



Regulation of autonomous vehicle - TESTING IN HUNGARY

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TESTING IN HUNGARY

CURRENT STATUS

INNOVATION FRIENDLY ENVIRONMENT FOR TESTING

Regulation on testing of the autonomous development vehicles since April of 2017

- Since 12 April, 2017 it is possible to **test automated functions on public roads** in Hungary without areal or time limitation
- Developers to be **registered** with and tests to be **reported** to the Minister responsible for Transport

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CURRENT STATUS

- ❑ 7 developers registered for testing on public roads
- ❑
 - 2017. 31 tests, 6810 km
 - 2018. 165 tests, 12200 km
 - 2019. 324 tests, 16125 km
 - 2020. 345 tests, 22335 km
 - 2021. 220 tests, 14236 km
 - 2022. 157 tests, 12372 km until today.

No accidents since 2017.

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DEVELOPMENT VEHICLES

- ❑ **The development vehicle** is a vehicle which is
 - temporarily technically modified AND
 - examined under traffic circumstances

- ❑ Registration is necessary – shall be filed by developer

The liability for the operation of the development vehicle lies with the developer.

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AUTONOMOUS DEVELOPMENT VEHICLES

- The autonomous development vehicle** is a development vehicle designed for developing partially or fully automated functions and operations.

- Additional conditions** in testing for autonomous development vehicles

DEVELOPER

- A **Company or an institution** carrying out the development of a vehicle or vehicle unit, which
 - qualifies as a **research organization** under the Act on research, development and innovation,
 - has **carried out research**, or in connection with this utilizes the results of a research and innovation on the vehicles or specific vehicle units

- The manufacturer** of a vehicle (with existing type-approval) or specific vehicle units

- A type examiner**

- A contractor** of the above entities carrying out development.

REGISTRATION OF THE DEVELOPER

To carry out tests in Hungary the developer must be registered with the Ministry.

Foreign entities might also be registered - however no testing without registration!

- ❑ The developer shall file **a form to the Ministry for the registration**
 - General data of the developer
 - Development activity and goals
 - Data on the testdrivers
 - Data on the development vehicle fleet
 - Data of the closed testing ground used
 - Declaration of the developer to fulfill testing conditions set out below

- ❑ Must have **adequate quality assurance procedures** in place (ISO 26262 standards prior to 2018, nov., now the assurance procedure applied by the developer)
 - for the development procedure
 - for their documentation
 - For the approval of the alterations
 - For testing (including testing in public roads)

REGISTRATION PLATES

License is necessary for testing on public roads.

VEHICLE

- Upon the request of the **vehicle developer**
 - the authority for transport administration issues a **temporary registration plate** for the development vehicle
 - the transport authority **may reclassify** a formerly registered vehicle to the development vehicle category in case the criteria are met.

- Classified as "**development vehicle**" in license.

APPLICATION FOR THE PLATES

- ❑ The vehicle developer application contains the general data and **introduction of the objective and the technical range of the planned development**, modification or technical invention of the vehicle.

- ❑ The technical modification of the development vehicle **may not result in the disimprovement of**
 - its original environmental caharacteristics
 - road safety characteristics in respect of third persons in traffic.

TECHNICAL CONDITIONS FOR AUTONOMOUS DEVELOPMENT VEHICLES

- ❑ To use the public roads the vehicles shall meet the following requirements:
 - **Roadworthiness**, including characteristics of new technology vehicles
 - Must be in **safe conditions**, shall meet all operation requirements
 - **Detection and control system** must be **well developed to enable safe response** to all possible environmental and road user impact
 - **Successful test in closed test area** is to be accomplished – shall be deemed successful by the developer!
 - Shall be reported to the Ministry electronically by filing a registration form

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GENERAL RULES OF TESTING

TESTING

- Up-to-date documentation on all technical modifications during the operation of the development vehicle plus 5 years**
- Full liability insurance is to be in place**
- Test driver is to be present in vehicle**
- Test driver is responsible for the safe operation** regardless of the mode of operation
- Test driver shall be able to safely monitor the operation and immediately take over control

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INDICATING FAILURE

- The test driver shall **be warned** about malfunction and failure occurring during the testing by a **sound signal** and **additional visual notification**.
- The automated braking and steering system of the autonomous development vehicle shall be designed in a manner that **enable regulated manual braking and steering** in case of failure.

Data recording tool shall be able to record minimum the

- Name of test driver
- Operational mode (automated or driver)
- Speed
- GPS coordinates
- Operations of lights and sounds

Data should be

- safely stored for 72 hours from the end of the test
- all data defined should be accessible/sent to the relevant authorities upon request

CONDITIONS OF TESTING

GENERAL REPORTING

- ❑ **Report at least on a 6 months** basis (or as defined by the authorities) including the test results and experiences with simplified statistics
- ❑ The Ministry **shall be notified on the tests in advance** (electronic reporting with fulfilling the form, monthly pre-plans accepted)

FUTURE DEVELOPMENT

REMOTE DRIVING

- Additional conditions to be fulfilled by developers
- Additional conditions to be fulfilled by development vehicles
- Areal limitation
- Limitation of speed, other conditions
- Special licensing

FUTURE DEVELOPMENT

Introduction to normal traffic

- Targeted development level to be defined
- New definitions to be created
 - “Vehicle with automated functions” – L3 – constant attention of the driver necessary
 - “Vehicle with self driving function” – L4 – supervision necessary

- Liabilities to be defined and new liabilities introduced (technical supervision)
- Additional behavior rules

CONTENT

DISCUSSION – MUTUAL
ACCEPTANCE
CAV TESTING



MUTUAL ACCEPTANCE CAV TESTING

MAIN PROBLEM:

Different approaches in regulation.

Hungary:

- Registered developers and registered cars shall take part in testing
- No use cases, any and all functions and vehicles might be tested if conditions met
- No „test approvals”

Austria:

- No registered developers and cars for testing
- Tests shall be approved in advance with certificates from the Ministry and other authorities in cases
- Defined use cases with specific conditions for each use case

OBSTACLES IN HUNGARIAN REGULATION

- Developers shall all be registered (5/1990. (IV.12.) Annex 13)
 - Foreign entities can also be registered
 - Question: exchange of registrations – automatic registration?
 - AUT: no general registration but certificates for each tests
- The Vehicle shall be registered
 - All tested functions reported
 - Question: registration with foreign plate and license?
 - Problem: the vehicle shall be classified as a development vehicle
- Test drivers shall have appropriate knowledge on Hungarian regulations, too