FEATURE ARTICLE

THE MANY FACES OF "OPEN"

Andrew Updegrove

Abstract: *The definition of "openness" as it applies to standard setting has been debated since the invention of the phrase "open standards." While many aspects of that definition have been generally agreed upon for many years, other attributes are the subject of sometimes heated debate. This article describes those attributes of openness that are generally conceded, and explores those areas that continue to be the subject of disagreement and debate (and why).*

Setting the stage: Standards have been present from time immemorial, in the form of languages (spoken and signed) and units of measurement. In their earliest forms, they were "open," in the sense that they emerged organically through the equal participation of all that used them. But with the rise of states and legal systems, some types of standards (e.g., monetary systems) became institutionalized, and their particulars were thenceforth mandated by the state.

With the emergence of an industrial society, modern production methods and networked systems (railways, telephones, utilities, and so on), new types of standards were required, as well as new methodologies to create and maintain these tools. In some cases, the design decisions of a single powerful vendor were eventually adopted by others. In other cases this was not feasible, or was not tolerable to other industry participants.

As the call for new performance and design standards rapidly expanded, so also did the need for rapid creation and adoption of those standards, in order to reap their maximum benefit. Since government was neither interested nor equipped to meet this need, industry was put to the task of creating the standards tools it needed to enable the market opportunities that were within sight, but otherwise would be out of reach.

But without the assistance of the state and the force of its regulatory power, how could those tools be agreed upon and adopted? The answer was by creating a system that rewarded those that became involved, as well as those that actually implemented the resulting work product.

As this system evolved, it was realized that a sufficient degree of process integrity would be required to assure participants that the rewards of participation and adoption would outweigh the risks of being taken advantage of by one's competitors. From this dynamic arose the concept of "openness", and the incentive to agree upon and achieve it.

Defining a definition: While the word "openness" has a familiar and intuitive sound, its demonstration in the context of standard setting is somewhat subtle. In order to appreciate that subtlety, it is important to first define the goal that drives the need to define what openness itself should mean.

Most would agree that the goal of openness is to achieve trust in the outcome of the standard setting process. Trust, in this sense, relates to the following attributes of the resulting work product:

1. Will the standard created be *generally useful*, i.e., will it serve all, rather than the needs of only the few who were involved in the creation process?

2. Will the standard be *equally valuable* to all, or will it have been created in a way that is disproportionately advantageous to some?

3. Will the standard be of *high quality* and *durable*?

4. May the standard be *used by all* on *equal terms*?

In short, the goal of openness is not only to create a useful tool, but a tool that will be used by an entire industry, because implementation by too few means the relative or total failure of the entire effort (especially in the case of interoperability, as compared to performance, standards). There is therefore a requirement not only of *quality*, but also of *fairness* in order to achieve *wide applicability*, because without broad utility and fairness there may not be wide adoption, regardless of quality.

The high level list of requirements presented above suggests three additional features of openness: participation, process, and terms. Their importance may be briefly summarized as follows:

- Participation: Who may be involved in: (i) deciding what standard will be created, (ii) actually creating the standard, and (iii) using the standard?

- Process: Are each of these three participation steps conducted in a way that guarantees equality of influence and access?

- To the extent that there are intellectual property rights (IPR) that could be used to restrict access to and economic enjoyment of the standard, does the process oblige the owners of that IPR to make it available on "reasonable and non-discriminatory terms?"

If there is a market perception of fairness in participation, process and terms, then there is a likelihood that a standard, once developed, will actually be implemented -- assuming that those who have actually crafted the standard have been skillful in conducting that task.

Delving deeper into the onion: Up to this point in our evolving definition, there would be little disagreement among those active in the development of standards that we are accurately reflecting consensus on the topic. But as we work to examine the next lower level of detail, divergences of opinion would begin to arise.

The forces that impact this next level of detail include the following:

- How will the process be paid for?

- What value should be placed on speed?

- Who should have a right to affect the ultimate result?

- What is fair to ask from IPR owners?

These are important and difficult questions, each of which is worth examining in detail.

Economics: Standard setting is not a terribly expensive process, but neither are the attendant costs negligible. Absent government support for the process (as is the case in the United States), someone has to pay the bills. In the case of accredited standards development organizations (SDOs), the near universal practice is to allow broad and inexpensive rights to participate, and charge the consumers of the standards created a purchase fee to support the standards development process (and often other SDO activities as well). The non-accredited standard setting organizations (SSOs) most often referred to as consortia go to the opposite extreme, charging amounts ranging from a few to many thousands of dollars to participate, and then giving away the resulting standards to non-members as well as members in order to make implementation less expensive (and therefore more likely and rapid).

Which is the more "open" practice? In the case of the SDO, participation is often broader, but the standards become a product that is sold, sometimes for very significant amounts (as is the case with aerospace standards). For many organizations, the aggregate amount charged is much higher than the cost of actually producing the standards themselves. In the case of SSOs, anyone can acquire a copy of the standard (and often implement it as well, depending on what IPR rights may be involved) for free, but fewer have a direct say in what that standard says.

Time to market: The greater the value that is placed on achieving broad input and total consensus, the more time is typically involved. If that time is too great, the usefulness of the resulting standard may be reduced, or even eliminated. In the most egalitarian and thorough processes, anyone that intends to vote against adoption of a given draft of a specification is required to give her reasons for doing so, and those reasons must then be addressed. This technique ensures that all needs are identified and (ideally) all technical weaknesses corrected, but the process of doing so can be tedious and protracted. At the opposite extreme in other organizations, majority votes simply follow after discussion, and the process moves on.

Numerous other decisions can also add time, involving (for example) how many different bodies (e.g., working group, technical committee, architecture board, full membership and board of directors) within an organization must approve the initiation of a given standard setting activity, as well as give final approval to the resulting standard. At what points between two extremes does a given process pass from being "closed" to being "open" to being "needlessly bureaucratic?" In practice, circumstances will dictate the answer to that question, taking into account such factors as how large and broad the membership is, how quickly the market moves, and how complex is the standards environment into which a new specification must be integrated.

Participation: While dues and other fees will have an impact on participation, they are not the only factors that influence how broad the input on a given standard is permitted to be. Time to market will again come into play. For example, adding a public comment period on top of internal review cycles will open the process to a wider audience, but will also incrementally slow the process. Of course, the quality of a standard will reflect the field of experience that is applied to its creation as well.

The motives of the initiators of a given standards project will also strongly affect the process route chosen. At one extreme, as in the "promoter/adopter" type of organization favored by some vendors, only those that are invited to participate are permitted to have a say in the resulting specification. While that specification may in fact turn out to be of high technical quality, that result will be achieved only if the right participants are invited, and agree, to join in. And certainly the parameters of a standard created through such a process cannot reliably be expected to match those of all interested and affected parties.

At the other extreme, where anyone can have an equal say in a process, different issues can arise, such as loss of focus in the standard, bogging down of the process, and deterioration of overall quality. Finding the right balance point (once again) between these two extremes often results in conflict between commitments to openness and market forces.

Risks and rewards: In recent years, the conflict between IPR owners and the needs of the standards process has become more acute. Not only are there disagreements between those that believe that IPR owners should provide necessary rights free of charge and those that believe that contribution of IPR should be entirely voluntary, but there are significant organizational and member process issues as well. Members with large patent portfolios and many memberships in SDOs and SSOs do not wish to spend endless amounts of time searching their patent portfolios to determine whether they do or do not have any patent claims that might be infringed by the implementation of scores of draft standards. Similarly, the resources of standard setting organizations are also taxed by administering the process of making patent calls, investigating the responses, distributing and examining assertion forms at the time of voting, and archiving the results.

Disclosure of IPR that would be infringed has therefore become as significant an issue as the question of whether or not that IPR will actually be available for license.

Finding the mean: As can be seen from the foregoing discussion, boundaries necessarily begin to blur at this level of definition as compromises and decisions inevitably must be made. As a result, achieving

consensus on bright line tests, as compared to identifying characteristics, becomes more problematic. Evolving features of the marketplace have brought new tensions as well, including the following:

- ***Convergence:*** Different industries, such as hardware, software and telecommunications have developed different tolerances and practices over time with regard to economic and other terms relating to standards. When products involve the practice of patents in all of these areas (as in cell phones), there can be culture shock, and difficulty in reconciling what the rules should be.

- ***New market realities:*** Historically, there have been many standards areas that are quite tolerant of royalties or other fees, while others (such as software) began to generate standards before patenting the underlying technologies became common. Similarly, there are traditional manufacturing areas where there is little time pressure on standard setting, while time to market pressure is intense in the technology area. Finally, there are new technological resources that have become essential to modern society, such as the Internet and Web, the rapid deployment of which has been made possible in large part due to the absence of royalty requirements and restrictive licensing terms.

- ***New methodologies:*** Happily, even as technology evolves, so does the process of creating standards (or, as we like to say, "commonalities": see our February 2004 issue, ***Standards of the Future*** <www.consortiuminfo.org/bulletins/feb04.php) In the case of the open source movement, a radical new technique has evolved: instead of collaboratively agreeing upon a standard that can be implemented, the implementation itself is jointly created. In short, the standard has become the implementation and vice-versa, providing the ultimate in guaranteed interoperability. In the open source model, the process values are still much the same, but just about everything else is different, either necessarily (as in the case of writing actual code) or electively (as regards some -- but not all -- of the legal terms involved in typical open source licensing).

Given the range of subject matter for standardization (from food to software to medical devices), differences in methodology, and variations in market realities, finding the mean in process, participation and terms must inevitably be situation specific to at least some degree.

Current definitions of openness: Notwithstanding the challenges of sharply defining what "open" must mean, efforts to do so are ongoing, and there are many available definitions worthy of review. In some cases, these efforts are purely theoretical, while in others they are enforceable by NGOs that accredit SDOs, that regulate government procurement, or otherwise have acquired the force of law.

Two examples will serve to show how disparate even brief definitions of openness may be.

American National Standards Institute: In order for a standard to receive full, approved status by many global bodies (such as ISO), it must be proposed by the national SDO that is recognized by that global body. In the United States, it is the American National Standards Institute (ANSI) that is accredited to ISO. ANSI does not itself set standards, but it does, in turn, accredit all standard setting bodies headquartered in the United States that desire to achieve such status. In order to become accredited, a standard setting organization must adhere to the process standards and patent policy that ANSI has adopted to ensure "openness." It must also submit to regular audits to confirm compliance with these policies.

Since ANSI accredits scores of SDOs, which cover the gamut from hair brushes to aerospace systems, its process standards are necessarily general rather than situation specific. The high level attributes of openness that ANSI endorses < www.ansi.org/standards_activities/domestic_programs/overview.aspx? menuid=3 > are as follows:

- consensus on a proposed standard by a group or "consensus body" that includes representatives from materially affected and interested parties;

- broad-based public review and comment on draft standards;

- consideration of and response to comments submitted by voting members of the relevant consensus body and by public review commenters;

- incorporation of approved changes into a draft standard; and

- right to appeal by any participant that believes that due process principles were not sufficiently respected during the standards development in accordance with the ANSI-accredited procedures of the standards developer.

EC European Interoperability Framework (EIF) for pan-European Government Services: The EIF is the reference document that has been adopted by the European Commission to guide its establishment of intergovernmental networks. It is therefore specific to the information technology industry. A major goal in its creation was to avoid undue dependence on single vendors, and it has therefore been optimized in favor of open source applications in particular as well as open standards. Under the EIF, the following have been determined to be the minimum characteristics of acceptably open standards:

- The standard is adopted and will be maintained by a not-for-profit organization, and its ongoing development occurs on the basis of an open decision-making procedure available to all interested parties (consensus or majority decision etc.)

- The standard has been published and the standard specification document is available either freely or at a nominal charge. It must be permissible to all to copy, distribute and use it for no fee or at a nominal fee

- The intellectual property — *i.e.*, patents possibly present — of (parts of) the standard is made irrevocably available on a royalty-free basis

- There are no constraints on the re-use of the standard.

Summary: Establishing the required elements of "openness" is as difficult a challenge as that presented to the United States Supreme Court, when it was compelled to define pornography. Still, as famously observed by Justice Potter Stewart in 1964, "It's hard to define, but you know it when you see it." Consequently, "openness" has both a degree of imprecision, as well as a need for situational adaptation to be truly useful in a given set of circumstances.

While efforts to articulate what makes openness "open" are eminently useful and necessary, applying the results of that analysis too literally is likely to unproductively constrain, rather than enable, the process of standard setting. Moreover, there is value in allowing the standard setting process to not only evolve with the marketplace, but to experiment with new solutions.

As in so many areas of life and science, applying religious fervor to support particular licensing terms or imposing political parameters on the standards development process, is ultimately likely to obscure, rather than inform the debate, and impede rather than assist, the ongoing development of the marketplace. Better to define the spirit rather than the strict letter of "openness", and then gauge a given process situationally against this more amorphous, but still important reference point.

Comments? updegrove@consortiuminfo.org

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