



A2EP – 2xEP Energy Productivity Summit
04-05 April, 2017
Australian National Maritime Museum
Darling Harbour, Sydney

Session 04
2xEP by 2030 by sector – Transport

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Andrew Somers > presentation follows

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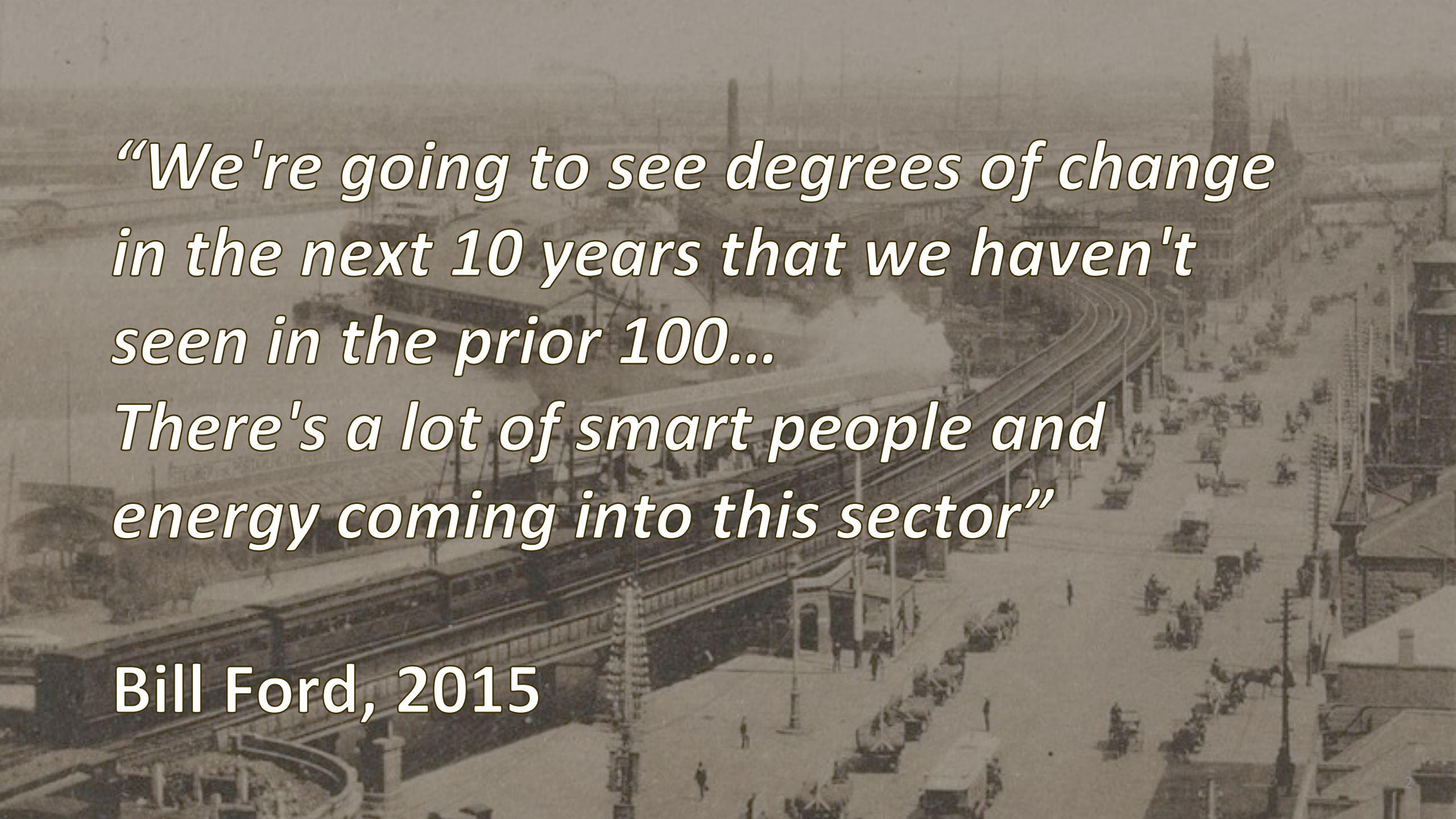
Doing more. Using less.

● *freedom of mobility*



2xEP Energy Productivity Summit
Andrew Somers, 4 April 2017





*“We're going to see degrees of change
in the next 10 years that we haven't
seen in the prior 100...*

*There's a lot of smart people and
energy coming into this sector”*



















Bill Ford, 2015

What is shaping the **future of mobility**?

automation



Levels of Automation (SAE)

	Control vehicle speed and direction	Monitor driving environment	Fallback relies on	When?
0 – no automation				Past
1 – driver assistance				Now
2 – partial automation				Now
3 – conditional automation				Soon
4 – high automation				Within / about a decade
5 – full automation (everywhere)				Some time away

What might automation mean?




- A step change reduction in crashes (<90%)
- Changed value of time – some potential to use travel time for other activities
- Enables changes in how people own and access transport
- Changed demand patterns change urban form of cities
 - Road space
 - Parking
 - Public spaces
- Major impacts on existing businesses and jobs

A red Chevrolet Spark electric car is shown from a front-three-quarter view, parked on a paved surface. The car is a compact hatchback with a modern design, featuring silver multi-spoke wheels and a black lower body trim. In the background, a city skyline is visible under a hazy, late-afternoon sky. A semi-transparent yellow rectangular overlay covers the upper right portion of the image, and the word "electrification" is written in white text across it. Three semi-transparent circular shapes in blue and yellow are also present, partially overlapping the car and the text area.

electrification



A woman with brown hair, wearing a brown coat with a fur collar, is smiling and looking down at a smartphone in her right hand. She is also holding a white coffee cup with a red lid in her left hand. The background is a blurred crowd of people, suggesting a busy outdoor setting. A semi-transparent yellow rectangle is overlaid on the left side of the image, containing the text "beyond ownership".

beyond
ownership

Owning an expensive, depreciating asset



- ① Most of the cost of owning a car is **hidden** - few of us know what it is
- ① **8 in 10 Australians believe** their car to cost them **\$5,000 or less** each year¹
- ① The **average** annual cost of running a car is **around \$12,000** each year¹
 - Ownership: finance cost, depreciation, registration, insurance, maintenance*
 - Usage: fuel, parking, tolls, tyres*
- ① ...but only 4% of Australians perceive the annual cost to be more than \$10,000¹
- ① The average car is parked for around 96% of the time²

(1) RAC WA 2013 vehicle operating costs survey

(2) RAC Foundation, 2012, Keeping the Nation Moving, Facts on Parking

automation


electrification

beyond
ownership

connectivity

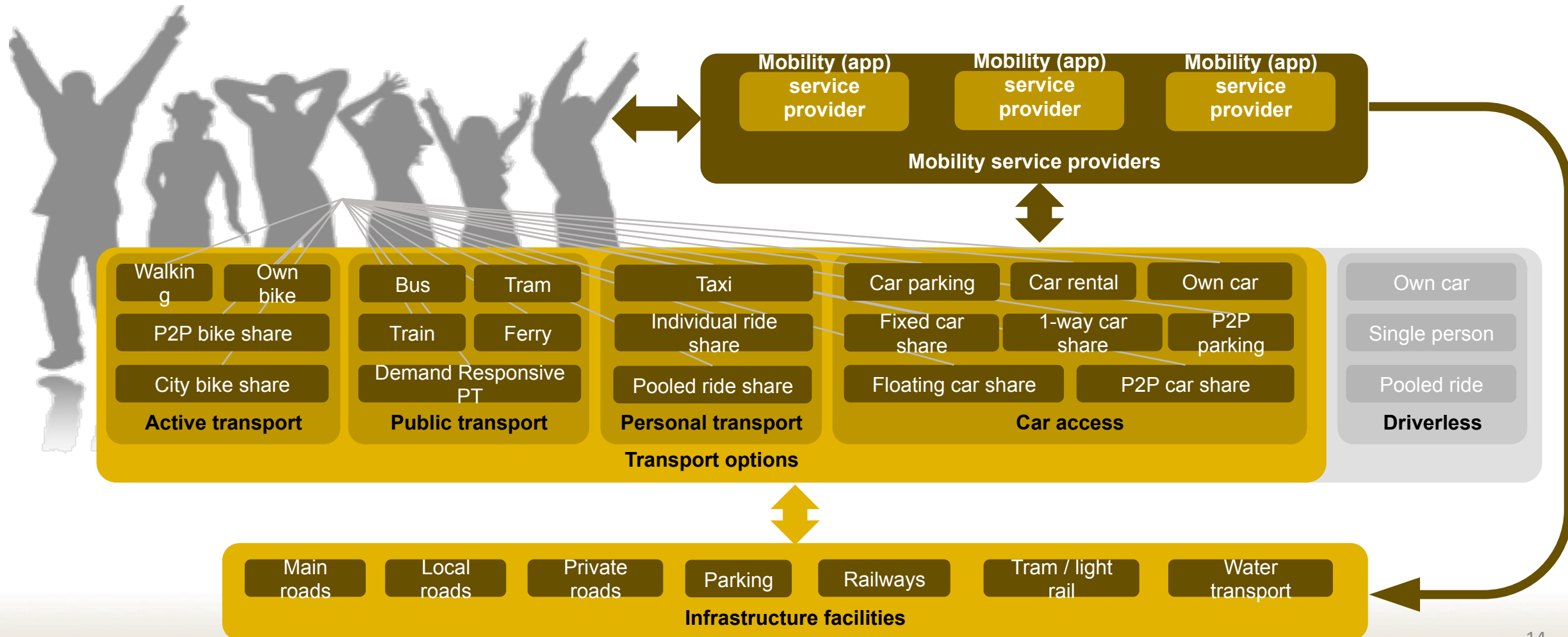
An elderly couple is standing in front of a rustic stone wall. The man, on the left, is balding with a mustache, wearing an orange t-shirt and khaki cargo shorts. He has a backpack and is holding a white smartphone. The woman, on the right, has short blonde hair and is wearing a denim vest over a blue shirt and denim capris. She has a colorful striped bag slung over her shoulder. They are both smiling and looking at the phone together. The text "mobility as a service" is overlaid in the center in a white, sans-serif font with a black outline.

mobility as a service

A person in a black wetsuit is walking on a sandy beach, carrying a red surfboard with white stripes. In the background, there is a large body of water with waves, and a city skyline with several tall buildings is visible on the horizon under a clear sky. The text is overlaid on the right side of the image.

imagine if getting there was
so seamless that life could truly
be
all about the destination

Access without ownership makes full use of the mobility ecosystem



Pay monthly, get there seamlessly



Access Package

- Unlimited public transport
- 8 hours / month of bike share
- 50km / month of taxi + ride share
- 4 hours of car share
- Grocery delivery

Flexibility Package

- Unlimited public transport
- Unlimited bike share
- 200km / month of taxi + ride share
- 12 hours of car share
- One weekend car rental
- Grocery & food delivery

Unlimited Package

- Unlimited public transport
- Unlimited bike share
- Unlimited taxi + ride share
- Unlimited car rental
- Unlimited car share
- Grocery, food & shopping delivery

automation

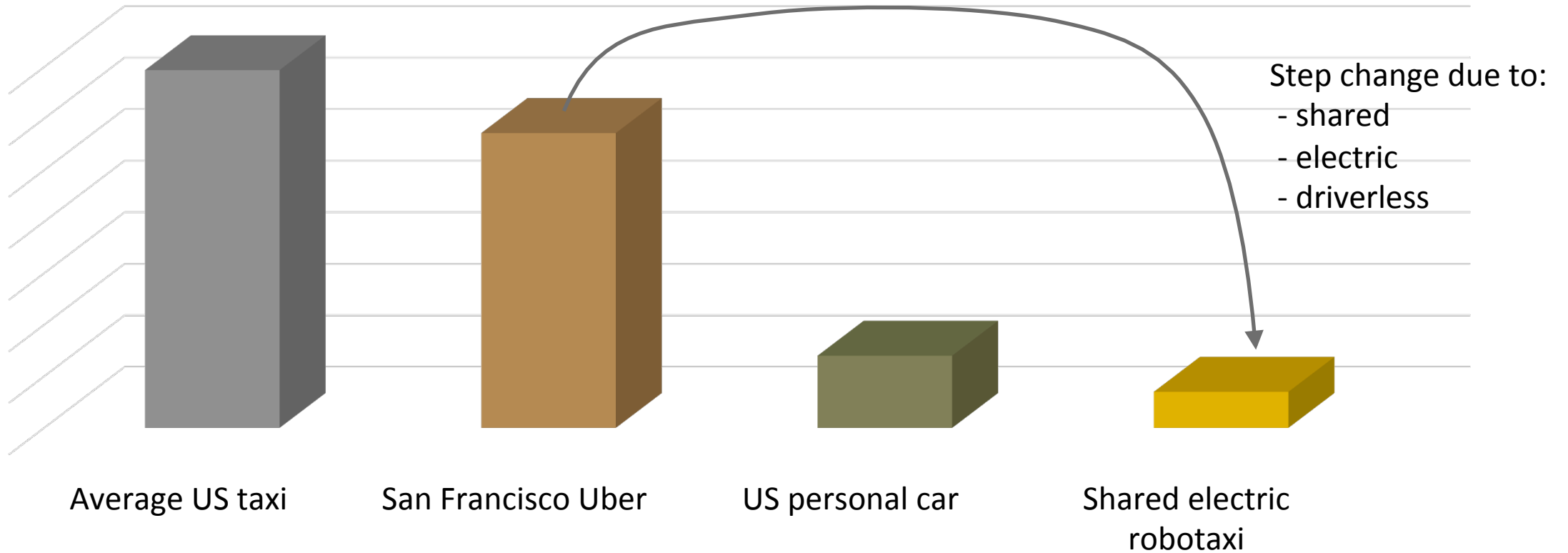
electrification

beyond
ownership

connectivity

The combination can be transformative

US estimates of cost per mile



Disruption can happen very quickly

Easter morning 1900: 5th Ave, New York City. Spot the automobile.



Source: US National Archives.

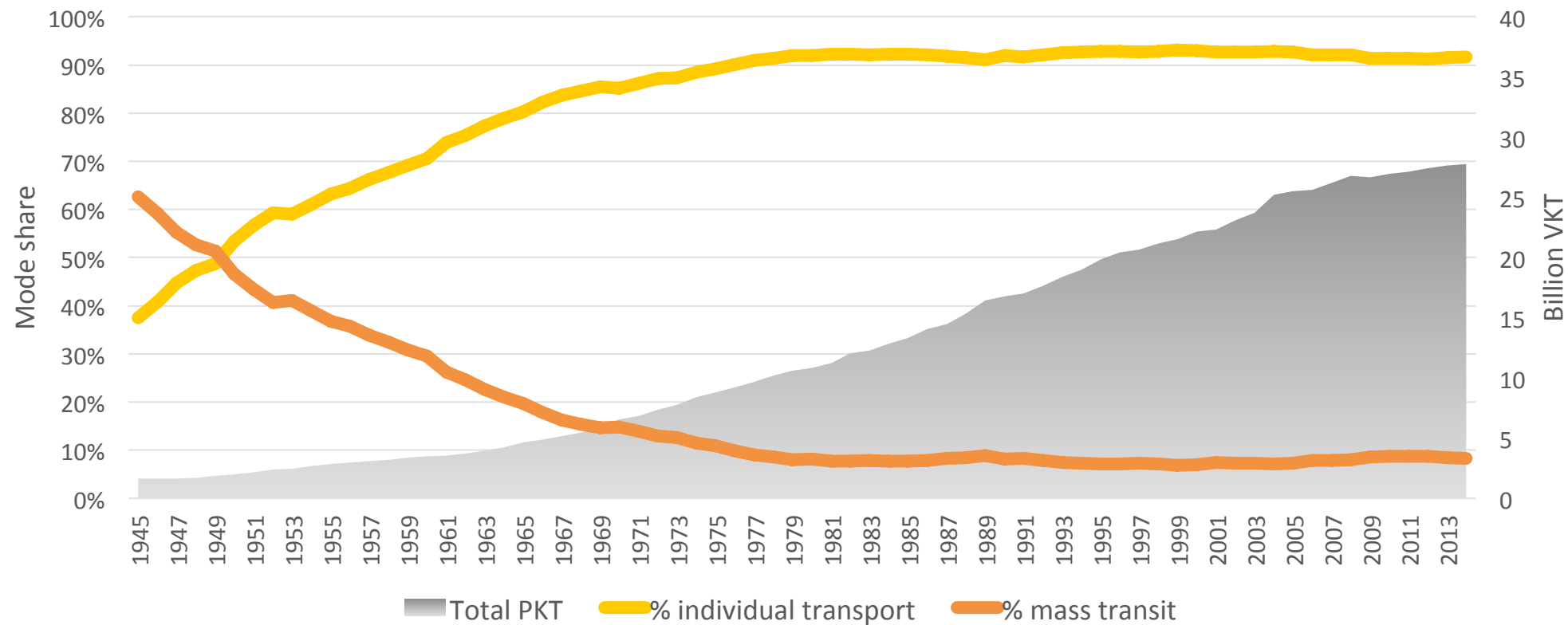
Easter morning 1913: 5th Ave, New York City. Spot the horse.



Source: George Grantham Bain Collection.

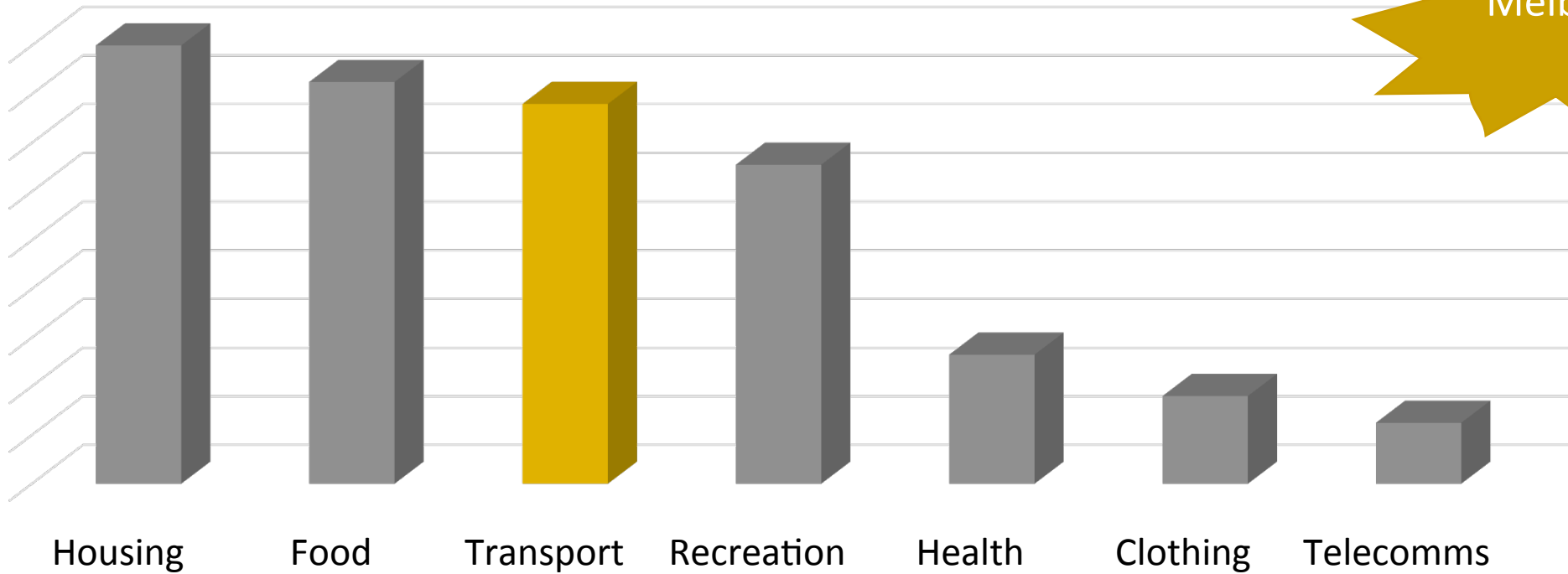
...but the normal rate of change in transport is much slower

Brisbane share since 1945 (BITRE)



There is a strong commercial imperative to make the disruption happen

Australian household expenditure



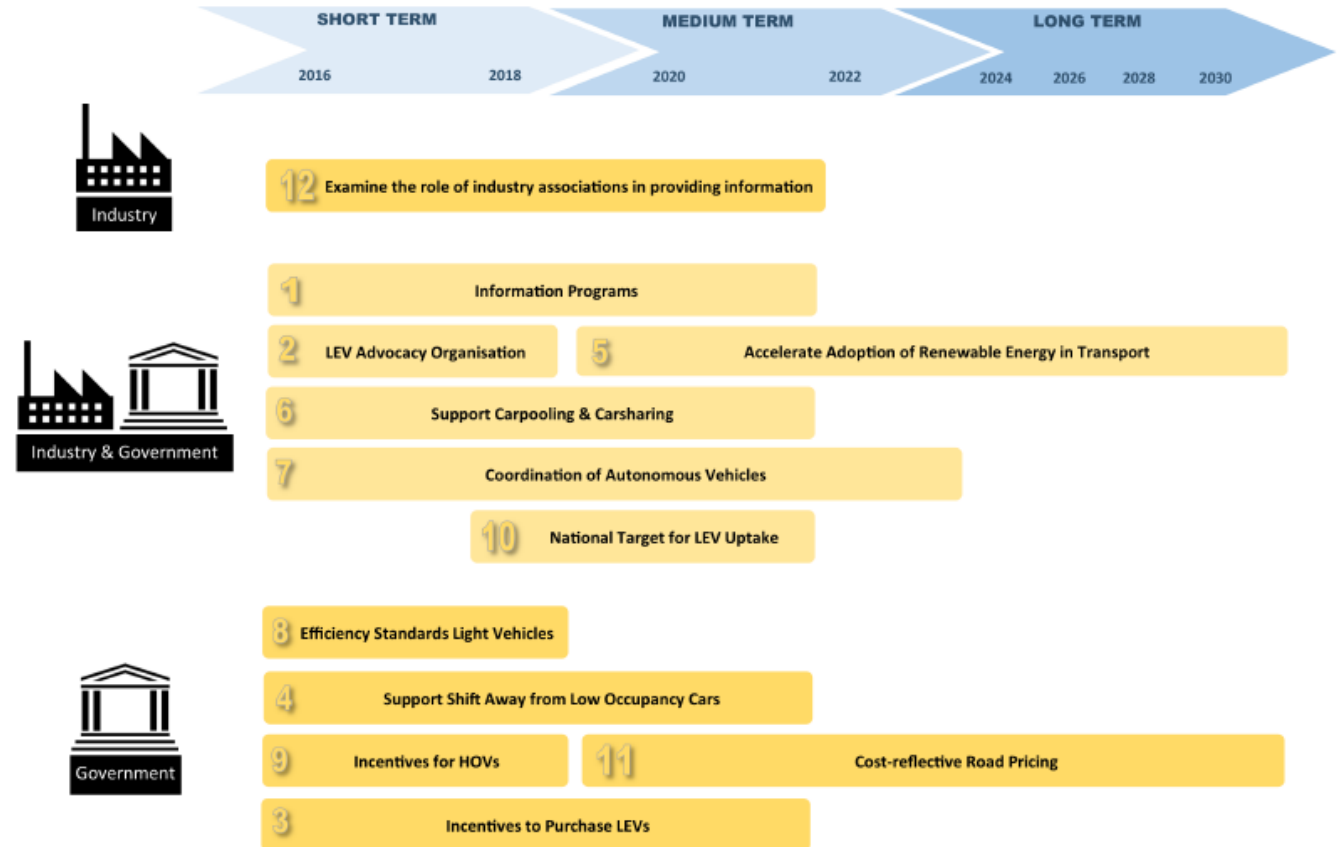
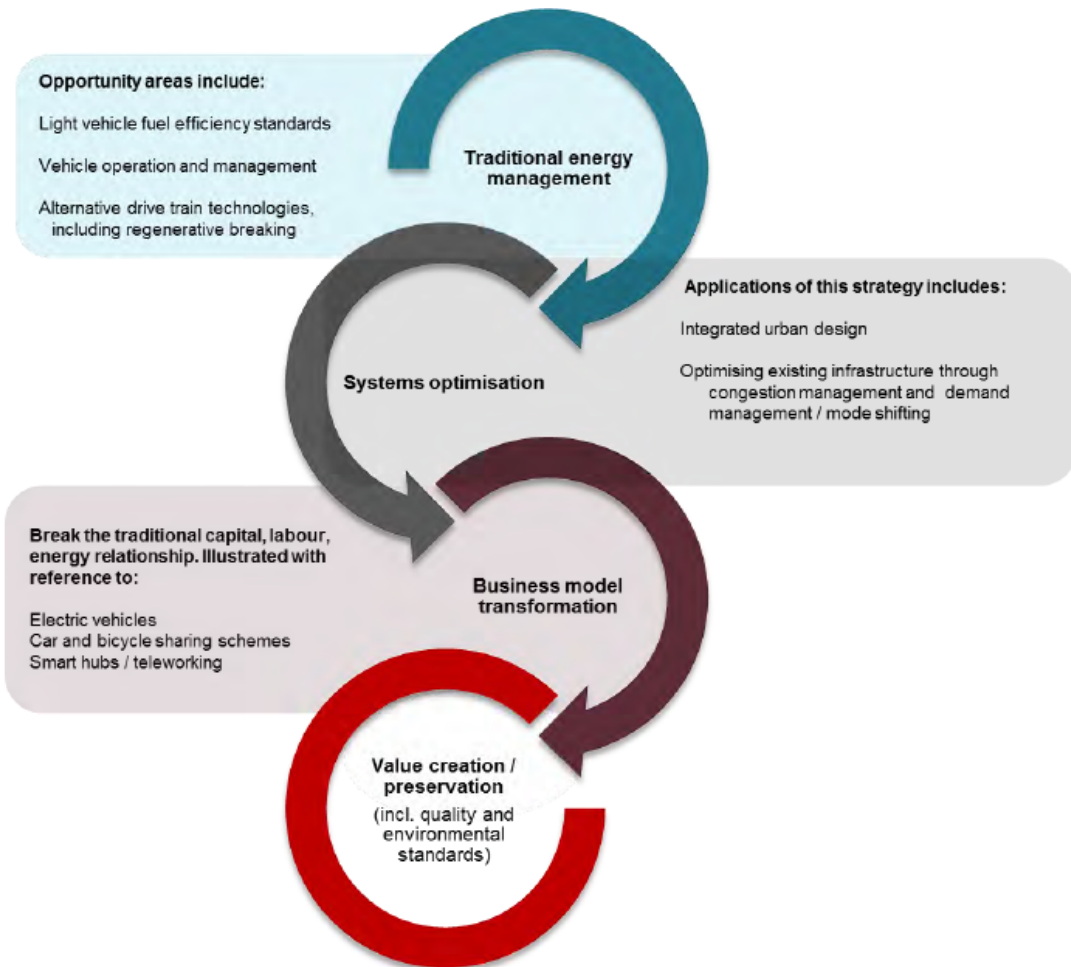
Sydney \$21,906 pa
Melbourne \$18,306 pa

● *freedom of mobility*



What does this mean for energy productivity?

Success needs a combination of many things



Energy productivity impacts of new mobility

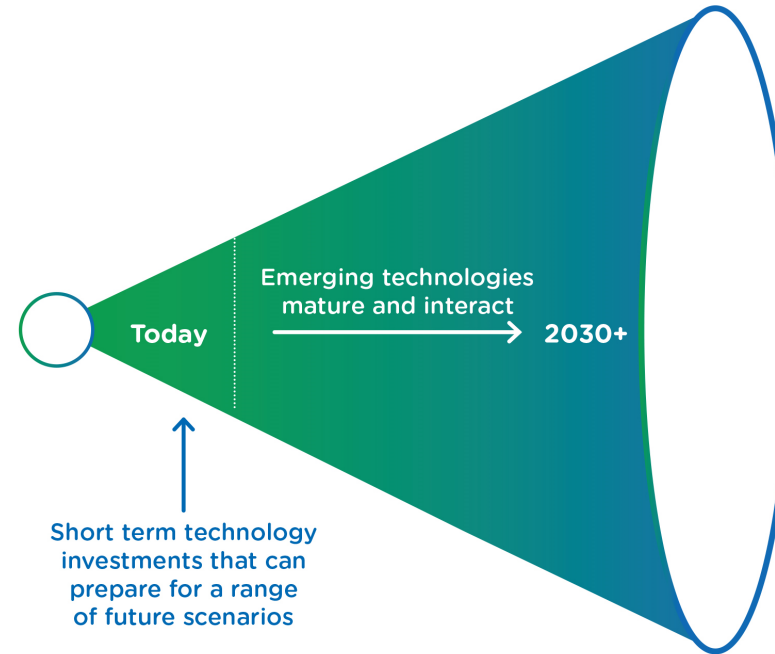


- ✓ Automated driving can be tuned to use less fuel/energy efficiency per km
- ✗ Changed value of time may mean more km travelled
- ✓ Sharing and public transport would mean less vehicle km per passenger km
- ✗ Automated driving introduces private car empty vehicle km travelled
- ✓ Better management systems might help reduce congestion per km travelled
- ✗ More overall demand may outweigh the efficiency improvement

Understanding an uncertain future

Four possible scenarios for the future of transport

future
transport



My (autonomous) car is (still) king

Individual point-to-point trips in personally owned units

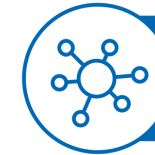
Customers have access to more personal point to point transport options using connected and automated vehicles that are increasingly customised to their needs (e.g. cars, pods)



We're all in this together

Aggregated demand, shared-use and network optimisation

Customers access a broad range of automated (shared and personal) on-demand and mass transport modes with dynamic demand management and integrated payments



Super-commuting with public, active and shared transport

A lifestyle based on mass transit, flexible and active transport

Customers use an extended public transport, active and flexible shared-service network. Autonomous vehicles are for specific high-productivity uses only



Why travel so much?

Technology reduces demand for mobility

Customers choose where they wish to work, shop, learn, socialise and be entertained. Technology enables travel to be minimised as services are 'delivered' in or near the home

Conclusions



- Disruption is coming to transport
 - Disruptive technologies enabling new business models
- The range of potential impacts is huge – from better overall to worse overall
- Actions today will make a difference as to whether your city is vibrant, liveable and productive tomorrow
 - We believe that vibrant Mobility as a Service and vibrant cities go together
 - We encourage you to come and talk to us about how to make that happen