

Internet of Things: Innovation with Chinese Characteristics

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The Internet of Things ("IOT"), or the Internet of Everything, has become a popular buzzword in recent times. But what does it really mean? While there are many definitions, the central premise is that many or most of the everyday objects (and perhaps even people) in our lives, from kitchen appliances to highways to paperclips, can be uniquely identified and linked together into a network using a variety of 'tagging' technologies, thereby sharing data and interacting to make our lives more convenient and efficient. The possibilities are endless – the lock on your office door could be linked to a taxi dispatch system, sending you a cab by the time you step out of the office building; you could have your car send a signal to start running a bath when you get close to home; an incoming phone call could automatically lower the volume on a nearby stereo system; or low inventory in a warehouse could trigger an automatic purchase order via a central purchasing centre.

With estimates of the global private value to be created by the IOT reaching well into the trillions of dollars, the possibilities for the transformational effect it may have on our lives seem boundless. Not to be left behind, the Chinese government has highlighted the IOT as an opportunity for domestic innovation, promoting it vigorously through locally-driven initiatives backed by supportive national policies.

National Policy Support

China's top leadership has provided support and encouragement for the push to bring China to the forefront of IOT development. With the government as the largest consumer in this space, such national support is and will continue to play a critical role. In China, the IOT space falls chiefly within the regulatory ambit of the Ministry of Industry and Information Technology ("MIIT"). However, other central ministries are involved in generating the underlying policies and rules as well. Some of the most influential policies may be those that have been in place for many years, such as Circular 18¹ and Circular 4² which provide preferential tax policies for the software and integrated circuits industries and which some say may be eventually extended to explicitly include the IOT. To date, the following key policies and rules have been developed to specifically target IOT innovation:

12th Five-Year Plan on the IOT³ (MIIT, November 2011). This broad statement of support and encouragement for the development of the IOT sector in China sets forth general tasks for the government and private enterprises in the 2011-2015 period including: solving key technological problems, setting standards, cultivating key enterprises, promoting and demonstrating IOT real-world applications, planning the regional distribution of the IOT industry, and ensuring information security.

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Guidance Opinion on the Orderly and Healthy Development of the IOT⁴ (State Council, February 2013).

This general policy document recognizes concrete results already achieved in R&D, standards development, industry cultivation, and technology application; outlines key principles for IOT development, such as harmonious and orderly progress, demand-led development, and security; and calls for near-term breakthroughs by 2015 with pilot applications targeting the agriculture, transportation, logistics, and energy industries.

IOT Special Fund Interim Measures⁵ (Ministry of Finance (MOF) April 2011). While most financial incentives for IOT development have been pushed from the local level, the IOT Special Fund ("**Special Fund**") is a national fund that seeks to promote IOT-related R&D, applications, and services. The Interim Measures describe some of the basic features of the Special Fund. The Special Fund is to be jointly administered by MIIT and the MOF, with the former responsible for determining the direction of annual support and supervising projects, and the latter responsible for budgetary management and fund allocation. Grants are generally offered to self-funded projects while loan subsidies support those with bank-loan funding.

Notice on Properly Implementing the 2013 IOT Special Fund Project Application⁶ (MIIT & MOF, April 2013). This document provides greater detail in terms of application procedures and acceptance criteria for the IOT Special Fund. In 2013, the Special Fund is to support the following key project areas: (1) IOT systems development projects, including critical features of intelligent industry, intelligent agriculture, intelligent environmental protection, intelligent transportation and logistics, and intelligent security; and (2) key technology R&D and industrialization projects focusing on IOT areas such as the sensing, transmission, and processing of data.

Locally-driven Innovation: Wuxi, IOT Hub

Despite such supportive policies and pronouncements from the central leadership, the main momentum for IOT innovation on the ground has come from local governments. A number of municipalities have made significant investments in this area, with Wuxi clearly at the forefront. In China, the name Wuxi is now synonymous with the Internet of Things and the country's push to be at the cutting edge of developments in this area. Starting from former Premier Wen Jiabao's visit to Wuxi in late 2009, the local and central governments have worked together to establish the 23-square kilometre Wuxi National Internet of Things Innovation and Demonstration Zone.

The IOT Demonstration Zone is primarily composed of four parks and one centre: (1) IOT Innovation Park, (2) IOT Industrial Park, (3) IOT Information Services Park, (4) IOT

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University Science Park, and (5) IOT Application Exhibition Centre.

Government support for the IOT push in Wuxi has included giving priority in government procurement, financial support, simplified and speedy approvals, and easier availability of land.

Wuxi IOT Demonstration Zone Statistics

(Statistics reflect data available up until August 2012⁷)

- Over 600 enterprises
- Over 100,000 employees
- 31 reputable research institutions
- Over 125 applied demonstration projects
- Nearly RMB 80 billion in IOT industry output

Opportunities and Challenges

China's commitment to developing the IOT sector presents a unique opportunity for private businesses. As the discussion above suggests, the Chinese authorities will generally welcome companies (both domestic and foreign) investing in the development of the IOT in China. Chinese officials at both the local and national levels who are cognizant of China's weakness in terms of the technical know-how required to underpin the development of the IOT should, in theory, be keen to attract foreign investment and technology transfer into this industry. However there remain many challenges facing private sector entities seeking to make an impact in China's IOT space.

For instance, the IOT industry in China is currently dominated by large state-owned enterprises and multinational companies which tend to have strong, established relationships with local and central government officials. With the government serving as both the largest customer for the IOT industry and as the biggest backer of IOT innovation, newcomers may find that demand is not necessarily driven by market factors and may struggle to cultivate the necessary relationships with the relevant authorities. National initiatives such as the Special Fund have already drawn criticism for a lack of transparency. Local decision-making may be even more opaque or may be driven by more local concerns.

The IOT development push also raises a range of legal issues including those related to data protection, intellectual property, and antitrust.

Among them, investors should familiarise themselves with the differences between the Chinese patent system and other patent systems, as well as the rules regarding intellectual property ownership when projects receive government support (e.g. through the Special Fund) or involve collaborative efforts with other companies (from different sectors, for example).

Furthermore, the IOT space by definition requires interoperability between various devices and platforms, which

in turn requires clear, common technical standards. In China, the importance of standard-setting processes has increased significantly in recent years. As China does not systematically adopt all international standards and sometimes pushes for the adoption of its own national standards (such as WAPI or TD-SCDMA), companies need to familiarize themselves with domestic standardization processes and institutions, which tend to be more government-influenced than those in the West. China's IOT push may also raise antitrust issues in due course. For example, the possibility of a new wave of 'patent wars' over the exercise of patents comprised in IOT standards cannot be ruled out.

Conclusion

The development of the IOT should be an inherently cooperative phenomenon that by its very nature brings together companies and individuals from very different sectors of the economy, and very different parts of the world. For lawyers and businesses, the challenges will relate to achieving interoperability and common standards that will allow such cooperation to function on a technical level and allow the IOT to operate seamlessly across borders and cultures, taking into account differing political and cultural sensitivities. For example, China has on the one hand historically welcomed the commercial possibilities of the Internet, but on the other hand it has been concerned about the Internet's potential to spread dissent and political unrest. At the same time, the Internet in most other jurisdictions has been a much more free-wheeling and less controlled and monitored space. Hence, China will likely be heavily focused not just on the technical interactions between things, but also on the *content* of their interactions.

Against this background, linking everyday objects into a network of things, while holding out immense promise and potential, will likely bring forth many new and interesting challenges for lawyers and for businesses. One thing is certain: the rewards for whoever succeeds in unlocking the potential of the IOT will be enormous.

FURTHER INFORMATION

The above is written as a general guide only. It should not be relied upon as a substitute for legal advice. For further information, please contact any of the following or your usual contact at the firm:

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- ¹ See *Policies on Encouraging the Development of the Software and the Integrated Circuit Industries* (鼓励软件产业和集成电路产业发展若干政策) issued by the State Council on June 24, 2000 ("**Circular 18**").
 - ² See *Policies on Further Encouraging the Development of the Software and the Integrated Circuit Industries* (进一步鼓励软件产业和集成电路产业发展若干政策) issued by the State Council on January 28, 2011 ("**Circular 4**").
 - ³ See *12th Five-Year Plan on the Internet of Things* (物联网“十二五”发展规划) issued by the MIIT on November 28, 2011.
 - ⁴ See *Guidance Opinion of the State Council on the Orderly and Healthy Development of the Internet of Things* (国务院关于推进物联网有序健康发展的指导意见) issued by the State Council on February 25, 2013.
 - ⁵ See *Interim Measures for Administration of the Special Fund for the Development of Internet of Things* (物联网发展专项资金管理暂行办法) issued by the Ministry of Finance on April 6, 2011 (the "**Interim Measures**").
 - ⁶ See of the General Office of the Ministry of Industry and Information Technology and the General Office of the Ministry of Finance *Circular on Properly Implementing 2013 IOT Special Fund Project Application* (工业和信息化部办公厅、财政部办公厅关于做好2013年物联网发展专项资金项目申报工作的通知) issued on April 27, 2013.
 - ⁷ See *Construction Summary of Wuxi National Internet of Things Innovation and Demonstration Zone* (无锡国家传感网创新示范区建设情况总结), <http://www.wuxi.gov.cn/zfxxgk/szfxgkml/gzbg/bmgzj/6191432.shtml>.