



July 1st, 2021

French Decree on automated vehicles' conditions of use and automated road transport systems' commissioning

Overview¹

Synopsis

Decree n° 2021-873 dated 29 June 2021 sets conditions for automated vehicles and automated road transport systems to be deployed in French roads. It covers automation levels up to fully automated systems, provided that there are under supervision of a person in charge of remote intervention and are deployed on pre-defined paths 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 (encompassing vehicles, roadside or remote equipments and operation procedures), can be commissioned, following a specific safety demonstration process. These provisions will come into force on September 1, 2022, allowing the deployment of automated passenger transport services, beyond an experimental framework.

These provisions and requirements, inter alia, specify responsibility principles set in ordinance 2021-443 dated 14 April 2021.

Definitions

1. "Partially" automated vehicle

- Must do a take-over request to regain control in response to certain traffic hazards or failures during a manoeuvre

2. "Highly" automated vehicle

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

3. "Fully" automated vehicle

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

¹ This document has no regulatory status

4. Conditions of use (set by the vehicle's or system's manufacturer or conceptor)

- Functional design domain
- Conditions and modalities of recovery, safety and emergency manoeuvres

5. Automated road transport system ("ARTS")

- Set of highly or fully automated vehicles, and technical installations allowing remote intervention or participating in security deployed on predefined routes or areas, and supplemented with operating, upkeep and maintenance rules, for the purpose of providing a road transport passenger service ²

6. "Remote intervention"

Only within an automated road transport system (ARTS)

- Activate, deactivate the system
- Instruct 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 fault 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

ARTS' condition of use: description

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

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

² Regulatory framework to be set later for freight and logistics services

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	<i>Not applicable</i>	Remote operator able to intervene according to the system's conditions of use

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

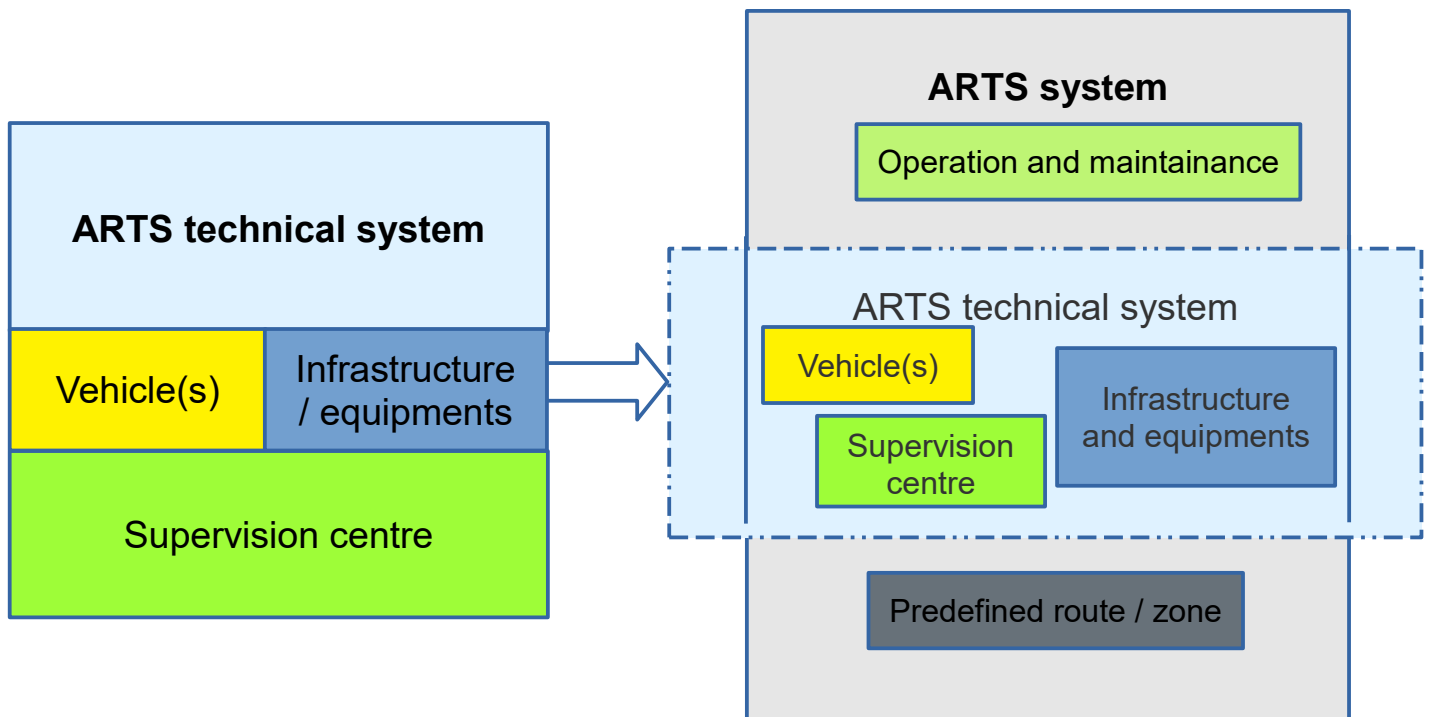
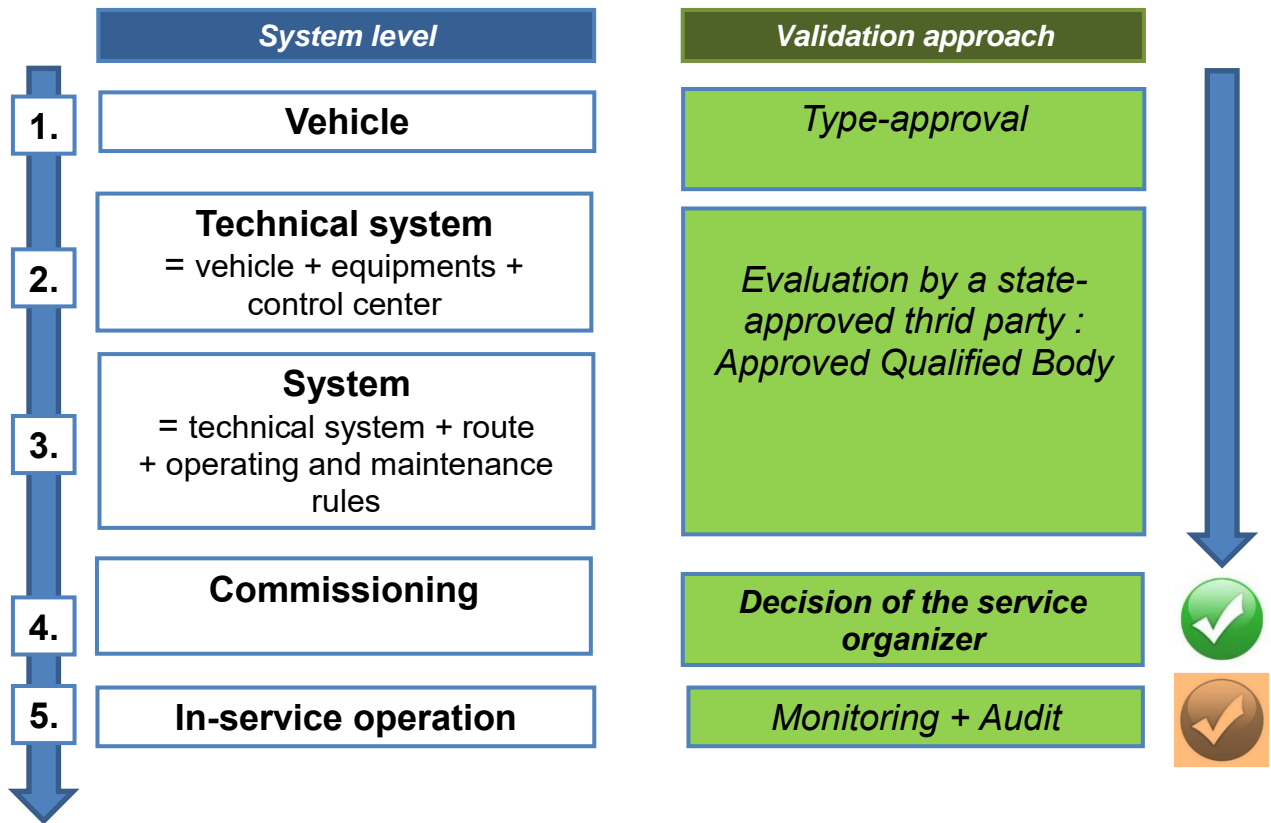
When the automated driving system is active, the driver is no longer due to keep himself in a condition and in a position to carry out conveniently and immediately all the manoeuvres incumbent on him. However, the driver must be constantly in a state and in a position to respond to a request for recovery, to comply with summons and instructions by law enforcement forces, to facilitate the passage of general interest vehicles and to give way to priority general interest vehicles.

Safety general requirement for ARTS

Any automated road transport system shall : i) be designed to avoid accidents that may result from reasonably foreseeable situations in its field of employment, ii) recognize whether it is in its field of employment and only be active in this field of use, iii) detect its failures and exits from the field of use, inform the operator, including within the framework of a remote intervention.

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

Architecture of the safety demonstration for ARTS



Contents of ARTS' safety demonstration files

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