IWG-DPPS ACEA Input

Definition of the Sensing Width

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Introduction

Current State:

• A globally common understanding of the sensing width for DPPS is to be established
• INF-GR/PS/141 Rev.1 Document and common practice for type approvals in sensing width definition are available as the basis

Future State:

• The sensing width is clearly defined to enable certification of deployable systems with no need for interpretation
• The sensing width can be verified in hardware repeatable and reproducible with a limited number of tests

What to avoid:

• A very local/limited sensing area with no effect in the real world
• Defining new areas on the vehicle without scientific justification
• Boundary conditions leading to technically sensible solutions that result in false activation in real world
• Maximizing the requirements, mixing due care considerations with basic proof for certification
Considerations

Thoughts:

- No clear connection between the first contact of the pedestrian (leg) and the head impact position
- Sensing capability does not discretely stop at the most outboard position of the sensors as fascias will be deformed in a wider area
- The shape of vehicles is not linear in the longitudinal direction
- Deflection of impactors occurs on curved shapes
- There is no proven contact biofidelity of any impactor on curved shapes as the real human has a different moment of inertia than lighter impactors

Current Proposals:

I. Keep description as in INF-GR/PS/141 Rev.1 (enabling centerline local detection only)
II. Sensing width needs to be as wide as the deployed parts in the impact area
III. Sensing width needs to be as wide as the Lower Leg tested area per the definition in UN-R127.02
Considerations

Thoughts on not to activate the deployable system outside of the sensing width:

The leg excites the sensor but the condition for the head impact area would be closed, this cannot be.
Considerations

Deflection:

Comparison of THUMS HBM and FlexPLI at 40km/h

- The leg impactor shows a non-biofidelic movement compared to a human body model
- Translational impactor energy is converted into rotation leading to reduced excitation of the sensor system
Summary

Position:

• Maximizing the requirements, mixing due care considerations with basic proof for certification, shall be avoided
• Differences between impactor behavior and real humans should be respected

Proposal:

• Refer to current regulatory definitions
• Applying the Lower Leg Test area per UN-R127.02 (corner gauge) as the prerequisite for acceptance of sensing capabilities for DPPS certification