

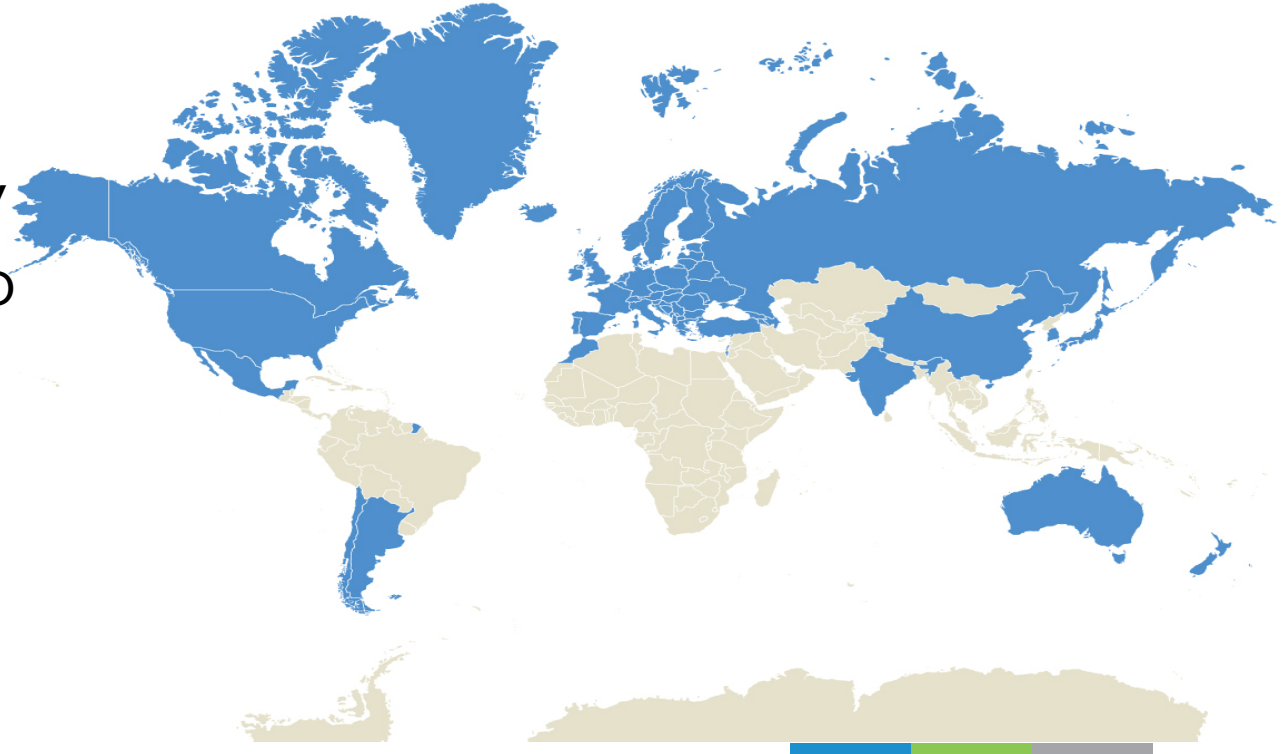
Shared Mobility solutions for a Liveable City

High Level Roundtable on Urban Mobility
Lisbon Council - Brussels, 23 May 2016

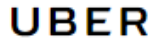
José Viegas, Secretary-General

Intergovernmental Organisation

- 57 member countries
(23 non-OECD)
- Politically autonomous,
administratively
integrated at the OECD
- Council of Ministers
of Transport, rotating
annual presidency
- Legal instruments:
European Multilateral
Quota System
(Road Freight)



- Established in 2013 as the ITF's platform to enrich policy analysis and discussions with a corporate perspective
- Current Members (20) →
- Set to grow to some 50 companies, from all modes of transport and associated sectors, with importance placed also on a balanced geographical representation



The big challenges: Emissions, Air Quality and Congestion

- Emissions (Carbon, pollutants) from urban transport still a significant part of the whole
 - In spite of progress towards cleaner vehicles
 - Considerable lifespan of vehicles limits emission reductions from new technologies
- Across the whole world, heavy congestion in urban areas
 - Building more infrastructure leading to self-saturation everywhere

An often forgotten objective: Equitable access

- The traditional transport planning approach has been excessively focussed on improving mobility, measuring progress through time savings
 - This is not the correct perspective
 - The real objective is providing ***good and equitable access of all citizens to jobs, public services and social interaction***
- Progress requires measures in the transport and in the land-use fronts

Sharing

The least used resources in urban mobility
(vehicles and in-vehicle space)



**Ride-sharing, demand responsive services
(Shared Taxis and TaxiBus)**

plus the Metro. No private cars or regular buses in the simulation

A horizontal bar at the bottom right of the slide, divided into three segments: blue, green, and grey.

Quality Requirements for Public Acceptance

- To get most current car trips into shared rides, quality level must be quite high. For ***shared taxis***:
 - Door-to-door service
 - Great convenience
 - Short waiting time
 - Travel time similar to that of driving your car
 - No concern with parking
 - Very easy transaction (smartphone based)
 - Good comfort on board
 - Price not higher than today



Quality of Service for Shared Taxis

- Max. acceptable delays variable with direct distance of trip
 - a) Waiting time from 5 minutes (≤ 3 km), up to 10 minutes (≥ 12 km)
 - b) Total “lost” time from 7 minutes (≤ 3 km), up to 15 minutes (≥ 12 km)
(wait + detour)
- Comfort
 - minivan currently seating 8 rearranged to seat only 6
 - easier and faster entry and exit

Demand responsive Taxibuses

- Fully demand-responsive (Buses to fit your individual requirements, not you to fit their routes and schedules)
- Good service, but not as high quality as shared taxis
 - Booking at least 30 min in advance (regular booking as norm)
 - Boarding and alighting up to 400 m away from door, at points designated in real time
 - Tolerance of 10 min from preferred boarding time
- All trips without transfer
- Minibuses with capacity 8 and 16



Some aggregate results

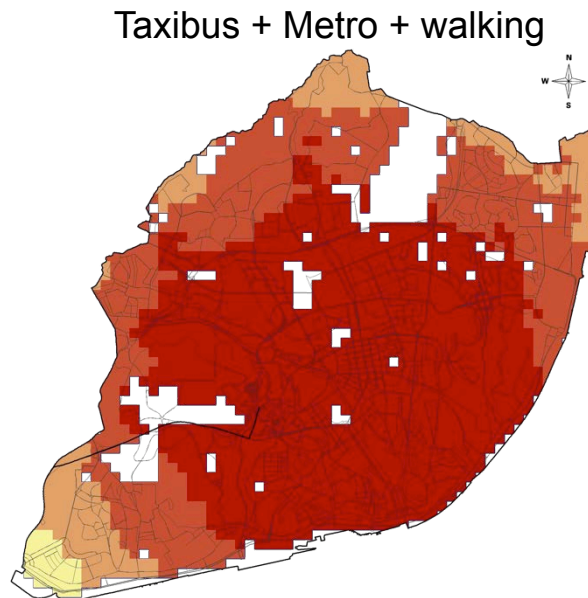
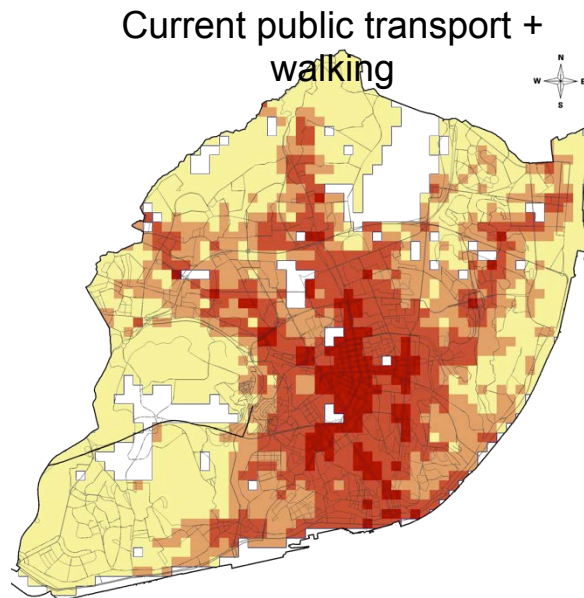
(based on very detailed, agent-based simulation for Lisbon. Basis at 2010):

Aggregate Indicators	3 modes (Shared Taxi, TaxiBus, Metro)	Comments
Avg. Pax on board (Sh.taxis)	2.0 (peak 2.6)	
Avg. Pax on board (Taxibus)	4.2 (c8) / 11.4 (c16) Peak: 5.0 (c8) / 14.6 (c16)	
Fleet size (Sh. taxis + buses)	2.8% (cars) Bus*: 568% veh. / 79 % (pl.)	Massive release of public space from parking (95%) Much fewer cars, but much higher distance per car (avg. 264 km/day)
VKM (weighted) all-day	77%	No Congestion !
VKM (weighted) peak-hour	63%	
CO2 emissions	66%	Best approach to short term reduction Mid-and long term even better due to much faster fleet turn-around

* - but these will be micro-buses with capacities 8 and 16, not standard urban buses, with capacity 80

Impacts on Accessibility - Jobs

- % of jobs accessed from each grid cell in 30 minutes (using PT)
- Much better and more equitable access: Using demand-responsive transport, distance matters but not the direction of travel



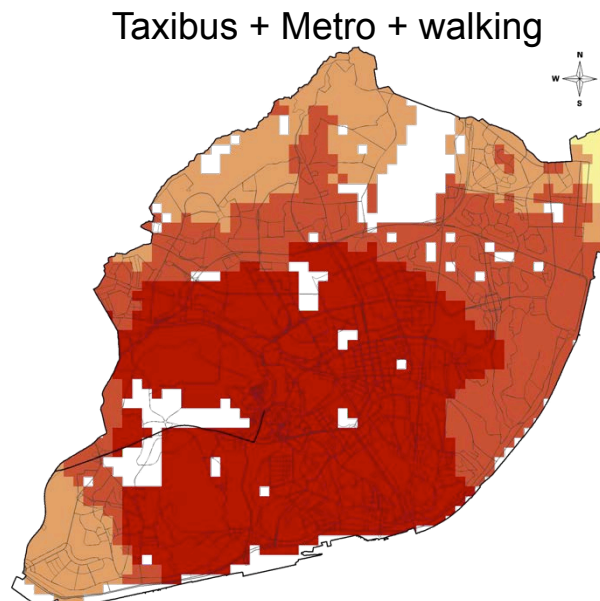
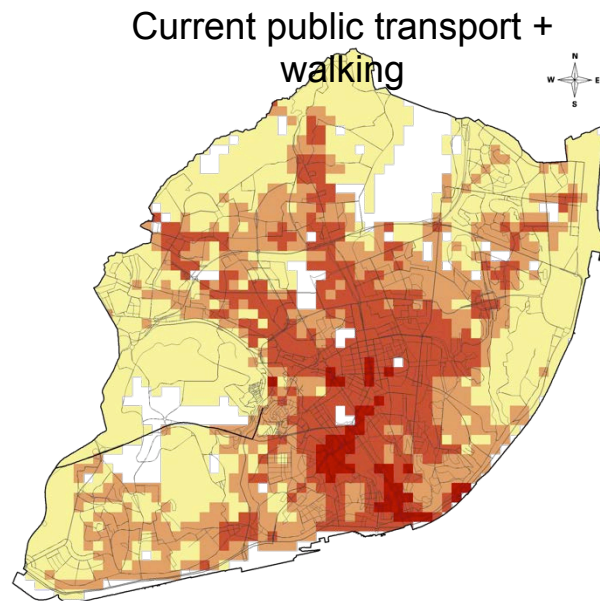
Inequity Indicator	Current PT + Walk	Taxibus + Metro + Walk
P90/P10	17.3	1.8
Gini coeff.	0.27	0.11

Classes of access by percentage of total jobs	
	0% to 25%
	25% to 50%
	50% to 75%
	75% to 100%

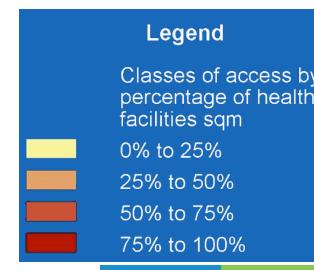
For each cell as origin, % of total jobs in the city accessed in 30 minutes

Impacts on Accessibility - Health

- % of health facilities (hospitals and health centres) in square metres accessed from each grid cell in 30 minutes (using PT)
- Dramatic reduction of inequity!



Inequity Indicator	Current PT + Walk	Taxibus + Metro + Walk
P90/P10	39.0	2.5
Gini coeff.	0.26	0.08

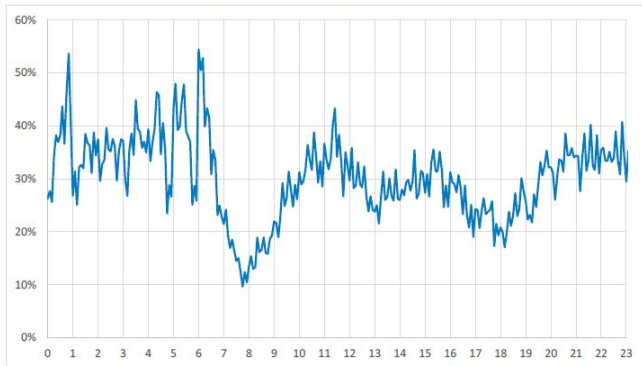


For each cell as origin, % of total capacity in the city accessed in 30 minutes

Some results on service and supply

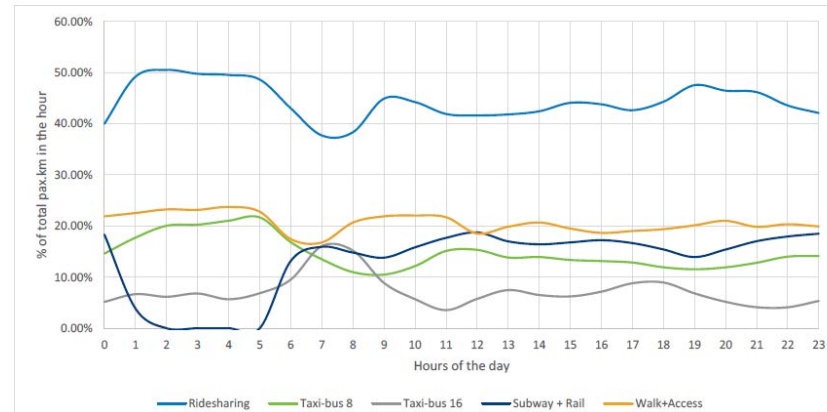
- Dominant mode across all day is the shared taxi,
 - market shares of 40%-50% (similar to private car today)
 - Avg. distance/day = 264 km

Figure 32. Share of Taxi-Bus demand upgraded



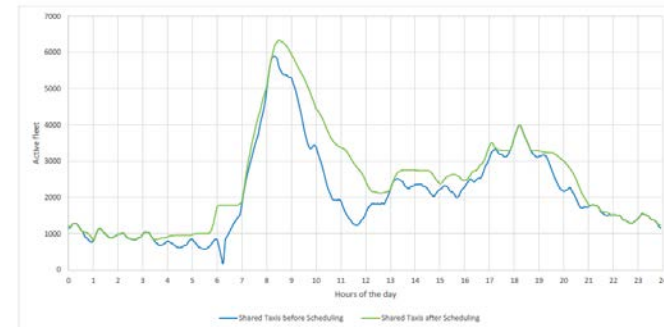
Some Taxibus trips (avg ~25%) are upgraded to Shared Taxi when this is found to be more efficient for the supply

Figure 31. Modal shared (pax.km/h) across the day



- Fitting 4- and 8-hour shifts to the pure need for shared taxi services increases their number by 15%

Figure 27. Active fleet of Shared Taxis (before and after scheduling)



Break-even Tariffs vs. current Taxi and Public Transport tariffs

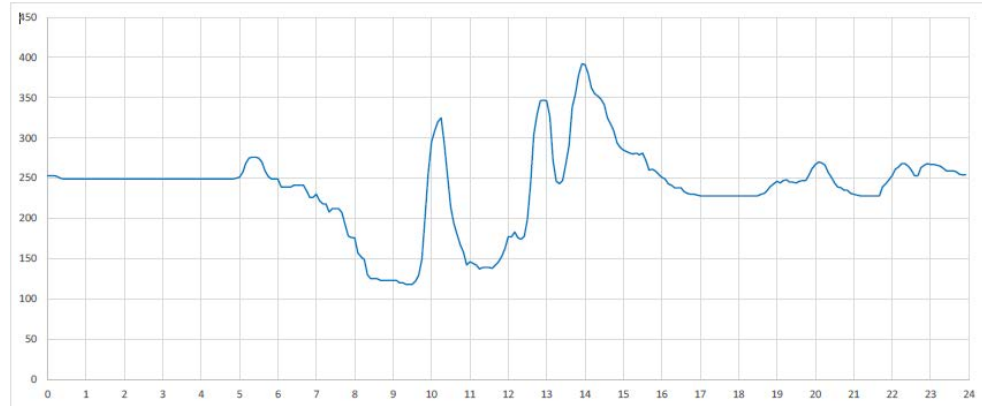
- With
 - professional drivers in 8- and 4-hour shifts,
 - uniform tariff/pax.km in each mode,
 - a margin of 25% above operational costs for other costs and profits,

Tariffs required for cost coverage would be :

- Shared taxi: 26% of current taxis
- Taxibus: 43% of current price using public transport monthly card
 - 28% of current cost of public transport, considering subsidies
 - 68% of the Shared Taxi price in this system
- Break-even distance vs. private car at 50 km/day for small car, 98 for mid-size car

Compatible with electric vehicles?

- Results based on current technology (Nissan commercial van, autonomy 170km)
- Shape of demand curve allows very efficient adoption of electric vehicles (even with current batteries and autonomy) : 30 min quick charge for 80% autonomy
- Optimization of quick recharge program (in the parking lots of shared taxis) allows full operability without any increase of fleet size
 - Very low investment risk on the recharging stations given guaranteed demand
- For shared taxis
 - Charging Points / fleet size = 7.7%
 - Charging point occupation between 29% and 66%, average 49.2%
 - No of charging points per park between 6 and 24, average 10



Possible transition scheme

- Retaining some private car trips reduces the overall efficiency but facilitates public acceptance and transition into a system mostly based on shared rides
 - Configurations tested for private cars accepted in city 1, 2 or 3 days per week (roughly 20%, 40%, 60% of trips)
 - Key indicators for configuration with 4 modes (Metro, Shared Taxi, Taxibus, Private car) for different percentages of current car trips kept in private cars

Aggregate Indicators	0% private cars	20% private cars	40% private cars	60% private cars
Active fleet size (Sh. Taxis + priv. cars)	2.8%	2.6% + (20%)	2.4% + (40%)	2.2% +(60%)
Prices rel. to current (Sh Taxi / Taxibus)	26% / 39%	28% / 41%	30% /42%	33% / 45%
VKM (weighted) peak-hour	63%	75%	87%	98%
CO2 emissions	66%	75%	86%	97%
% parking space released	97%	77%	58%	38%

Policy insights

- Solutions for the key challenges are within reach, with today's technology
 - Strong reduction of emissions and pollutants
 - No congestion
 - Much better and more equitable accessibility
 - Favourable introduction of e-mobility
 - High quality of service → good acceptance expectable in all segments
 - Lower or Zero subsidy for Public Transport
- Further reduction of VKM expectable from great improvement of walking and cycling conditions made possible from massive release of parking space
- Transferability tests to be launched in 5 cities:
 - Helsinki, Dublin, Toronto, Sydney, Auckland



Thank you

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