

45th GRSP Session Status report of Informal Group on CRS

Pierre CASTAING
Chairman

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 – BAST – KOLN
9. 11th March 2009 – OICA – PARIS
10. 22nd April 2009 – Test Achat – BRUXELLES

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

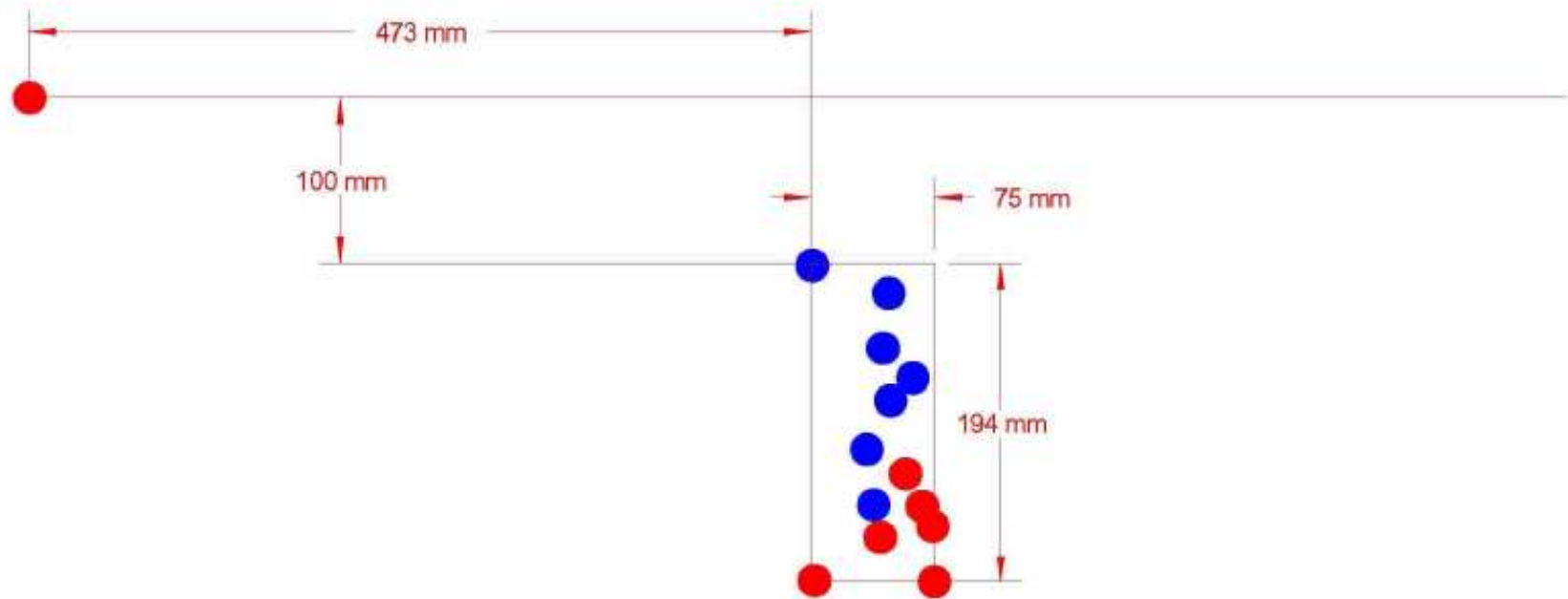
Test bench

- 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 to be defined based on NPACS bench
- Test bench orientation:
 - 0°
 - 90°
 - 180°

Test bench – Open questions

- Head Restraint on the bench?
 - Not defined up to now for phase 1
- Relative positions of adult seat belt anchorages versus Isofix anchorages positions.
(Interoperability with vehicles)
 - To be validated in phase 2 for non integral ISOFIX CRS
- Isofix anchorages - location of 3rd alternative point? *(Interoperability with vehicles)*
 - Not defined up to now for phase 1
 - No solution short term (EEVC WG18 and Swedish research in progress) link with ECE R14

Heel kick and floor

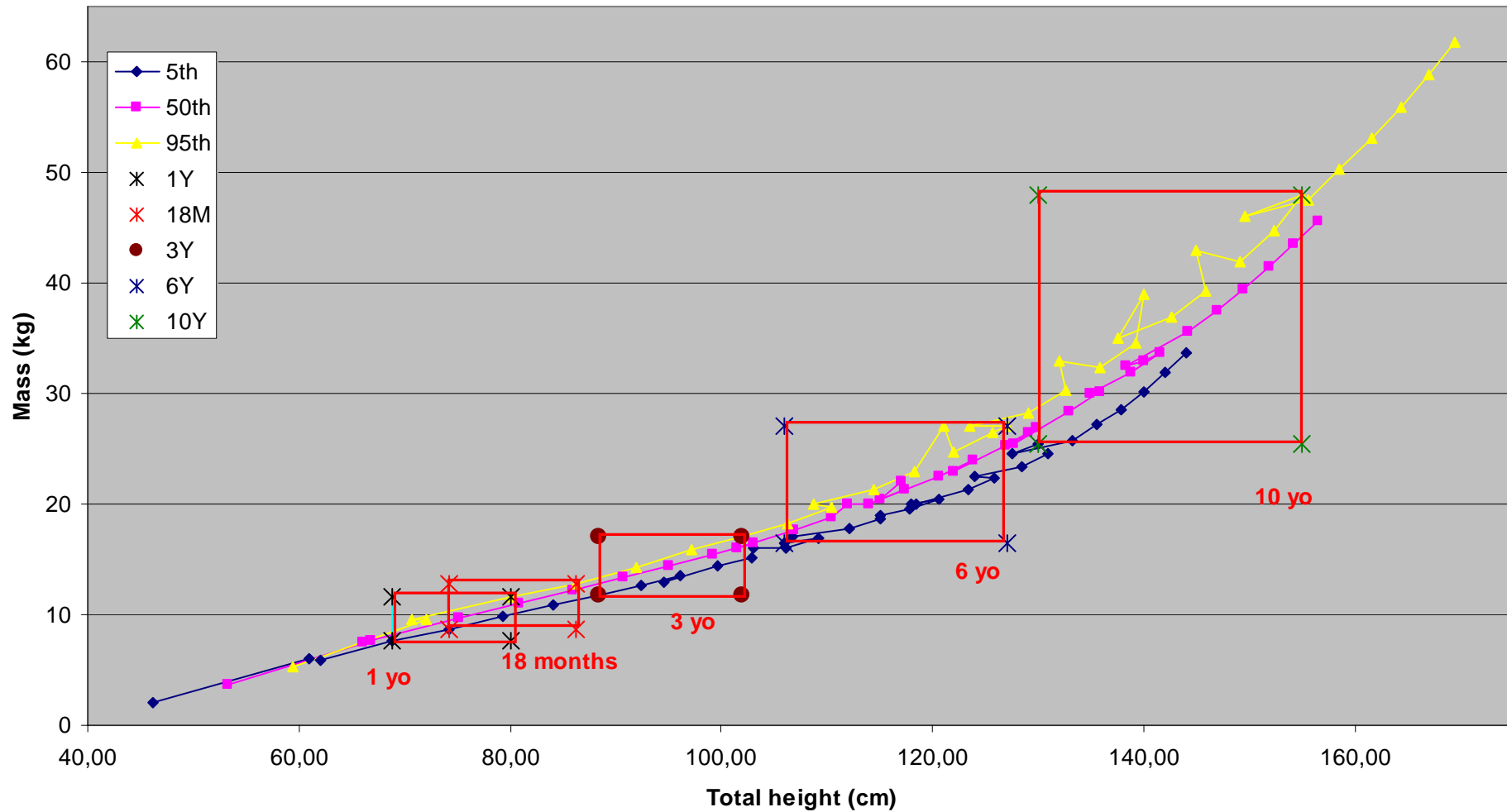


Classification

- 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

Classification

Total height as a function of body mass



Draft matrix of classification

Size in Cm	Isofix Integral Universal	Orientation	Maximum Weight Child + CRS	Side protection
40-80	Yes	RF		Yes
75-90	Yes	RF		Yes
85-105(8)	Yes	RF or FF	22 + 10?	Yes
100-130	Tbd	Tbd		Yes
130-150	Tbd	Tbd		Tbd



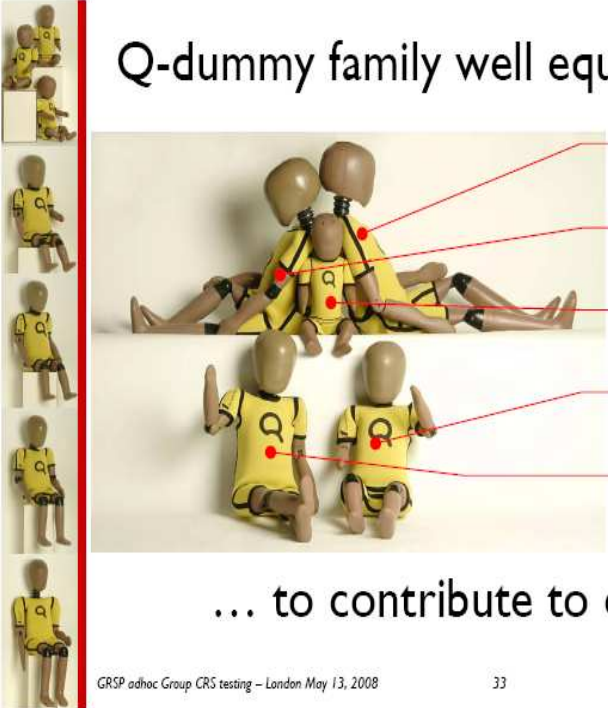
Classification

- Rearward Facing CRS with support leg to be included in “universal”
- Needs standard interface between vehicle floor and support leg contact surface
- Interfacing vehicle floor & support leg
 - ISO/TC22/SC12 works on this issue (proposal in July)

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

GRSP adhoc Group CRS testing – London May 13, 2008

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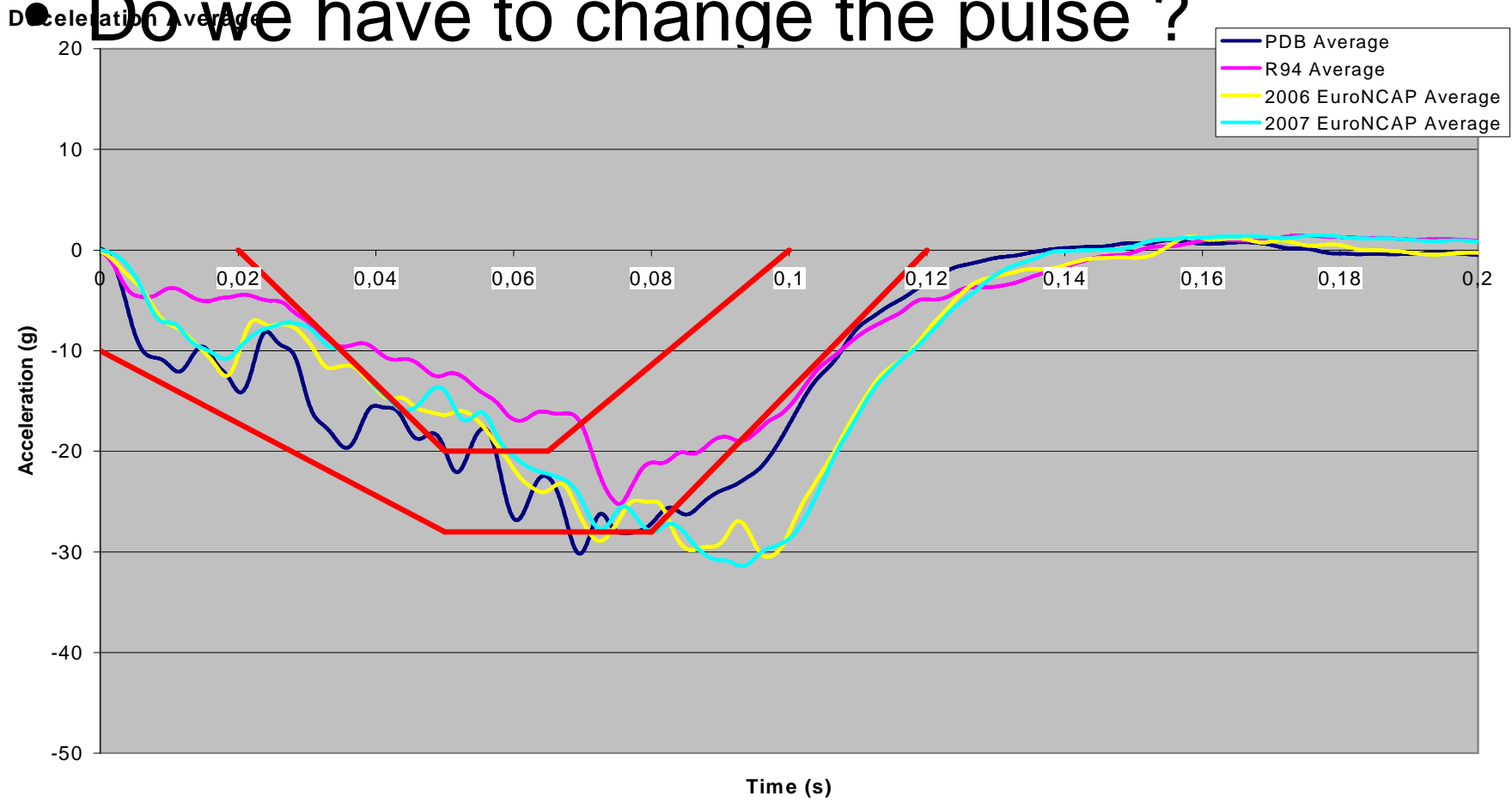
 First Technology
Innovative Solutions

Dynamic tests

- Frontal impact
 - Do we have to change the pulse ?
 - Final decision to be done on pulse
- Lateral impact
 - Simple approach in a first step.
 - Decision taken
- Rear impact
 - Keep as it is
 - Decision taken

Frontal impact

Do we have to change the pulse ?



Lateral impact

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

Australian Standard AS/NZ 1754 & 3629.1 - 2004



Fixed Door; P3 Dummy

ΔV 32 km/h ; Pulse 14 – 20 G

ISO - 2008



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



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

BRITAX – ADAC



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

Lateral impact

- Informal Group has 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

Lateral impact configuration

This impactor is fixed on the reaction mass, and the R44 bench is on the sled



Input parameters

- 90° rotation of the test bench on ECE R44 sled
- Fixed door panel on the stopping block
- Moving Isofix anchorages
- ECE R44 rear impact pulse
- Management of intrusion distance

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.

Decisions

- Scope: Isofix “universal” integral CRS
- Classification based on standing height and maximum permissible weight (Child + CRS)
- Q series dummies + special dummies for sizing
- NPACS test bench with common centreline
- Simple front, side and rear impact test methodology
- CRS with support leg qualified as “universal” if interface between floor and support leg defined by ISO
- No double “type approval” on the same product (*under this new regulation and under ECE R44*)

Draft Regulation

01 April 09

AGREEMENT

CONCERNING THE ADOPTION OF UNIFORM TECHNICAL PRESCRIPTIONS
FOR WHEELED VEHICLES, EQUIPMENT AND PARTS WHICH CAN BE FITTED
AND/OR BE USED ON WHEELED VEHICLES AND THE CONDITIONS FOR RECIPROCAL RECOGNITION OF APPROVALS GRANTED ON
THE BASIS OF THESE PRESCRIPTIONS./

Regulation No. XXX

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF CHILD RESTRAINT SYSTEM USED ONBOARD OF MOTOR VEHICLES.

UNITED NATIONS

SCOPE

This Regulation applies to **ISOFIX Universal Integral** child restraint systems
for child occupants of power driven vehicles.