Innovative concepts for mobility in London

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Multi-directional communication between users & suppliers

Ability to process big data

Real-time, integrated & customized information

Apps allowing for one-stop-shop for planning, booking, payment, billing

Changing travel habits and transport mix
Generation Y has been “bathed in bits and bytes” since birth.

Consistent downward trend in the percentage of young people owning a driving license.

Changing expectations toward individualization and sustainability...from ownership to usership.

digital
New mobility services in London

<table>
<thead>
<tr>
<th>Car clubs (car-sharing)</th>
<th>Ride-sharing (carpooling)</th>
<th>Ridehailing (P2P taxi)</th>
<th>P2P car rental</th>
<th>Bike-sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td>bluecity</td>
<td>GreenRide</td>
<td>minicab</td>
<td>easyCar club</td>
<td></td>
</tr>
<tr>
<td>DriveNow</td>
<td>BlaBlaCar</td>
<td>Uber</td>
<td>HyreCar</td>
<td></td>
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<tr>
<td>ecar</td>
<td>Liftshare</td>
<td>Ribbons</td>
<td></td>
<td>Santander</td>
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<tr>
<td>Enterprise car24</td>
<td>FAXI</td>
<td>Hertz 24/7</td>
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<td></td>
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<tr>
<td>co-wheels</td>
<td>Carpooling</td>
<td>CarP2P</td>
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<tr>
<td>UberEgg</td>
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<td>Hertz</td>
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<td>zipcar</td>
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</tbody>
</table>
## Journey Planners

<table>
<thead>
<tr>
<th>Name</th>
<th>Platform</th>
<th>Services</th>
<th>Modes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moovit</td>
<td>Computer + Mobile app</td>
<td>✓</td>
<td>public transport, rail, drive, cycle, walk</td>
</tr>
<tr>
<td>Journey Pro</td>
<td>Computer + Mobile app</td>
<td>✓</td>
<td>public transport, rail, drive, cycle, walk</td>
</tr>
<tr>
<td>Google maps</td>
<td>Computer + Mobile app</td>
<td>✓</td>
<td>public transport, rail, drive, cycle, walk + taxi³³</td>
</tr>
<tr>
<td>Citymapper</td>
<td>Computer + Mobile app</td>
<td>✓</td>
<td>public transport, rail, drive, cycle, walk + taxi³³ + bike sharing</td>
</tr>
<tr>
<td>Ally</td>
<td>Mobile app</td>
<td>✓</td>
<td>public transport, rail, drive, cycle, walk + taxi³³ + bike sharing + car club</td>
</tr>
</tbody>
</table>
What about infrastructure integration?
Integrated infrastructure

Central London: everything is there
Integrated infrastructure

Zone 2: almost everything is there
How do Londoners travel?
Input Data

London Travel Demand Survey (LTDS), 2005-2014

- 162,068 participants,
- 388,238 trips, and
- 805,865 stages
Stages per Trip

- 1 Stage: 48%
- 2 Stages: 19%
- 3 Stages: 23%
- 4 Stages: 3%
- 5 Stages: 5%
- More than 5 Stages: 2%

3.2 trips per day

48% of the trips consist of one stage

over 50% have more than one stage
Transport Mode

Car is the most popular mode

... Shift away from driving cars
Distance of Stages by Mode

- Car is the predominant mode for trips <1km mode
- North East & Central London: trips <2km
Intermodal Trips

- Taxi
- Rail
- UG, OG, DLR
- Bus
- Car Passenger
- Car Driver
- Cycle
- Walk

- Only one mode (including access and egress if walking)
- More than one mode

Rail & Tube => intermodal trips
What about new mobility services?

=> Official datasets do not offer information about new mobility services and mobility apps
State of the art data collection tools
London Mobility Survey (LMS)

• **Step 1:** Create your account at [https://london.fmsensing.com/general](https://london.fmsensing.com/general)

• **Step 2:** Answer the pre-questionnaire survey
  • Most of the questions have been taken from LTDS questionnaire
  • Extra questions have been added to customise it to the purpose of our study:
    – Car-Sharing
    – Parking
    – Journey planners

• **Step 3:** Download the FM Sensing app and start tracking your activities for one week

• **Step 4:** After a week of tracking and validating your activities, go to the post survey page to check your statistics and tell us your opinion about a new mobility service for London
London Mobility Survey

Data Selection
Wed, 21-09-2016

Map

18:01
24 h-4 min
Randolph Crescent, London W9 1DP, United Kingdom
Verified

18:06
6 min
Travel
Verified

18:12
17 min
17 Clifton Rd, London W9 1BY, UK
Verified

18:29
7 min
Travel
Verified

18:36
43 h-40 min
Randolph Crescent, London W9 1DP, United Kingdom
Verified

in 3 days**
Activity Diary - Verification

• Examples of trips verification (car, rail, tube)
**Activity Diary - Tracking**

- Open APIs have been linked in the back-end of the system to enhance predictions, reduce response burden, and record more information.

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- **Google Polyline Decoder**
  (determine trace segments leading up to each stop)

- **Google Places API**
  (transit stations locations)

- **TfL StopPoint API**
  (transit stations IDs needed for fare calculation)

- **TfL Fares API**
  (fares for tube and rail based on zone and time of the day)

- **TfL Capping Rates**
  (shapefiles for pricing zones)

- **Oyster Zones**
  (shapefiles for pricing zones)
Activity Diary: Tracking

- Information from Open APIs is linked to each trip

- Travel time & cost for alternative transport modes is automatically calculated
Example: Traffic Cameras Data

Potential for image processing
London Mobility Survey: Mobility Record

- Trip data & Pre-questionnaire are used to provide statistics to users
- Mobility Record (monthly)
- Users love to get feedback
London Mobility Study: Mobility Record

**Cost**
- £84.0

**Distance**
- 300.81 miles
- 52.17
- 26.79
- 124.33
- 97.53

**Time**
- 1d 13h
- 14h 32m
- 3h 25m
- 12h 10m
- 6h 54m

**Trips**
- 180
- 21
- 43
- 47
- 271 trips
Attitudes Towards Uber's Services

- I enjoy not having to hassle with payment
- I love seeing where the UBER vehicle is in real time
- I love how the driver automatically knows where I am
- The only reason I choose UBER is because it is cheaper than other taxis
- I trust the reliability of Uber
- I like to have a look at my trip history
- I like being able to send a text with a live map of my progress to my friends
- I enjoy using Spotify when I ride an UBER

7-point Likert scale: 1=Completely disagree, ..., 7=Completely agree
Car-owners attitudes

Car-owners seem to face several pain points while driving:

• 69% claimed that driving is a nightmare. This attitude remains fairly constant across all the residential zones.

• 51% stated that congestion is a problem when they drive. Those who live in zones 1-2 seem to face the biggest congestion problems as 74% of them agree with this statement.

• 40% declared that it takes them a lot of time to find a parking space when they use their vehicles.
Non-car-owners attitudes

“I believe there is no need to own a car in London”

“The number of cars is a big problem in London”
Non-car-owners attitudes

“I think people should buy fewer cars”
- Disagree: 70%
- Neutral: 14%
- Agree: 16%

“I will definitely buy a car in the future”
- Disagree: 42%
- Neutral: 16%
- Agree: 42%
Non-car-owners attitudes

- 87% believe that there is no need to own a car in London, regardless of their age or the zone they live in.
- 78% believe that the number of cars is a big problem for the UK capital.
- 72% believe that owning a car is a big hassle.
- 70% claimed that people should buy fewer cars.
- 42% of non-car-owners stated that they will definitely not buy a car in the future. Millennials are those who agree the most with this statement.
Attitudes towards shared mobility

"Car sharing schemes is a great way to have access to cars without owning one"

Car-Owners

63% Agree
24% Neutral
13% Disagree

"Overall, sharing cars makes sense"

Car-Owners

65% Agree
19% Neutral
16% Disagree

"Car sharing is a better way of using cars than everyone buying their own"

Car-Owners

58% Agree
24% Neutral
18% Disagree

Non-Car-Owners

77% Agree
13% Neutral
10% Disagree

Non-Car-Owners

45% Agree
35% Neutral
20% Disagree

Non-Car-Owners

69% Agree
17% Neutral
14% Disagree

Thredbo 2017, Stockholm
we need a ... quantum leap in technology, and a paradigm shift in thinking
Travelling ... not an easy issue
Rethinking mobility …

“Mobility as a Service”
MaaS Concept

Seamless mobility

Transport operators → MaaS Operator → Users

- Multimodal Journey Planner
- Real Time Information
- Booking
- Payment
- Getting on board / Ticket
- User Account

Information & Planning Integration

Payment & Ticketing Integration

• Pay-As-You-Go | Mobility Packages
Transport operators operate in silo. In some cases coordinations exist for PT modes at a city level.

Different:
- websites and mobile apps
- journey planners
- payment methods and tickets
- booking

Current Situation

The MaaS operator sells transport operators’ capacity. Better optimisation of supply and demand. User can plan journeys, purchase and access transport modes via a single interface.

Roaming across cities.

Urban Trips

MaaS model

Intercity Trips
• The MaaS model covers several concepts that have been extensively discussed in the transportation sector during last decades.
  ➢ These are the integration, interconnectivity and optimization of the transport services, smart and seamless mobility, and sustainability.

• The model also includes concepts that have recently emerged via the Internet of Things and the shared economy, such as the term “as a service” and personalisation.
Using MaaS-London
Maas-London ... rethinking mobility

Thank you!
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