UNECE GRSP Informal Working Group
on Deployable Pedestrian Protection Systems
(IWG-DPPS)

**Draft Minutes of the 13th meeting, 14-15 of September 2021**

1. Chair welcomed the participants.
2. The agenda was approved.
3. The minutes of the 12th meeting were approved.
4. Follow-up discussion on open topics and drafting.
	1. **IDIADA subgroup : finished.**

Subgroup leader (Bernhard Hirschbeck) explained the purpose of the discussions, regarding the time constraint alternative, with NHTSA’s cooperation to draft the options, and the IWG agreed.

**Decision**: include § from doc IWG-DPPS-13-05.rev1 in GTR9.

Remark: Dynamic option would be used as “default option” by USA, even if **TRT< HIT** (when usually the static test could be used). Other CP may choose static test, depending on transposition in National law.

* 1. **HIT Determination**

**I. HIT by numerical simulation – subgroup in progress**

The discussion was about the process to include the HBM family & GVMs in Mutual Resolution 1 (MR1), or how otherwise to certify HBMs which can be used by each CP & OEM via GVMs.

A special UN web site space is agreed to store the GVMs; maintenance of the GVM CAD will still be needed.

C. Klug, O. Zander & A. Besch explained that their subgroup drafts a proposal for HBMs certification and numerical simulation procedure, based on TB024, as HBMs are licensed, so not possible to store them as open source. The principle is to allow the certification of any HBMs, adapting the already agreed EuroNCAP Generic Vehicle Models (GVMs).

**II. HIT by generic approach – linked to NPRM/FMVSS process, not design stringency.**

Chair explained the opinions from other members, regarding the generic approach, which were that NHTSA should lead a subgroup developing this approach.

Subgroup to be chaired by NHTSA: tbd.

P. Martin explained that NHTSA plans a 3 steps contract for research to find basic “floor requirements” for feasibility and build a generic algorithm. As not many vehicles have active hoods in USA, it needs to ensure that these hoods deploy correctly. Whitney Tatum agreed.

Steps:

1. HIT values for EU/Asia family and vehicles

- 5-6 characteristics (exploratory – now): BLE, height , stiffness coefficient, bonnet angle, bonnet length, bumper lead, height of the bumper …, need data (many), to infer a data set, and create a function.

1. NHTSA has 10 different CAD US vehicle models, that can be run in simulations, to create their own NHTSA dataset.
2. Build own GVM (TB024 like, for US typical vehicles) and reconfigure GVM with these characteristics.

At this stage, it is an exploratory exercise: the plan may change during development.

The vision is to define HITs for the 4 sizes. It would work if the HBMs are well defined & steps to reconfigure those models are easy to follow. The goal is to find a conservative HIT value for check, a “best case” result for vehicle compliance; do not want to discourage active bonnets implementation.

Andreas Perl comments that Industry better understands now the approach, has been working on TB024 for some months; will look for more info on the 3 steps and consider how to help.

O. Zander explains that vehicle data with related HIT may be used for several options and would like more details about next steps (Bibliography research; transfer function; own GVM), and planned timeline as “a couple of years” are already spent in Europe. Would then a 2-phase approach be considered?

Chair: could NHTSA present a plan in next meeting for this generic approach?

**=> P. Martin agrees to present a more detailed approach & tentative timeline for next meeting.**

Chair: proposes

1. **phase 1**: amendment using the “best practice” of numerical simulation, and the other agreed decisions. To keep the planned timeline.

Mary V adds that “place holders” for 2 other options CPs may choose would allow USA to support the GTR9 amendment, even if not adopting it in national law, waiting for their development.

1. **phase 2**: have more time to study the generic approach & dummy testing specification.

**III. Dummy testing – Japan :**

Yanaoka-san explained that the whole body test procedure in SAE-J 2782 is meant to confirm the whole body kinematic biofidelity, which is needed for HIT determination, which follows the same procedure as HBM certification. He asks about which details should be clarified for pedestrian physical dummy.

Chair answers that SAE-J does not have complete posture data for all dummies. Yanaoka-san confirms that the set is only for 50%.

O. Zander points out that all 3 methods have their justifications, but only one has the whole data (HBM family). For pedestrian physical dummy: is the aim to combine physical 50% & simulation for the rest of the family? How to determine HIT in “phase 1” ? In all cases, the method of determining the HIT must be defined, and availability of each method and how to go forward in GTR9 must be assessed. A. Besch comments that for a usual European Sedan, the 50th % male will not hit the bonnet, but the windscreen.

Chair adds that both currently certified HBMs were built on PMHS /biblio and let to current TB024 corridors. Any HBM should fulfil at least these corridors, which is why it was decided to adapt this TB024 procedure. How to deal with these options? Currently a subgroup is working on adapting TB024 for numerical simulation. Wording is needed in the amendment for the physical alternative.

Could Yanaoka-san provide the wording based on SAE-J guidelines, to adapt it in the amendment? If 50th % male testing only is considered, then how to include it in the amendment?

After some discussions, the conclusion is that any method/test procedure should be fully specified.

*From chat*: *Mary V: I think any procedures in the GTR must be specified in sufficient detail that a manufacturer knows the test will be done the same way in each country that is applying the GTR.*

C. Klug proposes that Yanaoka-san & JASIC joins the subgroup.

**=> Tanaka-san concludes that Japan will further discuss and come back in next meeting.**

**Chair** asks CPs if they agree with HIT determination in 2 phases: phase 1 (numerical simulation) and phase 2 (alternatives, to let time for developing them) ?

**Decision: All CPs (Korea, Spain, France, Germany, USA, UK) agree with:**

 **- phase 1** “HIT by numerical simulation” **, with “place holders” provisions and preamble clarification.**

**- phase 2 “HIT determination alternatives”, to let time for developing them**

***Comments from chat:*** *US can agree to dividing into phases so long as text is clear re. future options to be added at a next phase. NL agrees to phase1/phase 2 approach. Important to keep our deadlines. Yes, Spain agrees. As Oliver commented before, important also to keep working with phase 2. Korea agrees. France agrees. Japan agrees to Phase1＆2approach but regarding Dummy, we will come back to the next meeting.*

* 1. **Decision List**

|  |  |  |
| --- | --- | --- |
| Information HIT vs WAD | Majority (IWG-DPPS-6)* Linear regression with HIT vs WAD(on DPPS) points
 | T.B.D.- below or above WAD of 6yo or 95%M- R2 <0.99 dot-to-dot |

For dynamic test : HIT versus WAD information is needed. We can apply this information for comparing HIT versus TRT. The idea is to have a constant value below 6yo and above 95th.

How to draw this diagram : Many times, the 50th or 95th are not on the bonnet, but on the windscreen. In this case, only 2 or 3 points will figure on the graph. Other times, the 6yo will also be under the bonnet height. So only statures which are available (hitting the bonnet) should figure on the graph. Could All agree with the linear regression? Until then, **we draft the majority opinion, to go forward with the wording.**

1. **Next web-meeting: DPPS 14th : on 16-17 November 2021, from 11h to 14h (CET)**