



FRAND in IoT ecosystems

Patent pools offer an attractive solution for complex IoT products as they reduce transaction costs for licensors and implementers. Page, White & Farrer’s **Olaf Ungerer** examines how they may reduce aggregate royalties

The internet of things (IoT) comprises networks of connected and communicating information and communications technology devices, known as objects or things. These objects or things are part of different application domains or ‘verticals’, ranging from industrial applications in smart manufacturing and smart energy to consumer applications used in smart wearables and smart health.

Many technical standards have to be defined and used for IoT networks to succeed, as interoperability between the various objects and their software is a necessary condition for IoT applications to function. These include standards that ensure quality and security of the IoT communication technology; standards needed to enable cooperation between different devices in the IoT and cloud-based services; standards defined for and applied within the things of the IoT; and standards required for ensuring the security of the internal operation of the things in the IoT (cybersecurity standards).

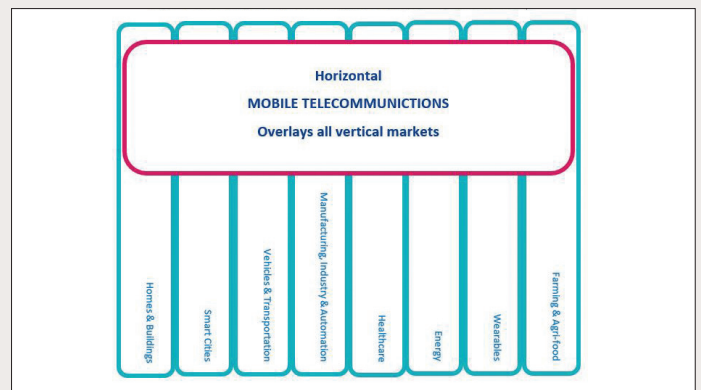
For instance, for a stationary device like a connected refrigerator, mobile connectivity is not required but fixed-line communication means may suffice. However, mobile objects such as connected cars may want to rely on mobile radio communication technologies to achieve the necessary interoperability. The value of connectivity may also differ across IoT verticals. For example, the value of connectivity for connected cars, especially those that drive autonomously, will likely be different from its value for a connected refrigerator.

Challenges for IoT implementors

Significant challenges may be faced by licensors of standard-essential patents (SEPs) and implementers of standards in the IoT in the future. Some of these may be caused by the complexity of the IoT landscape due to multiple verticals and different business models. Another source of complexity is that more than one connectivity standard may be used within each IoT vertical. See figure 1. This complexity creates problems such as increasing transaction costs, reducing transparency, and increasing uncertainty for both licensors and implementers, among others.

Important challenges are the choice of licensing level and the valuation of SEP portfolios across different IoT verticals. The use of platform, service, or data-driven business models will also create additional challenges in determining the licensing business model and the licence value that can be attributed to the use of the standardised technology in creating value from these businesses.

Figure 1: IoT landscape driving compatibility standards



FRAND terms and conditions

An important issue is whether fair, reasonable, and non-discriminatory (FRAND) terms and conditions should be set uniformly across IoT verticals. Or, should they be allowed to differ among different IoT verticals?

Because the products being sold in verticals will differ from one to the other, the incremental value of the standardised technologies covered by SEPs will likely be different across different IoT verticals. This implies that valuations done for SEP licences for different products in various IoT verticals may differ.

The determination of a royalty typically requires identifying a base for calculations and a royalty rate applied to that base. Different values can be used for calculating the royalty base, for instance it can be based on the value of the sales of the entire end product. Additionally, a fair and reasonable royalty can be determined for intermediate products such as modules or for the smallest saleable patent practising unit implementing the patented technology. The royalty can be set as a percentage of the royalty base (ad valorem royalties) or a per unit payment. In practice, licensors and licensees may adopt hybrid royalty schemes, eg, a percentage rate subject to (per unit) royalty caps.

Fair and reasonable

There are several approaches for determining a fair and reasonable value of a SEP licence, including:

- The *ex ante* approach (ie, the additional value of the patented technology as compared to the next best alternative prior to

standardisation).

- The comparable licence approach (ie, determination by reference to the terms and conditions of comparable licences).
- The 'top-down' approach (ie, assessing the aggregate royalty for all relevant SEPs and then apportioning that aggregate royalty to individual SEPs);¹ and
- The present value-added approach (ie, determining the increase in the value of the licensed product that is specifically attributable to the SEP).

A licensing offer falls outside the range of fair and reasonable if the SEP holder's compensation exceeds the incremental value that the patented technology adds to the licensed product or if it fails to remunerate the SEP holder for the additional value created in the product implementing the standard. In other words, a fair and reasonable licence should not reward hold out, ie, the unlicensed use of the patented technology, by refusing to enter into good faith license negotiations or by delaying such negotiations. Moreover, the terms and conditions on offer should not reflect any hold-up value, which may result from irreversible choices made by licensees during the development or the implementation of a standard.

Non-discriminatory

Linked to this, the non-discriminatory commitment requires the licensor to treat similarly situated parties in a similar manner although this does not require the SEP holder to offer the exact terms and conditions to all licensees.

For similarly situated implementers, differences need to be objectively justified based on a holistic view of relevant elements, such as sales volumes, certainty of royalty payments, geographic scope, etc. Furthermore, volume discounts, lump sum discounts and annual royalty caps are generally acceptable if offered to competitors that are similarly situated, unless they greatly favour one or more licensees without any added benefits to the licensor. Pursuing certain implementers for a licence and not others is not discriminatory either, as licensors cannot be expected to pursue all implementers at the same time. On the other hand, if there exists evidence of selective enforcement in a way that might lead to intentional skewing of competition, this type of situation should be further scrutinised.

Basis for negotiations

The basis for negotiations between a SEP holder and an implementer is the FRAND licensing commitment made by the SEP holder under the IPR policy of the relevant standard development organisation. In addition, the Court of Justice of the European Union (CJEU) in *Huawei v ZTE* has determined conditions under which a SEP holder is entitled to an injunction. By placing obligations on both the SEP holder and the SEP implementer, whereby the former should demonstrate it is a willing licensor complying with its FRAND licensing commitment and the latter should show that it is a willing licensee seeking a FRAND licence, the CJEU has defined a framework that applies to both parties' behaviour during their negotiations. The ruling in *Huawei v ZTE* provides a non-exhaustive but helpful framework for SEP licence negotiations.

Obligation to grant a FRAND licence

One of the most disputed questions in the context of SEP licensing is whether, as a result of their FRAND commitment or their obligations under competition law, SEP holders are under an obligation to grant FRAND licences to an entity at any level of the value chain requesting such a licence (license to all)? Or, can SEP holders select the level in the value chain where they grant FRAND licences (access to all)?

From an economic perspective, it may be more efficient if all relevant

SEPs are licensed at a single level in the value chain (the licensing level). Licensing at one level, rather than at multiple levels, will substantially reduce transaction costs and the risk of double dipping. It also reduces the risk of undercompensation for the licensor if potential licensees at different levels of the value chain try to push the royalty burden to other levels to minimise their own royalty.

On the other hand, a uniform FRAND royalty may be applied for a particular product irrespective of the level of licensing. Thus, the royalty for a licence for a SEP portfolio that is fully implemented in an end-product should be the same, whether it is licensed to an OEM or to a supplier if the latter's product also fully implements that SEP portfolio.

A further option could be that the FRAND royalty is a cost element in the price of a component and should be passed downstream. If licensing is targeted at a level higher in the value chain, to avoid a situation where the supplier would have to absorb the (entire) cost from its profit margin, it should be possible for this supplier to increase the price of its product to account for the extra costs of the licence fee. Thus, the related cost (or value) should be passed down in the value chain. For this principle to work in practice, vertical coordination discussions may be needed in the relevant value chain.

Recommendations

In view of an increasing number of declared standard-essential patents (SEPs) and the increasing number of SEP holders, it is expected that implementers of complex IoT products using many different standards will need an increasing number of licences. Thus, patent pools can be an attractive solution for these complex IoT products as they reduce transaction costs for both licensors and implementers and may reduce the aggregate royalty for the total number of SEPs used in the products licensed by the pool.

Standard development organisations could start fostering the formation of patent pools during the standard development phase (without becoming involved in the pool setting process themselves).

Until the operational start of a patent pool, a collective licensing agency could be established which, upon request of an implementer, could grant licences under all SEPs for a standard for which at least two SEP holders have been identified.

For IoT products using a large number of standards it may be attractive to form patent pools for as large a number of standards as possible. SEP holders could be encouraged to form this pool of pools, for example for clusters of standards related to the same type of technologies or functionality used in a product. Joint licensing by patent pools reduces transaction cost for both licensor and licensees.

Transaction costs could be further reduced if implementers were allowed to form groups to jointly negotiate licences on behalf of their group members.

Footnote

1. See more on the 'top-down' approach on p58-59 of this issue.

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Olaf Ungerer is a European patent attorney at Page, White & Farrer advising in all fields of electrical engineering and physics, including IoT. This article arises from the Contribution to the Debate on SEPs (E03600), published January 2021, by the Group of Experts on Licensing and Valuation of Standard Essential Patents advising the European Commission.