Intellectual Property Rights And Standards Setting Organizations: An Overview Of Failed Evolution

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EXECUTIVE SUMMARY:

Over the past fifteen years, there has been a tremendous growth in the number, type and nature of Standards Setting Organizations (SSOs). The globalization of the market, the expansion of multi-national companies, and the increased availability and accessibility of networking have heightened the need for standardized solutions within the Information and Communications Technologies (ICT) industry. Unfortunately, the evolution of SSOs - including organizational structures, market requirements, processes, and rules - has not kept pace with the changes in the ICT environment. In the last five years, the problems presented by this unordered state have become increasingly apparent, and there have been significant efforts mounted to regularize and describe these problems so that solutions can be found. Intellectual Property Rights (IPR) in SSOs is one of the central problems.

This paper looks at the evolution of SSOs and how this evolution contributed to the current set of problems in IPR regimes among the various types of SSOs. It offers a structural, rather than legal, response to this problem.

EVOLUTION

In the fifteen (15) year span between 1985 and 2000, the ICT industry went from having technology standardized largely in the formal Standards Developing Organizations (SDOs)[1] to using a multitude of organizations, ranging from SDOs to open source. The evolution was neither clearly planned, nor cleanly executed. There are five basic variants of standards setting organizations within the ICT sector[2]. Each variant has a place in the ICT sector because there is no single optimal choice for development of standards for the entire industry. A brief look at the rationale for these organizations will shed some light on why the ICT standardization world has assumed the shape that it has today.

[1] The term Standards Developing Organization (SDO) has a specific meaning when discussing standardization. An SDO is an organization that has been accredited by the International Organization for Standardization (ISO) or the International Electrotechnical Commission (IEC) as representative of the standardization activities of their country and for meeting the criteria for transparency, openness, impartiality, effectiveness, and balance. Within the U.S., the American National Standards Institute (ANSI) was selected the most representative of such organizations. This means that ANSI alone has the right, under the ISO/IEC regime, of accrediting organizations to be SDOs within the U.S.; by a limited grant from the U.S. Congress, ANSI alone has the right to designate a specification as an "American National Standard (ANS)". The process for creating an American National Standard is contained in the ANSI document entitled *American National Standards Institute: Procedures for the Development and Coordination of American National Standards*. This is available at the ANSI Web site at: http://www.ansi.org/public/library/std_proc/anspro/due_proc1.html

[2] See Cargill, Carl F. at http://www.house.gov/science/ets/jun28/cargill.pdf for an extensive description and history of these types of standardization organizations.

The five types of SSOs are: 1) trade associations, 2) Standards Developing Organizations (SDOs), 3) consortia, 4) alliances, and 5) the Open Source software movement. While all have a common goal of "standardization of technology", the methods by which they pursue the activity are substantially different. All of the organizational forms were created in response to specific market needs that were not being met by extant organizations or practices. Just as the market will respond to create a product that satisfies an unfulfilled need, so to will the market create organizational structures that fill its needs.

The first standardizers were trade associations, such as the ASTM and ASME, [3] originally founded to educate their members (primarily civil engineers) on engineering best practices and trends. The creation of standards was something that they did as a sideline, as part of the creation of an engineering discipline. Frederick W. Taylor, the "father of modern management", prepared a series of lectures to be given to the ASME, of which he was a member. These Principles of Scientific Management, published in 1911, are typical of the early rationale for the trade associations - which was to make the world better through the application of scientific methodology.[4]

Over time, however, the increasing industrialization of the U.S. made standards more necessary. "Standardization is one of the hallmarks of an industrial society. As a society becomes increasingly complex and its industrial base begins to emerge, it becomes necessary for the products, processes and procedures of the society to fit together and interoperate. This interoperation provides the basis for greater integration of the elements of the society, which in turn causes increased social interdependency and complexity." [5] In 1918, the first successful attempt at coordination of standardization in the United States was initiated with the creation of a federated standardization activity." Founded in 1918 by five engineering societies and three government agencies, the [American National Standards] Institute remains a private, nonprofit membership organization supported by a diverse constituency of private and public sector organizations."[6] The role of ANSI (which is a "formal SDO" under my terminology) was to

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[3] ASTM (now ASTM International) used to stand for the American Society for Testing Materials, while the ASME is the American Society of Mechanical Engineers.

[4] The following quote, from the introduction to The Principles of Scientific Management, illustrates the motivation of these early management scientists.

"This paper was originally prepared for presentation to The American Society of Mechanical Engineers. The illustrations chosen are such as, it is believed, will especially appeal to engineers and to managers of industrial and manufacturing establishments, and also quite as much to all of the men who are working in these establishments. It is hoped, however, that it will be clear to other readers that the same principles can be applied with equal force to all social activities: to the management of our homes; the management of our farms; the management of the business of our tradesmen, large and small; of our churches, our philanthropic institutions, our universities, and our governmental departments." Taylor, Frederick W., The Principles of Scientific Management (New York: Harper Bros., 1911): p.5 Cited in Internet Modern History Sourcebook. http://www.fordham.edu/halsall/mod/1911taylor.html

[5] Cargill, Carl F. *Standards*, in Ralston, Anthony et. al. editors, Encyclopedia of Computer Science, Fourth Edition, Nature Publishing Group, 2000, London, pp. 1677-1683

[6] ANSI Web Site, Introduction found at: http://www.ansi.org/public/ansi_info/intro.html

coordinate and administer the U.S. voluntary standards process. It did this by receiving a charter to be the sole authority granting the appellation American National Standard (ANS) (see footnote 1).

ANSI evolved over the next fifty years. The industry groups driving development of its standards were heavy manufacturing, automotive, chemical, energy, and construction. In the early 1960s, the ICT sector began to standardize with the appearance of Accredited Standards Committee X3, specializing in computing equipment and languages. Other groups began to engage in ICT standardization as the ICT arena grew. These groups included the Institute of Electrical and Electronics Engineers Computer Society (IEEE CS), the Electronics Industry Association (now Electronics Industry Alliance), and other groups as their members saw a need for their expertise in creating standards.

In the mid 1970's, a series of questionable practices, and a Supreme Court[7] case, rocked the U.S. standardization arena, and Congress began to investigate the standardization activities of the private sector. ANSI, representing a federation of all the private sector standardization participants, rushed to correct the process errors that allowed the violations to occur. It was here that the process requirements that included the patent policy of ANSI first began to appear. Participants who submitted technology for standardization had to commit to licensing the necessary patented technology included in the standard on a Reasonable And Non-Discriminatory Basis (RAND).[8]

This worked well - for a while.

By the mid-1980s, however, the increasing pace of change and consequent shortened product life cycle had begun to affect the entire ICT industry that began to develop "anticipatory standardization."[9] "In contrast to this historical tradition of standards sanctioning an existing well-defined product, [anticipatory] standards…may precede products…. Technologies can be developed in committee during the development of the standard, leaving the disposition of intellectual property rights uncertain."[10] The use of anticipatory standardization was largely limited to the IEEE and to X3, the two committees most concerned with ICT standardization. At about the same time, anticipatory standardization moved into the international

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[7] American Society of Mechanical Engineers vs. Hydrolevel (1982) http://www.antitrustcases.com/summaries/456us556.html

[8] The lack of a clear, equitable, and easily understood definition for the term RAND is one of the major sticking points in ICT industry. Small companies and individuals fear gouging by big companies; large companies fear diminution of their IPR portfolios.

[9] The idea of anticipatory standardization was first postulated in Cargill, Carl F. Information Technology Standardization: Theory, Process, and Organizations, Digital Press, Bedford MA, 1989. It identifies standardization that occurs prior to productization, but after proof of concept.

[10] Martin B.H. Weiss and Michael B. Spring, *Selected Intellectual Property Issues in Standardization*, Department of Information Science, University of Pittsburgh, Pittsburgh PA 15260 September 1992 and presented at the Twentieth Annual Telecommunications Policy Research Conference, Solomons, MD, September 12-14, 1992., p1. The paper (at http://www2.sis.pitt.edu/~spring/papers/stdip1.pdf) argues convincingly that the nature of anticipatory standards has an impact on the nature of IPR in standardization.

standardization arena when the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) created Joint Technical Committee 1 (JTC1). JTC1 quickly began to work on the creation of an all encompassing data interchange standardization effort called Open Systems Interconnect (OSI), which attracted the interest and participation of the International Consultative Committee on Telephony and Telegraphy (CCITT) of the International Telecommunication Union, hence merging Information Technology and Telecommunications.

All three organizations (based in Switzerland) had similar patent policies - that is, reasonable and non-discriminatory licensing of patents if the patent was used in a standard, and a commitment to disclose the patent sometime during the standardization process. These policies reflected the way that things were done in other areas of the industry (a carry-over from other industries) and did not take into consideration the rich intellectual property environment of the ICT arena. This is not surprising; the administrators of these SDOs were not lawyers (except in rare instances). Additionally, the participants in the committees were engineers, and they were creating - in committee - interfaces that would allow their computers to communicate.

With the advent of anticipatory standardization and the addition of the more complex processes, the work in the formal organizations began to slow down. By 1989, the average time to develop a standard in an SDO (depending upon the amount of controversy surrounding it) seems to have been between four and six years. This was unacceptable to the ICT community and, unknown to the SDOs or to the people that populated them, a search for alternatives began.

As a result of this market failure (which is about the only way that it can be described), the SDOs came face to face with a threat larger than that of patent policies or anticipatory standardization. By the early 1990s, consortia (alliances of like minded companies) were beginning to appear in number. What is worse, the consortia were pulling resources from the SDOs in the ICT arena. The SDOs had failed in their appreciation of the demands of the market. With the creation of complex processes meant to protect the SDO and the SDO members from lawsuit, they had missed the demands of the market for increased speed so that vendor solutions could be deployed. In a 1994 meeting of the Technology Policy Working Group of the U.S. Federal Government, Dr. Lewis Branscomb, Harvard University and former Director of the National Bureau of Standards, stated "When the consortium succeeds in obtaining de facto acceptance of their interfaces and protocols, they may well bypass the formal standard development organizations. In fact, I think that is precisely their intent. Some consortia regard their task is to accelerate the process for an ultimate formal standard by getting all the producers together, saying: 'Okay, we all agree on such and such. We are not going to have years and years of wangling among competitors. The problem now is for

the formal standards body to get representatives and users to sit down with us and see what we have to do to get them to accept what we have already agreed to.'"[11]

The basis of the Current IPR Problem

The consortia, in their efforts to create specifications, took some liberties with the SDO processes - the greatest one of which is that they were "pay to play" organizations. Unlike SDOs, which charged only a minimal fee to participate, consortia charged substantial fees, usually in the $10,000 to $50,000 range, with some having fees in excess of $1 million. The organizations - often U.S. based - were usually chartered under the National Cooperative Research and Production Act of 1993 (or predecessor acts), and did not develop standards - they merely developed "open specifications." The market accepted these specifications, and consortia continue to be founded today at a rate not too dissimilar to the original rate. On the other hand, consortia didn't especially change the patent policies of the SDOs, borrowing from the SDOs because they seemed to work. Again, most consortia had lawyers either on retainer or on staff - but the drivers of the agreements were usually business or marketing people who were trying to speed up a process that they believed was too slow. Negotiation of a new and comprehensive set of patent rules was difficult; alone among the organizations engaged in standardization, the European Telecommunications Standards Institute (ETSI) attempted something different. "At its inception in 1988/89, ETSI insisted that it was born into a 'new environment of European standardization' [Tuckett, 1993] in which emerging standards would be 'littered with IPRs'. Although the fledgling institute later estimated that the IPR-problem would only involve about 2% of its standards work [ETSI document, 1994], the perception that the danger had ceased to be an academic problem encouraged it to seek new measures to tackle the eventuality. Alas, it was not alone in this prognosis in the late 1980s and early 1990s. International voluntary SDOs like the former CCITT [now ITU-T] also recognized but 'avoided the temptation' of defining procedures to address the potentially damaging IPR problem."[12]

By 1995, consortia also implemented another fundamental change - that of rejecting, for the most past, anticipatory standardization. The inability of even like-minded companies to agree upon an interface specification that was amenable to interoperable implementations was becoming too difficult; many of the consortia were moving to standardization of "existing practice". This methodology required that a company or organization submit its existing technical specifications to a standardization organization for standardization. For the most part, the specification was reviewed and the pieces that required that some pre-existing proprietary software were removed. If the specification survived this cleansing, it was then

[11] Technology Policy Working Group, Minutes of the July 28, 1994, Meeting, available at http://nii.nist.gov/cat/tp/t940728.html

[12] Iversen, Eric J. *Standardization And Intellectual Property Rights: ETSI's Controversial Search For New IPR-Procedures*, proceeding of the 1999 SIIT conference, Aachen, Germany, available at http://www-i4.informatik.rwth-aachen.de/~jakobs/siit99/proceedings/

forwarded for standardization to whatever authorizing activity there was. The ultimate authorization, of course, was the take up of the technology by the market.

The method described above - "standardization of existing practice" - began to put strains on the IPR policies of the SSOs. Because there had never been adequate consideration given to software patentability, to software copyright issues, to the idea that software was mingled in many specifications, and to the nature of reusable software, the whole Internet/World Wide Web experience caught many ICT standardization organizations by surprise. The need for interface standardization had never been greater, yet there were severe problems with differentiating between the interface specification and the implementation. Finally, there were two more points of confusion. The first issue was the FTC vs. Dell hearings, which cast a pall on participation. Since it was not initially, and immediately, clear what "having knowledge of IPR" meant to the average engineering participant, there was a good deal of hesitancy on how to deal with the issue. Good intentions - which had been adequate in the past - were now possibly suspect. It also raised a spectre that some companies were not participating in the standards process with fair and clear intent, but rather had the goal of gaming the system to influence the market outcome of the process. Simultaneously with the Dell decision came the realization that the old style of standardization, in which a self selecting group of companies (either in SDOs or in consortia) would decide on the technical direction of the industry, was failing under the attack of the manifold interests of the World Wide Web (WWW).

Both of these problems were significant to the SSOs. The first meant that, until the implications of Dell were known, there was a degree of hesitancy on the part of organizations to participate. Additionally, the Dell decision put SSOs on the radar scopes of many corporate lawyers for the first time, and the resulting review of SSO IPR policies - both SDO and consortia - demonstrated how weak these IPR policies were. Secondly, the fact that there were now tens of thousands of players involved in the development of software for the Web and web applications meant that there were now large numbers of new participants aware of IPR considerations. Many of these individuals did not participate in any SSO, and were not bound by the conventions and rules of the SSOs. This meant that they did not have to disclose IPR ownership prior to the standard being published and implemented, so that implementing any standard or specifications now became riskier.

The weak and inconsistent IPR policies of the SSOs resulted in another complication. Where the SSO IPR policy was silent on an issue, the default was usually to either invoke the laws of the nation in which the SSO was incorporated or the laws of the nation of the SSO member at issue. An examination of national laws on IPR - especially software patent and copyright issues - shows a divergence that is just large enough to cause inconsistent results. Finally, the nature of Internet or Web standardization requires that results of

one SSO be usable by another SSO.[13] If the IPR regimes of the SSOs don't match (and they don't) and the IPR laws of the various nations don't match, you have a recipe for maximum confusion when complex systems standards are invoked. And, unfortunately, that is exactly where we are today.

A POSSIBLE SOLUTION

The basis of the solution depends upon the acceptance of the idea that "…standards…are impure public goods. These [impure public goods] combine aspects of both public and private goods. Although they serve a private function, there are also public benefits associated with them. Impure public goods may be produced and distributed in the market or collectively through government. ***How they are produced is a societal choice of significant consequence.*** [Emphasis added]"[14]

If this statement is accepted, then the efficient functioning of standardization is a matter of public and private interest - and government intervention is acceptable (and possibly necessary) when the private sector fails. There is little to indicate that the SSOs are making an effort to confront this problem in a manner that is acceptable to the market - the users, providers, and other concerned parties.

Criteria are needed to define an ideal SSO IPR policy framework requiring an SSO to address the key issues arising today such as required licensing terms (e.g. RAND and/or RF), IPR disclosure requirements and correlating timelines, and governing law.

SSOs also need incentives to use a required framework in their own efforts to create IPR policies. Once a required framework for an SSO IPR policy is defined, it would be possible to move this framework to the WTO for consideration as part of the WTO's definition of what constitutes a legitimate SSO IPR policy and standardization organization.

Today's variegated IPR regime is the legacy of a flawed evolutionary process that represents a real and true barrier to standardization. Ambiguity or conflict amongst SSO IPR policies will paralyze the standardization process. Unless some method can be found to create a required framework for SSO IPR policies, there can and will be little progress made in creating a fully functional environment. The lack of a standard - whether it is for IPR, or technology - serves only those who would keep information, and the ability to manage one's own information, under proprietary control.

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[13] For example, if a wireless Web specification is being developed, it might be reasonable to assume that the IETF, W3C, ITU, ETSI, ISO, IEC, the Open GIS Consortium, and the WAP Forum would be involved.
[14] U.S. Congress, Office of Technology Assessment, Global Standards: Building Blocks for the Future, TCT-512 (Washington, D.C.: U.S. Government Printing Office, March 1992), p. 14, footnote 23