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The limits to IPR standardization policies as evidenced by strategic patenting in UMTS

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ABSTRACT

The impact of patents and patent royalties are a major concern of standards setting organizations. This study examines the patents filed in the standardization of UMTS, the third-generation mobile phone technology developed under sponsorship of the European Telecommunications Standards Institute (ETSI) and others, using a patent policy developed in response to issues faced in the earlier GSM (née Group Special Mobile) standardization. After contrasting firm strategies and policy effectiveness between the GSM and UMTS efforts, the paper reviews the potential impact of potential changes to the ETSI IPR (intellectual property rights) policy.

1. Introduction

The management of patent royalties has become one of the most problematic and contentious areas of multivendor ICT standardization efforts. While standards setting organizations (SSOs) are organized around a presumption of cooperation toward a shared goal, the increasing role of patents in standards has also increased the divergence of stakeholder interests in standardization—between IP creators, equipment makers, service providers and end-users of standardized products. Although some SSOs have sought to manage standards-related patents or even ban them entirely, other SSOs seem to be in denial; all three approaches have serious limitations.

This study examines the nature and role of patents in one of the largest ICT standardization efforts of the past decade, that of the Universal Mobile Telecommunications System (UMTS), a third-generation mobile telephone standard. This standardization effort was governed by the IPR (intellectual property rights) policy developed in response to the difficulties faced handling patents during GSM (née Group Special Mobile) standardization.

The study focuses on two main questions. Firstly, how did firm IPR strategies used for UMTS compared to those used for GSM? Secondly, how well have SSO IPR policies coped with the increasing breadth and depth of patent portfolios?

The paper begins with a review of the standardization history and IPR policies for GSM and UMTS. It then analyzes the 1227 unique patents claimed to be essential by 72 firms involved in the UMTS standardization effort. It discusses the interactions between the strategic patenting motivations and a firm's industry position. Finally, it discusses the limits as to the UMTS patent policy, and actual (or potential) proposals to reform that policy.

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2. ETSI standardization and IPR policy

The standardization of UMTS[1] was both technically and institutionally a successor to that of the second-generation GSM (née Group Special Mobile). Much of the technical development took place at the European Telecommunications Standards Institute (ETSI), an outgrowth of the GSM standardization effort, and it involved many of the same telecommunications vendors and operators that led the early GSM effort. In particular, the UMTS standardization began with the IPR policy created by ETSI in response to problems encountered during GSM standardization.

2.1. GSM standardization

The initiative to create the first pan-European mobile phone standard began with the *Conférence Européenne des Administrations des Postes et des Télécommunications* (CEPT), the organization of all the major incumbent telephone operators. However, in 1988 the European Commission created ETSI to harmonize European telecommunication standards (Besen, 1990), and then pressured CEPT to transfer mobile phone standards efforts to ETSI. Operators remained in control of standards deployment through a group called the GSM Memorandum of Understanding (Bekkers, 2001).

As an initial IPR policy, the GSM agreement proposed a requirement that suppliers must grant operators a free worldwide license for all patents they held to implement GSM, and indemnify operators for all claims of patent infringement by third parties. However, the patent licensing policy was rejected by one of the largest IPR holders, Motorola, which was locked out of the US market and faced high barriers from incumbent suppliers in the European market. Other manufacturers tacitly supported the Motorola stance, leading to defeat of the policy (Garrard, 1998; Iversen, 1999).

In response, most (but not all) operators substituted a requirement that all suppliers promise to provide IPR to the entire GSM community (both suppliers and operators) under "fair, reasonable and non-discriminatory conditions" (Bekkers, Duysters, & Verspagen, 2002, p. 179). In some cases, this FRAND clause was obtained by additional payments to suppliers.

Motorola agreed to these terms under limited conditions, and obtained only a handful of supply contracts. At the same time, it refused to license its IPR under royalty, but instead required cross licensing, eventually negotiating licenses with Siemens, Alcatel, Nokia and Ericsson (Bekkers et al., 2002; Garrard, 1998). These cross-licensing agreements provided a strong cost advantage for these five major patent holders, and created high barriers to entry by prospective GSM suppliers, with royalty rates for non-cross-licensees estimated at 10–13% (West, 2006).

2.2. Development of ETSI's IPR policy

After the rejection of GSM's proposed patent policy, ETSI made several attempts to develop its own IPR policy. Under the heavy influence of operators, in 1993 ETSI proposed an IPR policy suggesting that firms should be assumed to license IPR on a non-exclusive, FRAND basis unless they notify ETSI otherwise. Again this policy was abandoned in the face of informal and legal opposition (Bekkers, 2001; Iversen, 1999). In 1994, ETSI proposed what became its eventual policy, the so-called (F)RAND model that has been adopted by most formal standards bodies around the world. In brief, the 1994 ETSI IPR policy (which remains largely unchanged) is[2]:

- Holders of IPR, members or not, will be rewarded in a suitable and fair manner.
- Members will make a reasonable effort to inform ETSI of relevant IPRs of which they are aware. If they propose a technical design to ETSI they will also, in good faith, draw attention to IPRs that could become essential[3] if that proposal is adopted.
- If an essential IPR is identified, the director of ETSI will request its holder, member or not, to make licenses available under (F)RAND terms.
- ETSI members can choose not to license an IPR. If no other alternatives exist, the director of ETSI will request the holder to revise its position. If a member refuses to do so, it has to inform the director about its reasons; this explanation will be passed on to ETSI's advisors (which include the European Commission). If no solution is found, ETSI may eventually halt the work on the standard or look for other technical alternatives that would not infringe upon the technology in question.
- To enable these policies, during each meeting of an ETSI Technical Committee, the participants are reminded that they should disclose possible IPR on the technical solutions that are being discussed.

[1] UMTS (and related technologies) have also been called Wideband CDMA, W-CDMA, DS-CDMA and later 3GSM. For consistency's sake, but this paper uses the original UMTS name.

[2] These principles remain in the ETSI Rules of Procedures as published in November 2006 (ETSI, 2006).

[3] *ETSI (2004, p. 44) defines essential IPR as* "it is not possible on technical … ground … to make, sell, lease, otherwise dispose of, repair, use or operate EQUIPMENT or METHODS which comply with a STANDARD without infringing that IPR."