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Connected and Automated Vehicles and the Cybersecurity Threat

Prevention or Management?

Battelle

HISTORY

- ❑ Established 1908
- ❑ 22,000 employees, 13 countries
- ❑ World's largest nonprofit independent R&D organization

SECTORS

- ❑ Energy
- ❑ National security
- ❑ Health and life sciences,
- ❑ Chemical and pharmaceutical
- ❑ Cyber security

AUTOMOTIVE HISTORY

- ❑ Anti-lock brakes
- ❑ Cruise control
- ❑ NEM: Automotive Anomaly Detection System
- ❑ Automotive security architecture services
- ❑ Cyber Auto Challenge



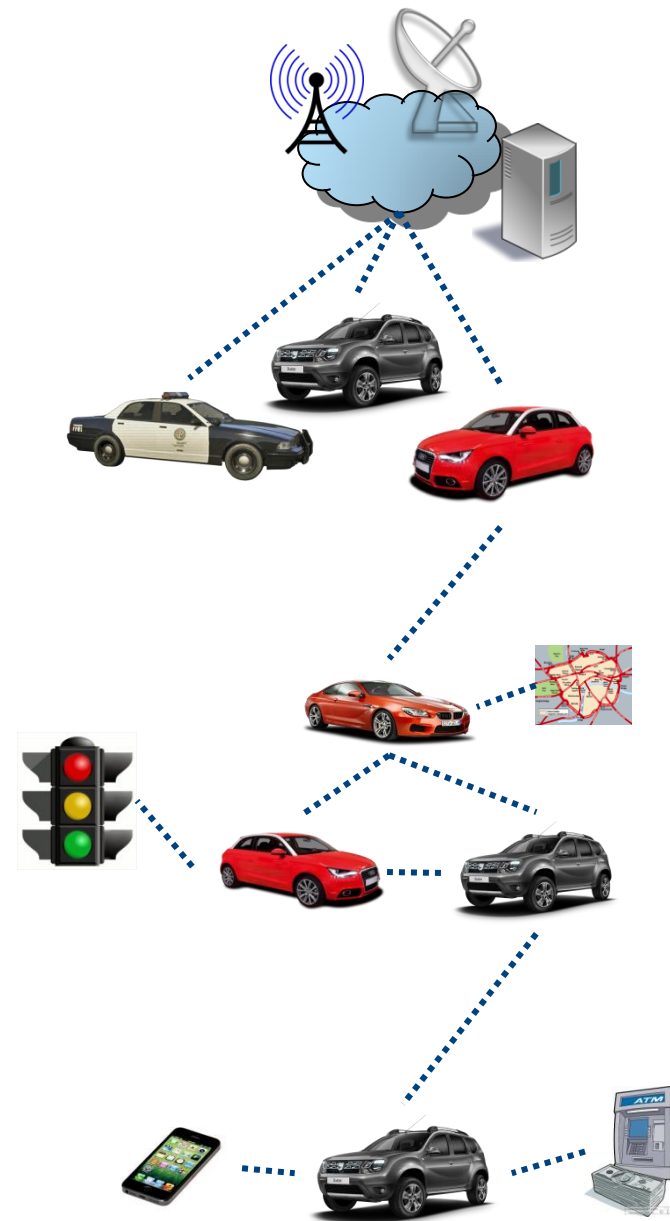
The need for connected cars

- To make cars safer and more reliable
- To optimize performance
- For convenience and luxury of passengers



The connected space

- Vehicle to Back bone
 - Back bone infrastructure, dedicated telematics, private networks
- Vehicle to Vehicle
 - Active transportation network, other connected cars
- Vehicle to everything
 - Consumer devices, POS, ATM



Most critical threats

- Intra car
 - Intrusions, cyber threat
 - Fraudulent warranty claims
 - Safety
 - Theft
- V2X (V2V & V2I)
 - Malware
 - False data injection
 - Misbehavior
 - Data leakage
 - PII Data privacy

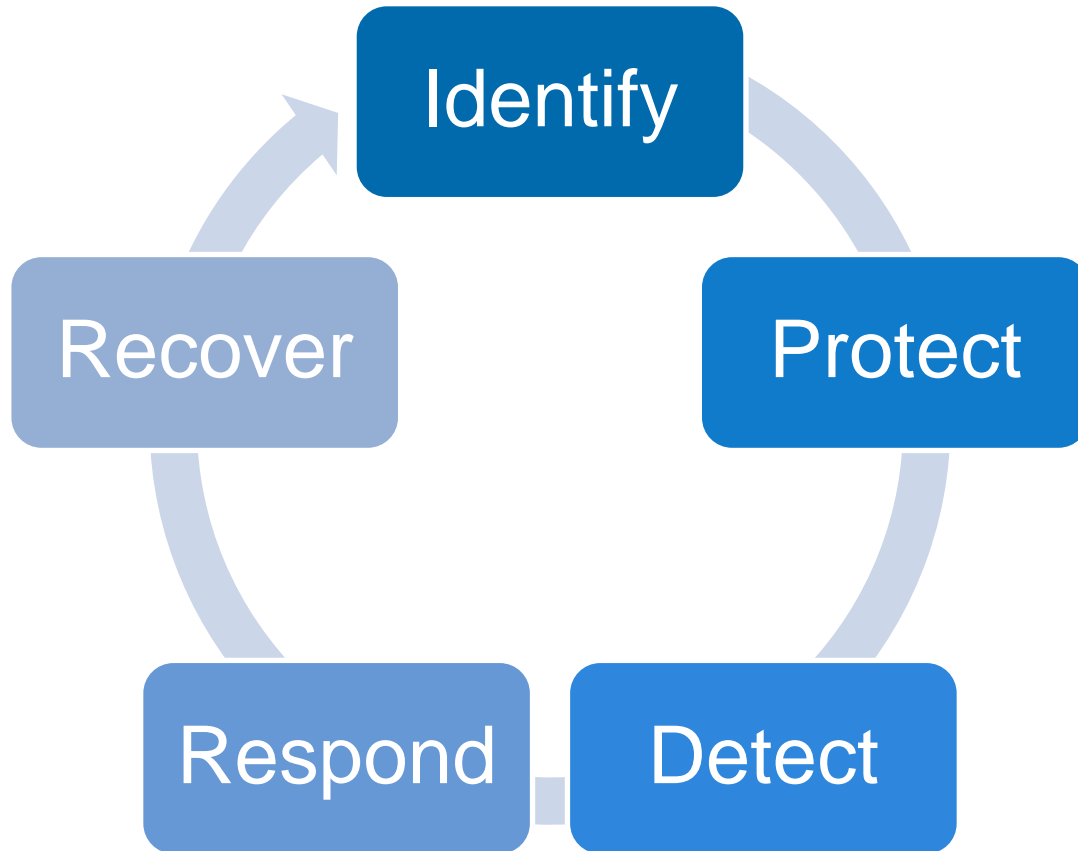


Prevent or Manage?

- 100% Prevention is Mission Impossible
- Controlling the resulting damage is practically achievable through effective threat management

EFFECTIVE THREAT MANAGEMENT

Effective Threat management



Combination of techniques balanced with risks

How the ecosystem can contribute

Standards development

- V2X standards must leverage inherent existing distributed system properties, existing robust feedback control and active systems
- Best building blocks for misbehavior detection
- Data protection and privacy through compartmentalization, time bound storage, anonymization, hardware based security (TPM based) as needed

Increased pre-competitive cooperation

- Government, infrastructure operators, OEMs, tier 1 manufacturers, research institutions must work together
- Major automotive involvement
- Commitment to adoption

How the ecosystem can contribute

- We may not get it right in the first attempt
- But the first comprehensive multi party attempt is the right approach

Contact

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Battelle Vehicle Cybersecurity Webpage:
<http://www.battelle.org/our-work/national-security/cyber-innovations/vehicle-cyber-security>



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