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

Source: Roland Berger
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

Source: Roland Berger
Photos: Kaspars Grinvalds/Adobe Stock; Alison Hancock/Adobe Stock; Olivier Le Moal/Adobe Stock
Business models are shifting toward lower asset intensity – Customers prefer "sharing" and "using" over "owning"
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:

- **Economy/society**
  - GDP development
  - Urbanization
  - Distribution of disposable income
  - Safety regulations
  - Environmental regulations
  - Social norms (car is not a status symbol any more)

- **Regulation**
  - City regulations
  - PT electrification
  - Environmental regulations

- **Consumer**
  - Sharing vs. owning
  - Christmas vs. full-time work

- **Technology**
  - Automated driving (Levels 1-3)
  - Automated driving (Level 4 City)
  - Digitalization of operations & sales
  - Progress in microelectronics (SoC, MEMS etc.)
  - New materials (lightweight, nano, compounds etc.)
  - Connectivit/IoT

**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.

**Sources:** Expert interviews; Roland Berger
Over time, bike sharing has developed into a highly technologized and integrated mode of transport business around the globe.

### Bike sharing development

<table>
<thead>
<tr>
<th>Year</th>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td>1.0</td>
<td>&quot;White bikes&quot;&lt;br&gt;• Invented in Amsterdam, Netherlands&lt;br&gt;• 50 white bicycles, permanently unlocked&lt;br&gt;• Often stolen/damaged</td>
</tr>
<tr>
<td>1995</td>
<td>2.0</td>
<td>&quot;Coin-deposit systems&quot;&lt;br&gt;• Founded in Copenhagen, Denmark&lt;br&gt;• Bicycles distinguished by color and design&lt;br&gt;• Designated docking stations&lt;br&gt;• Small deposits to unlock bicycles&lt;br&gt;• More reliable, but almost no information about customers</td>
</tr>
<tr>
<td>1998</td>
<td>3.0</td>
<td>&quot;IT systems&quot;&lt;br&gt;• First system founded in Rennes, France&lt;br&gt;• Bicycles distinguished by design or advertising displays&lt;br&gt;• Fixed or flexible docking stations&lt;br&gt;• User interface necessary for check-ins/outs&lt;br&gt;• Advanced technology used for locating, reserving and accessing bicycles</td>
</tr>
<tr>
<td>2013</td>
<td>4.0</td>
<td>&quot;Multimodal systems&quot;&lt;br&gt;• Used worldwide&lt;br&gt;• Bicycles distinguished by design or advertising displays&lt;br&gt;• Fixed, flexible, mobile or virtual stations&lt;br&gt;• User interface necessary for check-ins/outs&lt;br&gt;• Advanced technology used for locating, reserving and accessing bicycles&lt;br&gt;• Linked to public transit (e.g. schedules, stations)&lt;br&gt;• Cleaner technologies (e.g. solar-powered stations, sustainable bicycle redistribution)</td>
</tr>
<tr>
<td>2017</td>
<td>5.0</td>
<td>&quot;Smart mobility&quot;&lt;br&gt;• Predictive algorithms to maximize utilization of the bike fleet&lt;br&gt;• Customer data is systematically collected, exchanged with partners and used to improve the customer experience&lt;br&gt;• Sanitized and enriched movement data is used to generate ancillary commercial revenues&lt;br&gt;• Fully integrated in attractive mobility platforms, with seamless payment&lt;br&gt;• Advanced partnership models with other modes&lt;br&gt;• Extended business models that help make bike sharing operations profitable</td>
</tr>
</tbody>
</table>

Sources: Susan Shaheen, Roland Berger
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

Sources: Press research; Roland Berger
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

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>367</td>
</tr>
<tr>
<td>2011</td>
<td>450</td>
</tr>
<tr>
<td>2012</td>
<td>517</td>
</tr>
<tr>
<td>2013</td>
<td>639</td>
</tr>
<tr>
<td>2014</td>
<td>855</td>
</tr>
<tr>
<td>2015</td>
<td>1,005</td>
</tr>
<tr>
<td>2016</td>
<td>1,115</td>
</tr>
<tr>
<td>2017</td>
<td>&gt;1,250</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Bikes ['000]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>367</td>
</tr>
<tr>
<td>2011</td>
<td>450</td>
</tr>
<tr>
<td>2012</td>
<td>517</td>
</tr>
<tr>
<td>2013</td>
<td>643</td>
</tr>
<tr>
<td>2014</td>
<td>946</td>
</tr>
<tr>
<td>2015</td>
<td>1,270</td>
</tr>
<tr>
<td>2016</td>
<td>4,500</td>
</tr>
<tr>
<td>2017</td>
<td>&gt;10,000</td>
</tr>
</tbody>
</table>

1) Compound annual growth rate

Largest bike sharing cities by region

<table>
<thead>
<tr>
<th>City</th>
<th>Bikes ['000]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing</td>
<td>2,350</td>
</tr>
<tr>
<td>Shanghai</td>
<td>1,700</td>
</tr>
<tr>
<td>Shenzhen</td>
<td>890</td>
</tr>
<tr>
<td>London</td>
<td>18</td>
</tr>
<tr>
<td>Paris</td>
<td>15</td>
</tr>
<tr>
<td>Berlin</td>
<td>14</td>
</tr>
<tr>
<td>New York</td>
<td>8</td>
</tr>
<tr>
<td>Seattle</td>
<td>8</td>
</tr>
<tr>
<td>San Francisco</td>
<td>8</td>
</tr>
</tbody>
</table>

Sources: Press research; Roland Berger
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
- Local expansion in San Francisco and Bay Area
- Introduction of electric bikes ongoing
- Launch of own bike sharing service JUMP
- Integration of JUMP in UBER app
- Launch of bike sharing service via Didi app
- Integration of ofo and bluegogo in Didi app
- Heavy fund raising for global expansion
- Focus on quality improvements in operations
- Heavy fund raising for expansion to Europe
- Introduction of e-bikes and e-scooters announced
- Defending market shares in German cities
- Use of hybrid system for pickup and return

Source: Roland Berger
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**

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of bike sharing schemes</th>
<th>No. of bikes in bike sharing schemes [million bikes]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>164</td>
<td>0.5</td>
</tr>
<tr>
<td>2014</td>
<td>237</td>
<td>0.8</td>
</tr>
<tr>
<td>2015</td>
<td>396</td>
<td>1.0</td>
</tr>
<tr>
<td>2016</td>
<td>415</td>
<td>4.1</td>
</tr>
<tr>
<td>2017</td>
<td>430</td>
<td>9.3</td>
</tr>
</tbody>
</table>

**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

Sources: Press research; Roland Berger
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

Sources: Press research, Roland Berger

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

<table>
<thead>
<tr>
<th>Bluegogo bankruptcy</th>
<th>Gobee exit in France</th>
<th>Obike vandalism in Munich</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Bluegogo bike" /></td>
<td><img src="image2" alt="Gobee bike" /></td>
<td><img src="image3" alt="Obike vandalism" /></td>
</tr>
<tr>
<td>&gt; Chinese bike sharing startup <strong>bluegogo filed for bankruptcy</strong> in November 2017</td>
<td>&gt; Hong Kong-based startup <strong>gobee pulled out of the French market</strong> in February 2018</td>
<td>&gt; Singaporean startup <strong>Obike</strong> faced <strong>high repair costs</strong> due to damage caused <strong>deliberately</strong> to bikes in Munich</td>
</tr>
<tr>
<td>&gt; With 700,000 bikes, the bluegogo was the <strong>third-largest bike sharing operator in China</strong>, after Mobike and ofo</td>
<td>&gt; The company stated that the <strong>&quot;mass destruction&quot;</strong> of its dockless bike fleet was the primary reason for the exit</td>
<td>&gt; The damage appeared to arise from a <strong>massive protest</strong> by Munich citizens</td>
</tr>
<tr>
<td>&gt; Due to a recent cash shortage, bluegogo <strong>failed to pay its employees</strong> and <strong>refund users’ deposits</strong></td>
<td>&gt; According to gobee, a <strong>thousand bikes</strong> had been <strong>stolen</strong> and <strong>almost 3,400 damaged</strong> nationwide</td>
<td>&gt; Following its <strong>bankruptcy</strong> in July 2018, Obike <strong>ceased operations in Munich</strong> without removing its rental bikes from the city</td>
</tr>
</tbody>
</table>

Photos: testing/shutterstock; Antonello Marangi/shutterstock; franswillemblok/iStock
Sources: Press research, Roland Berger
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

<table>
<thead>
<tr>
<th>Year</th>
<th>Market size [EUR bn]</th>
<th>No. of bikes in bike sharing schemes ['000]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1.2</td>
<td>643</td>
</tr>
<tr>
<td>2015</td>
<td>1.8</td>
<td>1,270</td>
</tr>
<tr>
<td>2017</td>
<td>3.6</td>
<td>10,000</td>
</tr>
<tr>
<td>2019</td>
<td>6.0</td>
<td>16,000</td>
</tr>
<tr>
<td>2021</td>
<td>7.0 - 8.0</td>
<td>~20,000</td>
</tr>
</tbody>
</table>

### 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

Source: Press research, Roland Berger
Being low-priced and covering short to middle distances, bike sharing closes an important gap between other modes.

Transportation niche

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)

Source: Roland Berger
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**
- Car sharing
- On-demand services
- Bike sharing
- Ride hailing
- Taxi hailing

**Integration of mobility services**
- Mobility as a Service
- Integrated mobility platforms
- Aggregators
- Mobility apps

Bike sharing as an integral part of intermodal and multimodal mobility

Source: Roland Berger
There are essentially three bike sharing models in the market: free-floating, hybrid and dock-based bike sharing.

### Bike sharing models

<table>
<thead>
<tr>
<th>OPERATING MODELS</th>
<th>SPECIAL FORMATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free-floating bike sharing</td>
<td>E-bike sharing</td>
</tr>
<tr>
<td>Hybrid bike sharing</td>
<td>Company bike sharing</td>
</tr>
<tr>
<td>Dock-based bike sharing</td>
<td>Cargo bike sharing</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Overall goals</th>
<th>For Profit</th>
<th>Non-Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; Owned and operated by a private company, responsible for fund-raising and costs</td>
<td>&gt; Owned and operated by an agency, responsible for fund-raising and costs</td>
</tr>
<tr>
<td></td>
<td>&gt; Quick raising of private investments</td>
<td>&gt; Flexible funding (govt. or local sources)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financing</th>
<th>Private</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; Private loans</td>
<td>&gt; Federal grants</td>
</tr>
<tr>
<td></td>
<td>&gt; Private grants</td>
<td>&gt; State grants</td>
</tr>
<tr>
<td></td>
<td>&gt; Advertising</td>
<td>&gt; City funds</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ownership &amp; operations</th>
<th>Private</th>
<th>Public</th>
<th>Private</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Publicly owned/contractor operated
| N/A                     |

<table>
<thead>
<tr>
<th>Operations</th>
<th>Private</th>
<th>Private</th>
<th>Public</th>
<th>Public</th>
</tr>
</thead>
</table>
| Privately owned and operated
| Street furniture contract
| Third-party operated
| Vendor operated |

Sources: Programs promoting bikesharing in the US, Public Bikesharing in North America, Bike Share Opportunities in NYC, Roland Berger
Role of bike sharing in urban mobility

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

Source: Roland Berger
The value proposition of a bike sharing concept should take into account the goals of various stakeholders.

Stakeholder goals concerning bike sharing:

- **Regulator/Authority**
  - Preservation of orderly cityscape
  - Prevention of severe accident risks
  - Decrease in urban traffic
  - Decrease in pollution in the city

- **Operator**
  - Maximizing usage of rental bikes
  - Minimizing effort to ensure sufficient bike availability

- **Integrator (e.g. mobility platform)**
  - Customer and data monetization
    - Commissioning
    - Advertising
    - Big data

- **Other transport modes**
  - Securing own modal share
  - Complementing offerings for own transport services

- **Customer**
  - High availability of bikes throughout the entire city
  - Comfortable, high-quality bikes
  - Convenience of renting and paying by mobile app
  - Seamless connectivity to other modes of transport

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

Roles in bike sharing ecosystem

- **Customer**
  - Demands mobility solutions
  - Supplies transport

- **Operator**
  - Uses infrastructure
  - Supplies infrastructure
  - Supplies IT
  - Generates and sends data

- **Integrator (platform)**
  - Supplies data
  - Demands mobility solutions

- **Regulator/authority**
  - Defines standards and regulations, e.g. public sector
  - Demands infrastructure & data
  - Supplies infrastructure & data

- **Infrastructure provider**
  - Supplies infrastructure & data
  - Supplies mobility solutions

- **IT/service provider**
  - Supplies infrastructure
  - Demands infrastructure & data

**Critical Mass Needed for Operational Efficiency**

**Lack of Agreement and Cooperation between Operators and Authorities**

**Insufficient Investments in Bike-specific Infrastructure (e.g. bike lanes)**

**Uncertainty Regarding Data Sharing (data ownership and privacy)**

Source: Roland Berger
To stay ahead of the competition, bike sharing operators will have to proactively shape the market.

### React vs. Shape

<table>
<thead>
<tr>
<th>React</th>
<th>Market hypothesis</th>
<th>Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closely observe expansion moves of Asian competitors to adjust service-ability in existing markets, if needed</td>
<td>Asian competitors will learn fast and expand successfully in Europe</td>
<td>Actively utilize local knowledge and first mover advantage to strengthen position on existing and potential new markets</td>
</tr>
<tr>
<td>Quickly implement new regulations and inform own customers about any new developments</td>
<td>Bike sharing operations in high-density areas will be heavily regulated (e.g. infrastructure use)</td>
<td>Address regulatory bodies alone or in partnerships to influence the regulatory framework</td>
</tr>
<tr>
<td>Participate in interface solutions that enable access to and the provision and steering of bike sharing</td>
<td>By 2025, transport will be connected, intermodal and digital</td>
<td>Invest in solutions that will allow different transport modes to be integrated and provide required information/steering</td>
</tr>
<tr>
<td>Systematically monitor competitors to identify new/improved operational models and avoid their pitfalls</td>
<td>New hybrid and e-driven bike sharing models will rise</td>
<td>Invest in innovation and generate ideas for new/improved operational models to stay ahead of the competition</td>
</tr>
<tr>
<td>Reduce cost base and prices in order to be able to compete with cheaper market participants</td>
<td>Mobility will be more data-driven and partly available for free</td>
<td>Invest in the most profitable market segments and diversify own revenue base with new revenue models</td>
</tr>
</tbody>
</table>

Source: Roland Berger
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 |

Sources: Press research, Roland Berger
New infrastructure and policies aim to promote bike sharing – Bike sharing operators aim to reduce maintenance costs


| **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 |
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