Bus Contracts, Business Models and MaaS—What might they look like?

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Overview

1. Futures
   - Divergent Transport Futures
     - Technologies and Trends

2. Implications
   - Implications for Urban Efficiency
     - Opportunities and Realities

3. MaaS
   - Mobility as a Service (MaaS)
     - "Issues, budgets and brokers"

4. Demand
   - Demander Survey
     - Investigating End User Preference

5. Supply
   - Supplier Survey
     - Fluidising Operator Interest

6. Summary
   - Research Contributions
     - Innovations and Highlights
Divergent Transport Futures

Technologies and Trends
Collaborative Consumption and Vehicle Automation

- Already disrupted taxi industry
- Both competes and complements public transport—depends on market and demographic (Rayle et al., 2016)

- Ownership model—
  - Own and share model (Musk, 2016)
  - Universal automated taxi service (Enoch, 2015)
- Impacts on network efficiency unclear
Demographic Change and Digital Technologies

– Youth licencing decline across developed countries (Delbosc and Currie, 2013)

– Mixed evidence—due to education/employment or symbolism/ideology

– Difference between sharing information and sharing space

– Aging population—transport disadvantage

– Digitalisation of economy—Fourth industrial revolution
Implications for Urban Efficiency

Opportunities and Realities
Future Scenarios for Intermediate Mode Development

1. Modal convergence to automated taxi service
2. Microtransit displaces and replaces fixed route public transport
3. Microtransit evolves into fixed route public transport
Modal Efficiency Framework

Spatial and Temporal Integration

Legend:
- **Trunk services operated by the formal sector**
- **Feeder services operated by the paratransit sector**
- **Formal trunk station where interchange between formal and paratransit modes occurs.**

Note: Line widths difference between formal and paratransit modes depict variations in demand.

**TOP UP**
**INTERMEDIATE MODES**
**BASE LOAD**
**PUBLIC TRANSPORT**

**Ridership**

**Time of Day**
- 6AM
- 9AM
- 12:00 PM
- 3PM
- 6PM
- 9PM
Mobility as a Service (MaaS)

“Bundles, budgets and brokers”
Introducing the Concept

– Total integration across public, private and intermediate modes
– User, provider and societal benefits
– Major players brought together diverse stakeholders
– “Bundles”: mobility packages representing bundles of mobility
– “Budgets”: end user preferences and service provision possibilities
– “Brokers”: new contracting models and business interest

**Mobility as a Service enables new market approach**

**Urban commuter package for 95 €/month:**
- Free public transport in home city area
- Up to 100 km free taxi
- Up to 500 km rental car
- Domestic public transport 1500 km

**15 minutes package for 135 €/month:**
- 15 minutes from call to pick up by shared taxi
- EU wide roaming for shared taxi at 0,5 €/km
- Free public transport in home city
- Domestic public transport 1500 km

**Business world package for 800 €/month:**
- 5 minutes pickup in all EU
- Free taxi in home city
- Lease car and road use
- Taxi roaming worldwide

**Family package for 1 200 €/month:**
- Lease car and road use
- Shared taxi for all family with 15 minutes pickup
- Home city public transport for all
- Domestic public transport 2 500 km
Service Delivery Models

C: Mobility as a service under government contracting

Diagram:
- Demanders
- Brokers
- Suppliers
- Government

1. Subscriptions
2. Mobility Packages
3. Mobility Contract
4. Asset/Capacity
5. Accessibility Delivery
6. Accessibility Contract
I. Demander Survey

Investigating End User Preference

Mobility Packages: The Demander-Broker Interface

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
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<tr>
<td>2</td>
<td>Part I: About You and Your Family</td>
</tr>
<tr>
<td>3</td>
<td>Part II: Your Travel Patterns</td>
</tr>
<tr>
<td>4</td>
<td>Introduction to New Mobility Service</td>
</tr>
<tr>
<td>5</td>
<td>Introduction to MaaS Plan</td>
</tr>
<tr>
<td>6-9</td>
<td>Part III: Your Customised Mobility Package</td>
</tr>
<tr>
<td>10</td>
<td>Part IV: Create Your Own Mobility Plan</td>
</tr>
<tr>
<td>11</td>
<td>Final Part: Your Thoughts on MaaS</td>
</tr>
<tr>
<td>12</td>
<td>Finished</td>
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</tbody>
</table>
Tailored Choice Tasks

Part III: Your Customised Mobility Package:

Based on the information you provided to us, we have worked out the average transport-related cost per fortnight for you. This is presented in the first column. This cost is calculated based on your current record and includes public transport fares, fuel cost, parking cost, registration fee and insurance, maintenance and de-appreciation costs (and loss of interest). Columns 2 and 3 give you different mobility plans. Column 4 is a Pay-As-You-Go Plan where you pay a fortnightly subscription fee for having access to car-sharing, getting discounts from Taxi and Uber services, and using the MobiApp to plan your journey, book the services, and manage your mobility bill.

Scenario 1 (of 4)

If the Plan you created above were available today, would you buy it?  Yes  No

Would you definitely consider this Plan if it were available today?  Yes  No

If the Mobility Plan you chose were available today, how do you think it would impact your use of public transport? Select 3 most likely impacts.

Impact on Public Transport Use

Impact on Your Access to Public Transport

Select 3 most likely impacts.

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## Car Use and MaaS Uptake

Stated shares of MaaS Options in the presence of status quo by type of car user

<table>
<thead>
<tr>
<th></th>
<th>Non-user (0 day/week)</th>
<th>Infrequent user (1 or 2 days/week)</th>
<th>Frequent user (3 or 4 days/week)</th>
<th>Very frequent user (5 - 7 days/week)</th>
<th>All user type (0 - 7 days/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not subscribe (status quo)</td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td>53%</td>
</tr>
<tr>
<td>Customised Plan A</td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td>17%</td>
</tr>
<tr>
<td>Customised Plan B</td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td>20%</td>
</tr>
<tr>
<td>Pay-As-You-Go</td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
<td>11%</td>
</tr>
</tbody>
</table>

Data source: MaaS survey (this study)
## Willingness-to-Pay for Mobility Entitlements

<table>
<thead>
<tr>
<th>MaaS component</th>
<th>WTP</th>
<th>($/fortnight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>An hour access to car-share</td>
<td>$6.39</td>
<td></td>
</tr>
<tr>
<td>A full day access to car-share (10 hours)</td>
<td>$63.85</td>
<td></td>
</tr>
<tr>
<td>One-way car-share</td>
<td>$7.27</td>
<td></td>
</tr>
<tr>
<td>Round trip car-share</td>
<td>$0.00</td>
<td></td>
</tr>
<tr>
<td>Every 15 minutes increase in advance booking time</td>
<td>−$1.06</td>
<td></td>
</tr>
<tr>
<td>A day of unlimited PT use</td>
<td>$5.92</td>
<td></td>
</tr>
<tr>
<td>10% discount to every taxi bill</td>
<td>$3.68</td>
<td></td>
</tr>
<tr>
<td>10% discount to every ride-sharing bill</td>
<td>$7.18</td>
<td></td>
</tr>
</tbody>
</table>
II. Supplier Survey

Elucidating Operator Interest
Mobility Contracts: The Broker-Supplier Interface

- **Mode-specific operators:**
  - Bus operators
  - Rail operators
  - Transportation network companies

- **Non-mobility suppliers:**
  - Technology startups
  - Investment banks
  - Infrastructure operators
  - Property developers

- **Sampling frame:**
  - Australia
  - Hong Kong
  - Singapore
  - Japan
  - Western Europe
  - United States

- *Similar perspectives on risk and investment*
Characteristics—Contracts, Experience, Attitudes

- Market arbitration
- Procurement mechanism
- Asset ownership
- Contract design
- Risk allocation
- Contract management
- MaaS awareness and familiarity
# Opportunities in Future Mobility

## Mobility Offering (Composition of Total Revenue)

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Mobility Contract 1</th>
<th>Mobility Contract 2</th>
<th>Mobility Contract 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional public transport</td>
<td>0%</td>
<td>30%</td>
<td>60%</td>
</tr>
<tr>
<td>On demand public transport</td>
<td>20%</td>
<td>10%</td>
<td>40%</td>
</tr>
<tr>
<td>Carsharing</td>
<td>50%</td>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>Taxi</td>
<td>10%</td>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>UberPOOL</td>
<td>20%</td>
<td>20%</td>
<td>0%</td>
</tr>
</tbody>
</table>

## Government Support

<table>
<thead>
<tr>
<th>Support Type</th>
<th>Mobility Contract 1</th>
<th>Mobility Contract 2</th>
<th>Mobility Contract 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government (non-financial) support</td>
<td>Negative</td>
<td>Lukewarm</td>
<td>Enthusiastic</td>
</tr>
<tr>
<td>Monetary (financial) support</td>
<td>Continued at reduced level</td>
<td>Completely withdrawn</td>
<td>Continued at present level</td>
</tr>
</tbody>
</table>

## Remuneration

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mobility Contract 1</th>
<th>Mobility Contract 2</th>
<th>Mobility Contract 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential return on investment (profit margin)</td>
<td>-30%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Revenue risk (uncertainty)</td>
<td>±50%</td>
<td>±25%</td>
<td>±75%</td>
</tr>
</tbody>
</table>

## Other Considerations

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Mobility Contract 1</th>
<th>Mobility Contract 2</th>
<th>Mobility Contract 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaaS service branding</td>
<td>Other company branding</td>
<td>New branding for service</td>
<td>Your company branding</td>
</tr>
<tr>
<td>Your voting rights in MaaS business</td>
<td>30%</td>
<td>10%</td>
<td>60%</td>
</tr>
</tbody>
</table>

## Mix of Existing Players in MaaS Business

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Mobility Contract 1</th>
<th>Mobility Contract 2</th>
<th>Mobility Contract 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a transport operator in the mix?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Is there a platform provider in the mix?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is there a financial enterprise in the mix?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

## Your Contribution

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Mobility Contract 1</th>
<th>Mobility Contract 2</th>
<th>Mobility Contract 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity per annum as a proportion of your reported annual turnover</td>
<td>15%</td>
<td>30%</td>
<td>25%</td>
</tr>
</tbody>
</table>

## Choice Responses

- Which mobility contract would you choose to invest? [ ]
- Which mobility contract would you choose to supply? [ ]
Research Contributions

Innovations and Highlights
Research Summary

– Enthusiasm over technology, lack of clarity on travel behaviour impacts
– Must ensure that digital disruption occurs to our advantage

“Change is certain, progress is not” (E H Carr)

To market test mobility as a service on demanders and suppliers

DEMANDER-BROKER INTERFACE
– Bundles and budgets
– End user preference and trade-off between mobility package attributes

BROKER-SUPPLIER INTERFACE
– Commercial interest in delivering mobility services
– Mobility contracts for supplier buy-in and investment
The Public Transport Research Team at ITLS

DAVID HENSHER
Professor of Management; Founding Director, ITLS

CORINNE MULLEY
Professor and Chair in Public Transport

CHINH HO
Postdoctoral Research Fellow

YALE WONG
Doctoral Candidate and Research Analyst
Publications of Interest


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Transport Contracts Reform Story

**The Early Years**


Deregulation inevitable

**Turn of the Century**


STO framework

Trusting partnerships

Regulatory cycles

Next generation deregulation

Competition tendering the 'benchmark'

Role for negotiated contracts

"Ideal contract", macro contract context, risks and rewards

SMART contract management and KPIs

Shared asset ownership

Future mode regulation

**Recent Developments**