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Instead, the conclusions and recommendations in this paper are the result of the educated interpretation by the CIFRA consortium partners' experts of the results of the literature review, the interviews and subsequent survey conducted as part of the CIFRA project to a broad range of experts across the whole ICT value chain.

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This document is the outcome of the work of the CIFRA project (Challenging the ICT Patent Framework for Responsible Innovation), conducted under EU H2020 programme. Under said project the currently existing issues in the ICT patent ecosystem have been studied with a methodology that comprises a review of specialized literature, an empirical analysis of patent databases and a series of interviews to leading experts followed by a broader survey. More detail information on the evidences and basis for the recommendation in this paper can be found in the set of documentation produced by the project, available at: <http://www.cifra-h2020.eu/results/>

IMPORTANT NOTE: This is a **preliminary version** of this policy paper. Final version will incorporate additional feedback from relevant stakeholders.

1 INTRODUCTION

Patents have a crucial role in technology markets, and can be even considered the main currency for technology, that is, the tool used for technology appropriation and exchange between different actors in the value chain. From that viewpoint, and taking into account the huge size of the technology market in ICT (Information and Communications Technology), it can be understood that the patent ecosystem is subject to frictions and tensions among entities with different business models, and occupying different places in the ICT ecosystem. Thus, some of them may be interested in keeping the status-quo whilst others may tend to favour changes in one or the other direction.

This paper results from the CIFRA project (Challenging the ICT Patent Framework for Responsible Innovation), conducted under EU H2020 programme. The CIFRA project has analysed the current issues in the ICT patent framework as well as potential solutions, from a neutral standpoint, and following an academic, empirical, consultative, and unbiased approach. Therefore, the content of this paper is not meant to reflect the position of the CIFRA consortium as a whole, nor the position of any of its member companies and member experts.

2 METHODOLOGY

The project has followed a three-step methodology. On a first instance, the existing scientific literature on this field was reviewed.¹ Taking as input the issues and potential

¹ See CIFRA project documents D2.1 “State of Art, Literature Review” and D2.2 “Empirical Evidence on ICT Patents”, available at <http://www.cifra-h2020.eu/results/>

solutions identified in the literature for the ICT patent² ecosystem, a set of over 30 interviews were conducted with experts from the whole range of concerned stakeholders.³

Taking both the literature review and the interviews as a basis, a survey was elaborated, and distributed to a broader set of experts belonging to the same set of stakeholders. 839 responses were received between June and August 2017. 167 respondents completed the questionnaire from the beginning to the last set of questions, despite its length and complexity. These 167 responses cover organizations with different types of business models and positions in the ICT value chain. Thus, our analysis below covers a large set of different stakeholders in the industry.⁴

The survey allows to discriminate the responses depending on whether the respondents own patents or not, or depending on their business model, what allows to study the influence of these characteristics on the different topics consulted.

3 INSIGHTS

In general, there are significantly different views about the problems of the ICT patent ecosystems among those entities owning patents and those not using them actively, which is a quite expected finding. However, there is very little difference in the perception about the potential solutions for both sets of organizations, which is more surprising and worth mentioning.

Despite the acceptance and support of the proposed measures are in general moderate, there are some proposals and tools which seem to have a better endorsement or alternatively to still be less known by the industry, which denotes that their potentials may have not yet been fully exploited. Thus, both types of measures deserve especial attention.

Effectiveness of ICT Patents

The assessment of the interviewees related to the general effectiveness and efficiency of the patent system for ICT is highly dependent on the stakeholder group they belong to. Naturally, there is a much better perception of the overall value of patents by patent-owning entities, especially with the aim of securing their freedom-to-operate, as bargaining

² We have a very broad understanding of ICT patents following OECD (2017) including both traditional telecommunication technologies, but also Internet related technologies and the various applications, incl. electronic payment systems, imaging and sound technologies, but also gaming. Furthermore, we consider also patents on computer-implemented inventions (CII). http://www.oecd-ilibrary.org/science-and-technology/ict-a-new-taxonomy-based-on-the-international-patent-classification_ab16c396-en?crawler=true

³ European Commission, research organisations, patent offices, ICT patent owning companies, ICT patent implementing companies, telecom operators, patent pools, academic experts, Open Source Software (OSS) community, SME organisations, patent attorneys, IP support services, a consumer organization and the OECD.

⁴ A detailed description of the results of the interviews and survey can be found in CIFRA project document D3.2 "Report on Assessment of Impact of proposed new Framings", available at <http://www.cifra-h2020.eu/results/>

chips in negotiations and as a way to obtain a return on R&D investment. Patents are also positively considered in terms of enhancing the reputation of the patenting companies.

There seems to be not much emphasis among patent holders on patents as a tool to block competitors, which clashes with the perception from entities not owning patents, which see this aspect as the only one for which patents are effective.

The role of ICT patents to generate licensing revenues is perceived in general as rather limited, probably linked to challenges that the market for licensing faces.

Assessment of the Challenges of ICT patent ecosystem

Almost all challenges that were raised, in the areas of patent application, prosecution, enforcement and implementation, were considered significantly relevant by the different experts. However, patent owners appeared to be less concerned, whilst Small and Medium Enterprises (SMEs) stand out as the type of entities with a mostly critical viewpoint about these challenges.

Among the different challenges of the ICT patent ecosystem confronted with the experts, the bigger concerns in the area of patent prosecution were related to the too broad scope of patents and their limited quality, phenomena that were specially criticized by the companies not owning patents. Furthermore, the criteria for patents on Computer-Implemented inventions (CII) are not be specified enough and heterogeneous between patent offices. Finally, the patent protection period is considered to be too long.

In relation to patent enforcement, the most relevant challenge is clearly the legal uncertainty caused by Patent Assertion Entities (PAEs), which is highlighted by both patent owners and non-owners. The high expected legal cost for resolution of conflicts regarding ICT patents was the concern following the list. Another sensitive aspect is the difficulties caused by ICT patents for the use of Open Source Software, which, unsurprisingly, is stressed by the independent software developers.

Assessment of levers to alleviate the problems affecting ICT patent ecosystem

The results of the consultation revealed a common interest shared among all different actors in high-quality standards for patents, in terms of the required novelty and inventing step. This may denote the significant overhead caused by licensing negotiations and eventually by litigation for both licensors and prospective licensees, which could be reduced by relying on patents with proven quality. This ratifies the appropriateness of the efforts by the European Patent Office to conduct rigorous and high-quality patent examinations. Special emphasis is placed by some actors on raising the requirements to obtain patents on computer-implemented inventions (CII).

With Patent Assertion Entities (PAE) perceived as a problem by all different types of stakeholders, the search for mitigation measures for the issues caused by these entities

faces the problem of coming to an appropriate definition of PAEs in the first place. Therefore, the widely accepted proposal to rely on regulations to restrict their activities should be focused not on a specific type of company, but instead to limit their most harmful practices. Consequently, the majority of the experts promote restricting PAEs' options to ask for injunctive reliefs as well as to shop around in different courts to achieve injunctions. However, concerns were raised that the latter might end up being possible in Europe once the Unified Patent Court is put in place. Finally, it is proposed to let PAEs take the burden of the court costs, and avoid their practice of creating ad-hoc companies for each lawsuit, which in case of losing it, declare bankruptcy to avoid paying the court costs.

It is worth noticing that despite the high level of support for patent pools, other types of licensing programmes and defensive patent aggregators, public policies supporting them are not endorsed, especially by entities without patents, alleging that public intervention could create a bias in the markets.

In order to facilitate the licensing of patents, there is some support, especially from the side of the implementers, the non-patenting respondents and the SMEs, to promote the publication of bilateral licensing terms. This would improve transparency for the licensing market and provide more ground for creating a corpus of cases, thus lowering overhead. The specific profile of respondents raising this point may be related to a lower negotiation power by small firms and by companies not able to cross-license, which cause that for a specific patented technology the licensing terms may vary depending on the type of prospective licensee. Others, specifically patent owners, are less convinced about the effectiveness of making details of licensing agreements public.

The promotion of specialized courts, which deal only with patent disputes including both questions of patent validity and infringement, is widely supported by the experts, but more heavily by patent owners.

In addition, there is a great support to having infringement and validity issues regarding ICT patents tried together before the same court. Therefore the bifurcated system existing in some jurisdictions such as Germany, where it is possible to decide on infringement and validity in different courts, is perceived as creating higher costs and risks, especially for SMEs. Taking into account that a significant share of patents may subsequently be declared invalid by courts, then the risks created and the resources needed for decisions on infringement could be saved within one court case. However, according to the Agreement on a Unified Patent Court, this bifurcation will also be possible on a European level in the future. In case bifurcation is not avoided, then at least a very effective and efficient interface between the two courts should be established.

Patent pledges, i.e. voluntary commitments by patent holders to give up some of the rights associated with the patent (e.g. grant permission for commercial use without any direct compensation, no injunctions, FRAND -fair, reasonable, and non-discriminatory- licensing commitments, etc.), are not well known to the majority of the interviewed experts. The informed experts confirm the effectiveness and efficiency of the instrument, and thus it is advisable to investigate it more in-depth and – in case of support of our findings – to

promote initiatives to raise their public awareness, especially in combination with the promotion of specific technologies and eventually with Open Source.

The license of right (L.O.R.), i.e. the declaration of willingness to grant a license for commercial use to anyone, seems to be also quite unknown to many experts. Nevertheless, it raises serious concerns among the majority of the interviewees about its usefulness, specially taking into account the challenges related to FRAND, as a specific form of license of right.

Overall, mediation and arbitration are perceived by the experts as effective and efficient approaches to conflict resolution, which requires sufficient expertise by mediators and arbitrators, but also resources and trust. However, the majority has no or only a little experience with these approaches, which suggests that further measures to increase the awareness about them could be helpful.

Another aspect where educational initiatives would be positive, especially for SMEs, is about the interactions between open source software (OSS) and patents, where a limited expertise has been spotted, which may lead to some concerns about the usage of OSS due to the unclear implications.

The responses by SMEs, which reveal much more often that they are not able to assess both the relevance of the challenges and the effectiveness of the proposed measures, demonstrate they are probably the weakest players in the patent ecosystem. Along these lines, further support for SMEs in patent application and implementation, but also in court disputes, in addition to existing programmes, is suggested by many experts. However, there are also concerns about the need and the effectiveness of such SME-specific measures. What seems clear is the appropriateness to raise their awareness and understanding of the whole ICT patent ecosystem starting from R&D projects, but also including the opportunities and challenges of OSS.

Regarding patent law, a reluctance to any change has been made evident. For instance, there is scepticism against the effectiveness of changing application, renewal and even court fees. Reducing the protection period and the time to grant ICT patents, for instance by means of early certainty programs by the patent offices, are slightly more convincing to the experts. In fact, the requirement to grant ICT patents within five years is generally supported by the patent-owning respondents. However, the protection period is regulated by TRIPS⁵ and therefore difficult to change.

Assessment of Responsible Research and Innovation dimensions regarding ICT patents

According to the European Commission, “Responsible research and innovation (RRI) is an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and

⁵ “Trade-Related Aspects of Intellectual Property Rights” an international legal agreement between all the member nations of the World Trade Organization (WTO).

sustainable research and innovation.” In practice, RRI is implemented as a package that includes five dimensions: public engagement, open access, gender, ethics, and science education.

Very limited awareness of the interviewed experts of the responsible research and innovation dimensions has been identified, together with a low perception of their relevance in comparison with other aspects having a more direct economic impact.

Open access to scientific results is deemed to be the RRI dimension with a more direct impact on the ICT patent ecosystem. Indeed, it is expected that the unrestricted access to research results will both reduce the likelihood of patents to be granted and increase the chances of invalidity cases. Additionally, the open and easy access to scientific contents might push innovation, according to some experts. Moreover, companies implementing ICT patents mentioned that the results of publicly funded research should be available for society.

The majority of experts perceive little ethical issues related to ICT patents, in comparison to the intensive discussion about patents in the biotech sector, partly because they relate ICT in general, not with life-threatening technologies. Telecom operators in particular mention that the telecommunication infrastructure is in the public interest, which has an ethical dimension. On this basis, they defend the limitation of injunctions in patent infringement cases. Therefore, patents should be not misused neither to restrict the access nor to block the functioning, including the security, of networks

The other dimensions of responsible research and innovation, i.e. engaging society, gender aspects, and promoting (in)formal science education, are not very interlaced with the ICT patent ecosystem according to the responses from the experts. Only, the strong gender bias in ICT sector is observed, but perceived as difficult to change.

4 CONCLUSIONS AND RECOMMENDATIONS

Despite the opposed standpoints of different stakeholders in the value chain, and the fact that no recommendation was considered a panacea by the respondents to our consultations, a few potential levers stand out among the rest. Regulators, legislators, patent offices and any other entity with influence on any of these aspects are invited to take this paper into consideration.

One of the aspect that deserves more attention is the limitation of those practices usually conducted by PAEs that are considered to have a predominantly negative impact on the ecosystem, namely, the limitation of injunction whenever there are alternatives, limiting forum shopping, and securing their ability to take the court costs whenever they are legally bound to it.

Incentives to promote a more transparent licensing market, such as publications of bilateral licensing terms, whenever this does not affect competition, should be considered, especially

as a tool to address a potentially discriminatory behaviour towards small licensees, and thus levelling the playing field.

With regards to ICT patent enforcement, recommendations gathering strong support are the promotion of specialized courts and the avoidance of bifurcated patent litigation systems.

A need has been identified to promote education on different aspects of the ICT patent framework, especially aimed at actors such as SMEs. These awareness and educational actions are advised to address also less known tools and practices, which could be useful to overcome certain issues of the ecosystem, for instance on patent pledges, on the interplay between OSS and patents, and on alternative dispute resolution mechanisms.