PROTECTED
関係者外秘
Div:TME-R&D Until:
Indefinite

OpenPASS direction

Pablo Puente Guillen

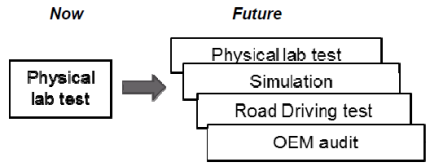
Impact of virtual simulation

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:



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

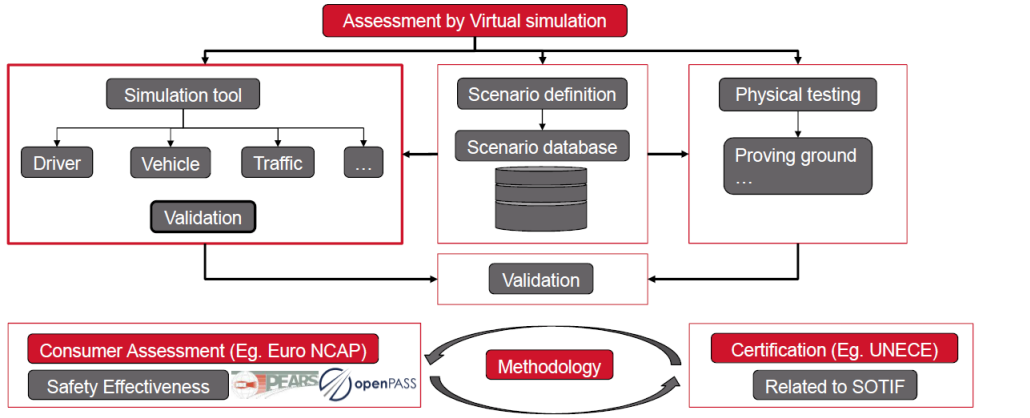
The focus of the roadmap is on the use of advanced technology to deliver improved passenger car safety but also on how it might assist other road users. The continued use of the overall rating scheme is envisaged, with its separation of assessment into one of four areas, but a move is proposed to a more 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

Simulation for Assessment / Certification



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

➔ (2) Which level of details is needed for each case?

P.E.A.R.S. & OpenPASS

Methodology
PEARS

- 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
openPASS

- Apply process up to validation
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Why is PEARS important?

EU direction for AD safety evaluation requirements

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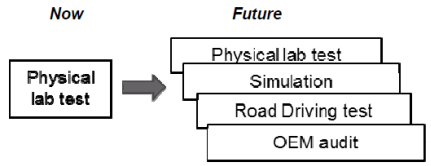

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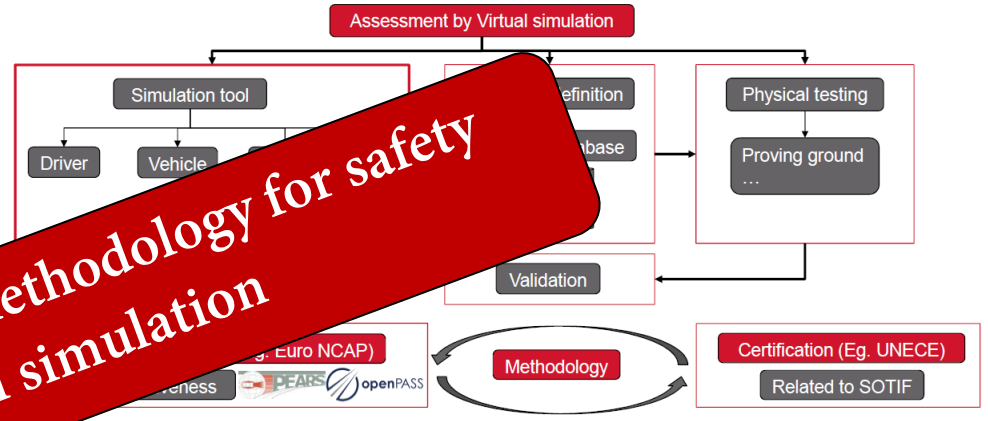

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PEARS is developing ISO standards for methodology for safety effectiveness assessment based on virtual simulation

& OpenPASS

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TOYOTA

Connection with PEARS

Why to use PCM over any other datasets?
What other datasets can we use and why?

What are the minimum requirements?

EU direction for AD safety evaluation requirements

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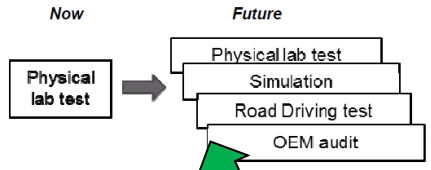

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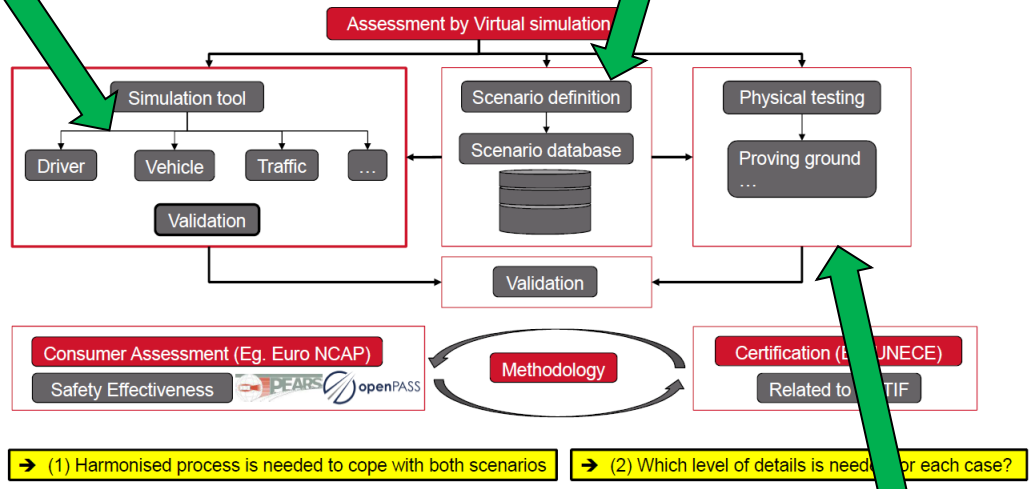
Do we want to contribute to regulation or assessment creation?
Or just a OEM benefit assessment tool?

Simulation for Assessment / Certification



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How do we validate the simulation results (tests track/driv. sim./ FOT)?
How many test do we have to do for validation?
How close have to be the results from simulation compared to test track/driv. sim./FOT?

P.E.A.R.S. & OpenPASS

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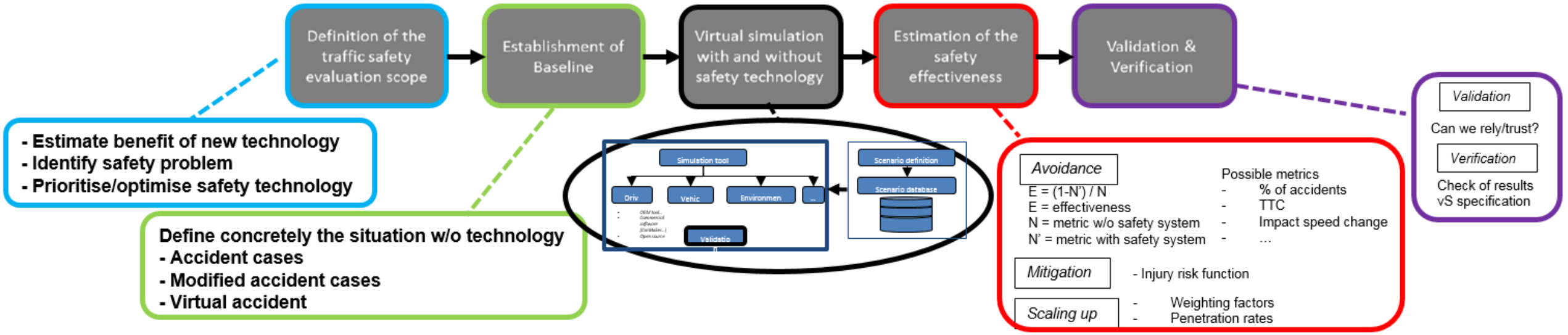
Are we focusing in AD or in ADAS?
How much we will have to change the methodology from ADAS to AD?

PEARS methodology



Output: (2018) ISO Technical Report as first step *(Within SC26, Safety and Impact testing)* ✓
(2019…) ISO Technical Specification (Currently under development)
(……) ISO Standard

What is the outcome/goal of OpenPASS?

P.E.A.R.S. & OpenPASS

Methodology

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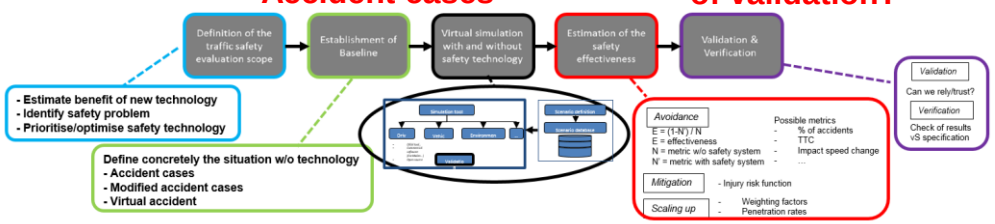
Goal: ?

Goal: ISO standards for methodology for safety effectiveness assessment based on virtual simulation

Testing different database? Traffic flow vs. Accident cases

Testing different types of validation?



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Testing PEARS methodology

Parallel project using PEARS outputs

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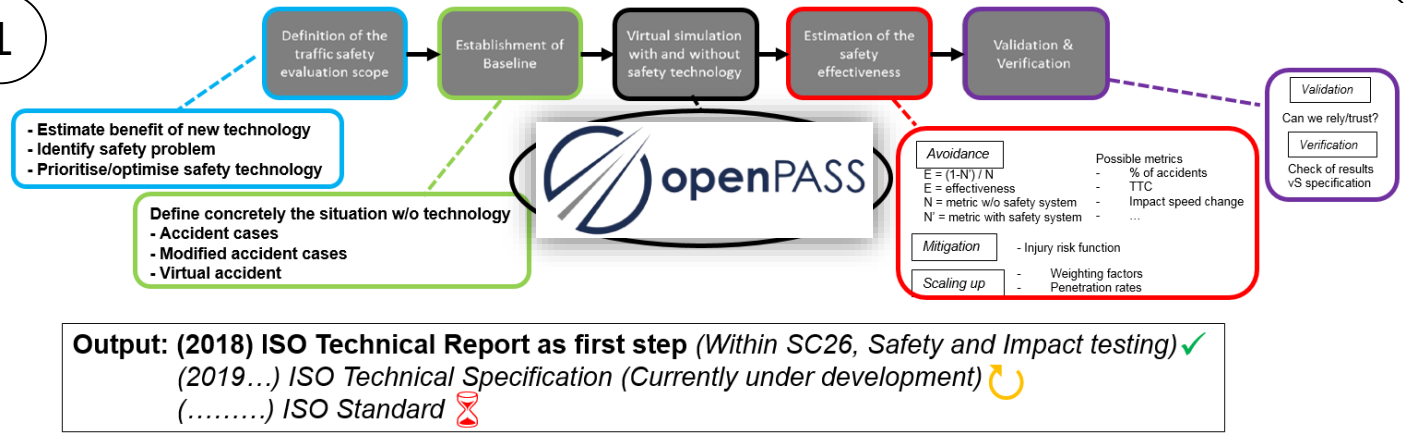
TOYOTA

Objectives for OpenPASS

1



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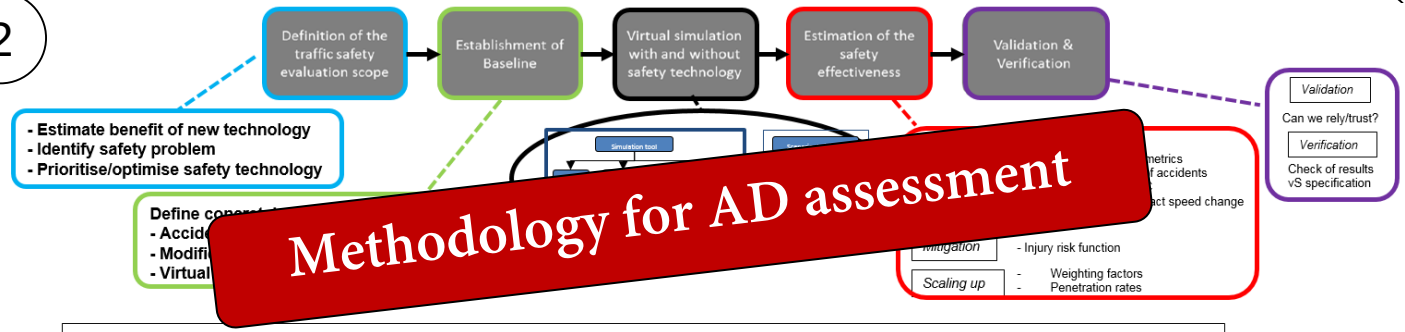
OBJECTIVE:
OpenPASS compatible with PEARS methodology for ADAS assessment
RQs: What are the different needs when using traffic flow vs. accident scenarios?

WHY:
Euro NCAP 2022-2025
ADAS assessment using virtual simulation
Due to open source (transparency), OpenPASS might be a good tool for Euro NCAP testing

2



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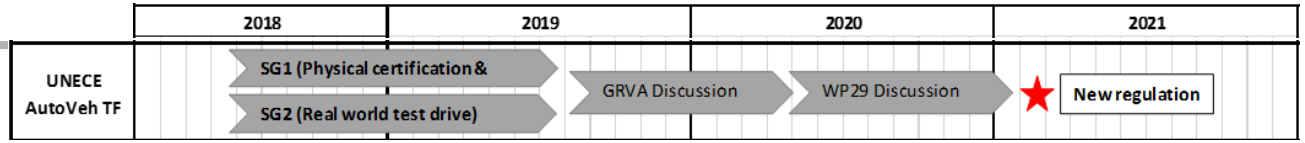
OBJECTIVE:
Based on PEARS methodology, develop AD methodology. Differences between ADAS and AD assessment?

WHY:
Regulation being developed
(Possible) Euro NCAP 2025
AD assessment using virtual simulation



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