

The Internet of Things and the issue of IP rights (part two)

Thorny Intellectual Property issues are likely to make cooperation between corporate giants a utopian ideal

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Introduction

As was discussed in [Part 1](#) of this article, “[The Internet of Things](#)” describes the growing number of everyday objects that have been embedded with unique identifiers and technology that enables them to sense and communicate. Power-efficient chips, manufactured by companies like Intel, Qualcomm and Texas Instruments, are making it cheaper than ever for these objects to connect to the Internet. And thanks to the latest version of Internet Protocol (IP), IPv6, it is now possible for each of these *things* to obtain its own IP address. Thus, the Internet of Things essentially represents a union of wireless technologies, the internet and micro-electromechanical systems ([MEMS](#)) — such as those developed by Bosch.

Many of these innovations are proving to be of great benefit, not the least of which is the average smartphone, which can be equipped with multiple sensors, including a GPS, an accelerometer or an altimeter. More importantly, smartphones can be loaded with apps that enable them serve as a wireless hub or a remote control for other “connected” objects. However, visionaries believe that the Internet of Things will progress beyond individual “smart” gadgets to become broad-based systems of interconnected people, places and products. And the city that is most likely to be the first to make such a vision a reality is the [Songdo International Business District](#).

A model for the Internet of Things to come

Songdo is a \$35 billion real-estate venture that is being built from scratch on 1,500 acres of reclaimed land along the Yellow Sea in Incheon, South Korea. Spearheaded by New York-based development company Gale International, Songdo is one of the largest public/private real estate ventures in the world. When this project is completed in 2018-2020, it will boast 40 million square feet of office space, 35 million square feet of residential space, 10 million square feet of public space, 10 million square feet of retail space and five million square feet of hospitality space. It will be home to 65,000 residents, and 300,000 people will commute in daily. Already, more than 32,000 people call Songdo their home.

Songdo's master plan draws on some of the world's greatest architectural elements, including New York City's Central Park, and the canals of Venice. It is also a model for sustainable city-scale development, with more than 13.7 million square feet of LEED-certified space, including the first LEED-certified convention center (called Convensia) in Asia and the first LEED-certified residential tower in Korea. Rain and wastewater are collected for irrigation and use in cooling

towers, and trash is sucked directly from residences into a network of underground pneumatic pipes.

Songdo's most distinctive characteristic, however, is the fact that wireless technologies are part of this city's DNA. A fiber-optic broadband infrastructure covers virtually every square inch of real estate, linking all of Songdo's social and information systems. Integrated and immersive technologies are provided to all of Songdo's residences, offices, schools, hospitals and retail locations. And the fact that companies like Cisco, 3M, LG and other major corporations have been cooperating to bring this project to life demonstrates that competing firms can work together toward a common goal. But it is one thing to develop a smart city from scratch, it is quite another to transform a major metropolis into a unified, interconnected system.

The challenges that lie ahead

For the Internet of Things to be integrated into a densely populated borough like Manhattan, or a sprawling municipality like Los Angeles, a complex technical architecture must be built that allows for universal wireless connectivity and the ability to process information streaming from a multitude of sources — including millions of sensors and connected devices located throughout the city. Protocols that can manage vast amounts of competing data will also be needed. This level of electronic interactivity will require the standardization of the system's technology.

Issues related to the patenting of standardized technology

If this standardized technology is patented, however, third-party users could be forced to either infringe on these patents, or to pay exorbitant license fees. Such a situation could create a substantial barrier to entry to the Internet of Things. In many other technology industries, the owners of standard essential patents (SEPs) are obligated to offer non-exclusive licenses to prospective licensees on fair, reasonable, and nondiscriminatory (FRAND) terms in order to avoid this problem.

These FRAND terms are often required by standards setting organizations (SSOs) for members that participate in the standard-setting process — which is intended to ensure the compatibility of devices manufactured by different companies. But even where FRAND terms are imposed, there is no guarantee that parties will ever agree on what fees are “fair and reasonable.” On the other hand, *too much* cooperation could be seen as a violation of anti-trust laws!

Issues related to the patenting of software

Another issue that must be resolved concerns the ownership rights of those that create the software that will be used in this system. This will be a very important subject, as powerful computer programs will need to be written to facilitate communication between different objects, between objects and the internet, and between objects and operator interfaces. Highly sophisticated security algorithms will also be needed to protect this system, as malware (e.g.

computer viruses and worms) could wreak havoc once the Internet of Things is integrated into a city's social structure.

The problem is that the issue of the patentability of software remains largely unsettled. The question of what kinds of computer programs are patent-eligible has vexed both the courts and the USPTO for over a half-century. Guidance may be forthcoming, however, as the U.S. Supreme Court is expected to issue its decision on *Alice Corporation Pty. Ltd. v. CLS Bank International* in June of this year. This will be the first case on the patentability of software that the Court has decided since *Gottschalk v. Benson* – over forty years ago!

This case is being closely followed by both technology companies and patent attorneys alike, and many groups have filed amicus curiae briefs. Some believe that when the Court renders its decision, it may finally establish a patent-eligibility test that clarifies when software can be patented — and, more importantly, when one can be found to be infringing on a software patent!

Conclusion

Outside of brand-new business districts, where wireless technologies are literally being integrated from the ground floor up, progress toward an Internet of Things on a city-wide scale may be slow and halting. Thorny Intellectual Property issues are likely to make cooperation between corporate giants a utopian ideal. The same turf wars that have plagued the telecommunications and mobile device industries will almost certainly be waged over the Internet of Things. Still, if newly developing smart cities like Songdo are a success, pressure will soon build to bring the Internet of Things to a city near you!

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