Which Business Models for integrated urban mobility?

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Partner, Arthur D. Little
The future will be urban… but urban mobility systems are under pressure and eco-systems extensions are emerging

<table>
<thead>
<tr>
<th>Evolving Mobility Needs</th>
<th>Technology (R)evolution</th>
<th>Eco-system Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Drastic increase of urban population in coming years&lt;sup&gt;1&lt;/sup&gt;</td>
<td>- Generalized use of web-based applications and smartphone penetration…</td>
<td>- Extension of the mobility eco-system&lt;sup&gt;2&lt;/sup&gt; (e.g. B2C and P2P car sharing, car pooling, etc.) …</td>
</tr>
<tr>
<td>- Evolving mobility needs requiring mobility service portfolio extension:</td>
<td>- … allowing for one-stop-shop for identification, planning, booking, payment, billing</td>
<td>… leading to cannibalization of traditional transport modes and profit pool redistribution</td>
</tr>
<tr>
<td>- Changing travel habits and transport mix</td>
<td>- Ability to process big data to provide real-time, integrated and customized information</td>
<td>- Interest of specialized players from other sectors to enter into the extended mobility system value chain and assess opportunities to act as Total Mobility Providers</td>
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<sup>1</sup> By 2015, 60% of the world population will live in urban areas and the number of trips in urban areas is projected to increase by 50% from 2005 level ; <sup>2</sup> B2C Car Sharing, P2P car sharing and Bike sharing boast expected CAGR 2012-16 in Europe of respectively 43% (46% in US), 20% (34% in US) and 30% (51% in US)
Questions addressed today

- To which extend are cities currently equipped to cope with the urban mobility challenges?
- What are strategic imperatives for mobility actors to better shape the future of urban mobility?
- Which innovative business models will emerge and shape future urban mobility eco-system?
- Which today’s mobility actors emerge as winners or losers in future extended mobility eco-system?
Understanding the urban mobility challenge

- System-level collaboration: integrated mobility platforms

- Conclusions
In 2011, Arthur D. Little conducted a global study on urban mobility and compared performance across 66 cities.

- **Urban Mobility Index: 11 Criteria**

<table>
<thead>
<tr>
<th>Mobility Maturity</th>
<th>Mobility Performance</th>
</tr>
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<tbody>
<tr>
<td>- Vision/ strategy for future mobility</td>
<td>- Average travel speed</td>
</tr>
<tr>
<td>- Share of public transport, walking and cycling in modal split</td>
<td>- Mean travel time to work</td>
</tr>
<tr>
<td>- Number of shared cars</td>
<td>- Number of fatalities</td>
</tr>
<tr>
<td>- Number of shared bikes</td>
<td>- Registered vehicles</td>
</tr>
<tr>
<td>- Penetration rate of smart cards</td>
<td>- Transport related CO₂ emission</td>
</tr>
</tbody>
</table>

Source: Arthur D. Little Urban Mobility Index
The overall results indicated that the majority of cities were badly equipped to cope with the mobility challenge ahead.

Global
Average 64.4

Source: Arthur D. Little Urban Mobility Index
The identified root causes of bad performance is the lack of innovation and collaboration

<table>
<thead>
<tr>
<th>Broad range of business models and technologies readily available</th>
</tr>
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<tbody>
<tr>
<td>Comprehensive review of 36 urban mobility business models reveals sufficient availability of solutions to address the pressing mobility challenges</td>
</tr>
<tr>
<td>Analysis of 39 key mobility technologies reveals a broad range of early and emerging technologies with significant potential to enable transformation to high performance urban mobility systems</td>
</tr>
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<table>
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<tr>
<th>Innovation hostility as a key barrier for evolution of urban mobility systems</th>
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<tr>
<td>Current mobility systems do not adapt to changing demands, combine single steps from a value chain to a new system, learn from other systems</td>
</tr>
<tr>
<td>Current mobility systems do not bring together key players to work jointly on solutions and rarely provide for a rewarding environment for investors</td>
</tr>
</tbody>
</table>

Need for system level collaboration between all stakeholders of the mobility eco-system to come up with innovative and integrated business models

Source: Arthur D. Little
Three strategic imperatives were identified for urban mobility depending on cities’ level of maturity and share of PT:

- **Establish sustainable core:** Invest in sustainable urban mobility infrastructure
  - **Establish your own way (do not replicate)**

- **Rethink the system:** Shape political agenda towards shift to public & sustainability
  - **Prerequisite**

- **Network the system:** Integration of different market players and networking of citizens
  - **... Way forward**

**Features:**
- Innovative thinking
- Seamless integration with "one key" for citizens
- High convenience
- Sharing concepts...

**Emerging**
- Emerging cities with partly underdeveloped mobility systems
  - Kinshasa, Kinshasa

**Individual**
- Mature cities with high proportion of registered vehicles
  - Bangkok, Moscow

**Public**
- Mature cities with high share of public transport / walking & cycling
  - Beijing, Brussels, Boston

**Networked mobility**
- Integration of all modes to reduce share of individual motorized transport
  - Stockholm, Hong Kong, Brussels, Boston

**Prerequisite**
- Kinshasa, Hong Kong, Moscow

Source: Arthur D. Little
Understanding the urban mobility challenge

System-level collaboration: integrated mobility platforms

Conclusions
System level collaboration can happen at 3 different levels and range from alignment to integrated mobility concepts

- **Strategic alignment**
  - Coordination of stakeholders to ensure a common understanding of political vision and directives and feedback to ensure right balance between stretch and achievability
  - Alignment of mobility priorities and investment (e.g. within region or state) to achieve global objectives and timetable for delivery; link with urban planning and sustainability

- **Technical / Operational alignment**
  - Definition of common technical solutions to support interoperability of mobility systems/services, without integrating mobility services, e.g.:
    - Interoperability of mobility smartcard across regions
    - Collaboration in development of contextual journey planner encompassing different transport modes

- **Integrated mobility platforms**
  - Provision of integrated mobility concepts thru integration of own mobility and aggregation of services offered by third-party providers
  - Offering of service for own account, taking full responsibility for actual service delivery and risk associated with using the services, thereby ensuring “one face to the customer”

Source: Arthur D. Little
Integrated mobility platform requires integration of relevant public and private stakeholders within the extended mobility eco-system

<table>
<thead>
<tr>
<th>System integration</th>
<th>Connectivity</th>
<th>Data provision</th>
<th>End-user equipment</th>
<th>Tour operation</th>
<th>Mobility services</th>
<th>Adjacent services</th>
<th>Marketing &amp; sales channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Techno platforms</td>
<td>Fixed</td>
<td>Maps</td>
<td>Mobile handset</td>
<td>Planning</td>
<td>Modes of transport</td>
<td>Banking</td>
<td>B2B</td>
</tr>
<tr>
<td>Apps</td>
<td>Mobile</td>
<td>Congestion info</td>
<td>Smart cards</td>
<td>Booking</td>
<td>Insurance</td>
<td>Insurance</td>
<td>B2C</td>
</tr>
<tr>
<td>Merchant terminals</td>
<td>NFC</td>
<td>Time schedules</td>
<td>Chips</td>
<td>Payment</td>
<td>Hotel</td>
<td>Retail</td>
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<td></td>
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<td></td>
<td></td>
<td>Billing</td>
<td>Culture</td>
<td>Culture</td>
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</tr>
</tbody>
</table>

Source: Arthur D. Little

Note: CS = car sharing, BS = bike sharing, SU = suburban, LD = long-distance
What should an integrated mobility platform operator be able to offer and do?

Value Proposition of Platform Operator

- Acts as a single point of contact for travelers and full service provider:
  - Planning
  - Booking
  - Payment
  - Billing

- Integrate or aggregate all mobility service providers across all modes of transport
  - Individual
  - Public individual
  - Public
  - Stationary

- Offers tailored solutions considering customer preferences, lifestyle and budget

Requirements

- Bundling of third-party services and selling them for own account
- Responsibility for delivery of third-party services and associated risks
- Collection of payments and management of security and fraud
- Design and management of partner ecosystems
- Penetration of new regions through contracts with local mobility providers
- Reaching maximum of mobility providers to keep the promise of total mobility
- Customers profiling
- Achieving balance between legal requirements on data security and need for transparency

Source: Arthur D. Little
If kept at regional level, extension of the revenue pool through introduction of VAS\textsuperscript{1)} will be required to get a balanced business case and PTA is likely to take the lead.

\[ \text{Source: Arthur D. Little} \]

\textsuperscript{1)} Value Added Services beyond core mobility services

### Revenue Side
- Sales of mobility cards/apps
- Sign-up and annual fees from aggregated partners
- Commission fees from VAS (revenue-linked)
- Extension of existing revenue streams (e.g. new customers penetration)
- Advertising

### Cost Side
- Platform software development/maintenance
- Management and operating personnel (e.g. call center)
- Chip & card
- Connectivity and data cost
- Marketing & sales

### VAS Partners
- **Retail** (large and small stores, services)
- **Culture** (museums, theatres, cinemas)
- **Sport** (stadiums, fitness, wellness)
- **Gastronomy** (cafes, restaurants)
- **Tourism** (sightseeing, hotels)
If carried beyond regional borders, there can be numerous candidates for the role of mobility platform operator.

**Comments**

- **Future passenger mobility** – not a domain of transportation providers only.
- Companies, that enjoy strong customer trust, are able to master technology and integrate partners, can act as Total Mobility Providers.
- First mover advantage as a key success factor.

Source: Arthur D. Little
Illustrative example of Total Mobility Provider business model from an automotive OEM perspective

<table>
<thead>
<tr>
<th>Modes of Transport – Morphological Box</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motor. individual</strong></td>
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<td><strong>Public individual</strong></td>
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<td></td>
</tr>
<tr>
<td><strong>Public</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Non-motorized</strong></td>
</tr>
<tr>
<td><strong>Stationary</strong></td>
</tr>
</tbody>
</table>

Business Model Illustration for Automotive OEMs

Source: Arthur D. Little

Note: CS = Car Sharing, BS = Bike Sharing, SU = Suburban, LD = Long-Distance, HW = Hardware, SW = Software
Key challenges encountered while setting up integrated mobility platforms

**Business model profitability**
- At regional level, extension of revenue pool beyond transport require to venture into VAS such as retail to get a balanced business case
- If platforms is to be rolled out in numerous cities:
  - Economies of scale and learning curve across cities will make the business case profitable
  - Integration of long-distance mobility (long-distances trains, buses, flight) can significantly increase potential revenue streams

**Technology**
- Technological networking of different transport modes and infrastructure
- Seamless integration of mobility services and underlying management mechanisms
- Next to building real-time information interfaces, collection of large amount of static information is required – exchange between partners is critical

**Stakeholder management**
- Finding the right set of partners to close all competency gaps along the value chain while ensuring positive business case for each partner
- 64% of Mobility is in cities; critical to have local authority involvement which may imply long time for vision and business model alignments
- Finding the right (legal and operational) structure for the operating company

Source: Arthur D. Little
Understanding the urban mobility challenge

System-level collaboration: integrated mobility platforms

Conclusions
Overall conclusions

- Urban mobility is a key challenge, particularly given under-satisfied customer needs and extension of traditional mobility eco-system

- The majority of cities are badly equipped to cope with the mobility challenge ahead and a critical root cause for bad performance is lack of system-level innovation and collaboration:
  - In the near future, innovative mobility services will be much less driven by improvements in individual transport modes but the next step will be integration

- There is a clear customer need and emerging business models, hence what does it take to make it happen?
  - It needs vision, creativity, courage, and entrepreneurship to turn the mobility paradigm towards full integration.

- Those players who take up the challenge as mobility platform operator will have a tremendous market potential to address
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