

The Internet of Things Part 4: *Can't Our Smart Devices All Just Get Along?* *Interoperability, Licensing, and FRAND*

A close-up photograph of a person's hand holding a silver smartphone. The hand has bright pink nail polish and a gold ring on the ring finger. The phone is held over a laptop keyboard, which is partially visible in the foreground. The background is blurred, showing a wooden desk and a laptop trackpad.

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Internet of Things Part 4: Can't Our Smart Devices All Just Get Along? Interoperability, Licensing, and FRAND

Matt Acosta

Happy New Year! My resolutions for 2019 include, among others, continuing to write about legal issues effecting the Internet of Things as well as educating myself over the lesser told stories of American history. Yes, I'm one of those history buffs. Fortunately, this topic lends itself to both. First, the history...

Over 72 hours in 1886, something extraordinary happened. During that time, there were nearly 100 different railroads in the southern American states. The problem was that the tracks for these railroads had different widths, or "gauges." When traveling among these different railroads, trains would have to stop, transfer their payload to different trains, and continue on their journey. This was called a "break of gauge," and during a single trip, it was common to encounter several of these breaks.

In 1886, a "convention" was convened in a small house in Atlanta to find a solution to this clear problem. In attendance were the heads of the 30 most powerful southern railways, each with their own interests and motivations. After vigorous debate, these industry leaders agreed to implement a "standard gauge." Thereafter, in less than three days' time, thousands of rail workers operated around the clock to fix the width of over 13,000 miles of train track to the newly adopted standard, a width of 4 ft., 9 in. This change greatly impacted the reconstruction of the south, the accelerated growth of the U.S. economy, and western expansion of the United States.

But what does this history lesson have to do with the Internet of Things (IoT)? Quite a bit. One of the greatest technical and market challenges facing the IoT category is interoperability and standardization. We are faced with the same problem as the 19th century railroads: Wouldn't it be great if all IoT devices could seamlessly interact with every other IoT device?

As it stands, most IoT devices only operate with devices from the same manufacturer and/or a system established by much larger tech companies (e.g., Amazon Echo). In addition, a variety of companies are wrestling for dominance of the more technical aspects of device intercommunication. Consumers and developers are left to choose a side with little flexibility. Once you've built your smart home with devices that interface with Google, it's probably no longer practical to switch systems to Apple if you're unsatisfied. You're stuck. Likewise, many manufacturers have to make the same decision when designing their product, with limited ability to switch teams later in the game.

Presently, most IoT devices have what is called "vertical application." That means that data collected from – let's say – your Fitbit is only accessible by another Fitbit device or its contracted partners. That means that your Fitbit won't be able to talk to your smart refrigerator unless they collaborate with each other directly or through a larger company's platform. On the other hand, a "horizontal application" would allow various IoT devices and platforms to share data among themselves without having some sort of pre-negotiated relationship. So how do we fix this railroad so that all of the tracks work together?

Like the railroads of the South, the future of the IoT category has two potential paths.¹ First, one company's technology just wins out. In that case, everyone who wants to build a generally interoperable IoT device will have to license technology from a single company to join the network. The most iconic example of this scenario is VHS winning over Betamax. In the second scenario, a Standard Development Organization (SDO) devises a common standard for the interoperability of IoT devices. For example, the international organization [oneM2M](#) is spearheading the [development of various IoT standards](#). These two scenarios are not necessarily mutually exclusive, and in all likelihood, we will probably end up with a combination of the two. In either case, those operating in the IoT space will be required to license intellectual property—such as copyrighted code or patented technology—as a cost of entering the market.²

But why does this matter? Well, in either scenario, somebody pays and somebody gets paid. Someone will be licensing out their intellectual property. While, generally, market forces will determine the price of a license, when it comes to technical standards, the courts often take a meaningful role in dictating the bounds of “reasonable” license rates. Understanding the legal framework used to value “standard essential” technology is a helpful foundation for these inevitable license negotiations.

SDOs develop standards through input from industry stakeholders, who will each advocate that their own proprietary technology should be incorporated into the standard. If your patented technology is incorporated, then those patents become “standard essential patents” (SEP), which means that if anyone uses the standards without a license, then they are necessarily infringing your patents. It's a nice place to be as a patent holder.

The wrinkle: Participation in this process typically requires an agreement that, if your proprietary technology is adopted in the standard, you must license that technology on terms that are “fair, reasonable, and non-discriminatory” (FRAND). For example, this requirement is explicit in [oneM2M's Partnership Agreement](#). This commitment seeks to prevent, among other things, “patent stacking” whereby licenses for the hundreds of patents required for a standard are “stacked” so that, collectively, the value that the patent owners charge for the technology exceeds, or significantly encompasses, the value of products that incorporate the standard.

The FRAND commitment is enforced by courts throughout the world, and as one might imagine, the definition of a “fair and reasonable” royalty rate has diverged throughout the world. There is also no commonly accepted definition within the U.S. The typical disputes over FRAND go like this: A standard is adopted that uses a company's patent technology. Other companies immediately start producing devices using the standard, and by extension the patented tech. The patent owner asks that all of the companies buy licenses to its patents. But some refuse, arguing that the demanded license price is unfair or that others are being favored with better licensing terms. Litigation ensues.

Very generally, the accepted framework in the U.S. for valuing SEPs and non-SEPs is similar. Courts imagine a “hypothetical negotiation” whereby many factors, referred to as the “*Georgia-Pacific* factors” after the first case recognizing them, are used to settle on an appropriate rate. But courts also recognize that SEPs are a special case for several reasons. First, courts have held that the fact that a patent is an SEP can tend to overinflate the value of the invention. (See [Commonwealth Sci. & Indus. Research Organisation v. Cisco Sys., Inc.](#), 809 F.3d 1295, 1305 (Fed. Cir. 2015)). The rationale being that “widespread adoption of standard essential technology is not entirely indicative of the added usefulness of an innovation over the prior art.” (See [Ericsson, Inc. v. D-Link Sys., Inc.](#), 773 F.3d 1201, 1233 (Fed. Cir.

¹ These are defined broadly for the purposes of this article. Others have broken these into sub-categories, covering more narrowly defined situations.

² The overwhelming majority of IoT devices, if not all, rely on some type of open-source software. Some of this software is available with no conditions. Others attach various conditions to its use. However, unless the principles of capitalism fundamentally change, someone is going to make money on the technology required to achieve an interoperability standard. The question is who?

2014)). The standard might have used other technology and been just as successful and widely adopted. Thus, while market success of an invention would normally drive a higher royalty rate, it is discounted in the case of an SEP.

This might seem like a disincentive to throw your technology into a SDO for fear that it might be devalued. But potentially mitigating this concern, if you are an SEP patent holder, is that at least one court has interpreted FRAND commitments to allow patent holders to charge licenses based on a whole product, not just the part of a product—for example, the microprocessors in your Fitbit—that practices the patented technology. (See [*HTC Corporation et al v. Telefonaktiebolaget LM Ericsson et al*](#), No. 6:18-cv-243 Dkt. No. 376 (E.D. Tex. Jan. 7, 2019)). Under the licensing frameworks traditionally applicable to patents, this kind of license – based on the value of a whole product – is the slim exception and not the rule. This translates into a benefit of making the FRAND commitment, rather than a restriction, and in my view, provides a stronger incentive for technology developers to actively participate in SDOs.

In addition, having made a FRAND commitment with respect to your technology will mean that many of the usual *Georgia-Pacific* factors involved in determining a royalty rate will suddenly become irrelevant or modified. (*Id.* at 1230). The particular modifications to the standard analysis will depend on the precise language of the FRAND commitment.

For example, in a recent case between smart phone manufacturer TCL and SEP owner Ericsson, a California District Court discussed—in the most detail I have ever seen (115 pages)—its view on the appropriate calculation of a FRAND license rate. (See [*TCL Commc’n Tech. Holdings, Ltd. v. Telefonaktiebolaget LM Ericsson*](#), No. cv 15-2370, 2018 WL 4488286 (C.D. Cal. Sept. 14, 2018)). Ericsson owns more than 100 U.S. patents involved in the 2G, 3G, and 4G telecommunications standards, and of course, it committed to licensing those patents on FRAND terms while those standards were in development. TCL used the standards in its mobile phones, but balked at the license rates offered by Ericsson. A lawsuit followed. Teams of TCL and Ericsson experts submitted their competing views on what a “fair” and “reasonable” license should be. The court didn’t fully adopt any of them.

Instead, the court built its “fair and reasonable” licensing analysis on a simple principle: All patented technology involved in a standard should be valued equally. And the value of the standard as a whole – e.g., the entire 4G technical standard – provides the baseline for the license price. The court found that the entire 4G standard was worth between 6-10 percent of the price of any device using that standard. Ericsson was entitled to its fair share of the 6-10 percent, which was calculated by dividing the number of 4G patents Ericsson owned by the total number of patents involved in the 4G standard—nearly 1500 patents in total. (*Id.* at *26). In this court’s view, the “strength” or “importance” or “criticality,” or even whether the patented technology is actually “optional” to the standard, are all irrelevant to the license price. Whereas, in a context outside of SEPs, these factors would be very important to valuating a technology license.

Altogether, those negotiating rates for SEPs—either patent holders or potential licensors—must be mindful of these frameworks. A few cents increase or decrease to a royalty rate can translate into millions, or sometimes hundreds of millions, of dollars. At least from a licensing perspective, achieving market interoperability is far more complex than it might initially seem, even when technical standards are defined and adopted. For an SEP holder, the failure to take these licensing principles into account may result in a finding that it has breached its FRAND agreements, rendering its patents unenforceable. On the other hand, potential licensors may be liable for patent infringement if they have rejected a FRAND royalty offer. While there is ample room for negotiation, neither party typically wants to be the greater fool, and consideration of these legal frameworks is one step to avoiding the label.

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