



IPIC 2023

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Autonomous vehicles under all weather conditions: steering towards a harmonised legislative framework enabling real-life deployment

Introduction – Aim of the analysis



In the framework of AWARD H2020 project, this paper and the project's task aim to analyse the different regulatory frameworks for testing and operation of autonomous vehicles in the EU and beyond

Regulations analysed: UN, EU, EU member states (Germany, France, Spain, BENELUX, Portugal, Italy etc.), Switzerland, Norway, USA and others

Output of the task: Develop recommendations on best practices for legislators to safely allow the market uptake of autonomous vehicles in the EU

Final results and recommendations will be submitted and published in Q1-Q2 2024

The current paper is including a first analysis of the EU's ADS Act, Norway, Austria and France

European framework on vehicle type-approval conditions: The ADS act

- Provides guidance on performance and technical specifications of vehicles equipped with ADS, focusing on:
 - the information required to support the ADS manufacturers' request for EU type-approval;
 - the performance requirements and technical specifications applicable to ADSs, under a variety of scenarios and operating conditions (OOD) that the vehicle finds itself in;
 - the review process of relevant approval authorities in their assessment of ADS compliance with the applicable technical specifications;
 - the review of documentation, tests to be conducted and guidance for approval authorities, when reviewing applications.

European framework on vehicle type-approval conditions: The ADS act (next steps)

- ADS act as part of a broader maturation in Europe's AV regulatory and commercial environment
- EU legislation to provide harmonised approach while granting an adequate flexibility to enable the safe development and deployment of AVs in Europe
- Next step is to create a legal framework (EU and national) that ensures safety of AVs and facilitate their deployment and commercialization on public roads and private areas, by learning from good national practices

Status Quo Austria: legal framework

Who is allowed to test?

vehicle manufacturers, system developers, research institutions, transport companies and operators of bus routes, goods carriage companies, operators of multistorey car parks and car parks, road maintenance organizations

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➤ ***contact point
automated
mobility***

= First point of contact in legal and technological issues for national and international companies and projects

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Automated Driving Ordinance („AutomatFahrV“)

- 2016 Automated Driving Ordinance came into force
- 2019 1st Amendment
- 2022 2nd Amendment

i *The Automated Driving Ordinance specifies the conditions for testing automated vehicles on public roads and defines which systems in which traffic situation, on which types of roads, up to which speed ranges can be tested. The regulation does not foresee to impose additional restrictions regarding time of operation, weather conditions or similar conditions.*

The driver may transfer certain driving tasks to these systems, but remains responsible at all times for resuming all driving tasks. The legislation for testing of fully automated vehicles without safety driver in the vehicle (remote operation) is currently under development in Austria.

The Ordinance defines two Use Cases for Systems in Series Production:
“Parking Assistant”
“Motorway Assistant with Automatic Lane Guidance”

8 Use Cases for test purposes



Automated minibus

a minibus equipped with a system capable of taking over all driving tasks at a speed of up to **20 km/h**.



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



Automated vehicle for passenger transport

speed limitation to **50km/h** that are based on type-approved vehicles (categories: M1, M2 and L7e)



Autonomous military vehicle



Automated vehicle for the transport of goods

speed is limited to **30 km/h**: for tests with AV that **have not been type-approved** before and to 50 km/h for tests with AV that are based on type-approved vehicles.



Automated valet parking

enables testing of automated parking, for example in multi-storey car parks at speeds of up to **10 km/h**.



Motorway pilot with automated lane change



Automated working machine

allows working machines to be tested without an operator on board and with a maximum speed of **up to 10 km/h**.

Currently, testing permits can only be issued if they are covered by one of the pre-defined use-cases.

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Summary of requirements and necessary information to obtain a test permit in Austria

Filled in application form:

- Contact person
- Description of the use-case
- Purpose of the test/research questions
- Name of operators
- License plate number
- Confirmation of third-party liability motor insurer
- Duration of tests
- Planned route or area
- Evidence of having informed the state governor and the road administration
- Approval from the driver/operator to perform data recording
- Accident data recorder
- Description of necessary infrastructure adaptations
- Additional questions

Safety relevant information:

- Analysis and risk assessment of the planned route following a given template (including corresponding documentation of risk mitigation measures)
- Confirmation of operator training:
 - Test driver certificate (or similar) – focusing on driver skills
 - Training/introduction covering the vehicle specifications, route specifications, use-case specific maneuvers. etc.
- Description of how the necessary maneuvers have been tested beforehand on a proving ground and in simulation
- Description of manual override of the system
- Description of manual deactivation of the system
- Description of a risk analysis for the whole test and if mitigation measures have been taken; including description of method used

The case of France

Overview of provisions depending on use-cases		
Use-case	Case A: On-board driver	Case B: Remote intervention
Partially automated vehicle	To be able to respond to any request for handover To be able to respond to law enforcement orders and facilitate the passage of priority vehicles	Not allowed
Highly automated vehicle	To be able to respond to any request to take over (NB: by design = out of scope) Be able to respond to law enforcement orders and facilitate the passage of priority vehicles	Only within an automated road transport system (ARTS) System validated by decision of the service organiser, after safety demonstration and opinion of an approved qualified body.
Fully automated vehicle	Not applicable	Remote operator able to intervene according to the system's conditions of use

Discussion – expected outcomes

Legislation in the studied countries allows for testing autonomous vehicles under pre-defined use-cases

The documentation needed to be submitted is rigorous in most cases

In most countries the legislation is going to be updated soon or is updated often

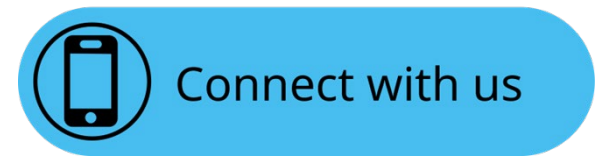
Next steps of the analysis

- Analysis of the regulatory frameworks of different countries in Europe and beyond is work in progress
- Recommendations based on the best practices to be produced
- Workshop to present the recommendations involving policymakers at both EU and national level in Q4 2023



Thank you

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