

UN GRSP IWG Equitable Occupant Protection (EqOP)

Draft minutes of the 7th meeting, which was held in person on September 10, 2024, in Stockholm.

33 in-person and 23 on-line participants, from Contracting Parties (CPs) and Industry.

Introduction

The meeting started with introductory words, timeline and overview by the chairs.

The chairs mentioned a planned meeting in conjunction with GRSP in December between the CP's to review the regulatory status regarding Virtual Testing.

The next in-person meeting of the IWG will be in conjunction with the ESV in 2026.

One or two of the Task Forces will potentially meet in conjunction with the IRCOBI 2025.

In-person meetings in conjunction with GRSP will be decided case by case.

Adoption of the agenda

Approved.

Approval of minutes of the 6th meeting

Approved.

Report from the Task Forces

See also the EqOP-07-03e.

The chairs introduced the Task Force reports with an approach regarding the relations between the task forces. It is a causation chain starting with external forces on the vehicle through potential long-term consequences of personal injuries. The equity issues regard all parts of the chain. However, the IWG does not cover all parts. For instance, crash compatibility issues are excluded from the scope as discussed in the previous. The chairs reminded us all also about exposures which differ between men and women, and age.

1. TF1. Report on equity issues, putting the worktable in written format.
 - a. Meetings: two to date (March and April 2024)
 - b. Outputs
 - i. Established purpose/scope/member roles.
 - ii. Created draft outline and website for co-editing report.
 - iii. Established timeline/milestones (18 months; target publication at 2026 ESV).
 - c. Status/Current Actions
 - i. TF1 members have volunteered to draft certain report chapters.
 - ii. Updating data table with new publications/expanded data elements for use in report.
 - d. Next Steps
 - i. Finish revised publication data table.
 - ii. Complete drafts of select chapters.
 - iii. Schedule TF1 meeting #3 after sufficient progress on revised data table and exemplar chapters (October/November 2024).

2. TF2. Rear impact assessment.
 - a. Four meetings 2024 to date, including one in-person workshop.
 - b. CLEPA proposal to GRSP in December
 - c. At least one more meeting to address:
 - i. Explore and discuss how to address the need for a forgiving design of the seat / load-taking evenness with focus on headrests and seatback.
 1. Eliminate poor design of seatback and head restraints.
 - ii. Explore the SETs, the Seat Evaluation Tools, which have been developed in EU project VIRTUAL.
 - iii. Identify any shortcomings of existing regulations and related standards.
 1. Can current test protocols be misapplied to optimize crash performance for the specific test conditions and test dummies in a narrow way that is detrimental to the protection of a diverse population?
 - iv. Discuss and understand the possibilities and challenges with virtual crash testing.
 1. Knowledge gaps?
 2. How can we develop a robust regulation?
3. TF3. Virtual testing.
 - a. Four meetings in 2024 to date.
 - b. The current challenge is now the selection of use case for which proof of concept of virtual crash testing should be further investigated, see further “Decision on load-case for proof of concept of VCT”.
4. TF4. Restraint system requirements.
 - i. First meeting not yet decided, but autumn 2024.
 - ii. Potentially link to or merge with TF3.
5. TF5. Extension to new injury types.
 - i. First meeting was held on June 11, 2024.
 - ii. Explore how these injuries could be assessed
 1. Review ideas on injury criteria & tools to assess them (physical tools and or virtual tools)
 2. Discuss and explore how identified knowledge gaps can be closed
 - iii. Collect input for CBA to evaluate benefit for assessing the respective injury types
 - iv. Next meetings on September 18 and October 2, respectively.

Decision on load-case for proof of concept of VCT

The chairs introduced the agenda point and the four alternatives:

1. Option A: Frontal Impact load case, front row seats
2. Option B: Seat evaluation for rear-end impacts (isolated seat)
3. Option C: Side Impact load case
4. Option D: Frontal Impact, on rear bench/seat

The IWG noted that the proof of concept must be feasible for test labs, OEMs, and suppliers.

The group mentioned that there is most experience in option A (front row seats). The Technical Expert from the USA supported option A with focus on the driver. OICA suggested to include passenger or even passenger instead of driver. It was mentioned that we aim for a methodology evaluation rather than specific results from the load-case. The Technical Expert from the USA reminded about a related UMTRI project, which regards frontal. The Technical Experts that are involved in Euro NCAP mentioned that Euro NCAP will start with frontal.

We could use pulses from regulatory tests but could limit the proof-of-concept load case to a sled test, for instance with crash pulse from the R137. In this perspective, NL proposed Annex 8 of R21, i.e., the sled test with the R16 pulse where you test that there is no contact between the dummy and instrument panel. It lacks the injury prediction component, but it does address kinematics of the human surrogate. The IWG asked itself whether it would be feasible to use Annex 8, R21, with HBM instead of dummy, as the proof-of-concept. It would qualify as option A. The IWG noted that we shall present the proof of concept and a methodology in GRSP at the December session of 2027.

On the issue of HBM, OICA has a concern that there are manufacturers which do not have the necessary tools such as the HBM. We foresee a global roll out, including all smaller vehicle manufacturers which do not perform crash tests with HBM, etc. OICA believes that we need to find solutions regarding the issue of smaller vehicle manufacturers. Thus, in parallel define concepts about how to manage alternatives. NL responded that we should see it vice versa as small series are anyway often exempted and therefore this should be addressed in such exemption rules instead of not moving forward because of an issue that exists for small series only. We do only cover unlimited series. GRSP is the forum to discuss this issue, rather than the IWG. It will be brought up there in the next meeting. OICA requested the IWG to discuss how we shall proceed with virtual testing including HBM in GRSP. The chairs responded that this is one of the reasons for a planned meeting between the CPs at GRSP. The chairs also concluded that the purpose of the proof of concept is to provide a basis for decision making and for this reason the HBM must be included. If we cannot achieve it, we still have several easier fallback-levels, but it would be the use case with the biggest possibilities for EqOP.

Conclusions:

The IWG decided to pursue with option A: Frontal load case for front row, BIW with focus on restraint system interaction, i.e., a combination of UN R137 and/or UN R21.

The aim is to investigate the interaction of restraints for different body shapes. Load-case dependent requirements for the virtual Human Models need to be defined (different if models are used for kinematics only compared to strain-based injury assessment).

Testable conditions will be defined for validation.

The proof of concepts should be the bases for decision making how to proceed with virtual crash testing on which level in GRSP and WP29. The decision how to deal with low volume cars is moved out of the IWG into GRSP.

Application of the Gender-Responsive Guidelines in the UN IWG EqOP work

the UNECE Guidelines on Developing Gender-Responsive Standards were presented for the IWG in the previous meeting. The chairs returned to the topic as planned and asked rhetorically how we should apply the guidelines in the regulatory work regarding EqOP. We ran an embedded workshop, i.e., all in-person participants discussed with a neighbor. The task was to discuss and reflect on how to apply the questions in the guidelines in the different task forces of IWG EqOP when it comes to review and develop current concerned regulations.

The following questions were tabled to provide the basis for the discussion:

1. Will men and women be impacted by the regulation?
2. Is it possible that there may be different impacts for men and women?
3. Is there sufficient data to assess potential gender impacts of the regulations?
4. What assumptions are being made? What are the limitations of those assumptions?
5. Are further modifications needed to make the regulation suitable for men and women?

The task was to identify one or two regulations to consider the guidelines questions upon.

Presented examples after the discussion were,

Example 1: Far-side Euro NCAP sled.

Yes, men and women are effected.

Yes, there may be different impacts.

Data is limited and so "not sufficient", but a working best guess is possible.

Assumptions that the relation between seat belt routing and variations in shoulder width as well as physical chest form is not significant.

Limitations is that the test is with an ATD.

How much does the belt slipping off the shoulder affect the results?

If women have narrower shoulders, will the belt slip off earlier in real-life?

Example 2: UN R137.

Yes, men and women are effected.

Yes, there may be different impacts.

Elderly women have been considered regarding the chest criterion.

Hence, gender and age were considered.

Example 3: GTR14.

Yes, men and women are effected.

Yes, there may be different impacts.

The target population for side pole test was young men as the road safety issue clearly was weekends and nighttime with young men driving too fast.

In other words, age and gender were considered.

We discussed further the methodology: do we only want to focus exposure, or exposure and risk, or other aspects such as diversity? What has the highest effect regarding safety? A regulation must cover both men and women as a baseline. The questions from the UNECE guidelines can help clarify the knowledge which is needed and ensure that the regulatory framework is inclusive. We discussed how to manage actual regulations: change only if accident data show that there is a need for change. New regulations or regulation changes should be based on systematic assessment of positive and negative effects for a diverse population, i.e., should be part of the justification.

Finally, we discussed whether adult men and women are a too narrow scope. The chairs highlighted that females and males are diverse and therefore if we look into the group of females or males, within that group we have distributions in age, height and weight. As we know that several distributions describing the body shape significantly differ between females and males, it makes sense to start at first with the discrete distinction of sex (female/male/non-binary) and then go into detailed distribution of each group. In cases where we know that the sex and body shape does not affect the response, such distinction is not meaningful. The chairs will prepare a first list of the regulations where this is not the case and therefore the application of the gender-responsive guidelines should be applied.

The questions will likely be useful when preparing new regulations. The IWG will come back to this discussion at the next meeting.

Confirmation of consensus on any action items

Updated workplan for TF3 and new workplan for TF4.

Draft the report on regulations for the 2025 GRSP May session.

Next meeting of the IWG

November 07 starting at 12 CET, 2024 (Web meeting).