CRS-15-11

GRSP IG CRS
Lateral Impact Test Procedure

Results of Conference Calls

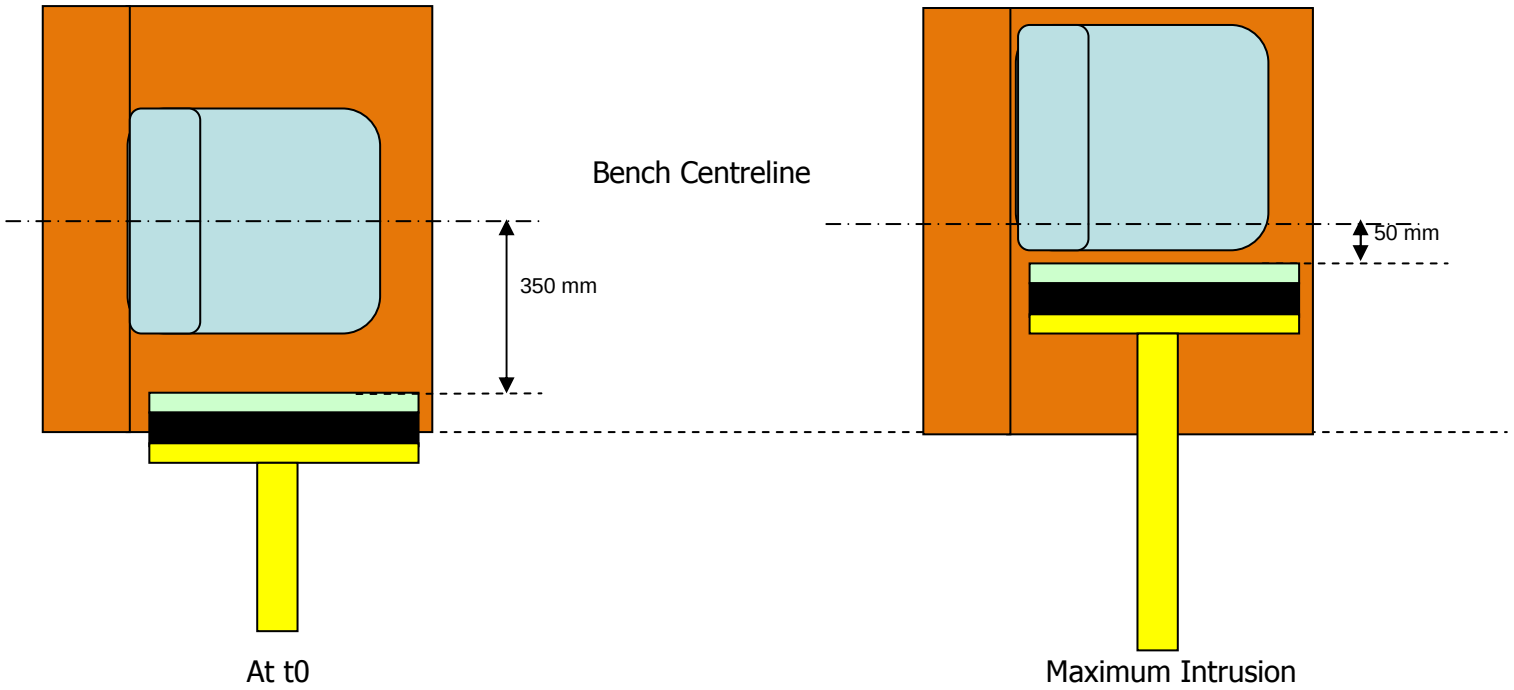
December 1st 2009

December 14th 2009

December 21st 2009

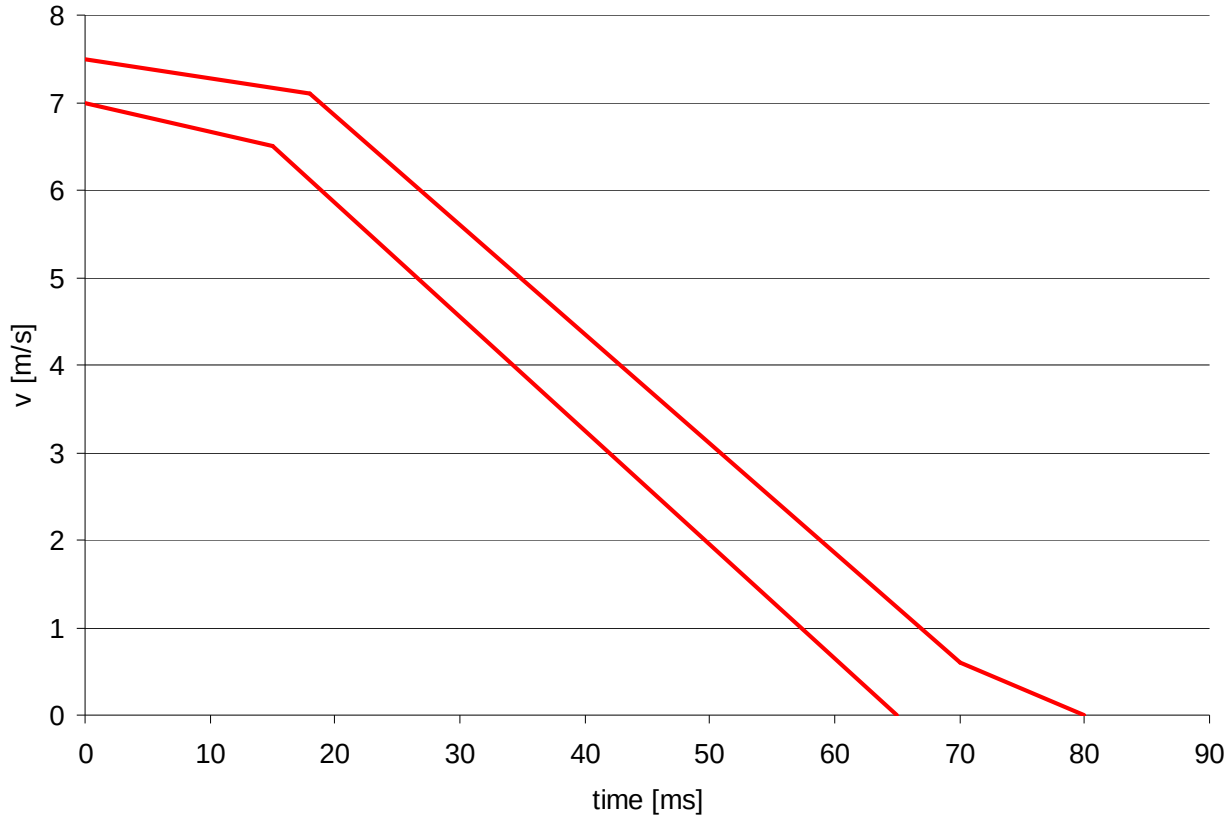
Definition of T0

- Acceleration starts at T0
- Position of door at T0 according to figure below

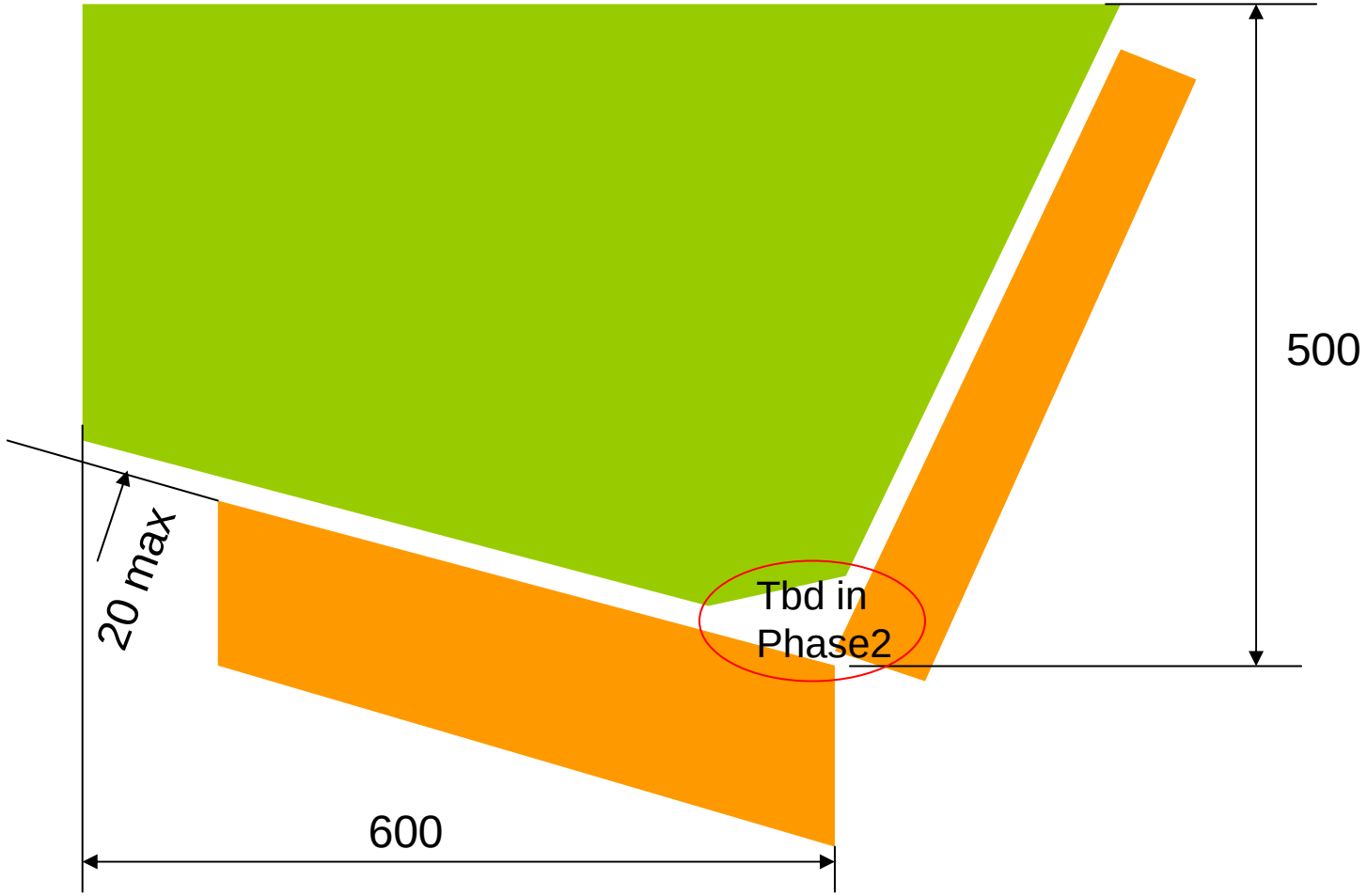


Relative Velocity Corridor

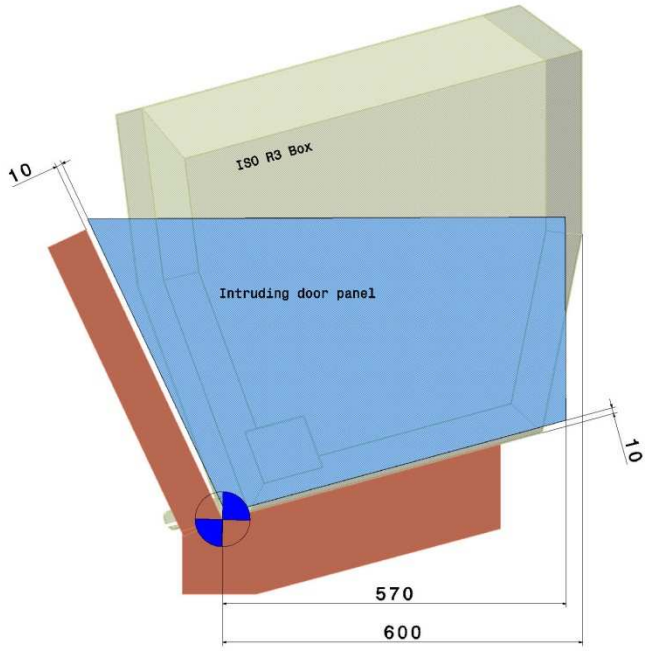
- Relative velocity corridor to be confirmed by evaluation program

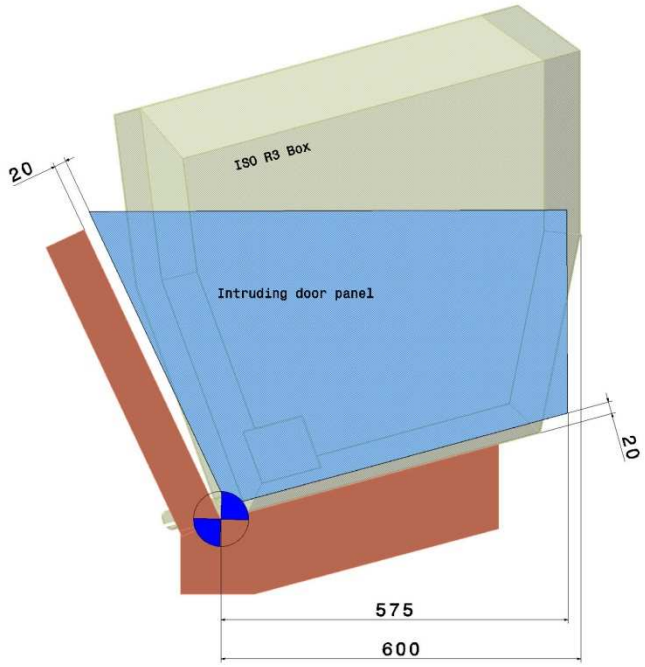


Door Specification



Door Specification According to R3 Fixture





Door Specification

- Padding based on ISO TS 29062:2009

ISOFIX Anchorages

- Single sliding system or 2 separate sliding systems of the 2 lower anchorages ?
  - To be analysed within evaluation phase
- Resistance force to anchorages sliding ?
  - Friction as less as possible
- Position with respect to CR (according to document CRS-5-3
  - X: -65 mm
  - Z: -2 mm

Test bench foam

- Same material as for frontal impact (already defined?)

Dummy Installation

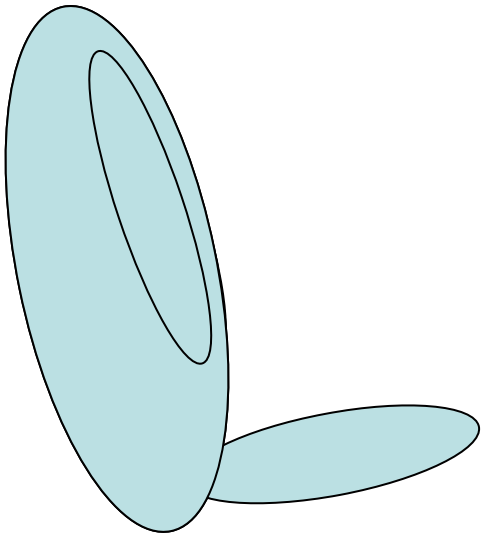
- Based on past experience the following items seem to be important
  - exact alignment of dummy centre line with CRS centre line and CRS centre line with bench centre line
  - pre impact stability
  - arm positions

Dummy Installation

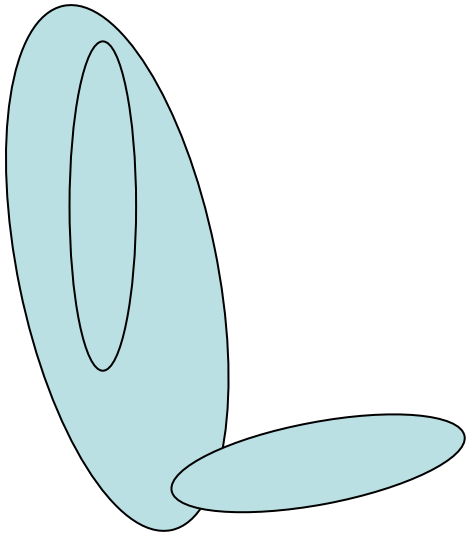
- Installation in general as described for frontal impact
  - e.g.,
    - harness tension 250 N with spacer
    - dummy shall be pushed toward the seat back after removing the spacer.
- CRS and dummy centrelines aligned with bench centre line
- Arms shall be positioned symmetrical. Elbows to be positioned in such a way that the upper arms are aligned with the sternum
- Hands shall be position on the thighs
- Legs shall be positioned symmetrical and parallel
- CRS and dummy shall be kept stable until t0 to be checked by markers at dummy, CRS and sled. Any mean used to stabilise the dummy before t0 shall not influence the dummy kinematics after t0
- [In case of deceleration sleds the impact speed shall be stabilised and be kept constant at least 5 m before t0 position] (to be compared with other regulations)

Dummy Installation

- Explanation arm position



Upper arms are aligned with sternum



Upper arms are not aligned with sternum

Evaluation Programme

- Who is going to contribute?
  - Testing
    - BASt (hydraulic brake)
    - Britax (PU tubes)
    - Dorel (hydraulic brake)
    - TUB (bar brake)
    - UTAC (acceleration sled)
    - TNO? (PU tubes)
    - IDIADA? (?)
  - CRS
    - BRITAX
    - Dorel
    - Graco?
    - Recaro?
    - Jane?
    - HTS?
    - …

Evaluation Program

- CRS to be tested
  - Rearward facing shell on base (BRITAX, Dorel)
  - Forward facing
    - TT (BRITAX, Dorel, ?)
    - Support leg (BRITAX, Dorel, ?)
  - Big rearward facing (HTS?, RECARO?, GRACO?)
  - State of the art and modified products (Dorel)

Evaluation Programme to be discussed

- Questions
  - Feasibility (all)
  - parameter investigation
    - Sliding system for ISOFIX anchorages (Dorel)
    - Corridor (Britax, CASPER?)
    - importance of sled mass? (?)
    - …
  - Repeatability (all)
    - input data
      - with different dummies and CRS
    - dummy readings
  - Reproducibility (all)
    - input data
    - dummy readings
  - good products -> good results (CASPER?)
    - test with modified products (to achieve poor design)

Criteria

- To be used
  - Head containment (definition needs to be defined)
- To be defined during evaluation programme
  - Energy absorption capabilities in head area
    - HIC
    - Head a3ms
    - Not to be considered
- To be monitored during evaluation programme to be sure not to miss an important criterion
  - Chest a3ms
  - Chest compression
  - Pelvis a3ms

Open points

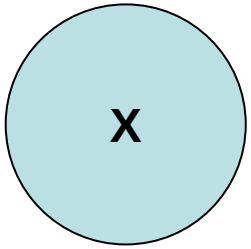
- Head Containment
- Integrated CRS

Head Containment to be discussed

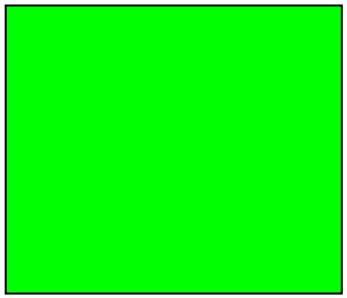
- Based on past experience different poor kinematics are possible
  - head is not contained within the CRS
  - head is within the CRS, however CRS and head are not contained within safety cell of the simulated car
  - head and CRS are contained
- We need to address what we want to cover with “containment”

Head Containment to be discussed

Dorel Proposal



Side View of the dummy head with a marker positioned on centre of gravity lateral projection point

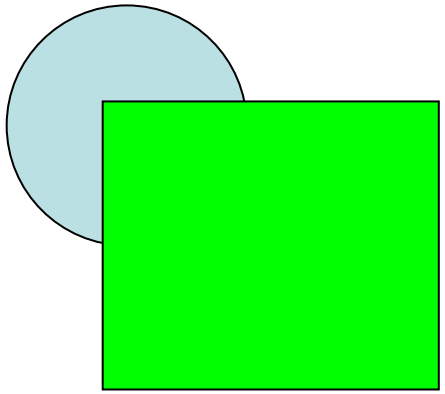


Side View of CRS head lateral protection

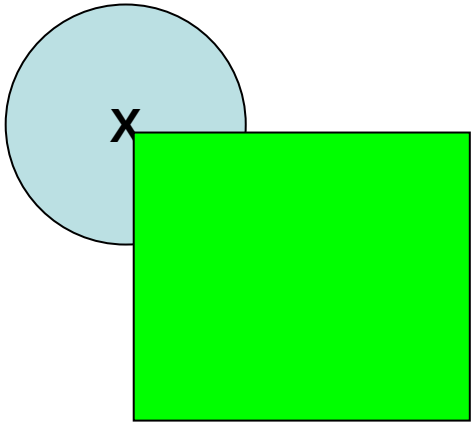
Head Containment to be discussed

Dorel Proposal

Analysis with lateral camera – Precise camera position to be defined



Contained



Not contained

Head Containment within the CRS – Proposition 2

Dorel Proposal

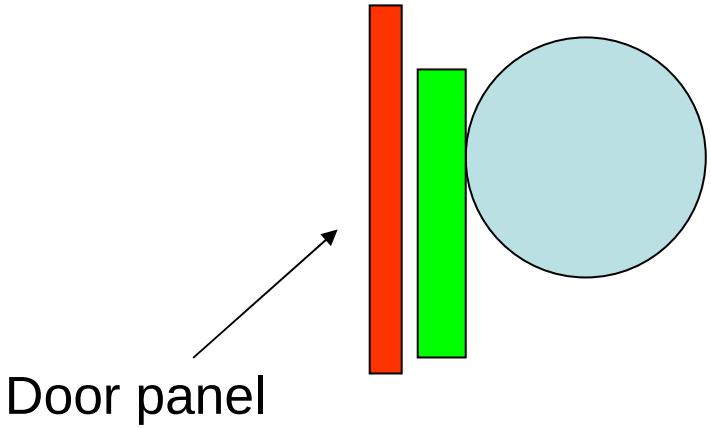
Does the head touch the door ?

Analysis with top, lateral and rear camera

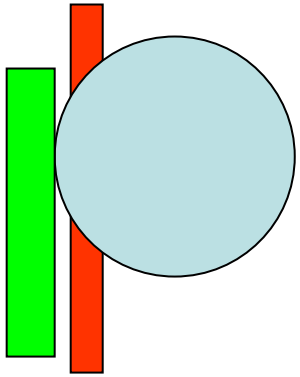
Head Containment to be discussed

Dorel Proposal

Analysis with top camera – Precise camera position to be defined



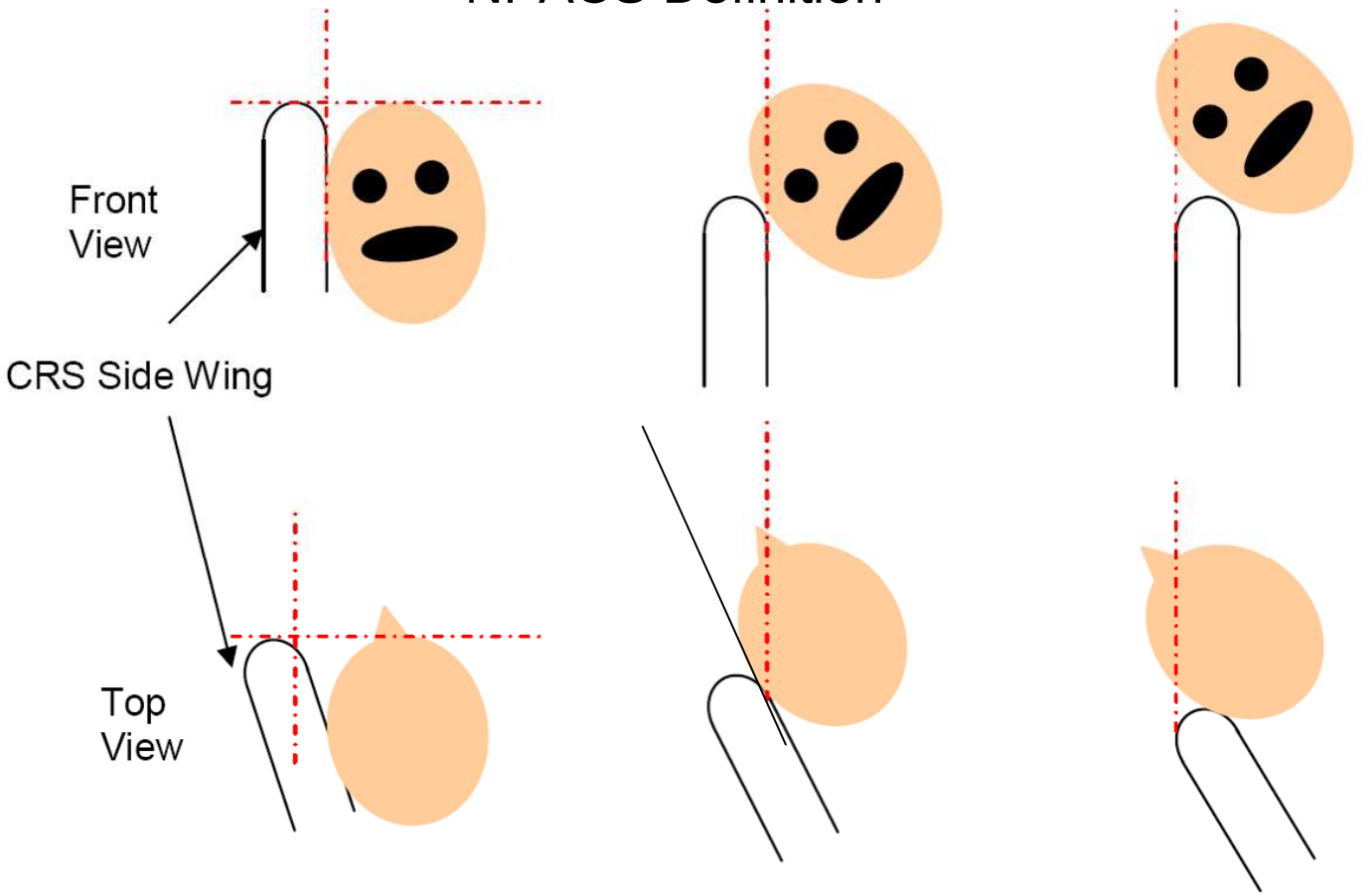
Contained within safety cell



Not contained within safety cell

Head Containment to be discussed

NPACS Definition



Contained
- Head contained within inner surface of CRS side wing

Marginal
- Head passes inner surface but not outer surface of CRS side wing

Not Contained
- Head passes outer surface of CRS side wing

Head Containment
to be discussed

- No final agreement
  - But head contact to door means not contained
- To be checked and defined based on results of previous tests
  - Pictures to be presented by
    - Hans
    - Heiko
    - …