FIMCAR
frontal impact and compatibility assessment research

FI-10-06

SEVENTH FRAMEWORK PROGRAMME

FIMCAR Global Strategy

GRSP IG FI 20101014

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Global Strategies for FIMCAR

- **Proposed Working plan**

1) Define compatibility characteristics based on accident analysis
2) Develop assessment procedures
3) Establish criteria for rating the assessment procedures
4) Select final procedure and finalise test protocol

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List of Open Issues From WG 15

- **Global Issues**

1. Further accident analysis and benefit analysis to update information on changing vehicle fleet

- **Status in FIMCAR**

1. in-depth analysis completed, information from GRSP available, benefit analysis to start later in project

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List of Open Issues From WG 15

- **Global Issues**
- 2. Finalise the test severity (EES) for regulation test.

- **Status in FIMCAR**
- 2. Test severity should not reduce compartment strength – need to define mass effect (more details later)

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List of Open Issues From WG 15

- **Global Issues**
- 3. Finalise assessment criteria for regulation test.

- **Status in FIMCAR**
- 3. Assessment Criteria under development

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List of Open Issues From WG 15

- **Global Issues**
- 4. Finalise objective assessment proce-dures to analyse results of car-to-car tests

- **Status in FIMCAR**
- 4. Test database complete as a tool, work on the analysis of car-to-car tests is planned

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List of Open Issues From WG 15

- **Global Issues**
- 5. Identify critical injury mechanisms (in particular relevance of thorax injuries in high deceleration pulse type accidents)

- **Status in FIMCAR**

5. Accident analysis highlighted thorax as most common AIS 2+ injury
   Input from THORAX project expected for the injury mechanism

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List of Open Issues From WG 15

- **Global Issues**
- 6. Finalise a compatibi-lity scale for a rating system.

- **Status in FIMCAR**
- 6. Not first priority within FIMCAR

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Global Priorities from FIMCAR and Previous Work

Assessment requirements

	Structural Interaction		**Front End Force / Deformation (Consisting of)**		**Compartment integrity**		**Restraint system**	
	Alignment	Load spreading (load paths / connections)	Deformation forces of frontal structures	Energy absorption management	Sufficient for single vehicle accident	Enhanced for light vehicles in vehicle to vehicle accident	(Assess over range of pulses)	Test restraint capacity
Priorities for FIMCAR	**1**	**1**	**2**	**1**	**1**	**2**	**1**	**1**

Strong Evidence in the existing and previous studies

Acceleration injuries need to be addressed, small car issues hard to identify in current data

Current R94 / EuroNCAP gains must be maintained accident data needs further analysis for car-car

Acceleration injuries need to be addressed, expand test types to test sensing systems

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How Frontal Impact and Compatibility Priorities are being addressed in FIMCAR

No.	Assessment requirements							
	Structural Interaction		**Front End Force / Deformation (Consisting of)**		**Compartment integrity**		**Restraint system**	
	Alignment	Load spreading (load paths / connections)	Deformation forces of frontal structures	Energy absorption management	Sufficient for single vehicle accident	Enhanced for light vehicles in vehicle to vehicle accident	(Assess over range of pulses)	Test restraint capacity
FWRB								
FWDB								
ODB								
PDB								
MDB (fixed mass/speed)								
MDB (variable mass/speed)								

FIMCAR has high priority on establishing structural interaction assessments using both a FW and Offset test – Choice of barrier types under investigation

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MDB (variable mass/speed)								

Vehicles must have minimum energy absorption requirements, likely resolved with FW test.

Force level issues rated as priority 2 and are unlikely to be resolved.

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FIMCAR will maintain an offset test with sufficient test severity as current levels.

Special actions for small vehicles are still being investigated by accident studies

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Full Width test is proposed to assess restraint capacity and address acceleration injuries found in accident analysis

Combination of tests is advised for sensor and restraint performance evaluation

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Planned FIMCAR Results

1. Full Width test will be proposed
   - In order to create a high deceleration pulse
   - Use of deformable barrier to be determined
   - Metric for structural alignment to be proposed
   - Possible concept for frontal force level requirements
2. Offset Barrier test will be proposed
   - In order to test compartment integrity
   - PDB is only barrier being investigated for load spreading evaluation
   - Existing ODB will be maintained if PDB cannot meet necessary performance requirements

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Planned FIMCAR Results

3. MDB will be developed with a PDB barrier face
   - structural evaluation criteria will be tied to PDB research
   - MDB barrier can address mass ratio compatibility issues which are probably not fully addressed in the fixed barrier tests
   - MDB may replace or complement fixed offset barrier