

TECHNICAL AND PRACTICAL ASPECTS RELATED TO PATENT QUALITY IN THE CONTEXT OF STANDARD ESSENTIAL PATENTS

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EXECUTIVE SUMMARY

I. STUDY OBJECTIVES

The objective of this exploratory case study, commissioned by WIPO, is to address how IP authorities can enhance the quality of patents that are relevant to technical standards, especially those patents that are pertinent to telecommunication and information technologies and declared as standard essential (SEPs). The study offers a first broad insight into the technical and practical challenges related to the effective use of standard-related documents in patent examination and carves out a set of recommendations on how to overcome such challenges, including a possible role of WIPO in that context. For that purpose, the study draws on the relevant experience of certain patent offices, such as the European Patent Office (EPO) and the Japan Patent Office (JPO), that have been using standard-related documents during patent examination for some time. Recasting the importance of standard-related prior art into the broader context of patent quality, the study also identifies and discusses any other functions of the patent system, or services offered by patent offices, that can further increase patent quality and legal certainty.

II. INTERFACE OF PATENT QUALITY AND STANDARDS

Policy measures to address patent quality: Technological convergence and the increasing economic role of patents pose a series of challenges to patent offices, redefining their traditional roles. An overwhelming quantity of patent filings – coupled with a bursting amount of data and valuable knowledge from nascent and complex technological fields - raise a new set of strategic priorities for patent authorities with regard to patent quality, efficiency, collaboration, transparency, technical expertise and a supporting IT architecture. Especially patent quality emerges as an element of reliability, fundamental for the evolution, sustainability and integrity of the patent system. It is an inclusive term, inextricably linked to content (patent validity requirements, patent data and other technical information), processes (search/examination, operations), infrastructure (IT, databases) and synergies (collaboration, work-sharing). According to WIPO, more than 3 million patent

¹ IP VANGUARD, Founder/Managing Director, www.ipvanguard.com. This exploratory study was commissioned by the World Intellectual Property Organization (WIPO) to the author. The views and opinions expressed in this paper are those of the author, and do not necessarily reflect those of WIPO or its Member States. The same disclaimer applies to the input provided by lead experts of the patent offices and standard developing organizations for the purposes of the study; albeit authoritative, their views and opinions do not necessarily represent the official position of the respective institutions.

applications were filed worldwide in 2016, up 8.3% from 2015, whereby the patent offices in the United States, China, Japan, the Republic of Korea, and Europe received 84% of the world total. Only the State Intellectual Property Office of the People's Republic of China (SIPO) received 1.3 million patent applications in 2016 – more than the combined total of the other four top offices. Many patent offices have a variety of policy measures in place that address issues of patent quality on a legal, organizational and operational level.

The special case of technical standards in the context of patent quality: To the extent to which patent systems comply with their patentability conditions in a transparent way, patent quality (and quantity) represents an essential input factor into the standardization system. Granting patents of poor quality exacerbates the already complex interaction between the standardization system and the patent system. Too many and/or weak patents, and the complex task of determining their validity in the context of litigation have the potential to tilt the negotiation balance, significantly impact transaction costs, and interrupt rapid implementation and innovation via the standardization process. In this respect, patent quality supports legal certainty and – with it – a sustainable co-existence of both systems.

From a patent authority perspective, the interrelation between patents and standards impacts prior art search and touches, by extension, on the knotty issue of patent quality. In view of the rapid development of 5G networks and the Internet of Things (IoT), standard-related documents serve as a primary or sole source of the identification of prior art. The particular nature of standards drafts and their potentially high technical value underline their significance in the evolution of pertinent technologies and, therefore, their pivotal role in patent examination. In other words, access to the databases of standard developing organizations (SDOs) becomes indispensable for the quality of patent search and examination in critical technology fields with widespread, cross-industrial application.

III. LINKING PATENT QUALITY TO THE USE OF STANDARDS DOCUMENTS FOR THE PURPOSES OF PRIOR ART SEARCH

EPO-SDO collaboration: Early on, the EPO recognized that standard-related documentation forms a significant part of the search and examination work in multiple industry clusters such as telecommunications, audio-video-media, electronics and computers. Pioneering collaboration with major SDOs in the field of standards, the EPO has established broad access to standards drafts of European Telecommunications Standards Institute (ETSI), IEEE-SA and International Telecommunications Union (ITU). To ensure quality of access and content, the EPO opted for the creation of in-house non-patent-literature (NPL) databases that import standard-related documentation through direct interlinking of its server to the SDO databases. The primary benefit of investing in standard-specific databases is that they enable the use of a single interface for prior art search through sophisticated organization and indexation of the available documentation. As a result of its linking to the ETSI database, the EPOQUE database contains a wide range of technical contributions, i.e., temporary drafts and working group documentation from the EPO's partner SDOs. By 2015, the total number of documents available at the EPO rose to approximately 2.8 millions. Following that steady pace, this number was

expected to surpass the 3,000,000 documents mark in 2017.

With regard to improvements in prior art searches, use of standards documents and drafts are estimated to impact roughly 30% - 40% of the cases in certain technical fields, e.g., 35% in the area of wireless telecommunications. The EPO decision to invest in NPL prior art resources in the field of technical standards has had a positive impact: EPO statistics reveal, for example, that the number of 3GPP citations increased from 83 in 2008 to almost 9,000 in 2014 and has been growing exponentially since then. Recent statistics outline a similar upward trend, whereby – at that pace - the number of cited standards documents was forecast to exceed a total of 22,000 in 2017. From a patent office perspective, cleaning up and harmonizing standards documents is an ambitious exercise. There are significant differences across the various SDOs in terms of standards definition, format and publication quality. Despite the technical challenges and costs tied to the acquisition and integration of standard-related information and metadata into the internal NPL depositories, missing this documentation would lead to unacceptable quality and legal uncertainty of granted patents – especially in the field of wireless communications and audio/video-coding, where up to 60% of the patent search reports include standards documents as pertinent prior art.

JPO-SDO collaboration: At the JPO, more than 1,700 examiner and trial examiners use the internal database as a primary source of prior art. As of October 2016, the internal database contains domestic patent information, foreign patent applications/patents as well as a wide range of NPL documentation, including standard-related documents of both published and preparatory material. NPL documents are managed separately from patent documents, whereby the frequency of updates depends on the type of the stored information. In addition, the JPO subscribes to more than 30 external databases. These databases can be broadly divided into three groups, i.e., databases equipped with a mere abstracts search, databases with access to full-text, and those in which structure or physical properties of substances can be searched. The internal database is not connected to external databases provided by third-party agencies, but operates separately.

Other patent offices: So far, other patent offices have not embarked on a similar path to upgrade their databases with standards-related documentation. This is partly explained by the long history of standardization in Europe, US and Japan, which contrasts with a lack of awareness around the importance of standards in other regions. Other reasons include lack of technical expertise, capacity building, up-to-date IT infrastructure and funding. Finally, there is no consensus about best practices and whether the leading EPO example could be emulated to fit the patent examination purposes of a specific patent office. On a macro level, the various patent authorities have their unique dynamics, political justifications and organizational inertia that render the implementation of policy initiatives a challenging task. On a micro level, aspirations to use the most pertinent standards-related documentation as a source of prior art succumb to the practical difficulty of retrieving that documentation, a reluctance of some formally open SDOs to grant access to their documentation, and a limited interest on the side of patent offices to invest in this area. Albeit without an information exchange in place that emulates the EPO-SDO cooperation practice, a few patent offices around the world, e.g., KIPO, Singapore IPO and Rospatent, have

introduced certain patent quality measures that take into account the importance of technical standards for innovation and the local economy.

Collaboration benefits for SDOs: Given that 1/3 of pertinent prior art documents in relation to telecom patent applications stem from standards drafts produced during the standardization process, the mutual benefits of the collaboration between IP authorities and SDOs are non-negligible: from a patent office perspective, high quality patents in the ICT area can best be obtained by giving patent examiners access to standardization information and providing joint training, while SDOs can benefit by updating and completing their patent declarations through access to data from the patent registers through improved automation. Patent-related information flows in both directions, thereby informing the patent grant process as much as the process of standardization. As a result of the EPO-ETSI cooperation, the ETSI IPR database offers a good practice example of how declarations of essential patents are automatically updated with patent data from the EPOQUE database. Also, IEEE-SA is currently developing a new platform for its centralized repository, which will allow interested patent offices worldwide to search, access, and publicly view nearly 40,000 IEEE-SA Working Group contributions via subscription. This so-called Working Group Data Service will be updated on a daily basis, the main challenge thereby being the development of a schema against which all IEEE Standards Working Group data can be mapped. This schema will define which information and how that information will be accessible to the patent offices so that IEEE-SA can tag, govern and control the data.

Including standards documents into public prior art: Information disclosed by an SDO may constitute prior art in some countries but not in others, the reason being that the definition of prior art is not the same under all national patent laws. Many national laws converge in their definition of prior art as “everything made available to the public” before the filing or priority date whereby the terms “availability” and “public” may be interpreted slightly different within the various legal systems. Furthermore, the WIPO handbook on IPR describes prior art as a notion covering all the written or orally disclosed knowledge that existed prior to the relevant filing or priority date of a patent application whereby disclosure is understood as to information accessible to the public. Hence, while the legal definition of prior art in the national patent law systems is relatively standardized, the interpretation of “public availability” is nuanced and requires clarifications. The debate around the legal status of standards documents becomes more complex in the case of a wide range of preparatory documents, which potentially constitute a primary or sole source for the identification of prior art. In the context of the EPO-ETSI collaboration, the ETSI dissemination policy clarifies that, as a rule, proceedings of the technical bodies and information submitted to a technical body are to be regarded as non-confidential and made available for public inspection. As a result thereof, the EPO regards the acquired standard-related documentation as public prior art, unless otherwise specified.

Transparency: Transparency at the interface of patents and standards refers to the reliability and accessibility of pertinent information about the status of a patent in the field of standardization, notably about the aspects of validity, enforceability, ownership and its essentiality for standards. Therefore, the notion of transparency in this paper addresses both the transparency in the patent system as well as the transparency in the standardization system. In this context, *transfers of SEP*

ownership have been flagged as being increasingly relevant and occurring increasingly often. Given that information on patent ownership is fragmented or largely incomplete, an obvious start to collect and organize up-to-date SEP ownership information would be by linking relevant patent office data to SDO databases. Provided that access to such service is desirable, questions arise about the technical specifications as well as the possible role of standards developers, SDOs and patent offices in that context.

Furthermore, current declaration practices across the various SDOs do not clearly convey reliable information on the *essentiality* of declared patents, i.e. SDO databases contain an increasing amount of declarations of patents that are deemed essential to technical standards by the patent holders without sufficient scrutiny regarding that essentiality. This has, primarily, important consequences for the licensing practice of SEPs, but is also tied to the larger debate for increased transparency of the patent system as a whole and the need to efficiently navigate the bulk of patent data by focusing on the quality and accessibility of the recorded information. Against this backdrop, how to manage essentiality checks, i.e., who should perform the essentiality checks at which timing and under which conditions, continues to be one of the discussion points in different fora.

Finally, the increasing importance of litigation outcomes in the area of mobile telecommunication standards raises questions related to legal uncertainty as well as the benefits and costs of SEP disputes. In that context, the potential integration of *alternative dispute resolution (ADR) mechanisms* into the standardization process comes into play. Until recently, ADR mechanisms have been used in a limited manner vis-à-vis SEP-related court disputes and were thus regarded as underutilized in the particular field. This has changed (and may further change) with regard to SEP licensing disputes, as established FRAND²-specific arbitration frameworks may cater for the needs of those with large patent portfolios and facilitate the resolution of multi-jurisdictional disputes. Arbitration of FRAND-related disputes has been promoted by key players in this area such as WIPO, the Federal Trade Commission (FTC) and the Court of Justice of the European Union (CJEU), whereas courts and authorities in the US and in Europe have identified ADR as a suitable option to facilitate the determination of FRAND-related disputes. In addition, some SDOs have included ADR procedures in their IP policies.

IV. CONCLUSIONS AND POLICY RECOMMENDATIONS

Intensified use of standards documents in prior art search: The experience gleaned from the cooperation of ITU, ETSI and IEEE-SA with the EPO shows that it is possible to increase *transparency and predictability* at several levels. In particular, it is possible to maintain and even improve the quality of patent examination in ICT standards-related sectors, thereby ensuring the legal certainty of granted patents. Further benefits derived from the SDO-patent office collaboration involve the aspect of *informativeness*, i.e., the systematic accessibility and searchability of standards-related (meta-)data that provide examiners with reliable information in a timely

² The majority of SEPs are declared under FRAND terms, i.e., the commitment to license these patents under fair, reasonable and non-discriminatory terms.

manner and through a usable format. In this context, the challenge of managing patent quality and quantity boils down to the ability to manage the quality and quantity of relevant information in a centralized, uniform manner that allows examiners to filter pertinent patent information on prior art out of raw meta-data. Of pivotal importance hereby is to ensure accessibility of valuable technical information from the standardization process for the purposes of patent search. Allowing examiners to access that information in a timely and accurate manner would confer greater legitimacy to patent grants related to those technologies.

Collaboration between patent authorities and SDOs is isolated, but can be replicated: Increasing backlog issues have prompted various joint efforts of patent offices in work-sharing or mutual utilization of work results through bilateral agreements. The consequence of the proliferation of bilateral arrangements such as the patent prosecution highway and the IP5 cluster are designed to reduce costs and duplication of effort by utilizing, wherever appropriate, the result of prior art search and substantive examination done by the other. The regional focus of these collaborations covers alignment of documentation practices pertaining to databases, patent classification and common citation, but it does not extend to information sharing related to standards with global impact. Collaboration on the latter has been thus isolated and, equally, the result of bilateral negotiations between the patent offices (EPO, JPO) and their respective partner SDOs.

Against this background, there appear to be two options for patent offices interested in accessing standard-related documentation for examination purposes: they could either conduct direct negotiations with local and/or globally relevant SDOs on a one-to-one basis, following the EPO and JPO example; or, in case resources are limited, they could form an alliance that would shape the scope of collaboration with individual SDOs and the terms of use of pertinent documentation on a collective basis. In any case, the regional character of standardization, coupled with the increasing global - if not geopolitical - importance of standards, will dictate the potential and dynamics of such alliances in the future. SDOs representing these regional efforts would arguably play a crucial role in this exercise by allowing access and utilization of standard-related information under specific conditions to the benefit of patent search and examination. Overall, a closer and institutionally backed cooperation between the major standard developing organizations and other patent offices is necessary in order to increase transparency and establish a kind of voluntary co-regulation in this critical field. In the light of the precedent set by the EPO, this type of inter-agency collaboration reveals a range of important aspects (or lessons) to be taken into account:

a) Patent offices and SDOs should first embark on a policy dialogue that will shape a common agenda. The exchange of information and documentation should result into *mutual benefits for both systems* (prior art search, patent ownership of standard-related technology, digitization of information, upgraded databases, education and promotion activities). Identifying those premises and initiating relevant talks relies strongly on the foresight and engagement of advocates from both sides. According to the history of the EPO-SDO collaboration, the contribution of these experts has been instrumental in raising awareness within their respective organizations and setting the stage for the subsequent high level agreements: increased transparency around IPR

was not merely a patent office issue but an imperative equally identified from an SDO perspective;

b) The efficient, fully implemented use of standards-related documents for the purposes of search and examination is dependent on the definition of prior art in the patent law context, most particularly the *interpretation of “public availability”*. The definition of sharable information should be clarified between the negotiating parties early on so as to include non-confidential (unless otherwise specified) documentation into the notion of public prior art;

c) An ongoing practical component of the collaboration is the definition of a *common documentation format* that is compatible with the existing IT infrastructure and prior art databases. Many of the technical challenges involved can be mitigated in the long run through uniform templates for standards-based prior art documents, such as early drafts of specifications and published minutes.

WIPO’s enhanced role as a global contact point between IP authorities and SDOs: Acting as a global contact point and facilitator in the context of patent information sharing and beyond, WIPO could educate on the benefits of a collaboration between SDOs and patent offices and encourage the latter to include standards documents in the Patent Cooperation Treaty (PCT) minimum documentation for specified technical fields. In this capacity, WIPO could assist in manifold ways:

a) initiate discussions for information-sharing agreements between IP authorities and major SDOs and coordinate *multilateral efforts* to scale up existing ones;

b) encourage patent offices to cooperate in the field of prior art documentation within the specific context of standards by *raising awareness* around the benefits of including standards in the prior art search and the subsequent impact on patent quality;

c) clarify whether and under which circumstances standards contributions and drafts can be considered *publicly available prior art*;

d) provide technical assistance to patent offices in accessing relevant technical information by developing a *shared universal data format* across all patent offices;

e) explore the possibilities of an *interagency collaboration between WIPO and globally relevant SDOs* with the purpose of enhancing the contents of PATENTSCOPE and, ultimately, establishing a portal for access to standards-specific information. Similar to the WIPO Digital Access Service (DAS) that has been developed to facilitate the exchange of priority documents between offices in electronic or paper form, an appropriate *one-stop-shop mechanism* may be envisaged for access to early drafts and other standards-related documents. This idea does not necessarily involve the setup of a new database, but leverages on existing, sophisticated standards databases and centralized repositories such as those of ETSI and IEEE in order to achieve information linkages and worldwide interconnectedness;

f) potential synergies between WIPO and SDOs could extend to other areas. For instance, SDOs could further *promote the use of WIPO ADR* by parties willing to settle their disputes outside the courts;

g) continue its efforts to support the dissemination of patent information, including prior art citation and further development of WIPO standards to be used in both patent and standardization systems.

Future research and policy action: From a research point of view, the present exploratory study points to significant information gaps regarding our systematic knowledge of the current dynamics across IP authorities worldwide, especially with regard to differences in search and examination practice. Previous research has put emphasis on “best practice” examples from the major patent offices (USPTO, EPO and JPO). Albeit a useful resource, such practices may be difficult to follow by other patent offices or unsuitable for smaller offices or offices with limited resources. Whereas the demand for patents has become increasingly internationalized, only a few IP authorities appear to grasp the impact of the current shifts and the challenges ahead. Future research could help assess the barriers to their further development and the extent of information gaps or ill-understood interactions. Basic descriptive work could shed more light on the patenting process of smaller offices of regional importance and the unique policy issues they face thereby.

Specifically, a systematic review of the prior art search and documentation processes of various patent offices worldwide in selected technical fields, including those of technical standards, could unveil useful lessons and opportunities. It would also emphasize the importance of accessing and assessing standards drafts in the context of prior art, both to the advantage of patent examination as well as to the benefit of technical and operational processes within the larger organizational context – as the leading EPO and JPO examples demonstrate. This type of research could be embedded in WIPO’s work programs and action plans in which the patent authorities of the member states are invited to reflect upon and exchange information on practices relevant to patent quality in the field of technical standards, including specific metrics, information on prior art search tools, digitization processes, access to NPL, relevant professional training, etc. Furthermore, it is pertinent to receive direct input from the main actors of the patenting process, i.e., examiners, applicants and third parties, who would be invited to share their experiences in the context of various WIPO discussion fora – also, in interaction with SEP holders, standard implementers and other stakeholders.