

Corporate Partnership Board: Innovation, Emerging Mobility Trends and the Role of the Private Sector in Road Safety

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Volvo Studio
Stockholm, 18 February 2020

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CPB Report: Safer Roads with Automated Vehicles?



George Yannis
Professor, NTU Athens



Safer Roads with Automated Vehicles? An Overview

Goals

- Investigation of how increasing automation of cars and trucks affects road safety
- Identification of the basic security vulnerabilities to be addressed for self-driving vehicles

Scope

- Exploration of the “Safe System” approach adaptation to automated driving
- Discussion of potential safety benefits/disbenefits for automated driving
- Analysis of safety considerations with regards to cybersecurity of vehicles and traffic systems

Lessons

- The “Safe System” approach can deliver safety in an automated environment
- More crashes may happen during take over situations for “average” drivers
- Humans retain an advantage over single sensor-based automated systems in many contexts

Safer Roads with Automated Vehicles? – Main Findings

- Claims of a more than **90% reduction** in road traffic deaths resulting from automation eliminating crashes linked to human error are untested.
- The “**Safe System**” approach ensures that human fallibility does not result in death or serious injury
- There is a lack of a **common safety performance** assessment framework due to lack of experience and data on automated driving
- Safe operation will require vehicles to communicate with each other and with infrastructure beyond line of sight. Reliability issues might arise with regard to **cybersecurity**.



Safer Roads with Automated Vehicles? – Key recommendations

- Reinforcement of the “**Safe System**” approach to ensure safe AVs
- Apply **Vision Zero** thinking to AVs
- Avoid **safety performance** as a market mean for AVs
- Take into account the **human-machine interaction** in safety impact assessment
- Safety **data acquisition** from AVs
- **Staged testing** regime for AVs
- Comprehensive **cybersecurity** principles
- Functional isolation of **safety-critical systems** and not compromising security due to connectivity
- Clear and targeted **messaging** of vehicle capabilities



Safer Roads with Automated Vehicles? – Perspectives

- **Safe System Approach** and Vision Zero should drive all automation developments, with emphasis on interaction with “non automated” road users (VRUs, etc.)
- An **holistic approach** covering both road safety and cybersecurity is yet to be realised
- Emphasis should be given in the identification and documentation of the **safety-related results of cyber security violations**, the liability of actions, the time needed for safe countermeasures as well as the cost efficiency of those countermeasures
- Future research should be focused on how to make **control transition** smoother and safer through data-driven approaches for greater transferability



Safer Roads with Automated Vehicles? – Relevant EU Work

- **LEVITATE** prepares a new impact assessment framework to enable policymakers to manage the introduction of CAVs
- **ARCADE** builds consensus across stakeholders from all sectors for a sound and harmonized deployment of CAD in Europe and beyond
- **SHOW** deploys shared connected and electrified automation in urban transport chains
- **HADRIAN** ensures acceptable and safe new driver tasks and responsibilities in automated driving developments



levitate



HADRIAN

Questions and Discussion

Thank You

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