

# Road safety, data management and individual freedoms in the era of connected, driverless vehicles

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## **Abstract:**

The “autonomous” vehicle, long confined to science fiction, is ready to ride into reality. Beyond the adjustments to be made in traffic laws, highway safety administrations and the assignments of police forces, it is worthwhile devoting thought to the driverless vehicle as an “actor” in road safety, sometimes independently of its driver or passengers. By expanding the range of possibilities, technology enables us to imagine interactions between this new actor and the highway police — prospects to be qualified, however, with legal and social considerations, which are also evolving. A car is not just a simple means for movement nor a machine; it is an economic and social object with strong implications.

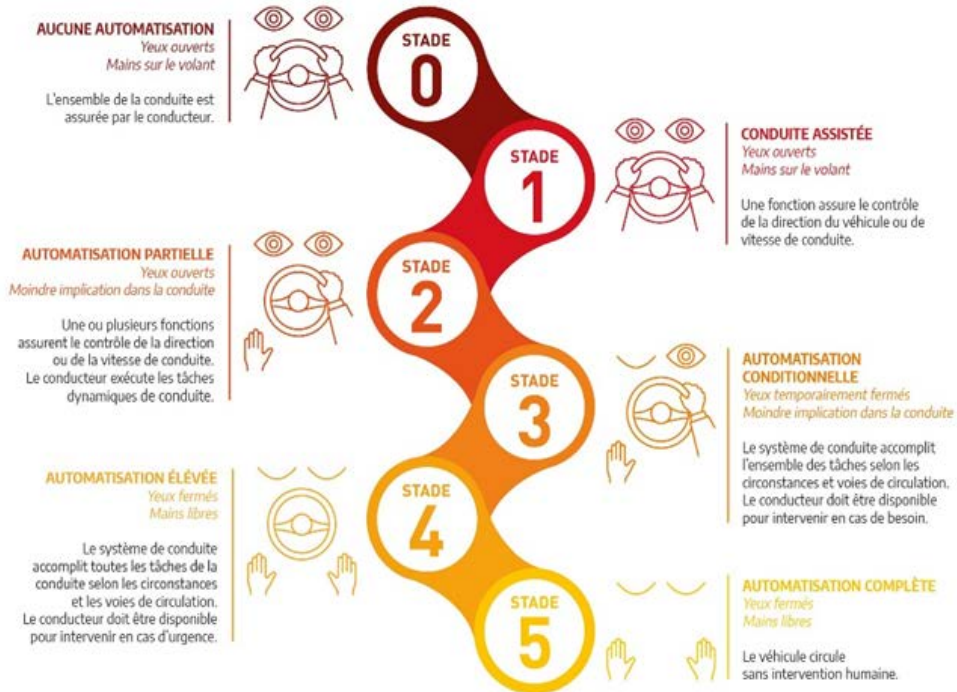
Long reserved for exercises in science fiction, driverless vehicles are ready to come true. Ever more efforts, in particular by Google, Tesla, Citroën and Valeo, are being undertaken to make real what used to seem utopian.<sup>1</sup> In fact, the question now is not so much the potential of such vehicles as the pace for introducing them on highways. Scenarios for a slow rollout, based on the annual rate of replacement of motor vehicles, suggest a time line running up to 2040-2050, whereas those based on hypotheses about rapid market penetration predict 2020-2030 (PAVEL *et al.* 2016:19, JANIN *et al.* 2016). This last projection seems too ambitious given the turnabout of some automakers (like PSA, which recently abandoned plans for producing driverless vehicles) and despite the many budding plans for experiments in urban transit (in La Rochelle, Lyon, etc.) — and even though public authorities clearly back programs of this sort.<sup>2</sup> Before the dates in these projections, vehicles, without being autonomous, will incorporate ever more connected features for assisting or eventually replacing the driver. These considerations explain why I have adopted the phrase “autonomous connected vehicle”, since it covers the evolution of these vehicles through the phases indicated in Figure 1.

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<sup>1</sup> Major points herein are borrowed from DE MARICOURT & VADILLO (2019b). This article, including quotations from French sources, has been translated from French by Noal Mellott (Omaha Beach, France). The translation into English has, with the editor’s approval, completed a few bibliographical references. All websites were consulted in September 2019.

<sup>2</sup> A commitment made in Decree n°2018-211 of 28 March 2018 on experiments of vehicles with assisted driving on public roadways and by Article 125 of Act n°2019-486 of 22 May 2019 on the growth and transformation of firms. Texts of French laws and decrees are available at <https://www.legifrance.gouv.fr/Droit-francais>.

**Figure 1:** Driverless connected vehicles: Stages of evolution  
Source: Sopra.



Besides the adjustments to be made to driving regulations or to the assignments of domestic security forces and road safety administrations, we should give thought to the role of autonomous connected vehicles as players in highway safety (sometimes independently of drivers and passengers). By broadening the scope of what is possible, this technology leads us to imagine new interactions with law enforcement. However our imagination should be restricted by legal and social considerations, which are likely to evolve. In effect, an automobile is not simply a means of transportation, or a tool; it is an economic and social object with strong implications.

## New police controls: An obedient, autonomous, connected vehicle?

Given the more or less temporary but inevitable cohabitation on highways between autonomous vehicles, connected vehicles and ordinary vehicles, law enforcement officials will continue controlling traffic as usual by performing identity checks, alcohol tests and inspections (vehicle registration, etc.). For vehicles in the 3rd and 4th stages of evolution, drivers will presumably be able to take steering back under control in order to comply with police orders for the vehicle to stop.

But will this still be the case for autonomous vehicles of the fifth stage? If the driver (or vehicle) refuses to obey,<sup>3</sup> will the police be able to take control of the vehicle and make it stop? A report to the Ministry of Interior has mentioned, without details, *“France will request that requirements be formulated in international technical regulations so that the vehicles in which the steering system is fully delegated to the vehicle be equipped to comply with orders from law enforcement and to do so safely”* (IDRAC 2018:96).

Legally, beyond considerations about “proportionality” which the Constitutional Council will have to weigh, there is apparently no reason why the police should not stop the vehicle on their own. After all, refusing to obey an order from law enforcement or running away are offenses. Furthermore, arrangements for physically stopping a vehicle (tire deflation devices or blocking its motor) are already used in traffic-control operations (*e.g.*, “go-fast” vehicles in the narcotics trade).

To put it simply, will the police be able to take control of steering and impound an autonomous connected vehicle? Once again, there is apparently no legal reason why they should not do so, since Article L.325-1 of the Highway Code foresees the possibility of operating *“without the owner’s consent”*. Moreover, Article L.325-2 authorizes the police to *“open or have opened the doors of the vehicle, maneuver or have maneuvered all devices. [Law enforcement officials] may drive the vehicle or have it driven, in their presence, toward the place of impoundment by using, if need be, the autonomous means of movement with which the vehicle is equipped”*.

Nevertheless, this ability to take control raises questions. Will law enforcement officials have a master key? Will they be authorized to legally “hack” the steering system? The intent would not be to drive the vehicle but to force it to perform a maneuver incorporated in an algorithm and to do so as safely as possible. Both these solutions increase “cyberrisks” for these vehicles and, too, their exposure to persons or programs with criminal intent. If these solutions are rejected however, the question would, nonetheless, not be settled. How to stop an autonomous connected vehicle on orders from law enforcement, especially if the vehicle has no occupant? How to ward off risks related to criminality (cars used as battering rams, etc.) or to malfunctions that jeopardize human lives? This is a strategic issue since the number of autonomous connected vehicles without occupants is likely to rise: autonomous taxis, driverless cars that are parking, making a delivery, or going to pick up a passenger.

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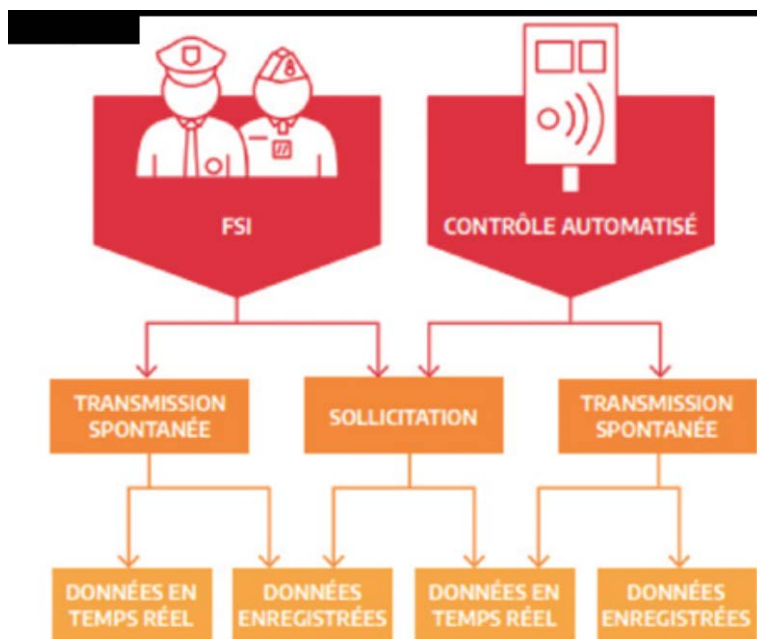
<sup>3</sup> This offense, liable to a fine and prison sentence under Article L.233-1 of the Highway Code, can be qualified under Article L.231.1 as a hit-and-run accident.

## A new generation of traffic violations?

Without even capitalizing on the “fear of cops”, the principal consequence of the deployment of autonomous connected vehicles will be to drastically reduce a series of traffic violations (tailgating, speeding, failing to obey signs, etc.) because of the vehicle’s programmed obedience and the limitations on the human driver’s interventions. This is, in fact, the major argument that the supporters of these vehicles advance.

**Figure 2:** Law enforcement and automatic control

Source: Sopra Steria



Nevertheless, certain violations will not be prevented, for example, the failure to comply with recommendations from the vehicle (during stages 3 and 4) and the driver’s lack of attention, imprudence, negligence or deceit (DE MARICOURT & VADILLO 2019a). In these cases however, violations will be more easily reported owing to the transmission of data during the ongoing exchanges between the vehicle and its environment, which are necessary for it to run. An autonomous connected vehicle could respond:

- to a request thanks to automated controls (conventional or new controls incorporated in the highway infrastructure with which these vehicles will exchange data) or on its own or under the control of law enforcement;
- in real time (conventional controls) or afterwards (control of the vehicle’s driving history). *Ex post* controls would strongly rely on event data recorders (EDR) or electronic telematic boxes (ETB), which some firms have installed in their vehicle fleets for the purpose of real-time management of trips (geolocation, the actual itinerary, distance and, therefore, average

speed, the duration of driving and of stops, etc.). Such devices are mandatory for vehicles hauling freight (to which law enforcement authorities have legal access under Article L.130-6 of the Highway Code). In a related, promising approach, Michelin has launched a “better driving” program that relies on a connected box that, installed on board, shares driving data.

Thanks to such devices installed on board autonomous connected vehicles, data could be collected for traffic violations related to a driver’s or passenger’s behavior. At the very least, these devices would help “*establish indicators of the driver’s activity in order to be sure that the driver is able to take back control and oversee the system; maintain the driver’s ability to steer the vehicle despite limited driving practice; [solve] problems related to distraction resulting from the use of driving systems*” (HAUTIERE *et al.* 2017:101). Behaviors resulting in traffic violations could be targeted thanks to such devices (breathalyzers, locking systems, etc.) on board vehicles or to artificial intelligence (AI, which could analyze behaviors, interpret images, and so forth). However it seems dubious that AI could detect, for example, passengers exempted from the requirement to fasten their seat belts (passengers with a medical certificate or certain morphology, as stipulated by the Highway Code). It is worth pointing out that Article R.130-11 of this code already authorizes the automatic reporting of violations involving seat belts or driving while using a telephone or without insurance. So, incorporating more such features in a vehicle would be logical.

Given the current state of the law however, these developments seem impossible. Article L.311-2 of the Highway Code states that “*the information and data embedded in the vehicle other than those [for the identification and inspection of the vehicle and its components] cannot be used as evidence about other offenses committed under the current code*”. This article ensues from a philosophical tenet (upheld by the Court of Appeals) against self-incrimination.

Furthermore, what about the “proportionality” of the means granted to law enforcement for accomplishing its mission — the well-known “*necessary conciliation between upholding freedoms and maintaining order*” emphasized by the Constitutional Council? This point is cogent since the driver’s vehicle benefits from the same protections as his home. It would be difficult to justify police interventions (in particular for the surveillance of behavior inside the vehicle) by invoking a higher principle than privacy. Extending this line of reasoning, such interventions would infringe on the EU’s General Data Protection Regulation (GDPR).

Would public opinion accept controls of the sort described? After all, vehicles now on our highways could also be equipped with ETBs, tachographs or governors if we could imagine that fellow citizens would not be averse to such controls...

## **Easier investigations?**

### **...of accidents**

Recording driving data would make it easier to investigate traffic accidents. For this reason, law enforcement should be equipped with information systems that are interoperable with the coming EDRs in order to have access to data that can stand up in court.

Prior to this major change however, law enforcement needs more reliable data about the location of accidents. Supported by the European Commission, the eCall program, which allows for contacts with motorists in collisions, makes a step in this direction. In addition, the French database (BAAC) on traffic accidents with bodily injury should be made secure and reliable. For example, interconnections with the vehicle registration system (SIV) and the file of drivers’ licenses would

enable law enforcement to recuperate for investigations and for the BAAC valid information about a vehicle's registration plate and the number of points left on the driver's license.

All these changes imply that investigating officers be equipped to process and analyze data (DE LA FORTELLE 2014:88), but technology of this sort is still incipient in France. Bolstering the Bureau of Traffic Accident Investigations (BEA-TT in the Ministry of Transportation) would help concentrate technical means and expertise and, too, cope with the problem of data being scattered as they are produced and exchanged. Furthermore, these investigations imply acquiring "cyberskills". After all, the risks of actions with criminal intent will increase as more autonomous connected vehicles run on highways.

### ...by judicial or administrative authorities

In cases other than accidents, services of criminal investigation or intelligence could benefit considerably from the introduction of autonomous connected vehicles on our roadways. They will be able, for example, to request access to geolocation data under the conditions set in the Code of Penal Procedure (CPP) or Code of Domestic Security (CSI).<sup>4</sup> The law will have to be modified to treat the parties that centralize the data from autonomous connected vehicles (*e.g.*, automakers, car rental agencies or insurance companies) like operators in electronic communications. Furthermore, the installation of beacons on the roadside and of sound systems on vehicles, as foreseen by these codes,<sup>5</sup> will make it easier to operate from a distance by "hacking"<sup>6</sup> or by centralizing data. In the latter case, the law, once again, would have to be modified.

Finally, a system could be set up with the obligation to declare any serious offenses suspected by examining the data collected by the aforementioned organizations that centralize data. The model for this would be the system applied to banks in the campaigns against terrorism and money-laundering.<sup>7</sup> This implies, however, that the Constitutional Council would accept that highway safety is an objective higher than trade secrecy (in its various forms) and at least equal to privacy (against which it would have to be weighed).

These remarks draw attention to the acute question of the status of the data produced and of their management.

## The thorny issue of access to data

Beyond the question of the data specifically generated and collected for security purposes, what about the processing of the data spontaneously produced by autonomous connected vehicles? Since these vehicles, by nature, emit and receive data, some authors have emphasized the need to reconsider the issues of access to, and control over, these data (JANIN *et al.* 2016:4, IDRAC 2018). However their approach is mainly economic, focused on the collaborative reconstitution of the driving environment, infrastructure management, traffic warnings and the improvement of algorithms for use on a large scale.

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<sup>4</sup> Respectively, §III of Article L.34-1 of the Code of Electronic Communications triggered by articles 60-1, 77-1-1 and 99-3 of the Code of Penal Procedure; and Article L.851-4 of the Code of Domestic Security.

<sup>5</sup> Respectively: articles 230-32ff. of the Code of Penal Procedure or Article L.851-5 of the Code of Domestic Security; and articles 706-96ff. of the Code of Penal Procedure or L.853-1 and L.853-3 of the Code of Domestic Security.

<sup>6</sup> Article 706-102-1ff. of the Code of Penal Procedure and Article L.853-2 of the Code of Domestic Security.

<sup>7</sup> Article L.561-15 of the Monetary and Financial Code.

Will these data be centralized? If so, by whom: automakers, their subcontractors and suppliers, the authorities who administer infrastructures, rental agencies (as they become omnipotent)? In effect, it might no longer be worthwhile to own an autonomous connected vehicle, neither economically (given the cost or risk of obsolescence) nor socially (given the altered image of cars and car ownership). In this case, renting or leasing would become much more frequent. As a consequence, rental agencies would be centralizing most of the data produced or collected — data with unparalleled economic potential. The law would apparently have to settle the ensuing questions lest citizens be left helpless when coping with big businesses.

In fact, automakers have proposed principles for a differentiated access to several types of data (road safety, services involving suppliers, personalized services, sales data and the monitoring of components). These principles suppose either an access to anonymized data or a contractual access between various parties, in particular drivers.<sup>8</sup>

Thought is also being given to the idea of defining certain data (highway safety, management of traffic and infrastructures) as being in the general interest. The insistence on a contractual framework and the anonymization of data are not without significance, since the data collected will provide information for identifying drivers, their location, habits, driving behavior, the number of passengers, etc. Article L.330-5 of the Highway Code, which covers the processing and transmission of certain types of data for statistical, commercial or technological purposes, will have to be modified.

As we see, the introduction of autonomous connected vehicles on our highways and even more the generalization of their use raise many legal, technological and human issues. These issues aggravate the sometimes contentious relation between the law, individual freedoms and technology. They entail three requirements. The first is to reassert the status of public authorities as a regulator of the activities of economic agents. The second implies working on the social acceptability of modifying laws and regulations. The third, probably the most important, forces lawmakers and jurists to upgrade their skills in order to avoid the programmed obsolescence of laws and regulations. Our tools undergo change, but the general principles to be applied must benefit from a degree of intangibility.

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<sup>8</sup> A.M. Idrac (2018:65) has insisted on the importance of “enlightened consent” under the GDPR.

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