Total Mobility

Multi-Modal, Integrated, Sustainable, Mobility-on-Demand Systems
Agenda

Themes

- Context
- The Vision – Integrated Mobility
- Market Development and Participants
Macro-trends are changing mobility behaviour and demand and stimulate the development of integrated mobility solutions

| Sustainability and growing ecological awareness |
| Energy security, ambitious climate change targets and tighter regulation |
| Smart, mobile ITC applications and social media |
| Stagnating incomes, rising living costs |
| Inter – and multimodality; Use not ownership |
| Demographic change, urbanisation, societal change |
Rising Challenges for Urban Mobility Systems

Challenges

- Rising challenges for urban mobility systems due to ...

Ecological footprint urban mobility

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>6.7%</td>
<td>11.4%</td>
<td>17.3%</td>
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</table>

Daily hours due to congestions p.a.

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2030</th>
<th>2050</th>
</tr>
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<tbody>
<tr>
<td>Hours</td>
<td>58.4</td>
<td>78.8</td>
<td>106.3</td>
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</table>

Urban mobility investments p.a.

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bn EUR</td>
<td>324</td>
<td>534</td>
<td>829</td>
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</tbody>
</table>

Source: UN Population Division, Urban Age, Arthur D. Little Lab

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The future is multimodal and needs systemic approaches

- **Emerging**
- **Individual**
- **Public**
- **Multimodal**

**Network the system**

**Establish sustainable core**

**Rethink the system**

**Integrate the system**

Photos: Manila – Manfred Günter Boffo; Washington - Jason Reed, Reuters; Hong Kong - Thomas Brauner

Sources: InnoZ, Arthur D. Little, Future of urban Mobility, 2011
Mobility markets undergoing fundamental change – objective is intermodal, carbon-free mobility with unlimited range

**Objective**

- **Public transport:** highspeed rail, regional rail and urban transport
  - „Classical“ low-carbon transport offerings

- **Motorised individual transport** (non-electric/electric)
  - Integration of vehicle fleets (cars, bikes) and other services (e.g. taxi, car-sharing, rental cars)

- **Intermodal stations, parking and charging, Information, navigation and payment systems**
  - Provision of renewable power
  - Integrated information, booking and payment system across all transport carriers
Three-way integration: Transport, ICT, Energy

Three-way integration

- **Transport**
  inter- und multimodal networks, public transport with different transport modes and services

- **ITC**
  mobility services, such as information, navigation, routing, booking, check-in / out, payment, social media and data-sharing (B2B)

- **Energy**
  local und supra-regional renewable energy, smart grids, climate-protection/energy security
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Flexible, Public, On-Demand Mobility

Ease of Access/Use

- "One Touch Mobility": All transport modes are combined in an integrated service
- Access, Use, Exit
- "Mobility-on-Demand": Use, not possession of means of transportation
Electric Mobility – a systemic, interconnected approach

Vision of an integrated mobility solution with...

... green energies

... bike and car sharing stations

... universal public transport

... smartphone application

Picture: Kircher&Burkhard 2010
InnoZ pilots solutions for integrating EV fleets with public transport

BeMobility – Berlin elektroMobil

Vision integrierter Mobilität

Umsetzung durch

Leitbild für BeMobility

Integrierte Mobilitätskarte, 135 Testnutzer für ÖPNV, e-Auto und Fahrrad

BeMobility App bietet Informationen rund um integrierte Mobilität

Elektrisches Carsharing mit 40 Elektro- bzw. Hybridautos an 15 Stellplätzen
E-Cars are a Perfect Addition for Urban Car Pools

e-carsharing in Berlin (2011)

40 e-cars

100% green energy

1 capital

18 e-car sharing stations
Shared E-Cars as Part of a Holistic Urban Mobility Concept

Connected mobility – mobility card (2011)

~240 cars
(electric and non-electric)

~13,000 stops
(bus, tram, underground, rapid transit railway)

~1,250 bikes
(75 bike stations)
Results of the test of the mobility card (2011)

- **78 €** (month)
- **50 €** credit for carsharing
- **30** free minutes each trip
- **24** hour public transport around the clock

- **135** test users / **3** months test

- **10 %** personal car use (day)
- **20 %** bike rental (month)
- **30 %** car sharing (week)
- **11 %** public transport (day)

Source: Bewertung integrierter Mobilitätsdienste mit Elektrofahrzeugen aus Nutzerperspektive, InnoZ 2012
Integrated Mobility Information Services

Intermodal personalised Mobility-Apps incl. routing, check-in/out, booking, payment

- One time registration
- Real-time transport information
- User information on all transport carriers
- Enables spontaneous use of all transport modes and can be directly booked
- Intermodal routing can be planned and compared
- Background payment processes and monthly billing
BeMobility Suite – One App Family for „Metromobiles“

BeMobility Suite – information and multimodal navigation (2011)

~ **14.490** access points for mobility

~ **100** public charging points

~ **20** parking garages free of charge (Contipark)

**numerous** route ways
BeMobility Suite: A Toolbox to Provide Mobility Information Services

Intermodal mobility app aggregates specific travel apps

Interactive Context Menu; data shared between different apps

- EV Station and Charging Search
- Parking Search
- Location Based Services incl. Routing

Available in the App-Store / Android Markets since mid-2011

- Public Transport Connections
- Car Navigation
- Routing Comparison Public Transport/MIT
- Planing Inter-modal Routes
Mobilitätskarte
BerlinelektroMobil

Gültig vom 01.06.2011 bis 31.08.2011
Max Mustermann

Berlin ABC
Diese Karte gilt für:
**e-Flinkster, Call a Bike, Bus, Tram, U-Bahn und S-Bahn**
im angegebenen Geltungsbereich. Hotline 0800 1 28 28 28

Unsere **mobilen Services**
auf Ihrem Handy:

www.flinkster.de  www.callabike.de  www.bahn.de
Electric Mobility – Part of the Smart Grid

E-cars integrated in a Micro Smart Grid at the „Platform for electric mobility“ in Berlin (2011)

- 5 kW wind turbines
- 2 kW cogeneration
- 7,5 kW Solar Panel “Solar Mover”
- 46 kW solar power stations (on roofs)

Buffer

1 large battery

local demand

up to 20 e-car batteries

outside access

Innovation Center for Mobility and Societal Change

July 2012
Agenda

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Integrated mobility: merging of market segments

Integrated mobility markets and networked systems

- Non-connected individual systems and market segmentation – Transport not Mobility
- Known players in individual markets
- Intermodality, electric mobility and energy transformation stimulate new mobility services
- New market entrance opportunities
- New entrants offer new mobility and value-added services
- New large players in the market offering fully integrated services
- Mobility defined more broadly. Competition for client data and service depth
From transport to mobility markets – reorientation from segment solutions to add-on mobility services

Current developments in the mobility market

Legend

Segmented, individual solutions

Basic add-on mobility services

Legend
Competition between different alliances and systems is a key feature of emerging new mobility markets.

Probable developments in mobility markets:

- **Inter- and multimodal mobility**
- **Basic alliance solutions**
- **Integrated mobility**
- **Basic system solutions**
- **Legend**
New mobility services for differentiated user segments are required – new innovation and piloting demand

Segments and mobility services

- **Transport mode enabling services**
- **Transport mode related services**
- **Integrated transport services**

 Depth of Integration

- **Integrated user**
- **Mobile users**
- **User (public transport)/Driver (MIT)**

**Today**

Service-apps (mycityway, cairo ...), service-plattforms (mobility und energy management)

Carsharing, CAB, P&R, mobility-apps (mytaxi, flinc, emobility-suites...), modal comparison, check-in/out, payment, integrated mobility card

Ticket machines, station/stop, routing, navigation, Pol, T&T, RailNavigator, BahnCard