



White Paper

## Shared Mobility – Part 2 (of 2): The Future of Shared Mobility

Status Quo and Long-term Perspectives of Shared Mobility Business Models

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## Pre-amble

In the first part of our white paper on shared mobility we focused on car-sharing as one of the leading shared mobility business models. Main findings were:

- » There are four different car-sharing business models, mainly driven by free-floating vs. station-based usage models
- » Free-floating as well as station-based car-sharing vary significantly in their usage patterns but are both on the edge of reaching profitability
- » Electric vehicles can be beneficial for car-sharing profits; however, this will not happen before 2021 on a broad scale (at least in Europe and North America)
- » The global car-sharing market will grow up to 725,000 vehicles in 2025; however, taking into account an estimated 100 million vehicles sold worldwide in 2025, it will remain a niche market and thus not be the main driver for shared mobility

If car-sharing will not be the dominant shared mobility model, what else will it be?

This question is the starting point for this second part of our white paper on shared mobility. In several consulting projects we have investigated the different shared mobility business models, the changes they are undergoing and have developed a long-term vision what shared mobility business models we will see in the future.

Based on these findings clear consequences for shared mobility companies, automotive OEMs as well as automotive suppliers can be derived.

In particular, we will discuss the following topics in part 2 of shared mobility:

- » Today's four dominant shared mobility business models
- » Anticipated changes in business models due to autonomous vehicles to come
- » Two strategy case studies of leading players
- » Long-term impact of shared mobility on the installed base of passenger cars
- » Consequences for market players

We hope that you will find the insights and future hypotheses helpful in your daily work and wish you enjoyable reading.



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## 1. Today's Dominant Business Models in Shared Mobility

Car-sharing is only one of four business models currently pursued in the shared mobility space

The scope of alternatives for car ownership and usage is diverse and leaves plenty of room for innovation. Therefore, it is not surprising that car-sharing is only a prominent segment out of the total market for shared mobility. Besides car-sharing, three other car-centred shared mobility services have established, namely peer-to-peer car-sharing, ride-sharing / ride-hailing as well as taxi and limousine fleets (see Exhibit 1).

On a basic level, shared mobility services can be distinguished between asset-light and asset-heavy business models. Providers of asset-light business models (e.g. Uber or Turo) act as brokers, connecting drivers to passengers respectively passengers to cars, but do not own a physical vehicle fleet. On the other hand, providers of asset-heavy business models (e.g. Car2go or taxi services) are responsible for a physical vehicle fleet and corresponding rental stations. Practice has shown that providers of the first business model were able to scale up more quickly on a global level compared to the latter.

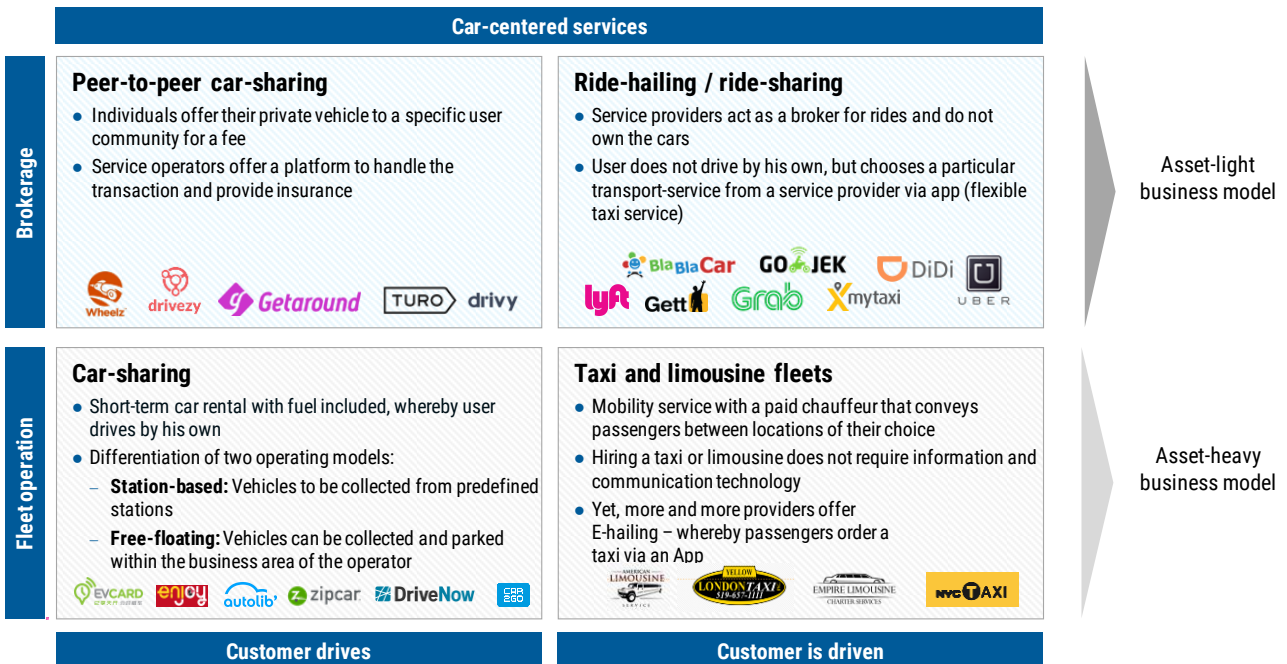


Exhibit 1: Today's models of car-centered shared mobility services; Source: Strategy Engineers

## 2. Anticipated Changes in Future Shared Mobility Business Models

Shared mobility providers show first tendencies to enter a new hybrid business model of fleet operation and brokerage

Taken the assumption that it is no longer a question of if but when AVs will hit the road, today's shared mobility providers are already starting to adapt their current business model towards more hybrid forms of fleet operation and brokerage (see Exhibit 2).

For the future of shared mobility, we see especially three new mobility concepts to become apparent, which will be further emphasized by the entrance of AVs:

- » **Brokers without fleet** – providing an online platform to match mobility supply and demand
- » **Hybrids: Brokers with fleet** – providing an online platform as well as operating a physical vehicle fleet to connect mobility supply and demand under one roof
- » **Fleet operators** – operating a physical vehicle fleet

With AVs to hit the road, no more driver will be needed, erasing the distinction between sharing a car and sharing a ride. Hence, we expect future car-sharing providers to either focus on the operation of an autonomous fleet or to position themselves as autonomous fleet operator with additional broking service.

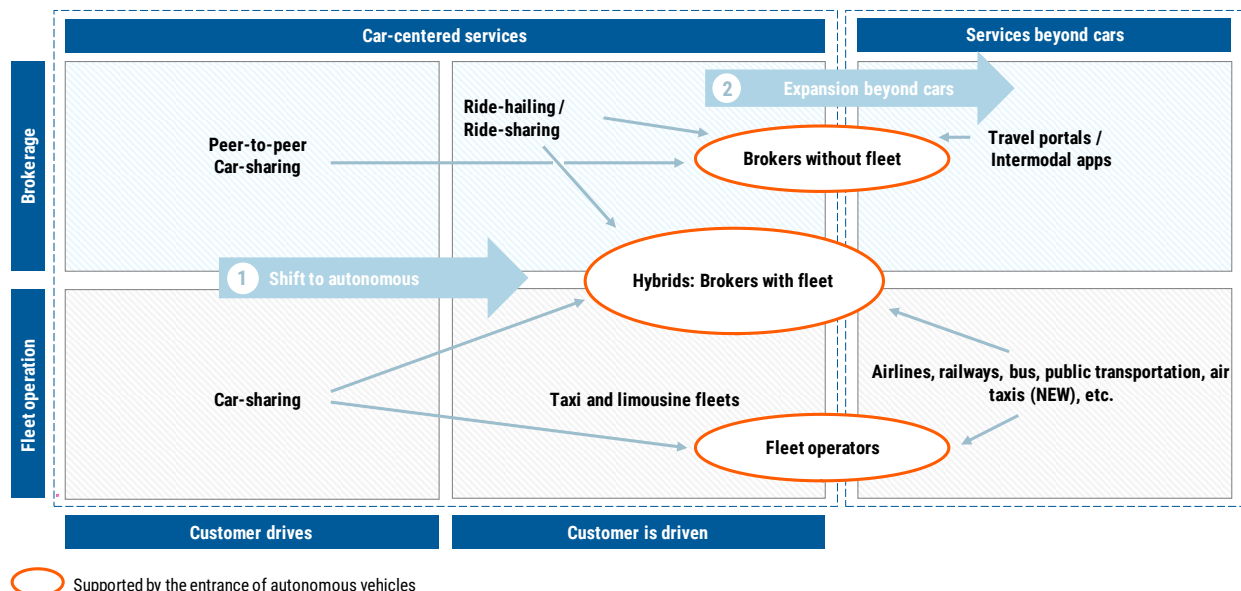


Exhibit 2: Future models of shared mobility services; Source: Strategy Engineers

In contrast, today's brokers will prospectively get more and more involved in owning a physical, autonomous fleet. Moreover, mobility services beyond cars such as airlines or travel portals might enter the shared-mobility landscape, offering their customers a larger range of possibilities of how to get from A to B.

### 3. Two Strategy Case Studies

Whereas Uber starts to invest in an autonomous fleet, Daimler converges its current shared mobility models into one transportation platform

Considering industry key players such as automotive OEM Daimler and ride-hailing platform Uber, the tendency to enter new hybrid business models becomes obvious (see Exhibit 3).

In the last few years, Daimler has largely invested in new mobility services, including among others Car2go, Turo, and mytaxi. To exploit synergies, the OEM has recently started to integrate its different services into its intermodal travel platform moovel that allows users to book trips while using different transportation types.

To date, Uber focused mainly on broking by connecting passengers and drivers. Yet, with the intend to become the world largest autonomous fleet provider, the company has announced to build its own fleet in the future – shifting its broking business model towards fleet operation.

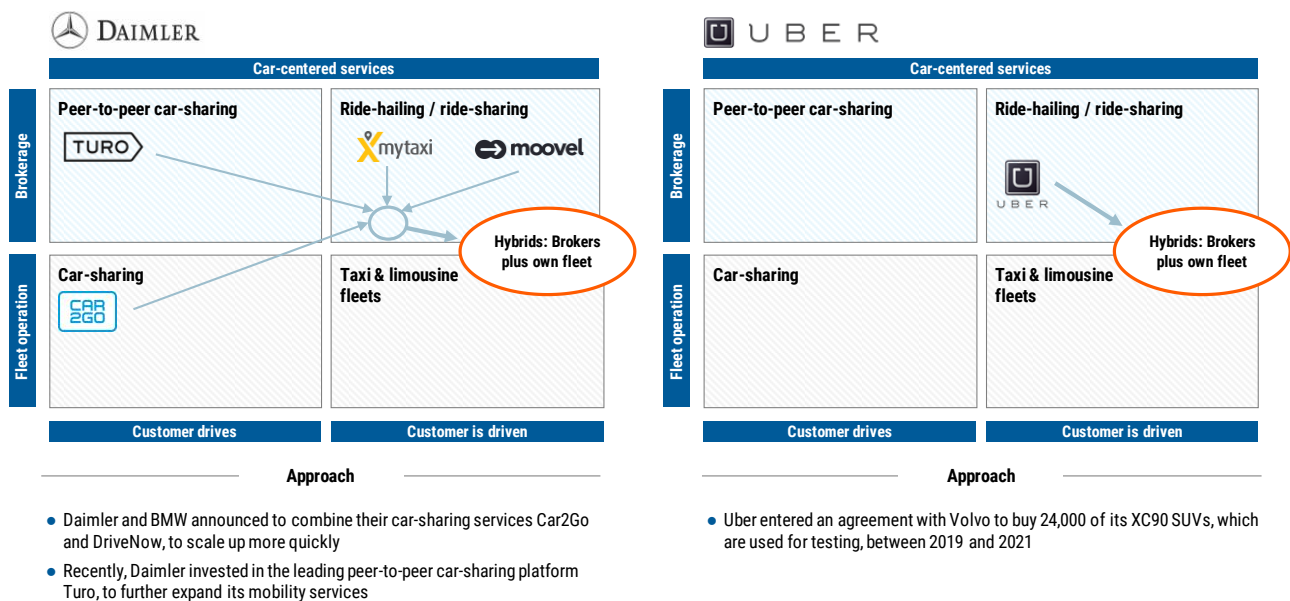


Exhibit 3: Example – Development of Daimler's and Uber's shared mobility models; Source: Strategy Engineers

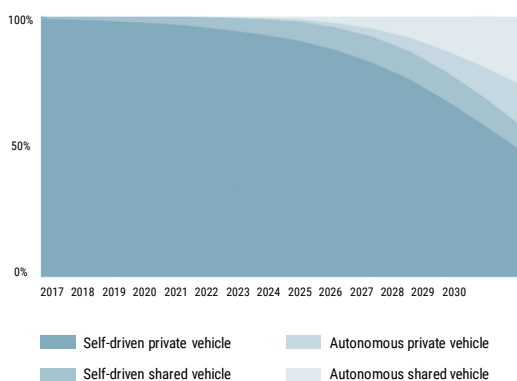


## 4. Long-term Impact of Shared Mobility on the Passenger Car Installed Base

Beyond 2030 and with autonomous vehicles to come, shared mobility will play a dominant role with a much smaller vehicle installed base

Currently, less than 1% of personal vehicle mileage is covered using sharing concepts. At the same time, most car-sharing users will not forgo car ownership entirely in the near future. Hence, according to our estimates, car-sharing will have only a small impact on vehicle installed base until full market penetration of AVs beyond 2030. Thereafter, we expect AVs to significantly affect the vehicle installed base. For example, assuming a full coverage of shared AVs at today's mobility behaviour, the entire German vehicle demand could be served with a fleet of 15.1 million shared AVs compared to 45.8 million passenger cars in 2017. However, due to increased mileage of the vehicles, production volumes are expected to remain in similar ranges as today (see Exhibit 4).

Mileage traveled by vehicle in Europe [in %]



Autonomous car-sharing – Vehicle demand (Germany, weekday)

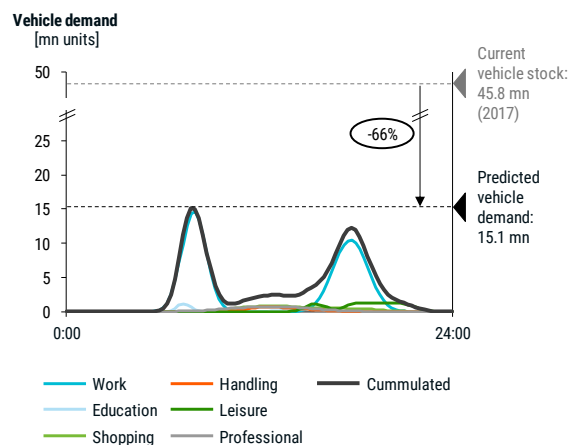


Exhibit 4: Autonomous car-sharing – Example: Full market penetration; Source: Strategy Engineers, PWC (2017)

## 5. Consequences for Market Players

In the last few years, the global market for car-sharing has been extended and will continue to see double-digit growth in the future – however, nothing will change overnight. It will remain a niche market until AVs hit the road and undoubtedly bring dramatic change to mobility behaviour. But since AVs will not reach full market penetration before 2030, there is now the time for both established automotive players and new entrants (such as CSOs) to start considering its future role in the new world of mobility.

### Consequences for car-sharing operators

Though being hyped as being the solution to all modern society traffic issues, the business model “Car-sharing” does currently not promise high profits for operators. But CSOs can leverage their profits by focussing on either one of the two options fleet operation or fleet operation with broking. Both options differ in their revenue pools as well as in the actions that have to be taken by the particular CSOs:

#### **Fleet operation**

- » Outsource broking service to platform providers to quickly expand customer base and gain market share
- » Offer solutions in form of fleet maintenance (offline /online)
- » Cooperate with OEMs and fuel providers to reduce cost

#### **Fleet operation with broking**

- » Invest in technical development of broking platform to attract a customer base
- » Offer broking service to fleet operators to quickly increase physical fleet, customer base and become first choice platform provider
- » Partner with other mobility providers and public transportation services to form an intermodal travel platform to expand network
- » Cooperate with OEMs and fuel providers to reduce costs

Depending on the CSOs competencies and current positioning on the market, either one of the both strategies can be favourable.

### Consequences for established automotive players: OEMs

Following the above, OEMs’ major revenue pools are currently not endangered by car-sharing. But in the future, mobility will not be a mutually exclusive service offered by those selling cars. Thus, OEMs need to position themselves for this scenario and they must determine how to benefit from a market, where cars will no longer be the core. To do so, they will have to:

- » Consider a mobility-as-a-service strategy with increasing focus on shared mobility to expand revenue streams and customer base
- » Focus on purpose-built vehicles for urban transport to become the preferred partner for fleet operators of new mobility concepts

- » Improve cooperation capabilities to obtain necessary skills and technologies in the future shared mobility market
- » Become a fleet operator to test new technologies and to compensate declining sales of private vehicles

### Consequences for established automotive players: Suppliers

Automotive suppliers are the least endangered by this development, but it offers even chances to position themselves stronger in the value chain. For them, it will become essential to build new capabilities and partnerships to deliver technologies that make sharing vehicles more convenient. Even lifting themselves up one step in the value chain by becoming the manufacturer of the cars seems to be considerable since purpose-built (electric) vehicles for car-sharing will be less complex and easier to manufacture. By that, suppliers will have to:

- » Either strengthen relationships with OEMs to be the preferred supplier of purpose-built vehicle components or strive towards manufacturing the vehicles by themselves
- » Adapt key components to future vehicle usage patterns and provide them for fleet vehicles and expand their current product portfolio e.g. to smart infrastructure components
- » Provide facilitating technologies to make sharing vehicles more convenient



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## Strategy Engineers

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