

In order for the creativity and inventive capacities of the hundreds of thousands of people developing around open-source projects or platforms to be realized, it is vital that patent non-aggression be safeguarded.

By Keith Bergelt

Mar 26, 2018—As the next wave of internet usage, the Internet of Things (IoT) will transform industries and provide new opportunities for technological advances. The IoT can be viewed as a means to connect objects, machines and humans in large-scale communication networks. Gartner estimates that there will be 20.4 billion IoT-connected components worldwide by 2020, and more than half of major new business systems and processes will include a IoT component.

Furthermore, according to a 2017 Boston Consulting Group report, the market for IoT products and services is expected to reach \$267 billion by 2020. The report predicts that by 2020, 50 percent of all IoT spending will be driven by discrete manufacturing, transportation, logistics and utilities—critical areas of businesses and community infrastructure.



The great prospects for the IoT have already led to growing patent litigation in the space. For example, Unified Patents studied district court patent litigation in the IoT in the United States from 2012 to 2015, and found that IoT patent litigation increased by 80 percent during those four years. Extrapolating from this data, there is the potential for aggressive patent behavior, whether via patent litigation or other tactics, to accelerate going forward as the size of the IoT market grows.

Open Source and IoT: Connected

The proliferation of IoT devices and embedded parts is growing at a pace in lock-step with that of open-source software adoption. This makes sense, given that Linux and embedded Linux are the *de facto* operating systems for the vast majority of IoT-based systems and components.

Open-source software development and usage is an irreversible trend. Today, open-source code is so effective and cost-efficient that it is used in more than 90 percent of all software. In fact, it is impossible to catalog all of the daily touch points the average person has with an open-source-powered product or service. The Linux Foundation estimates that more than 31 billion lines of code have been committed to open-source software repositories. Open-source is a leading technology in smart cars (Automotive Grade Linux), blockchain (Hyperledger) and, of course, IoT platforms and devices.

While it has experienced nearly exponential growth, the successful adoption and use of open-source by banking networks, mobile phone manufacturers, telecom networks, smart cars, cloud computing and blockchain platforms, among numerous others, was not a foregone conclusion. In 2003, there was an IP-based attack on Linux, the most prevalent open-source software project.

While the claims underlying the litigation ultimately were found to be without merit in the court proceeding, it was a wake-up call to several IP-savvy companies as to the potential negative impact of patent aggression on the growth of Linux and open source software projects. IBM, Red Hat and SUSE (then Novell) coordinated an effort with Sony, Philips and NEC to conceptualize and implement a solution designed to create a patent no-fly zone around the core of Linux.

The entity charged with administering this patent no-fly zone utilizes a free license to require participant companies to forebear litigation and cross-license patents in the core of Linux and adjacent open-source software. Throughout the twelve years since its formation, the organization has grown into the largest patent non-aggression community in history, with an excess of 2,400 participant companies which own upwards of three million patents.

In addition to administering the highly successful royalty-free free license, the organization has been one of the most active users of the American Invents Act's pre-issuance submission program, and through its actions prevented the granting of hundreds of patent applications with overly broad claims that, if issued as submitted, would have threatened Linux technology and products for years to come.

The community-based organization also routinely uses its central role as guardian of patent freedom in the open-source community to gather critical prior art to neutralize Linux-related litigation and pre-litigation patent assertions. In some cases, it has taken the extraordinary measure of forward-deploying key assets from its defensive patent portfolio of more than 1,300 patents to companies at risk or in litigation, for the purpose of allowing these companies to better defend themselves from patent

antagonists with often far larger patent portfolios and deeper pockets seeking to slow or stall the progress of Linux.

Going forward, the IoT market has the potential to be a significant driver of innovation and growth for the global economy. For this reason, the organization is including core IoT open-source technology from major open-source projects, such as IoTivity and AllSeen, in the Linux System, and is thereby insulating its community licensees from patent risk.

As the threat landscape morphs and new threats arise from the ranks of operating companies and patent-assertion entities, this organization will remain vigilant in acting to ensure that fewer poor-quality patents are issued, that poor-quality and already-granted patents are invalidated and that the community of companies pledging patent non-aggression in the core of Linux and adjacent open-source technology grows.

In order for the creativity and inventive capacities of the hundreds of thousands of people developing around IoT open-source projects or platforms to be realized, it is vital that patent non-aggression in the core be safeguarded. Companies and individuals seeking to support patent non-aggression in the core of Linux and open-source should join this kind of organization's free license and, in so doing, commit to the onward sustainability of the collaborative model of innovation that is central to open-source.

Keith Bergelt is the chief executive officer of [Open Invention Network](#) (OIN), a collaborative enterprise that enables innovation in open-source and an increasingly vibrant ecosystem around Linux. In this capacity, he is directly responsible for enabling, influencing and defending the integrity of the Linux ecosystem. Widely regarded as one of the most experienced and knowledgeable experts on intellectual property law, Keith is a frequent speaker at key intellectual property and open-source events.