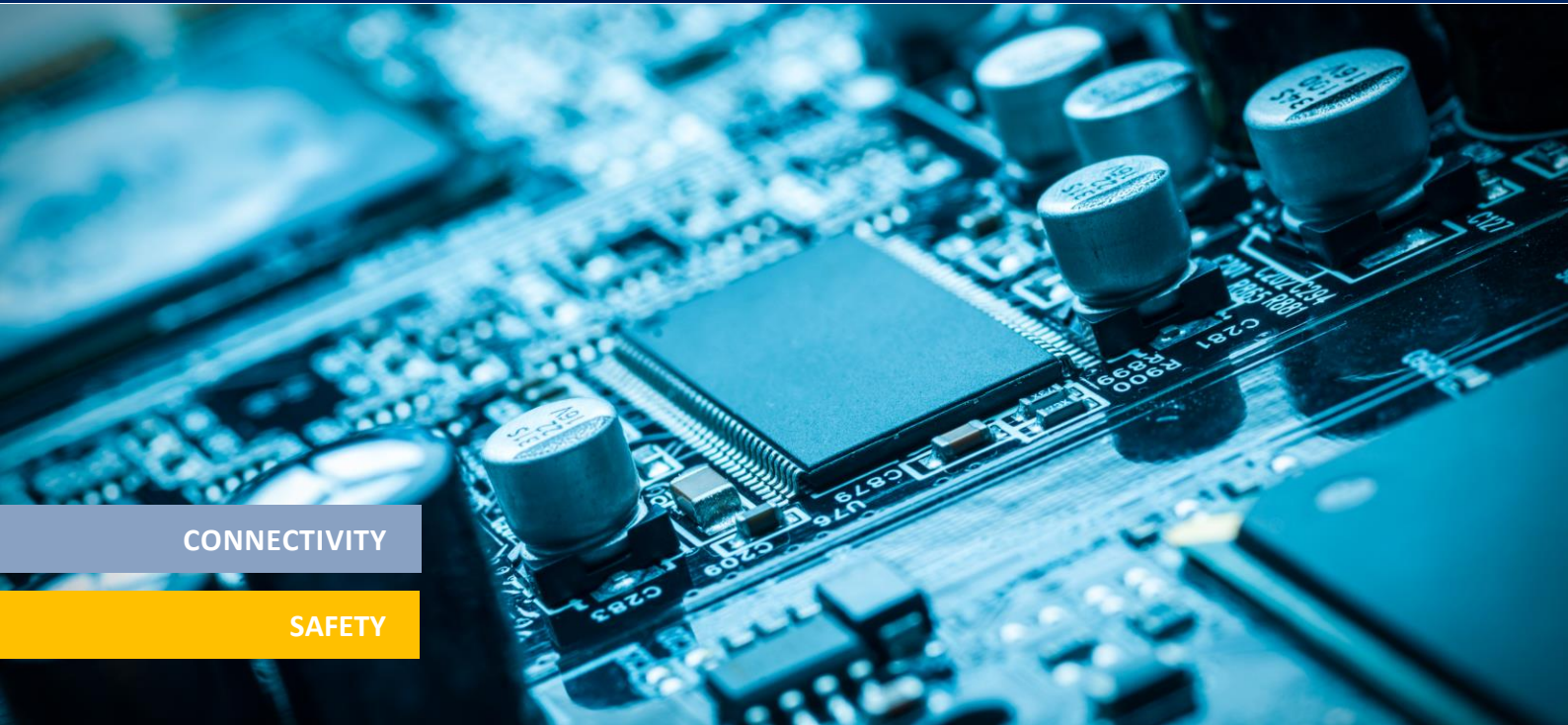




POLICY POSITION ON EVENT DATA RECORDERS



CONNECTIVITY

SAFETY

Executive Summary

Conducting road accident research and consequent liability establishment, in some instances, requires use of event data recorders (EDR) and data storage systems for automated driving (DSSA). The European Commission is evaluating whether EDRs should become standard equipment under the revision of the General Safety Regulation. FIA Region I sees no compelling case to mandate EDRs in all new vehicles. Nevertheless, if such devices are fitted, the European Commission should:

- Standardise data sampling, storage and access and define a maximum set of data to be stored and regularly adapt this definition to match technical progress
- Grant access to anonymous data to relevant safety stakeholders to improve road safety, access to personal data should only be possible if ordered by a judge on a case-by-case basis

FIA Region I deems that the DSSAs should be considered for automated vehicles from SAE level 3 onwards and standards should be defined if they are fitted in vehicles. Any direct monitoring should be limited to automation mode and should not occur by means of camera. All data used in this context should be securely transferred and stored.

Legislative Background

Under the revision of the General Safety Regulation, the European Commission is considering to the fitment of an event data recorder (EDR) in all vehicles. The study commissioned by the European Commission (DG MOVE)¹ considers that the presence of EDR will not influence drivers' behaviour.

On the other hand, data collection will add to establishing liability for highly and fully autonomous vehicles. Consequently, data protection and data security as well as

transparency must be ensured for the user. Therefore, a DSSA should only be used for recording starting with SAE² level 3 and serve as a source of information for post-crash analysis liability and warranty issues over the entire vehicle's lifetime.

“For private vehicles, the presence of an EDR alone, even if its presence is acknowledged by the driver, may not influence driving behaviour, or may only do so for a small percentage of drivers.”

Discussion at UNECE (United Nations Economic Commission for Europe) and EU level are running to address the issue of Data Storage Systems for automated driving (DSSA).

FIA Region I Position

An event data recorder (EDR) monitors a limited set of technical data with no continuous monitoring of driver behaviour or performance. Data recording is triggered by the activation of a safety system, for example pedestrian protection or automated emergency braking system.

Data is gathered in the vehicle via the electronic control units. Storing EDR data does not necessitate the existence of separate hardware for data monitoring. Data recording can be based on hardware and/or software devices that are already part of the vehicle's control systems. Data gathered by EDR today is either stored on-board of the vehicle or transmitted to external storage locations. All data should be securely transferred and stored.

A variety of event data recorders exist and they fulfil multiple objectives. A data recorder, or black box, is mostly referred to in aviation, where it is based on highly accurate and multiple sensor signals measuring the same parameters, also referred to as sensor redundancy. This ensures a very high level of accuracy, robustness and endurance over the planes' lifecycle. Private vehicles are equipped with automotive sensors, which are not regularly adjusted and so their quality cannot be guaranteed over the lifetime of the vehicle.

Since 2006, the US has adopted standards for event data recorders. These are not mandated by law, but apply on an “if fitted basis”. This means that a vehicle manufacturer equipping its vehicles with EDR should comply with the standards on installation, data storage, data accessibility and retrieval. For some EDR types, 30 variables are continuously sampled and stored on board of the vehicles and the data is overwritten every 8 seconds.

¹ Report PPR707 'Study on the benefits resulting from the installation of Event Data Recorders', TRL 2014

² https://www.sae.org/misc/pdfs/automated_driving.pdf

In the case of an accident, the 5 seconds before and 3 seconds after remain in a control unit's permanent memory. This stored data can be retrieved from a control unit by an accident analyst or by the authorities, even if the vehicle is no longer functioning. Manufacturers can add an unlimited amount of logging variables to the data collected as they see fit and store it where they like, so long as they comply with the General Data Protection Regulation. Nearly 100% of the US fleet and around 90% of the European fleet is already equipped with EDRs, since the industry deems it in accordance with its interests.



In Europe

Transport consultancy TRL assessed the road safety impact of EDRs and underlined the difficulty to appraise the safety benefits of such systems for private drivers. FIA Region I would encourage decision-makers to commission studies on the impact of EDRs on private car drivers, before taking further legislative steps.

The key benefits of this technology are to gather accident data, to determine accident causation and to improve future vehicle design and safety systems. Accident reconstruction could improve with EDR fitting by providing additional information from before and during an accident. The main benefits of fitting EDRs in the entire new fleet can be summarised as follows:

- Data can lead to improvements in vehicle and safety system design
- Better understanding of accident causation could lead to changes in the road infrastructure or policies
- Potential for increased road safety (needs to be backed up with research)

However, FIA Region I also sees several concerns with the technology:

- **Privacy** – the use of the EDR data must comply with the General Data Protection Regulation and the European Convention on Human Rights. Consumers must be fully aware of the EDR's presence and the data collected. Clear rules should exist as to who can access the data and under which conditions and how the data can be used or transmitted and for which purposes.
- **Reliability and robustness** – vehicle manufacturers should be responsible for the quality of the collected data in the EDR/DSSA/other data storage units, as this is data that is used for establishing driving behaviour and/or accident analysis in court. In addition to the quality and the specification of measurement tolerances, independent authorised experts must also be presented in individual cases with algorithms from which it is recognisable how the data were collected and processed. The vehicle manufacturer must prove that the sensor system functions for the entire life of the vehicle about quality, algorithm and measurement tolerance.
- **Liability and warranty** – 90% of vehicles in the EU are already equipped with an EDR on a voluntary basis by vehicle manufacturers. Currently, this places manufacturers in control of designing the EDR/DSSA.

Data Storage Systems

A **data storage system for automated driving (DSSA)** involves the continuous recording of a certain set of data elements, monitoring the vehicle and the driver control for automated driving conditions. It is fitted on vehicles starting from SAE level 3, to provide retro-active information on who was in control of the vehicle, the driver or the vehicle itself. Such a device monitors the vehicle and driver and stores data onboard the vehicle.

DSSAs should only record: if the driver or the system are performing the driving task; if the driver interferes with the automated mode; and if any requests were made by the system to take over control of the driving task. Should data recording go beyond these parameters, it would represent a threat to consumer privacy. There may be a need to determine who oversaw the driving task at the time of a given event from a certain level of automation.

SAE levels 3 and 4 of automation allow the driver to operate their vehicle manually or launch an automated driving function. DSSA recording should only begin if the driver or the system was in control of the vehicle in a particular situation.

For SAE level 5 of automation, the vehicle is entirely in charge and the human passenger is out of the control loop. The car occupants are not supposed to be the fallback solution in case of system errors or hazardous traffic situation. Data storage could help clarify the liability chain between the different industry players to assign liabilities and establish who was responsible for the driving task at a given moment.



Fédération Internationale de l'Automobile (FIA) Region I office

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