Achieving connected, automated and safe mobility





Artificial Intelligence & Automated Vehicles Towards a better Road User Safety ?

Keynote presentation Future Networked Car Symposium 13th March 2023 UNECE - ITU

Joost Vantomme CEO, ERTICO-ITS Europe



Agenda



- 1. ERTICO-ITS Europe
- 2. Al and automation: safety benefits
- 3. Al and automation: safety concerns
- 4. Not only vehicles...
- 5. Homework to improve road safety
- 6. Regulatory progress
- 7. Projects and international activities
- 8. ITS European congress (May 2023)

ERTICO-ITS Europe A Public Private Partnership

Bringing together

120+ Partners from 8 mobility sectors since 1991 to make mobility **smarter**, **cleaner, safer** and **more efficient.**

Geographical scope: EMEA

www.ertico.com





Public Authorities



Users

ERTICO PARTNERS







Up to date list of partners: www.ertico.com





Intelligent Infrastructure

Systems

V2X Communication

AI & automation: safety benefits





Goal: Human error reduction for safe driving



- Driver related factors (study Insurance Institute for Highway Safety)
 - ✓ Sensing and perceiving errors (e. g. driver distraction, impeded visibility)
 - ✓ Predicting errors (misjudgment by drivers)
 - ✓ Planning and deciding errors
 - ✓ Execution and performance errors
 - ✓ Incapacitation involved impairment
- AI in ADAS and AD: facilitates the reduction in distraction, fatigue and impaired driving
- Facilitates perception of environment -> predictive driving, traffic management
- Faster and more accurate decision making

AI & automation: safety concerns



Data history Technical limits	 Legacy scenario based decisions: decisions based on the data algorithms have been trained on Limits to handle unpredictable road situations
Learning is never	Attention to overreliance on technology

- Ongoing development and testing of Al
 - New ODD's not embedded in the trained algorithms
 - Issues & errors with software & hardware

Legal & ethical unknowns

finished

Unchartered domains in allocation of responsibility/liability
Ethical considerations: Al to take decisions on who/what has priority (human life/other)

Cybersecurity

Connectivity V2V/V2I/V2X -> cyber threats
Hacking, malicious attacks

Not only vehicles, also roads and connectivity





EU-ICIP Guide to Intelligent Transport Systems Standards, https://www.mobilityits.eu/ccam-connected-vehicles





Safety: takes more then vehicles and roads

- **U** Vehicles with higher levels of AD incl. Al
- □ Physical road infrastructure
- Digital infrastructure & data sharing. V2V, V2I, V2G communication systems, real-time information on traffic and road conditions as well as potential hazards.
- Mapping and localization: roads need to be accurately mapped and localized to enable automated vehicles to navigate their environment and make decisions based on real-time data about road conditions and traffic
- Regulations and standards: to ensure safety and interoperability across different manufacturers and jurisdictions
- Maintenance and upkeep: roads will need to be regularly maintained and upgraded to support the ongoing development and deployment of automated vehicles, including the integration of new technologies and infrastructure
- And of course: the driver/person being driven and other road users





And what about the public/user acceptance ?

- Reliance and trust in technology ? Hand-over of decision making control to Al/automated systems ?
- □ **Resistance to change**/new technology
- □ How to handle **digital divide** ?
- Mixed traffic situations. Half of all road traffic deaths are pedestrians, cyclists and motorcyclists
- Collection and processing of personal data (driving behaviour, location, interaction with others): questions on data protection & privacy
- **Driver licence** requirements

XXX

- Cost: some worries about the cost of purchasing and maintaining an automated vehicle
- Automation replaces the driver ? Economic/social questions



Homework to improve road safety

- □ Testing and validation of scenarios/safety & reliability
- Machine learning algorithms: higher sophistication to handle complex driving scenarios
- □ Research and funded programs: e.g. Horizon Europe and Digital Europe
- More powerful computing power required to process large amounts of sensor data in real-time
- Data analytics from sensors and other sources. Enables the vehicle to make more informed driving decisions based on real-time information about traffic, weather, and road conditions
- □ Road infrastructure: huge investments in physical infrastructure and digital twins
- □ Connectivity sector: 5,5G, 6G, edge computing, ...





Regulatory progress to improve road safety

Regulatory framework in the EU in transformation mode

- New EU implementing act on Automated Driving Systems (type approval) based on UNECE R155, R156, R157)
- ✓ Increased role of validation/certification/type approval/mutual recognition
- ✓ Roll-out of European data strategy
- Proposal act on artificial intelligence (increased regulatory oversights and obligations on automated transport systems -> high risk applications)
- ✓ Proposal changes to civil liability rules on products and AI
- ✓ Set-up of European mobility data space(s)
- ✓ New European updated requirements for driving licences
- □ International cooperation programmes





Improve road safety across Europe for all road users by creating a Safety-Related Traffic Information (SRTI) Ecosystem through collaboration between vehicle manufacturers, traffic information, service providers, automotive suppliers, road operators, authorities, road agencies.

ERTICO chair of General Assembly. Contact Joost Vantomme (j.vantomme@mail.ertico.com) Vice-chairs : Asfinag (AT), Ministry Infrastructure and Water management (NL), DGT (ES), Ford (DE) www.dataforroadsafety.eu



Examples of EU funded projects



Societal Level Impacts of Connected and Automated Vehicles Road safety impacts of Connected and Automated Vehicles: <u>link</u>

Althena Al-Based CCAM: TrustwortHy, Explainable, and Accountable

AI4CCAM Trustworthy AI for CCAM. Link



Vehicle captured data, can contribute to AI use cases. Link

@ERTICO | ERTICO.COM



Examples of international initiatives

- UNECE WP 29/GRVA : AI and vehicle regulations
- **UNECE WP 1** : traffic regulations
- UK Law Commission report, UK government Connected and automated mobility 2025 report
- The World Economic Forum: Safe Drive initiative -> wants to create new governance structures that will then inform industry safety practices and policies for self-driving cars. Their proposed framework is centred around a scenariobased safety assurance approach.
- The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems has also been working on broad and specific safety standards across industries, ranging from healthcare and agriculture to autonomous driving.



Join the ITS European Congress

22-24 May 2023

Website: www.itseuropeancongress.com Twitter: @ITS_Congress @ERTICO #ITSLisbon2023



EUROPEAN CONGRESS

LISBON, PORTUGAL 22-24 MAY 2023

ITS: The Game Changer.





Cooperative, connected and automated mobility Topic



- Ubiquitous resilient connectivity
- Standards and cross-border solutions
- Safety, security, reliability & liability
- The changing role of infrastructure
- Synchronising communications and physical & digital infrastructure
- Positioning, timing and navigation systems
- New transport system policies, business models, new technology and services
- The transition phase and user behaviour
- Pilots, trials and tests
- Autonomous public transport

Plenary Session 1 Digitalisation – what can mobility users expect?

Plenary Session 2 Connected, Cooperative and Automated Mobility: How green can you go?

Plenary Session 3 Integrating road, rail, air and waterborne – multimodality by any means?

Plenary Session 4

Managing urban mobility space – what can we expect from cities in the future?



Curious to find out more ?



Connecting for tomorrow's journey



Report: <u>https://ertico.com/wp-</u> <u>content/uploads/2022/05/Annual-Review-</u> <u>2022_FINAL.pdf</u>

1' video: <u>https://www.youtube.com/watch?v=meQFgICNKxY</u>



https://www.connectedautomateddriving.eu/

https://digital-

strategy.ec.europa.eu/en/policies/connected-andautomated-mobility

https://ertico.com/gdpr/





Contact:

Joost Vantomme, CEO

j.vantomme@mail.ertico.com

+32 2 400 07 10

"Alone we can do so little, together we can do so much" Helen Keller **ERTICO Partnership**

> ertico.com @ertico

