D16 Vehicle System Forensics and Determining Who Was Driving at the Time of a Crash

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After attending this presentation, attendees will have an appreciation for the vast amount of digital data stored in modern vehicles and how it can be retrieved to assist in identifying the driver of a vehicle following a traffic collision.

This presentation will impact the forensic science community by introducing a new source of data stored in modern automobiles and by illustrating how that data can be used to identify the driver of a vehicle during a collision investigation.

Electronic data being recorded and stored in modern vehicles is an established concept; however, what data are recorded, and where and how to retrieve that data, depend on many variables. Common types of data stored and regularly retrieved from modern vehicles include diagnostic data used in service and repair and crash data used in the investigation of traffic collisions. A more recently discovered source of evidence in motor vehicle incidents is the existence of stored electronic data in vehicle infotainment and telematics systems. The retrieval and analysis of this new data is now commonly referred to as Vehicle System Forensics.

Many collision investigations result in an issue of identifying the driver of a vehicle at the time of the collision. Scenarios in which this issue manifests itself include rollover collisions that have resulted in occupant ejections. It is not uncommon for collision investigators to respond to the scene of a rollover collision where a surviving party states that the driver of the vehicle at the time of the collision was ejected from the vehicle and is now deceased at the scene. There are many approaches to investigating this statement and identifying evidence that would support or refute this party's claim. Analyses involving trace evidence, DNA, biomechanics, and occupant kinematics are common; however, with many modern vehicles, there may be stored electronic data to assist the investigation of this issue.

As an area of focus for this discussion, a hypothetical scenario involving a late-model Ford® vehicle will be examined. The vehicle was equipped with the Ford® SYNC® 3 infotainment and telematics system. The collision scenario being examined is a simple one — a vehicle was driven off the roadway and overturned. One occupant was ejected and killed (Party A). A second occupant (Party B) survived and provided emergency personnel on scene with a statement that included the following claims: (1) Party A was driving at the time of the rollover and Party B was seated in the passenger seat; (2) Party A was ejected out the driver's door as it came open during the rollover sequence; and, (3) after the rollover ended and the vehicle came to rest, Party B exited the vehicle through the passenger door, which he opened.

Data recorded by the Ford® SYNC® 3 infotainment and telematics system in this vehicle can be accessed using the Berla iVe vehicle system forensics tool. This system allows the retrieval of extensive data from this type of vehicle. Example data parameters include vehicle speed, tracking logs, call logs, contact lists, connected devices, and "events," which include the date, time, and location of gear shifts, opening/closing of doors, hard acceleration, and hard braking. In the examined scenario, data related to the opening and closing of doors would be extremely relevant.

Investigators could undoubtedly examine the physical evidence and determine that the vehicle had been driven off the roadway and rolled over, with one party ejected and killed. Furthermore, both vehicle doors may have been damaged and found open during the on-scene investigation; however, finding observable physical evidence of which door came open during the rollover and which door was opened moments after the collision is unlikely. That data may have been recorded by and stored in the SYNC® 3 module. Specifically, this module can record the date, time, and location (Global Positioning System (GPS) – latitude and longitude) when the driver and/or passenger doors were opened or closed. This information could be directly compared to claims of the surviving party. Other data accessible with the Berla iVe system would certainly be useful in the overall investigation as well.

This scenario and depictions of the specific data that can be relied upon in examining the central issue of driver identification will be presented. Specific examples of this data will be demonstrated with a discussion of its availability and retrieval.

Vehicle System Forensics, Infotainment and Telematics Systems, Driver Identification

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