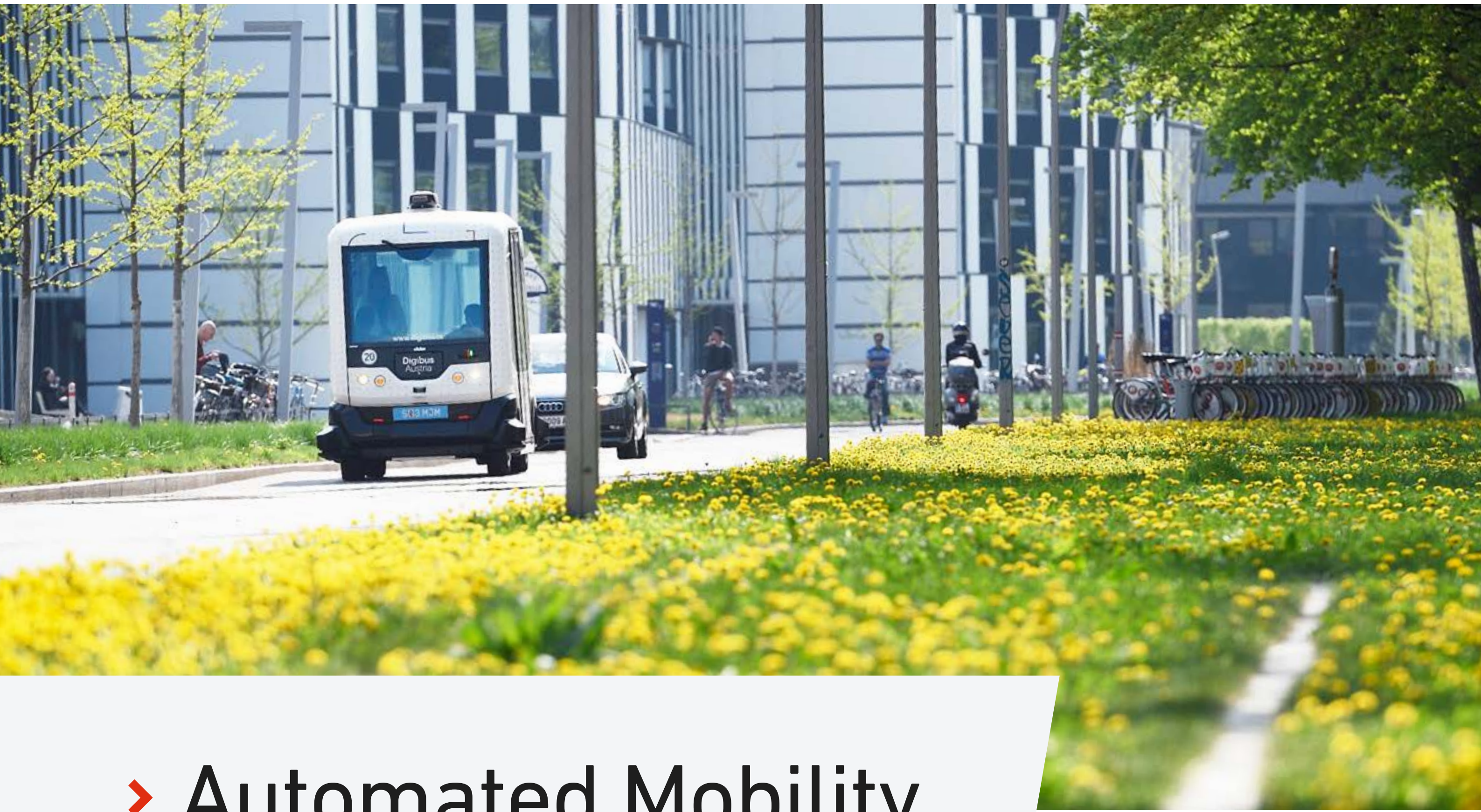

Automated Mobility in Austria

Monitoring Report 2018

September 2019

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Content

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Contact Point Automated Mobility

The "Contact Point Automated Mobility" has been established in 2016 at AustriaTech in order to advise and support Austrian test environments as well as national and international companies wishing to test in Austria in accordance with the "Automated Driving Regulation" focusing on legal and technological issues.

In addition to handling test applications and issuing test certificates, the Contact Point for Automated Mobility has various tasks in the context of communication and knowledge transfer regarding to automated mobility.

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contact point automated mobility

Tasks:

- Organisation of knowledge exchange between projects and stakeholders
- Dialogue with various institutions, stakeholders and local authorities on the opportunities, actions and impacts of automated mobility
- Supervision of ongoing national projects (pilot projects, test environments and others)
- Development of international cooperation (e.g. trilateral cooperation AT-HU-SI) with focus on harmonisation of framework conditions and processes to enable cross-border testing
- Determine the requirements for testing, which exceed the current legally permissible applications, in order to subsequently analyse which additional applications are in demand and can be implemented
- International exchange on the legal and organisational framework conditions as well as on the research landscape and funding opportunities in other countries worldwide in order to get to know successful approaches and solutions and to examine their applicability for Austria
- Participation in international research projects to keep abreast of the rapid development of automated mobility and to proactively shape developments

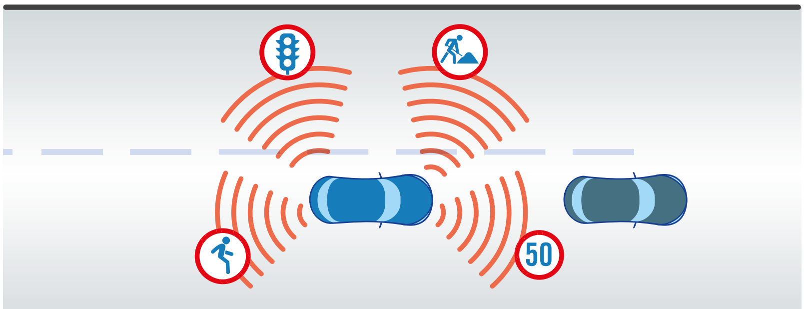
In addition to the activities mentioned above, the Contact Point also has the task of preparing the annual monitoring report on Automated Mobility in Austria.

Automated Mobility in Austria

Strategic Framework in Austria

The Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT) established a controlled process in 2015 to deal intensively with the topic of automated driving. About 140 experts from industry, business and research as well as important cities and all Austrian provinces worked in small working groups on topics such as test infrastructures, legal framework conditions, system architecture, scenarios and use cases as well as digital infrastructure. The result was the first Action Plan Automated Driving "Automated - Connected - Mobile"[1], which created the first legal framework and thus made tests on public roads possible.

Fig 1 – Use case "Security+ through an all-round view" © BMVIT



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The use cases prioritised in the first action plan, "Security+ through an all-round view", "New flexibility" and "Well supplied", form the basis for new measures to be implemented in the coming years. Increasing road safety plays an important role here. Driver assistance systems which, thanks to predictive sensors and C-ITS components, can proactively detect dangerous situations and intervene accordingly are intended to contribute to increasing road safety in the immediate vicinity of the vehicle (Figure 1). On-demand services, both in urban and rural areas, as feeder systems to public transport nodes, are intended to increase the flexibility of users and thus also relieve the burden on the environment (Figure 2). With increasing automation, concepts for the "last mile" should enable efficient freight transport and optimised feeder services (Figure 3).

In order to seamlessly follow up the first action plan, the first bilateral discussions with experts on the further development and design of future measures in the field of automated and connected mobility in Austria took place at the beginning of 2018. In April 2018, two online consultations were conducted, one as part of the Transport Research Arena (TRA) and another as part of the "Connected and Automated Driving" Symposium. In both consultations the participants were asked about the visibility of the first action programme (within the transport or mobility community), the relevance of the measures formulated or implemented so far and the need for new activities. These two events also offered a unique opportunity to involve international stakeholders active in the field of automated mobility in this process.

In June 2018, workshops were held with experts from various fields (including administration and politics, spatial planning, road safety, automobile clubs, local public transport, road operators) to exchange views on the guiding principles and needs for concrete measures for the new action programme.

The new action programme, presented at the end of 2018, differs from the first action plan on automated driving in that it now also addresses other modes of transport, such as rail and aviation.

The focus is now more on automated mobility, i.e. the interaction of automated and connected vehicle and infrastructure functions with the entire mobility ecosystem.

The planned activities are based on the core objective of maintaining or regaining a public space worth living in and of high quality. Accordingly, automation, alongside electrification of mobility, sharing mobility and multimodality, is a building block in a long series of necessary measures to achieve transport and social policy objectives. The focus in Austria continues to be on testing and piloting – since 2019 with special consideration of Human-Machine-Interfaces (HMI) and intensive involvement of users. The provision and establishment of new (partially) automated mobility services should also contribute to reducing CO_2 emissions in the transport sector.

Further objectives of the current action programme address the domestic industry, which is facing a number of challenges due to the new mobility requirements. The funding measures in the area of (Austrian) research, technology and innovation policies (RTI) are intended to make a significant contribution to further strengthening the competitiveness of domestic industry and business in this future field. Further information can be found in the Action Programme Automated Mobility[2].

Legal Framework

The first step towards implementing the 2016 action plan was the 33rd amendment to the Motor Vehicle Act on 1 August 2016, which created the legal framework for testing automated vehicles outside private test sites. On the basis of this amendment, the BMVIT issued the “Automated Driving Regulation” (AutomatFahrV) on 19 December 2016. This specifies the conditions under which tests of automated vehicles on public roads can take place. In particular, it determines in which traffic situations, on which roads, in which speed ranges, which assistance systems or automated or connected vehicles can be tested.

Fig 2 – Use case “New flexibility”

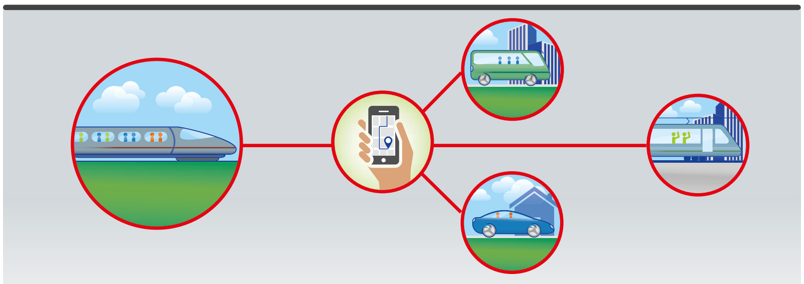

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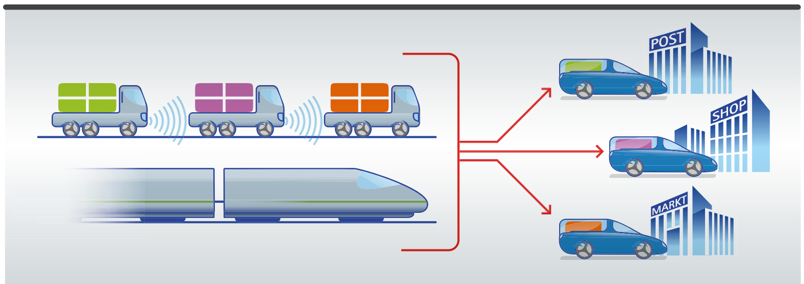
Fig 3 – Use case “Well supplied”



© BMVIT

The regulation defines three applications: Autonomous Minibus, Motorway Pilot with Automatic Lane Changing and Autonomous Military Vehicle. Within the scope of these applications, time-limited tests on public roads may be carried out under certain conditions and after application to the BMVIT. However, there must always be a driver in the vehicle in order to be able to take over manual control of the test vehicle at any time. The AutomatFahrV thus defines the legal framework for testing automated vehicles on public roads. From the outset, the legal structure was designed in such a way that, if necessary, appropriate changes can be easily implemented.

An amendment to the AutomatFahrV came into force in the first half of 2019. This contains regulations which, under defined conditions, permit the use of certain automated driving functions (Parking Assistant and Motorway Assistant) approved in series production on public roads. In addition, this amendment will enable an acceleration of the procedures for test drives on the low-ranking road network and an extension of the scope of testing for Autonomous Military Vehicles[3].

Testing & Learning in Austria

In Austria, numerous research institutions, established companies in the fields of vehicle development, vehicle supply and C-ITS as well as start-ups are intensively engaged in connected and automated mobility. The developments range from parking aids and adaptive distance and speed control (ACC) to automated driving from A to B. In order to be able to use and test these driving functions in a controlled and safe environment, the Austrian Federal Ministry of Transport, Innovation and Technology has created the corresponding prerequisites (AutomatFahrV, Code of Practice, …).

Fig 4 – Test drives during the TRA2018 © Zinner/AustriaTech

Process: Tests on Public Roads

Under certain conditions it is possible to test automated driving functions on public roads in Austria within the framework of the “Automated Driving Regulation”. With the “Code of Practice” (CoP) a further set of rules for safe testing on public roads was created. In addition to legal requirements and official approvals, the CoP guidelines are intended to provide testing organisations with assistance on the way from system development to production readiness. In this process, the Contact Point Automated Mobility is the place to go for all those who want to test automated driving functions on public roads in Austria. One of the main tasks of the Contact Point is to advise on the preparation of test applications and to provide all necessary information.

The Contact Point Automated Mobility receives technical and legal support from a council of experts when reviewing the test applications. The council of experts advises the BMVIT and provides its expertise on security-related issues, data protection, liability and ethical issues. Tests that go beyond the applications defined in the “Automated Driving Regulation” are currently not possible in Austria. The Contact Point Automated Mobility, however, continuously collects additional test requirements in order to analyse, which additional applications are desired and should be implemented.

Tests with Shuttles

Three Shuttle-projects are currently testing automated driving functions on roads with public traffic in Austria. The automated shuttles of the companies NAVYA and EasyMile are used for these test drives. The duration of the test drives varies between a few days (showcases) and up to two years. The showcases and tests carried out over the past year have examined methods, technologies and models for researching and testing the reliable and safe operation of automated passenger shuttles.

The aim of the tests was:

- the demonstration of technologies,
- the recording of the reactions of the users,
- the data collection for research purposes,
- the operation in mixed transport with other road users (buses, lorries, cars, cyclists, pedestrians),
- the questioning of acceptance by the population,
- the performance of driving manoeuvres (entry and exit to/from bus stop areas, turning, crossing, driving around obstacles, etc.)
- the changing requirements due to the geographical location, spatial nature and structure of the road network.

The tests have shown that the shuttles can stop reliably in front of obstacles or adapt their speed to the situation. At the same time, the very sensitive sensors for environment detection proved to be problematic, as even minimal changes between the virtual mapping of the environment and the actual on-site situation during the execution of the tests led to the vehicles braking or stopping. System failures could also be caused by slightly varying ground distances. These resulted, for example, from the different number of passengers and thus the vehicle weight. Driving impairments also occurred when using several vehicles on a route, when route information was transferred from one vehicle to another vehicle, as this led to inequalities with the alignment of the real environment.

The reactions of road users were different.
The first contact with a shuttle often showed an initial reluctance, as the speed of the vehicle, the driving manoeuvres and the uncertainty as to whether the vehicle could stop in time were not apparent to many people. At the same time, many pedestrians and cyclists also tested the limits of the vehicle by deliberately entering or crossing the lane just in front of the vehicle despite acoustic warning signals.

The average driving speed of the shuttles was 9 km/h. In many cases this slow speed was disadvantageous because other road users often reacted impatiently and overtook the vehicle at the next opportunity - even in unfavourable places, such as a pedestrian crossing or just before a bend. The slow speed of the test vehicles hindered the flow of traffic, especially at peak times. Longer stops were also caused by obstacles that the shuttles could not handle automatically and that required manual control by the operator.

The shuttles used exclusively record non-personal travel data. The sensor data used and recorded for driving operations do not allow any conclusions to be drawn about personal data, neither in the vehicle nor in its surroundings. In summary, the test reports show that the test drives have sensitised the population to automated driving and to the possibilities and limits of the technology of connected and automated mobility. While driving with semi-automated shuttles is already a reality, the tests also showed that these vehicles cannot yet drive fully automatically and that numerous development and research steps are still required before they reach level 4 or even 5. Communication between shuttles and other road users needs to be continuously improved through symbols as well as optical and acoustic signals.

Tests with Motorway Pilots

AUDI AG, AVL List, Magna Steyr and the Virtual Vehicle received a test certificate in 2018 to test their SAE Level 2 and 3 Motorway Pilots on Austrian motorways and expressways. Within the scope of the tests, driver assistance systems such as distance control systems and lane guidance, lane change, congestion and blind spot assistants were analysed. Extensive vehicle data was also collected and processed. Within the framework of the tests, different methods for the validation of vehicle dynamics and processes are applied and scenarios and technologies and functionalities are mapped. Validation methods are, for example, test fields or closed test environments whose results are subsequently tested or verified under real (road) conditions. The topic of data management plays a central role here.

Test Environments in Austria

The further development of complex, automated vehicles to market maturity requires extensive test procedures that meet the highest safety requirements and performance criteria. In order to be able to test virtual validation in the laboratory as well as under real conditions, the BMVIT supports the development of special, multifunctional test environments within the framework of the Action Plan on Automated Mobility. According to the BMVIT, these represent a combination of simulation, test bench, test environments on private test sites and test tracks and real operation on public roads. The BMVIT supported the tendering of test environments and preliminary studies in the years 2016 – 2018 with six million euros.

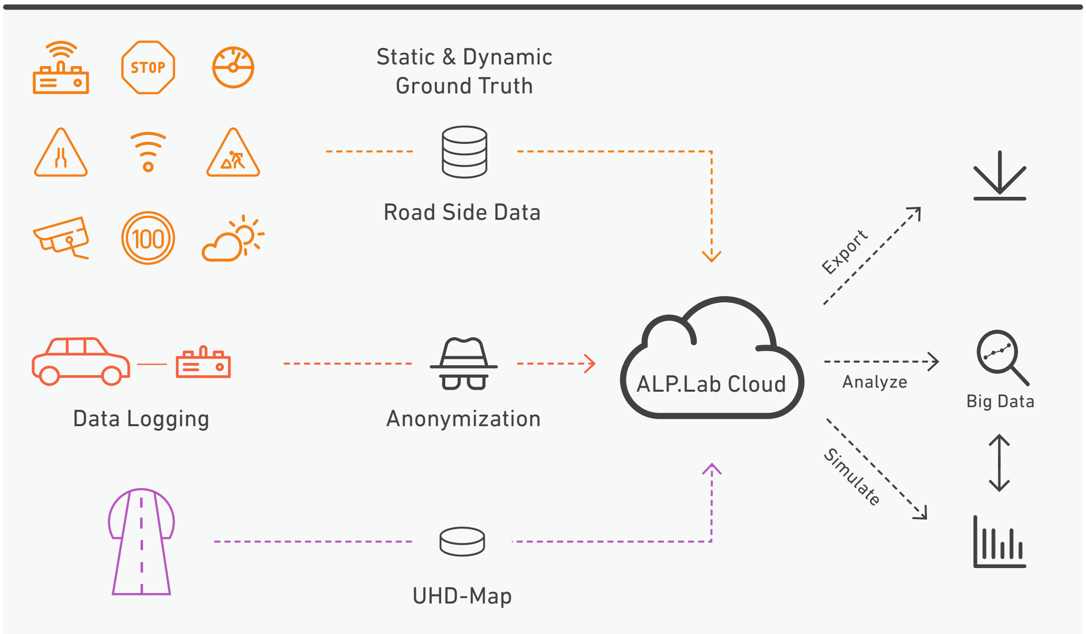
DigiTrans

The DigiTrans test environment aims to establish an interdisciplinary test region for automated and connected driving. The project takes up requirements from industry and infrastructure operators, including aspects of digitisation and logistics. DigiTrans focuses on the needs of commercial and special vehicles, especially in the area of logistics hubs and in the context of infrastructure sharing of test environments for automated driving.

testregion-digitrans.at

Fig 5 – DigiTrans Graph

Fig 6 – ALP.Lab Cloud



alp-lab.at

ALP.Lab

Under the title ALP.Lab, this test environment bundles the entire test chain – from initial simulations to tests on test benches to test drives on private company premises and tests on public roads. The aim is to shorten the development time of automated vehicles under optimum safety conditions, thereby giving Austria a pioneering role in this technology and thus strengthening the business location. Test drives will take place on a 20 km long section of the A2 between Graz-West and Laßnitzhöhe equipped with digital infrastructure by ASFINAG. Testing will also take place on the A9 from St. Michael to the Styrian-Slovenian border. In addition to the existing basic infrastructure (fibre optic network and ICT infrastructure, traffic and environmental data sensors for weather data), the test section on the A2 was also upgraded with high-resolution HD video cameras with video detection and stationary radar systems. Possibilities have also been established for the continuous recording of individual vehicle data and for overall traffic analysis.

Work is being carried out successively on improving the recording of test vehicles through to the generation of a continuous vehicle trajectory. As a basis for test management and simulation, an ultra-precise high-definition map of the test environment is created and continuously updated.

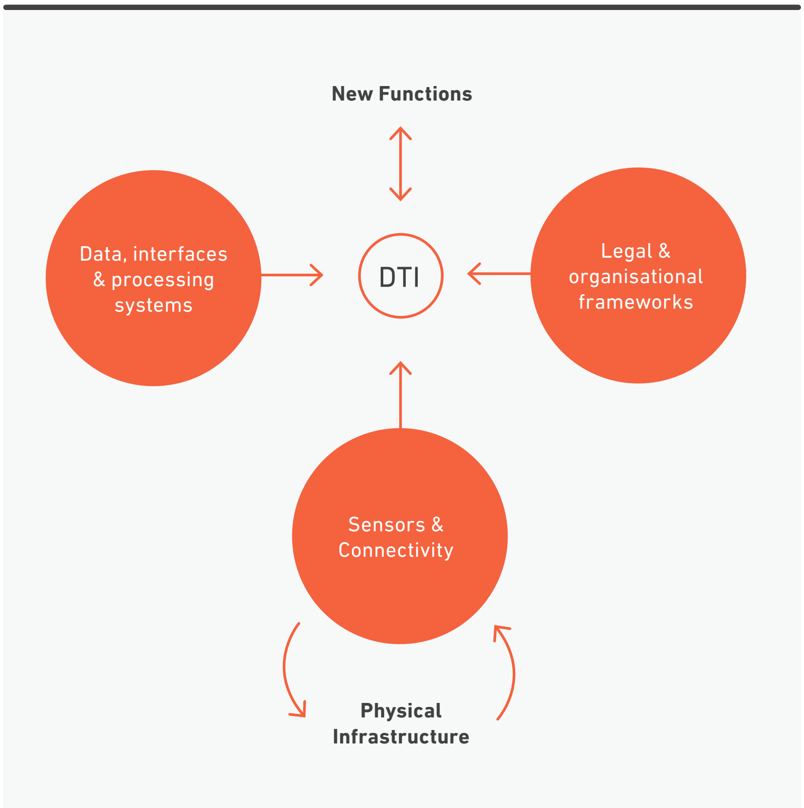
The initial findings from these tests show that the large amounts of data generated during the validation of automated driving functions pose a particular technical challenge for real-time analysis. In order to be able to deal effectively with the large amount of data, data processing is operated on cloud based systems. ALP.Lab has developed a cloud for this purpose. The comparison of the traffic sign recognition with the actually existing traffic signs or with the corresponding switching of variable traffic signs is already implemented. ALP.Lab offers to make the cloud available for other test environments and projects so that similar or identical infrastructures and systems do not have to be set up in parallel.

› Digital Infrastructure

The term digital infrastructure means a traffic data ecosystem that is controlled and managed by a set of institutional guidelines and technical standards. The digital infrastructure links data, interfaces and the physical infrastructure.

Digital infrastructure (see Figure 7) can support automated vehicles in driving tasks, but can also increase the efficiency of the entire transport system, e.g. through new traffic management solutions. Elements of the digital infrastructure are data, interfaces and processing systems, the legal and organisational framework as well as the sensors and their networking. The requirements for digital infrastructures are very closely linked to the respective application scenarios. Digital infrastructure is a key topic at ITS Austria.

Fig 7 – Digital infrastructure, Work Programme of ITS Austria 2018



The INFRAMIX project is developing a digital infrastructure to support automated and connected vehicles on the high-level road network, contributing to a safer and more efficient transport system. Analogous to the levels for automated driving, a "Road Infrastructure Classification Scheme" is being developed to show the potential of the infrastructure, e.g. in the area of connectivity or the support of automated vehicles. ASFINAG and Abertis Autopistas España presented a classification scheme, the so-called Infrastructure Support Levels for Automated Driving (ISAD), at the ITS World Congress in Copenhagen 2018, which defines infrastructure support for automated driving at five possible levels (see Fig. 9)[4]. The aim is to contribute to the harmonisation and categorisation of all roads or road sections to support and manage automated vehicles. ISAD levels are also currently being discussed at ERTRAC in connection with the roadmap for automated driving.

Operational Design Domains (ODDs) are an important parameter in both digital and physical infrastructure. An ODD defines the conditions under which an automated driving system can be operated. Among other things, this concerns components such as road types, speed ranges, weather, day/night. It is essential to develop a common understanding of ODDs and to analyse on the basis of concrete examples how digital and physical infrastructure can contribute to extending the possible application range of driving systems (geographical extension of ODDs) on the one hand and to making them safer within the ODD on the other. The schematic Figure 8 for the ODD framework shows already defined ODDs in the grey shaded area. The gaps between them represent situations in which the vehicle control is passed from the system to the driver (purple line) – for example due to threading processes in road traffic or due to bad weather.

A core element of the digital infrastructure is connectivity. To this end, extensive activities in the field of ITS-G5 access technology have taken place in Austria in recent years. This is based on the WLAN standard IEE802.11 and is used in the frequency bands reserved for European ITS applications. The advantages of ITS-G5 are very short latency times and already highly developed or standardised messages (CAM, DENM, SPATem, MAPem, IVI). Communication via ITS-G5, both between infrastructure and vehicles, and between vehicles, has already been implemented and further developed in various projects. An EU-wide security solution has also been specified and is currently being tested. This security solution mainly relates to the integrity and availability of messages and is based on a public key infrastructure. In the C-ROADS platform various activities in the area of testing and implementing C-ITS services have been successfully carried out in order to enable a harmonised deployment of C-ITS in Europe.

Fig 8 – Schematic representation of ODDs

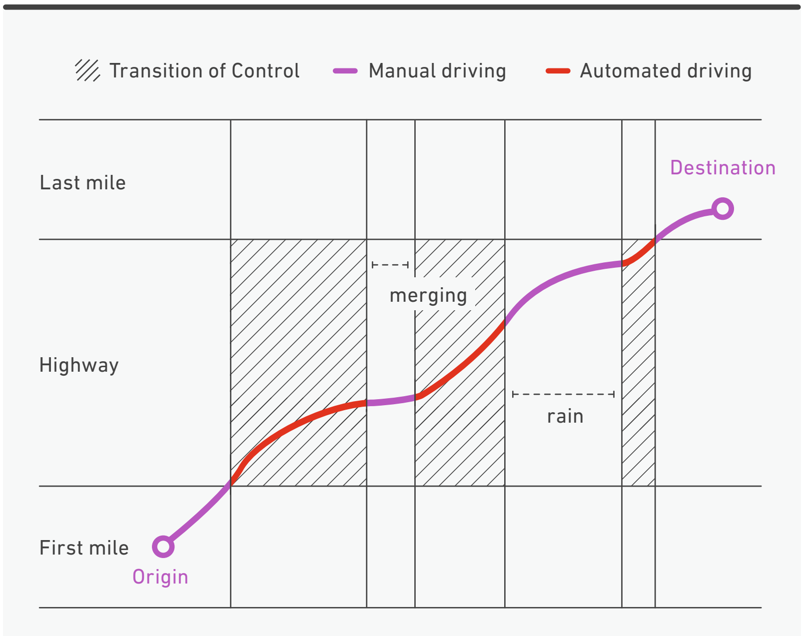


Fig 9 – ISAD Levels

	Level	Name	Description	Digital map with static road signs	VMS, warnings, incidents, weather	Microscopic traffic situation	Guidance: speed, gap, lane advice
				Digital Information provided to AVs			
Digital Infrastructure	A	Cooperative driving	Based on the real-time information on vehicle movements, the infrastructure is able to guide AVs (groups of vehicles or single vehicles) in order to optimize the overall traffic flow	×	×	×	×
	B	Cooperative perception	Infrastructure is capable of perceiving microscopic traffic situations and providing this data to AVs in real time	×	×	×	–
	C	Dynamic digital Information	All dynamic and static infrastructure information is available in digital form and can be provided to AVs	×	×	–	–
Conventional Infrastructure	D	Static digital information / Map support	Digital map data is available with static road signs. Map data could be complemented by physical reference points (landmark signs). Traffic lights, short term road works and VMS need to be recognized by AVs	×	–	–	–
	E	Convetional infrastructure / no AV support	Conventional infrastructure without digital information. AVs need to recognise road geometry and road signs	–	–	–	–

Austrian R&D Projects & International Activities

AVENUE21

In the course of the AVENUE21 project, the development of automated driving in urban areas in Europe was examined and the effects on spatial impact, planning and control were investigated. Project results point to a protracted change from the previous conventional system to a system dominated by connectivity and automation (the "Long Level 4"). In addition, the ability to automate the use of vehicles will depend on physical and regulatory environmental factors of the ODDs. Within the framework of simulation studies, it was determined which effects will have an influence on traffic and land use. On this basis, an "automated drivability" concept was developed to determine the suitability of road spaces for highly and fully automated vehicles. With a study on policy design for automated and connected driving in Europe, a further building block could be established for understanding possible effects on European cities, so that the use of automation and connectivity in transport systems is not only technologically dominated, but actively shaped.[5]

via-AUTONOM

The aim of the project was to investigate which road-side infrastructure measures (for existing and new roads) have the best effect on a well-functioning mixed operation, i.e. the joint use of the infrastructure by automated and conventional vehicles and other road users. As a basis for this, a risk model was used to discuss which measures are best to be taken where in the road network, since it cannot be assumed that the roads will be adapted to automated traffic throughout the network. Following the identification of critical points in the public road network, the effectiveness of defined measures (e.g. extension of the acceleration lane, roadside sensors) was investigated using simulation methods. For this purpose, a simulation framework was developed and applied by way of example in experiments. The evaluation of the simulations included effects on both safety and traffic flow. It was successfully demonstrated that the simulation method can be used as a future decision-making aid for infrastructure measures.[6]

Fig 10 – via-AUTONOM Results

Recommendations for Physical Infrastructure
Guidance devices and markings, traffic signs, routing, traffic areas

Toolchain for Creating Virtual Streets
Digitisation of infrastructure, extraction of objects, modelling for simulation

Data Architecture for Automated Mobility
Efficient collection and management of traffic, vehicle and infrastructure data

Co-simulation Platform for Virtual Tests
Micro and sub-microscopic simulation for evaluation of infrastructure for automated mobility

Recommendations for Digital Infrastructure
Digital map, live updates, roadside units and I2V, cooperative driving, traffic management

Risk Model for Identifying "Hot Spots" in Mixed Traffic
Risk analysis based on accident, weather and infrastructure data, hot spot map for automated driving risks

© via-AUTONOM (AustriaTech representation)

auto.Bus - Seestadt

The project auto.Bus - Seestadt deals among other things with regulations and standards for type approval solutions, with standardised communication technology between vehicle and infrastructure, with the newly created workplace "Operator", with machine learning for increased situational awareness as well as with interaction possibilities between passengers and the Shuttle and of course with classical technical adaptations. Passenger service started in the spring of 2019 in the Seestadt Aspern (Vienna).

^ Fig 11 – The workhops of the High Level Ministerial Meetings took place at Vienna's giant ferries wheel © Reich/BMVIT

High Level Ministerial Meeting on Connected and Automated Driving

On 28 and 29 November 2018, numerous mobility experts from Europe (EU member states, European Commission, platforms, pilot projects) accepted the invitation of the BMVIT and the Contact Point Automated Mobility and took part in the fourth "High Level Meeting on Connected and Automated Driving". The event was held under the motto "Beyond SAE Levels: Towards Safe & Sustainable Mobility".

With the aim of obtaining comparable test and research results at European level, so-called "Building Blocks" (see Figure 12) were prepared as a basis for discussion and processed in small groups during the event. These Building Blocks of connected and automated mobility should serve to systematically differentiate concrete applications such as automated shuttles. Subsequently, these Building Blocks are also to be applied to other applications such as Motorway Pilots or platooning or further developed according to their requirements.

Each of the Building Blocks listed in Figure 12 deals with legal, regulatory and institutional framework conditions. Discussion results from the small groups showed that in particular the building blocks road safety, user experience and acceptance as well as digital infrastructure and connectivity were identified as currently relevant for joint work at European level. In addition, some "blank spots" have been identified which are considered important for the further development of automated mobility, but about which little knowledge or competence is currently available. These include, for example, institutional capacities, business models and reporting as part of tests or pilot projects.

The event was topped off with a discussion round on the topic of "Sandboxing" for connected and automated driving. Their purpose is to find legal solutions to enable the testing and further development of new technologies or driving functions outside the existing legal framework (e.g. road traffic regulations). Another finding of the event was that the promotion of European cooperation with regard to a harmonised development of automated and connected mobility should continue to be promoted and that there is a willingness among the participating member states to do so.

Fig 12 – Building Blocks Automated Mobility

International Working Groups

Last year, the trilateral working group with representatives from the EU, the USA and Japan on automation in road transport dealt with the complexity of the effects of automated driving. The motivation for this was the realisation that international harmonisation of methods and indicators for impact assessment is in the interest of all, since field trials are expensive and therefore usually only carried out on a small scale. This trilateral cooperation is the first attempt to harmonise the three regions. Since there are many concepts for automated driving, no detailed methodological recommendations were given. Instead, the working group aimed to facilitate meta-analysis between different studies. An important result of the working group is the comprehensive Impact Assessment Framework published in April 2018. The framework contains numerous thematically sorted Key Performance Indicators and methods for measuring the effects of connected and automated mobility.

On 23 March 2018, another trilateral working group was formed between Austria, Hungary and Slovenia. At ministerial level, a Memorandum of Understanding on cross-border cooperation in the development and testing of electrical, connected and automated mobility services has been signed. This cooperation is based on agreements at the European level, such as the Amsterdam Declaration of the EU Transport Ministers of 2016 and the subsequent High Level Meetings, in which the EU member states agreed to cooperate in key areas such as the exchange of data and information between test environments, the development of coherent regulations at the international, European and national levels or the development of an impact assessment of connected and automated driving.

In addition to cooperation at ministerial level, there are cooperation between various interest groups in these countries. As early as autumn 2017, a partnership and joint cooperation was agreed between the Austrian test environment ALP.Lab and the Hungarian test site Zala Zone. Since 2017 there has also been a cooperation between universities in Graz, Budapest and Maribor, in the framework of which joint project ideas for connected and automated mobility are being developed. In 2018, the motorway operators ASFINAG, Magyar Közút and DARS also began working together in various working groups to coordinate the use of cooperative, connected and automated mobility.

Events

^ Fig 13 – EU Commissioner Violetta Bulc at TRA2018 © Zinner/AustriaTech

From 16 to 19 April 2018, Vienna hosted the Transport Research Arena (TRA), where numerous research results were presented and discussed. Under the title "a digital era for transport: solutions for society, economy and environment" more than 3,600 visitors from 65 different countries came together to participate in a scientific discourse, showcases and networking opportunities. With a special focus on digitisation, everything revolved around transformation processes in the transport and mobility sector. A review and overview of the TRA is available in two highlight reports on the AustriaTech website.[7]

Following the TRA 2018, the two-day EUCAD Symposium took place, which was organised jointly with the CARTRE and SCOUT initiatives, the European Commission and AustriaTech. The aim of the event was to explore and analyse the specific topics related to the development and introduction of connected and automated driving in Europe. The participants exchanged positions and visions and discussed the challenges and research needs of connecting and automating mobility.

› Summary

In 2018, all planned measures of the first action plan "Automated - Connected - Mobile" were successfully implemented. At the same time, the development of the new "Austrian Action Programme on Automated Mobility" began at the beginning of the year and was finalised in October 2018. It provides for a total budget of around 65 million euros for the implementation of more than 34 defined measures in the years 2019 to 2022.

In 2018, the Contact Point Automated Mobility received numerous applications for tests on public roads. The shuttle test projects auto.Bus Seestadt, Digibus Austria® and SURAAA, which are currently running in Austria, have used this opportunity for testing. Tests with the Motorway Pilot were carried out by Magna.

"The annual monitoring of automated mobility is important for several reasons: It makes domestic experiences and competences visible and enables a focus on future learning fields."

› **Martin Russ**
Managing Director
AustriaTech

Numerous R&D projects for connected and automated driving are currently underway. The test environment DigiTrans concentrates, for example, on goods mobility and logistics aspects and aims at the demand-oriented alignment of commercial vehicles and special-purpose vehicles. In a similar thematic field, the pilot project Connecting Austria deals with evaluation bases for the assessment of the effects of energy-efficient, semi-automated lorry platoons[8]. In addition, numerous international (networking) events and transnational working groups have made it possible to intensify existing cooperation at project and institutional level and to establish new ones.

Two major R&D projects, AVENUE21 and via-AUTONOM, were completed in 2018. Within the framework of AVENUE21, the development of automated driving in urban areas was examined and possible implications for (spatial) planning and social structures of cities were examined. Via-AUTONOM dealt with the infrastructure requirements for the operation of automated vehicles. The project results include recommendations for the design and adaptation of motorways and expressways, open country roads as well as for the implementation of the digital infrastructure. Austria continues to work intensively on adapting the legal framework for testing automated driving functions. In the course of 2018, the BMVIT drew up an international country comparison of the legal framework for automated driving. A (feasibility) study on sandboxing was also put out to tender and awarded at the end of 2018.

The activities listed in this monitoring report show the bandwidth of what is currently happening with regard to connected and automated mobility in Austria. At the project and platform level as well as at the level of industry and universities, new initiatives and developments are constantly being taken forward. In the future, open questions will have to be answered in connection with data protection, the use of vehicle and route data and cyber security. A long version of this monitoring report is available (in German) on the AustriaTech website.

Endnotes

1 http://austriatech.at/pdf/328

2 https://www.bmvit.gv.at/en/service/publications/downloads/action_automated_mobility_2019-2022_ua.pdf

3 https://austriatech.at/assets/Uploads/Fokusseiten/Kontaktstelle-Automatisierte-Mobilitaet/Dokumente/22417b0c9b/EN_Verordnung_AutomatFahrVO.pdf

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8 http://www.connecting-austria.at/#/project/general

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