

The BMWi should not rely on the Iplytics 5G Report to understand 5G technology leadership

Précis

A new report, authored by Iplytics and the Technical University of Berlin, and commissioned by the German BMWi, is being promoted to industry and journalists to answer the question “Which companies are leading 5G technology development?”

However, quantifying 5G leadership is not straightforward. In this article we note three major flaws in the Report which undermine its conclusions.

1 The Report wrongly treats 5G declarations as if they are 5G standard essential patents (SEPs)

Not every patent declared as potentially essential to a standard setting organisation is actually essential.¹ In previous generations of cellular standards, essentiality rates of cellular SEPs have varied significantly between companies, and studies have shown that one company's essentiality rate can be many times higher than another's. This variation is amplified by the fact that the average essentiality rate across the industry has been relatively low. This variation can be greater than the differences in declaration numbers.

There is no reason to believe that the position with respect to essentiality will be significantly different for 5G. This means that self-reported declaration counts are likely to correlate poorly with ownership of 5G essential patents, as, to draw any conclusions about 5G essential patent ownership, it would be necessary (at a minimum) to consider essentiality rates. However, the Report omits any consideration of essentiality rates and focuses on metrics based on 5G declarations.

The Report acknowledges the issue of essentiality in a separate disclaimer, but does not explain that this issue undermines its conclusions as to 5G SEP ownership. This is likely to be the reason that the Report has received attention from the mainstream media and regulators: if the significance of this point were understood, then the Report would be of niche applicability and limited interest. A possible reason for the omission is that the Report was commissioned from a commercial supplier, whose business model is selling subscriptions to a database which provides this declaration data.

¹ A declaration to ETSI is a "notification that a patent "may be or may become essential", rather than a declaration that a patent is essential. In this article, references to declarations should be taken as referring to declarations in accordance with ETSI's IPR policy.

2 The Report's lack of transparency in its methodology means that it is not possible to verify its findings

Rather than explaining the methodology used when processing 5G declaration data, the Report relies on referencing the Iplytics Platform, which is a platform that does not detail its underlying methodologies. The Report has also not been peer-reviewed: Iplytics' presentation of the data in January afforded attendees limited opportunity to question or verify the data, and no consensus was reached. We note that some obvious mistakes identified by attendees have not been rectified in the published Report.

3 The Report does not present an impartial view when attempting to summarise the legal and economic landscape for SEPs

The Report presents the authors' views on economic concepts (such as royalty stacking and top-down analyses) as fact, despite significant evidence to the contrary, and despite a lack of consensus on these topics amongst academics, economists and within the telecoms industry. The Report uses partisan wording when describing the legal landscape and when describing the potential for greater regulation, favouring arguments that are typically deployed by implementers and lobbyists such as the Fair Standards Alliance.

As a result of these flaws, it would be inadvisable to rely on the conclusions of the Report in making business or policy decisions², and a mistake to rely on its findings and conclusions as to which companies and regions are leading in 5G standard essential patent holdings. Unless this point is more widely understood, this mistake will continue to be made, for example in attempts to support the popular belief that China is leading 5G development.

² Of particular note is the suggestion that purchasing decisions for network equipment should be influenced by 5G patent leadership. The logic of this is not clear to us, as no patent owner has more than a minority share of the SEPs in 5G, so any equipment maker will necessarily need to license-in most of the technology that it uses. The FRAND licensing system ensures that this is not a bar to producing or selling equipment, and a manufacturer with few or no SEPs should suffer no disadvantage in making or selling network equipment or operating mobile networks that practise the relevant standard. This is similar to the position in handsets, where there are many examples of leading smartphone manufacturers who own no, or few, 2G-5G SEPs.

Introduction

5G technology has the potential to transform the way we live and work, affecting industries as varied as entertainment, heavy industry and medicine. This transformative technology provides opportunities, as well as the potential to disrupt. The question of technology leadership is one that has received intense interest, from industry, regulators and politicians worldwide.

In late February, IPlytics published a report titled “*Fact finding study on patents declared to the 5G standard*”³ (the ‘Report’), in collaboration with Professor Knut Blind of the Technische Universität Berlin. The Report states that it was “officially commissioned” by the German BMWi, i.e. the Federal Ministry for Economic Affairs and Energy (the ‘BMWi’).

It is not known what the BMWi’s intention was in commissioning of the Report, or for what purpose the data is to be used. However particular care must be taken with respect to the cellular industry, where there is a lot of applicable data and significant commercial stakes, meaning that data is often over-simplified, misunderstood, and misinterpreted. This level of care is particularly important in situations where data may be used for policy or regulatory recommendations.

There has already been commentary by industry experts on the legal deficiencies in the Report,⁴ so this article focuses instead on the limitations of the patent data presented in the Report.

Declaration counting metrics alone are uninformative as to 5G SEP ownership

The Report is prefaced with a disclaimer which makes clear that it is based on 5G declarations and standard contributions. The disclaimer states that the Report makes “no effort” to assess essentiality or validity, and that it “does not provide any suggestions” about the percentage of declarations which are actually essential, or how such essentiality rates vary between different 5G patent holders.

It is important to consider essentiality rates when making statements as to 5G standard essential patent (“SEP”) ownership, as not every patent declared as potentially essential to ETSI is actually essential. This is

³ The Report was publicly released in February 2020 and dated January 2020.

⁴ See “*To make effective 5G IP decisions policy-makers need the full picture*”, Haris Tsilikas, IAM, 13 April 2020 (<https://www.iam-media.com/frandseps/5g-decision-making-full-facts>); and “*Ownership of Standard Essential Patents to 5G NR*”, Gustav Brismark, LinkedIn, 17 April 2020 (<https://www.linkedin.com/pulse/ownership-standard-essential-patents-5g-nr-gustav-brismark/?trackingId=Z9LA%2Bm9OSW6sC6c%2F686tug%3D%3D>)

partly because ETSI’s declaration system is intentionally over-inclusive, to allow standards development teams, if necessary, to design the standard in a way that does not infringe any blocking patents; and to ensure that there is a record of all the patents that may potentially read onto a standard compliant device. It is also the case that patent declarations are not independently assessed for essentiality.

Essentiality rates can vary widely between companies. Reported patent court decisions and studies have found a range of cellular SEP essentiality rates at least as wide as 3.4% to 21%.⁵ Large company-by-company variations and low absolute essentiality rates together mean that variations in the essentiality rate can have a greater effect on overall 5G SEP ownership than variations in declaration counts. So although patent declarations to standards bodies are one useful starting point when assessing 5G SEP portfolio strength, unless essentiality is controlled for, metrics based on declarations alone are likely to correlate poorly with ownership of actually essential 5G patents.

Aside from essentiality rates, there are many factors that need to be taken into account when relating declarations to 5G SEP portfolio strength, and it is not clear how the methodology behind the Report deals with these factors. If the BMWi is interested in the question of who owns actual essential 5G patents, IPlytics’ metrics are likely to have limited informative value. If the report was merely a narrow, fact finding study of declaration rates as claimed, then the absence of text considering essentiality may be less problematic, but the Report: (i) runs to 62 pages and attempts to provide an overview of a number of related topics;⁶ and (ii) inaccurately conflates the concepts of patent declarations and 5G standard-essential patent ownership (i.e. ‘SEP’ ownership), treating them as equivalent concepts in a way that may mislead readers.⁷

⁵ See, for example :

- (i) *Unwired Planet v Huawei* [2017] EWHC 711 (Pat), where the Judge’s decision relied on essentiality rates in the 9.4%-15.9% range;
- (ii) “*Evaluating Standards Essential Patents in Mobile Cellular*”, Dr. David Cooper, *Les Nouvelles - Journal of the Licensing Executives Society*, Volume LIV No. 4, December 2019, which found rates in the 12-21% range; and
- (iii) *Nokia Corp v InterDigital Technology Corporation* [2007] EWHC 3077 (Pat), where the essentiality rate determined for InterDigital implied an essentiality rate of approximately 3.5%.

Some other studies have found higher rates but these have been based on shorter reviews of each individual patent, which is a different methodology. To be conservative we have not included these.

⁶ Such as: a summary of the case law dealing with determination of FRAND royalties for SEPs; the appropriate royalty base for a FRAND rate; and licensing models of SEPs.

⁷ Examples include: (i) referring to top declarers of patents which may be essential to the 5G standard as “*top 5G patent owners*”; (ii) suggesting that the 5G standard is “*highly patented*” on the basis of declaration counts; (iii) referring to companies with many patent declarations as “*the leaders of 5G patents*”, etc.

This Report appears to rely on this problematic approach most strongly when advancing the view that China is leading in 5G.⁸

As the acknowledgment in the disclaimer is crucial to understanding the relevance of the Report, we would expect to see some consideration of essentiality in the text, even if doing so draws attention to an inherent limitation in the Report and in IPLYtics' product. It is clear that additional clarity is needed, as, in the past, confusion between declarations and 5G SEP ownership has caused IPLYtics' 5G data to be misrepresented by journalists and by companies in press releases.⁹ Samsung has already claimed that the Report shows that it is the "leader in patents granted for 5G",¹⁰ even though the declaration-based counts in the Report are inconclusive as to granted 5G SEPs. Samsung is not the only company which has claimed that the Report puts it in the lead: Huawei claims that the Report shows that it "owns the most 5G patent worldwide" (sic),¹¹ illustrating that there are multiple different ways of determining leadership, even in metrics based on declaration counting. We expect that there would be limited interest from the media in this sort of data if the distinction between declaration and SEP ownership was more widely understood.

Further misunderstandings occur in situations where it is not clear that data has originated from IPLYtics. This can make it appear, incorrectly, that different studies have all come to similar conclusions as to 5G SEP ownership rankings. There is a recent example where this occurred even within a single article. This article referred to two different sources of 5G SEP data, but when traced to its sources, all of the data was derived from IPLYtics' product.¹²

A need for greater clarity

Processing ETSI declaration data is not simply a matter of counting declarations; a significant amount of

⁸ For example: (i) referring to Chinese companies as being new "in the top patent owner list"; and (ii) stating that the study shows that "more and more 5G patent owners are coming from China".

⁹ E.g. <https://www.iam-media.com/frandseps/how-oppo-turning-handset-shipments-sep-leverage>; <https://www.iam-media.com/frandseps/5g-sep-damage>

¹⁰ See <https://www.samsung.com/global/business/networks/insights/news/samsung-announced-as-leader-in-patents-granted-for-5g-by-iplytics/>. This press release has been widely re-reported in the mainstream media, for example: <https://www.zdnet.com/article/samsung-claims-top-spot-in-granted-5g-patents/>

¹¹ See https://consumer.huawei.com/en/community/details/Huawei-owns-the-most-5G-patent-worldwide%3A-IPLYtics/topicId_41399/

¹² See "5G and the Sputnik crisis", IP for Business, 18 February 2020 (at <https://ipforbusiness.org/5g-and-the-sputnik-crisis-the-claims-for-the-communication-in-the-internet-of-things-have-already-been-staked>)

additional work is necessary.¹³ For example, a data analyst must make certain data processing decisions when tagging declarations to one or more of the 2G-5G standards.¹⁴ The Report should be transparent and forthcoming about such steps. Instead it relies on the fact that the data is derived from the IPLYtics product, which is a platform that does not detail its underlying methodologies.

The Report deals with this issue by stating that the results of the study were presented to and discussed with "over 120 patents and standard experts". One of the authors of this article attended that presentation. Attendees had limited opportunity to question the data or the underlying methodologies and there was no consensus amongst the audience as to the accuracy of the data or the methodologies used. It appeared that IPLYtics did not appreciate that they had made data processing decisions in creating the Report. This is concerning, given the importance of such decisions, and it may explain why the Report is silent as to these steps. We also note that even simple mistakes which were raised by attendees (e.g. as to the definition of patent families used by ETSI and as to the members of AVANCI) have not been taken on board by the authors of the Report, and remain in the final version.

There are other examples in the Report where the data or findings are not presented transparently. The Report claims to rely on information from discussions with 3GPP engineers and industry experts, yet the identity of these individuals and the details of the discussions have not been made public. In addition, graphs and tables in the Report have no captions to explain the processing methodology or what data is shown.

The importance of impartial reporting

The Report asserts that results are neutrally presented and discussed, without making policy recommendations. However, the Report dedicates a significant amount of text to summarising the legal and economic SEP landscape, with many examples of partisan wording. Other commentators have already highlighted a number of examples in the Report where the legal landscape is said to have been mischaracterised, and we do not attempt to list them all in this article.¹⁵

From an analytics perspective, the example that causes us the most concern is the assumption that royalty stacking has posed a real issue in the telecoms industry,

¹³ For example: cleaning declaration data, matching it to public patent databases, de-duplicating the data, tagging declarations to standard generations, and analysing the resultant patent families.

¹⁴ Declarations are made to ETSI Projects and Technical Specifications rather than standard generations.

¹⁵ Ibid footnote 4.

as there is significant evidence to the contrary.¹⁶ The Report relies upon this assumption as the basis for the use of top-down analyses, claiming that such analyses have been “*increasingly used in recent years*”, and that “*it can be assumed that the top-down method [...] will continue to be used by courts [...] to determine FRAND-compliant license fees for 5G SEPs*”. In support of this statement, the Report references the cases of *Unwired Planet v Huawei* in the High Court of England and Wales, and the case of *TCL v Ericsson* in California.¹⁷ However, in *Unwired Planet v Huawei* the court used a comparable licences approach as its primary valuation methodology. In *TCL v Ericsson* the court recognised the need for a comparable licences approach in addition to its top-down approach,¹⁸ and the decision has since been overturned on appeal and vacated by the US Court of Appeals for the Federal Circuit.¹⁹

It may be that this characterisation is the result of the authors being closer to one side of the argument than the other, rather than a deliberate attempt to mislead. This is evident in the Report’s penultimate section, where (in contravention of its claimed neutrality), the Report presents in detail the arguments advanced by implementers and lobbyists such as the Fair Standards Alliance, without also explaining the counter-arguments advanced by SEP owners or IP Europe.

The inclusion of one-sided wording in a document which claims an affiliation with a German federal ministry may give the impression that the ministry shares those views. Indeed IPlytics has replied to criticisms about the neutrality of the Report by stating that since the Report was “*a commissioned study by the German state it by definition is neutral and it cannot be an opinion piece*”.²⁰ We have seen no evidence that the Report has been endorsed by the BMWi, and would be concerned if readers were to consider the Report to reflect the views of a government ministry.

¹⁶ For examples, see Haris Tsilikas’ IAM article (ibid footnote 4), which refers to “*numerous empirical studies, as well as court findings*” which point to the conclusions that “*royalty rates for standard-compliant smartphone handsets with 2G, 3G and 4G capabilities have remained at low, single-digit figures*”. The Report later concedes these findings, on page 35.

¹⁷ *Unwired Planet v Huawei* [2017] EWHC 711 (Pat); and *TCL Comm’n Tech. Holdings, Ltd. v. Telefonaktiebolaget LM Ericsson, Nos. SACV 14-341 JVS, CV 15-2370 JVS, 2018 WL 4488286 (C.D. Cal. Sept. 14, 2018)* (reference to corrected, public version, released on September 14, 2018).

¹⁸ Ibid footnote 17: “*Licenses are a proper measure for determining whether an offered rate meets the FRAND requirements, but not the exclusive measure*” and “*A top down method, however, cannot address discrimination as the Court interprets the term*”.

¹⁹ See “*TCL v Ericsson overturned on appeal*”, Richard Vary, Bird & Bird LLP, December 2019 (<https://www.twobirds.com/en/news/articles/2019/global/tcl-v-ericsson-overturned-on-appeal>)

²⁰ See the comments below the following article: Ownership of Standard Essential Patents to 5G NR, Gustav Brismark, LinkedIn, 17 April 2020

There are a number of instances where it is clear that the authors are unfamiliar with 5G technology: in one example, the authors state that low latency communications are necessary for remote surgery because “*a few seconds are critical to save someone’s life*” (sic).²¹ It also appears that the authors are unfamiliar with elements of the structure of the telecoms industry, arguing that it is SEP owners alone who decide upon the adoption of technologies.²²

We note that the Report and the publicity surrounding it has the effect of promoting the IPlytics platform, and the Report shares similarities with the 5G patent studies that IPlytics publishes on its own website for marketing purposes.²³

In conclusion, despite wording in the Report that suggests otherwise, the Report’s findings cannot be relied upon to understand 5G technology leadership and it would be a mistake for the BMWi to rely upon it as such.

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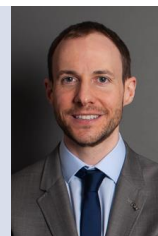
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²¹ In fact: (i) both 4G and 5G latencies are order(s) of magnitude smaller than a second; (ii) latency has more usually been quoted as being relevant to remote surgery because instantaneous responsiveness gives better control of the implements; and (iii) in practice remote surgery is more likely to use uninterruptible wired connections.

²² For example, the statement that “*3G and 4G patent holders have controlled how mobile technologies are used in the smartphone industry*”, demonstrates a lack of understanding of the central role of operators and how technology selection decisions are made in the industry.

²³ See for example: <https://www.iplytics.com/report/5g-patent-study-2020/>

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