Where innovation starts

Logistics research topics related to safe and efficient transport

EARPA Autumn meeting 2014

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Smart Mobility TU/e
• A significant and growing share of Europe's GDP (5-15% depending on the definition)
• Increase of 1% efficiency in logistics returns economic benefit for the EU of 10B€
• Growing transparency in the supply and demand for transport has potential to greatly enhance efficiency
• Urbanization brings new challenges, especially for the last mile
• Overrepresentation of SME’s
• Extremely competitive industry; Logistics will help automotive RTD with some sound business cases.
• Logistics enables many of the new societal changes like mass individualization
Goal EARPA TF Logistics

- Develop new transport and logistics concepts, processes and use of technology supporting European service providers and shippers, making them **more competitive and sustainable**;
- Support the development of more efficient and sustainable transport and logistics solutions related to road transport, contributing to an **improvement in end-to-end logistics performance**.

Following EARPA’s mission we will primarily approach these goals from the angle of **automotive technology**, also with the aim to distinguish from and add value to similar initiatives in the field of logistics.
# Cost of Mobility

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
<th>Percentage of GDP</th>
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<tbody>
<tr>
<td>Safety</td>
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• Relative high impact of truck accidents

• Conflict with vulnerable road users (blind spot).

• Internet has increased number of delivery vans in residential area’s with consequent safety risks (eg 30km zones in NL)
Relative share of pollution by trucks vs cars will push for further implementation of clean technology.

In the logistics industry, a few percent fuel saving can mean profit or loss; Energy saving technology will be welcomed in logistics sooner than elsewhere.

Environmental impact of road transport will further improve, strengthening its position towards other modes.

Local (zero) emission regulations push for new vehicle technologies.
The mobile being

The 1h06m mobility urge
The mobile being

Gross Domestic Product (GDP) per capita (US$ 1985)
• A parcel or truck load does not have the biological urge to be mobile for 1h06m → Improvement in efficiency and congestion for logistics really helps.

• Explicit information on the supply and demand of transport will bring huge optimization potential.

• Big Data from vehicles (and cargo!) makes the new difference. Floating Cargo Data.

• The urbanization trends forces the industry to come with new concepts, new vehicles.
Urban logistics with increased challenges
Solutions in Logistics
Solutions in Logistics
## Cost of Mobility

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Mobile Disruptions
EARPA TF Logistics Members

- Austrian Institute of Technology
- Chalmers University
- Eindhoven University of Technology
- Florence University
- Fraunhofer
- Karlsruhe Institute of Technology
- LETI
- University of Bremen
- University of Southampton
- SP
- TNO
- Vrije Universiteit Brussel
Take-out

- The Transport & Logistic industry brings some welcome business cases for automotive technology.

- Especially on the last mile, logistics can and should achieve improvements in sustainability and safety.

- A package has no urge to be mobile for 1h06m → fighting inefficiency and congestion in logistics really pays off.

- Some exciting disruptions in mobility is on the way.

- If you see benefit for the TF Logistics, please join us!
No pollution and traffic jams due to intelligent cars
<table>
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<th>Transit Chain (1)</th>
<th>Transportation Chain (2)</th>
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<tr>
<td>- Synchromodal network connectivity</td>
<td>- Aggregation of multi-source real-time information for transport planning</td>
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<tr>
<td>- Port &amp; Hub automation</td>
<td>- Combination of ITS &amp; route planning</td>
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<td>- International standards</td>
<td>- Smart cargo in the supply chain</td>
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<tr>
<td>- Seamless transfer from chain to chain</td>
<td>- Mode separation</td>
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<td>- Integrating Hubs, smoothly enhancing changing from one mode to another</td>
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<th>Urban Networks (3)</th>
<th>Vehicle specialization &amp; design (4)</th>
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<td>- Smart urban electric transport</td>
<td>- Cargo adaptive vehicles</td>
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<tr>
<td>- First and last mile pick-up and delivery logistics</td>
<td>- Aerodynamics</td>
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<tr>
<td>- E-fullfillment</td>
<td>- Cargo adaptive transport means</td>
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<td>- Electrification (Electric &amp; Hybrid)</td>
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