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Intellectual property rights and standardization: the case of GSM

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Abstract

This paper investigates the role of intellectual property rights (IPRs) in the process of standardization in the telecommunications industry. We take the global system for mobile communications (GSM) case as a highly relevant example, being part of a high-tech industry in which standards play a large role. In the process of designing the GSM standard, a lot of attention has been given to IPRs, mainly to avoid a situation in which a single IPR holder could hamper or even totally block the development of the standard. Nevertheless, the ultimate GSM standard contains a large amount of so-called ‘essential IPRs’, i.e., IPRs without which the implementation of GSM products is impossible.

The paper provides a general discussion of the development of GSM and presents a database on the essential IPRs in the GSM standard. This database has been compiled on the basis of international patent statistics, and the data that manufacturers have supplied to European Telecommunications Standards Institute, the European standardization body responsible for defining the GSM standard. We use this database to assess the dynamic IPR position of firms in the original GSM standard and its subsequent development.

We use the GSM case to underline the importance of a general European policy with regard to IPRs and standardization, and derive several concrete recommendations for such a policy. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Innovation strategies; Patents; Telecommunications; GSM; Essential IPR

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1. Introduction

Standards, intellectual property rights (IPRs) and competition law are all developed to serve public interests. Standardization (whether imposed de jure or emerging from the market) can overcome many disadvantages related to a too wide variety of products, services or methods. Without standardization, a battle between different technological systems may emerge, and users may get stranded in technologies that will appear from the market after a while. Obviously, these consumers may face high switching costs, for example they need to discard old equipment. On the producer side, standardization increases economies of scale, and may hence lower the price of consumer goods associated to the standard.

A system of IPRs is often necessary to ensure that individuals or companies will carry out innovative activities. Without IPRs to knowledge resulting from an invention, imitation (e.g., by reverse engineering of products) will erode the inventor's profit rate, and hence lower the incentive for inventive activities. An IPR, such as a patent, grants the inventor a legal monopoly to the commercial exploitation of the invention. An IPR holder is insulated from market competition and on the same hand seen as a promoter for innovation. Competition law seeks to promote consumer and economic welfare by fostering and preserving competition (Gutterman, 1997, p. 11). The tension that is created between balancing the diverse interests of the different actors was well brought forward by Mansell (in Hawkins, Mansell, & Skea, 1995, p. 222) '*From a policy perspective, there is an issue as to whether intervention in the market using available alternatives, including standardization, is likely to enhance a given set of policy goals. It can be assumed, on the one hand, that a mature and fully articulated competitive market is present and that it is in this context that standardization choices are taken. On the other hand, imperfect competition, monopolistic competition or oligopolistic rivalry frequently offers more realistic ways of describing a market*'.

At first sight, standardization and IPRs may serve conflicting interests: an IPR is aimed at appropriation of a right to exploit a piece of knowledge by a single firm, while a standard aims to identify a common pool of knowledge to be used by all parties contributing to or using a standard. Still, standards and IPRs do not necessarily conflict. Philips and Sony license their compact disc patents to hundreds of manufacturers. The widely used Ethernet and Token Ring standards for local area networks are based on patents of Xerox and IBM, respectively. In addition, the *Motion Picture Experts Group* (MPEG) audio and video standards cover several patents too. In some cases, patents even apply to standards that are referred to in regulatory measures. The use of the patented modular telephone jack, which can be found on virtually any device that can be connected to the telephone network, is obligatory in many situations in the US.¹

Such situations are not problematic if the patent holder waives its rights, or makes licenses available at a reasonable fee to all interested parties. The IPR holder is, however, in no way obliged to do so. The IPR holder is entitled to secure any monetary or other compensation (e.g. a cross-license) that it is able to extract from the licensee, can freely choose any license conditions, or set territorial or other restrictions on its licenses. Besides this, it is also not obliged to treat

¹ This telephone connector is incorporated in the Federal Communications Commission (FCC) Part 68 rules and also is the basis of an IEC standard (Hanrahan, 1995, p. 496).

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