Java and the PAS process

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Anyone who thinks standards just happen and the job of creating standards is easy, fun, and a chance to travel to fun places should have had the chance to help standardize Java. As the Sun Microsystems director of standards, I was given the "opportunity" of responding to the market's (users, providers, partners, competitors) request to make Java a standard. Everyone wanted it, and Java was already well documented, well known, and being tested and deployed all over the world.

Sounds simple. Almost too simple.

My first task was to determine which Standards Developing Organization (SDO) to use and which path or standardization process to follow as the specification moves from a Sun contribution to a final international standard. After much discussion inside and outside the company, we decided to go with the ISO/IEC JTC1 PAS procedure. Here, I explain the Publicly Available Specification (PAS) process and, so that this is not just an academic discussion, use Java as the example of how the process worked and didn't work. The Java experience also serves to demonstrate that developing standards isn't simple; rather it's a complex discipline that seems (at times) to become everyone's favorite target.

The process

The ISO/IEC Joint Technical Committee 1 (JTC1) created PAS as one of three paths to formalizing a standard. The other two paths are the more traditional development of a standard in or with a JTC1 working group, and Fast Track. The former tends to be slow and requires a great deal of committee work, while the Fast Track path requires that the specification be a standard developed by a recognized SDO. The PAS method allows useful, needed, and deployed de facto standards or specifications developed outside the formal process to enter the JTC1 process in a timely manner.

At JavaSoft, the Sun division responsible for Java, we selected the PAS procedure as best fitting our needs. It requires three steps: an organization's application to become a PAS submitter, a negotiation step, and final approval of a PAS specification as an ISO/IEC standard. However, we had one major problem: PAS was an untested pilot process.

At the time that Sun made its request to JTC1 to become a PAS submitter there were only four approved PAS submitters and no PAS-created standards. At the same time, three JTC1 subcommittees were interested in having Java as a standard. Each either wanted to reference it or have the challenge of standardizing a part of it.

Clearly Java was hot. Very hot.

How PAS works

In theory, the PAS procedure is simple. Any organization that has a popular specification can be recognized as a PAS submitter. The organization then applies via a written request to JTC1 to become a PAS submitter. The application has to answer many questions with reference to its legitimacy and openness, its ability to maintain a standard, and its acceptance of JTC1 IPR (Intellectual Property Rights: Patents, Copyrights, and Trademarks) rules. Then the JTC1 processes the submission and votes on it. Upon approval, the PAS submitter provides a specification and negotiates the IPRs and the maintenance process with JTC1. Then the standardization activities begin.

Shortly after Sun sent in its application, the e-mail hit the fan. People were either very much for the proposal or very much opposed to it. The reasons for the passion are legion—everybody had a reason. Unfortunately, nearly everyone in the IT community took sides. There were fierce battles at every step, with every step illustrated

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in the press, mostly in either a biased and incorrect manner or merely in an incorrect manner. It's clear to me that everyone is willing to discuss and criticize the standards process, but very few people are willing to learn about it. (Ignorance seems to be a very fun activity; the less people know, the more they are willing to make bold and decisive [and wrong] statements.)

Once the organization—*and there are no fundamental conditions or restrictions as to the form the organization (that is the PAS submitter) should take*—applies to become a PAS submitter, JTC1 sends out the request for a six-month balloting period to JTC1 voting members. Each of the 28 or so members decides in its own way how to vote. In the US the ballot goes to ANSI, which then automatically requests the US JTC1 TAG (Technical Advisory Group) to establish a US position.

The US TAG then conducts a letter ballot. A two-thirds yes vote is required because this is a vote determining a position. Most countries also have a group similar to the US JTC1 TAG, which meets and discusses the issues, and then votes. Each country has its own rules for forming a position.

Because of the US controversy, the TAG issued a call for comments open to anyone. A very well attended ad hoc meeting was held to establish a recommendation for the JTC1 TAG vote. However, participants could not agree on a recommendation and presented the JTC1 TAG with a multiple-choice set of comments. The JTC1 TAG met and, after much discussion, accepted a set of comments.

The normal JTC1 procedure is that if there are any substantial comments, the country votes no with comments. According to the rules this is the only way the comments will be resolved.

The JTC1 TAG also had a lengthy set of motions and ballots on whether to vote yes, or no with comments. The votes were close, but members finally compromised to vote no with comments. It seems as if this scenario played out all over the world in a similar, possibly predefined, way. So there were many no-with-comments votes.

Normally, since there is very little controversy on this submitter ballot, JTC1 organizes a small ad hoc group to deal with any comments, requests the submitter to respond to the comments, and then forwards approval.

For Sun, things were a little different. The JTC1 Secretariat asked Sun to respond to all of the comments in writing within 60 days. Then these responses were distributed to JTC1 for a final 60-day ballot.

JTC1, by coincidence, met during the second 60-day period. The issue was not on the JTC1 agenda, since there was a ballot open, but a good part of the informal discussions at the meeting centered on the Sun PAS ballot. During this time Sun and other major IT companies organized their far-flung supporters, sales, and marketing people to visit anyone and everyone to lobby on this vote.

The US JTC1 TAG met again to form a position on this final ballot. Again, it could not get a two-thirds yes agreement on any vote, so the original position of no with comment remained the US position. In the end the JTC1 did finally approve Sun as a PAS submitter because most countries supported Sun: 20 yes, 2 no (US and China), and 2 abstentions.

Now Sun is preparing the Java platform documents for submittal to JTC1. After an organization receives approval as a submitter, it submits a specification to JTC1. JTC1 then discusses the details of the specification's format, style, future maintenance, intellectual property, schedule, and other necessary details. Once this is worked out, JTC1 submits the specification for a six-month ballot by JTC1 members.

After that ballot, there is a ballot resolution meeting in which the PAS submitter and JTC1 members resolve any comments received during the balloting period. This could be very simple or very lengthy. Resolving comments means that the comment resolution group should try to accept the recommendation in the comment or explain why it can't. In the end the specification may be modified, and, if major changes were made, recirculated to ensure that the members are still satisfied with the proposed standard.

Once consensus is reached, the specification becomes an ISO/IEC standard.

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Was it worth it?

This "ballot" costs many companies a great deal of time and money. Was it worth it? To Sun, it was. Sun won two things: status as a JTC1 PAS submitter and—possibly more important—tons of public attention. The media made a big thing of this battle. Inside the IT industry many people had to learn about Java so that they could take a side. This was a great marketing effort, which supports my basic theory that standards are a form of marketing.

Does all of this work mean that you should forget about using the PAS process?

Absolutely not. It simply means that Sun took all of the bullets and opened a path for others to follow. As many organizations as possible should use PAS as long as they have a long-term commitment and a valid contribution to make. The PAS process will make it easier for others to standardize their specifications and open up more competition for the benefit of the user.

See www.jtc1tag.org for more information on PAS.