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Road traffic safety management standards
ISO 39003 (new work in ISO/TC 241)  
Road Traffic Safety (RTS) – Guidance on the aspects of Autonomous Vehicles that require ethical consideration

The ISO 39000 series of standards provide standardization and guidance in the field of Road traffic safety management systems

ISO 39003 will give guidelines to facilitate a consistent, **systematic approach** to those aspects of an autonomous vehicle’s behaviour that should be considered by the designer/manufacturer to ensure that no key, safety-related, aspects are overlooked or disregarded.

This document is **applicable to any organization** involved in the design, manufacture, sale, purchase, after service, or operation of vehicles that operate on the public highway without a driver, otherwise known as an autonomous or driverless vehicle. It will provide an **holistic Safe System** approach to prevent deaths and serious injuries resulting from the behavior of such vehicles.
ISO TC/241 WG6

GUIDANCE ON THE ASPECTS OF AUTONOMOUS VEHICLES THAT REQUIRE ETHICAL CONSIDERATION

ISO/TC 241/WG 6 Convenor Mr. Dave Conway/United Kingdom
Background

• The single most significant factor in road traffic safety is a nut...
  ...
  the nut behind the wheel.

• Driverless vehicles have the potential to remove this variable with the ability to recognize, process and react to data input far beyond human capacity

• But how can we be sure that the autonomous vehicles have moral prioritizations that align with those of society?
What could go wrong? 1

The vehicle detects two living creatures in its path. It can only avoid one?

Which does it hit?

Avoid the moose to save the car, but hit the child?
What could go wrong? 2

Two driverless vehicles approach a single lane width passing point. Which has right of way? The one with greatest sense of urgency algorithm?
Scope of ISO 39003

This standard is not a Management System Standard nor a Technical Standard.  
• Will not set requirements for the outcomes of ethical decisions  
• Will not offer guidance on methodology  

It will only detail: those aspects of an autonomous vehicle that require considerations to be made by the designer/manufacturer to ensure that key aspects are not overlooked or disregarded.  

This standard does not offer the technical precision to prescribe the required controls but would, rather, offer a set of “protocol guidelines” that a vehicle manufacturer might choose to self-certify against to assure that the desired necessary ethical considerations were addressed during design and effectively controlled.
Purpose and justification – ISO 39003

Vehicles must be developed to an agreed set of ethical standards and protocols to minimize risk.

There are a number of standards available, or under development, that address the engineering and technological aspects of autonomous vehicles but there are none that cover the decision-making processes of the vehicle control system.

This standard will define:
• the aspects that should be considered,
• possible outcomes of those decisions

It should provide manufacturers and distributors, a mechanism to enable formal declaration of compliance to an International Standard

Give assurance to purchasers, end-users and society as a whole, that the vehicles’ design has considered and addressed the ethical issues identified within the standard.
Relevant affected Stakeholders

- Manufacturers
- Distributers
- Purchasers
- End-users
- Society as a whole
Example aspects to be considered:

6.1. General
   6.1.1. Basic good practices
   6.1.2. Determinations of Key Ethical Considerations
   6.1.3. Evaluations of Key Ethical Considerations

6.2. Basic Ethical Considerations
   6.2.1. Unavoidable Collisions
   6.2.2. Right of Way
   6.2.3. Journey and risk management
   6.2.4. Vehicle Maintenance
   6.2.5. Post-Crash Behaviour
   6.2.6. Operational, legislative and societal arena
   6.2.7.
   6.2.8.

6.3. Additional Ethical Considerations (Manufacturer's Vehicle Special Features)
   6.3.1.
   6.3.2.
   6.3.3.
Thank you for your attention!
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