THE FUTURE OF MOBILITY: A MARKET IN TRANSITION

E.N.G.s MOVE 2017, Berlin October 10th and 11th

Fraunhofer IML, Isabella Geis, Project Manager

Fraunhofer-Gesellschaft, the largest organization for applied research in Europe

- 67 institutes and independent research units
- More than 24,000 staff
- €2.1 billion annual research budget totaling
  - ~2/3 of this sum is generated through contract research on behalf of industry and publicly funded research projects
  - ~1/3 is contributed by the German state and federal state governments in the form of base funding
- International cooperation

- Institute / independent location
- Other location
- Headquarter

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The Center for Logistics and Mobility in Frankfurt in the House of Logistics and Mobility (HOLM)

Since 2015 the Fraunhofer Institute for Material Flow and Logistics is represented by the Center of Logistics and Mobility are active in following research fields:

- Supply Chain Management
- Aviation Logistics
- Mobility

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Drivers for changing markets

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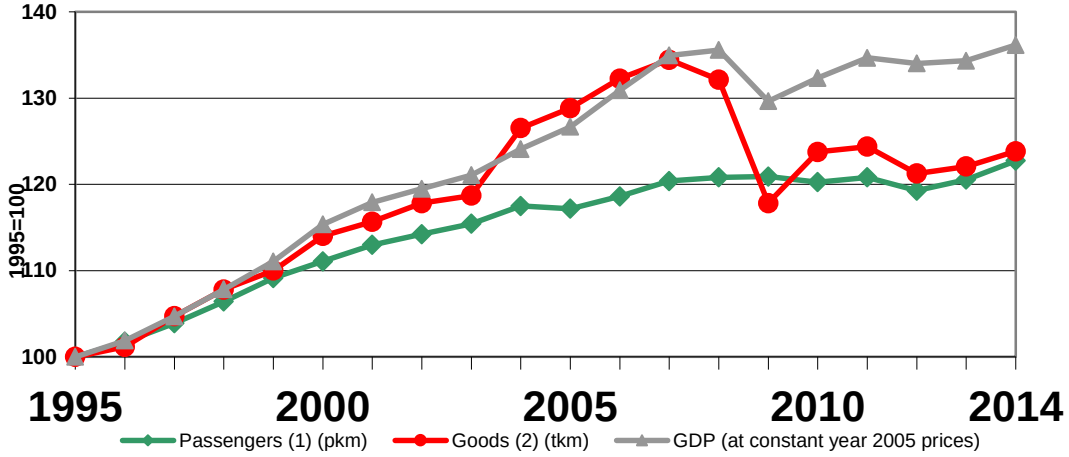
Transport today and tomorrow



Source: [European Union 2016]

- Transport in the EU
  - Directly employs 10.5 million people[1]
  - Accounts for 4.5% of the total employment[2]
  - Represents 4.6% of the GDP[2]
  - Contributes with around 36% to the total CO_2-emissions[1]

- In the EU
  - the car is the most important mode with 72.3% of the modal split[1]
  - Mobility consists of 6,592 billion pkm[1]
  - Road transport causes 25,974 fatalities per year[1]
  - The average duration of Europe's worst traffic jam hotspots is 97 minutes[3]

Source: [1][European Union 2016]; [2][European Union 2013]; [3][INRIX2016]

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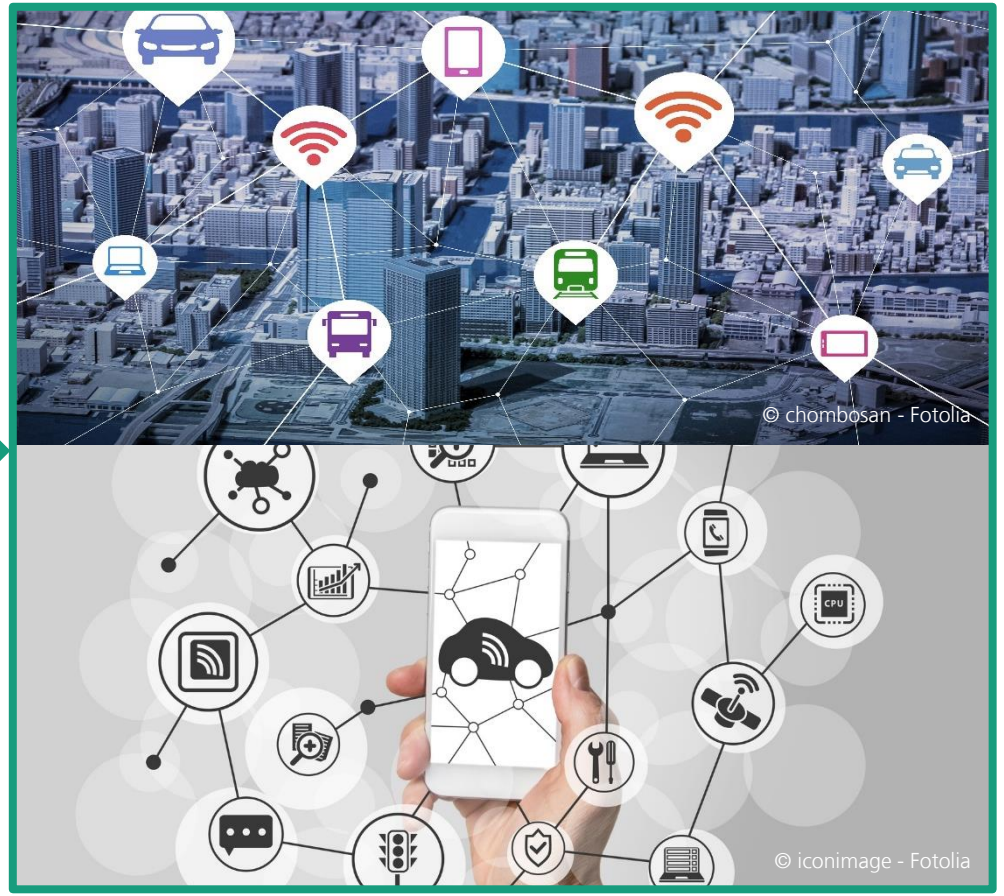
A changing market in quantity or quality?

- Expected growth of passenger transport volume: 10% (2025)[1]
- Economic costs of congestion and traffic jams by 2025: 199 billion Euros [2]
- 58.2 % of the world´s population will be living in urban areas by 2025 [3]
- 150 million vehicles will be connected to internet by 2020 [4]
- 95 million self-driving cars are expected to be sold by 2035[5]

SUPPLY SIDE



DEMAND SIDE

Source: [1][European Commission 2016]; [2][INRIX 2016]; [3][United Nations 2014]; [4][IHS 2013]; [5][Navigant Research 2014]

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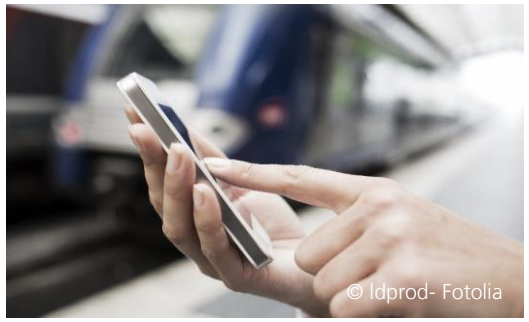
The influence of technology

60 mio. € AR-market[1]



65% smartphone user[4]

48 mio. vehicles connected to the internet[2]

90 % use smartphones for information and ticket services[6]

85% have access to internet[5]

Economic value of data 300 billion €[3]

56% use a mobile phone to access the internet[5]

Source: [1][Deutsche Bank Research 2015]; [2][Oliver Wyman/Statista 2017]; [3][European Commission 2017]; [4][eMarketer2014/Statista 2017]; [5][Eurostat 2017]; [6][SPLENDID RESEARCH/Statista 2017]

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Technology meets behaviour meets situation – insights from research

Using smart devices for real-time information

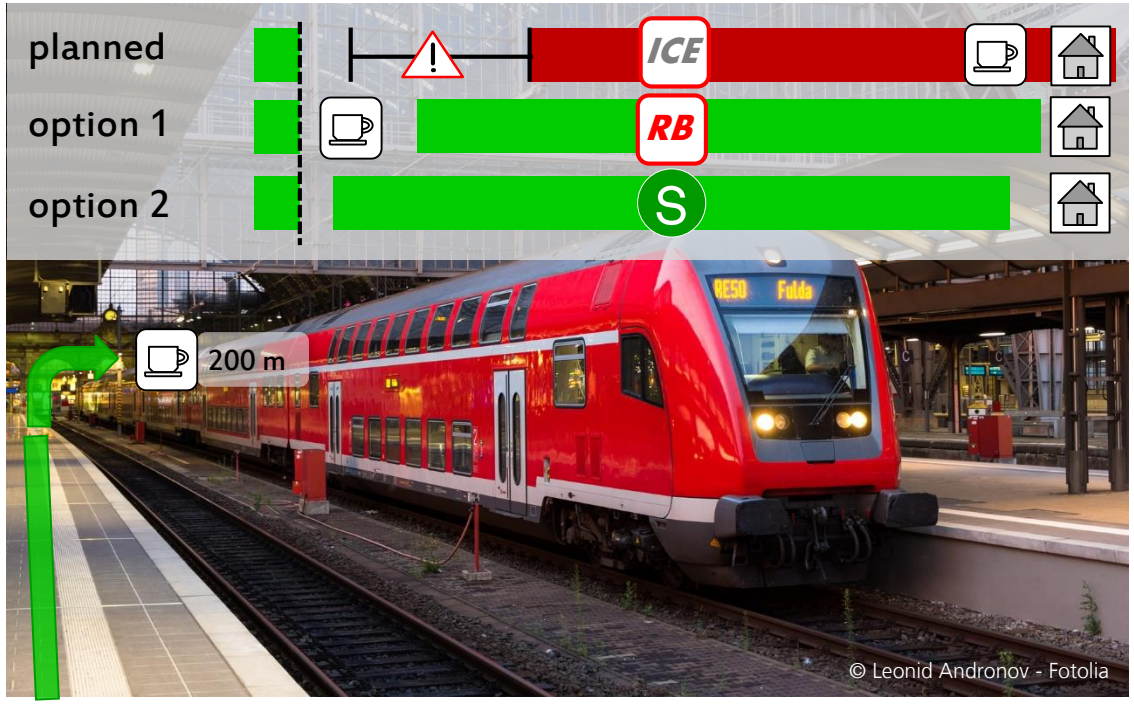
➔ adaptive and user-centered

Example Augmented Reality for traveller navigation:

- Delay in planned trip occures
- Mobility agent automately suggests alternatives:

Option 1: according to the user habits: with coffee break

Option 2: earlier arrival time without a break



Source: http://www.radarplus.de/

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Changing travellers

- In Germany, France and Great Britian there was a decrease of driving licence ownership of 3.5 % on average between 1996 and 2008[1]
- The world´s sharing economy is estimated to grow from 11.9 billion Euros in 2014 to 283.8 billion Euros by 2025[2]
- Europeans are using internet 27.1 hours per month, 71% are using internet every day[3]
- 440.8 million people worldwide use online booking for travelling[5]

Determinants of modal choice[4]

- Price
- Reliability
- Availability
- Safety
- Journey duration
- Comfort
- Freedom to move around
- Flexibility
- Opportunities for taking luggage

Source: [1][ifmo 2011]; [2][Brookings Institution India Center 2017]; [3][comScore/ Statista 2017]&[Eurostat 2017]; [4][AWT 2014]; [5][Statista 2016]

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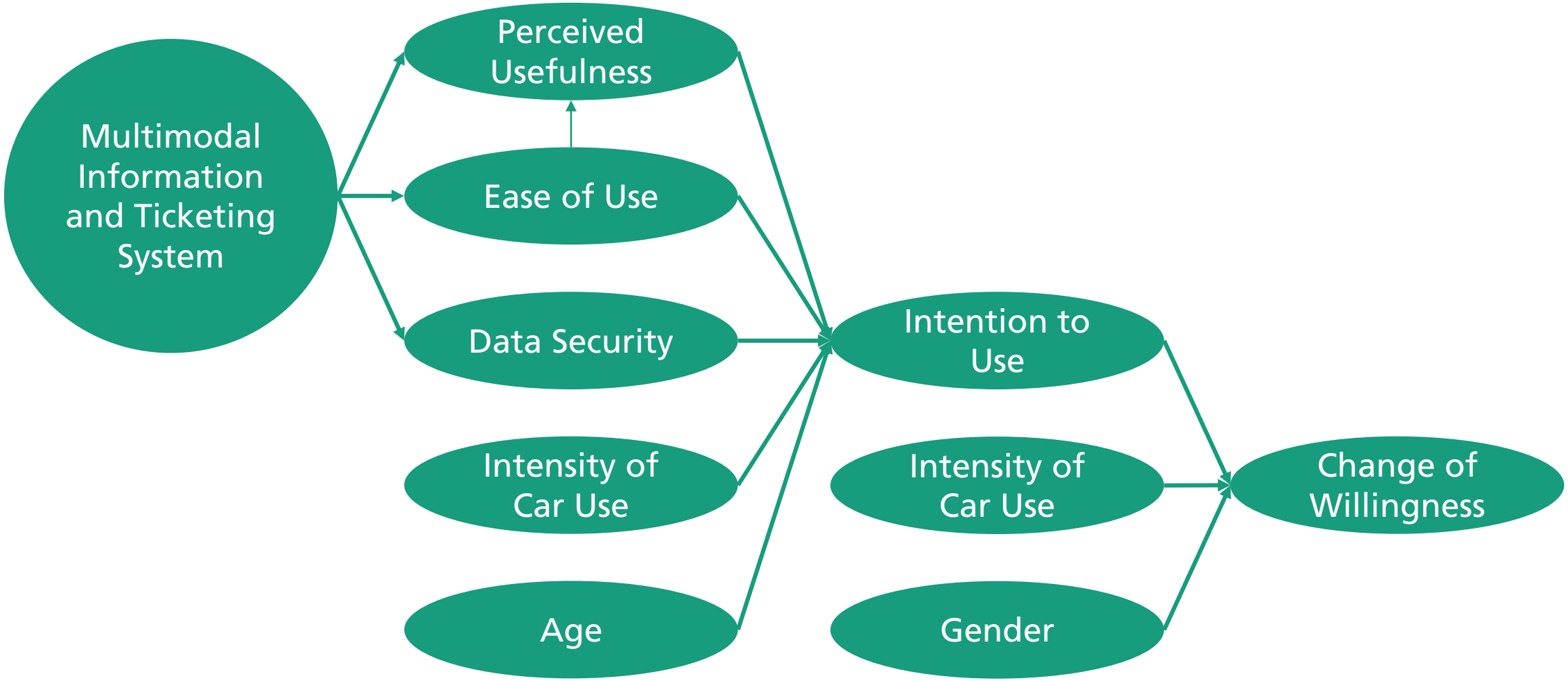
Can technology change behaviour? Empirical evidence



Source: [Geis & Schulz 2016]

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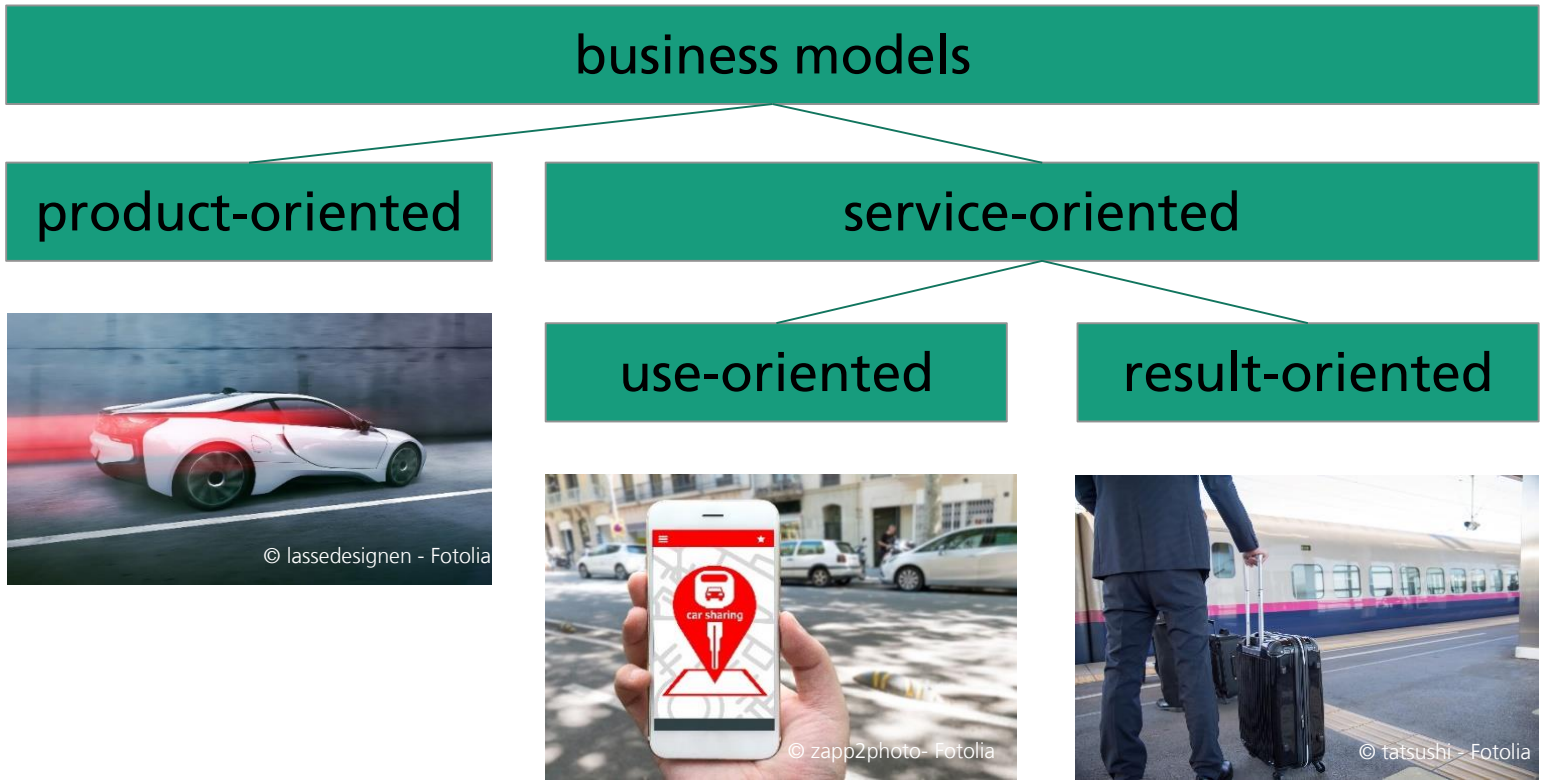
New players and business models – a new mobility ecosystem



⇨ Data as the core of technological and business model innovation

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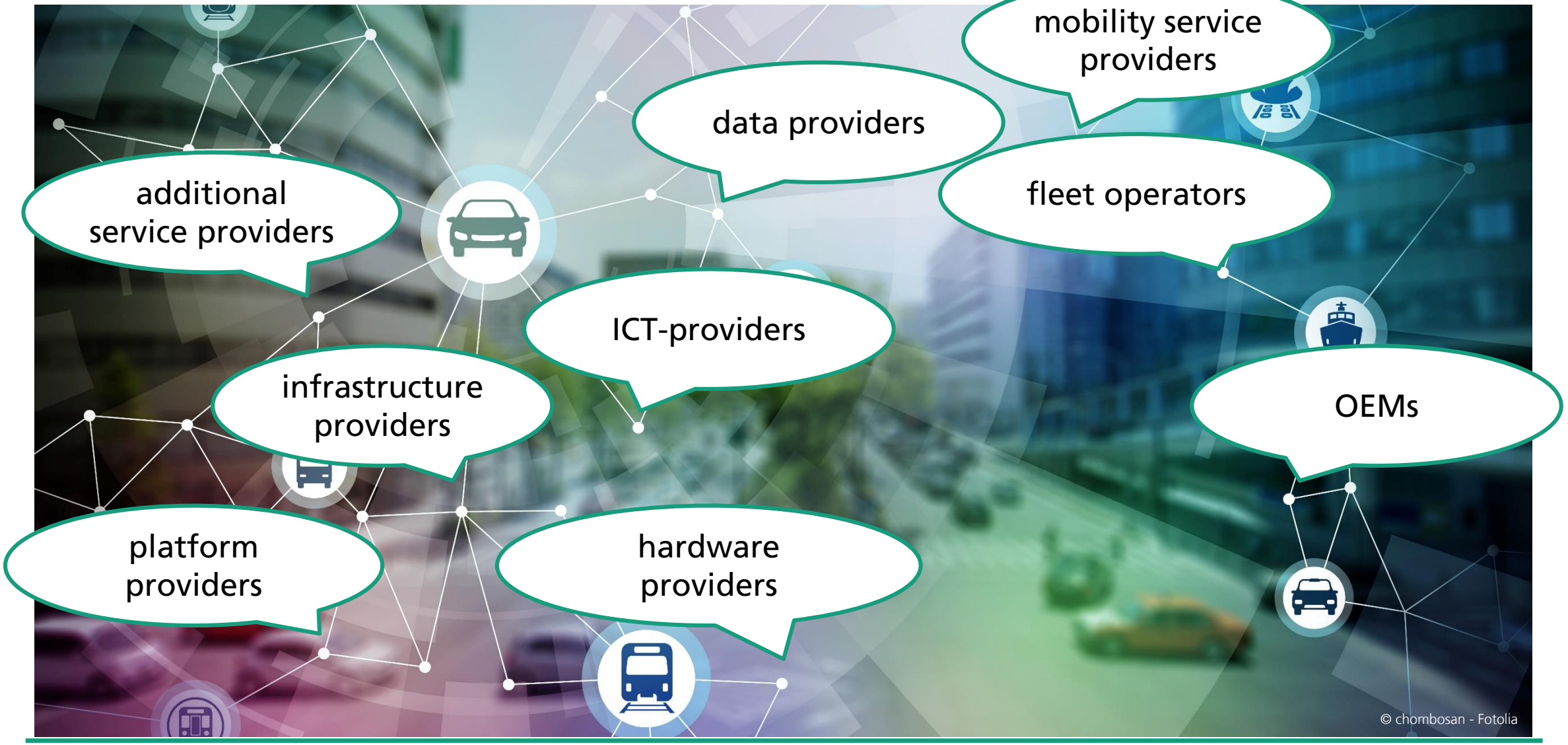
Roles in a new value chain



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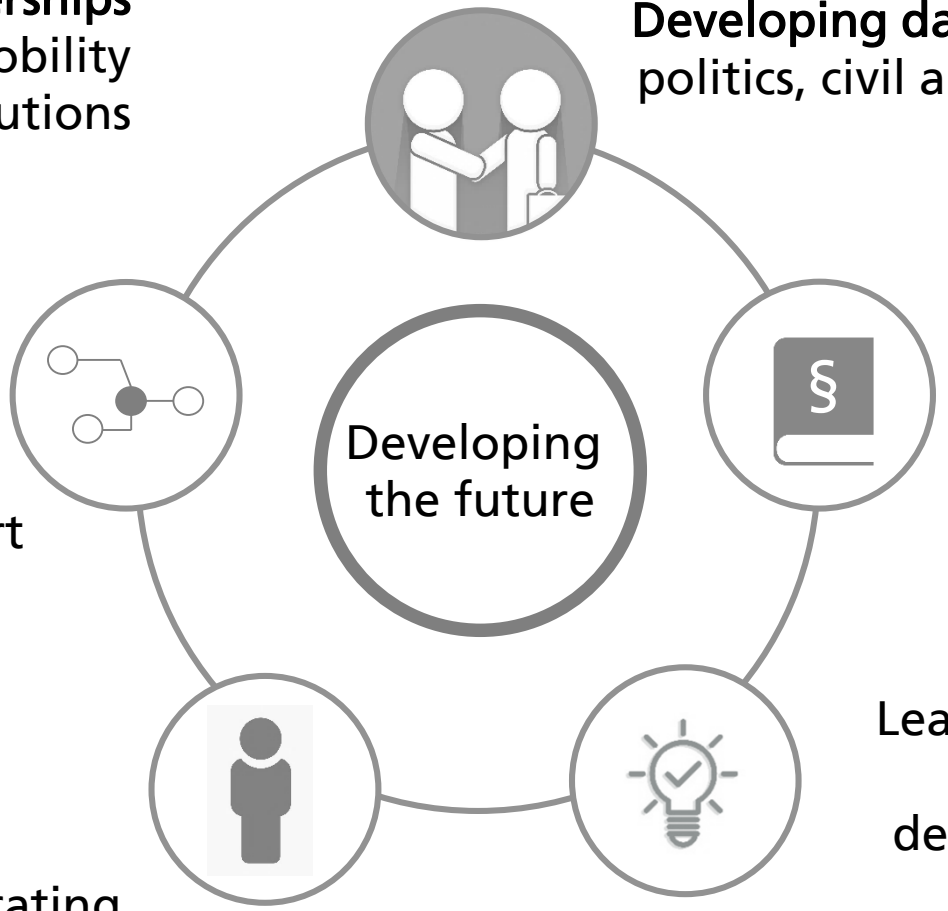
Recommendations and challenges for market actors

Forming **new partnerships** that allow reliable mobility and innovative solutions

Developing data cooperations between politics, civil authorities and industry to foster smart



Developing intelligent infrastructure
for efficient and safe transport

Creating a **legal framework for mobility as a service** that covers all modes

User-centered mobility:
Understanding and integrating different the traveler needs

Leaving behind the competition between the modes and developing business models for **mobility provision instead of unimodal products**

Source:

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THANK YOU FOR YOUR ATTENTION.

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