

This paper was presented at The [Economics of the Software and Internet Industries](#) conference in Toulouse, France, January 2005.

[A previous version](#) was published as the feature article in Telecommunications Industry Association's [STAR](#), 1997.

## Communications Standards and Patent Rights: Conflict or Coordination? [1]

by Ken Krechmer  
Communications Standards Review

757 Greer Road  
Palo Alto, CA USA 94303-3024  
+1 650 856-8836  
<http://www.csrstds.com>  
[krechmer@csrstds.com](mailto:krechmer@csrstds.com)

Standards development is moving to the center of the fundamental conflict between the unique and the uniform. Patents are one way to value the unique; standards are a technical society's means to define the uniform. Therein lies the conflict. Two approaches are possible to reduce this conflict: create tighter controls on the patent process or create tighter controls on the standardization process. This paper examines how standards development organizations (SDOs) deal with the rights to patents and pending patents considered essential to standards under development. [2]

For examples of key patent debates, look at the 56 kilobit per second modem schism in the Telecommunications Industry Association (TIA, a US based telecommunications equipment industry trade association) and the International Telecommunication Union (ITU, a charter organization of the UN responsible for world-wide telecommunications standards) or at the conflict between Discrete Multi-Tone (DMT) and Carrier-less Amplitude/Phase modulation (CAP)/Quadrature Amplitude Modulator (QAM) line codes for asymmetric digital subscriber line (ADSL) in the Alliance for Telecommunications Industry Standardization (ATIS) Committee T1 (a US based telecommunications network trade association). SDOs, or more precisely the companies and organizations that support standards development within the SDOs, must balance the desire for economic gain to the patent owner offered by the use of "essential" patents in a standard (*i.e.*, typically a license required for use) -- the "cost" -- with their goal of quickly completing state-of-the-art standards -- the "benefit." The currently accepted American National Standards Institute's (ANSI, the US standardization accreditation organization) and other SDOs' approach is to identify potential essential patent holders during the standards development process and categorize these patent owners' willingness to license patents under the terms of the SDO's patent policy, expressly leaving any commercial negotiation outside the standards development process. This approach was a significant step forward (in the mid 1980's) for many SDOs, which previously did not consider patent issues at all.

In many products, a patented technology -- in return for its license fee cost -- provides some advantage over similar products without the patented technology. In some standalone products there is an ability to consider the value of the patented technology and whether or not to include it. The consensus decision to include a technical approach in a standard that relies on patented technology is usually made in order to ensure that in high-technology fields the standard is based on the state of the art. However, communications standards, that is, standards for *compatibility* rather than *similarity*, are much more sensitive to issues of patented technology, as communication is not possible without standards.

Approving a communications standard which requires use of a patented technology usually requires a license from the controlling company and payment of a fee by all who desire to build equipment to communicate using that standard. The implementers of the communications standard have no choice to use or not use the patented technology if it is "essential" to the standard. If they implement the standard, they must obtain a license or risk patent infringement. In this light, communications standards might be considered a special case, where more aggressive policies to circumscribe proprietary technology might be necessary to support public communications.

## The Increasing Importance of Patents<sup>[3]</sup>

The license fees for patents (and pending patent applications if issued) relating to communications products, once a relatively small part of the cost of such goods, are becoming a major cost for communications product manufacturers and their customers, including the communications service providers. The cost of patent rights for communications products is expanding for at least five basic reasons:

1. The control of worldwide communications networks is transitioning from public to private organizations. Some public network providers treated their patents as public property. Private network providers treat their patents as a profit center.
2. Increasingly, the profit of companies that manufacture communications products is predicated on the control of communications technology via patents rather than unique manufacturing, sales or distribution capabilities.
3. Communications products and services no longer address narrow markets, but often sell in very large volumes for very low prices.
4. The United States (U.S.) patent office has expanded the applicability of patents and changes in the U.S. Patent court system have made patents easier to defend. <sup>[4]</sup>

The effect of these four separate changes is to produce more patents with more patent claims and more aggressive patent holders requesting license fees for each claim relating to a communications standard; in sum, an exponential increase in economic claims. This exponential increase in economic claims is somewhat mitigated by the increased use of cross-licensing agreements which allow different companies, each holding patent(s) on the same communications standard (or related technologies to those used in the standard), to avoid patent disputes without significant economic costs. But in total, patent claims and charges are rising, and negotiations over such matters often create delays in communications standards development worldwide. <sup>[5]</sup> And with the cost of communications products in decline, patent license fees are becoming a more significant part of the cost-of-goods-sold for many manufacturers.

The increase in patents and claims often results in multiple patent holders claiming rights to the technologies within a single communications standard. The sum of the fees to license these rights may even exceed the total profit available to a product manufacturer. Thus, the Director of the ITU-T has questioned whether "reasonable" license fees apply to the individual fee or the aggregate of all license fees required to implement an ITU Recommendation. <sup>[6]</sup> In the face of such prospects, it is no wonder that the manufacturers which participate in some standards committees are often forced to delay the standards development to negotiate acceptable terms for the required patent(s). Such negotiations too often become waiting games, thereby defeating the best efforts of standards committees to expedite the completion of their standards work.

SDOs have not always been involved with patent issues; such topics were "business issues." More recently many standards development organizations -- both formal and informal -- have implemented some form of the patent procedures described below.<sup>[7]</sup> Now, as patent issues come in direct conflict with the goals of SDOs to develop standards more quickly, it appears that these organizations are challenged to further address patent issues.

Following is a description of the current patent policies of the ITU and the American National Standards Institute (ANSI) and some of the resources available in the World Intellectual Property Organization (WIPO). The article also explores possible ways that SDOs' involvement in essential patents might change to respond to this new challenge.

## Some Formal Organizations Patent Procedures

### ITU-T Statement on Patent Policy

A visit to the ITU's Web site will inform the inquirer about the ITU Telecommunication Standardization Sector's (ITU-T) policy.<sup>[8]</sup> Over the years, the Telecommunication Standardization Bureau (TSB) has developed a "code of practice" regarding intellectual property rights (patents) covering, in varying degrees, the subject matters of ITU-T Recommendations. The rules of this code of practice are simple and straightforward -- ITU-T Recommendations are drawn up by telecommunications experts, not patent experts; thus, the drafters may not necessarily be very familiar with the complex international legal situation of intellectual property rights. ITU-T Recommendations are non-binding international standards which are designed to ensure compatibility of international telecommunications on a world-wide basis. To meet this objective, which is in the common interests of all those participating in international telecommunications (network and service providers, suppliers, users), it must be ensured that Recommendations, their applications, use, etc., are accessible to everybody. It follows therefore that a commercial (monopolistic) abuse by a holder of a patent embodied fully or partly in a Recommendation must be excluded. To meet this requirement in general is the sole objective of the TSB code of practice.<sup>[9]</sup> The detailed arrangements arising from patents (licensing, royalties, etc.) are being left to the parties concerned, as these arrangements might differ from case to case.

The TSB code of practice provides for the same elements found in most such patent policies: early disclosure, statements of willingness to license on reasonable and non-discriminatory terms or a waiver of such rights, and the fact that the ITU-T cannot determine the validity or scope of patents. (It should be noted that the International Organization for Standardization (ISO) operates in a very similar way.<sup>[10]</sup>)

### ANSI Patent Policy

SDOs accredited by ANSI are governed by the ANSI patent policy. ANSI policy states, "There is no objection in principle to drafting a proposed American National Standard in terms that include the use of a patented item, if it is considered that technical means justify this approach" (ANSI Procedures 1.2.11). Similar to the ITU, ANSI requires a statement from patent holders or identified parties indicating one of three possible terms:

1. General disclaimer of no patent;
2. Royalty-free license; or
3. Licensing on reasonable and non-discriminatory terms.

ANSI also encourages early disclosure of potential patent holders in its "Guidelines for Implementation of the ANSI Patent Policy," which can be found at <http://web.ansi.org> by entering the term "patent policy" in

the search window. ANSI advises it is prepared to get involved in disputes over what is "reasonable" and "non-discriminatory."

## Some Informal Organizations' Patent Procedures

Various fora and consortia operating in high-technology areas have also adopted their own patent or intellectual property rights (IPR) policies.[\[11\]](#) Many follow policies similar to ISO, IEC, ITU and ANSI. Some require an agreement to license any essential patents covered by the forum/consortium documents as an up-front condition to participate in the fora/consortia. The Federal Trade Commission (FTC) Consent Order in the FTC v. Dell Case involved the Video Electronics Standards Association (VESA) and its patent policy.[\[12\]](#) This case strengthened the legal arguments supporting the SDOs patent disclosure policy. More recently, the RAM bus litigation[\[13\]](#) has weakened the value of the SDOs patent policy. These conflicting decisions make the legal situation concerning the SDOs patent policies more difficult to understand.

## World Intellectual Property Organization (WIPO)

WIPO is an intergovernmental organization with headquarters in Geneva, Switzerland. It is one of the 16 specialized agencies of the United Nations (UN). The ITU is another of the specialized agencies of the UN. WIPO is responsible for the promotion of the protection of intellectual property throughout the world through cooperation among member states and for the administration of various multilateral treaties dealing with the legal and administrative aspects of intellectual property.

One function within WIPO is the Arbitration and Mediation Center, established in 1994 as part of the International Bureau of WIPO. The Center offers arbitration and mediation services for the resolution of commercial disputes between private parties involving intellectual property. The dispute resolution procedures offered by the Center constitute alternatives to court litigation.

## Possible New Approaches to the Use of Patented Technologies

Currently most SDOs identify potential patent holders and categorize them into the three sets of terms noted (*i.e.*, no claim of IPR, royalty-free license, or reasonable terms and non-discriminatory license). Only when a possible patent owner is identified to fall into the third set of terms -- licensing on reasonable and non-discriminatory terms -- are additional efforts desired. In this case, some SDOs could become more involved as a clearing house/forum to speed patent negotiation. Many of the more traditional SDOs have stated they will never get directly involved in commercial negotiations. One recent example of this approach is the Motion Pictures Expert Group (MPEG) Licensing Administration sponsored by Cable Labs.

From the ITU-T code of practice (outlined above), "it must be ensured that Recommendations, their applications, use, etc., are accessible to everybody. It follows therefore that a commercial (monopolistic) abuse by a holder of a patent embodied fully or partly in a Recommendation must be excluded," some means of oversight or enforcement is required. However, current SDOs' policies covering the use of patents in a technical standard "exclude" very little. Generally the only enforcement the SDO offers is the non-publication or withdrawal of the standard if the SDO's IPR policy is not complied with. Enlightened self-interest once was sufficient motivation for communications product and service providers to license on generally acceptable terms. As noted, it appears changes have occurred which are making such licensing policies obsolete. If enlightened self-interest is no longer a sufficient motivator, the question can be asked: Should SDOs -- whether fora/consortia or formal standards developers -- involved with communications standards expand their patent policies to deal more directly with proposed patented technology in communications standards?

Patents have become an increasing part of standards development and could be addressed in an open process separate and parallel to the technical standards work. One approach could be to have WIPO or some similar organization provide the necessary legal and arbitration services to implement the function of a patent clearing house for patent holders identified in the SDO committees. The standards development and patent negotiations among all the participants could take place in parallel and in open sessions. This might also level the playing field among the technical standards committee participants who have and do not have their own patents. If identified patents or patent holders cannot be handled in such a way, then the technical standards committee could consider the alternatives described below.

Possible ways of expanding an SDO's patent policy on essential patents offered under license when identified by the technical standards committee could be:[\[14\]](#)

- No proprietary technology allowed. Private property would not be included in a public standard. Organizations such as the World Wide Web Consortium (W3C) and Sun Microcomputer Products favor this approach in certain cases. This approach is problematic, as public communications standards might technically lag behind proprietary communications products and the state of the art.
- Proprietary technology only allowed as an option. This moves the economic choice to use (and pay for) private property closer to the end-user.
- Proprietary technology only allowed if a significant performance improvement is possible (guidelines or independent review committee needed). This keeps the choice of controlled technology within the technical standards committee but creates more detailed instructions on when and how SDOs implement patented technology.
- Allowed at the discretion of the technical standards committee. This is the current situation.

## Possible New Technical Approaches to Deal with Some Patented Technologies

The Internet provides an electronic communications network with worldwide coverage. Some parties have proposed that the Internet could provide a mechanism to report and allow copyright owners to charge for use of copyrighted material, another form of intellectual property. Possibly, creative minds can determine a way for users of another form of intellectual property rights, patents, to pay for such rights on a license-for-use basis. Much software is licensed today across the Internet. One could envision that someday a communications standard may have an optional protocol that the user could select, but such protocol, being patented, would require the user to pay some license fee first. Traditional patent attorneys may see this as unworkable, but some saw the Internet as "unworkable" when first proposed. If there is a "need," technologists may offer a solution.

## Summary

The importance of patented communications technology to the functioning of society is increasing. The earlier approach of public ownership and control of technical communications systems created significant limitations to the introduction of new technology and is now in decline. In contrast, the breadth and depth of patented technology is expanding. But this paper postulates that the current system of adjudicating patent licenses is very slow and costly. How industry participants respond to these new challenges will have a considerable impact on the deployment of new, likely patented, communications technologies. Public communications systems are in danger of becoming fragmented with pockets of incompatible patented technologies defended by expensive legal armies. Qualcomm's patents on CDMA cellular technology (cdmaOne) are a current example. Without new procedures, communications standards development, as well as public communications networks, may fragment into islands of connectivity linked with duplicate functions to other islands of connectivity.

*Ken Krechmer has been active for about 30 years in telecommunications standards development in various telecommunications SDOs (ITU, ETSI, TIA, ATIS and consortia). He was the founding technical editor of Communications Standards Review (1990- 2002) (<http://www.csrstds.com>) and Communications Standards Summary), technical journals reporting on standards work-in-progress at TIA, ITU and the European Telecommunications Standards Institute. He also was secretary of TIA's TR-29 engineering committee (facsimile standards) from 1990 to 1995. Between 1981 and 2000 Krechmer utilized his knowledge of communications standards work to consult for several hundred clients including France Telecom, NEC, Dialogic, Cirrus Semiconductor, Ascend Communications and Pacific Telesis.*

---

[1] A version of this paper appeared in the Telecommunications Industry Association publication STAR (Standards and Technology Annual Report) in 1998.

[2] Patents and patent disputes mark the beginning of the telephone industry. As noted in John Brooks book, "Telephone, The First Hundred Years," Alexander Graham Bell, a teacher for the deaf, had no knowledge or association with electricity until he began the long series of experiments that culminated in the "invention" of the telephone. From these earliest roots, "commercial terms" for patent licenses for the use of inventions were required when a deaf student's father, Thomas Sanders, a prominent leather merchant from Salem, Massachusetts, and Gardiner Hubbard, a prominent Boston attorney and President of the Clarke School for the Deaf in Northampton who had a deaf daughter, became the financial backers of Bell on February 27, 1875 with the formal signing of the Bell Patent Association agreement. On February 14, 1876, Hubbard, on behalf of Bell, filed Bell's patent application a few hours before Elisha Gray filed a "caveat," or warning to other inventors for a speaking telephone. Thus, Bell's U.S. Patent No. 174,465, which was allowed on March 3, 1876, became the basis of the Bell System and this patent withstood numerous challenges to its validity. Thus, patent disputes have been a part of the telecommunications industry since its very beginning.

[3] A 1998 contribution to the ITU Telecommunication Standardization Sector (ITU-T) also listed similar reasons why more discussions on patent rights issues are taking place: the number of draft Recommendations involving patent rights is rising with the emergence of new technology; international competition is increasing and patent rights holders are less generous than they were in the past; new entrants desire to recover some of their costs through patent rights royalties; royalties may be required to be paid to several patent rights holders; discussions in the General Agreement on Tariffs and Trade (GATT) and disputes involving the European Telecommunications Standards Institute (ETSI) on its patent rights policy and implementation have made more parties aware of the issues.

[4] For a more detailed discussion of these changes see A. B. Jaffe and J. Lemer, Patent Prescription, page 38, *IEEE Spectrum*, December 2004.

[5] This is one reason that in January 1998, the ITU Telecommunications Standardization Advisory Group (TSAG) began serious discussions of some changes to the ITU patent policy.

[6] December 23, 1997 letter of Theo Irmer to ITU-T IPR Ad Hoc group and Temporary Document submitted to TSAG.

[7] For a web page discussing patent issues in standardization and providing links to many resources, see <http://www.gtwassociates.com/answers/micros66a.html>.

[8] The "Statement of the Telecommunication Standardization Bureau (TSB) patent policy" has been used within the ITU-T for the past 14-16 years in its current form. Thousands of Recommendations have been processed under this TSB policy. <http://www.itu.int/ITU-T/dbase/patent/patent-policy.html>

[9] The vast majority of existing and draft ITU-T (and ITU Radiocommunication Sector or ITU-R) Recommendations are free of patent issues. Since detailed or specific implementations of Recommendations usually occur outside the ITU and at levels more detailed than ITU documents, it is not surprising that very few ITU IPR issues arose in the past. Starting in the late 1990's, the impact of IPR issues began increasing.

[10] Part 2 of the Directives of the ISO and International Electrotechnical Commission (IEC) contain the ISO/IEC patent rights

policy in a normative Annex.

[11] The Standards and Patent Policy of the Internet Engineering Task Force (IETF) can be found in RFC 2026 at <ftp://ds.internic.net/rfc/rfc2026.txt>.

[12] See FTC vs. Dell Computer, FTC Docket No. C-3658 and FTC File No. 931-0097, <http://www.ftc.gov/opa/9606/dell2.htm>, a Consent Decree wherein Dell has agreed to make certain patents available royalty-free in order to settle the FTC complaint.

[13] The U.S. Court of Appeals for the Federal Circuit, in Washington, D.C. decision released January 29, 2003.

[14] Jonathan Band, "Competing Definitions of 'Openness' on the NII," Standards Policy for Information Infrastructure, editors: Brian Kahin and Janet Abbate, The MIT Press, Cambridge, MA, 1995, offers a legal view of how IPR impacts compatibility (what J. Band terms openness):

- "1. Microsoft believes that interface specifications should be proprietary, but will permit openness by licensing the specifications to firms developing attaching (but not competing) products.
2. The Computer Systems Policy Project (CSPP) also believes that interface specifications can be proprietary, but will permit openness by licensing the specifications on RAND terms for the development of products on either side of the interface.
3. The American Committee for Interoperable Systems (ACIS) believes that software interface specifications are not protectable under copyright, and that therefore reverse engineering (including disassembly) to discern those specifications does not infringe the author's copyright.
4. Sun Microsystems believes that critical National Information Infrastructure (NII) software and hardware interface specifications should receive neither copyright nor patent protection."

---

This page was last updated January 17, 2005.

[Return to CSR Home Page](#)

[Go to a Listing of Ken's Published Papers](#)