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# Soft IP and Markets for Technology

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**Abstract:** Behaviour in the way patents are used in the marketplace has changed over the two decades. Intellectual property has become an industry in its own right with specialist R & D companies concentrating on technology development rather than production. Major industry players are also licensing out their technologies to other players. Technology diffusion and innovation arguably benefit through these trends – there is increased trade in knowledge and more liquidity. However there are still serious problems with the current system – speculative use of patenting to create injunctions and extort large settlement sums being one of these. This paper explores the potential of a novel patenting regime, so called Licenses of Right (LoR) or Soft Intellectual Property (Soft IP), in the European context and its likely impact if it were introduced. An advantage of such a system is that it may facilitate Markets for Technology and reduce the limits caused by the fear of being forced out of business through a patent infringement case. At the same time, such a system might encourage a better understanding of the functioning of this institution and increase awareness of the system itself,. An outcome could be a greater use of technology markets. Yet, if such a system is to function properly there are some questions to answer and problems to resolve.

## 1. Introduction

Behaviour in the way patents are used in the marketplace has changed over the two decades. Intellectual property has become an industry in its own right with specialist R & D companies concentrating on technology development rather than production. Major industry players are also licensing out their technologies to other players. Society benefits from increased technology diffusion and innovation. However there are still serious problems with the system, the filing of patents that can lead to injunctions being threatened to extort large settlement sums from manufacturers and service providers being one of these.

## 2. Objectives

This paper explores the potential of a neglected aspect of the patenting regime, the so called Licenses of Right (LoR), in the European context. The goal of this paper is to better understand the functioning of a LoR system. A broad advantage of the LoR system is that it may facilitate markets for technology and reduce the limits due to the fear of litigation by innocent infringers. At the same time, the definition of a LoR system might encourage a better understanding of the functioning of this institution in practice. In turn, this may increase awareness of the system itself, and hence encourage a greater use of technology markets. Yet, a proper functioning of an LoR system still presents some open questions. Generally, we suggest a voluntary scheme under which a patent applicant may choose between a traditional patent with full exclusivity and a patent with only “soft IP”. The paper

will raise and articulate a series of questions related to a Soft IP scheme and make recommendations.

## 3. Methodology

The paper is based on research conducted in how markets for technology have developed over the last decades. In addition practical experience of the approach to technology patenting, patent licensing and patent pledging by a major industry player is described as a case study. The hypothesis of what would change under a Licenses of Right regime is made.

## 4. Background

Markets for technology (henceforth MFT) have grown considerably during the past two decades. At the aggregate level, the chart below (Athreye and Cantwell, 2007 [3]) uses IMF data to show that while licensing royalty rates have been rising only slowly between 1950-1985, they have accelerated sharply thereafter. Similarly, according to OECD (2006) data [9], in the G8 countries, from 1980 to 2003, the technology royalty payments and receipts have increased by an average annual factor of 10.7%, reaching $190,000 million in 2003.



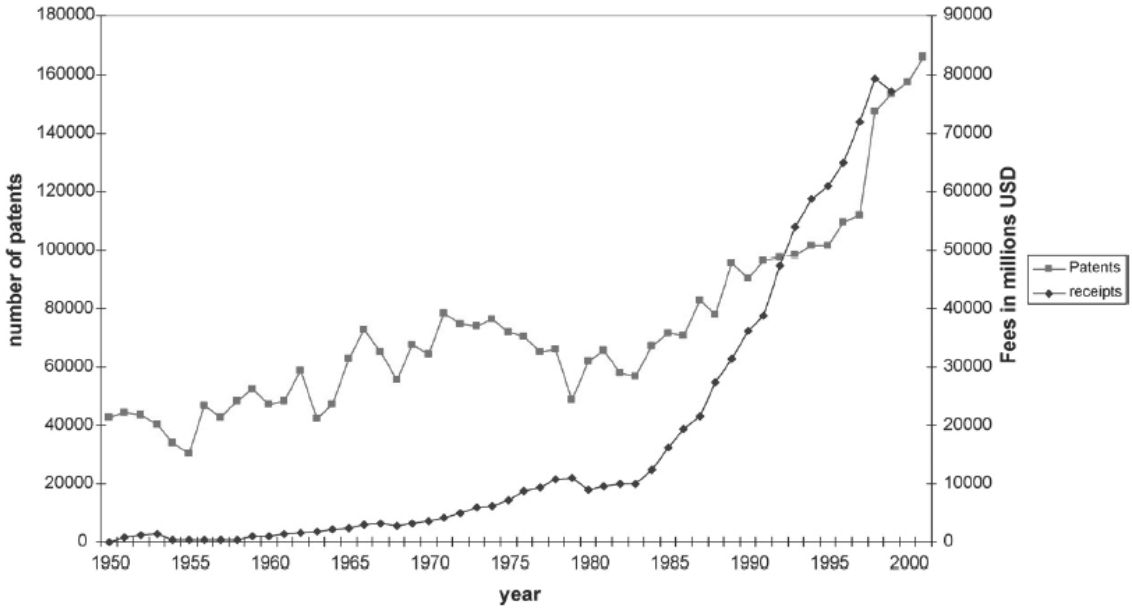


Fig. 2. Growth in non-US held patents and worldwide royalty and license revenues.

Overall, it seems that in the post-war period until the early 1980's, the inventions protected by patents were predominantly used (if used at all) by the patent-holders, whereas from the early 1980's there has been a strong growth in the trade with rights on intellectual property, such as patents.

At the industry level, many high-tech industries – biotechnology, semiconductors, IT, etc. – feature specialist technology suppliers selling their technologies to downstream manufacturers. The division of labor between firms has expanded from manufacturing issues (exemplified by Adam Smith by the making of pins in the early industrial revolution) into the research and development field. This means that new types of firms have appeared, firms that do nothing but produce new knowledge. Prominent examples pertain to the biotech area, where the discovery of gene-splicing in the late 1970's triggered a literal explosion of new non-manufacturing companies (Pisano et al., 1988 [10]). This increasing division of labor may be said to be a natural development following trends in, say, the

petrochemical sector, where the immediate port-war period witnessed the emergence of a new type of company, the specialized engineering firm that designed plants and processes (Arora & Gambardella, 1998 [2]).

But the trend not only is based on the creation of new firms. Also larger firms (e.g. IBM) engage in licensing out their technologies more than they used to do in the past. An OECD study (Sheenan et al., 2003 [13]), interviewing 105 large firms in Europe, Japan, and the US, finds that the majority of firms interviewed predict that they will increase their licensing in and out in the 2000s compared to the 1990s.

If the increasing degree of labor in the manufacturing dimensions was a major driving force in the industrial revolution, the MFT promise to enhance the productivity of the entire society in a perfectly similar way. MFT provide several advantages both at the firm and industry level.

Some of the firm-level advantages are:

1) Firms have more strategic options. On the demand side, they can buy or make technology, or both. On the supply side, they can use it internally or sell it, or both.
2) Firms can profit from developing technology even if they do not own the assets to integrate them into products and related markets. This favors in particular firms with limited liquidity or downstream assets, typically start-ups and smaller firms.
3) Established firms produce many technologies that they do not use (e.g. Rivette and Kline, 2000 [12]). Moreover, many of their technologies have multiple uses. MFT enable them to create value from these unexploited assets. This may also encourage companies to think of their large R&D departments as a direct source of economic returns in the market as well.
4) Firms can enjoy liquidity from technology, which is otherwise one of the most illiquid assets. Again, this favors in particular smaller entrepreneurial companies that typically face liquidity constraints.

All of these advantages will provide stronger incentives to develop more technology. Individual firms will expect wider use of their technologies, and henceforth spend more resources on R&D.

This lead to a greater supply of technology that will provide industry-level advantages such as:

1) The greater incentives to invest in technology raise the rate of technological experimentation in the economy.
2) The increased division of “innovative” labor (Arora et al., 2001 [1]), creates greater competition in downstream industries and markets. This is because these firms have an incentive to sell their technology, which in turn diffuses through market trade.

Despite the observed growth and the obvious advantages from an increased specialization in technology development, markets for technology are still faced with problems. The markets are to a very high degree imperfect.

A well-known way of increasing the efficiency of markets is by introducing intermediaries. This is also happening in this area. A series of internet-based technology brokers has emerged over the past few years. Three leading intermediaries worldwide are yet2.com (www.yet2.com), Ocean Tomo (www.oceantomo.com), IP Bewertungs AG (IPB) (www.ipb-ag.com). These companies act as brokers in the increasingly complex markets for knowledge. This vehicle, however, seems not to solve fundamental problems. Lichtenthaler and Ernst (2008) [8] thus reports limited success for these companies.

The main limitation of technology markets is that they are still bound by transaction costs. Razgaitis (2004) [11] notes that out of 100 cases in which a company wants to sell its technology, only in 25 cases a potential partner is found, in only 5-6 cases the parties enter

into negotiation, and only 3-4 end up in a licensing transaction. The main reasons for such high attrition rates are the costs of finding a partner, the fear of losing control of relevant intellectual property, the exclusivity or the geographical extension of the deal. In a number of cases the failure may be due to failure of the technology to reach a standard suitable for adoption: the invention may simply be unsuitable for use – or may already have been superseded by better innovation.

Another important (and related) limitation is the increased litigation over IP rights. This may even discourage investments in innovation because firms, especially smaller firms or units, may fear stumbling on some patents and hence incur high litigation costs. The issue has become rather serious and diffused (see eg Bessen and Meurer, 2008 [4]).

In a number of technology areas (such as ICT and biotech) there is concern that patents are increasingly forming "thickets" that effectively are impenetrable, especially for new firms (Bronwyn Hall, Cowan et al., 2007). The increasing patenting has covered large areas with such a complex web of rights that firms may simply give up operating in such areas, or invest in freedom to operate by cross-licensing patents. A recent study (Lichtenthaler, 2007 [7]) concludes that the most important motive for out-licensing is to secure freedom to operate. Generating revenues from licensing seems not to be among the driving forces for licensing. In addition the societal dimension of patenting in pharma, biotech and ITC are attracting increasing attention –Is the balance right between societal interests and commercial objectives?

Thus, while markets for technology are certainly growing, the full potential of this development is far from realized. Trading knowledge requires well-defined property rights, so that efficient contracts can be written. But certain property rights and the enforcements of them on the other hand may hinder the exploitation of technology that is already developed. .

## 5. Developments in policy considerations

It is in this spirit that the licenses of rights (LoR) scheme now attract renewed attention. It is our conjecture that a sensibly introduced LoR can solve in part these limitations, and they can give new spin to the MFT more generally.

Licences of Rights provisions are well known in several European jurisdictions. More recently, LoR has come on the agenda of the European Union, since an LoR scheme was included in the 2004 proposal by the European Commission for a Community Patent. The recent work on the Community Patent uses the 2004 proposal as its starting point and still includes the LoR provisions although there are concerns that, following the example of the French Patent Office which has recently revoked its LoR provisions, the provisions in the Community Patent regulation may be removed.

This would be very unfortunate. An LoR provision holds promise of mediating some of the transaction cost related obstacles for the expansion of markets for technology. The 2000 Commission proposal included a European Community Patent where the cost of the patent would be prohibitive if translation into all the languages of the European Community were required, and yet those potential infringers in countries not using the language of filing of the patent application will be vulnerable to being an innocent infringer simply because the patent is not in their own language. The Community Patent would not be translated into all the Community languages but would in be in the language of filing with the EPO and it would be automatically endorsed LoR. At the same time, the court system currently proposed for the Community Patent would be perfectly capable of dealing with the Licenses of Right requests in addition to handling normal infringement and validity questions.

## 6. Soft IP

Soft IP is a new concept that arose in the European Patent Office's Scenario project, which examined the long-term future of the European patent system. Interested stakeholders have since taken the concept forward and are proposing it as a possible component in the European Community Patent. Soft IP is conceived as a system that enables efficient capture and protection of IP, with provision for making licenses available to all interested parties. This is particularly applicable to patents. The Soft IP scenario acknowledges the value of IP in a licensing context, the need for balance between uses of IP in various industries and development models, and the fact that the value of a patent does not always reflect the value of the invention but more the cost of being unable to continue using the invention when an injunction is given.

In particular, the idea behind Soft IP is to encourage the use of LoR in the patent systems. The most immediate and dramatic consequence of LoR is the elimination of the right to seek an injunction to stop an infringer. This is a natural consequence of the LoR: The License of Right in essence changes the exclusive right that a normal patent provides to a remuneration right. Or – in other words – the right comes with a requirement to license, under which the right-holder cannot prevent anyone receiving a license to use the invention. Similar to certain copyrights, the idea is exactly to open the use of the patent to everyone who pays a royalty. Under such a scheme, the patent-holder cannot seek injunction to stop infringers, but it will still be an infringement if a user does not provide notice of the use and pays the royalty.

Instead of the power of injunction, the patent owner would acknowledge that some form of compensation for infringement would be acceptable – the compensation could be monetary with perhaps a cross license being taken into account if appropriate. The fact that a LoR is available greatly assists innocent infringers since they would be assured of obtaining a license, and would not be faced with the prospect of their business being disrupted or closed down. As with the existing LoR systems in the UK, and Germany, if parties cannot agree on terms, terms would be decided by the courts.

The Soft IP approach would be particularly attractive in situations involving the so-called honest concurrent user of the invention. Such people or organizations are "innocent" infringers. Innocent infringers have not engaged in any nefarious or unprincipled behavior but need to use patented inventions. Examples include inventions essential for software interoperability, Internet use and telecommunications projects where interoperability is a must-have, or Open Source projects.

Patent law already recognizes the concept of the "innocent infringer" – one who did not know of the patent or could not reasonably be expected to have known of the patent. The "Soft IP" concept would extend the notion of the innocent infringer.

Introducing Soft IP into the patent systems would facilitate the growth of the markets for technology in two important aspects:

1) It would eliminate the threat of injunctions blocking activities worth much more than the actual values of the invention. Disciplining the so-called patent sharks, this would allow companies a "freedom to operate" subject to royalty payment.
2) It would reduce the transaction costs of negotiating terms of licenses, a serious obstacle for the diffusion of knowledge. This probably would benefit especially small firms and universities.
3) It would partly redress the balance between societal and commercial interests which a patent system should seek to achieve – Soft IP drives a higher degree of collaboration between stakeholders and eliminates "strategic patenting" behavior that is harmful to wide economic interests.

## 7. Soft IP: benefits, limitations, and open questions

With these obvious benefits in sight, we need a better understand the functioning of a LoR system.

In this respect, a broad advantage of the LoR system is that it may facilitate MFT, and reduce the limits due to the fear of litigation by innocent infringers. At the same time, the definition of a LoR system might encourage a better understanding of the functioning of this institution in practice. In turn, this may increase awareness of the system itself, and hence encourage a greater use of technology markets.

Yet, a proper functioning of an LoR system still presents some open questions. Generally, we suggest a voluntary scheme under which a patent applicant may choose between a traditional patent with full exclusivity and a patent with only "soft IP". However, a specific proposal requires serious consideration. There still is a series of questions related to a Soft IP scheme. Specifically, the relevant questions in this context can be divided in three main areas.

*1) When should a patent applicant decide on whether to opt for Soft IP?*

The main question is whether the option of a LoR should be exercised at the time of the patent application rather than grant. This implies that the choice is made when the patent owner does not yet know about the potential uses of the patent. In turn, this reduce the potential opportunistic behavior that the patent owner only chooses to put under LoR less valuable patents (or patents that he has decided to license in any case), while keeping his jewels under the standard regimes. With greater uncertainty, some jewels may turn out to fall onto the LoR scheme, thereby reducing the potential "lemons" problem of this market.

*2) Setting the prices of royalties under Soft IP*

Another important question is how the LoR prices should be determined. In addition, one also ought to address the question of how the LoR collection of payments may take place. What can be learned from collecting societies in the copyrights area?

As an example, one can think of some compulsory publication of licensing rates and conditions for patents falling under the LoR regime, so as to increase transparency in transactions and to further encourage the development of the market. It would also avoid discriminating among clients, and the use of licensing as anti-competitive instruments (collusion).

*3) Is Soft IP attractive?*

A related set of questions is the following: How big will the LoR incentive be? What extra incentives may be needed to make the system attractive? Should LoR be only voluntary or should it be mandatory for certain patents? Interestingly, this could create a continuum from no LoR to what would basically amount to a Compulsory License (mandatory LoR). To whom should incentives be aimed at, the community at large or the patent owner? What about questions of legal certainty for innocent infringer, viz., should they always get a license in any case?

4) *To what extent is Soft IP really friendly towards SMEs?*

Recent practice shows that particularly SMEs are vulnerable in Europe to the threat of infringement. In theory, the Soft IP system means that innocent infringers would not be blocked from pursuing their invention in the case of alleged infringement. Also Soft IP is less costly: it would be cheaper to file LoR endorsed patent and under Soft IP licenses fees could be made easier to collect. Both these hypotheses need further examination.

5*) Is Soft IP compatible with Open Source software licenses?*

In theory there is no contradiction between the Soft IP /LoR system and Royalty Free / Open Source licensing regimes. Open Source software is available on a Royalty Free basis,

however this does not necessarily mean that it is not protected by patents. Some companies have made pledges not to enforce their patents against open source software. Such companies could endorse their patents under LoR, effectively granting a royalty free license to open source software and granting licenses requiring a royalty payment to proprietary software. However further research needs to be conducted to highlight any possible problems.

A series of other questions relate to enforcement and to the valuation of Soft IP.

LoR schemes exist in several countries. Research into the functioning of these systems might shed light on whether existing LoR systems (e.g. Germany, UK) support the markets for technology. In particular, historical situations (such as the British 1977 Patents Act extension of the patent period) should be examined. Similarly, it could be examined if there is a pattern in the use of the LoR option: Can it be shown that it is taken mostly by firms who plan to license the technology? If so, the current LoR scheme may basically turns out to be a discount to the (few) firms who plan to license their patents.

## 8. Conclusions

The paper identifies Licenses of Rights as potentially a powerful vehicle for the promotion of markets for technology. It also brings into the equation the importance of achieving a balance between the monopoly rights granted to the patent holder and societal interests. Excluding the right to pursue an injunction means that society benefits from more reasonable services, since the use of injunctive threats arguably adds to costs and supports inappropriate monopoly conditions. However we have raised a series of questions on how to implement such provision in the European context and we also recognize that the various stakeholder interests in a Soft IP system need to be subjected to fuller analysis.

## References


[1] Arora A., Fosfuri A., Gambardella A. 2001. *Markets for Technology: Economics of Innovation and Corporate Strategy*. Cambridge, Mass.: MIT Press.

[2] Arora A., Gambardella, A. “Chemicals: A U.S. Success Story”, …. 1998

[3] Athreye, S., Cantwell, J., 2007 “Creating Competition? Globalisation and the Emergence of New Technology Producers” Research Policy 36, 209-226.

[4] Bessen J, Meurer MJ, 2008. *Patent failure*, Princeton and Oxford, Princeton University Press, 2008.

[5] Cowan, R.,Van der EIJK, W., Elsmore, M., Lissoni, F., Lotz, P., Van Overwalle, G., Schovsbo, J., 2007. “Policy options for the improvement of the European patent system”, The European Parliament, IP/A/STOA/FWC/2005-28/SC16. http://www.europarl.europa.eu/stoa/publications/studies/stoa16_en.pdf

[6] Hagedoorn, J. 2002 “Inter-firm R&D Partnership: An Overview of Major Trends and Patterns Since 1960,” Research Policy 31, 477-492.

[7] Lichtenthaler U, 2007. Corporate technology out-licensing: Motives and scope. *World patent Information* 29, 117-121

[8] Lichtenthaler U, Ernst H, 2008. Innovation intermediaries: Why internet marketplaces for technology have not yet met the expectations, *Creativity and Innovation Management* 17(1).

[9] OECD 2006. OECD Technology Indicators, Technology Balance of Payment – Payments/Receipts. Paris: OECD.

[10] Pisano, Gary P., W. Shan, and David Teece. "Joint Ventures and Collaboration in the Biotechnology Industry." In *International Collaborative Ventures in U.S. Manufacturing*, edited by David Mowery. Cambridge, Mass.: Ballinger, 1988.

[11] Razgaitis S. 2004. US/Canadian Licensing in 2003: Survey Results. *Journal of the Licensing Executive Society* 34 (4): 139–151.

[12] Rivette, K.G. and Kline, D. (2000) “Discovering New Value of Intellectual Property”, *Harvard Business Review*, January-February, 54-66.

[13] Sheehan, J., Martinez, C. and Guellec, D. 2004. Understanding Business Patenting and Licensing: Results of a Survey. Paris: OECD.