OpenPASS & TME
Contribution and Expectation
23/07/2018
1) Toyota AD Development related centers

- **Toyota Motor Corporation** would decide to use for automated driving simulation environment.
- **Toyota Motor Europe** should investigate for automated driving simulation environment. And we need to share to **Toyota Motor Corporation** this information.

- **Overview Toyota R&D center**

  - Vehicle Eng.
  - System/Sensor development
  - Vehicle Eng.
  - Camera recognition
  - Vehicle Eng.
  - AI

  - USA
  - Europe
  - China
  - Japan
  - Asia Pacific
2) EU direction for AD safety evaluation requirements

UNECE Regulations
Focus on Safety Reassurance?

Status of UNECE legislative activities:
1. UNECE WP29 ITS/AD: current Type Approval process not enough
2. New UNECE AV certification working group starts in spring 2018
3. OICA Cluster III (Certification of ADV) already started draft proposal

Direction of discussion:

Now

Future

Physical lab test
Simulation
Road Driving test
OEM audit

Consumers Assessment
Focus on Safety Effectiveness?
(on top of Safety Reassurance)

The focus of the roadmap is on the use of advanced technology to deliver improved passenger car safety but also on how it might assist other road users. The continued use of the overall rating scheme is envisaged, with its separation of assessment into one of four areas, but a move is proposed to a more scenario-based scheme in the future and to greater use of simulation to provide a broader and more robust assessment. An assessment of automated driving is proposed, outside of the main star rating scheme. For primary safety, driver monitoring (start date 2020)

This review of the overall rating methodology will also address opportunities to exploit virtual testing to add more robustness to the assessment. This transition process will phase in from 2022 and is expected to be completed by the end of the roadmap term in 2025.

Source: Euro NCAP 2025 Roadmap

→ Both Certification & Assessment are aiming for similar process & methods to evaluate safety of AD
3) Simulation for Assessment / Certification

(1) Harmonised process is needed to cope with both scenarios

(2) Which level of details is needed for each case?
4) TME Expectation from OpenPASS

From Research...

- TME expectation is that OpenPASS is following the methodology set in P.E.A.R.S.
- OpenPASS has a key role towards future assessment using virtual simulation

Future research and industry cooperation on « new » scenario (eg. use EuroNCAP Roadmap as base)

- Bring simulation activities to an even higher level
- Correlation of simulation with Proving ground testing

...to Requirement setting

Simulation as tool for safety assessment
- OEM tool...
- Commercial software (CarMaker...)
- Open source

Certification

European Commission H2020 HEADSTART (IDIADA Proposal)

TME expectation is that
- OpenPASS is following the methodology set in P.E.A.R.S.
- OpenPASS has a key role towards future assessment using virtual simulation
5) P.E.A.R.S. & OpenPASS

**Methodology**
- Establish process from RQ to validation
- Define minimum requirements
- Round robin of existing tools

Initial scope is ADAS. How to adapt it towards AD?

**Tool**
- Apply process up to validation
- Apply minimum requirements
- Add tool to Round robin test