Presentation to GRSP
ISOFIX/LATCH

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Introduction

- Purpose:
  - To raise awareness of non-rigid alternative to the rigid ISOFIX attachment.
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- **Purpose:**
  - To raise awareness of non-rigid alternative to the rigid ISOFIX attachment.
  - To achieve the non-rigid CRS attachment system as an acceptable alternative to the rigid CRS attachment means under ECE R44.
Topics of Discussion

- Background Information
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- Alternative Design
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- Alternative Design
- Test Results
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- Benefits
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- Issues/Concerns
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- Benefits
- Issues/Concerns
- Action Request
Background information

- Emerged from concerns for misuse and incompatibilities
- ISO Activity – Global Involvement
- Evolution of the concept to include non-rigid CRS attachments
Alternative Design

- Lower anchorage – adjustable belt/connectors
- Anti-rotation – top tether
- Design is intuitive, readily available, and simple.
- Can be used to extend the benefits to many child restraints currently in use.
Test Results

- First Test – CRS secured using lap and shoulder belt
- Second Test – CRS secured with non-rigid CRS attachment system
- Provide performance results to allow comparison of CRS attachment systems
## Test Results for Non-Rigid CRS Attachments

<table>
<thead>
<tr>
<th>Limit or Test Number and CRS Retention</th>
<th>Forward Excursion Limit (mm)</th>
<th>Upward Excursion Limit (mm)</th>
<th>Resultant Chest Acceleration (G’s)</th>
<th>Vertical Chest Acceleration (G’s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE R44.03 Limit</td>
<td>550/500</td>
<td>800</td>
<td>55</td>
<td>30</td>
</tr>
<tr>
<td>201102-6 Lap/shoulder belt</td>
<td>495</td>
<td>709</td>
<td>22.1</td>
<td>23.0</td>
</tr>
<tr>
<td>211102-1 Non-rigid LATCH</td>
<td>437</td>
<td>692</td>
<td>22.8</td>
<td>22.2</td>
</tr>
</tbody>
</table>
Benefits

- Less complicated system
- More tolerance for fitting to vehicles
- Less weight
- Allows extension to current product is use.
- Lower cost alternative
Issues/Concerns

- Potential Misuse
## Misuse Test Results

<table>
<thead>
<tr>
<th>Limit or Test Number and Test Set-up</th>
<th>Forward Excursion Limit (mm)</th>
<th>Upward Excursion Limit (mm)</th>
<th>Resultant Chest Accel. (G’s)</th>
<th>Vertical Chest Accel. (G’s)</th>
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<td>550/500</td>
<td>800</td>
<td>55</td>
<td>30</td>
</tr>
<tr>
<td>201102-6 Installed with Lap/shoulder belt</td>
<td>495</td>
<td>709</td>
<td>22.1</td>
<td>23.0</td>
</tr>
<tr>
<td>211102-1 Installed with Non-rigid Attachment</td>
<td>437</td>
<td>692</td>
<td>22.8</td>
<td>22.2</td>
</tr>
<tr>
<td>161002-4 Installed with Non-rigid Attachment (10 N)</td>
<td>447</td>
<td>751</td>
<td>25.0</td>
<td>9.0</td>
</tr>
<tr>
<td>221102-3 Installed with Lower attachment only, no top tether</td>
<td>535</td>
<td>720</td>
<td>22.5</td>
<td>20.5</td>
</tr>
</tbody>
</table>
Action Request

- GRSP proceed with the implementation of the ISOFIX requirements for vehicles and child restraints (rigid attachment).

- Pursue the non-rigid CRS attachment in subsequent rule making.
Thank You