44th GRSP Session
Status report of Informal Group on CRS

Pierre CASTAING
Chairman
Mandate - GRSP and WP29 decisions

- **May 2007 - GRSP Report - ECE/TRANS/WP.29/GRSP/41 §45 & §46.**
  - IC indicates a large number of issues to be solved.
  - France suggested the establishment of a new informal group.
  - Germany suggested considering the conclusions of EEVC working group 18 in the future work agenda.
  - Australia announced the input of a study of the Adelaide University concerning height and mass of children.
  - GRSP agreed to set up a new informal group on child restraint systems.

- **June 2007 - WP29 Report - ECE/TRANS/WP.29/1062 §37.**
  - WP.29 gave its consent to the establishment of the new informal group to devise new performance requirements for Child restraint systems.

- **December 2007 - GRSP Report - ECE/TRANS/WP.29/GRSP/42 §37 & §38.**
  - France tabled a proposals of lists of issues to be regulated in a future new Regulation on child restraints.
  - GRSP added, that the informal group deemed that the new Regulation would be phased in over a period of time to be defined, in parallel to the current Regulation No. 44.
Terms of Reference - Approved ToR

- The informal group shall consider the development of a new regulation for “Restraining devices for child occupants of power-driven vehicles” for consideration by GRSP.

- The basis of the discussion will be informal documents No. GRSP-42-2 and GRSP-42-27.

- A step by step approach shall be implemented
  - Phase1: Develop definitions, performance criteria and test methods for ISOFIX Integral “Universal” CRS

- In its work, the informal group will take into consideration amongst others the technical expertise of EEVC WG18, EEVC WG12, ISO TC22/SC12, NPACS as well as the results of the discussions held in the informal group and at GRSP.

- If necessary, the informal group shall develop complementary test methods and propose alternative judgement criteria.

- The target completion date for the informal group shall be the forty-sixth session of GRSP (December 2009) for this first phase.
Meetings

1. 30th January 2008 – OICA – PARIS
2. 1st April 2008 – CLEPA – BRUSSELS
3. 13th May 2008 – SMMT – LONDON
4. 18th June 2008 – CCFA – PARIS
5. 2nd September 2008 – BMVIT – VIENNA
6. 7th October 2008 – ACEA – BRUSSELS
7. 25th November – BNA – PARIS
8. 21st January – BASSt - KOLN
List of issues & Priorities

- Test bench – **Priority 1**
- Classification of CRS – **Priority 1**
- Dummies – **Priority 1**
- Dynamic tests – **Priority 1**
- Components tests – **Priority 2**
- Labelling – **Priority 2**
- Ease of Use / Misuse – **Priority 2**
- Control Of Production – **Priority 2**
- Interoperability with vehicle – **Priority 1**
- Child comfort and health harmlessness – **Priority 2**
- Other
Present status
Develop definitions, performance criteria and test methods for ISOFIX Integral “Universal” CRS

• Test bench
• Classification
• Dummies
• Dynamic tests
• Interoperability with vehicle
Test bench

• The test bench will be based on NPACS bench with Isofix and belt anchorages having same the centreline

• There is no need for a dashboard

• Seat cushion technical characteristics need to be defined based on NPACS bench
Test bench – Open questions

• Head Restraint on the bench?

• Isofix anchorages - location of 3rd alternative point? (*Interoperability with vehicles*)

• Relative positions of adult seat belt anchorages versus Isofix anchorages positions. (*Interoperability with vehicles*)
Classification

• Based on stature and maximum weight
• Not based on availability of dummies
• For Isofix Integral “Universal” CRS limited by *(Interoperability with vehicles)*:
  – Maximum dynamic load sustainable by vehicles anchorages
  – Maximum space offered by Isofix fixtures
## Draft matrix of classification

<table>
<thead>
<tr>
<th>Size in Cm</th>
<th>Isofix Integral Universal</th>
<th>Orientation</th>
<th>Maximum Weight Child + CRS</th>
<th>Side protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-80</td>
<td>Yes</td>
<td>RF</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>75-90</td>
<td>Yes</td>
<td>RF</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>85-105(8)</td>
<td>Yes</td>
<td>RF or FF</td>
<td>22 + 10?</td>
<td>Yes</td>
</tr>
<tr>
<td>100-130</td>
<td>Tbd</td>
<td>Tbd</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>130-150</td>
<td>Tbd</td>
<td>Tbd</td>
<td></td>
<td>Tbd</td>
</tr>
</tbody>
</table>
Dummies

• Q series not Qs for dynamic tests
• Use of geometric dummies for size classification

Q-dummy family well equipped …

Q6  23.0 kg  
Q3  14.5 kg  
Q0  3.4 kg   
Q1  9.6 kg   
Q1.5 11.0 kg

… to contribute to child safety
Dynamic tests

• Frontal impact
  – Do we have to change the pulse?

• Lateral impact
  – Simple approach in a first step.

• Rear impact
  – Keep as it is?
Frontal impact

Do we have to change the pulse?
Lateral impact

- Informal Group to review all existing methods to determine the one to be retained

Australian Standard AS/NZ 1754 & 3629.1 - 2004

ISO - 2008

Fixed Door; P3 Dummy
ΔV 32 km/h ; Pulse 14 – 20 G

Moving Door; Q3 Dummy
ΔV 24-26 km/h ; Door angular velocity corridors for RF and FF seats
NHTSA Research
Takata linear side impact test device

Moving sled into fixed impactor; Hybrid III 3y & Qs3
ΔV 32 km/h ; Door Velocity 25 km/h.

ADAC Procedure within EU Consumer tests

BRITAX – ADAC

Fixed Door 80° ; Q3 Dummy
ΔV 29 km/h ; Pulse 15 G

Opel Astra Body 80°; Fixed Door; Q0 – Q6 and P10
ΔV 28 km/h ; Pulse 18 G
Lateral impact

• Informal Group to consider first methods delivering required energy level and:
  – Promoting energy absorption in the seat
  – Including measurable performance criteria

• Supported by ISO/TC22/SC12 (Alternative1)
  – To provide essential input parameters only of a CRS side impact test method.
  – Delivery date from ISO: June 2009
Interoperability with vehicle

• Load level in Isofix anchorages
  – Definition of a maximum permissible load level on current ECE R14 Isofix anchorages
    • Maximum weight / g level

• A proposal to reach more flexibility in the application of ISOFIX child restraint could be (Classification):
  – A definition of a total weight for the couple [Child + CRS]
  – A permissible weight of the child is then depending on child restraint system weight.
Interoperability with vehicle

• Risk of deploying side airbags
  – Not taken into account in the work
  – Based on APROSYS analysis
    • no interaction CRS/children with airbags.
    • OOP is no problem / no issue (in EU)

• Interfacing vehicle floor & support leg
  – Open question for “universal” Isofix Rearward Facing seats
  – ISO/TC22/SC12 works on this issue
Conclusion

• Some decisions
  – Isofix “universal” integral CRS
  – NPACS test bench with common centreline
  – Q series dummies + special dummies for sizing
  – Classification based on standing height and maximum permissible weight (Child + CRS)

• Some open questions
  – How to qualify “universal” CRS with support leg
  – How to encourage use of RF CRS for older children