

# Bike Sharing 5.0

Market insights and outlook



Berlin, August 2018

# This study provides a comprehensive overview of developments on the bike sharing market

## Management summary

### 1 Key trends in innovative mobility

- > **Major innovations and new regulations** are on the way to reshaping the mobility market
- > **New business models** follow an asset-light approach allowing consumers to share mobility offerings
- > **Bike sharing** has emerged as one of the most-trending forms of mobility in the current era
- > Digitalization has enabled bike sharing to become **a fully integrated part of urban mobility**

### 2 Bike sharing market development

- > Bike sharing has grown at an extremely fast rate and is now **available in over 70 countries**
- > Several mostly Asian operators have been **expanding fast**, but **first business failures** can be seen
- > On the downside, authorities are alarmed by the excessive growth and **severe acts of vandalism**
- > Overall, the bike sharing market is expected to **grow continuously by 20% in the years ahead**

### 3 Role of bike sharing in urban mobility

- > Bike sharing has established itself as **a low-priced and convenient alternative** in many cities
- > The three basic **operating models** are dock-based, hybrid and free-floating
- > **Key success factors** for bike sharing are a high-density network and high-quality bikes
- > Integrated mobility platforms enable bike sharing to become an essential part of **intermodal mobility**

### 4 Future of bike sharing

- > Bike sharing operators will have to **proactively shape the mobility market** to stay competitive
- > Intense intra-city competition will lead to **significant service improvements**
- > Use of **smart analytics and artificial intelligence** will enable operators to optimize their networks
- > **Dedicated infrastructure** and **bicycle-friendly regulations** will aim to promote bike sharing

# Major mobility trends will heavily impact all mobility providers in the future

## Mobility trends

### 1 Mobility as a service



- > Integrating public transport and new mobility providers in a single platform with integrated ticketing and pricing
- > More customized and a wider variety of options for customers that could be either more convenient or more cost-effective than public transport

### 2 Regulations



- > Cities to implement regulations banning the use of motor vehicles in cities and stimulating the use of electric vehicles in public transport tenders, for example
- > Stimulating demand for public transport and environmentally-friendly mobility options in city centers

### 3 Autonomous driving



- > More cost-effective solution compared to public transport or owned cars, for example, due to significant reduction in personnel costs
- > Attractive robocabs could achieve a high modal share, but might not be feasible in every area due to traffic congestion

# Business models are shifting toward lower asset intensity – Customers prefer "sharing" and "using" over "owning"

## Business models

### 1 Traditional transportation

|                        |                                |                                           |                                              |                |
|------------------------|--------------------------------|-------------------------------------------|----------------------------------------------|----------------|
| <b>Asset intensity</b> | <b>Information provider</b>    |                                           |                                              |                |
|                        | <b>Agent</b>                   |                                           | Travel agencies                              |                |
|                        | <b>Service provider</b>        | Car insurance companies and car workshops | Public transportation companies and airlines |                |
|                        | <b>Vehicle provider</b>        | Car and bike manufacturers                | Leasing and rental car companies             |                |
|                        | <b>Infrastructure provider</b> | Garages                                   | Bus station and car park operators           |                |
|                        |                                | <b>"Own"</b>                              | <b>"Use"</b>                                 | <b>"Share"</b> |

**Consumer behavior**

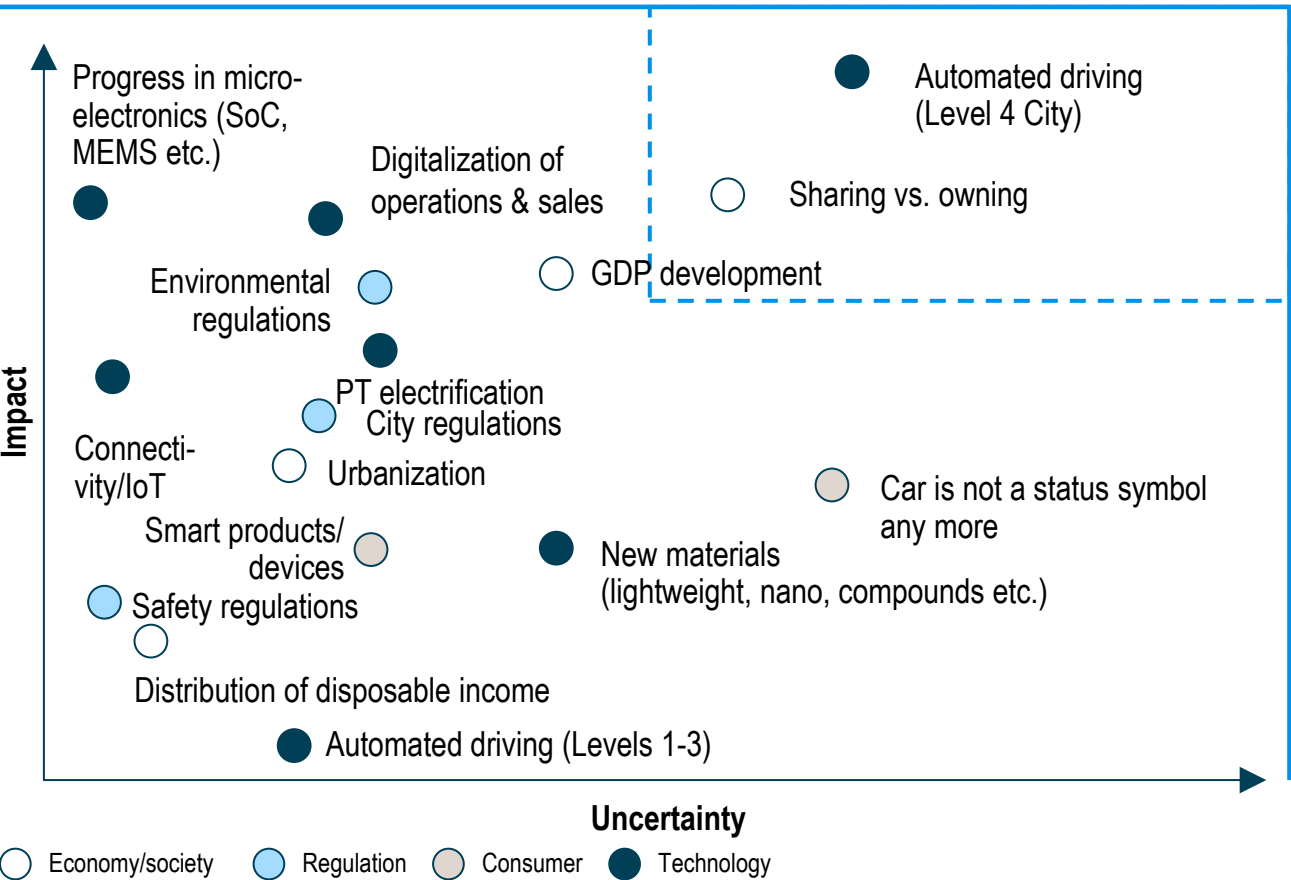
### 2 Innovative mobility: Lower asset intensity

|                        |                                |                                                 |                                           |                                           |
|------------------------|--------------------------------|-------------------------------------------------|-------------------------------------------|-------------------------------------------|
| <b>Asset intensity</b> | <b>Information provider</b>    |                                                 | Intermodal routing and sight-seeing apps  | Crowd navigation and review platforms     |
|                        | <b>Agent</b>                   |                                                 | Intermodal booking and taxi apps          | P2P parking and P2P car sharing platforms |
|                        | <b>Service provider</b>        | eCall/bCall and telediagnosis service providers | Mobile "parking" and mobile payment       | Ride sharing providers                    |
|                        | <b>Vehicle provider</b>        | E-bike and micro vehicle manufacturers          |                                           | Bike sharing and car sharing operators    |
|                        | <b>Infrastructure provider</b> |                                                 | Mobility stations and e-charging stations |                                           |
|                        |                                | <b>"Own"</b>                                    | <b>"Use"</b>                              | <b>"Share"</b>                            |

**Consumer behavior**

# How mobility will develop depends primarily on two factors: technological progress and customer acceptance

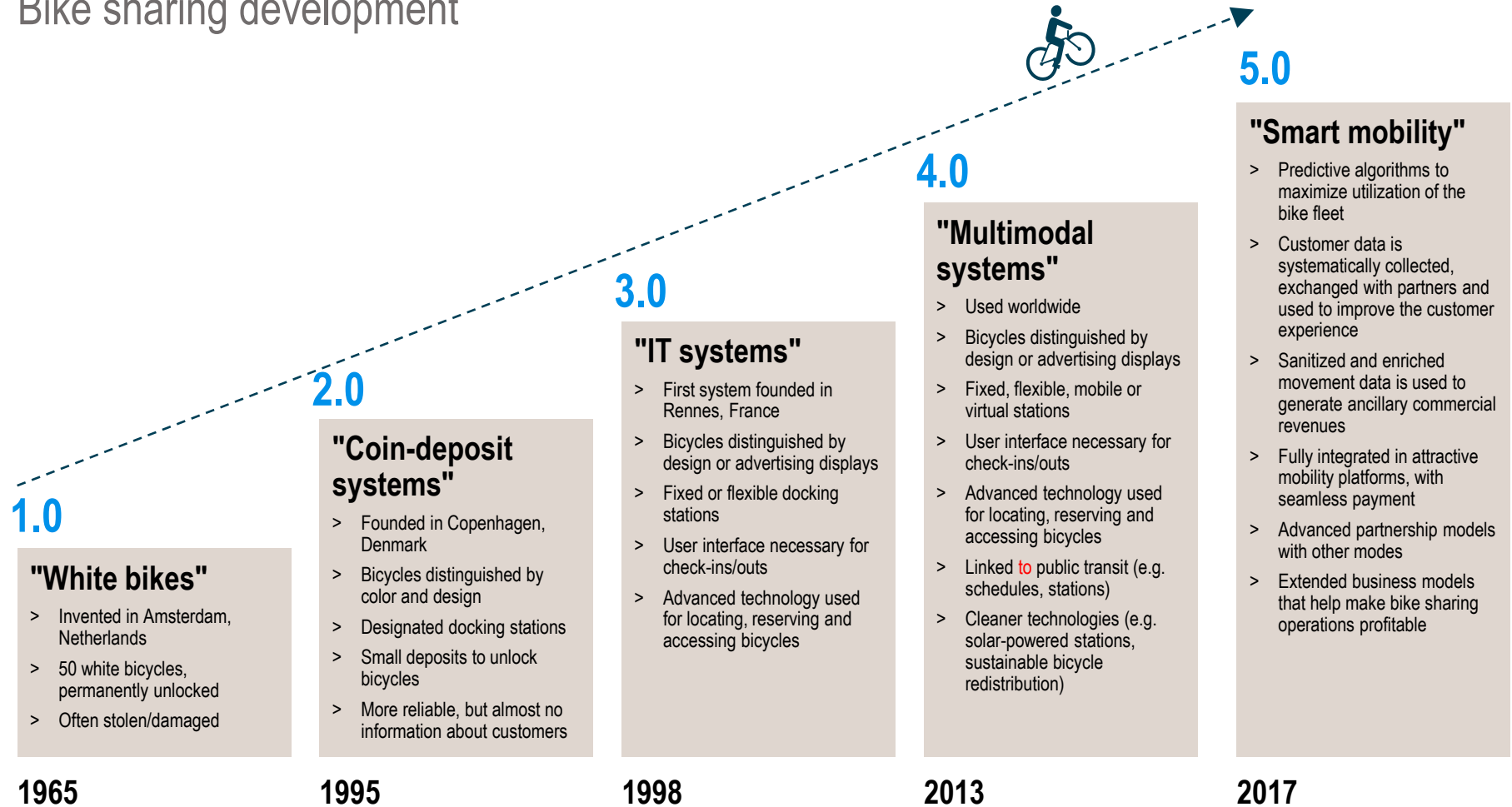
Key influencing factors and trends impacting advances in mobility in the next 15 years



**Technological progress** in automated driving (cars, buses, trains) and **consumer attitudes** toward cars as the primary means of individual transport are the key parameters for the future development of mobility

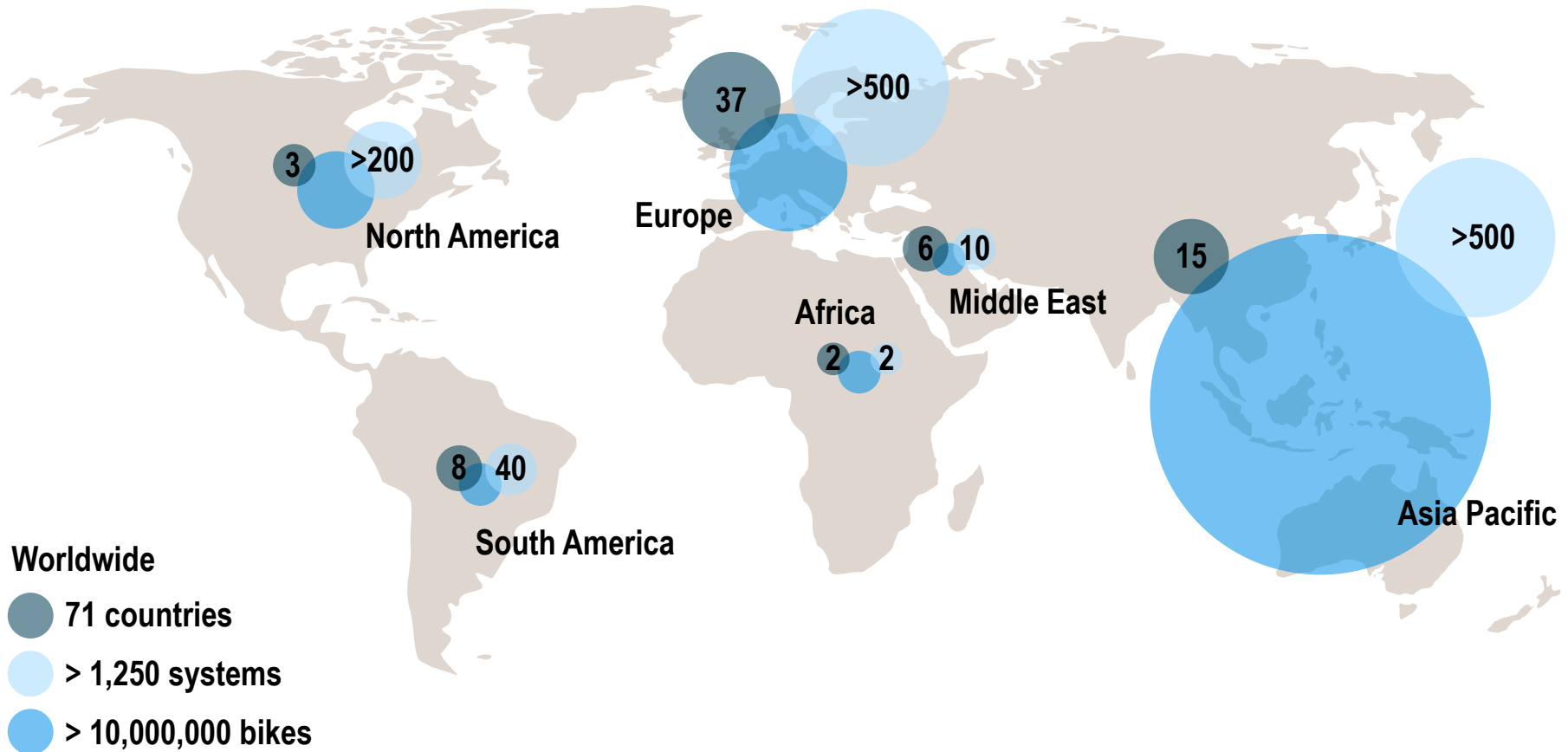
# Over time, bike sharing has developed into a highly technologized and integrated mode of transport business around the globe

## Bike sharing development



Around 1,250 bike sharing systems with more than 10 m bicycles are already in use around the globe – Asia is the largest market

Global presence of bike sharing systems – December 2017

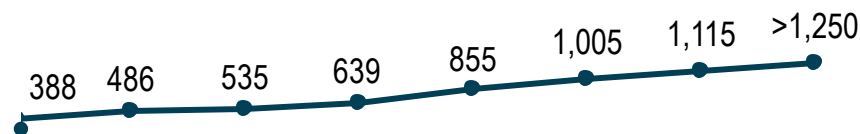


# The number of bikes in bike sharing systems is still growing significantly – Biggest bike sharing systems implemented in China

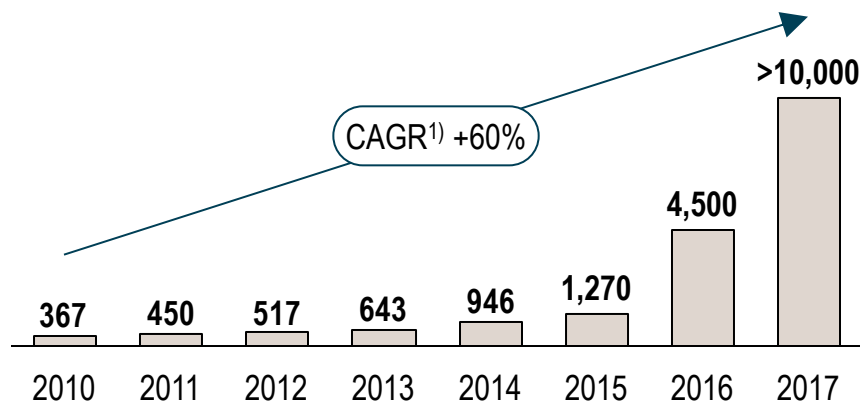
## Global development and distribution of bike sharing systems

### Global development of bike sharing

No. of bike sharing schemes



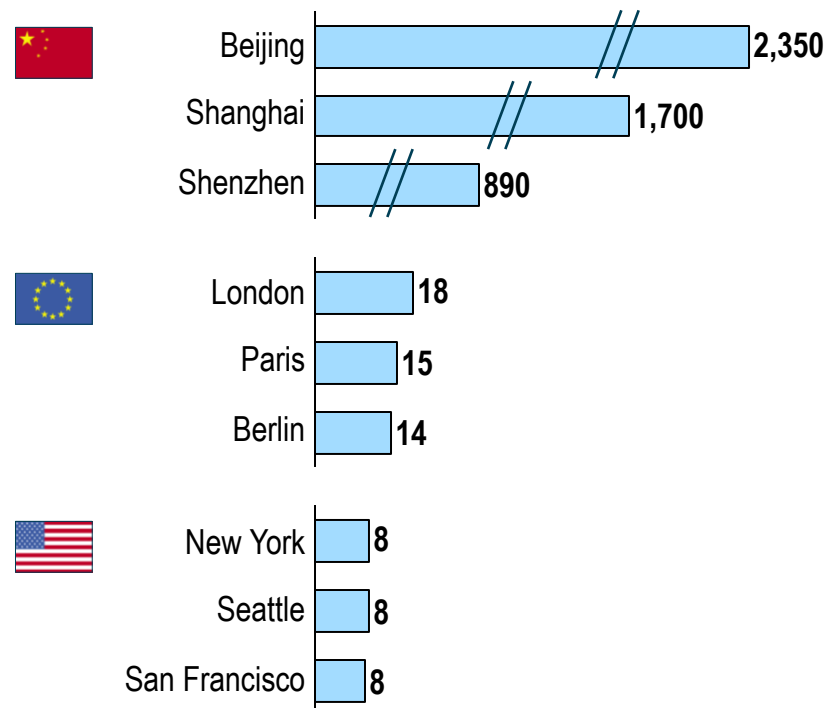
No. of bikes in bike sharing schemes ['000]



1) Compound annual growth rate

### Largest bike sharing cities by region

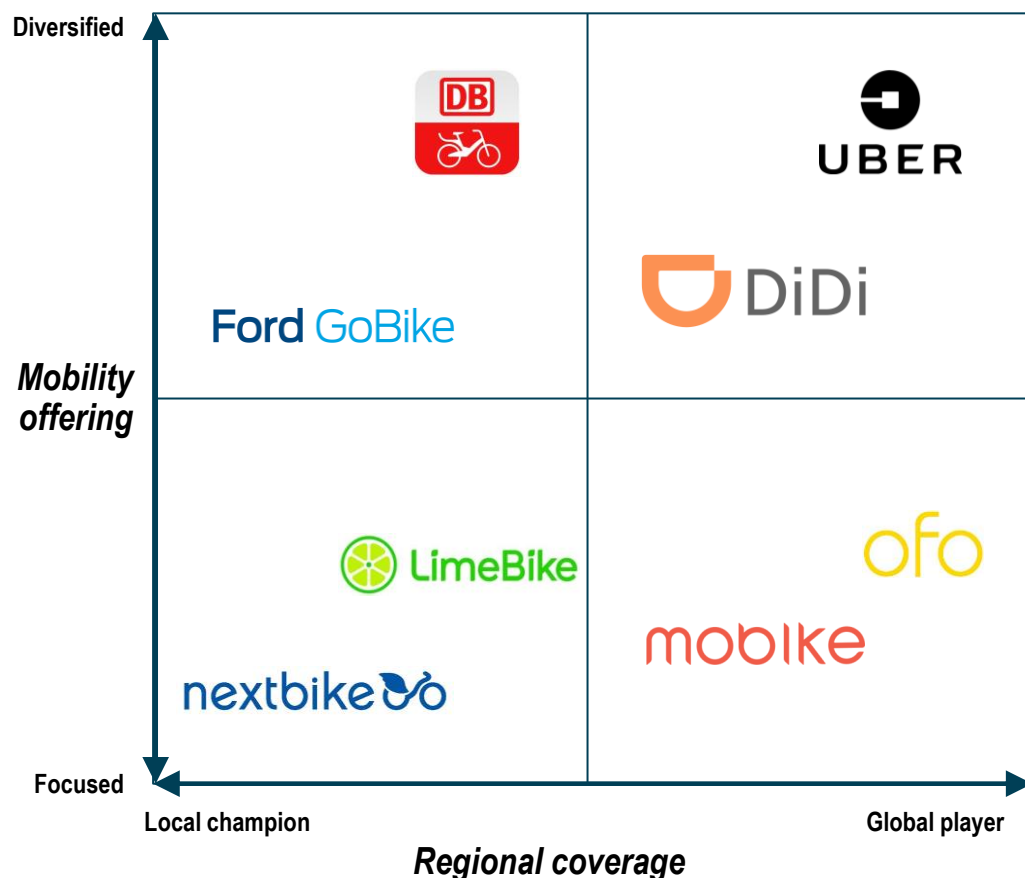
No. of bikes ['000]





The competitive bike sharing landscape is becoming more diverse, with UBER and Didi the most recent new entrants to the market

### Bike sharing – Competitive landscape



### Strategic direction

- > Defending market leadership position in German cities
  - > Cooperation with retailers started, e.g. Lidl in Berlin

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- > Local expansion in San Francisco and Bay Area
  - > Introduction of electric bikes ongoing

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- > Launch of own bike sharing service JUMP
  - > Integration of JUMP in UBER app

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- > Launch of bike sharing service via Didi app
  - > Integration of ofo and bluegogo in Didi app

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- > Heavy fund raising for global expansion
  - > Focus on quality improvements in operations

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- > Heavy fund raising for global expansion
  - > Data sharing for integration in map services ,e.g. Baidu

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- > Heavy fund raising for expansion to Europe
  - > Introduction of e-bikes and e-scooters announced

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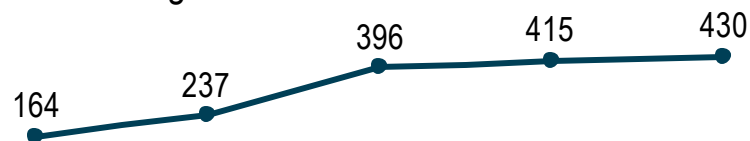
- > Defending market shares in German cities
  - > Use of hybrid system for pickup and return

In China, the number of shared bikes has increased immensely since 2015 – Market entry of private operators key driver for growth

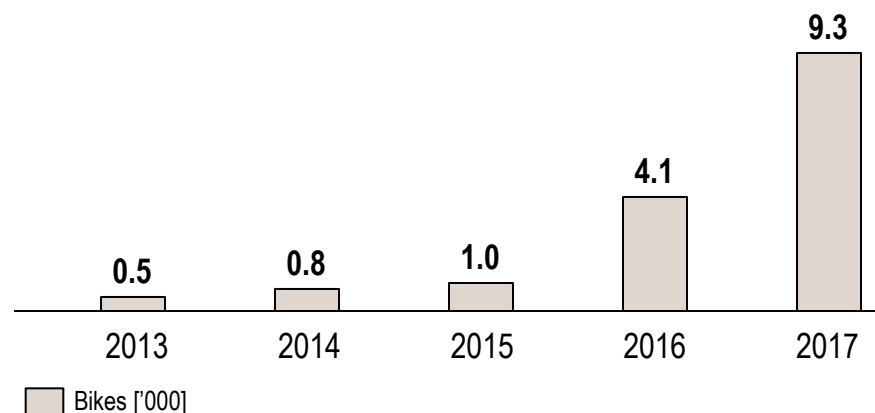
Focus on China – Recent market growth

### Development of bike sharing in China

No. of bike sharing schemes



No. of bikes in bike sharing schemes [million bikes]



### Drivers of market growth in China



#### Rise of private players

> Several private operators have entered the market since 2014 – They are now battling for market share and profiting from global scale



#### Unregulated market

> In many cities, operators do not have to apply for a license to offer bike sharing



#### High investments

> Private operators have raised investments of more than USD 3.0 bn, enabling them to rapidly expand their business in China and abroad



#### Sufficient production capabilities

> Chinese bike manufacturers have production capacity for more than 80 million bikes per year



#### Unsaturated demand

> Consumers prefer bike sharing over other modes of transport due to low cost and easy access

# The vast increase in bike sharing schemes, led by China's largest operators ofo and mobike, is having a major impact on Chinese cities

Focus on China – Rise of private operators

## Key facts

ofo

|                          |            |
|--------------------------|------------|
| Founded:                 | 2014       |
| No. of cities:           | 180        |
| No. of countries:        | 13         |
| No. of registered users: | 200 m      |
| Funding:                 | USD 2.2 bn |

mobike

|                          |            |
|--------------------------|------------|
| Founded:                 | 2015       |
| No. of cities:           | 200        |
| No. of countries:        | 12         |
| No. of registered users: | 200 m      |
| Funding:                 | USD 0.9 bn |

### + Positive effects



#### Less traffic congestion

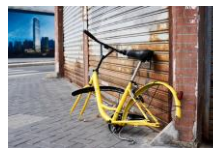
> 80% of China's 100 biggest cities see improvements in local traffic conditions



#### Less air pollution

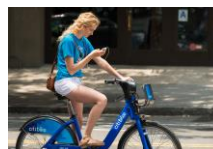
> New bikes absorb polluted air and remove particulate matter before releasing it

### - Negative effects



#### Increased vandalism and littering

> Customers deliberately demolish shared bikes and discard them illegally



#### Higher risk of accidents

> Improper traffic behavior (e.g. use of smartphones) is driving an increase in fatal accidents

# Followed by other Asian players, ofo and Mobike have intensified expansion of their business to a range of attractive European cities

## Focus on Europe – Expansion of Asian operators



- > European systems mostly with dock-based concept
- > New market entrants, mostly from Asia, are disrupting the European market with free-floating systems
- > Ofo and Mobike in particular have each raised sufficient funding to pursue their expansion strategy in Europe
- > In April 2017, ofo launched its first bike sharing scheme outside Asia in Cambridge – Mobike followed two months later with a scheme in Manchester
- > Both providers have already announced that they will set up further schemes in Europe, as they see huge potential for bike sharing in Europe
- > However, ofo recently just pulled out of several European cities to focus on the key markets

1) Ofo: 2,800 bikes; Mobike: 3,500 bikes 2) Ofo: 450 bikes; Mobike: 100 bikes 3) Ofo: 4,000 bikes; Mobike: 8,000 bikes 4) Ofo: 150 bikes; Mobike: 2,700 bikes 5) Ofo: 2,500 bikes; Mobike: 3,000 bikes

Sources: Press research, Roland Berger

# Although the global market is growing and attracting significant funding, first movers are facing serious issues

Some of the challenges facing bike sharing operators

## Bluegogo bankruptcy



- > Chinese bike sharing startup **bluegogo** filed for **bankruptcy** in November 2017
- > With 700,000 bikes, the bluegogo was the **third-largest bike sharing operator in China**, after Mobike and ofo
- > Due to a recent cash shortage, bluegogo **failed to pay its employees and refund users' deposits**

## Gobee exit in France



- > Hong Kong-based startup **gobee** pulled out of the **French market** in February 2018
- > The company stated that the "**mass destruction**" of its dockless bike fleet was the primary reason for the exit
- > According to gobee, a **thousand bikes** had been **stolen** and **almost 3,400 damaged** nationwide

## Obike vandalism in Munich



- > Singaporean startup **Obike** faced **high repair costs** due to **damage caused deliberately** to bikes in Munich
- > The damage appeared to arise from a **massive protest** by Munich citizens
- > Following its **bankruptcy** in July 2018, Obike **ceased operations in Munich** without removing its rental bikes from the city

# City authorities have taken different measures to prevent vandalism and regulate the local bike sharing market

## Regulation efforts

### Measures taken by cities to clean up the streets



**Limits** on number of operators per city and fleet size per operator



**Restrictions** on parking locations and number of bikes per parking zone



**Penalty fees** for breaches of any kind



**Requirement** to install tracking devices on rental bikes



**Immediate disposal** of damaged rental bikes

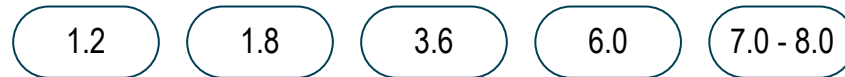


The market is expected to grow by 20% p.a. to EUR 7.0-8.0 bn in 2021 – Growth rates will gradually flatten in this period

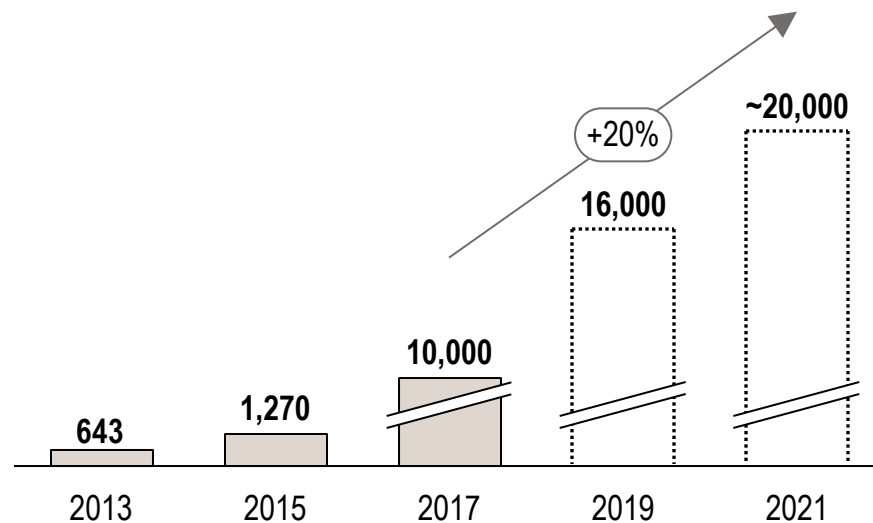
## Outlook

### Market development

Market size [EUR bn]



No. of bikes in bike sharing schemes ['000]



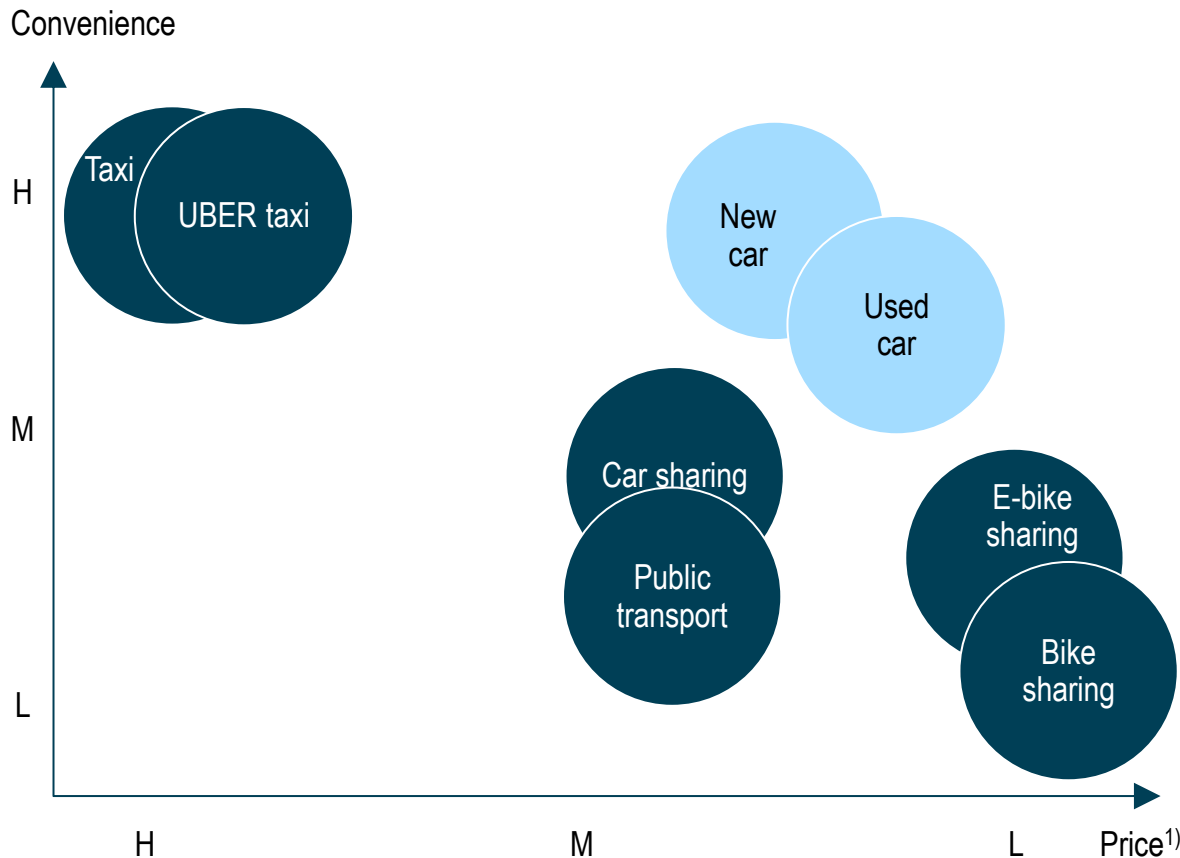
### Forecast key rationales

- > **Significant funding**
  - Sufficient financial means to fund expansion and development of new products, including e-bikes
- > **Enhanced connectivity**
  - Bike sharing accepted as an urban transportation mode and fully integrated in multimodal offerings
- > **Changes in buying behaviors**
  - Sharing rather than owning
- > **More fragmented markets**
  - Growth mainly in a higher number of cities, but with a smaller customer base in Europe and US
- > **Stronger competition and regulation**
  - Progressive market consolidation and limitation on number of operators per city at the municipal level
  - Higher quality requirements for fleets

# Being low-priced and covering short to middle distances, bike sharing closes an important gap between other modes

## Transportation niche

Illustrative



### Bike sharing...

- ... is faster than walking
- ... is cheaper than taxis and car sharing
- ... is more flexible than public transport
- ... requires less maintenance and is less expensive than owning a car
- ... can be combined with other means of transport

... will remain cheaper than autonomous transport modes for short to middle distance journeys

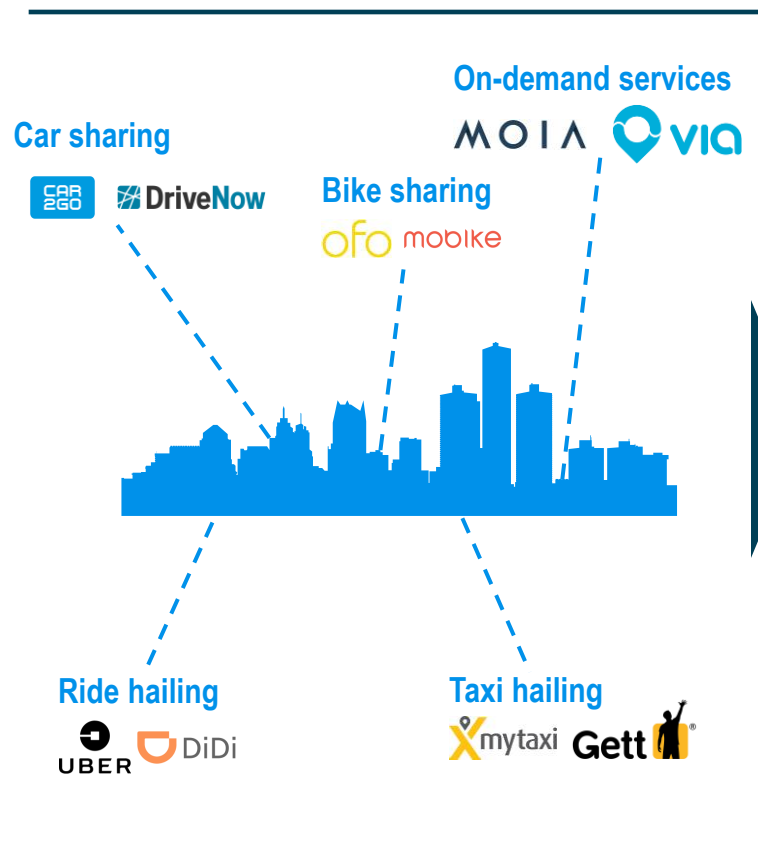
1) Price range for a single urban ride (5 km)



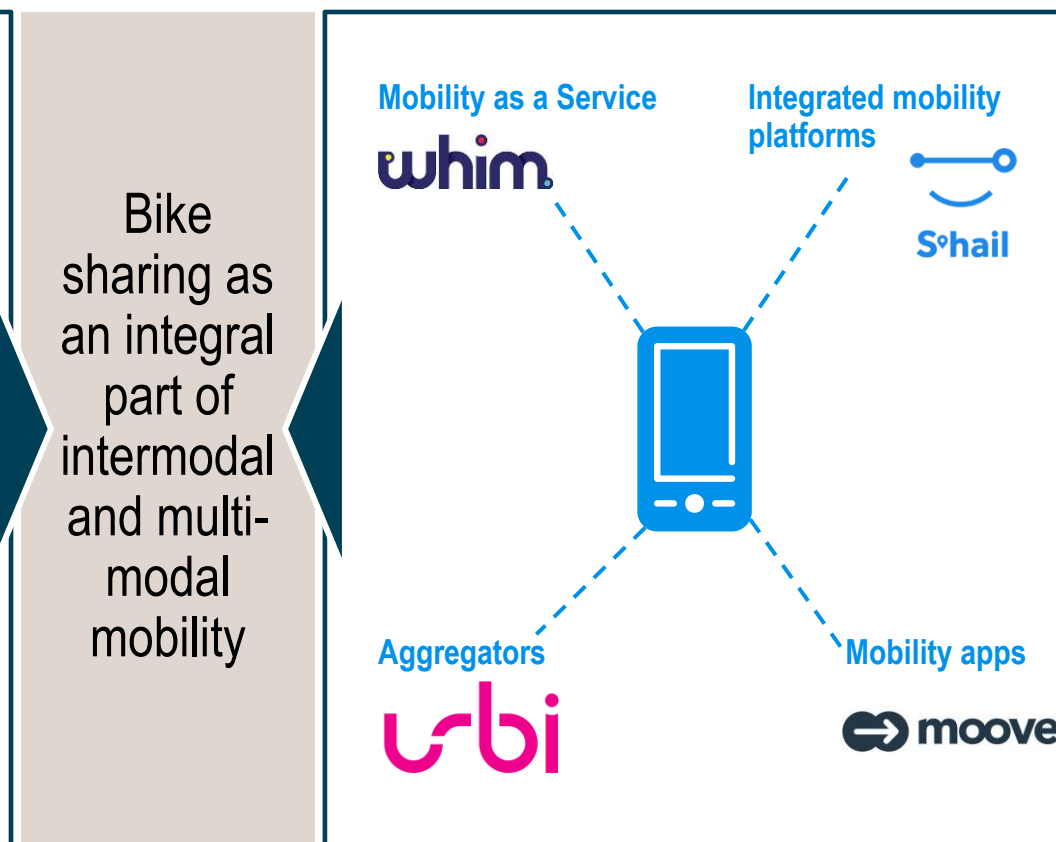
# Driven by a growing ecosystem and integrated mobility solutions, bike sharing is becoming a regular feature of intermodal mobility

## Role of bike sharing

### Growing ecosystem



### Integration of mobility services



# There are essentially three bike sharing models in the market: free-floating, hybrid and dock-based bike sharing

## Bike sharing models

### OPERATING MODELS

#### Free-floating bike sharing



- > Inner-city rentals without any fixed pick-up points within a defined operating area
- > Bicycles can be picked up and dropped off at any intersection

#### Hybrid bike sharing



- > Inner-city rental with guaranteed provision of bikes at fixed pick-up points
- > Bicycles can be picked up at pick-up points and dropped off anywhere

#### Dock-based bike sharing



- > Inner-city rental of bicycles from specific pick-up points
- > Bicycles are rented and returned at specific pick-up points

### SPECIAL FORMATS

#### E-bike sharing



- > Inner-city rental of e-bikes
- > Bikes must be plugged in when returned to recharge
- > Transactions normally done at the station or by app

#### Company bike sharing



- > As a service for company employees on site, for large events or for hotel guests
- > Can be connected to municipal systems

#### Cargo bike sharing



- > Special purpose bikes, e.g. for families or to transport large/heavy goods
- > Transactions normally done at the station or by app

# Overall goals, sources of funding and the ownership/operating model are the factors that differentiate bike sharing operators

## Operating models



### Overall goals

| For Profit                                                                                                                                                                                | Non-Profit                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>&gt; Owned and operated by a private company, responsible for fund-raising and costs</li> <li>&gt; Quick raising of private investments</li> </ul> | <ul style="list-style-type: none"> <li>&gt; Owned and operated by an agency, responsible for fund-raising and costs</li> <li>&gt; Flexible funding (govt. or local sources)</li> </ul> |



### Financing

| Private                                                                                                                     | and/or                                                                                           | Public                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>&gt; Private loans</li> <li>&gt; Private grants</li> <li>&gt; Advertising</li> </ul> | <ul style="list-style-type: none"> <li>&gt; Venture capital</li> <li>&gt; Sponsorship</li> </ul> | <ul style="list-style-type: none"> <li>&gt; Federal grants</li> <li>&gt; State grants</li> <li>&gt; City funds</li> </ul> |



### Ownership & operations

| Ownership  | Private                                                                                                                                                                                      | Public                                                                                    | Private                                                    | Public                                                                             |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------------------------------|
| Operations | <ul style="list-style-type: none"> <li>&gt; Privately owned and operated</li> <li>&gt; Street furniture contract</li> <li>&gt; Third-party operated</li> <li>&gt; Vendor operated</li> </ul> | <ul style="list-style-type: none"> <li>&gt; Publicly owned/contractor operated</li> </ul> | <ul style="list-style-type: none"> <li>&gt; N/A</li> </ul> | <ul style="list-style-type: none"> <li>&gt; Publicly owned and operated</li> </ul> |

# Bike sharing systems must be simple, offering low-priced, high-quality bikes integrated in a dense multimodal network

## Key success factors

### A. High-density network

Highly concentrated and comprehensive networks of bikes and widespread program coverage ensure high accessibility

### B. Multimodal integration

Integration of infrastructures, information structures and payment with other mobility services enables convenient transfers

### C. Simple handling

User-friendly, app-based rental processes and no advance registration increase usability and reduce entry barriers for new users

### D. Smart data analytics

Use of data-driven applications optimizes pricing and operations while creating additional revenue streams

### E. High-quality bikes

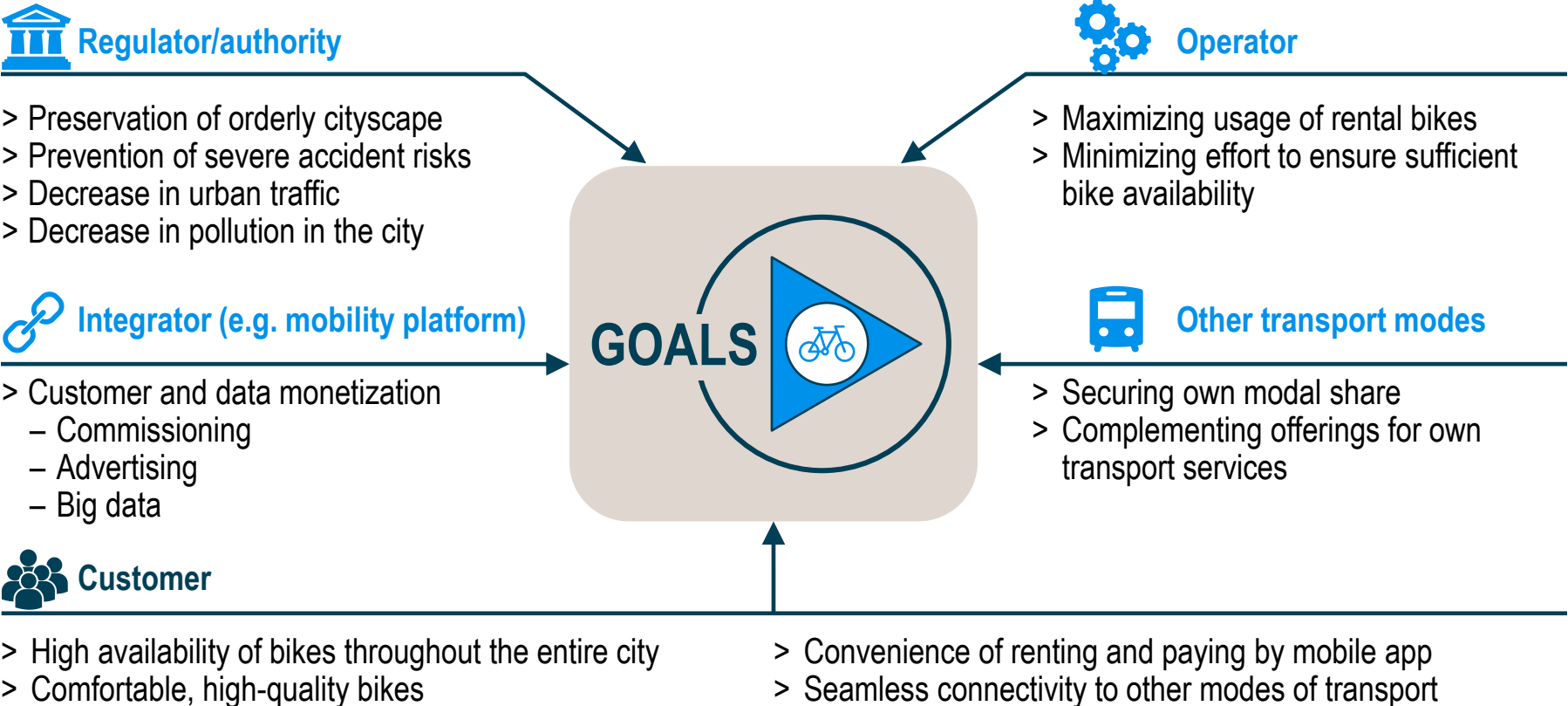
Easy-to ride but also sturdy and weatherproof bikes ensure a comfortable riding experience and reduce maintenance costs

### F. Support of local authorities

Support of local authorities, e.g. in terms of bike lanes, accessibility of public spaces and links to public transport can boost success

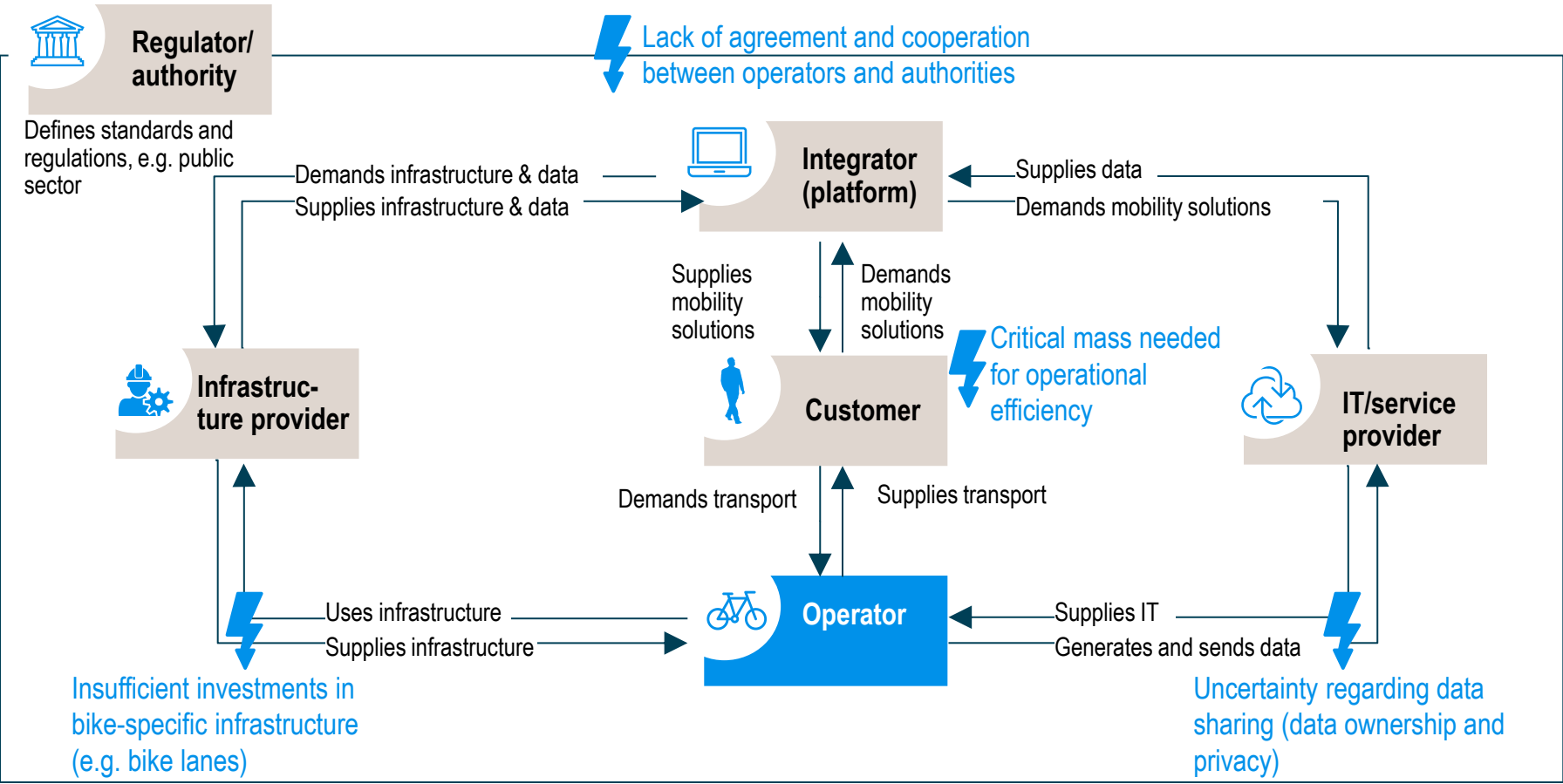
# The value proposition of a bike sharing concept should take into account the goals of various stakeholders

## Stakeholder goals concerning bike sharing





# In the bike sharing ecosystem, relationships between the different stakeholders are complex – Various pain points still to be removed

## Roles in bike sharing ecosystem



# To stay ahead of the competition, bike sharing operators will have to proactively shape the market

## React vs. shape

|  <b>React</b>                                                                       | <b>Market hypothesis</b>                                                                                 | <b>Shape</b>                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>&gt; Closely observe expansion moves of Asian competitors to adjust service-ability in existing markets, if needed</li> </ul> | <p>Asian competitors will learn fast and expand successfully in Europe</p>                               | <ul style="list-style-type: none"> <li>&gt; Actively utilize local knowledge and first mover advantage to strengthen position on existing and potential new markets</li> </ul>  |
| <ul style="list-style-type: none"> <li>&gt; Quickly implement new regulations and inform own customers about any new developments</li> </ul>                         | <p>Bike sharing operations in high-density areas will be heavily regulated (e.g. infrastructure use)</p> | <ul style="list-style-type: none"> <li>&gt; Address regulatory bodies alone or in partnerships to influence the regulatory framework</li> </ul>                                 |
| <ul style="list-style-type: none"> <li>&gt; Participate in interface solutions that enable access to and the provision and steering of bike sharing</li> </ul>       | <p>By 2025, transport will be connected, intermodal and digital</p>                                      | <ul style="list-style-type: none"> <li>&gt; Invest in solutions that will allow different transport modes to be integrated and provide required information/steering</li> </ul> |
| <ul style="list-style-type: none"> <li>&gt; Systematically monitor competitors to identify new/improved operational models and avoid their pitfalls</li> </ul>       | <p>New hybrid and e-driven bike sharing models will rise</p>                                             | <ul style="list-style-type: none"> <li>&gt; Invest in innovation and generate ideas for new/improved operational models to stay ahead of the competition</li> </ul>             |
| <ul style="list-style-type: none"> <li>&gt; Reduce cost base and prices in order to be able to compete with cheaper market participants</li> </ul>                   | <p>Mobility will be more data-driven and partly available for free</p>                                   | <ul style="list-style-type: none"> <li>&gt; Invest in the most profitable market segments and diversify own revenue base with new revenue models</li> </ul>                     |

# The free-floating model is a major bike sharing trend – Other current trends are geofencing and intermodal integration

## Current innovations: What's hot, what's next? (1/3)

### Free-floating



- > Eliminates the need for docks and stations by allowing users to locate and unlock bicycles using an app
- > Distributes bikes evenly across town to ensure availability at all times
- > Examples: Mobike, ofo and Spin

### Geofencing



- > Uses GPS devices to prevent theft and vandalism
- > Ensures that shared bikes stay within the designated geographic area
- > Addresses the issue of illegal parking
- > Examples: ofo in Cambridge, oBike in Singapore

### Intermodal integration



- > Integrates bike sharing in existing mobility platforms through integrated ticketing and pricing
- > Collaborates with other shared mobility companies as well as public transport
- > Example: Whim and nextbike partner in West Midlands



# Operators are starting to invest in innovative bicycles such as cargo bikes – AI and adapted policies used to boost bike sharing usage

## Current innovations: What's hot, what's next? (2/3)

### E-bike sharing



- > Uses electric bikes for bike sharing
- > Is more convenient, e.g. in cities with hilly terrain
- > Example: BiciMAD in Madrid

### Cargo bike sharing



- > Cargo bikes: Bicycles with an open box or flat platform designed for transporting loads
- > Enables customers to go shopping or move things by bike
- > Makes some e-cargo bikes available at docking stations or host locations
- > Examples: DonkEE in Cologne, carvel2go in Switzerland

### Artificial intelligence



- > Analyzes user demand and mobility patterns to adjust service offerings to customer needs
- > Improves efficiency of bike repositioning, e.g. with data about peak times or popular areas
- > Uses collected mobility data to assess infrastructure investments like bike lanes
- > Example: MoBike in Beijing

### Tax breaks



- > Allow commuters to use pre-tax transit benefits for bike sharing
- > Grant the same tax treatment as company cars and other public transportation systems
- > Example: Bike sharing in New York City

# New infrastructure and policies aim to promote bike sharing – Bike sharing operators aim to reduce maintenance costs

Current innovations: What's hot, what's next? (3/3)

## Sturdy bike components



- > Reduce maintenance costs (especially wheel-related costs) for bike sharing operators
- > Improve existing solutions to enhance user comfort
- > Example: Solid, airless tires

## Prioritized road infrastructure



- > Reduces the threat from other vehicles on the road with dedicated, clearly separated bike lanes, e.g. with cobblestones at the side
- > Enables a safer biking experience in the city with other motor vehicles nearby
- > Examples: Gothenburg, Copenhagen, Amsterdam

## Smart traffic lights



- > Introduce new traffic lights that stay green longer if many cyclists want to cross
- > Give cyclists priority when it is raining so they spend less time in the inclement weather
- > Measure congestion on bike paths and suggest faster alternative routes to cyclists
- > Examples: Copenhagen, Odense

# Your contacts for innovative mobility services at Roland Berger



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