PARADIGM SHIFT: FROM DRIVER DISTRACTION TO TASK ENGAGEMENT DURING AUTOMATED DRIVING.
MINIMIZING SECONDARY TASK ENGAGEMENT HAS BEEN A MAIN FOCUS FOR DESIGNING DRIVER–VEHICLE INTERACTION OVER THE LAST DECADES.
IN THE FUTURE, AUTOMATED DRIVING SYSTEMS WILL END PROBLEMS RELATED TO DISTRACTED DRIVING ONCE AND FOR ALL.
AND IN THE MEAN TIME!? 

**Level 5**
Full Driving Automation

**Level 4**
High Driving Automation

**Level 3**
Conditional Driving Automation

**Level 2**
Partial Driving Automation

**Level 1**
Driver Assistance

**Level 0**
No Driving Automation

|------|------|------|------|------|------|------|------|

Paradigm Shift: From Driver Distraction to Task Engagement during automated driving.
AND IN THE MEANTIME!?

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Paradigm Shift: From Driver Distraction to Task Engagement during automated driving.
LOWER LEVEL AUTOMATION – THAT IS ALREADY AVAILABLE – MAY CONTRIBUTE TO PRODUCE SAFER ROADS TODAY.

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>Road type</th>
<th>Proportion with system switched on</th>
<th>Reduction in critical situations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cars</td>
<td>Highways</td>
<td>51%</td>
<td>32–82%</td>
</tr>
<tr>
<td>Cars</td>
<td>Rural roads</td>
<td>31%</td>
<td>32–45%</td>
</tr>
<tr>
<td>Cars</td>
<td>Built-up areas</td>
<td>19%</td>
<td>32%</td>
</tr>
<tr>
<td>Trucks</td>
<td>Highways</td>
<td>42%</td>
<td>14–36%</td>
</tr>
</tbody>
</table>

How adaptive cruise control and rear-end collision warning help.
LOWER LEVEL AUTOMATION – THAT IS ALREADY AVAILABLE – MAY CONTRIBUTE TO PRODUCE SAFER ROADS TODAY.

Paradigm Shift: From Driver Distraction to Task Engagement during automated driving.
…PROVIDED WE MANAGE TO KEEP THE PERFORMANCE OF THE DRIVER AT AN OPTIMAL LEVEL.

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Paradigm Shift: From Driver Distraction to Task Engagement during automated driving.

FIRST STUDIES ON SAE LEVEL 2 SYSTEMS INDICATE THAT SECONDARY TASK ENGAGEMENT MAY IMPROVE DRIVER PERFORMANCE.

Paradigm Shift: From Driver Distraction to Task Engagement during automated driving.

<table>
<thead>
<tr>
<th>Task Type</th>
<th>Longitudinal Error (Obstacle)</th>
<th>Lateral Error (Driftage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Secondary Task (Baseline)</td>
<td>3.61</td>
<td>2.57</td>
</tr>
<tr>
<td>Visual Task</td>
<td>3.91</td>
<td>4.02</td>
</tr>
<tr>
<td>Cognitive Task</td>
<td>4.53</td>
<td>4.37</td>
</tr>
</tbody>
</table>

Lorenz & Hergeth, 2015
KEY RESEARCH AREAS FOR SAE LEVEL 2 AND 3 SYSTEMS.

Paradigm Shift: From Driver Distraction to Task Engagement during automated driving.
THANK YOU FOR YOUR ATTENTION!

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