

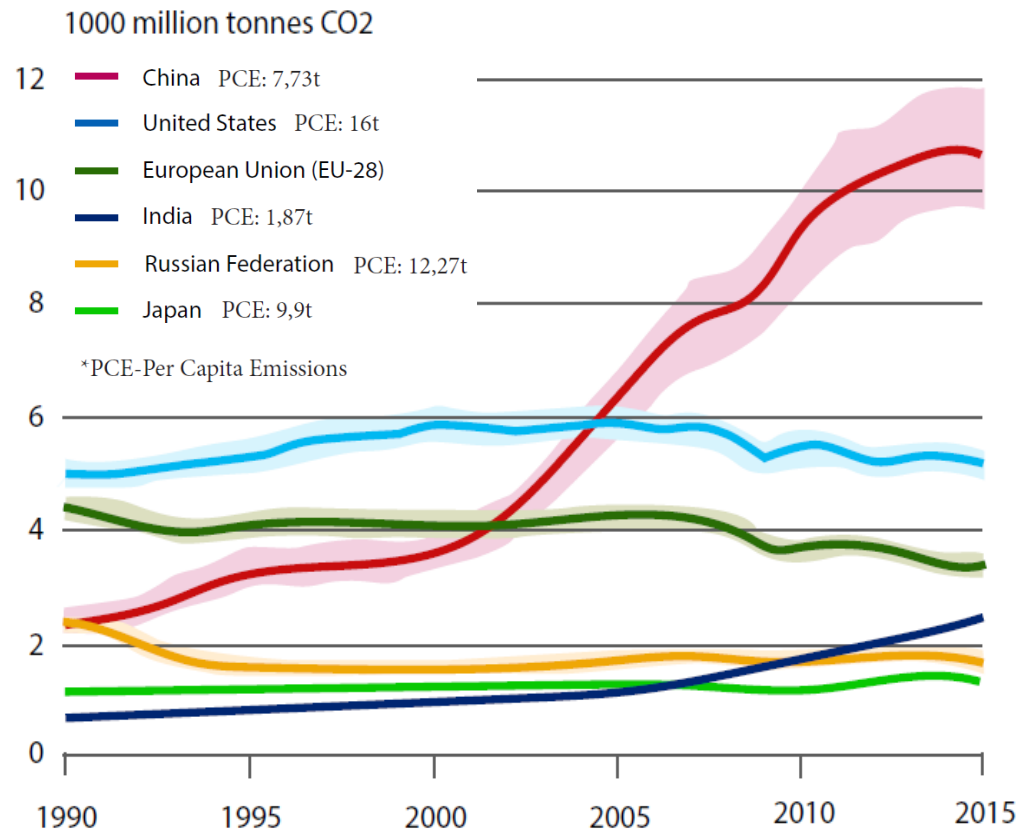


Transport Innovation made in China: How China is changing the global transport regime

Transport and Climate Change Week

China – The biggest emitter

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



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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)



Number of passenger cars per 1000 capita
(2016)





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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 Liquefied Natural Gas (LNG)



Cycling and Walking

Improvement of urban transport facilities for cyclists and pedestrians and promotion of cycling

Netizens - China's digital eco-system

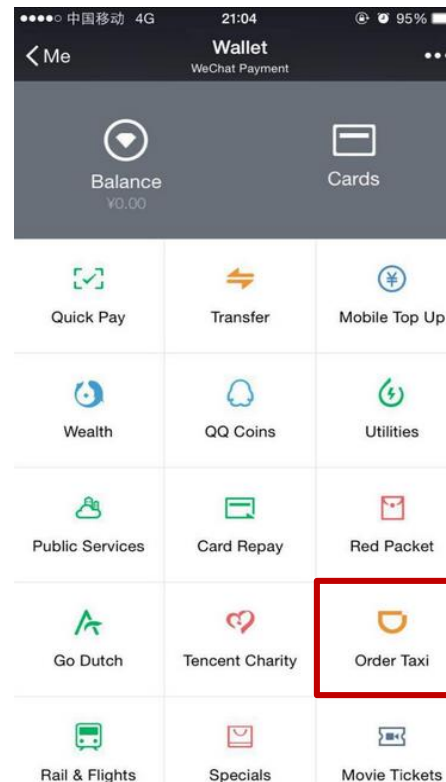
- China is home of about **802 million internet users**
- The Netizens are **digital natives** and are very used to mobile services (e-payment, e-commerce or mobile booking)
- Currently about **98%** of Chinese internet users are mobile
- More than 80% are using **WeChat**, where customers can access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



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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



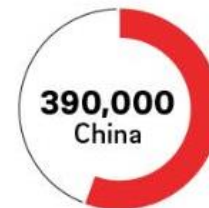
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Electro-mobility

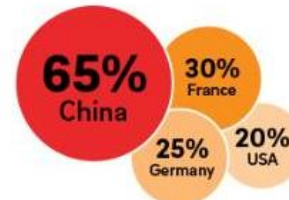
- Electro-mobility is a **key column of China's innovation roadmap** and a key column of China's "made in China 2025" strategic economic development plan
- Shenzhen fully electrified its public bus fleet by end of 2017 (17,000 buses)
- **Policy frameworks** on national and local level promote e-mobility (battery production, charging infrastructure, „e-shared mobility“ etc.

CONSUMERS:

Booming interest in electric vehicles



700,000 global EV sales
in H1 of 2018



Considering buying an EV as
their next car

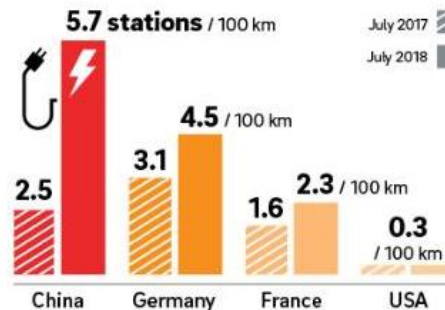


Consumers used an app at least
once a week to plan a trip

INFRASTRUCTURE:

The public charging network is growing fast

China doubled its charging
infrastructure over the past year:



REGULATION:

Beijing paves the way for more EVs

- ⚡ **Crackdown on combustion engines:**
More Chinese cities are discouraging combustion engine ownership while actively promoting use of electric vehicles
- ⚡ **New rules for foreign OEMs:**
Beijing has ended restrictions on foreign ownership of EV manufacturers in an effort to promote development
- ⚡ **Open to trials of self-driving cars:**
Daimler and BMW recently gained approval to test autonomous vehicles in Beijing and Shanghai

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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**

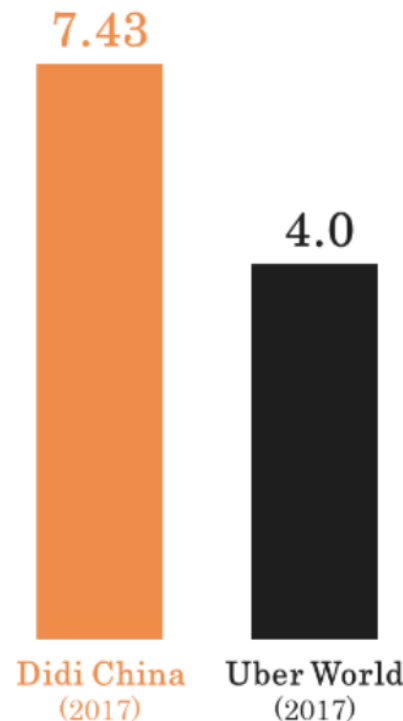


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Shared Mobility – Didi Chuxing

- 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

Total Number of Rides 2017
(billions)

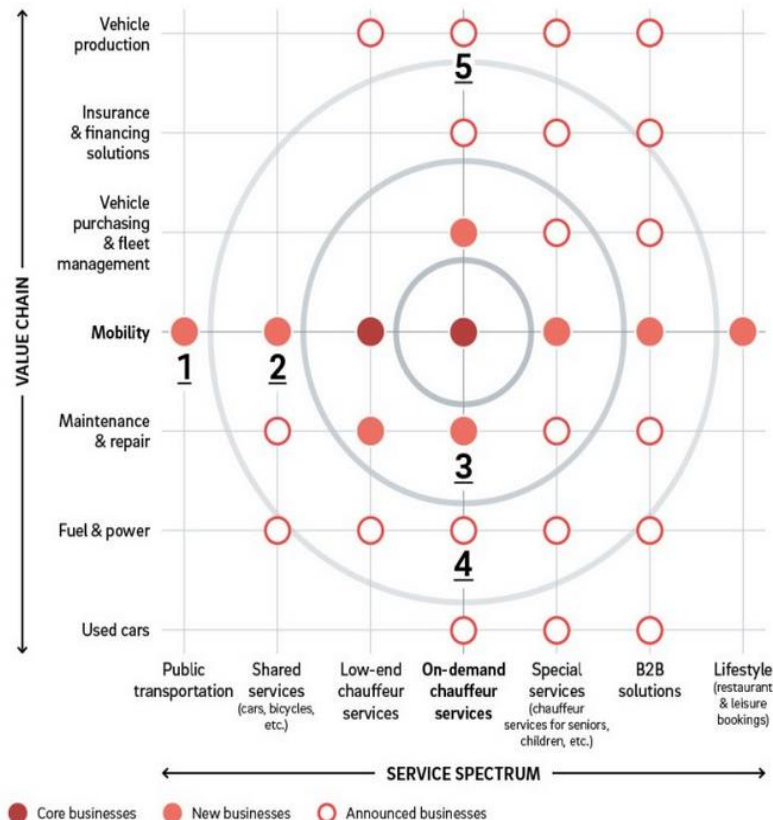


Rides per Day
(2018)

30,000,000
Didi China
15,000,000
Uber World

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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
(Ofu, 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 infrastruc-
ture 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**

Didi Chuxing – A holistic service environment



- ➔ **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



- ➔ **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 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



- ➔ **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

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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





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Autonomous driving



Major Business	Search Engine	Social Media and Gaming	E-Commerce	Ride-Hailing	E-Commerce
Valuation	\$90 billion	\$540 billion	\$60 billion	\$56 billion	\$500 billion
Start Automated Vehicle Project	2013	2016	2016	2017	2018
Focus	Passenger Cars	Passenger Cars	Delivery Robots	Passenger Cars	Delivery Robots
US Testing Permit	Yes (2016)	No	No	Yes (May 2018)	No
China Testing Permit	Yes (Beijing, March 2018))	Yes (Shenzhen, May 2018)	No	Yes (Beijing)	No



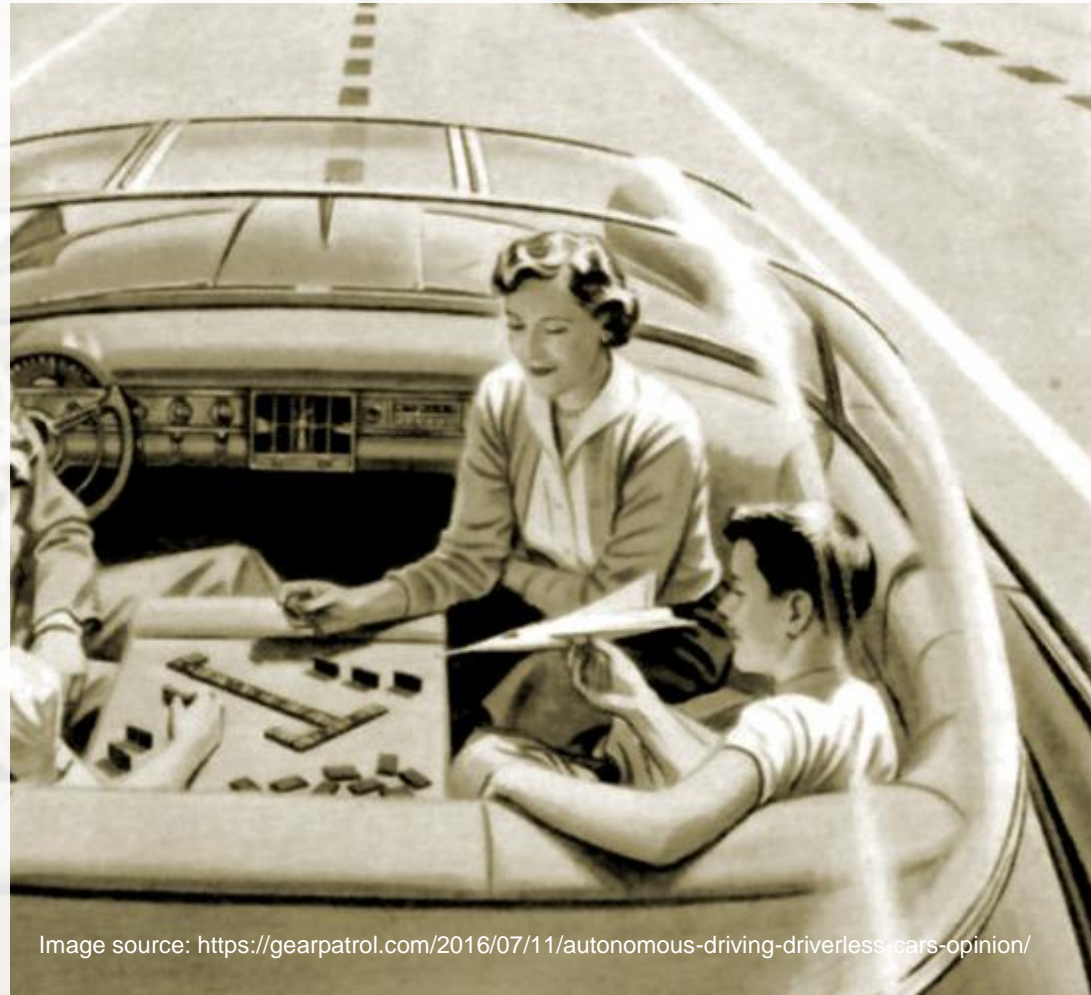
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Autonomous driving

- 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





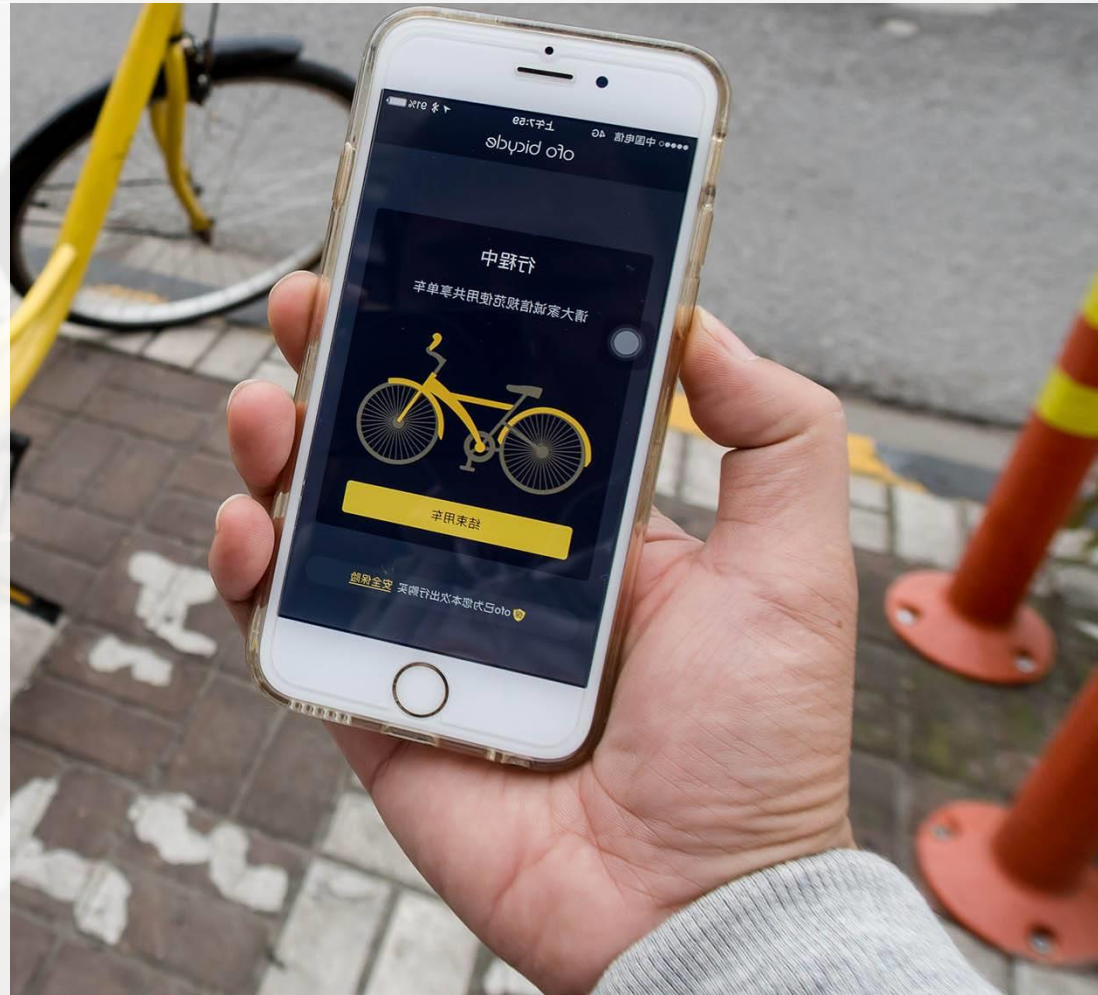
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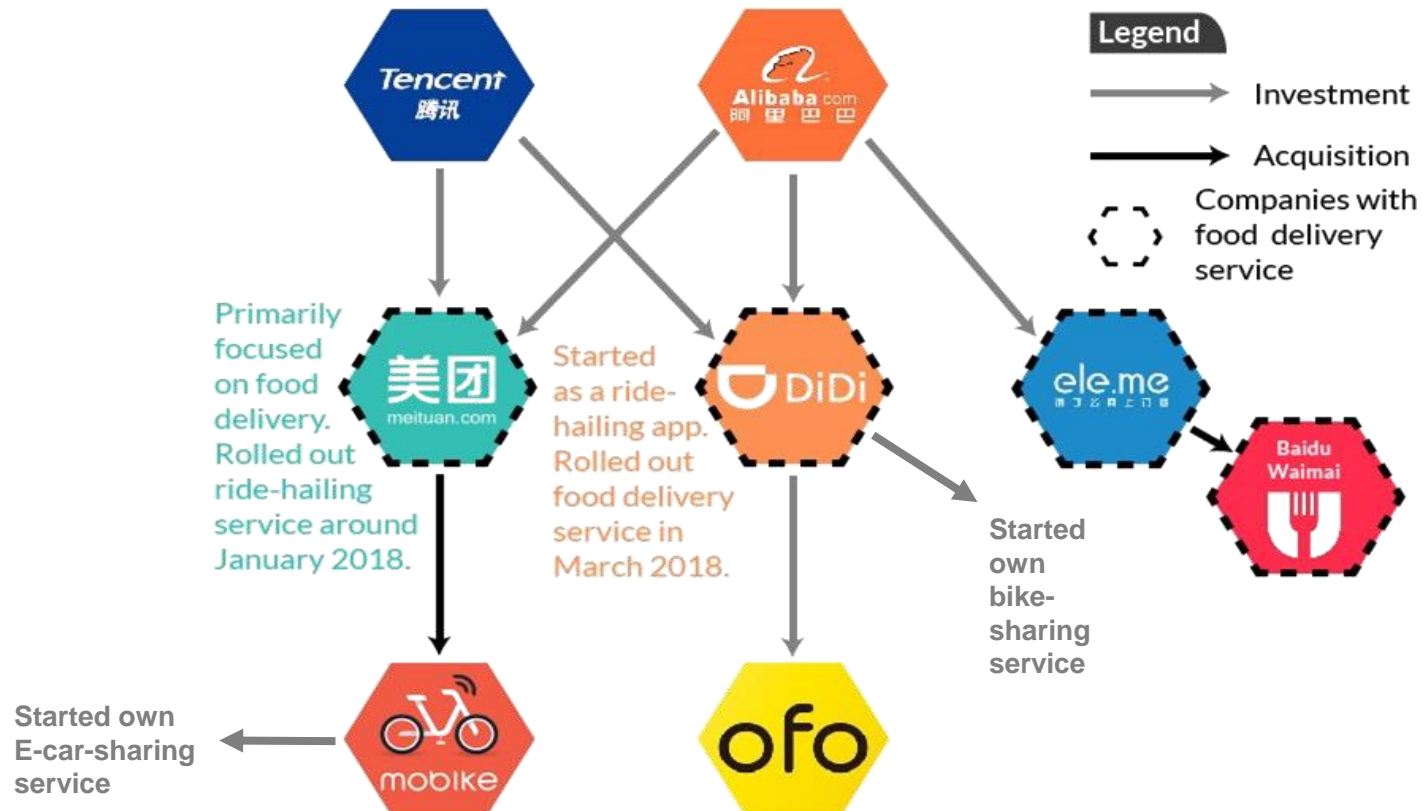
Smart bike-sharing

- 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



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Platforms & Cross industry alliances



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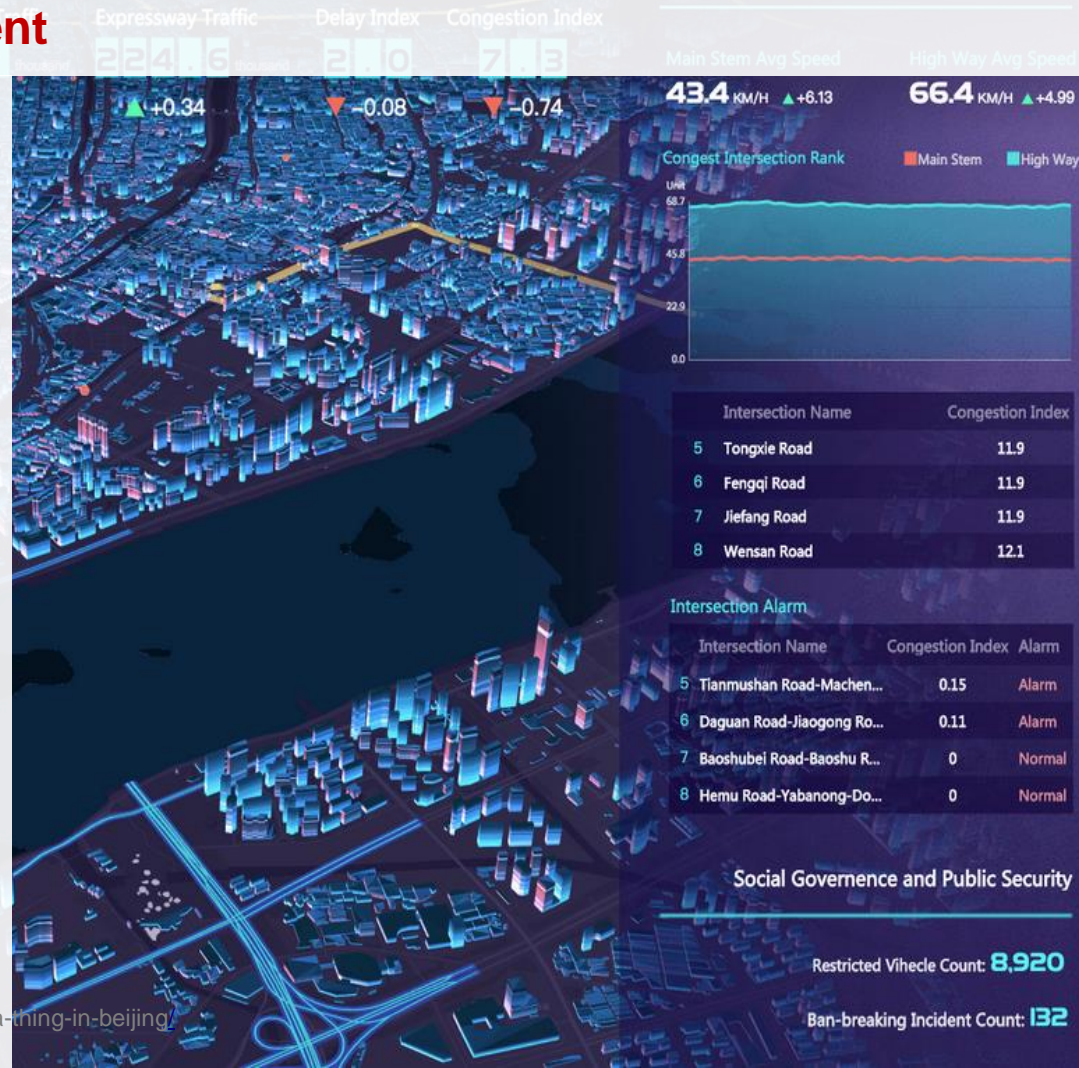
City Incident Perception and
Intelligent Processing

 **ET BRAIN**

Traffic Situation Perception and
Signal Light Optimization

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





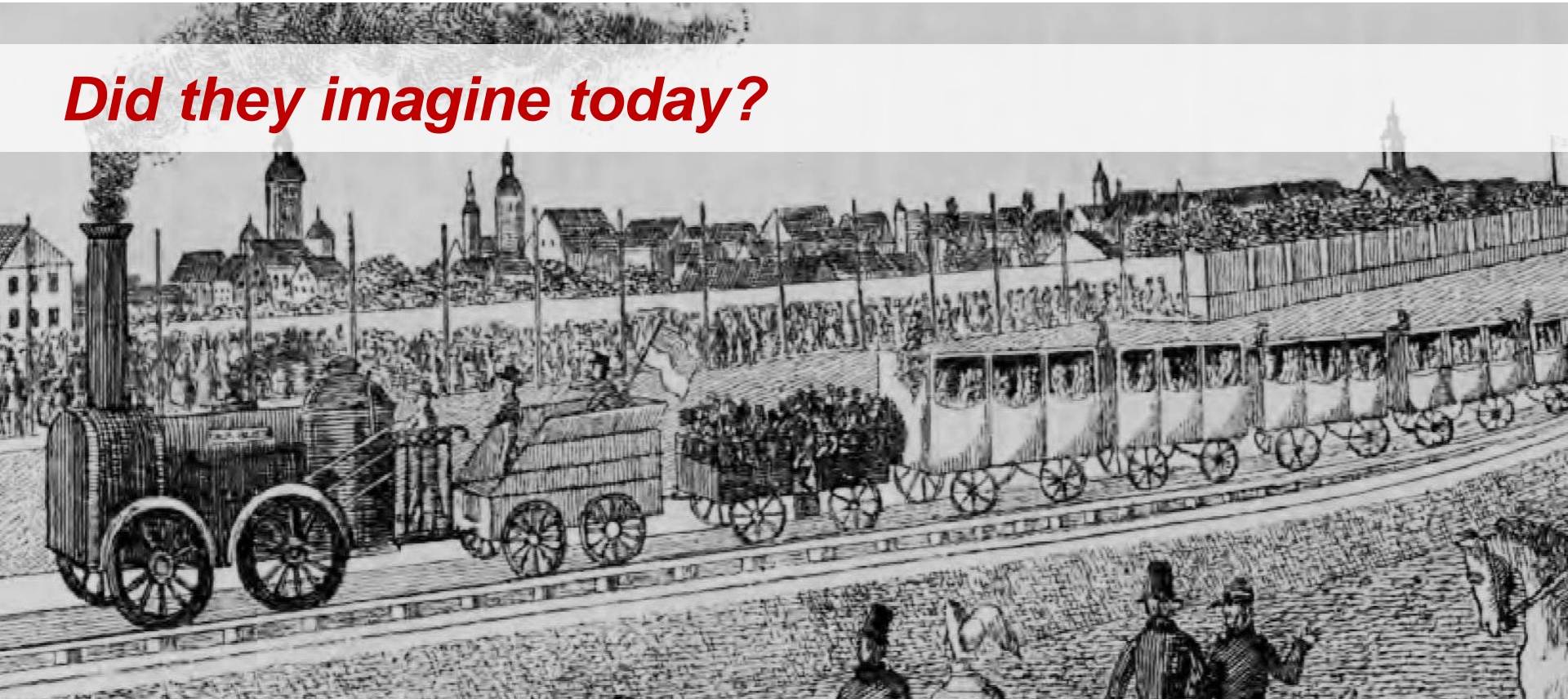
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Chinese Street Surveillance Object/Face recognition



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Did they imagine today?



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