Impact of Modern Vehicles

Modern vehicles have complex networks that govern critical safety functions such as brakes and airbags and control navigation and infotainment systems. This complexity has increased exponentially within the past decade. Modern vehicles have an average of 70 computers and five networks that connect the computers and generates about 25 gigabytes of data per hour.

These onboard systems present new opportunities for law enforcement agencies because the systems collect data that can be used as evidence in criminal and terrorist investigations.

Project iVe

In 2013, DHS S&T began supporting the development of iVe by Berla Corporation. A digital forensics toolkit, iVe helps law enforcement agencies obtain digital evidence from vehicle navigation and infotainment systems.

This research and development (R&D) project grew out of an earlier forensics effort focused on investigating handheld and maritime global position system (GPS) devices. iVe provides a brand new capability for law enforcement investigators—operating with a warrant—to acquire data through logical or physical acquisition using nondestructive methods. Currently, iVe supports more than 6,730 models of vehicles from major manufacturers such as BMW, Buick, Cadillac, Chevrolet, Chrysler, Dodge, Fiat, Ford, GMC, Holden, Hummer, Jeep, Lincoln, Maserati, Mercury, Opel, Pontiac, Ram, SRT, Saturn, Seat, Skoda, Toyota and Volkswagen.

Also, iVe can acquire data from mobile devices such as smartphones, media players, USB drives and SD cards that have been connected to a supported vehicle's infotainment system as well as navigational data housed on a vehicle's network. In addition, iVe can acquire a vehicle's events data, which records information such as when the transmission shifts gears or when doors were opened.

A field-support capability developed with S&T funding, the iVe Mobile application includes a simple user interface providing quick information about supported vehicles and step-by-step instructions for information acquisition. The application can be used by first responders to quickly assess what information can be extracted from the vehicle.

Impact on the Law Enforcement Community

As part of the R&D contract, DHS S&T established the iVe Steering Committee. It is comprised of representatives from 17 federal, state and local law enforcement agencies and meets quarterly to discuss each new iVe release and provide additional requirements for Berla to incorporate in the next release. Each participating agency is provided an iVe kit for operational testing and receives hardware and software updates for the life of the contract.

Current Status and Future Work

Currently, iVe is sold commercially to the broader law enforcement community with DHS S&T-funded capability enhancements added to the tool during the contract. The project will develop four additional software and hardware releases focused on extending support to additional manufactures and vehicle models through July 2017.