

Automated driving

Fact sheet for conducting pilot tests in Switzerland

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1. Introduction

The use of automated vehicles, the connectivity of vehicles with one another and the connection with the various other options presented by digitalisation are opening up attractive opportunities for Switzerland's transport system. The introduction of automated vehicles could make road travel safer and more convenient, and could also enable access to transport for new user groups (the elderly, people with disabilities, children, etc.). The new technologies are also opening up attractive opportunities for providers of public transport services.

Pilot tests with automated vehicles can yield valuable findings in the field of digital mobility, and promote Switzerland as a location for business and research. In view of this, the Federal Council wants to facilitate pilot tests.

This fact sheet provides entities interested in conducting pilot tests with automated vehicles with information about the legal bases, authorisation procedure, responsibilities, required documentation and the technological, operational and safety-relevant framework conditions.

The degree of automation is defined internationally in the form of various levels (SAE J3016: https://www.sae.org/standards/content/j3016_201806/). If the driver is still fully responsible for the operation of the vehicle (level 0, non-automated; level 1, assisted; level 2, partial automation), the vehicle can be type approved in the normal manner and does not require an authorisation for a pilot test. This means that tests for connecting vehicles to one another and to the infrastructure (C2X) would also be possible without special authorisation. However, tests with vehicles in levels 3 (conditional automation), 4 (high automation) and 5 (full automation) always require authorisation.

2. Prerequisites for the issuance of a special authorisation

Based on Article 106, paragraph 5 of the Road Traffic Act (RTA), the Federal Council is empowered to issue special authorisations for conducting pilot tests with automated vehicles that are deemed necessary until the introduction of relevant legal provisions.

The main criterion for the issuance of a special authorisation is that the test yields new findings with respect to the status of technology or the use of automated vehicles and systems. In addition, applicants are required to explain how those legal provisions that cannot be complied with during the test are to be compensated through the implementation of suitable measures. An authorisation may only be granted if the federal government deems the residual risks associated with the pilot test to be reasonable and proportional.

Special authorisation will only be issued if the pilot test organisers grant the Federal Roads Office full access to all data from the trials should this prove necessary in order to evaluate the test and draw the

relevant findings. FEDRO may bring in experts to do so while respecting the commercial secrecy of the pilot test organiser.

Applications for authorisations must contain the following information:

- A description of the targeted new findings and how these are to be obtained.
- An indication of those provisions and requirements (traffic regulations, technical requirements on vehicles, etc.) that cannot be complied with during the test.
- A description of the measures to be taken in order to compensate for provisions that cannot be complied with, and thus guarantee road safety.

An authorisation cannot be granted if there is no possibility of obtaining new findings or if the findings could also be obtained without the use of automated vehicles.

3. Required documentation and certificates

3.1 Vehicle technology

In principle, the automated vehicles to be used in the test have to meet the same requirements as conventional vehicles. This concerns the brakes, lights, maximum speed, electrical safety, etc. In addition, at all times – including in automated mode – it must be possible for the system to be switched off or overridden by an operator on board and for the vehicle's brakes to be operated manually.

In order for the applicant to be able to meet these requirements, he/she or a mandated specialist must possess the necessary knowledge about vehicle construction. As a rule, FEDRO will look at the vehicle concerned together with the other authorities involved.

→ Required certification and documentation:

- Documentation that describes the construction, design and technical details of the vehicles, plus inspection reports. In the case of modified vehicles that have already been type approved, reference may be made to the documentation relating to their type approval. However, for prototypes, the various test reports (especially concerning the brakes) must always be submitted.
- A list and description of the various technologies to be used, together with information about the extent to which they have already been tested, including details of the interaction of the components.
- Reflections showing that the various systems can be expected to serve their intended purpose.

3.2 Safety

Safety must be afforded the highest priority during the pilot test. This applies to the safety of other road users as well as the occupants of the vehicle.

→ Required certification and documentation:

- Description of action to be taken in the event of a hazard or emergency.
- List of duties / operating concept and description of training for on-board safety personnel.
- Confirmation of liability insurance cover in the amount of at least 100 million Swiss francs to reflect deviations from existing road traffic legislation.

3.3. Operation

The operation of the vehicle is restricted to defined perimeters and routes with the consent of the respective owners of the roads. The manoeuvres to be carried out with the vehicle must be described in a clearly discernible manner. In retrospect it must be possible to ascertain when the vehicle was operated in automated mode and whether the accompanying person assumed control of it. In addition, a

logbook must be kept in which the travel data (distance in kilometres, date, time and any incidents that may have occurred) must be recorded.

→ Required certification and documentation:

- Description of use of the vehicle on the road.
- Route map with description of the various situations (speed limits, ascents and descents, traffic intensity, special situations such as priority from the right, narrow passages, crossroads controlled by traffic lights, etc.).

In principle an authorisation is always required if the test is to be conducted on roads that are subject to road traffic legislation. This may also include privately owned roads to which the general public (i.e. other road users) has access.

The test must not unduly interfere with existing traffic; in particular, the tested vehicle must not hamper the flow of traffic and thus potentially provoke accidents.

3.4 Carriage of passengers

If the pilot test is to include the carriage of passengers, as a general rule a corresponding licence has to be obtained from the federal government.

→ Required certification and documentation:

- Transport licence issued by the Federal Office of Transport (FOT).

3.5 Training

Evidence must be provided that all personnel deployed as part of compensatory measures have undergone the necessary training / further education.

→ Required certification and documentation:

- Certification of completion of training / further education for all functions deployed in the course of compensatory measures.

3.6. Role of the cantons, police and local authorities

The cantonal authority is responsible for issuing the licence plate for the vehicle to be used in the test, but not for issuing authorisation to conduct the test. The relevant cantonal agency (e.g. road traffic office) is there involved in inspecting the vehicle technology.

Furthermore, the respective road owners (federal government, canton, municipality/city, or private individuals where required) have to be involved in determining which stretches of road may be used to conduct the test. In addition, in view of their comprehensive knowledge of the local area, their role as enforcement bodies and in the interests of good relations, the cantonal and local authorities and the police should also be involved in the test.

→ Required certification and documentation:

- Written consent of the relevant road owners (federal government, canton, municipality/city and private individuals where required) for the test and the selected route.
- Evidence of the necessary inclusion of the police in the pilot test.

3.7 Data security

An automated vehicle cannot be operated without data being transmitted and exchanged. Leaks and false data have a direct impact on the safety of road users and passengers. Data security is therefore of the utmost importance.

→ Required certification and documentation:

- Confirmation that the legal provisions governing data protection will be complied with and that data security is assured.

3.8 Radio communication licence

Automated vehicles require a broad variety of electronic devices and wireless transmission technologies, which could potentially interfere with other radio communications and electrical appliances. Interference-free transmission must therefore be assured.

→ Required certification and documentation:

- Radio communication licence to be obtained directly from the Federal Office of Communications (OFCOM).

4. Authorisation procedure and responsibilities

4.1 Issuing authority

In accordance with Article 106, paragraph 5 of the Road Traffic Act (RTA), the Federal Council is responsible for assessing applications and thus granting any necessary special authorisations. The authorisation itself is issued by the Federal Department of the Environment, Transport, Energy and Communications (DETEC) in accordance with Article 47, paragraph 6 of the Government and Administration Organisation Act (GAOA). Applications have to be submitted, together with all the required documentation as listed above, to the Federal Roads Office (FEDRO) (address: Versuchsbewilligung@astra.admin.ch), which then checks that all the required documents have been submitted. If necessary, it may request additional documents or information.

4.2 Validity of the authorisation

The authorisation is valid for a limited period only. If the framework conditions should change in the course of the preparation stage or the ongoing test, the authorisation may have to be modified or renewed in consultation with FEDRO, depending on the extent of the changes.

4.3 Processing time

Processing authorisation applications can be time consuming. This applies in particular to the vehicle inspection and to examining the routing and zoning plans. We therefore recommend allowing sufficient processing time in the planning stage.

4.4 Final report

A comprehensive final report must be submitted to FEDRO not later than six months after the test has been completed. This report should above all describe the obtained findings.

4.6 Contact details for further information

Versuchsbewilligung@astra.admin.ch