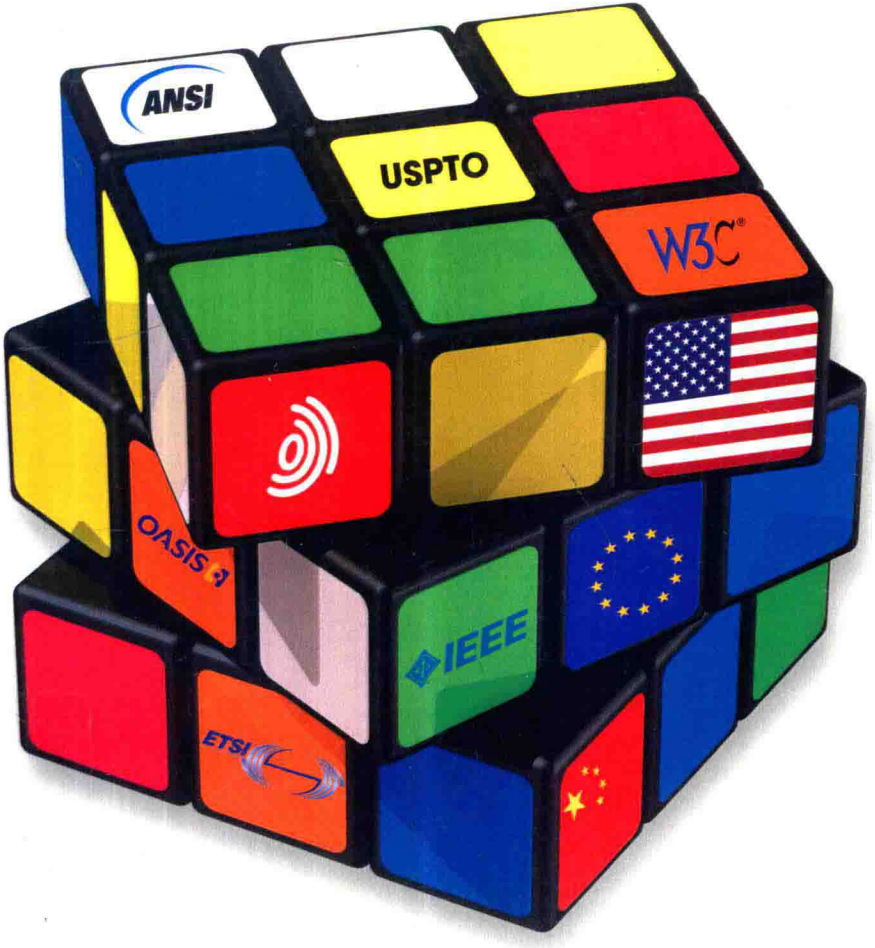
PATENT CHALLENGES FOR STANDARD-SETTING in the Global Economy

LESSONS FROM INFORMATION AND COMMUNICATIONS TECHNOLOGY



NATIONAL RESEARCH COUNCIL
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LESSONS FROM INFORMATION AND COMMUNICATIONS TECHNOLOGY

Committee on Intellectual Property
Management in Standard-Setting Processes

Board on Science, Technology, and Economic Policy

Policy and Global Affairs

Keith Maskus, Editor

Stephen A. Merrill, Editor

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

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Preface

The U.S. Patent and Trademark Office (USPTO) in 2011 asked the National Academies' Board on Science, Technology, and Economic Policy (STEP) to examine and report on the role of patents in standard-setting processes in an international context. For the STEP program, this charge represented the confluence of its long-standing interests in the standards system on the one hand and intellectual property policy on the other hand. The Board's very first consensus study, in response to a congressional mandate, resulted in the report, *Standards, Conformity Assessment, and Trade* (National Research Council, 1995). And in 2001, STEP initiated a series of studies of the patent system whose products included *Patents in the Knowledge-Based Economy* (National Research Council, 2003), *A Patent System for the 21st Century* (National Research Council, 2004), *Reaping the Benefits of Genomic and Proteomic Research: Intellectual Property Rights, Innovation, and Public Health* (National Research Council, 2006), and *Managing University Intellectual Property in the Public Interest* (National Research Council, 2010). STEP Board recommendations strongly influenced the America Invents Act, enacted in 2011 the first major revision of U.S. patent law in more than half a century.

The present project was approved by the Academies' Governing Board Executive Committee with the following charge:

> An ad hoc committee under the auspices of The National Academies' Board on Science, Technology, and Economic Policy (STEP) will examine and assess how leading national, regional, and multinational standards bodies address issues of intellectual property (IP) arising in connection with the development of technical standards. Through commissioned analysis, a public workshop in Washington and a report of the findings of an expert committee, the project will first document the policies and practices of different types of standard-setting organizations in different geographical contexts. The committee will consider policies with respect to such matters as requirements for the disclosure of IP essential or relevant to the development and implementation of standards, the terms of IP licensing to implementers of a standard, and whether conditions attached to

IP incorporated in standards carry over to a new holder in the event of a transfer of IP rights. The study will assess how these policies work in practice and in a legal context and how variations in these policies relate to different types of standards activities, organizations, and fields of technology. Second, the project will evaluate the effectiveness of these policies in reducing conflict between IP holders and other implementers, balancing the interests of firms of different sizes and with different business models, and balancing the interests of producers and consumers.

A committee comprised of academic economists and social scientists, legal scholars, standards professionals, and technologists was appointed by the Academies to address the charge. The committee met four times in the course of preparing this report. At the first meeting, we received written submissions from or heard oral presentations by individuals from government, industry, and the standards community. We commissioned a study of the IPR policies of a carefully selected sample of national and international SSOs, which was carried out by two members of the study committee, Rudi Bekkers, Eindhoven University of Technology and Andrew Updegrove, Gesmer Updegrove, L.L.P.[1] Next the committee planned and held a two-day symposium, *Management of Intellectual Property in Standard-Setting Processes*, in Washington, D.C., on October 3-4, 2012, with invited presentations on a variety of topics addressed in this report (Appendix B; presentations available at http://sites.nationalacademies.org/PGA/step/PGA_072825). The symposium also provided an opportunity for interested members of the public to express their views. The committee is grateful to all of these contributors to its deliberations.

Our study has been carried out in a dynamic environment. Just in the last few months there have been discussions in numerous SSOs about changes to their IPR policies, new pronouncements from government competition authorities on both sides of the Atlantic, hearings in both houses of Congress, court decisions in high-profile legal suits, and a new articulation of China's policy with respect to "national standards." For the most part, we have taken account of the most important developments through preparation of our report for external review in May 2013. The high profile decision of the United States International Trade Commission in *Apple v. Samsung* that was subsequently overturned by the United States Trade Representative occurred as the committee deliberated its responses to reviewer comments, and the committee could not ignore the relevance of the case's outcomes to its recommendation regarding the availability of injunctive relief to holders of standard-essential patents who have undertaken to license them on reasonable and non-discriminatory terms. Apart from this exception, the committee recognizes that both the intellectual property and standards landscapes are changing and will continue to change in ways that the report does not address.

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[1]See http://www.nap.edu/catalog.php?record_id=18510.

The committee's recommendations represent a consensus of views, but not every member agrees with every formulation. In one instance, majority and minority views are presented. As with any Academy report, the views expressed are personal and do not necessarily represent the views of members' employers. Despite the heterogeneity of SSOs, the committee's recommendations addressed to standards developers are stated in general terms. The committee recognizes that each organization should and will consider the appropriateness of our advice for its own circumstances and seek its own counsel.

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Academies' Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the process.

We wish to thank the following individuals for their review of this report: Alden Abbott, Research In Motion; Andrew Brown, Delphi Corporation; Gary Calabrese, Corning Global Research; Dieter Ernst, East West Center; Patricia Griffin, American National Standards Institute; Irwin Jacobs, Qualcomm; Konstantinos Karachalios, Institute of Electrical and Electronics Engineers Standards Association; Earl Nied, Intel; Joshua Sarnoff, DePaul University; Carl Shapiro, University of California, Berkeley; Andrew Torrance, University of Kansas; and Dirk Weiler, European Telecommunications Standards Institute.

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations, nor did they see the final draft of the report before its release. The review of this report was overseen by Samuel H. Fuller, Analog Devices, Inc. Appointed by the National Academies, he was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authoring committee and the institution.

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Contents

Summary

Background

Standards are technical specifications describing means of achieving certain beneficial features of products and services. To become "standards," such specifications undergo some process of examination and approval, whether through regulatory systems, private industry bodies, or simple market acceptance by consumers, that recognizes they are sufficiently effective to merit wide adoption.

Standards are ubiquitous in today's markets and serve multiple purposes—to assure minimum levels of safety, health, and environmental protection, to provide information to consumers, and to reduce transaction costs between producers and users in the selection of inputs and products. One of the most important functions of contemporary standards, and the focus of this report, is to enable components and products designed and produced by different firms to operate and communicate with one another. Such interoperability standards are increasingly important for domestic and international commerce by helping to achieve economies of scale and scope within and across borders.

The technologies that enter into standards are often protected by patents or are the subject of patent applications at the time standards are developed. Incorporating patented or patent-pending technologies in standards is virtually inevitable and generally beneficial, but there is a tension between owners and users of a patented technology. Inventors generally seek economic returns on their R&D investments while users of technologies want access to them on affordable terms. This tension is even more pronounced in the realm of standards, which by their nature are intended to have widespread acceptance and use.

To manage this tension, the wide variety of entities, domestic and international, that are dedicated to developing standards (termed "standard-setting organizations" or SSOs in this report) have generally adopted policies regarding the disclosure and terms of licensing of patents essential to the standards they create (so-called standard-essential patents or SEPs). In general, SSOs encourage or require member firms to disclose SEPs and license them to standards implementers under terms commonly referred to as fair, reasonable, and non-discriminatory (FRAND). These policies vary in content and specificity, are in many cases in flux, and often lack guidance for increasingly common occurrences—litigation

over SEPs and changes in SEP ownership. In particular, SSO policies often do not address whether a SEPs holder that has made a FRAND commitment should be able to seek injunctive relief or an order excluding the allegedly infringing product from the United States and whether FRAND licensing commitments by patent holders in an SSO transfer with changes in patent ownership.

At the same time that the voluntary standards development system common in most respects to the United States, Europe, and Japan is evolving, it is also adjusting to the rise of large developing economies that are major markets for new technologies and show promise of becoming important sources of them. There is uncertainty about how standards policies will evolve in China, India, and Brazil in particular and how they will treat intellectual property incorporated in standards. In a world of rapid technological change and diffusion, proliferating patents, and frequent litigation over patents, the relationship of patents to standards obviously has enormous implications for firms, national economies, and global trade.

Study Origin, Methods, and Focus

In 2011, the U.S. Patent and Trademark Office (USPTO) asked the National Academies to examine and report on the role of patents in standard-setting processes in an international context. The Academies appointed a committee composed of academic economists and social scientists, legal scholars, standards professionals, and technologists and charged them with documenting and evaluating the policies and practices of different types of SSOs in different geographical contexts, focusing on such matters as patent disclosures, terms of licensing, and provisions for the transfer of obligations when patents are traded, sold, or disposed in bankruptcy proceedings.

The committee held four meetings, including a workshop with presentations selected by the committee as well as public commentary and commissioned original research and analysis, including a study of a dozen SSOs operating in the information and communications technology (ICT) sector. The committee, in consultation with the sponsor, chose ICT as the project's focus because of its technological dynamism and heavy reliance on standardization, and because of the escalation of patenting and salience of issues involving patents and standards in those industries.

SSO Approaches to IPR Issues

The committee's selection of SSOs to examine represents a diversity of organization types (both formal standards organizations and consortia) and geographical foci (U.S., European, and global) and encompasses standards activity across the range of ICT technologies—consumer electronics, microelectronic products and their associated software and components, and communications networks including the Internet. These organizations and their salient characteristics are listed in Table S-1.

TABLE S-1 Organizations and their Salient Characteristics

TITLE	TYPE	GEOGRAPHICAL FOCUS	TECHNOLOGY FOCUS	NOTABLE IPR POLICIES
International Organization for Standardization (ISO)	formal	global	broad	share common policy but permit adjustments
International Telecommunications Union (ITU)	formal	global/UN Affiliated	communications	
International Electrotechnical Commission (IEC)	formal	global	electrical, electronics-related technologies	permits but does not require *ex ante* disclosure of the terms
Institute of Electrical and Electronics Engineers Standards Association (IEEE-SA)	formal professional association	global	broad electronics	reviews ipr policies as part of accreditation process
American National Standards Institute (ANSI)	SSO and standards-accreditation organization (not a standards developer)	U.S.	broad	
Internet Engineering Task Force (IETF)	consortium of individuals	global	internet	preference for non-patented technology
Organization for the Advancement of Structured Information Standards (OASIS)	consortium	global	e-business and web service	multi-modal ip policy
VMEBus International Trade Association (VITA)	consortium	global	avionics, military and industrial applications of electronics	*ex ante* disclosure of licensing terms; binding arbitration of disputes
World Wide Web Consortium (W3C)	consortium	global	internet & web	royalty free license
High Definition Multimedia Interface Forum (HDMI)	consortium	global	digital audio/visual transmission	non-assertion
Nearfield Communications Forum (NCF)	consortium	global	data exchange among consumer devices	
European Telecommunications Standards Institute (ETSI)	formal	European-based but international	ICT broadly	