Future of Urban Mobility: Results of Arthur D. Little Global Benchmarking Study

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Urban Mobility Index – our contribution to tackle the urban mobility challenge

**Urban Mobility is a Burning Platform**

- The future of the earth will be urban
- Urban mobility expected to triple until 2050
- Current urban mobility trends will impose a heavy toll
- Majority of cities are badly equipped to cope with the challenges
- Root cause for poor performance is the lack of innovation

**The future of urban mobility is networked**

- Outperforming cities establish networked, multimodal systems
- Four success factors to establish an innovative, effective system
- Three strategic imperatives for cities to develop towards networked, multimodal urban mobility systems
- Three long term sustainable business models for mobility suppliers
In 2011 Arthur D. Little benchmarked 66 cities globally to identify good practices.

<table>
<thead>
<tr>
<th>World’s largest cities determined by GDP share of region and population</th>
<th>Americas</th>
<th>Europe, Middle East &amp; Africa</th>
<th>Asia</th>
</tr>
</thead>
</table>

**Source:** Arthur D. Little
Mobility maturity and performance were measured along the set of 11 indicators

### Urban Mobility Index Indicator Definition – Max. 100 Points

#### Mobility maturity max 32.5 points

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Definition</th>
<th>Max. Points</th>
</tr>
</thead>
</table>
| Share of walking/cycling in modal split | ▬ Best (7.5)  
 carpob | MAX 7.5 POINTS |
| Mobility Strategy/Vision | cumulative  
 Alternative engines 2  
 Sustainbility 2  
 Multi-modality 2  
 Infrastructure 2  
 Restrictions 2 | MAX 10 POINTS |
| Number of shared cars per citizen | No sharing program (0)  
 Planned 2011 (1)  
 < 50 vehicles/capita (2)  
 50-100 vehicles/capita (3)  
 100-200 vehicles/capita (4)  
 > 200 vehicles/capita (5) | MAX 5 POINTS |
| Number of shared bikes per citizen | 0 = nothing  
 1 = 0-0.1  
 2 = 0.1-0.25  
 3 = 0.25-0.5  
 4 = 0.5-1  
 5 = > 1 cards/capita | MAX 5 POINTS |
| Penetration rate of smart cards | | |
| Fatalities per citizen | Lowest (15)  
 Highest (0) | MAX 15 POINTS |
| Mobility related CO₂ per capita | Lowest (7.5)  
 Highest (0) | MAX 15 POINTS |
| Vehicles registered per citizen | Lowest (7.5)  
 Highest (0) | MAX 7.5 POINTS |
| Average travel speed | Best (7.5)  
 Worst (0) | MAX 7.5 POINTS |
| Satisfaction with transport | Average of 3 expert opinions | MAX 15 POINTS |
| Mean travel time to work | Shortest (7.5)  
 Longest (0) | MAX 7.5 POINTS |

#### Mobility performance max 67.5 points

Source: Arthur D. Little Mobility Index
Majority of cities are badly equipped to cope with the challenges ahead

Global
Average 64.4

Region average scores

- Western Europe: 71.4
- East/Southeast Europe: 64.0
- North America: 62.0
- South America: 63.6
- Asia-Pacific: 62.5
- Africa and Middle East: 54.4

Source: Arthur D. Little Mobility Index; xx%: share of cities in this performance cluster; 100 index points for city that would achieve best performance which is achieved today on each performance criteria.
Majority of cities are badly equipped to cope with the challenges ahead

East / Southeast Europe
Average 64.0

Source: Arthur D. Little Mobility Index; xx% : share of cities in this performance cluster; 100 index points for city that would achieve best performance which is achieved today on each performance criteria
Majority of cities are badly equipped to cope with the challenges ahead

North America
Average 62.0

Source: Arthur D. Little Mobility Index; xx% : share of cities in this performance cluster; 100 index points for city that would achieve best performance which is achieved today on each performance criteria
Majority of cities are badly equipped to cope with the challenges ahead

**South America**
Average 63.6

Source: Arthur D. Little Mobility Index; xx% : share of cities in this performance cluster; 100 index points for city that would achieve best performance which is achieved today on each performance criteria.
Majority of cities are badly equipped to cope with the challenges ahead

Asia Pacific
Average 62.5

Source: Arthur D. Little Mobility Index; xx% : share of cities in this performance cluster; 100 index points for city that would achieve best performance which is achieved today on each performance criteria
Majority of cities are badly equipped to cope with the challenges ahead

Middle East / Africa
Average 54.4

Source: Arthur D. Little Mobility Index; xx% : share of cities in this performance cluster; 100 index points for city that would achieve best performance which is achieved today on each performance criteria.
Outperforming cities establish networked, multimodal systems: Example Hong Kong

### Top 5 Challenges

1. No geographic extension potential
2. Drastic increase of cross border traffic
3. Traffic accidents (CAGR 4%)
4. Air pollution (33% of PM$_{10}$ and 20% of NO$_2$ emissions from urban mobility)
5. Jammed mobility infrastructure

### Top 5 Initiatives

1. Octopus – multimodal mobility card (penetration rate of 3.1 cards per inhabitant)
2. Extensive system of free of charge escalators
3. High taxes for cars (35-100% of car value)
4. High taxes for gasoline
5. Aggressive extension of subway network

### Modal Split

<table>
<thead>
<tr>
<th>Year</th>
<th>Motorized Individual</th>
<th>Public</th>
<th>Bike and Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>16%</td>
<td>46%</td>
<td>38%</td>
</tr>
<tr>
<td>2008</td>
<td>7%</td>
<td>55%</td>
<td>38%</td>
</tr>
</tbody>
</table>

Source: Census and Statistics Department Hong Kong, Arthur D. Little
Four success factors to establish an innovative and effective urban mobility system

1. Establish a collaborative platform to align stakeholders and prioritize common initiatives

2. Define and execute a vision for the future of the urban mobility system

3. Discover and respond to the consumer need for a seamless, multimodal urban mobility

4. Initiate fair competition between different transport modes and related business models

Source: Arthur D. Little
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