Action Name

Develop a common EU testing and validation methodology

Related Task/s

Why is this action important?

- Increased complexity to validate emerging technologies implemented in CAD vehicles is one of the main barriers for CAD introduction.
- Need for optimization of development cost and time.
- Need for assurance of reliability
- NO complete, reliable and evolving validation procedures to verify that CAVs fulfill technological and regulatory requirements
- Need for alignment among the needs of all key user groups involved in the development and validation process
- Need to consider new definitions, technologies and tools that will be involved in the validation process

Further arguments?

Key uncertainties

- Indicators to demonstrate the real impact on the citizens' everyday lives, to enhance users' appreciation
- Public authorities need to know which requirements to put on CAD functions, and how to show that these requirements are fulfilled to provide safe CAD.
- Lack of regulation supporting CAD at European or member state level
- SW validation approach in a traditional sector such as automotive
- Introduction of cybersecurity as part of validation loop

Further key uncertainties?

Specific key uncertainties for truck or urban?

Cause-effect or working mechanism

- **Cause:** Commonly accepted safety validation framework; Partial initiatives by different stakeholders and addressing different aspects
- **Effect:** Straight forward and aligned test methodology to speed up innovation and assure safe vehicles in public roads
- **Working mechanism:**

-Revision and input from state of the art
-Scenario selection and simulation validation
-Cross-linking of all test instances such as simulation, proving ground and real world field tests
-Involvement of relevant actors and stakeholders from industry, academia, consumer test programmes, regulation

Questions/ Feedback?

Action description

Create a dynamic catalogue of existing methods, procedures and tools for testing, validation and certification considering multi-stakeholder requirements

Harmonization of existing testing and validation approaches taking into account other industries and domains

Define and develop test, validation and certification methodologies and procedures for CAD building upon existing initiatives

Demonstrate the developed methodologies, procedures and tools through the testing of relevant CAD use cases

Reach consensus by creating and managing an expert network of CAD testing to promote adoption of the project results considering multi-stakeholder needs

Questions/ Feedback?

Possible impacts

- Cost and time-to-market reduction
- New development strategies
- New safety-increased testing methods
- Risks reduction
- New official assessment protocols
- User acceptance
- Safety-aware sales growth
- New CAD type approval regulation
- CAD safe market introduction
- Digital Driving License

Further possible impacts?

Stakeholders

Actor	Task	Role
EU (DGGrow, JRC)	Guidance and alignemt with common approach and description of OD	Building on top of Headstart
Euro NCAP, NHTSA; AAA	Consumer test programmes	External advisor
Industry (OEMs, TIerX)	Bring in industrial expertise and relevance	Car, truck, shuttles designer
UNECE	Later include OD in type approval (Low priority)	Type approval
Road authorities / traffic authorities	Test and operate OD measures (Depending on country)	Road operator
Standardization entities	Include OD in scenario work	Standardization

Evaluation criteria

Indicators for: engagement of relevant actors in the expert network; how relevant audiences and general public have been reached; level of dissemination in the scientific and research community;
Demonstration of capabilities of the common framework for testing and validation procedures for CAD functions to several professional networks (i.e. HEADSTART).
Influence of related projects on policy makers, relevant governmental organizations and standardization bodies about the adoption of a common test and validation framework;
Demonstration of proof of concept solutions to the citizens' everyday lives, to enhance users' appreciation.
Further evaluation criteria?

Key references

OEMs: White paper "Safety first for automated driving"
Legislation_EU_Guidelines_Exemption procedure for the EU Approval of AD vehicles
http://www.ertrac.org/uploads/documentsearch/id38/ERTRAC_Automated-Driving-2015.pdf
ECE/TRANS/WP.29/2017/145- (ITS/AD) Proposal for the Definitions of Automated Driving under WP.29 and the General Principles for developing a UN Regulation on automated vehicles
UNECE proposals for safety regulation and future certification of AD systems
Relevant European projects: HEADSTART, MOOVE, PEGASUS family projects, L3 Pilot
Consumer test programmes (Euro NCAP, NHTSA, AAA)

Further key references?

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