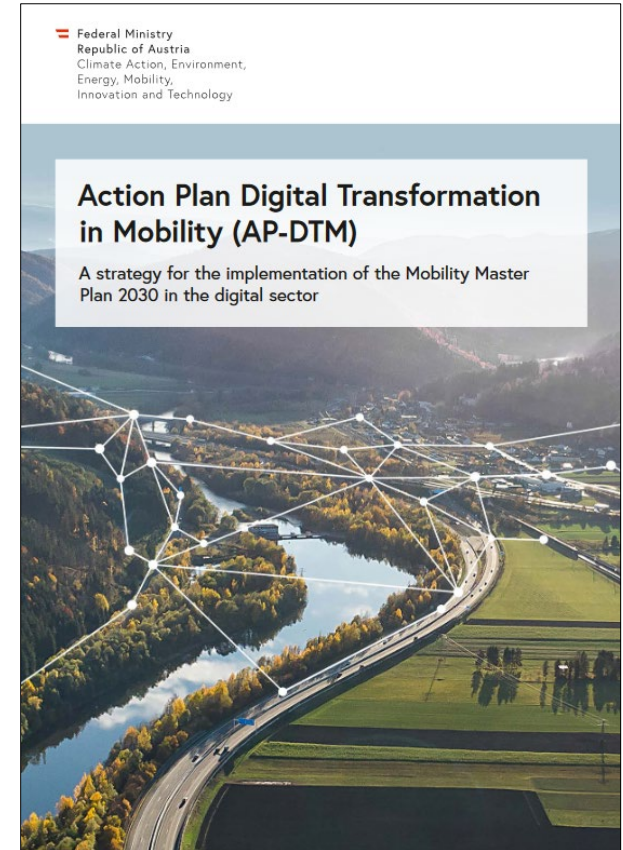
How will satellite services improve data quality as well as completeness (e.g. traffic state)?



Integrated Mobility Services

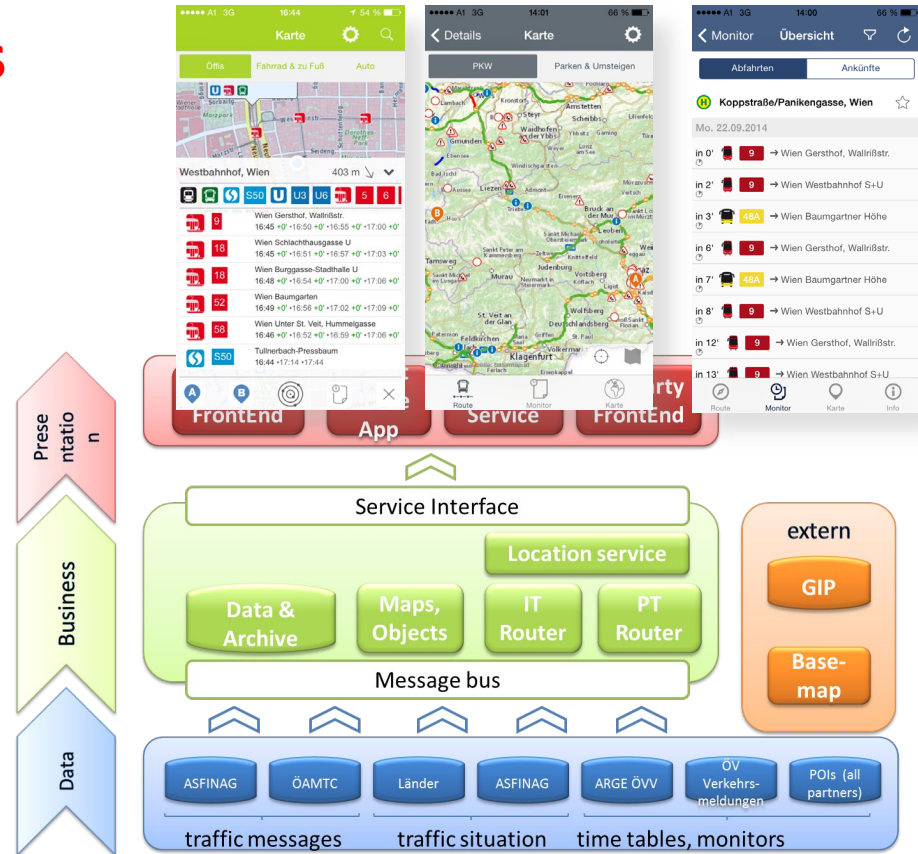
Making the sustainable mobility services more attractive to use – enabling integrated mobility services

- Simplifying access to sustainable mobility services for users
- Establishing national profiles for data and service interfaces



Integrated Mobility Services

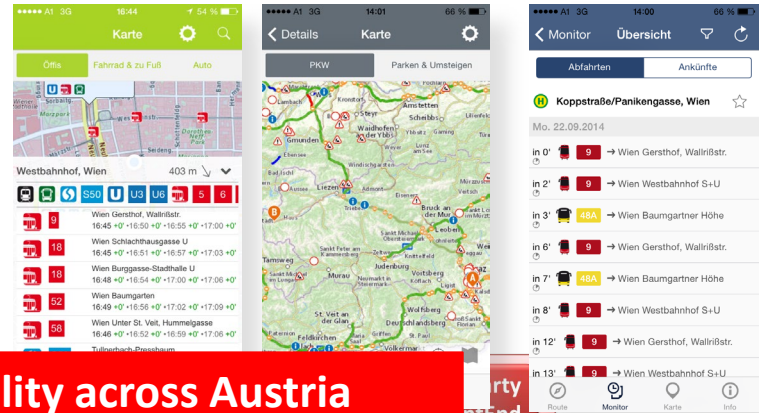
Since 2015 one multimodal traveller information service (white label) as basis for several end-user information services – Travel Information Austria (VAO) – is operative



Integrated Mobility Services

Since 2015 one multimodal traveller information service (white label) as basis for several end-user information services is operative

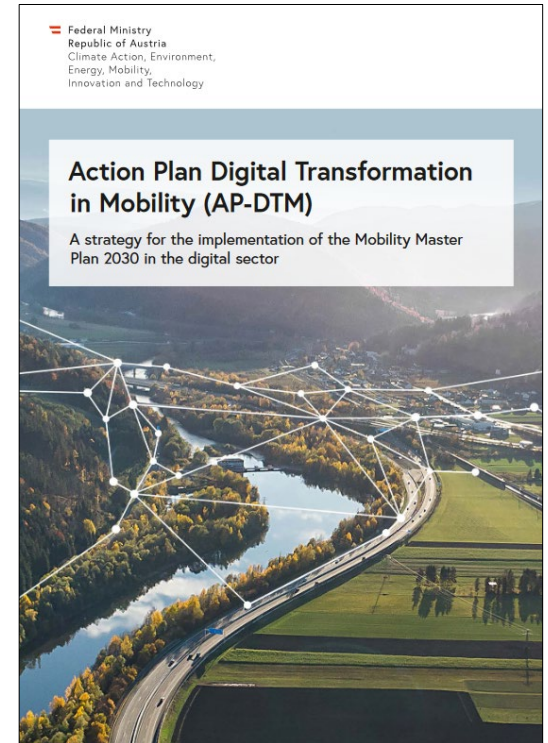
- PNT will improve service quality across Austria (incl. inner-cities, underground, valleys)
- PNT might provide an additional data layer and in parallel enable new end-user services



Integrated Traffic Management

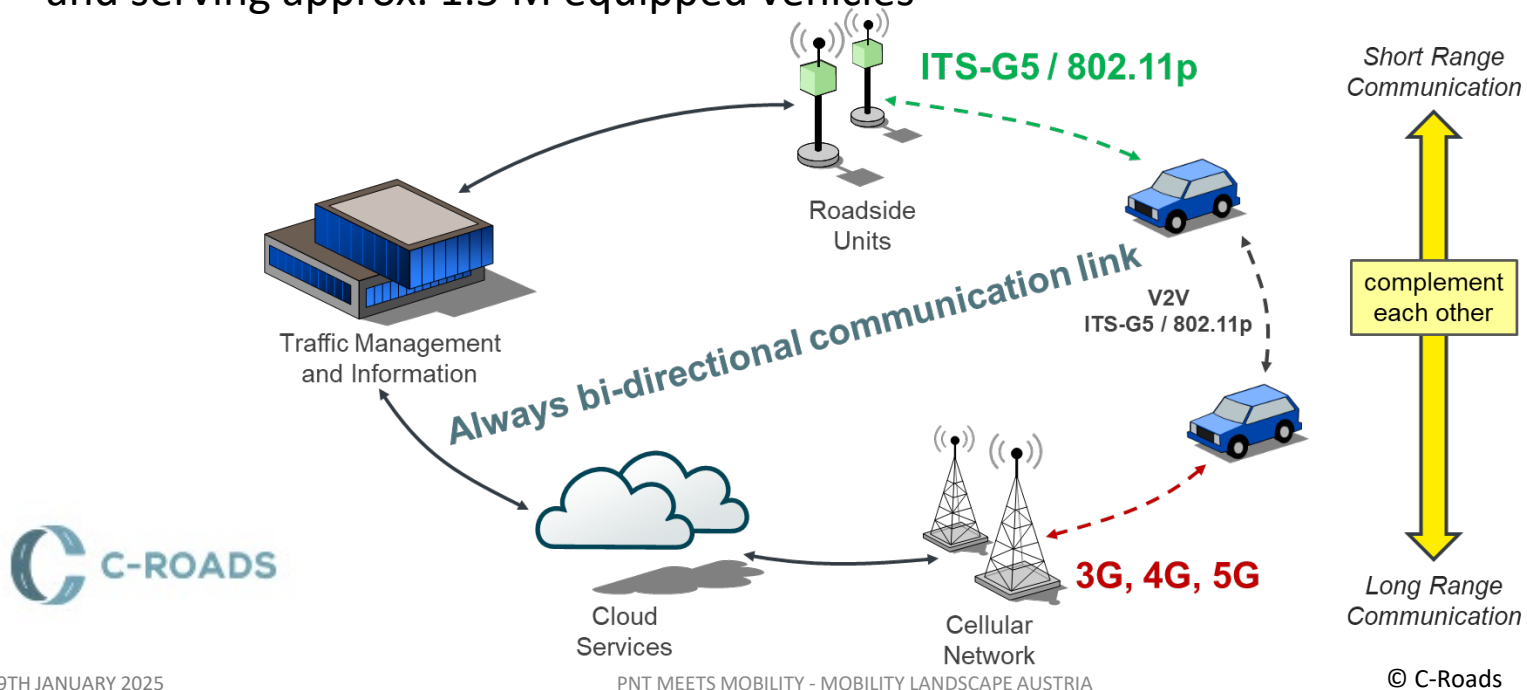
Making transport fit for the future – integrated traffic management

- Integrated traffic information and integrated traffic management
- C-ITS implementation as a contribution to a sustainable and safe mobility system
- Using the digital transformation for climate and environmentally friendly traffic management

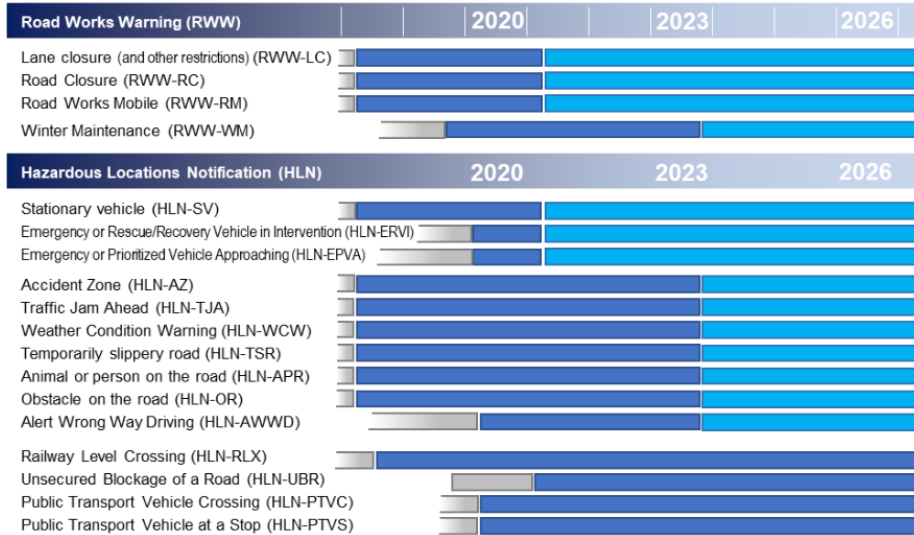


Integrated Traffic Management – C-ITS

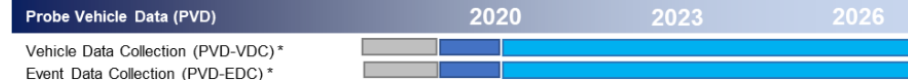
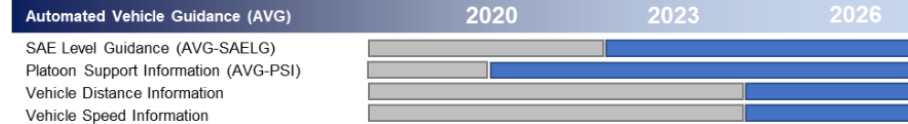
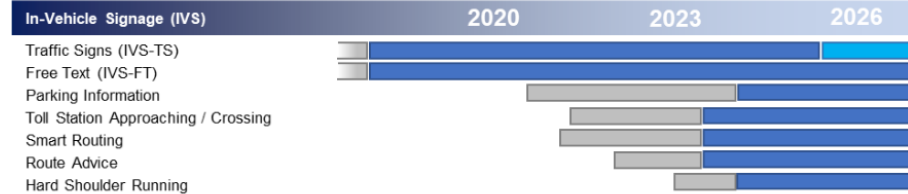
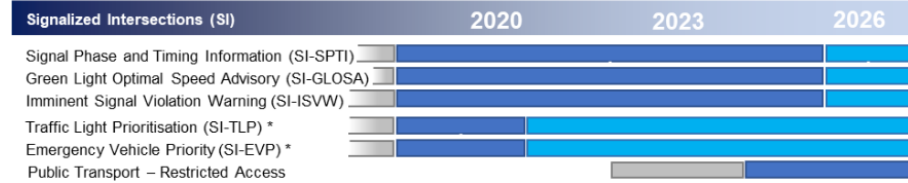
- C-ITS services are operative in Austria (ASFINAG, Graz, Klagenfurt, Salzburg, Vienna) and serving approx. 1.5 M equipped vehicles



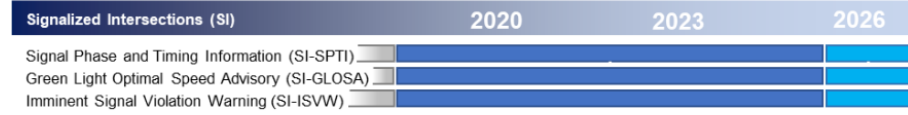
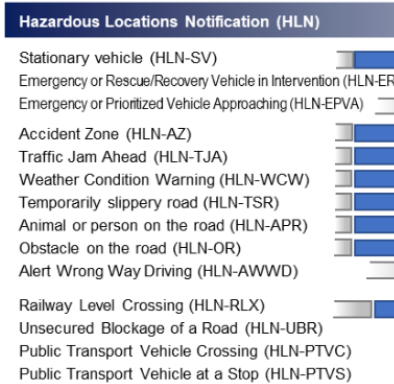
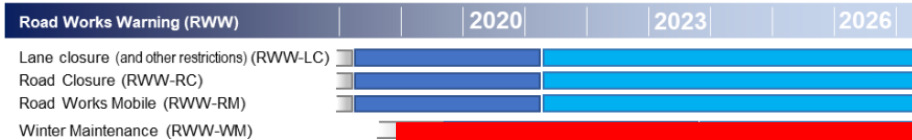
Integrated Traffic Management – C-ITS



- Use case specified
- Published in a C-ROADS Profile - Validated and Ready to Market – Infrastructure operation starting
- Operational on both sides - Trust between Infrastructure and vehicles (OEM vehicles or special fleet)



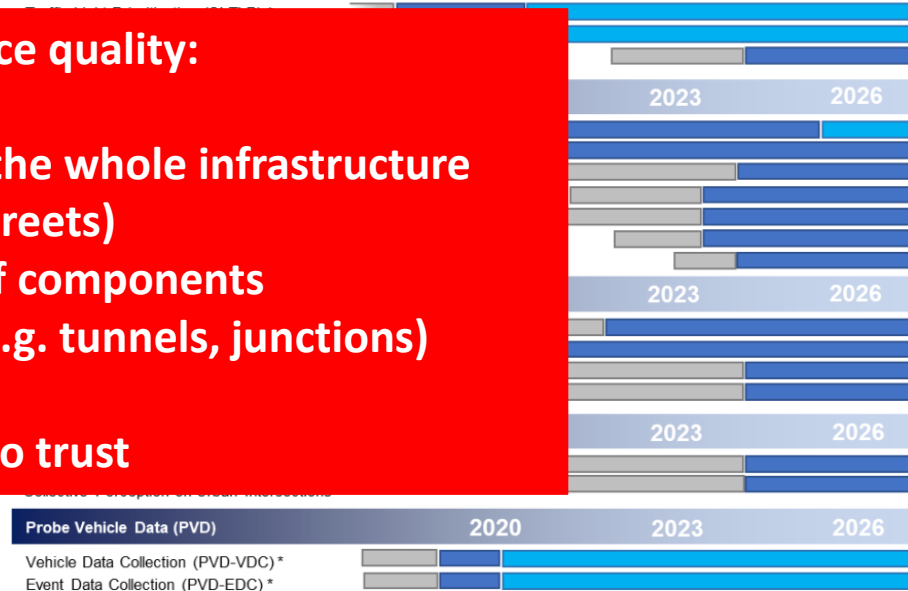
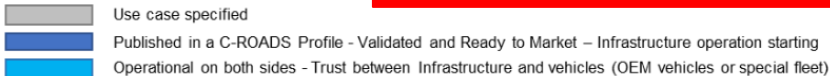
Integrated Traffic Management – C-ITS



PNT will improve the service quality:

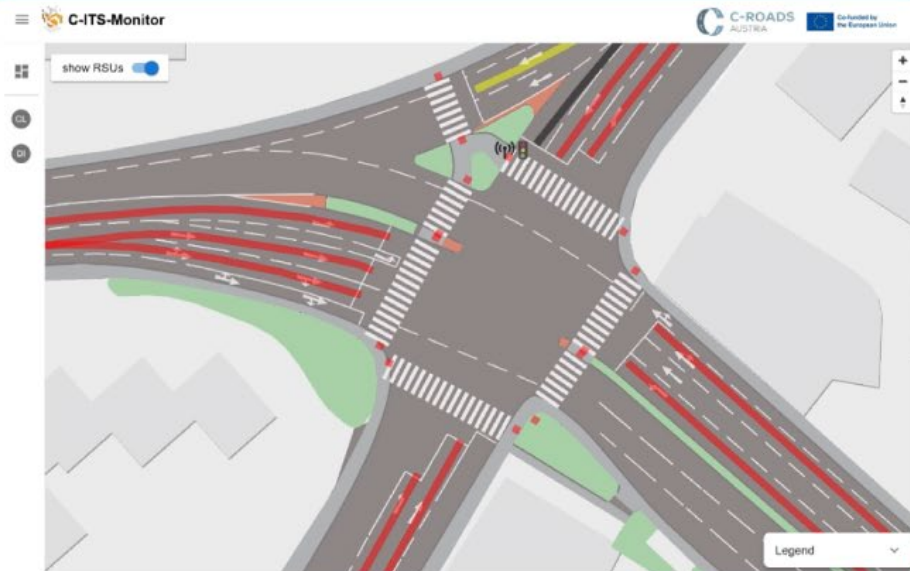
- Lane specific services
- Need to operate along the whole infrastructure (incl. tunnels, narrow streets)
- Time synchronisation of components
- Collective Perception (e.g. tunnels, junctions)

and in parallel contribute to trust

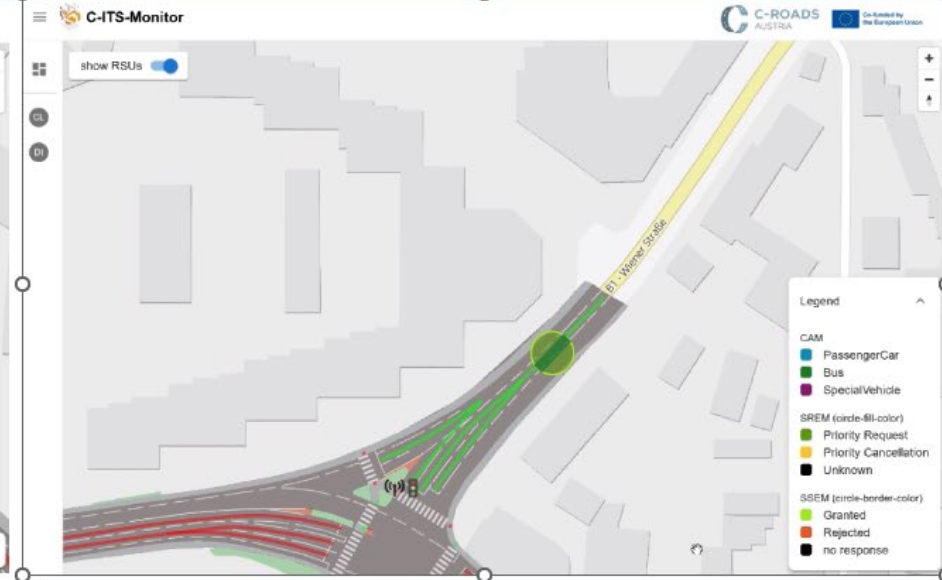


Integrated Traffic Management – C-ITS service examples

Signal phase and timing information (SPAT/MAP)



Traffic Light Prioritisation (SREM/SSEM)



© Salzburg Research

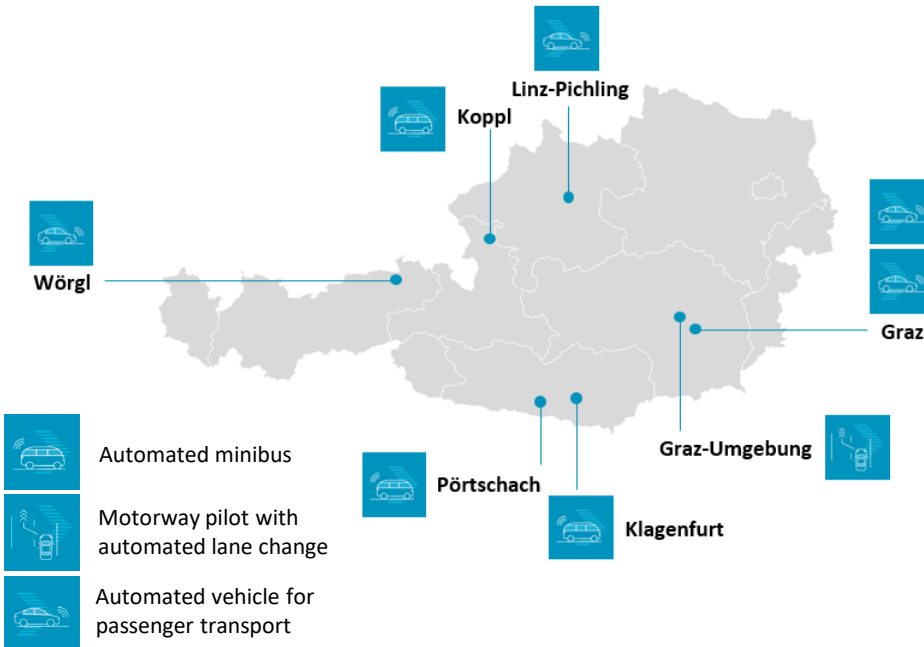
Integrated Traffic Management - CCAM

- AustriaTech is the Austrian Contact Point Automated Mobility
- We expect that C-ITS will form one technical basis for enabling CCAM services in Austria



CCAM in Austria

- Active test permits 2024

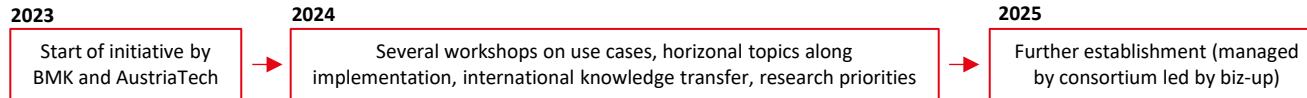


- Test regions ALP.Lab and Digitrans and test vehicles TORUS & eVAN



CCAM in Austria – recent initiatives and projects

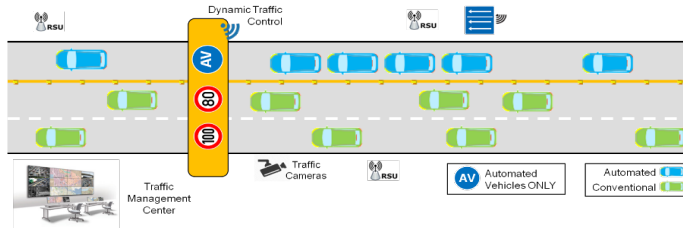
- Strategic Alliance Automated Mobility (“Strategische Allianz Automatisierte Mobilität”)
 - **Stakeholder network** and a **cooperation structure** with **stakeholders from industry, research and the public sector** on the topic of automated mobility in Austria
 - Common vision: 1) the **best possible use of automated mobility in Austria** and 2) to achieve **Austria's technological leadership**
 - main pillars: strategic alignment, knowledge transfer and competence building, participation in committees and other platforms, networking and matchmaking



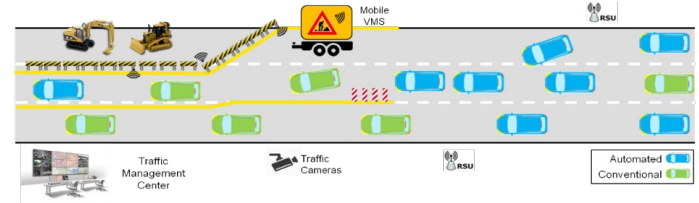
- auto.Ready
 - centralised support for stakeholders and the public sector in the form of a **Readiness Framework for Automated Mobility in Austria**
 - Coordinated and defined **focus-use cases** for Austria
 - Survey, analysis and evaluation tools + **monitoring and evaluation system**
 - Identified **competencies and technical requirements** for the public sector

Integrated Traffic Management - CCAM

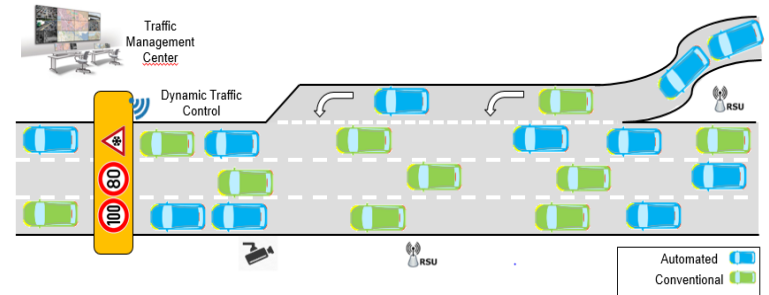
Dynamic Lane Assignment



Roadworks zones



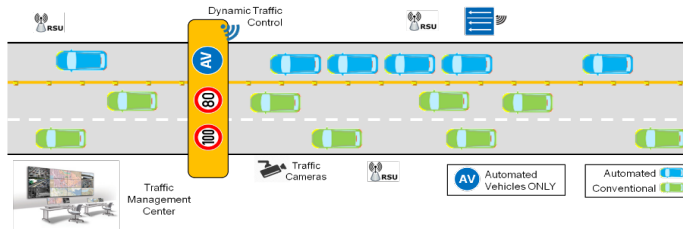
Bottlenecks



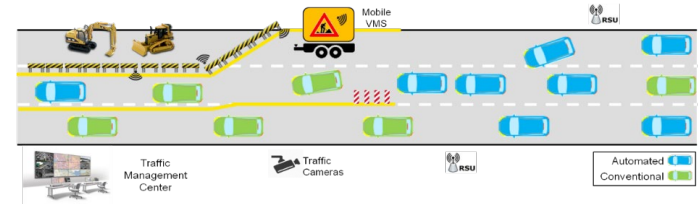
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Integrated Traffic Management - CCAM

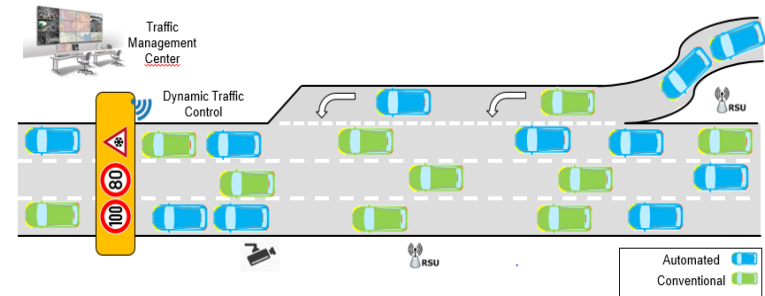
Dynamic Lane Assignment



Roadworks zones



Bottlenecks



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Current scenarios:

- on a specific point/section
- Future scenarios: area wide support?

Austrian Expertise as part of European Cooperation



Conclusio

- **PNT is an integrative part of the digital transformation** in mobility and becomes even more important in future.
- The **combination of satellite** navigation systems with various **ground-based sensors** provides increasingly **higher accuracy** for navigation.
- These innovations are particularly **important for new mobility applications** but will improve as well **existing mobility applications**:
 - Improved data quality (completeness, accuracy)
 - Enlarge service areas (e.g. towards peripheral and rural areas)
 - Time sync (e.g. in the Edge) to support collective perception

Thank you for your attention

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