

Concept for a Global Framework for the Assurance of Automated Vehicle Safety

Contents

1. Concept for a validation framework
 - a) Importance of manufacturer validation
 - b) Limitations of compliance testing
 - c) *De facto* international consensus
2. Concept for a two-phased approach
 - a) Global guidance
 - b) Regulatory measures

Manufacturer Validation

- Validation of automated vehicle performance requires:
 - Long-duration testing
 - Under all (applicable) traffic conditions
 - On public roads
 - Across significant numbers of vehicles
- Only manufacturers can conduct such testing.
- Assessment must build upon manufacturer testing.

Compliance Testing

- AV safety requirement: “safe under all (applicable) conditions”
 - “Automated vehicle systems functioning within their operational design domains shall not cause any traffic accidents resulting in injury or death that are reasonably foreseeable and preventable”
(Japan guidelines regarding safety technology for automated vehicles)
- “Canon law”: objective, quantifiable, technology-neutral, performance-oriented, repeatable, reproducible, and comparable
- Controlled, fixed testing cannot reasonably capture diversity of performance requirements.

Combined Approach

- Comprehensive testing and validation by manufacturers
- Verification of manufacturer validation by safety authorities
 - Manufacturer documentation
 - Third-party reporting (e.g., police accident reports)
 - Selective testing and assessments

What is “comprehensive testing”?

Current Consensus

- Governments have issued policies and guidance concerning manufacturer development, testing, and deployment of automated vehicles.
- *De facto* consensus that safety authorities should provide, and manufacturers should follow, guidance on safe testing on public roads.
- WP.29 can consolidate this guidance into a robust, comprehensive document for worldwide use.

Conceptual Framework

- Establish and maintain a global guidance document.
 - State-of-the-art reference on safety expectations
- Manufacturer affirmation of the guidance.
- Establish methods to verify the manufacturer's affirmation.

The guidance creates space for innovation and collaboration towards methods that result in high confidence in vehicle performance.

Benefits of Guidance Document

- Clarifies concepts for application in regulatory measures
 - What is a robust, comprehensive development program?
 - What is a “real world test drive”, an “audit”?
 - What is “foreseeable and preventable”?
- Flexible and responsive safety mechanism
 - Annexes that can be updated quickly in response to real world events
 - Global information sharing

Two Phase Program?

- Phase One: Harmonized Global Guidance [September 2019?]
 - Consolidate existing CP guidance and task force results
 - Provide clear foundation for anticipated regulatory measures
- Phase Two: Assessment framework [September 2020?]
 - Manufacturer declaration of compliance with guidance
 - Verification of compliance through selective testing/assessment

"Trust often determines automation usage. Operators may not use a reliable automated system if they believe it to be untrustworthy. Conversely, they may continue to rely on automation even when it malfunctions."

— Raja Parasuraman & Victor Riley
Humans and Automation:
Use, Misuse, Disuse, Abuse
1997

THANK YOU

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