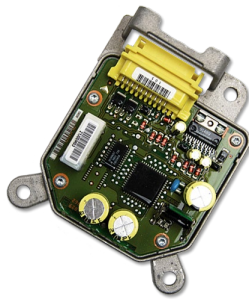


Advancing crash investigation with connected and automated vehicle data

While current Event Data Recorders (EDRs) provide effective supplemental information supporting physical evidence, Connected and Automated Vehicle (CAV) sensor data can serve as an automated witness to accurately preserve the scene of a crash event and events leading to crash. The ability to record, report, and store accurate crash data would benefit future investigators, safety researchers, and manufacturers by improving the reliability of crash reports. This study assessed law enforcement stakeholder perspectives on how CAV data can be leveraged to improve crash investigation procedures. We performed a literature review to identify which sensors are most commonly included in CAV research and how they can supplement EDR data.



An Event Data Recorder (Image: Crash Data Group, www.https://www.crashdatagroup.com/)

Key findings of this research include:

- CAV sensor literature shows that functional range, pedestrian detection, and speed/steering control are the most important capabilities.
- The recommended combination includes camera and LiDAR technologies, which can provide a complete and visually descriptive depiction of the environment outside and inside the vehicle.

- LiDAR is a robust environmental sensor based on the identified capabilities and limitations.
- Law enforcement officers agreed that abundant information and helpful data are the best advantage of modern EDRs.
- The most common EDR improvement recommendation was universal cables or other common systems for data access.
- The two most recommended pieces of information by law enforcement included camera data and information about automation system's performance.
- The results of the law enforcement surveys are consistent with similar efforts to develop guidelines for reporting crash data for CAVs.

A key element of the project is the use of safe systems approach incorporating key stakeholders, data collection processes, technological capabilities, and harnessing microscopic level data. The results of this work can help improve crash reconstruction procedures when combined with the opinions and interpretations of other crash reconstruction experts. It will be important to understand the perspectives of other key stakeholders to design a useful dataset that will not only help in future crash reconstruction efforts, but also help researchers improve the safety of all road users.

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