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## Automotive cyber security trends and the impact to forensic readiness

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Modern cars are complex systems incorporating a wide range of actuators, sensors, ECUs (Electronic Control Units) and the means of connecting these components in order to implement basic functionality as well as advanced driver assistance systems. Generally, the firmware powering the ECUs is closed-source, which poses a serious challenge for investigators with the aim of event reconstruction. Several measures are taken by the manufacturers in order to prevent reverse engineering. This is mostly due to intellectual property protection but is also hindering or even preventing a successful investigation. With the growing interconnectivity between vehicles and their surroundings (both visible/easily identifiable such as cables and sockets and hidden channels, e.g. using the mobile phone/eCall subsystem for telematics) new possibilities and new attack vectors arise. Attacks on in-vehicle systems might aim at undermining the privacy of the user but might as well, given the fast-paced environment in which vehicles operate, and aim at the safety of occupants and bystanders. While various research, including the prevention and event reconstruction of such attacks, is being done on these security issues at the current time new challenges loom on the horizon. (Semi)autonomous vehicles carry a host of so far unanswered questions with them – like of the responsibility for a crash caused by a (Semi)autonomous vehicle. Discussing the deep ethical and legal implications of such a question is beyond the scope of this talk. Instead we want to focus on the question which impact (Semi-)autonomous vehicles and their growing interconnectivity have on the ability of a forensic investigator to determine the course of action and the root-causes of incidents involving modern day vehicles.

### Biography

Jana Dittmann has her expertise in Multimedia And Security Research. As a leader of the working group on multimedia and security, she has years of experience in Research, Evaluation, Teaching and Administration with a special focus on the holistic evaluation of IT-security, including embedded systems of which automotive systems are a prime example. Under her leadership, a model of the forensic process was established that is capable of identifying potential sources of data and which can aid in their integrity and authenticity preserving acquisition, investigation, analysis and documentation.

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