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THE INFORMATION SOCIETY

WSIS FORUM 2021

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WSIS FORUM 2021

Session 265

Cybersecurity track : Automotive Cybersecurity

13:00 ~ 14:00 (UTC+2) Friday 16 April 2021

WSIS FORUM 2021

In-Vehicle security : Past, Present and Future

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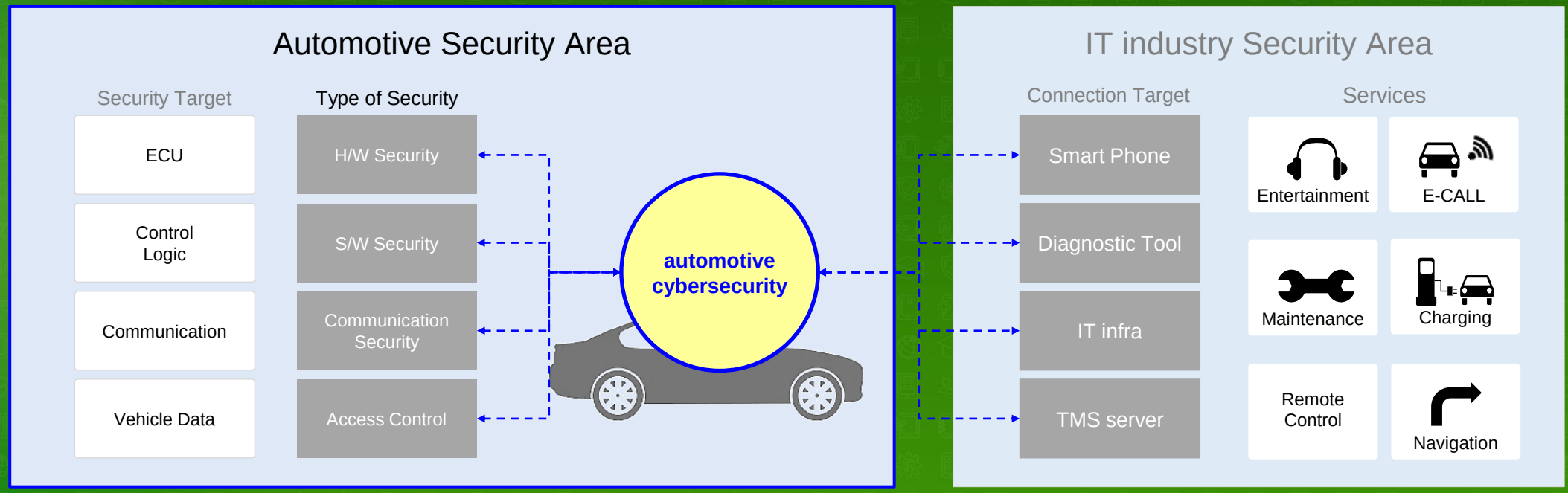
Contents

- What is Automotive Cybersecurity
- Global Trends
- In-vehicle cybersecurity solution trends
- Related SG17 Q13 recommendation

What is Automotive Cybersecurity

- Ensuring safety & privacy of driver and passenger against vehicle hack
- Security technology for areas from vehicles to external environments



→ Requires overall vehicle security including ECUs, networks, E/E platforms, etc.

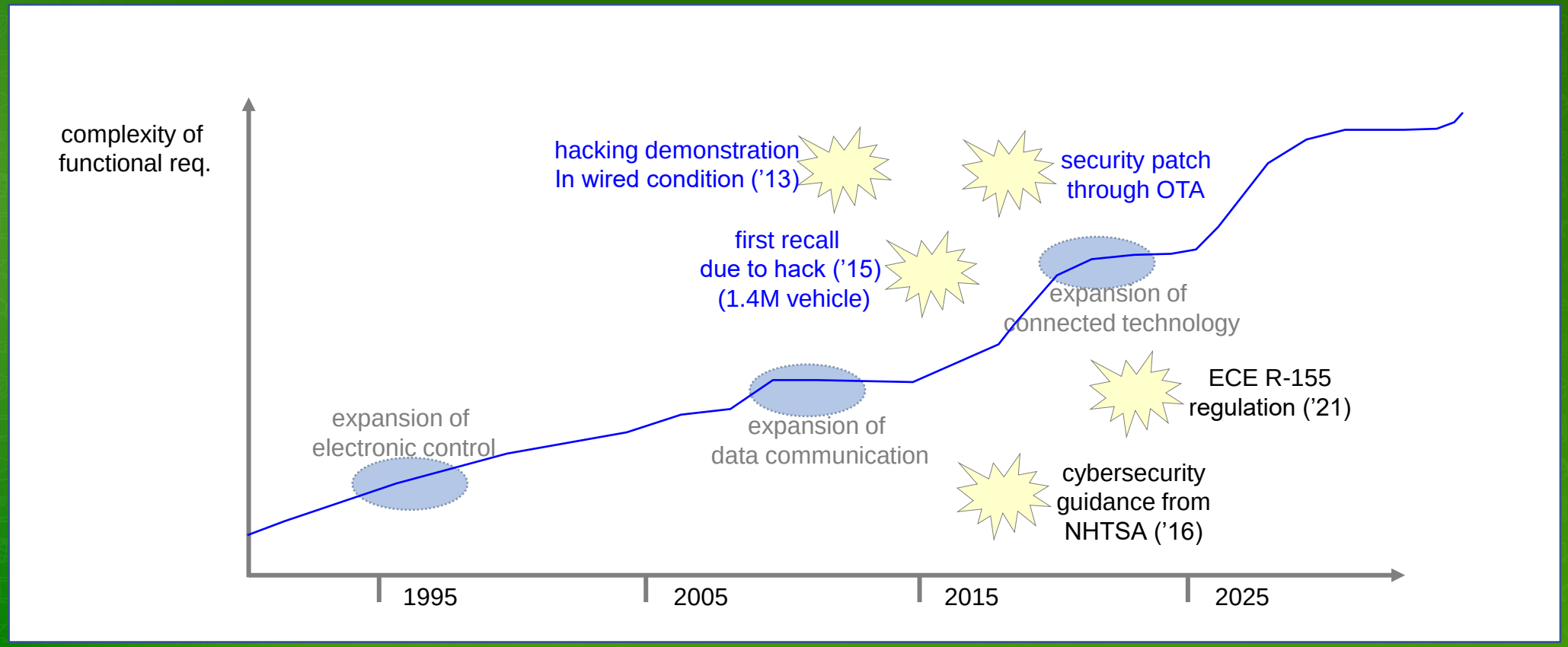
Global Trend

- Automotive functional requirements and hacking threats continue to increase
- Advanced security solution and its implementation are required

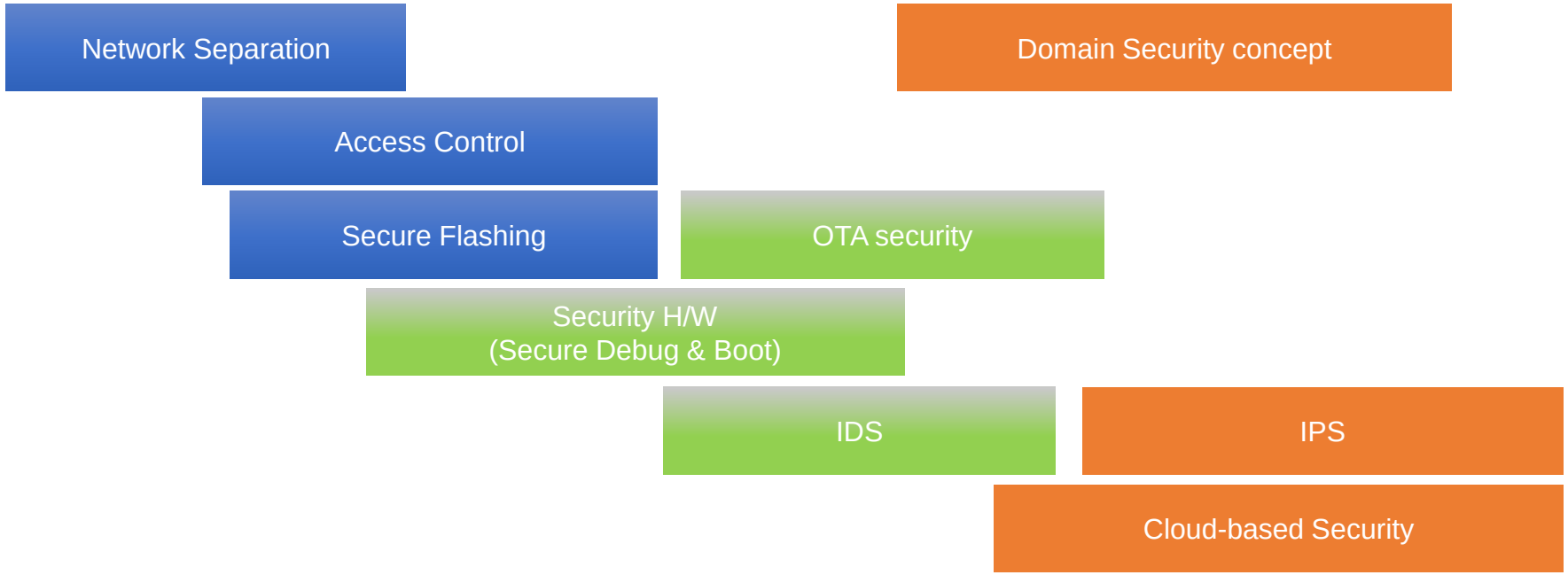
	Wiring Era (1990s ~)	Communication Era (2010s ~)	Future Mobility Era (2020s ~)
	wiring complexity ↑ introduce CAN protocol	Infortainment Service (using 3G / 4G, etc.)	Connected–car Autonomous Driving
Security Concept	physical access restriction	Guarantee S/W integrity	Simultaneous security (for multiple vehicles)
Typical Security Solution	Locking, Anti-theft	Access Control S/W modification verification	HSM Intrusion detection OTA update

Global Trend

- Automotive functional requirements and hacking threats continue to increase
- Advanced security solution and its implementation are required



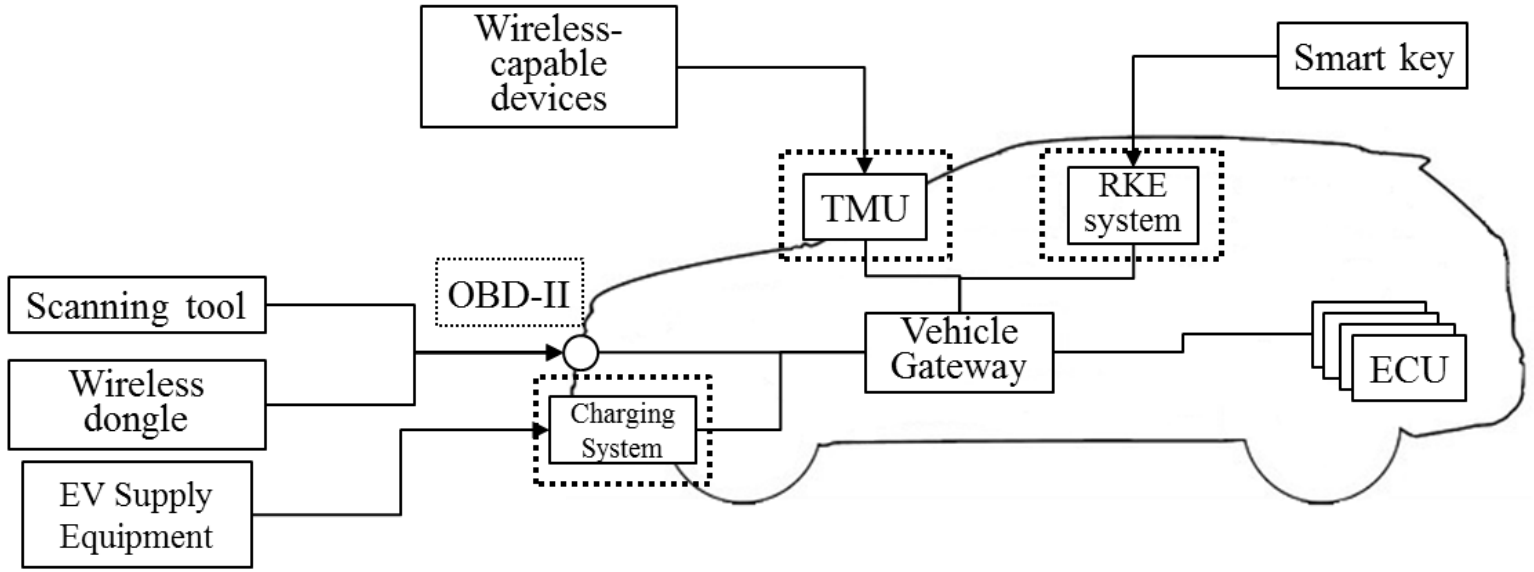
In-vehicle cybersecurity solution trends

	Before (2010 ~ 2018)	Present (2019 ~ 2023)	near Future (2023 ~)
Typical Solution			
ITU-T SG17 Q13 Recommandation	X.1374	X.1373 rev X.1375	X.edrsec X.eivnsec X.ipscv

Related SG17 Q13 recommendation

- X.1374 : Security requirements for external devices with vehicle access capability

  - Define security requirements for external devices
  - Address the identified threats

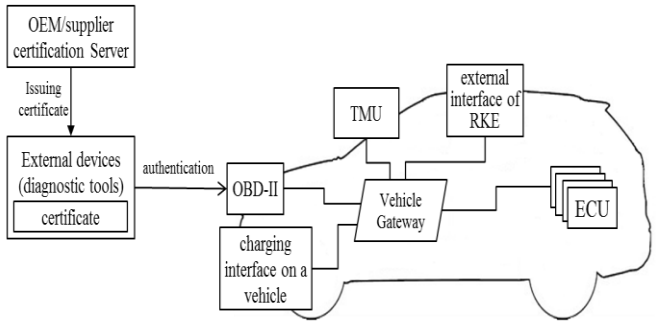


< X.1374 - Interfaces and external devices >

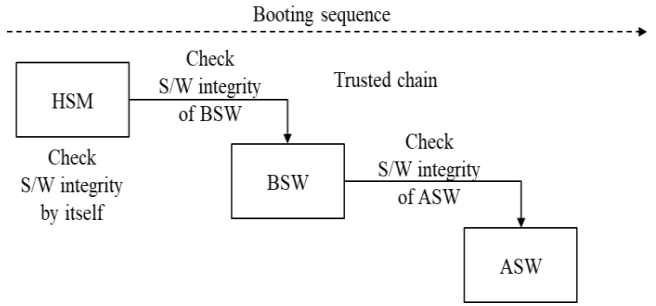
Related SG17 Q13 recommendation

- X.1374 : Security requirements for external devices with vehicle access capability

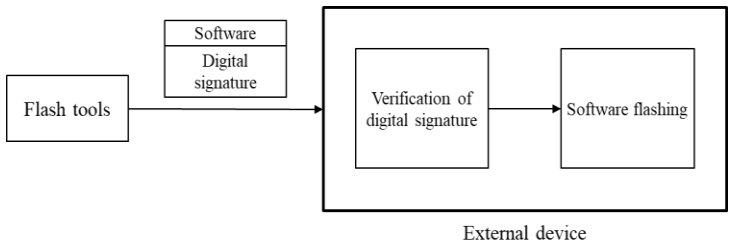
  - Require 4 security functions for devices connected to OBD-II port



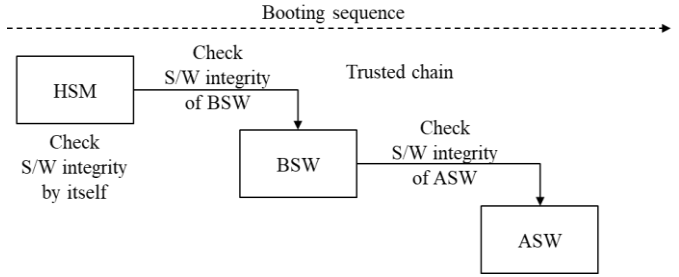
< X. 1374 - Security access for OBD-II >



< X. 1374 - Secure Debug >



< X. 1374 - Secure Flash >

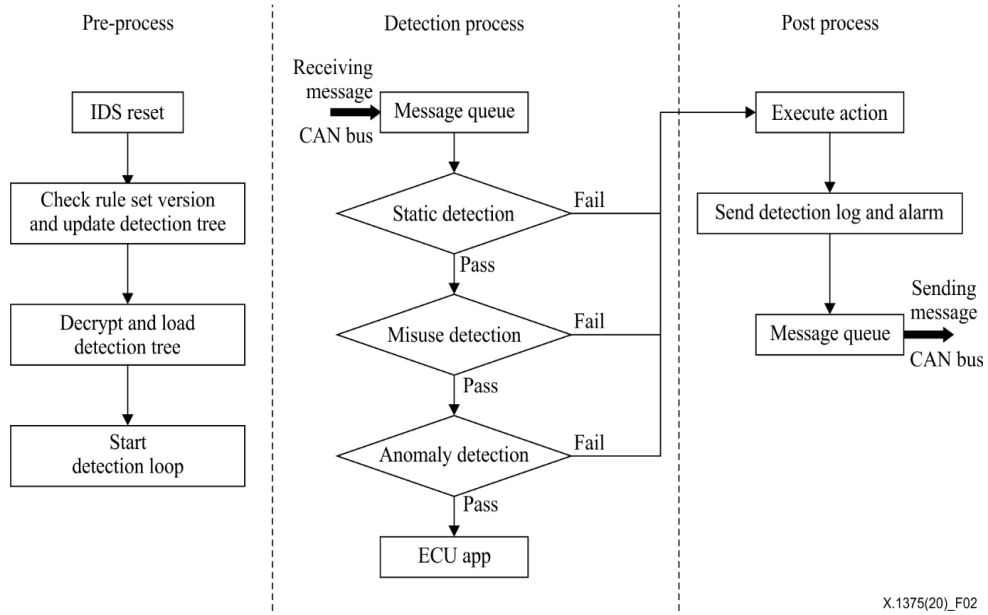


< X. 1374 - Secure Boot >

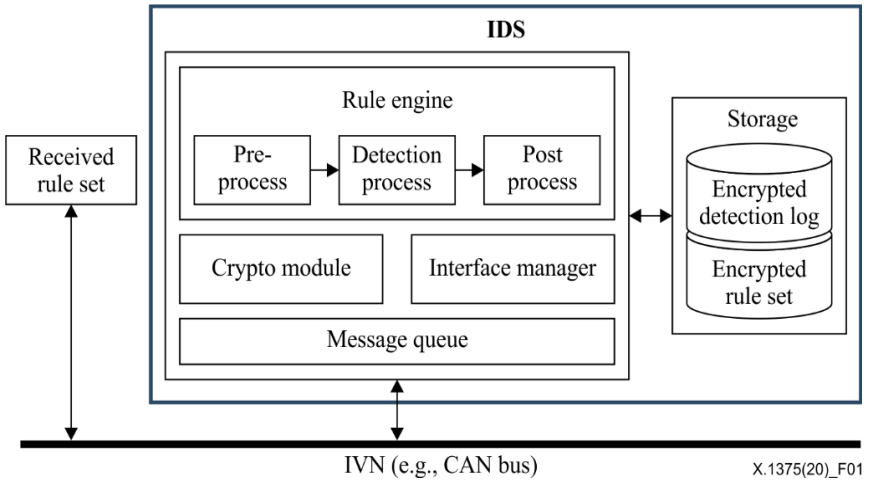
Related SG17 Q13 recommendation

- X.1375 : Methodologies for intrusion detection system on in-vehicle system

  - Focuses on aspect detecting intrusion and malicious activities in IVNs
  - Identifies threats to IVNs such as CAN



< X. 1375 - Overall procedure in the rule engine >



< X. 1375 - Architecture of an in-vehicle IDS >

Related SG17 Q13 recommendation

- X.1375 : Methodologies for intrusion detection system on in-vehicle system

  - Classify the intrusion detection methodologies
    . Static detection
    . Misuse detection
    . Anomaly detection
    . Hybrid detection

  - Classify the detection rule set
  - Define a detection rule set structure

Related SG17 Q13 recommendation

■ X.edrsec : Security guidelines for cloud-base data recorder in automotive environment
Technical consideration on data recording system for connected vehicle
Security requirements for EDR (Event Data Recorder) and DSSAD (Data Storage System for Automated Driving)

■ X.eivnsec : Security guidelines for the Ethernet-based in-vehicle networks
Studying security threat analysis, security requirements and use cases for the Ethernet-based in-vehicle network

■ X.ipscv : Methodologies for intrusion prevention systems for connected vehicles
Studying intrusion prevention system for connected vehicle focusing on
active response capability for intrusion, implementation guidance and use cases

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Q & A

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