

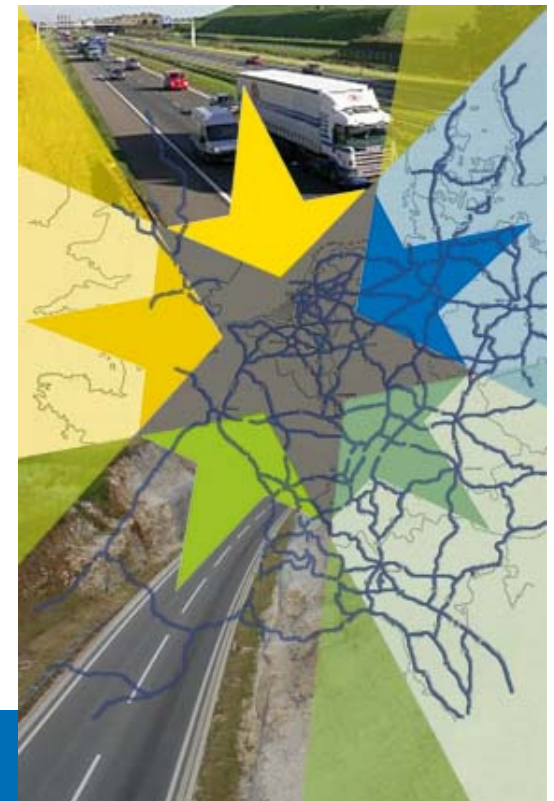
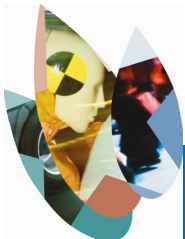


# APROSYS

## Advanced Side impact test methods

### Session 2

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## Background

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- In Europe ~10.000 car occupant fatalities in side impact crashes annually
- At 2005 ESV conference a 4 part draft test procedure was published by IHRA
  - Car to car test / AE-MDB
  - Car to narrow objects (car to pole)
  - Free motion headform tests
  - Side Out Of Position
- Further development of proposed procedures and evaluation of applicability for Europe





# Activities

## Multi vehicle lateral crashes

- AE-MDB development
  - Car to car / AE-MDB tests
  - LCW calibration tests
- AE-MBD / IIHS barrier comparison
- ES2 / WorldSID 50<sup>th</sup> / WorldSID 5<sup>th</sup>
- Supporting simulation activities

## Car to narrow object crashes

- Oblique / perpendicular impacts
- Euro NCAP <> NPRM 214
- Full scale tests / numerical studies
- Velocity / angle / impact location / pole
- Effect of ESC (literature review)

## Head protection

- Update of EEVC WG13 protocol
- FMH tests and feasibility checks
- Definition of impact angle
- Selection of impact locations
- Reproducibility

## Side Out of position

- Based on IHRA / TWG proposal
- Focus on European situation
- Hybrid-III 3yo, 6yo, SIDIIs
- Additional tests with CRS





# Main Findings

## Multi vehicle lateral crashes

- Updated test protocol
  - V3 improvement of V2
  - V3.9 representative for c2c
  - More severe as ECE R95
- ES-2 / WordSID50th / WorldSID 5<sup>th</sup>
  - Test information available
  - Waiting for injury criteria

## Car to narrow object crashes

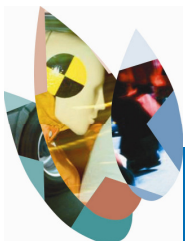
- Euro NCAP & NPRM 214 possible
- Preference for perpendicular test
  - Dummy >> oblique loading
- Oblique possible for harmonization
- ESC: significant effect on number

## Head protection

- Updated protocol / flowchart
- Good reproducibility
- Evaluation workshop scheduled

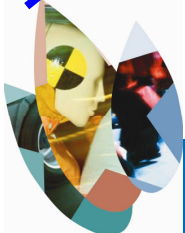
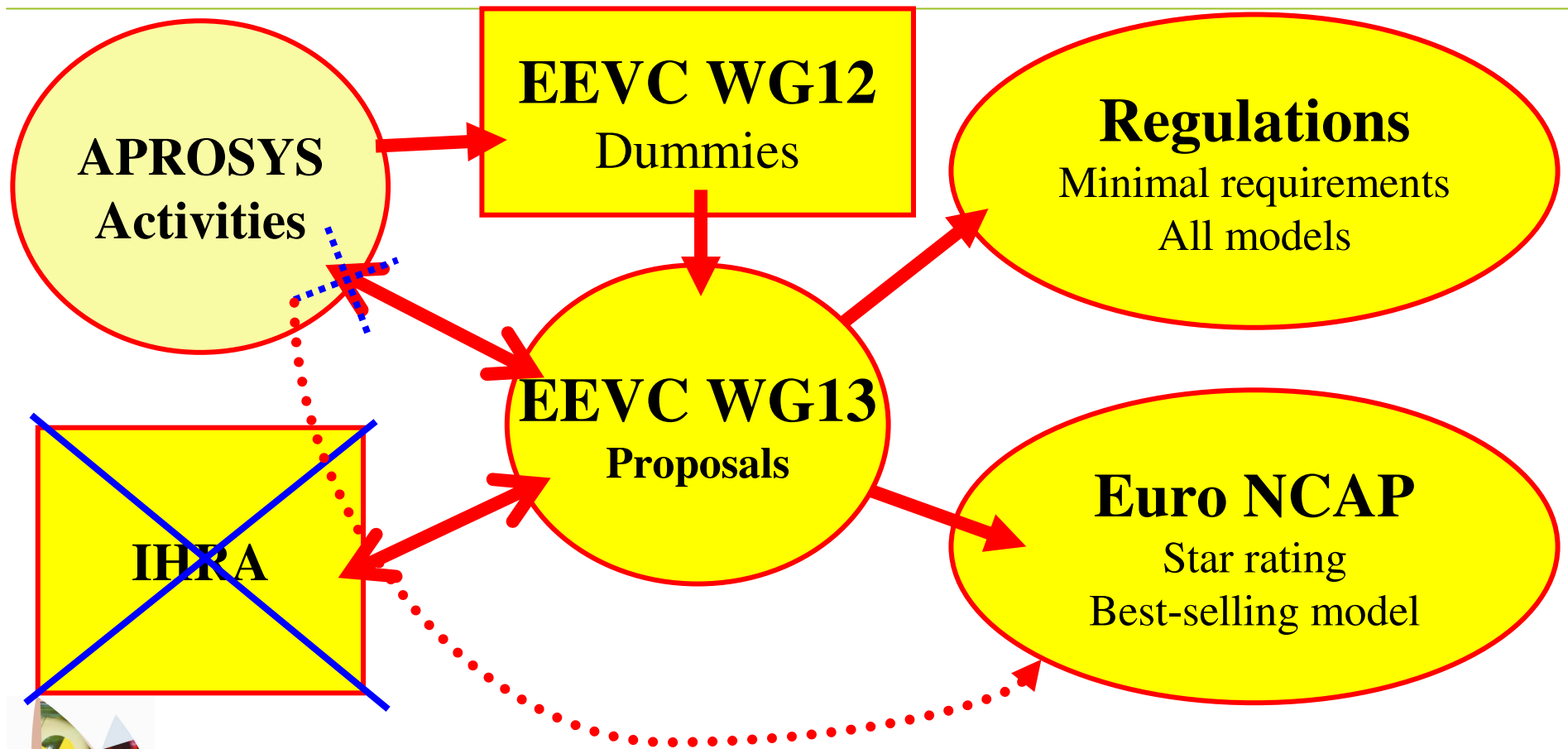
## Side Out of position

- No need in Europe (yet !?)
- Sub-set TWG scenario's feasible in EU
- Change to type approval regulation
- Booster seats included





# Use of results / How to improve safety



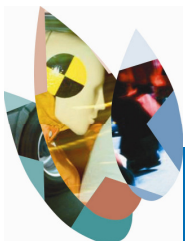
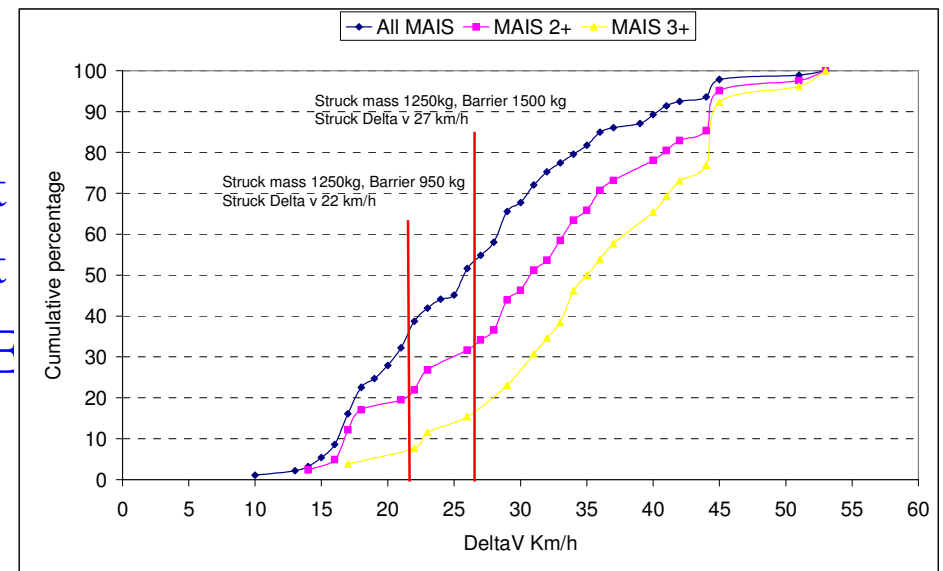


# Use of results / Status EEVC WG13

- Ready
  - Extensive accident analysis by WG21
- Ongoing
  - Cost benefit analysis, with scenarios:
    - ECE R95 > AE-MDB
    - ECE R95 + car to pole test
    - AE-MDB + car to pole test
    - AE-MDB + car to pole test
  - Final test specification AE
    - Barrier specifications
    - Test velocity (UK study)

**Regulation**

**NCAP**





*Final Event*



## Contact

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