IEEE Open: A New Option for Open Source

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The English word "patent" derives from the Latin "patere" meaning "to be open." Its use in this sense comes from the letters patent issued by kings and other sovereigns wishing to make their edicts open for all to see. In contrast, letters close were edicts that were kept secret. We see this usage of "patent" when we say something is "patently obvious," that is, openly obvious.

The letters patent that are issued today to create a temporary monopoly for a novel invention, which we commonly call "patents," are called this because the invention is made open for all to see and use. The public good in having a patent system requires this openness. Openness ensures that all can learn from the invention and incorporate it in their own practice, if they so choose. Of course, this openness comes with a price, and that price is what inventors choose to charge to license their inventions to those who want to use it.

The point of openness is to increase the diffusion of knowledge. This is so important that it made it into the fundamental law of the United States, the U.S. Constitution, in 1787. The U.S. Constitution makes no mention of such necessities of life as food, shelter, or healthcare, but it does mention patents and copyrights. Increasing both the store of knowledge and the diffusion of knowledge was that important to the authors of this fundamental document. This priority has carried over into international law and into the obligations of the 150+ member states in the World Trade Organization.

The patent system has not, however, been without its critics. It has been criticized for its slowness, its legal framework, and its limited applicability to new areas of technology, such as software.

Today, there are advocates of a wider movement toward openness, again with the thought that increasing openness will increase the diffusion of knowledge, and that the diffusion of knowledge will improve the conditions and prospects of humanity as a whole. For instance, in the world of publications, there is a trend toward "open access," which aims to eliminate the costs to the reader of accessing the world's scientific and scholarly literature.

In parallel, over the past few decades there has been a trend, maybe even a movement, toward "open source" software. In its most basic form, this means that the authors of software are encouraged not just to provide the executable form of their work, but the source code for that software, so that others can understand exactly what was built and how it was built. In addition to serving to teach others how such software is constructed, this availability makes it possible for others to extend the functionality of the software in a variety of ways and for a variety of purposes.

The advocates and users of open source often cite as a benefit the speed with which open-source software can be developed and put into productive use, especially compared to the time it takes for the open disclosures of a utility patent to make their way through the patent system. Of course, these two systems are not strictly comparable, as open source does not provide the legally-enforceable intellectual property protection of a patent. In fact, some advocates claim exactly the opposite [1]. However, the complexity of large and sophisticated open-source software systems, and their production by a relatively small community of experts who actually know how they function, can in many instances provide the equivalent control and exclusivity that we normally attribute to patented intellectual property.

Exactly because open-source activity offers these benefits, many companies and entities have entered the open-source arena. The value created in some cases is obvious. For instance, IBM purchased open-source GNU/Linux operating system provider Red Hat for $34 billion dollars, in a deal that closed in July 2019 [2].

However, at the same time the open-source community was expanding and flourishing, the varieties and structures of activity called "open source" and the licenses of those open-source activities were also widely diversifying. Open-source code is protected by copyright, like all original works, and the use of copyrighted material is governed by the terms of the license granted by the author. To be useful to others, the copyright license accompanying open-source code needs to be liberal in its grant of uses; otherwise, it would not be "open" in any real sense.

Nevertheless, the notion of "open" has been interpreted in many different ways. Over 100 types of open-source licenses were listed on the webpages of the Open Source Initiative [3] recently. Many other licenses are available that are called "open source," and there is no widely accepted standard for what can be called authentic "open source."

In another development, the expansion of open source has also occasioned an expansion of 'abandonware' [4]. This refers to open-source projects whose products are available, but have become unsupported, ignored by their owners and creators. Estimates of the numbers vary widely, but there is no doubt that large numbers of open source projects are abandoned because the core community that created them has lost interest or incentive to continue [5]. Overall, the proliferation of types of open source licenses, the lack of connection to standards, and the increase in abandonware all decrease rather than increase the diffusion of knowledge and the use of knowledge for practical impact.

Trying to learn from this situation, the IEEE Standards Association has taken a different path in creating its new IEEE Open initiative. Informed by the rules-based but transparent governance that goes into creating IEEE technical standards, IEEE Open is based on the notion that open source does not necessitate a lack of rules or structure. On the contrary, adhering to a small set of predefined governance rules and practices means that open-source communities can attract and keep supporters by minimizing the overhead that building an open-source community entails.

What are some of these practices?

1) A small number of types of approved licenses. Currently, IEEE Open has two types of open software licenses and one open hardware license.
2) A single development environment that is continuously supported and upgraded.
3) A requirement for a documented governance structure, project leadership, and decision processes.
4) The ability to make open source either a normative or informative part of a standard.
5) The availability of the use of the IEEE brand when an open-source project adheres to the highest standards of project governance in its development, distribution, and maintenance.

In addition to these practices, IEEE Open has the advantage of the 400,000+ members of the IEEE, whose global presence and engineering expertise is second to none. If the promise of open source is the greater diffusion of knowledge, IEEE Open is designed to realize that promise, not through law, but through a well understood, cooperative, and transparent framework that allows technical experts to work together.

References

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