As Yogi Berra famously remarked of déjà vu, it’s standardization skullduggery all over again.

Let me pose a riddle for you: Imagine that I own patents needed to implement an IEEE standard. Because I participated in formulating the standard, I signed the customary letter of assurance (LOA) to the IEEE, binding myself and any assignees to let the standard’s users practice my patents at a reasonable and nondiscriminatory (RAND) royalty, to make standard-compliant products. After some such licenses have been granted (say, at 3 percent), my imagined company’s imaginary MBAs ask, “How can we better monetize our intellectual property? How can we increase our income stream from these patents?” (For the IEEE’s current policies on patents and standards, see the “IEEE Standards Association Bylaws” sidebar.)

I give up; electrical engineering training doesn’t make EEs skilled in the arcane ways of business. But the MBAs solve this riddle with ease. They spin off a new company that takes the patents with it. That company in turn assigns half the patents to Company A and the other half to Company B (or, if you will, to 10 companies, each with a tenth of the patents). Companies A and B each offer to license their respective patents on a RAND basis—each, say, at 3 percent. Given that 3 percent + 3 percent = 6 percent, the same group of patents formerly licensed at 3 percent now generates an income stream of 6 percent. The MBAs call that improved monetization of intellectual property.

This imagined scenario has occurred repeatedly in recent history. Bell Labs assigned its patents to Lucent, for example, which subsequently assigned patents to various other companies. No doubt, you are aware of some other examples.

**Does RAND + RAND = RAND?**

The problem for users of this IEEE standard—at least for future users, because any existing licenses are grandfathered in at a 3-percent rate—is that the IEEE’s LOA doesn’t:

- define RAND,
- provide a mechanism for determining what RAND is when a dispute occurs, or
- account for the cumulative effect of stacking royalties from different companies’ patent portfolios on top of one another.

The IEEE’s LOA should define RAND in terms of no more than an amount that won’t appreciably decrease adoption and usage of the IEEE standard below what would have been the adoption and usage rate in the absence of the royalty. Without better knowledge, this downward difference in adoption and usage might be the old slide-rule accuracy rule of thumb of 10 percent. An alternative (perhaps too rigid) approach is to say that RAND will always be x percent or less, where x is a small number, possibly 2 or 3.

Additionally, the LOA should provide for the appointment of an appraiser or arbitrator when a dispute arises over what royalty is RAND. The cost should be borne, or borne more heavily, by the party with the most unreasonable position. (This is probably an unnecessary refinement, but I would suggest that the appraisal cost should be divided in proportion to the respective squares of the differences between each party’s proposals and the final result in order to discourage gaming the system by high- or low-balling.)

Finally, there’s the problem of stacking royalties on several patent owners’ patents. What constitutes a RAND royalty for one of several essential patents must be understood in terms of the royalty payments needed to make a standard-compliant product. Unless patent owners are willing to accept royalty-free licensing as the price of having their technology made part of the standard, this problem must be resolved. (The substantial benefit they get is that they already know how to use their own technology, and therefore they have a head start on competitors in using it.)

Even without such possible skullduggery as that of our imaginary
IEEE Standards Association Bylaws

The IEEE’s current policies on patents and standards may be found at http://standards.ieee.org/develop/policies/bylaws/sect6-7.html. The following excerpts from section 6 (“Patents”) are relevant to RAND disputes.1

Definitions

- **Enabling Technology** shall mean any technology that may be necessary to make or use any product or portion thereof that complies with the [Proposed] IEEE Standard but is neither explicitly required by nor expressly set forth in the [Proposed] IEEE Standard (e.g., semiconductor manufacturing technology, compiler technology, object-oriented technology, basic operating system technology, and the like) [sec. 6.1].

- **Essential Patent Claim** shall mean any Patent Claim the use of which was necessary to create a compliant implementation of either mandatory or optional portions of the normative clauses of the [Proposed] IEEE Standard when, at the time of the [Proposed] IEEE Standard’s approval, there was no commercially and technically feasible noninfringing alternative. An Essential Patent Claim that was essential only for Enabling Technology or any claim other than that set forth above even if contained in the same patent as the Essential Patent Claim [sec. 6.1].

- **Letter of Assurance and LOA** shall mean a document, including any attachments, stating the Submitter’s position regarding ownership, enforcement, or licensing of Essential Patent Claims for a specifically referenced IEEE Standard, submitted in a form acceptable to the IEEE-SA [sec. 6.1].

- **Patent Claim(s)** shall mean one or more claims in issued patent(s) or pending patent application(s) [sec. 6.1].

- **Reasonable and Good Faith Inquiry** includes, but is not limited to, a Submitter using reasonable efforts to identify and contact those individuals who are from, employed by, or otherwise represent the Submitter and who are known to the Submitter to be current or past participants in the development process of the [Proposed] IEEE Standard identified in a Letter of Assurance, including, but not limited to, participation in a Sponsor Ballot or Working Group. If the Submitter did not or does not have any participants, then a Reasonable and Good Faith Inquiry may include, but is not limited to, the Submitter using reasonable efforts to contact individuals who are from, employed by, or represent the Submitter and who the Submitter believes are most likely to have knowledge about the technology covered by the [Proposed] IEEE Standard [sec. 6.1].

- **Statement of Encumbrance** shall mean a specific reference to an Accepted LOA or a general statement in the transfer or assignment agreement that the Patent Claim(s) being transferred or assigned are subject to any encumbrances that may exist as of the effective date of such agreement. An Accepted LOA is an encumbrance [sec. 6.1].

Policy

IEEE standards may be drafted in terms that include the use of Essential Patent Claims. If the IEEE receives notice that a [Proposed] IEEE Standard may require the use of a potential Essential Patent Claim, the IEEE shall request licensing assurance, on the IEEE Standards Board approved Letter of Assurance form, from the patent holder or patent applicant. The IEEE shall request this assurance without coercion [sec. 6.2].

A Letter of Assurance shall be either:

- A general disclaimer to the effect that the Submitter without conditions will not enforce any present or future Essential Patent Claims against any person or entity making, using, selling, offering to sell, importing, distributing, or implementing a compliant implementation of the standard; or

- A statement that a license for a compliant implementation of the standard will be made available to an unrestricted number of applicants on a worldwide basis without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination. At its sole option, the Submitter may provide with its assurance any of the following: (i) a not-to-exceed license fee or rate commitment, (ii) a sample license agreement, or (iii) one or more materially licensing terms.

Copies of an Accepted LOA may be provided to the working group, but shall not be discussed, at any standards working group meeting.

The Submitter of a Letter of Assurance shall provide notice of a Letter of Assurance either through a Statement of Encumbrance or by binding any assignee or transferee to the terms of such Letter of Assurance, and (b) to require its assignee or transferee to (i) agree to similarly provide such notice and (ii) to bind its assignees or transferees to agree to provide such notice as described in (a) and (b) [sec. 6.2].

The assurance is irrevocable once submitted and accepted and shall apply, at a minimum, from the date of the standard’s approval to the date of the standard’s withdrawal.

The IEEE is not responsible for identifying Essential Patent Claims for which a license may be required, for conducting inquiries into the legal validity or scope of those Patent Claims, or for determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, if any, or in any licensing agreements are reasonable or nondiscriminatory.
Nothing in this policy shall be interpreted as giving rise to a duty to conduct a patent search. No license is implied by the submission of a Letter of Assurance.

In order for IEEE’s patent policy to function efficiently, individuals participating in the standards development process: (a) shall inform the IEEE (or cause the IEEE to be informed) of the holder of any potential Essential Patent Claims of which they are personally aware and that are not already the subject of an existing Letter of Assurance, owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents; and (b) should inform the IEEE (or cause the IEEE to be informed) of any other holders of such potential Essential Patent Claims that are not already the subject of an existing Letter of Assurance [sec. 6.2].

Reference

Input from the IEEE Micro Community

Some members of IEEE Micro’s editorial board have commented on the problem that this column addresses. IEEE Micro’s Shane Greenstein states:

My view is that rampant royalty stacking works against the spirit of what RAND [reasonable and nondiscriminatory] is supposed to accomplish, and such actions would be bad for the industry as a whole. I am quite sympathetic to efforts to find ways to write the rules so royalty stacking does not arise due to a bunch of MBAs who are too clever by half.

IEEE Micro’s Vojin G. Oklobdzija states:

Royalty stacking is a sour point of the standardization process.

IEEE-USA Intellectual Property Committee’s Glenn Tenney states:

The whole standards process (not just IEEE) and IP has gotten way out of hand. At the very least, I’d like to see some requirement whereby all companies with any personnel involved in the development of a standard agree to a licensing consortium with one single RAND license fee. . . . For at least 10 years now, the standards process has become a place for some corporations to work to maximize the monetization of their IP [intellectual property] and not necessarily to develop the best engineering solutions.

MBAs, stacking problems can arise. Consider IEEE Standard 802.11 on Wi-Fi. The list of patent owners is long (see http://standards.ieee.org/about/sasb/patcom/pat802_11.html). If each patent owner exacted only 1 percent, the total royalty would be enormous.

The only solution to stacking that I’m aware of was adopted by the various informal standard consortia, such as MPEG, DVD, and the like. Under this approach, technical experts—either hired from outside or possibly engineers of the companies participating in the development of the standard—first determine which patents are essential (indispensable to using the standard). Then, an independent technical expert hired to make the appraisal places a value (say 1.0 to 10) on each patent. These values are summed, and each patent receives a normalized percentage share of the RAND value, based on dividing the patent’s individual value by the sum of such values. (The Antitrust Division of the Department of Justice has repeatedly cleared this procedure as not violating antitrust laws.) As patents expire, it’s occasionally necessary to renormalize, but this calculation is routine and relatively costless. Because each patent has its own value under this system,
splitting ownership of a portfolio doesn’t affect the royalty rate. This, of course, isn’t the present IEEE procedure.

A partial solution

A partial solution exists for the riddle posed at the outset—Company A and Company B each charging 3 percent separately. The LOA should provide that the initial RAND rate will not be raised during the life of the group of patents committed to RAND licensing under the LOA, even if ownership becomes divided. It can be left to the multiple owners to figure out how to divide the revenues. That is their problem, not that of the licensees.

That narrow solution, however, doesn’t do anything to resolve the broader problem under the IEEE’s present LOA. RAND should have a workable definition. How to resolve disputes, such as by binding arbitration or appraisal, should be in the LOA. Finally, the problem of stacking royalties should be dealt with in the LOA or IEEE Standards Board by-laws, as well. (For more information on these issues, see the “Input from the IEEE Micro Community” sidebar.)

A further problem I haven’t mentioned might also deserve consideration—that is, evolution and change. How do you adjust a RAND determination in the face of technological change? Can it be amended without, in effect, having to meet and create a brand new standard? These are issues that can perhaps be discussed in future issues of IEEE Micro.