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Executive Summary

The Industrial Internet of Things (IoT) has the potential to fundamentally shift the way businesses create value, whether internally for their operations or externally for their customers. It is critical to understand that all incremental value from IoT systems comes from transforming data into useful information. The flow of data provides the ability to monitor systems in real time, control assets remotely, optimize the performance of processes, and gain radically deeper insight into how facilities, assets, devices, and people operate.

The Chinese government understands the transition that is taking place and is investing heavily to establish China as a leader in digital innovation. IoT technologies are key enablers in China’s mission to evolve from the leading high-volume manufacturer to a country that competes on quality and innovation, while remaining a cost leader. China’s aspirations extend across the economy from manufacturing to healthcare technology. IoT technologies are likewise horizontal in scope. Technologies like 5G and machine learning will enable new products and processes across the economy. China’s sustained economic growth and stability will depend in some large part on its success in establishing leadership in the core IoT technology domains of device hardware, device software, connectivity, cloud platforms, and applications.

Why is China’s strategic imperative important to your business? Whether you operate in China, compete with Chinese companies, or look to China as a high growth market, you will be impacted by China’s investment in IoT innovation and system deployment. This report is written for technology providers and system operators that are committed to remaining profitable and relevant in an era of data-driven value creation. We encourage these companies to monitor the rapid development of China’s IoT ecosystem in order to assess risks posed by new competitors, opportunities presented by industry upgrading, and cost effective strategies for implementing agile digital innovation in emerging economies.

Our central finding is that China is poised to become a leader in both the development and deployment of IoT technologies. Foreign companies have much to gain by participating in China’s next stage of industrial development. However, they must do so with a strategy that is sufficiently agile to compete in China’s dynamic markets yet attentive to the risks posed by rising competitors. Our findings in brief:

- China’s unique innovation model is designed around a deeply embedded public-private collaboration in which the state provides strategic direction and financial incentives through subsidized research and project deployment, while private companies drive technology and business model innovation. State-owned-enterprises (SOEs) operate as extensions of the state by allocating resources to strategic domains. They are not innovation leaders but will remain an important lever for economic management.
- China is most suitable as a testbed for experimental deployment of new business models and operating processes, rather than complex, cutting edge technologies. Chinese end users are highly adaptable due to the lack of entrenched operating processes and their comfort level with digital technologies.
• Chinese Industrial IoT companies focus primarily on ‘devices’ and ‘software’. There are few Chinese companies with competitive core hardware technologies. However, they excel at integrating existing technologies into innovative form factors. Chinese companies have also emerged as leaders in software domains such as machine vision and data visualization. Foreign product manufacturers and operators have a strong opportunity to collaborate with Chinese IoT companies both to upgrade their technological capabilities and to integrate their existing technologies into new solutions that Chinese companies can bring to ‘long tail’ or lower-tier markets.

• China’s Industrial IoT companies are heavily consolidated in Beijing, Shanghai, and Guangdong. These cities also contain more than 80 percent of foreign research and development centers, which simplifies coordination. However, there is a trend among both Chinese and foreign firms to expand to western cities, such as Chengdu, Xi’an and Wuhan, where developer resources are relatively inexpensive.

• The majority of Chinese Industrial IoT companies were established after 2010. They are significantly smaller than digital market leaders in China’s Consumer Internet, averaging less than 238 employees. This is due to the recent adoption of Industrial IoT solutions in scale and to the fragmentation of industrial market niches. The Industrial IoT is widely expected to surpass the Consumer Internet in terms of market size; however, the market will remain relatively fragmented due to industry-specific regulations, requirements, and B2B sales processes.

• European companies are lagging significantly behind American companies in terms of engagement with Chinese Industrial IoT companies. Among the 10 foreign companies with the most local partnerships, one is European (Bosch), one is Korean (Samsung), and the remaining eight are American. This trend indicates that European companies will be at a disadvantage as industrial value creation shifts from a reliance on hardware toward a reliance on software.

• Likewise, industrial companies lag information technology and telecommunications companies in forming partnerships with Chinese Industrial IoT companies. Of the 20 most active partners, only Bosch, State Grid Corporation of China, and China National Petroleum Corporation have their roots in the industrial sector. The other 17 are companies such as Intel, Tencent, and China Mobile. It is thus plausible that traditional market leaders will lose market share to information technology and connectivity providers in the coming decade.

This report captures the current state of the Industrial IoT market in China, with a focus on the entrepreneurial companies that will power China’s industrial transformation. We hope it is a useful reference source as you develop and implement your digital transformation strategy.
Report Methodology & Content Overview

This report is based on research into 134 Chinese companies that are contributing to the Industrial Internet of Things (IoT) ecosystem as software, hardware, or service providers. The companies provide technologies or services in 19 solution domains and serve 24 industries and 13 functions. For each of the 134 companies, we provide an overview of the company’s value proposition, products, size, financial maturity (when available), target customers, and partners. Multiple solution domains, industries and functions may be selected for each company. We also identified 34 investors, incubators, and technology parks that serve as innovation enablers. These organizations support development of a scalable ecosystem and often act as conduits to communicate strategic national objectives to entrepreneurs.

This report is not a definitive survey of all relevant Chinese companies. Through other projects, IoT ONE has assessed more than 600 companies in China with Industrial IoT solutions. There are undoubtedly many more that we remain unaware of. This report is also not a statistical representation of the ecosystem. Software providers were prioritized over hardware and service providers due to their importance in enabling new solutions and business models. The report also has a bias towards startup companies, with less attention provided to mature players. This is due to our impression that our audience will receive greater value by learning about companies that are difficult to identify and may otherwise remain unknown.
Content Overview

China Industrial IoT Landscape Analysis

Improve your understanding of the composition of China’s Industrial IoT ecosystem with analysis by technology domain, target customer industry and function, geography, and company age and size.

China Partner Ecosystem Analysis

Identify the companies most active in partnering with Chinese IoT companies, including foreign enterprises, private Chinese enterprises, and state-owned enterprises.

China Industrial IoT Company Profiles

Discover 134 Chinese vendors who are providing software, hardware, and services that enable companies in China to upgrade their product portfolios and operations with IoT technologies.

Ecosystem Support Organizations

Identify the technology parks, accelerators, and co-working spaces that are supporting the rapid rise of technology entrepreneurship across China, from Beijing to developing western provinces.
About IoT ONE

IoT ONE published this report to further our mission of helping companies understand the evolving Industrial Internet of Things (IoT) landscape. The first Internet wave disrupted retail, media and finance. Traditional companies declined and new leaders emerged. The second Internet wave is disrupting how products and operations create value. It will impact every company that builds or operates physical infrastructure, assets and devices. The core question companies must consider is “Will you disrupt or be disrupted by the Industrial Internet of Things?” Our “micro-to-macro” research covers the the four central knowledge domains that guide strategy development for both IoT technology development and adoption.

**Use cases** define the range of possible solutions that exist today or will exist in the future. Use cases differ in market readiness. The predictive maintenance use case is easily envisioned but technically challenging. In contrast, asset-as-a-service use cases can be technically simple but may disrupt value chains.

**The IoT technology stack** enables use cases. Bottleneck technologies can delay or prevent use case adoption. For example, battery constraints limit the deployment of sensors for environmental monitoring.

**Business model or process innovation** is often required in order to obtain value from a connected product or an internal system. The most significant challenges may be organizational rather than technical.

**Partner ecosystems** are as critical as intellectual property for success in Industrial IoT markets. Few companies possess all of the competencies internally that are needed to bring solutions to market.

IoT ONE provides research and advisory services to help companies manage the threats and opportunities brought by the Industrial Internet of Things. We conduct research globally, because innovation transcends borders and cultural differences, and we support the planning and execution of innovation strategies in Asia. Our methodology combines IoT domain expertise with innovation strategy and organizational development experience. And our engagement with technology and startup ecosystems gives us access to specialized expertise and entrepreneurial perspective.

We hope you find this report useful as you position your company for profitable long-term growth.

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IoT ONE helps companies access the external information they need to make confident business decisions. We provide customized IoT landscape reports with the objective of helping you make informed decisions about how IoT technologies will impact your top line, bottom line and competitive position.

Which IoT use cases have the potential to create new business opportunities or disrupt your existing business?

Which technologies will enable disruptive use cases and what is their current state of maturity?

What partner ecosystem will help you fill capability gaps and stay agile as your products and operations evolve?

What IoT-enabled business models and operating processes will improve your competitive positioning?

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