

## **French regulatory framework on automated vehicles' conditions of use and automated road transport systems' commissioning**

### **Synopsis**

Decree No. 2021-873 of 29, June 2021 *“implementing Ordinance No. 2021-443 of 14, April 2021 on the responsibility regime applicable in case of circulation of a vehicle equipped with an automated driving system and its conditions of use”*, sets conditions for the deployment of automated vehicles and automated road transport systems on French roads. It covers levels of automation up to so-called “fully automated” systems (i.e. without driver on board), provided that they are under the supervision of a person in charge of remote intervention and that they are deployed on predefined routes or zones.

The decree sets definitions and general safety provisions for these systems, as well as requirements for the driver or the person in charge of remote intervention.

Finally, the decree sets conditions under which fully automated systems (including vehicles, roadside or remote equipment and operational procedures) may be put into service, following a specific safety demonstration process.

Orders specify procedures for approved qualified bodies and the content of their report on system safety, as well as conditions for the authorisation of remote operators, particularly in terms of training.

A number of reference documents (methodological documents or guides) are intended to support stakeholders (system designers, operators, service organisers, and approved bodies) in the implementation of safety demonstrations.

This document provides a synopsis of this framework. It has no regulatory value.

## Definitions

### 1. *“Partially” automated vehicle*

- Must do a take-over request to respond to some traffic hazards or failures during a manoeuvre

### 2. *“Highly” automated vehicle*

- Can respond to any traffic hazard or failure (within its operational design domain), without doing a take-over request during a manoeuvre

### 3. *“Fully” automated vehicle*

- Can respond to any traffic hazard or failure, without doing a take-over request during a manoeuvre
- Used in automated road transport systems with remote intervention capability

### 4. *Conditions of use*

- Operational design domain
- Terms and conditions of takeover, safety and emergency manoeuvre

### 5. *Automated road transport system (“ARTS”)*

- A set of highly or fully automated vehicles, and technical devices allowing remote intervention or safety, deployed on predefined routes or zones, and complemented by operating and maintenance rules, for the purpose of providing a passenger road transport service<sup>1</sup>

### 6. *“Remote intervention”*

Only within an automated road transport system

- Activate, deactivate the system
- Give instruction to the system to perform, modify, interrupt a manoeuvre
- Acknowledge manoeuvres proposed by the automated driving system
- Choose, modify the planning of a route or stop points

### 7. *“Minimum risk manoeuvre”*

- Stopping the vehicle in a situation of minimal risk to its occupants and other road users
- Automatically performed by the automated driving system, following a hazard not foreseen in its operating conditions, a serious failure or, in the case of remote intervention, a failure to acknowledge a manoeuvre requested by the system

### 8. *“Emergency manoeuvre”*

- Manoeuvre automatically performed by the automated driving system in the event of an imminent risk of collision, with the aim of mitigating or avoiding it

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<sup>1</sup> The regulatory framework for freight and logistics services will be set at a later stage

## ARTS' condition of use: description

Any automated road transport system is subject to conditions of use which specify:

- operational design domain of vehicles used in the system
- technical design domain of the technical system
- conditions under which a minimum risk manoeuvre is activated by the automated driving system
- conditions under which an emergency manoeuvre is activated by the automated driving system
- conditions under which an authorised person may, outside the vehicle, give the instruction to carry out, modify, interrupt or acknowledge a manoeuvre
- description of manoeuvres that can be performed outside the vehicle
- description of acknowledgment conditions for manoeuvres proposed by the system and which can be acknowledged remotely

## Requirements on the driver (use cases with driver on board)

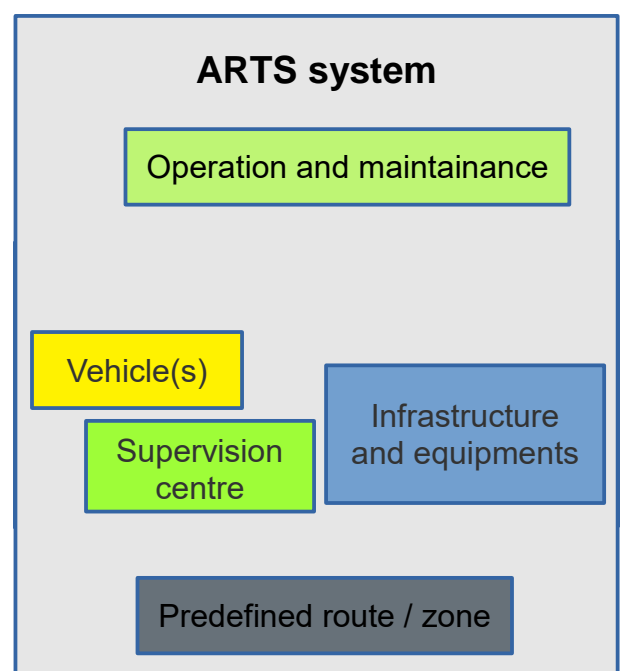
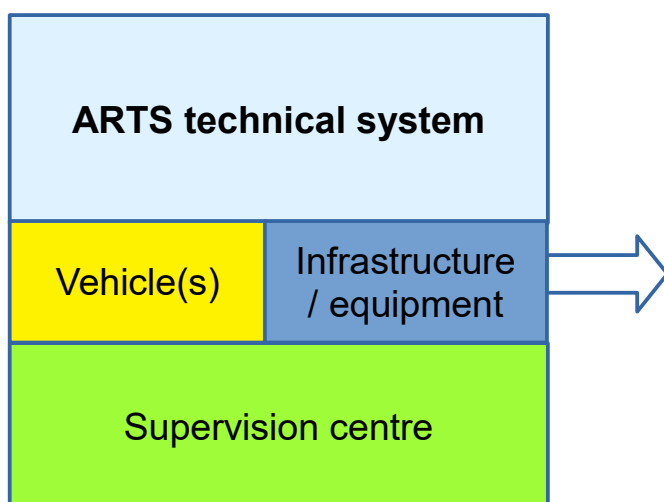
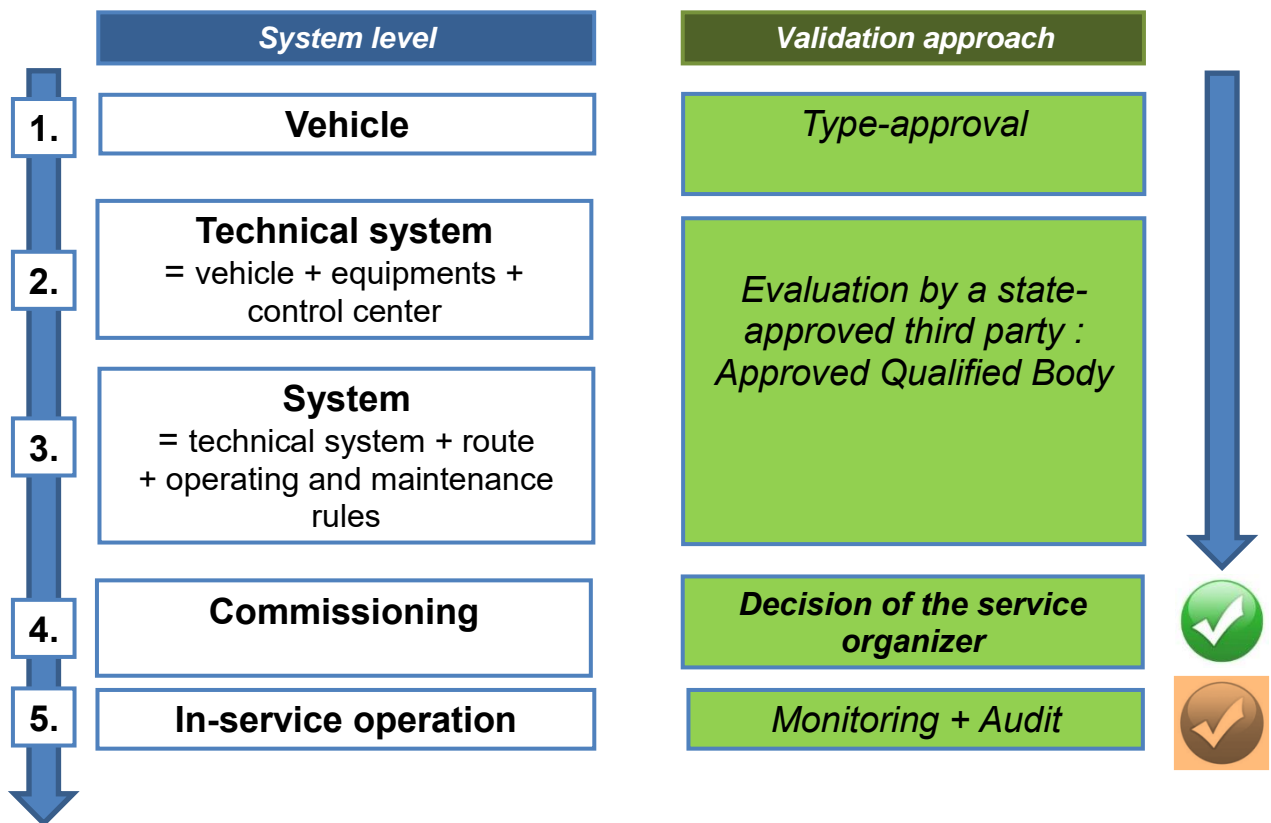
When the automated driving system is active, the driver is no longer required to be in a state and condition to carry out conveniently and immediately all manoeuvres incumbent on him. However, the driver must at all times remain fit and able to respond to a request for recovery, to comply with summonses and instructions from law enforcement forces, to facilitate the passage of general interest vehicles and to give way to priority general interest vehicles.

<b>Overview of provisions depending on use cases</b>		
<b><i>Use case</i></b>	<b><i>Case A : On-board driver</i></b>	<b><i>Case B : Remote intervention</i></b>
<b><i>Partially automated vehicle</i></b>	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	<b>Not allowed</b>
<b><i>Highly automated vehicle</i></b>	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	<b>Only within an automated road transport system (ARTS)</b>  System validated by decision of the service organiser, after safety demonstration and opinion of an approved qualified body.
<b><i>Fully automated vehicle</i></b>	<i>Not applicable</i>	Remote operator able to intervene according to the system's conditions of use

## Safety general requirement for ARTS

"Any automated road transport system or any part of an existing transport system shall be designed, put into service and, where appropriate, modified in such a way that **the overall safety level with regard to users, operating staff and third parties is at least equivalent to the existing safety level or to the safety level resulting from the implementation of the systems or subsystems providing comparable services or functions**, taking into account the state of the art, the feedback from experience concerning them and the reasonably foreseeable traffic conditions on the route or in the traffic area concerned".

### Architecture of the safety demonstration for ARTS



<b>Contents of ARTS' safety demonstration files</b>		
<b>1. Design file</b> <i>Technical system</i>	<b>2. Preliminary safety file</b> <i>In project phase</i>	<b>3. Safety file</b> <i>Commissioning decision</i>
<ul style="list-style-type: none"> <li>- Declaration of functionality and safety, which summarises the characteristics and conditions of use of the vehicles</li> <li>- Capabilities of the technical system: manoeuvring, perception and localisation capabilities, remote intervention capabilities</li> <li>- Types of routes or areas covered by the technical system</li> <li>- System requirements for testing and facilities outside the vehicle.</li> </ul>	<ul style="list-style-type: none"> <li>- Routes or areas identified for the circulation of the system</li> <li>- Characteristics of the service</li> <li>- Proposed operational safety management system</li> <li>- Proposed layout of the technical and safety installations located outside the vehicles</li> <li>- Responses to the technical system requirements for technical and safety facilities</li> <li>- Characteristics and level of service of the road, its facilities and the technical and safety installations necessary to achieve the safety level</li> <li>- Test and trial programme</li> </ul>	<ul style="list-style-type: none"> <li>- Final version of the safety management system in operation</li> <li>- Verification of the effective implementation of the technical and safety facilities and installations provided for in the preliminary safety file</li> <li>- Presentation of the agreements between the service organiser and the road managers</li> <li>- Report on the tests and trials carried out</li> </ul>
<i>Design file of the technical system is prepared by the designer and under his responsibility.</i>	<i>Preliminary safety file is drawn up under the responsibility of the service organiser.</i>	<i>Commissioning safety file is established under the responsibility of the service organiser.</i>  <i>The operator establishes operational safety management system.</i>

Three orders were issued in application of the ARTS decree:

- Order of 2 August taken in application of Article R. 3152-30 of the transport code relating to the content of applications for approval and procedures for examining applications in the context of automated road transport systems;
- Order of 2 August 2022 taken in application of article R. 3152-3 of the transport code relating to the authorisation of remote operators in the context of automated road transport systems;
- Order of 5 August 2022 taken in application of article R. 3152-24 of the transport code relating to the content of opinions of approved qualified bodies.

## Order on the authorisation of the remote operator

A remote operator shall:

- Have a medical aptitude of group 2, regularly checked
- Have undergone general training in the remote intervention activity adapted to the considered technical system and specific training adapted to the system specificities on routes or zones where it is deployed

General training	System specific training
<ul style="list-style-type: none"> <li>• Remote intervention functionalities</li> <li>• Technical and material means allowing remote intervention</li> <li>• Capabilities of vehicles involved in the remote intervention</li> <li>• Performances and limits of technical and material means of the technical system</li> <li>• Operational design domain, activation conditions of MRMs and emergency manoeuvres</li> <li>• Procedures and operating modes for remote intervention</li> <li>• Respond to requests from law enforcement agencies, emergency services, road managers and users</li> <li>• For operators from a supervision centre, to know methods to avoid cognitive or visual hypovigilance</li> <li>• For operators operating in the vicinity of the system, to know how to position themselves safely to give manoeuvring instructions or to carry out necessary actions</li> </ul>	<ul style="list-style-type: none"> <li>• Technical means and specific equipment to the system and their use for remote interventions</li> <li>• Specific characteristics and specific risks of routes or zones</li> <li>• Management methods defined by specific procedures and operating modes</li> <li>• Communication methods with actors to be alerted in the event of an incident (technical agents, emergency services, police, road managers, etc.)</li> </ul>

- The training must be supplemented by exercises in remote intervention centres, situations particularly relevant to remote intervention (malfunctioning of the technical system, external incident), and recycled regularly
- The training courses are validated by certificates relating to the validation of knowledge
- The minimum duration of training (general + specific) is four days, to be adapted to specificities of systems and courses

## **Order on the content of qualified bodies' opinions**

Opinions of approved qualified bodies must contain the following information (among others):

- If the opinion is issued at the stage of a technical system design file (DCST): the identification of the technical system subject to the opinion. If the opinion is issued at the stage of a preliminary safety case (DPS) or a safety case for commissioning (DS): identification of the automated road transport system subject to the opinion and identification of the technical system implemented in this automated road transport system.
- The type of file at the stage at which the opinion is issued (DCST, DPS or DS), identification of the entity responsible for the file (designer of the technical system or organiser of the transport service)
- For each of the seven technical fields defined, the identification of the approved qualified bodies that have been involved
- Precise references of approved qualified bodies reports on which the opinion is based
- If the opinion relates to a technical system, the result of functionalities and safety declaration verification on the basis of the DCST and the result on compliance verifications with requirements and the state of the art.  
If the opinion concerns an automated road transport system, the result of the verification of compliance with the requirements and conformity with the state of the art.
- The classification of the body's opinion on the system: favourable opinion, favourable opinion with special requirements or unfavourable opinion
- If the opinion is issued at the stage of a DPS or a DS and, if applicable, the details of the specific operating and safety requirements with their implementation deadline

## **Order on the content and procedures for examining applications for approval of qualified organisations**

The file for approval must be sent to the technical service for ski lifts and guided transport (STRMTG), which examines applications and issues an approval certificate (if applicable). This file contains (among other things) a list of technical fields for which the organisation is seeking approval; an organisation chart and an explanatory note presenting the applicant's activities, skills, professional experience, technical and human resources and working methods.