Passenger Mobility in the Baltics
A Catalyst for Regional Cohesion

Arnis Kakulis, Managing Director
AECOM Baltics
10 benefits from Rail Baltica (source RB Rail AS)

1. A powerful catalyst for sustainable economic growth in the Baltic States
2. A new standard of passenger and freight mobility
3. A new economic corridor will emerge
4. Sustainable employment and educational opportunities
5. An environmentally sustainable infrastructure
6. New opportunities for multimodal freight logistics development
7. New intermodal transport solutions for passengers
8. Safety and performance improvements
9. A new value platform for digitalization and innovation
10. Completion of Baltic integration in the European Union transport ecosystem
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Passenger Mobility

Mobility

Travelling in a Tube

**The Technology**
A capsule, with passengers, travels at speeds of more than 1200 KM/H inside a vacuum tube.

**Vacuum tube has an area of LOW PRESSURE INSIDE IT**

**India Plans**
Hyperloop can be built in India in 38 MONTHS.
Globally, 800 ENGINEERS working on the Hyperloop, of which 25 ARE FROM INDIA.

It uses power from RENEWABLE ENERGY sources like solar energy, regenerative braking & wind power.

These tubes stand on pylons that can WITHSTAND quakes & crashes.
Passenger Mobility

The single most important measure of urban vitality is the extent to which cities, and their citizens, are connected with each other.
Passenger Movement Trends

Passenger flows have grown for all modes over the past 25 years.

Billions of passenger-kilometers

Note: Based on data for 54 countries, covering all global regions. CAGR = compound annual growth rate.

Source: OECD, Oxford Economics, IATA WATS, Oliver Wyman analysis.
Passenger Movement Trends
Passenger Movement Trends

Global passenger-km traveled, by major mode of transport, in 1950, 2000, and 2050 (projected). Size of pies corresponds to PKT, which has been multiplied nearly 10 times through 2000 and is likely to be multiplied by a factor of 30 by 2050.

For comparison, GDP has grown by factors of 7 and 20, respectively.

(Source: Long-term Trends in Global Passenger Mobility, A. Shafer)
SURVEY SAYS: MOST RELEVANT MOBILITY TRENDS
PERCENTAGE OF RESPONDENTS WHO CITED AS A "TOP THREE" TRENDS

- **Shared Mobility & Increased Transport Efficiency**: 78%
- **Rise of Integrated Mobility Providers**: 47%
- **Accelerating Urbanization & Smart Cities**: 41%
- **Deregulation of Public Transport**: 39%
- **Development of Autonomous Vehicles**: 35%

*Note: Multiple answers possible.*
*Source: Oliver Wyman Mobility 2040 survey analysis.*
Passenger Mobility

Me + Us + All = Mobility
Passenger Movement Rail Baltica – Passenger Model Assumptions

Demand Basis:

Existing observed (2009) demand for travel between key origin / destination pairs - DATA

Synthetic demand model (from origin and destination socioeconomic characteristics and journey generalised costs) – FOR DATA GAPS

### Average Annual Growth in Passenger Demand by Region

<table>
<thead>
<tr>
<th>Period</th>
<th>Estonia</th>
<th>Latvia</th>
<th>Lithuania</th>
<th>Baltic Region</th>
<th>International</th>
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<tbody>
<tr>
<td>2009 - 2020</td>
<td>1.50%</td>
<td>0.63%</td>
<td>1.14%</td>
<td>1.06%</td>
<td>0.88%</td>
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<tr>
<td>2020 - 2030</td>
<td>1.46%</td>
<td>1.25%</td>
<td>1.15%</td>
<td>1.23%</td>
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<td>2030 - 2040</td>
<td>1.52%</td>
<td>1.35%</td>
<td>1.16%</td>
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## Passenger Movement Rail Baltica – 2010 existing data

<table>
<thead>
<tr>
<th></th>
<th>Rail</th>
<th>Road (Car)</th>
<th>Road (Coach)</th>
<th>Air</th>
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<tr>
<td>Tallinn – Riga</td>
<td>0</td>
<td>1520</td>
<td>320</td>
<td>430</td>
<td>1,650</td>
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<td>Tallinn – Kaunas</td>
<td>0</td>
<td>60</td>
<td>8</td>
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<tr>
<td>Riga – Tallinn</td>
<td>0</td>
<td>1520</td>
<td>320</td>
<td>430</td>
<td>1,650</td>
</tr>
<tr>
<td>Riga – Vilnius</td>
<td>0</td>
<td>560</td>
<td>300</td>
<td>420</td>
<td>1,680</td>
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<tr>
<td>Riga – Kaunas</td>
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<td>340</td>
<td>120</td>
<td>70</td>
<td>770</td>
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<tr>
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<tr>
<td>Vilnius – Riga</td>
<td>14</td>
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<td>300</td>
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<td>220</td>
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<td>120</td>
<td>70</td>
<td>770</td>
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<tr>
<td>Kaunas – Warsaw</td>
<td>10</td>
<td>420</td>
<td>40</td>
<td>0</td>
<td>350</td>
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<tr>
<td>Kaunas – Tallinn</td>
<td>0</td>
<td>60</td>
<td>8</td>
<td>0</td>
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## Passenger Movement Rail Baltica – 2010 forecasts

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<tbody>
<tr>
<td>Tallinn to Parnu</td>
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<td>3,361</td>
<td>3,721</td>
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<td>2,755</td>
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<td>Parnu to Riga</td>
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<td>2,432</td>
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<td>1,672</td>
<td>1,867</td>
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<tr>
<td>Tallinn to Tartu</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<td>3,378</td>
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<td>2,088</td>
<td>2,276</td>
<td>1,043</td>
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<td>2,735</td>
<td>3,062</td>
<td>3,314</td>
<td>1,805</td>
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<td>2,083</td>
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<tr>
<td>Riga to Jelgava</td>
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<td>3,067</td>
<td>3,324</td>
<td>3,625</td>
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<td>3,325</td>
<td>3,581</td>
<td>3,867</td>
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<tr>
<td>Jelgava to Kaunas</td>
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<td>-</td>
<td>2,034</td>
<td>2,211</td>
<td>2,402</td>
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<td>-</td>
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<td>2,157</td>
<td>2,343</td>
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<tr>
<td>Riga to Panevezys</td>
<td>2,566</td>
<td>2,837</td>
<td>2,945</td>
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<td>-</td>
<td>-</td>
<td>2,603</td>
<td>2,883</td>
<td>2,989</td>
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<tr>
<td>Panevezys to Kaunas</td>
<td>4,611</td>
<td>4,972</td>
<td>5,120</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4,649</td>
<td>5,018</td>
<td>5,165</td>
<td>-</td>
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<tr>
<td>Kaunas to Poland</td>
<td>1,114</td>
<td>1,038</td>
<td>856</td>
<td>857</td>
<td>768</td>
<td>710</td>
<td>1,104</td>
<td>1,021</td>
<td>836</td>
<td>844</td>
<td>751</td>
<td>694</td>
</tr>
</tbody>
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## Passenger Movement Rail Baltica – 2010 modal shift

<table>
<thead>
<tr>
<th></th>
<th>2020 (Total trips per day, 2-way)</th>
<th>Red</th>
<th>Yellow</th>
<th>Green</th>
<th>Orange</th>
</tr>
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<tbody>
<tr>
<td><strong>Trips Diverted from Existing modes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car</td>
<td>2,133 (28%)</td>
<td>2,322 (25%)</td>
<td>1,632 (26%)</td>
<td>1,473 (27%)</td>
<td></td>
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<tr>
<td>Bus</td>
<td>3,452 (45%)</td>
<td>3,894 (43%)</td>
<td>2,379 (38%)</td>
<td>2,122 (39%)</td>
<td></td>
</tr>
<tr>
<td>Rail</td>
<td>222 (3%)</td>
<td>827 (9%)</td>
<td>819 (13%)</td>
<td>481 (9%)</td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td>844 (11%)</td>
<td>771 (8%)</td>
<td>599 (10%)</td>
<td>698 (13%)</td>
<td></td>
</tr>
<tr>
<td><strong>Induced Trips</strong></td>
<td>1,039 (14%)</td>
<td>1,332 (15%)</td>
<td>804 (13%)</td>
<td>722 (13%)</td>
<td></td>
</tr>
<tr>
<td><strong>Total Rail Baltica Trips per Day</strong></td>
<td>7,689</td>
<td>9,146</td>
<td>6,234</td>
<td>5,496</td>
<td></td>
</tr>
</tbody>
</table>
URBAN connectivity is important

INTEGRATED multi-modal offering is important

SHARED transport is important

REDUCED TRAVEL TIME is important

**SURVEY SAYS: MOST RELEVANT MOBILITY TRENDS**
PERCENTAGE OF RESPONDENTS WHO CITED AS A "TOP THREE" TREND

- **SHARED MOBILITY & INCREASED TRANSPORT EFFICIENCY**: 78%
- **RISE OF INTEGRATED MOBILITY PROVIDERS**: 67%
- **ACCELERATING URBANIZATION & SMART CITIES**: 41%
- **DEREGULATION OF PUBLIC TRANSPORT**: 39%
- **DEVELOPMENT OF AUTONOMOUS VEHICLES**: 35%

**Note**: Multiple answers possible.
**Source**: Otter Wyman Mobility 2040 survey analysis.
Passenger Mobility

Mobility = Regional Cohesion
Regional Cohesion – New HSR Rail Corridor Case Studies

*England*/France: Channel Tunnel  
Japan: Shinkansen  
France: Train à Grande Vitesse (TGV)  
Germany: Neubaustrecken  
Spain: Alta Velocidad Española (AVE)  
Italy: Rete Alta Velocità/Alta Capacità (AV/AC)

HSR lines IMPROVE ACCESSIBILITY between the cities connected by the service...

**BUT**

HSR lines also DISARTICULATE the space between these cities...  
(what has been referred to as the tunnel effect (Gutiérrez Puebla, 2005)).

**Hence, HST lines do not seem to increase inter-territorial cohesion, but rather they promote territorial polarization.**
Regional Cohesion - Baltics

SPEED and INTEGRATED NETWORK are KEY
Regional Cohesion – Spatial Development Zone
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Regional Cohesion – Spatial Development Zone
Regional Cohesion – Passenger Benefits

**Me = the region is SMALLER**

- Better URBAN connectivity – quicker trips to Tallinn/Vilnius/Warsaw
- Convenience of MULTI-MODAL shared transportation modes (Center + Airport)
- INTEGRATED & INNOVATIVE digital platform for ticketing/services/solutions

**Us = the region is STRONGER**

- URBAN centers work as a PAN-BALTIC economy of agglomeration
- CONVERGENCE of Baltic labor markets – efficient commuter patterns

**ALL = the region is INTEGRATED with the EU**

- BALTICS --- NORDICS --- NORTHERN EUROPE
- EU Cohesion & Resilience – Intergrated TEN-T Transportation Network
Me + Us + All = Mobility
Thank You

Arnis Kakulis, Managing Director, AECOM Baltics

Arnis.kakulis@aecom.com

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