

UNECE IWG EqOP Task Force Virtual Crash-Testing

IWG EqOP - TF VCT; 2nd Workshop

Agenda

- 1.) Approval of agenda
- 2.) Approval of minutes from first workshop
- 3.) Building blocks identified in first workshop
- 4.) Current research on Virtual Testing
 - a.) NHTSA
 - b.) CATARC
 - c.) others
- 5.) Discussion on requirements for virtual testing from contracting parties' view**
- 6.) Discussion on strategies to enable virtual testing**
- 7.) Next steps**

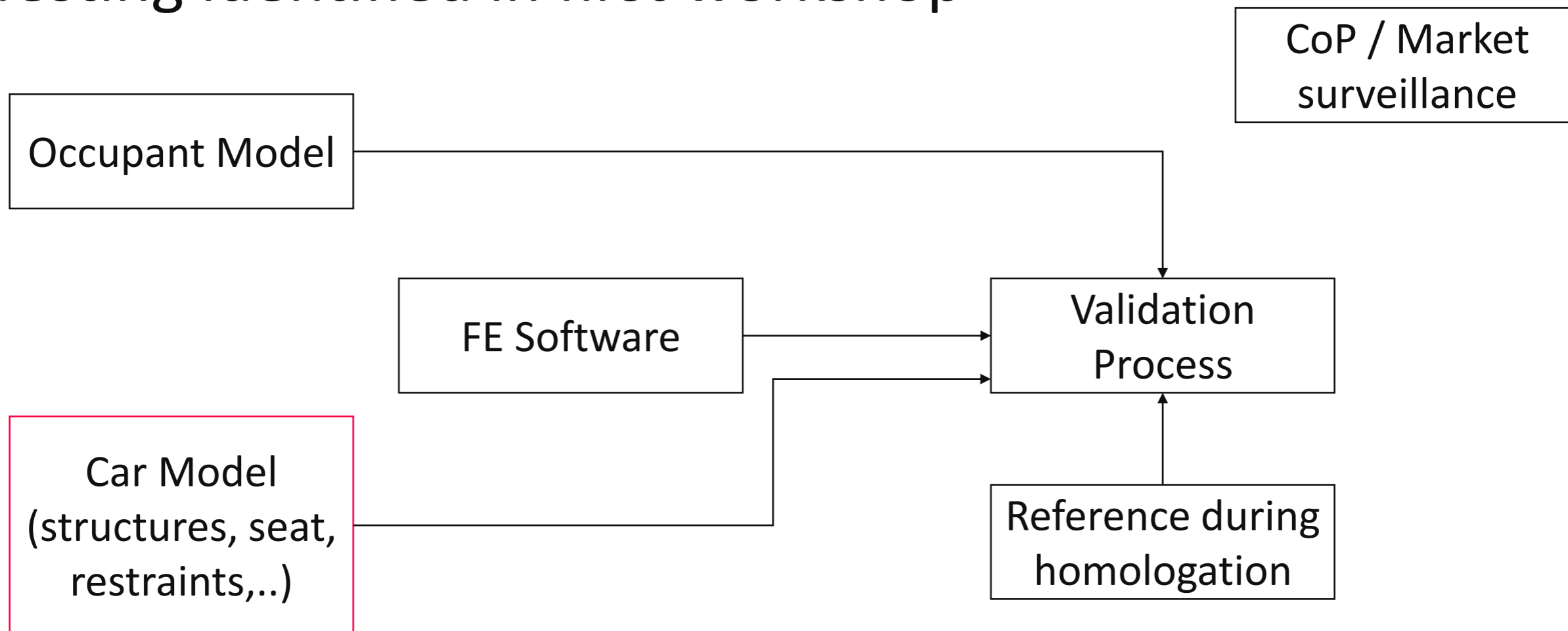
Aim of the workshop

- How could we implement Virtual Crash testing into regulations?
 - What are the requirements to enable virtual crash testing?
 - Which barriers do we have to overcome to enable virtual crash testing in regulations?
 - How can we address them?
 - What can we learn from other disciplines?
 - What would be required to make it happen?

Not in the scope:

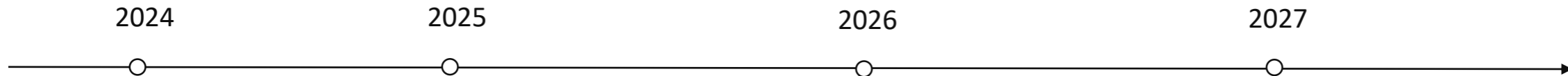
- Discussion of tools and related specific requirements

Building blocks for Virtual Crash (Occupant Protection) Testing identified in first workshop



Virtual Testing activities

EqOP Task Force on Virtual Testing



„Assess virtual crash testing as a method in concerned regulations to improve equity in occupant protection further and define related requirements for the models and procedures, including how virtual testing can be validated with existing ATDs.“

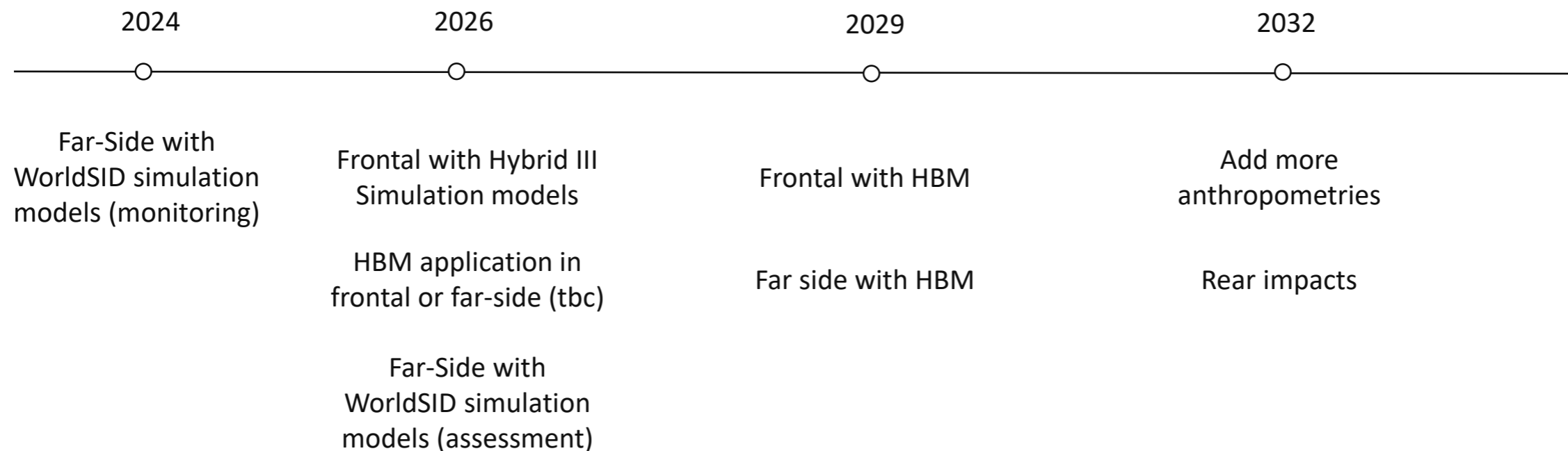
Define requirements for virtual crash testing process

Proof of concepts

Draft process for virtual crash testing including different options

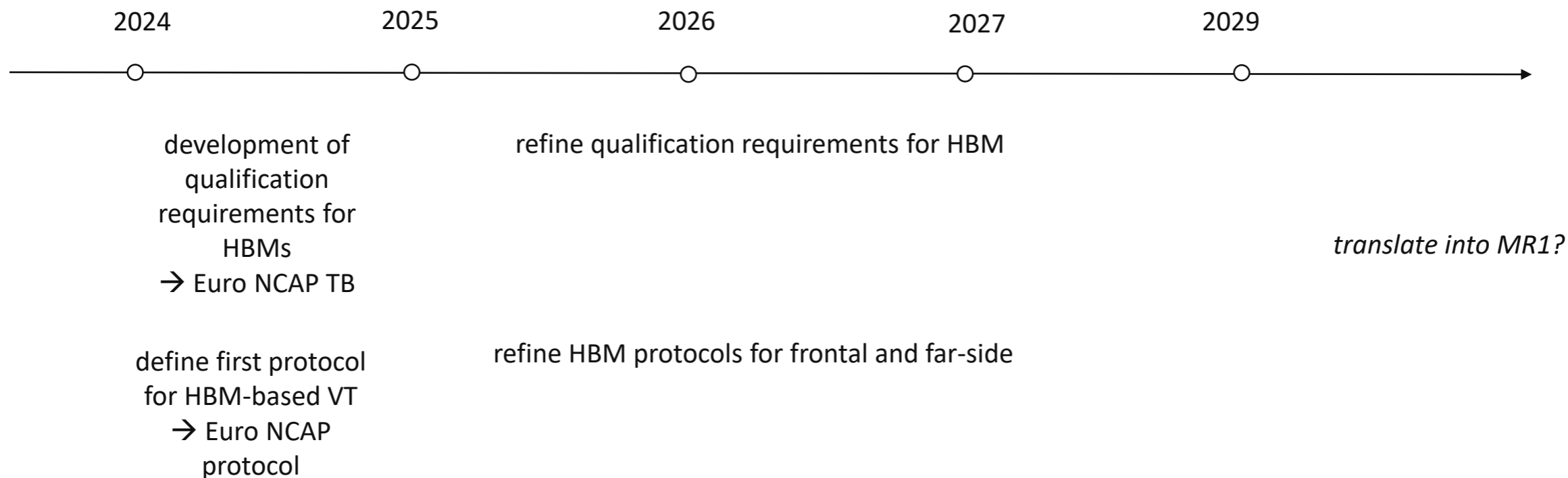
Activities on Virtual Testing

Euro NCAP



Activities on Virtual Testing

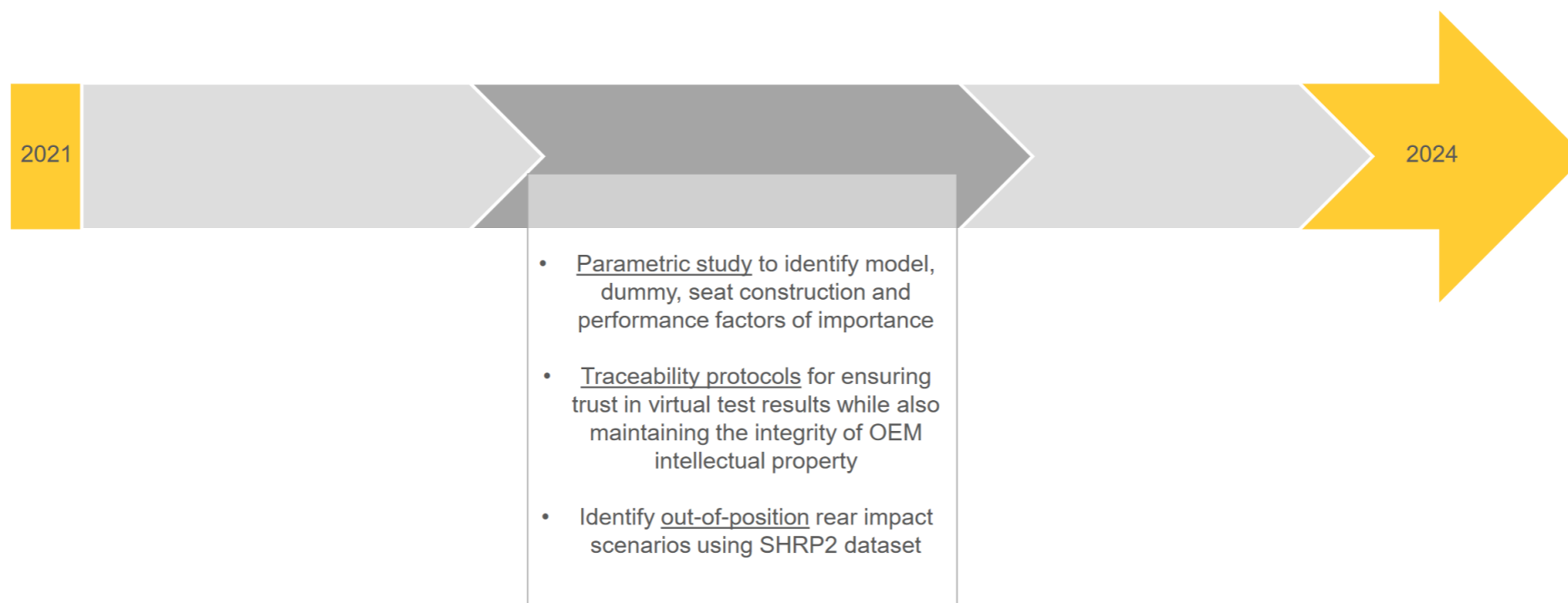
HBM4VT



Activities on Virtual Testing

Virtual testing research plan

IIHS



https://wiki.unece.org/download/attachments/215679542/EqOP-Workshop-03-06e_2023%20IIHS_Rear%20Impact_Eqop.pdf?api=v2

Other activities

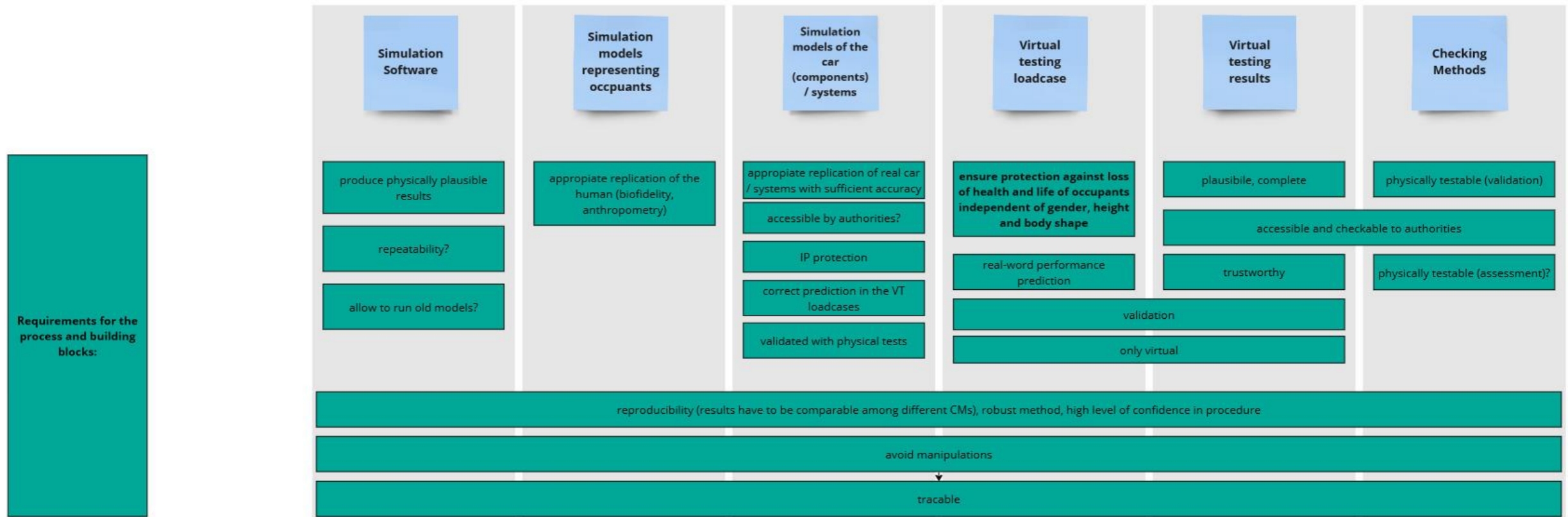
- GTR No. 9 – Determination of HIT and WAD with HBM for assessment of deployable pedestrian protection systems (IWG DPPS work has been finalised)
- VT already possible for EU type approval
- TÜV SAAR activities
- NHTSA (presentation from 31.01.2024)
- CATARC(presentation from 31.01.2024)

Building blocks to be discussed

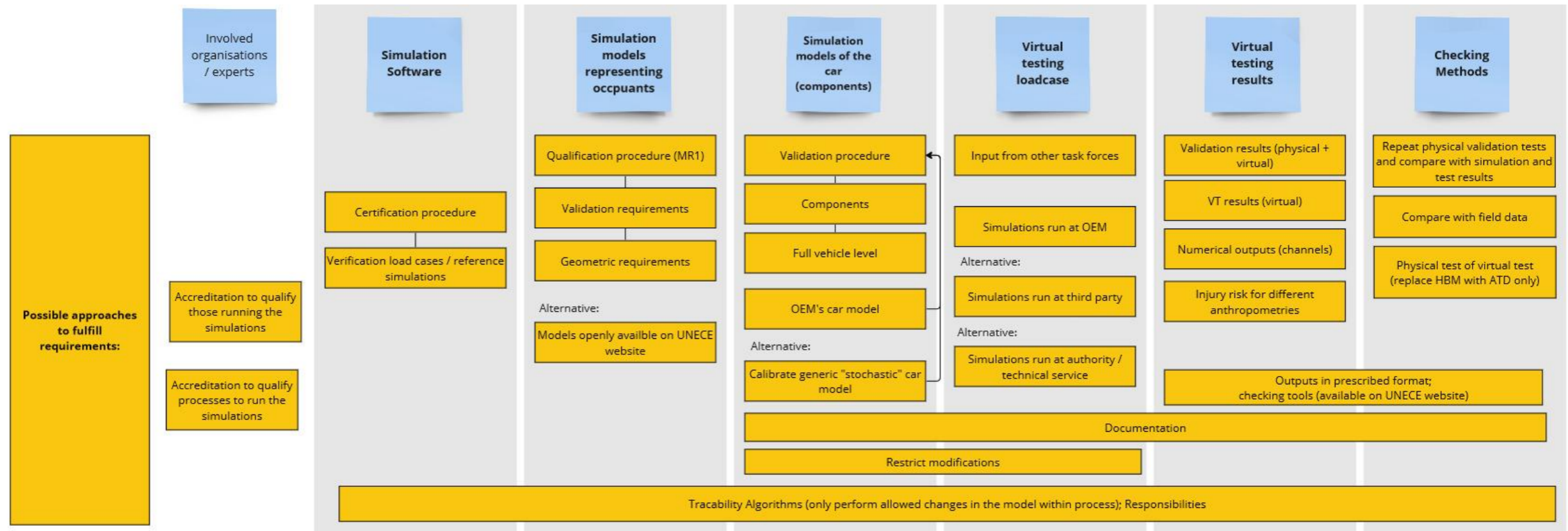


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Building blocks for virtual crash testing – Requirements for the process



Building blocks for virtual crash testing – possible approaches to address requirements



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Definitions

Validation:

- The process of determining the degree to which a model is able to represent the real world in the context of its intended use.

Calibration (Tuning, Correlation):

- The process of modifying properties and model parameters to reach a target response (reference) defined beforehand.

Verification:

- The process of determining that a computational model accurately represents the underlying mathematical model and its solution.

Qualification / Certification

- official approval that a tool/model fulfils specific requirements and therefore can be used for a specific purpose (i.e. to virtually test a vehicle).

Wording

Computational Model Qualification (alternatively: Computational Model Certification)

The process of official approval (usually defined by an authority) that a computational model fulfils specific requirements and therefore can be used for a specific purpose (e.g. virtual testing for consumer rating / legislation,). The requirements as well as the process depends on the application (e.g. Euro NCAP Far Side Virtual Testing protocol).

A.) Validation Requirements

- Load cases representing the real world in the context of its intended use
- Acceptance criteria

B.) Other Requirements:

- Geometry (e.g. Anthropometry)
- Quality
- Outputs
- ...

C.) Comparability Requirements:

- Assess Similarity of models (e.g. ATD/HBM) behaviour in load cases representative for VT assessment load cases

The qualification (certification) process can contain requirements from A or B or C or any combination

Next steps

1. *Define wording / glossary*
2. **Sketch General Process**
3. Definition of loadcases
4. Requirements for occupant simulation models (ATDs & HBM)
5. Requirements for vehicle model validation (Standards)
6. Processes to combine occupant and vehicle model to a simulation loadcase/scenario
7. Requirements for FE Software
 - a. Process for traceability of model changes and linked results
 - b. Process for running models at technical service
8. Requirements for outputs / documentation
9. Collaborations with other groups / experts?
 - Forum i.e. as policy lab
 - Cyber security
 - GRVA (e.g. R157)
 - SAR (specific absorption rate)
 - WP6 (Standardisation...)
 - Ask SAE to organise a workshop to better link with other disciplines?



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