

In a nutshell

Over three decades of rapid economic growth have fuelled China's rise to being the world's second-largest economy, aided by its transition from the manufacturing of low-end goods towards a knowledge-based economy. China is currently experiencing an economic slowdown due to lower foreign demand, and is thus seeking to invest in domestic innovation and consumption. Planned expansions of the national and regional road and rail networks, as well as increased car production and improvements in agriculture and other industries, offer increased opportunities for GNSS in China. The Chinese government is actively promoting the development and use of its BeiDou GNSS system, which launched in 2012. BeiDou has already seen significant uptake in more than a dozen industries, including transportation, meteorology, fishery, public security, forestry and finance. The huge size and scope of Chinese markets for GNSS applications, coupled with a rapidly digitalising economy, offers a significant opportunity for European partners to sell or licence their technology and services. Moreover, European companies could cooperate with Chinese firms, in particular SMEs, in accessing markets outside China. Such smaller Chinese companies tend to experience difficulties in expansion overseas without foreign participation.



Key opportunities



LBS

Location Based Services (LBS) in China are driven by the considerable market position of the three Chinese internet giants: Baidu, Alibaba and Tencent. For instance, the main Chinese social media platform WeChat from Tencent (with over 900 million daily users), offers a far greater degree of LBS integration than Western alternatives. The mobile payment sector in China is already around fifty times larger than the US market. Notably, the LBS sector in China is comparatively open to foreign enterprises and less dominated by Chinese State-Owned-Enterprises (SOEs).



Road

The unique context of China's urban transportation challenges, coupled with the high penetration rate of mobile internet and the rapid adoption of alternative ownership concepts, is fuelling a change towards smart mobility and Intelligent Transport Systems (ITS). The traditional automotive sector is being disrupted by non-traditional players in China, such as Baidu and Alibaba entering the autonomous drive markets.



Rail

By the end of 2017, China's rail network ranked as one of the largest in the world, with a total route length of 127,000 km. China has been continuously investing in infrastructure modernisation, and GNSS-based localisation systems are already in use on some rail lines. The impact of an operational BeiDou system will contribute to the continued improvement and application of GNSS in the rail industry. Notably, the European Rail Traffic Management System (ERTMS) / European Train Control System (ETCS) has already found sizeable adoption in China, which uses GNSS for e.g. virtual balises.



Agriculture

China is actively promoting Smart Farming practices through the application of Internet-of-Things and GNSS-enabled devices. This includes the use of sensors controlled via smartphones for herd tracking in Inner Mongolia and the remote control of smart well systems. The use of GNSS for precision agriculture is also a developing industry, for instance in cotton harvesting and irrigation.



Maritime

BeiDou is increasingly being used for the sending of maritime distress signals, using its two-way communication system.

Strengths & opportunities

- Vast size of Chinese consumer market with rapid growth, allied to major developments in industries such as social media, mobile payment and LBS requiring GNSS-enabled applications.
- High-profile development of BeiDou has raised awareness of the potential of GNSS applications.
- Very high mobile phone use and booming urbanisation movement (leading to demands for smart cities, smart mobility and Internet-of-Things).
- Growing sectors in robotics and artificial intelligence, which will require high performance GNSS solutions and devices.
- Government-led connectivity initiatives, such as China's Belt and Road Initiative (BRI), could bring opportunities for EU GNSS companies in energy, rail and road.

Weaknesses & threats

- Several barriers to market access for foreign firms, including protected sectors, limits on equity ownership, and challenging standardisation and public procurement practices.
- Dominance of State-Owned-Enterprises (SOEs) in several sectors, particularly infrastructure-related.
- Market dominance of BeiDou may be difficult to disrupt, particularly as higher-end BeiDou services become available.
- Low market awareness of Galileo, coupled with increasing independence of Chinese industry in high-technology areas.

A globally competitive GNSS value chain

In 2017, the total output value of China's satellite navigation and location service industry reached ca. €33.15 billion, an increase of 20.4% from 2016. Chipset devices, algorithms, software, navigation data and terminal equipment accounted for 35.4% of this total. Of this, BeiDou is considered to account for 80% of the total value. The Chinese Government is also pushing efforts to make BeiDou a regional standard for GNSS with local partner countries.

Large-scale GNSS-enabled applications for smart cities, integrated security, and precision agriculture are expected to increase. It is estimated that through 2025, transportation will remain the most important industry market for GNSS-enabled applications.

The Chinese Government is fuelling the GNSS industry and LBS-related market with significant investment through public procurements. However several Chinese internet giants, such as Baidu, Alibaba, Tencent, Jim Dong and Meituan-Dianping are driving innovation in mobile technologies, LBS, smart cities and Intelligent Transport Systems (ITS). These sectors are considered easier for foreign companies to enter. Other sectors offer more significant market barriers for foreign companies, via licence requirements, local standards, requirements for national security, unequal access to subsidies, direct ownership restrictions and protected market sectors.

Key GNSS stakeholders

Institutions



Chipsets / Receivers



Applications / System Integrators / Solution Providers



Contribution to multi-GNSS in Asia-Pacific

System

Beidou

Space Segment	Final constellation: 3 GEO, 24 MEO and 3 IGSO satellites (plus spares).
User segment	L-Band: B1:1559.052-1591.788MHz; B2: 1166.220-1217.370MHz; B3: 1250.618-1286.423MHz S-Band: E1: 1590MHz; E2: 1561MHz; E6: 1269MHz; E5B: 1207MHz
Accuracy	Free service with a 10-metre position accuracy, 0.2 m/s velocity accuracy, and a timing accuracy of 50 ns. Centimetre-level accuracy is expected soon, likely to be provided free.
Current status	Regional services already fully available, the global system will be completed by 2020.



GNSS.asia local partner:
European Chamber of
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