Transport Innovation made in China:
How China is changing the global transport regime
China – The biggest emitter

- China underwent a tremendous socio-economic transformation and urbanization during the last 4 decades
- Today China is the world's biggest emitter of GHG emissions
- The transport sector accounts for about 10% – 12% of China’s CO2 emissions (up to 26% in urban areas)

Transport – A growing sector

- Significantly **increasing volumes** of passenger and freight transportation (road, rail, shipping, aviation)
- **E-Commerce and urban delivery** are putting additional pressure on the urban transport systems
- **Car ownership** in China - still a huge growth potential

**Total number of passenger cars in China and Germany in Million cars (2016)**

- **China**: 163
- **Germany**: 45.7

*in million

**Number of passenger cars per 1000 capita (2016)**

- **Germany**: 552
- **China**: 118

Image source: Own graphic
Transport in China’s 13th Five-Year Plan (2016-2020)

- **High Speed Railway**: Construction of a total length of 30,000 km, connecting more than 80% of all large cities
- **Expressways**: Construction or upgrading of around 30,000 km of expressways
- **Civil Airports**: Construction of at least 50 more civil airports
- **Urban Transportation**: Approximately 3,000 km of new urban rail transit lines
- **City Cluster Transportation**: Intercity rail networks for Beijing-Tianjin-Hebei, Yangtze Delta, Pearl River Delta, middle-reach Yangtze, Central Plain, Chengdu-Chongqing region and Shandong Peninsula city clusters
- **Development of Corridors**: Construction of cross border corridors and main corridors along One Belt One Road
- **Rural Transportation**: Construction of 1 million km of rural roads to facilitate rural development; interlink all administrative villages via paved roads and shuttle bus services
- **Transportation Hubs**: Construction of multimodal passenger and freight hubs and city complexes around transportation hubs
- **Intelligent Transportation**: Internet based operation of transport infrastructure, internet of vehicles and vessels, vehicle automation
- **New Energy Vehicles**: Cumulative total production and sales of 5 million new energy vehicles
- **Harbor and Shipping Facilities**: Improvement of port clusters (Bohai sea rim, Yangtze and Pearl river delta) and inland waterways, specialized berths for containers, crude oil and Liquified Natural Gas (LNG)
- **Cycling and Walking**: Improvement of urban transport facilities for cyclists and pedestrians and promotion of cycling

Image source: Own graphic
Netizens - China’s digital eco-system

- China is home of about **802 million internet users**
- The Netizens are **digital natives** and are very used to mobile services (e-payment, e-commerce or mobile booking)
- Currently about **98%** of Chinese internet users are mobile
- More than 80% are using **WeChat**, where customers can access a variety of services within one platform and only one account

Source: https://tendashsix.com/chinese-netizens-population-europe/
WeChat - China’s digital eco-system

- **WeChat** is the dominating digital platform in China
- WeChat combines social media, communications (voice and video chat), data exchange, online ordering, mobility, in app-environment etc.
- Customers can access a **variety of services within one platform** and only one account
- QR Code based **mobile payment** is fully integrated into WeChat
Electro-mobility

- Electro-mobility is a **key column of China’s innovation roadmap** and a key column of China’s “made in China 2025” strategic economic development plan.

- Shenzhen fully electrified its public bus fleet by end of 2017 (17,000 buses).

- **Policy frameworks** on national and local level promote e-mobility (battery production, charging infrastructure, „e-shared mobility“ etc.

China´s sharing economy

- Shared Mobility as part of China´s sharing economy (SE) is **actively promoted**

- SE a key driver to ensure **technological leadership** in key sectors such as location based services as well as an **economic driving force**

- SE is expected to account for more than **10 percent of China´s GDP** by 2020

Source: [http://silicon-valley.net/apple-to-invest-1-billion-to-uber-rival-didi-chuxing/]
Shared Mobility – Didi Chuxing

- Didi Chuxing is the biggest Chinese ride-sharing company, providing a set of new mobility services (taxi hailing, private car hailing, DiDi Chauffeur, DiDi Bus, DiDi Minibus, bike-sharing etc.)

- More than 450 million users across over 400 cities in China and holding about 85% market share in China

Didi Chuxing – A holistic service environment

1. 24 cities will use the DiDi Smart Transportation Brain, an optimized public transit solution that relieved 10-20% of traffic jams on average in 2017.

2. 6,000,000 shared bikes will be launched by Didi through several affiliates (Ofo, Bluegogo, etc.) to compensate for substitution in the 3-5 km taxi/driving market.

3. 300 owned or franchised repair shops in 20 cities will be opened in 2018 by Didi through its daughter company Orange Autocare.

4. 13% of Chinese electric vehicles run through Didi’s network. In 2017 Didi and GEIDCO launched a joint venture to offer infrastructure for electric vehicles (from Didi’s fleet and others).

5. Didi and BAIC announced plans in early 2018 to work together to design vehicles.

Chinese mobility platforms are looking for more business and expanding both horizontally and vertically.

Source: Roland Berger
Didi Chuxing – A holistic service environment

- **Artificial Intelligence**
  - Didi Research Institute
    - Aims to optimize its dispatch system and route planning
  - Didi Labs (California)
    - Launched in March 2017
    - Focus on AI-based security; intelligent driving technology
  - Didi AI Labs
    - Launched in Jan. 2018, expands on the research institute and Didi labs

- **Big Data Operation**
  - Didi Cloud Platform
    - Every day, Didi's app generates > 70TB of data
    - Didi is analyzing its data in China to identify traffic hot spots and predict when more cars are needed on the road
    - The goal is to better balance supply and demand, thus mitigating traffic congestion

- **Smart Transportation**
  - Smart Transport Brain
    - Integrated solution for smart city traffic management
    - Developed together with transport authorities
    - Launch in January 2018, piloted by more than 20 Chinese cities

- **Self-Driving Technology**
  - Didi Self-Driving Car
    - Didi announced its self-driving car project in 2017
    - In May 2018, Didi received a testing permit for the US (California)
    - Currently, Didi is seeking to form a joint venture with Volkswagen to work on connected vehicles

Autonomous driving

- Autonomous Driving (AD) is a key of China’s ambition to become a global innovation leader in transport

- Many of China’s start-Ups are heavily investing into core technologies of AD

- In particular advanced LIDAR (light detection and ranging), AI and 5G technology will be the foundation of demand prediction, fleet management and fleet intelligence

Autonomous driving

<table>
<thead>
<tr>
<th>Major Business</th>
<th>Search Engine</th>
<th>Social Media and Gaming</th>
<th>E-Commerce</th>
<th>Ride-Hailing</th>
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<td>Delivery Robots</td>
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<td>Yes (May 2018)</td>
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<td>Yes (Shenzhen, May 2018)</td>
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Transport and Climate Change Week

Autonomous driving

- With L4 penetration (full self driving), cars will become lifestyle carriers, making the way the target and mobility a “full experience”

- Further integration of mobility services and entertainment, leisure, mobile office solutions, e-commerce, gaming and social interaction is to be expected

- AD is a key driver of the disruption of traditional business patterns and the further growth of platform economy based cross industry alliances

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Smart bike-sharing

- Mobike, Ofo and Co. deployed massive amounts of internet and GPS based bicycles onto China’s streets

- The bikes function as decentralized IoT assets and „independent“ revenue generators

- Free-floating bike-sharing serves the development of the sharing economy and the promotion of IoT (Internet of Things)

- Low level feeder for other platform economy services
Platforms & Cross industry alliances

- Tencent
  - Primarily focused on food delivery. Rolled out ride-hailing service around January 2018.

- Alibaba.com
  - Started as a ride-hailing app. Rolled out food delivery service in March 2018.

- MiTian (美团)
  - Started own E-car-sharing service

- Didi (滴滴)
  - Started own bike-sharing service

- Ele.me
  - Companies with food delivery service

- Baidu Waimai

Legend:
- Investment
- Acquisition

Source: Sixth Tone Liu Chang & Qian Zhecheng
Big Data & Smart city management

- Alibaba’s ET City Brain 2.0 is a cloud-powered and AI-driven urban traffic-management system.
- The platform provides real-time traffic recommendations and travel routes based on its video and image recognition & the use of big data.
- Real time emergency lane control but also urban infrastructure condition information are only a few examples for the scope of the ET City Brain.

Chinese Street Surveillance Object/Face recognition
Did they imagine today?

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