Economic Commission for Europe
Inland Transport Committee
Working Party on Transport Trends and Economics
Thirtieth session
Geneva, 4-6 September 2017
Item 11 (c) of the provisional agenda
Review of the transport situation, transport trends
and economics in ECE region

Transport Trends and Challenges in the road sector

Submitted by the International Road Transport Union
Managing the transition to driverless road freight transport

UNECE Working Party on Transport Trends and Economics Trends in the road transport sector
Geneva, 4-6 September 2017

iru.org
Founding members in 1948

14 Founding IRU Members in 8 countries
IRU Members
Governments, vehicle manufacturers, transport operators and trade unions join forces
# Level of automation

<table>
<thead>
<tr>
<th>Level</th>
<th>Name</th>
<th>Steer, accelerate, decelerate and signal</th>
<th>Monitor and respond to driving environment</th>
<th>Fallback performance of dynamic driving tasks</th>
<th>Context (operational design domain)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No automation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Driver assistance</td>
<td></td>
<td></td>
<td></td>
<td>Limited</td>
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<tr>
<td>2</td>
<td>Partial automation</td>
<td></td>
<td></td>
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<td>Limited</td>
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<tr>
<td>3</td>
<td>Conditional automation</td>
<td></td>
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<td>Limited</td>
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<tr>
<td>4</td>
<td>High automation</td>
<td></td>
<td></td>
<td></td>
<td>Limited</td>
</tr>
<tr>
<td>5</td>
<td>Full automation</td>
<td></td>
<td></td>
<td></td>
<td>Unlimited</td>
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</tbody>
</table>

- **No automation**: Full-time performance by the human driver of all aspects of the dynamic driving task, even when enhanced by warning or intervention systems.
- **Driver assistance**: Context-specific execution by a driving automation system of either steering or acceleration/deceleration, using information about the driving environment and with the expectation that the human driver perform all remaining aspects of the dynamic driving task.
- **Partial automation**: Context-specific execution by one or more systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the human driver perform all remaining aspects of the dynamic driving task.
- **Conditional automation**: The sustained context-specific performance by a driving automation system of all dynamic driving tasks with the expectation that the human driver will be receptive to requests to intervene and system failures and will respond appropriately.
- **High automation**: The sustained context-specific performance by a driving automation system of all dynamic driving tasks and fallback operation, without expecting a human driver will respond to a request to intervene.
- **Full automation**: The sustained and unconditional performance by a driving automation system of all dynamic driving tasks and fallback operation, without expecting a human driver will respond to a request to intervene.
Why will driverless trucks be taken up?

- Labour costs / addressing labour shortage
- Decarbonisation of transport
- Improvement of road safety
- Digitalisation of transport operations
- Operating times
Driverless trucks - adoption scenarios

Long distance road freight

- Baseline
- Conservative scenario
- Disruptive scenario
- Regulated scenario

% of adoption over years 2016 to 2040.
Potential scale of truck driver job losses

• Automated trucks could reduce the demand for drivers
• Up to 4.4 million professional trucking jobs could become redundant
Truck driver labour force snapshot

**US**

- **Tertiary**: 90%
- **High school**: 50%
- **Less than high school**: 10%

**Europe**

- **Tertiary**: 90%
- **High school**: 60%
- **Less than high school**: 20%
Truck driver labour force snapshot
Where do we go from here?

Certainty…

• Only a very few will keep their jobs in the transport industry
• New qualifications will be needed
• New trained professionals will be needed

And…

• Who will pay for the transition?
• Will a gradual introduction of innovation solve the issue (permit systems)?
• Is new taxation on innovation a solution?
Report recommendations – measures to be taken

• Establish a transition advisory board to advise on labour issues

• Set international standards, road rules and vehicle regulations for self-driving trucks

• Start with pilot projects to test vehicles, network technology and communication protocols
Other open questions

- Security risks
- Road safety
- Acceptability of driverless vehicles
- Data ownership
Thank you!