

NSTIC IDESG
STANDARDS COORDINATION COMMITTEE
WORKING PAPER ON STANDARDS ADOPTION CRITERIA
MAY 2013

DRAFT 2 JBC

This working paper elaborates the principles and plans described in the presentation titled "Standards Adoption Criteria, Draft considerations 11/08/2012" shared with the Standards Committee in November. The committee may wish to consider whether it agrees with the general scheme described here for:

- (a) the selection of criteria for assessing candidate open standards;
- (b) the methodology suggested for applying those criteria to approve or endorse specifications, and
- (c) suggestions at the end of this working paper for next actions.

SECTION 1. PURPOSE OF STANDARDS CRITERIA

The purpose of an "open standards" criterion within the IDESG system is to implement the call of the White House NSTIC (the "National Strategy") for the use of open standards as the preferred methodology for transactional identity data exchanges among independent parties within identity ecosystems. As noted in the National Strategy, and multiple prior governmental directives and best practices, widespread adoption and success for identity ecosystems depends on voluntary participation. While some ecologies of identity data exchange may have their own satisfactory proprietary or closed methods, the NSTIC open and scalable ecosystem concept depends on the ability of large groups of enterprises, institutions and individuals to federate and conduct electronic data exchange transactions, voluntarily -- with confidence that they will be able to use their own systems and methods, within their own environment -- while also confidently relaying on transactions with each other across organizational boundaries, by means of stable, vendor-neutral methods with well-declared meanings.

That requirement of open accessibility to newcomers, in "openly federating" systems, generally can be addressed by the criteria for open standards use that are pervasive in US public policy. "Voluntary consensus standards" use is preferred, as a policy matter, because those methods are:

- Neutral as to vendors, and more accessible by DIY implementers. The transparency generated in an open standards process generally results in higher quality and better-examined methods, less tied to the peculiarities of any one offering. These requirements also help address competition law issues, so that a government policy is not seen to favor a specific supplier.
- Open accessibility of a system to any implementer, regardless of system or software, also enhances positive network scale effects, by making it easier for newcomers to federate and transact without high switching costs. When a higher volume of

transactions is enabled, this also can result in cost savings from the creation and marketing of common interfaces, tools and service providers.

This working paper does not go further in economic arguments for the use of open standards, as these are a "given" under the National Strategy. Of course, those intentions are easier said than done. To achieve them, any ecosystem takes on the responsibility for confirming whether the methodologies that it recommends and makes available are, in fact, sufficiently open. That goal is the subject of sections 2 and 3 below. At the same time, new methods are always evolving, and new marketplaces for methodologies to accomplish identity data exchanges. A well-designed ecosystem should support further experimentation to the extent that it can be done consistent with the goals of the National Strategy. That issue is discussed in section 4 below.

SECTION 2. CANDIDATE STANDARDS CRITERIA

We do not need to dilute or undermine the National Strategy's requirement of open standards use, in order to also enable embrace innovation. Traditionally, public administrations tend to be conservative in recognizing the stability, neutrality, and appropriateness of a candidate standard. Several examples of specific filters used to make those judgments are described below. Recognition of specifications as appropriate open standards, under these regimes, generally has been a fairly careful and slow process – and thus one in which emerging technologies often do not rapidly achieve official status.

Another way of putting this is that industry analysts and the trade press tend to get excited about new "standards projects" long before most governmental officials would be comfortable endorsing them ... and often, long before any issuance of a final draft or any production experience to assess it. Our ecosystem should address that duality rather than ignore it. This section 2, and section 3, discuss how an ecosystem might evaluate a given specification and its source for openness and appropriateness for recognition as an "open standard," using traditional analysis. At the same time, we can acknowledge that there will be emerging methods not yet ready for that designation, which still may be appropriate for some ecosystem use, as discussed in section 4 below.

A. *OMB Circular A-119*:

Circular A-119, http://www.whitehouse.gov/omb/circulars_a119, requires that US federal agencies employ existing voluntary consensus standards, rather than government-developed alternatives, in their procurement and regulatory activity. Agencies are required to assess whether a candidate specifications, source qualified as a "voluntary consensus standard," with explicit attention given to the following criteria:

- The openness of the process that developed the standard;
- Whether the standard's development was accessible to and received contributions from a balance of interests (as opposed to those of a single company, or from a single role in a supply-chain);

- The use of consensus procedures in the standard's development, including some requirements for transparency and responsive treatment of comments; and
- Whether the standard's development was conducted under new process rules that afford fairness to the deliberations.

B. *National Technology Transfer and Advancement Act of 1995 ("NTTAA").*

Section 12 of the US NTTAA, <https://standards.gov/nttaa/agency/index.cfm?fuseaction=documents.PL104113>, enacted the main point of Circular A-119 into statutory law – federal agencies and departments must use voluntary consensus standards – with the added spin that NIST has special responsibility for determining conformity assessment. This reinforces the responsibilities of implementing agencies to determine, and NIST to advise, whether a given candidate standard qualifies for eligibility for use under NTTAA. That determination takes the criteria of Circular A-119 into account, but may also encompass other situation-specific needs.

As a specific illustration of agency implementation, see FERC's 2010 report on smartgrid standards adoption criteria (and particularly slides 6 and 7): <http://www.ferc.gov/legal/staff-reports/07-15-10-smart-grid.pdf>. It's notable that FERC relies in part on institutional determinations, but also reserves the right to make its own determination, regarding whether a given candidate standard was subject to sufficiently broad consensus.

There also are increasing efforts in other national jurisdictions to afford official recognition for open standards from recognized, stable consortia, for widespread use in public administration. See, for example, EU Directive 98/34 as amended October 2012: http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/intm/132723.pdf; <https://www.oasis-open.org/news/pr/eu-reform>.

C. *WTO Agreement on Technical Barriers to Trade ("TBT Treaty"), Annex No. #3 (the "Code of Good Practice")*

The World Trade Organization's member states adopted the TBT Treaty, http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf, to obtain assurances that the *de jure* standards bodies of individual nations would not use their local standardizing methods as trade barriers; but rather, would remain open to cross this border and industry influences and the use of global rather than local methods in order to promote free trade. While its principles officially apply only to national bodies, not consortia, they do provide a set of relevant international best practices. Its criteria include:

- The absence of any intent to create obstacles to free trade;
- The reuse of global or industry-wide standards in preference to new variations, if no special circumstances justify a fork or a new method; and the avoidance of unnecessary duplication;
- Contribution of locally-developed methods up into global standardization, rather than "playing keep-away";

- Standards based on functional and performance criteria, rather than design or product-specific characteristics;
- The use of consensus processes in standards development;
- Explicit and publicized open public reviews of its draft work, with minimum response times and explicit responses to submitted comments; and
- Public availability of draft standards for review upon request without punitive cost.

D. ISO/IEC JTC1, ANSI and other cross-certifiers

Some of the foregoing principles also are reused by *de jure* standards organizations in assessing whether to accept consortium outputs as their own inputs, ready for higher-level approval. While the rules vary, and not all determinations are well-documented, the cross-approval rules do include some helpful discussions and restatements of the foregoing principles. For example:

- The criteria used by ISO/IEC Joint Technical Committee 1 on Information Technology ("JTC1") for re-approval of submitted "publicly available specifications" from submitters that JTC1 certifies: <http://isotc.iso.org/livelink/livelink?func=ll&objId=8913248> (program), and Annex F of http://isotc.iso.org/livelink/livelink/fetch/2000/2122/3146825/4229629/4230450/9482942/JTC_1_Supplement_%28pdf_version%29.pdf?nodeid=9484244&vernum=-2 (criteria)
- Similarly, the American National Standards Institute ("ANSI") maintains criteria for the approval and certification of industry panels to directly issue American National Standards: http://www.ansi.org/standards_activities/domestic_programs/overview.aspx?menuid=3 (program), and http://publicaa.ansi.org/sites/apdl/Documents/Standards%20Activities/American%20National%20Standards/Procedures.%20Guides.%20and%20Forms/2012%20ANSI%20Essential%20Requirements%20and%20other%20Updated%20Procedures/2012_ANSI_Essential_Requirements.pdf (criteria).

E. Intellectual Property and Licensing Rules

Although the requirements often are housed in a different section of rules or policies, each of the foregoing regimes also applies some kind of requirement of clear licensing or availability terms, for the final standards that are the output of these open processes.

- Agency review of suitable standards under the NTTAA often includes confirmation whether appropriate licensure would be available for the expected outputs. The SEP debates are further evidence that government agencies may view different degrees of open licensure as necessary, in different industries and applications.
- Separate regulatory agencies also monitor the conduct of industry standards activities for appropriate, pro-competitive behavior. See the involvement of the Federal Trade Commission in the *Rambus* litigations, and more recently in debates over *Standards-essential patents* ("SEPs") in the mobile industry.

- Both the ANSI and ISO/IEC JTC1 rules set specific minimum criteria for the licensing or disclosure of patents necessary to implement their approved standards.

Additionally, the government's continued focus on *open data initiatives* imposes certain requirements on information to be freely and widely disseminated. Some additional limitations on the use of overly-restrictive licensing terms may be derived from data architectures that rely on broad access and participation by citizens, businesses and local governments.

SECTION 3. COMMON CRITERIA

From the foregoing, it appears that there is a common constellation of principles generally used to determine the suitability of candidate voluntary consensus standards, for broader implementation in the service of public policy goals. Each of the following requirements appears in some manner in most or all of the principal systems described above:

- *Primary deliverables:*
 - *Participatory openness*, in the sense that anyone can participate within reasonable restrictions.
 - Facilitates balanced input, retards the exclusion of stakeholders or use cases. Some standards bodies have explicit "balance" composition rules. Others believe that better results come from proactive recruiting, and level-playing-field rules that make participation attractive for minority stakeholders, than from quota approaches.
 - Some degree of participation fees have generally been found appropriate, although it's possible that a "rich players club" with too high an entry barrier might be found inappropriately exclusionary.
 - *Fairness and due process* rules to enforce balanced decisions and consensus methodology.
 - At a minimum, published rules and an absence of a track record of ignoring them seem essential.
 - Usually includes enforcement mechanisms reasonably assuring that the rules are followed. This can be difficult to measure or assess in the case of small or volunteer-run groups.
 - In practice, it appears that some agencies run spotchecks on this issue by seeking and evaluating assertions that significant points of view were excluded.
 - *Transparency*, or openness in the sense of public access to inputs and results.
 - Some charges for published standards, to pass along the reasonable costs of development generally, have been found appropriate, particularly in industries with relatively large commercial players. There is some pushback on this principle from the "open data" movement, on the grounds that public policies which amount to regulatory requirements should be freely available, to enable review and compliance.

- The degree of availability of draft material (as opposed to final products) varies widely among consortia at present. Their justifications for securing draft information range from preserving it as a member-only benefit, to keeping it distinct from final work ready for implementation, to assertions that technical debates may be more robust if not conducted transparently.
- There is a related but difficult-to-measure problem with groups who have transparency rules in theory (such as posting and archiving practices, and meeting notice rules), but tend not to honor them in practice.
- *Function-oriented description*, as opposed to specifying design or product-specific characteristics.
 - This requirement obviously retards lock-in or tying to a single product or methodology other than the specification itself.
 - Descriptions by performance feature (as opposed to "do it like this exemplar product") tend to give better guidance to developers of new conforming products, and are more readily adaptable into useful conformance clauses for testing purposes.
- *Requirements derived from the primary deliverables*:
 - *Minimum public review procedures* creating genuine opportunities for, and consideration of, feedback from non-participants.
 - Parties who do not wish to invest the time or licensure necessary to actively contribute to a standard still may represent stakeholders whose views should be considered.
 - Several of the above bodies explicitly require minimum durations for public review, or replies or acknowledgments of public comments received, or both.
 - *Stable hosting arrangements* likely to support the intended access and permanence of the outputs and relevant archival material.
 - The access and openness deliverables noted above are of little value if artifacts cannot be found and relied upon, over time, after their issuance. Even in the relatively fast – moving ICT sector, it appears that the lifecycle of use for data standards may be measured in decades, while the hype cycle that supports their dot.org activity may be limited to years, or even months.
 - This archival imperative may apply to draft inputs and metadata as well as final approved outputs.
 - To some degree, provisions for monitoring and enforcing the maintenance phase of published standards – managing errata, maintaining their integrity via copyright management, and maintaining conformance or interoperability criteria – also may be relevant. The need for these functions may vary widely depending on the nature of the standard.
 - *Intellectual property rules* with sufficient certainty, access and enforcement.
 - The same principles of clearly-stated rules and reliable enforcement that apply to process rules, above, also apply here.

- Outputs that are only available on extraordinarily-limited license terms may not serve the goals of a broadly implementable standard. Some governments take this issue further, and express a preference for royalty-free, freely-available or open source standards in order to support wide implementation and access.
- Standards whose development allows contributors to attach complex conditions, of the outset (hostage-taking at the design stage), may not develop freely in response to feedback from other stakeholders.
- Overly-restrictive licenses required to implement a final standard, especially those which require negotiation or surveillance by competitors (hostage-taking at the implementation stage), may impede use of the standard or related technology, as is implied in the SEP cases.

SECTION 4. AGILE DEVELOPMENT ISSUES

One weakness of the foregoing traditional analysis is that it treats all standards as if they don't really exist until they are finally issued. In practice, forks, modifications and new technologies are coming along constantly. At any given time, there always are lots of worthy projects in development that have not yet fully brought themselves into an accredited standards process. At the same time, of course, there also always are lots of private projects that either have no intent of becoming open, or publicly available, or that present themselves as "standards" without ever satisfying basic openness or heterogeneity suitable to public policy use. Accordingly, any identity ecosystem, and any thoughtful implementer participating in it, must make choices about the adoption of methods that might – later – lead to open standards and impressive network effects, but also might turn out to be a dead end, or be captured by a single vendor or stakeholder group.

A balanced approach that allows for flexibility and innovation may need to establish some general principles for working appropriately with new and incomplete proposed data methodologies. Here are some draft principles for further consideration:

While long-term, large-scale deployments and dependencies require the assurances and qualities ought by the NTTAA and the National Strategy, any developing ecosystem also will have a number of pilot projects, small implementations, and experiments. These may not yet be the basis for a mandate or wide roll-out, so the use of not-yet-standardized methods may be perfectly appropriate. Among the foregoing (draft) common criteria, the requirements of:

- *Participatory openness,*
- *Fairness and due process, and*
- *Stable hosting arrangements.*

probably are premature. and reasonably might be waived in experimental pre-standardization projects. The other four criteria, plus one additional special one, may still have relevance:

- *Transparency to the public* may still be needed, in some lesser degree, so that the outputs of a proposed methodology can be evaluated by a ecosystem participants. As an example, note the NSTIC pilot project interim reports delivered to the IDESG.

Without some degree of information, stakeholders are not in a position to make plans about incorporating a candidate technology into broader systems.

- *Function-oriented method descriptions* of the project's methods would significantly assist implementers in replicating the experiment's success with different tools, and more readily lend itself to future standardization, than would a statement like "we used the Ping Identity product."
- *Minimum public review procedures*: Similarly, external projects that seek a preliminary niche in the ecosystem should be subject to exposure for meaningful feedback, as the cost of that interim recognition. Without that mechanism, there would be little opportunity or motivation for those emerging methods to socialize into, and collaborate with, other technologies so as to become sufficiently interoperable.
- *Intellectual property rules*: To some degree, the eventual license availability of a developing technology may be clear from a project's launch. Often (but not exclusively) the license terms applicable to a final standard are dictated by the practices used and contributions permitted during its formation. For that reason, any experimental method that wishes to be embraced as part of a large, widely-available ecosystem should be able, at its initiation, to demonstrate that a design is in place for adequate open licensing and availability, on terms are reasonable in light of its intended use. This suggests that some kind of statement of intent or declaration may be appropriate at a very early stage. (For example, if a particular functional domain was expected to be directly accessible to consumers without cost, it might be an appropriate constraint that projects to develop standards needed to implement that function be scoped not to bear royalties.)
- *Prospective commitment to open standardization*: If an identity ecology is asked to give early recognition or support to an emerging method which is not yet standardized, as contemplated by the applicable public policy, it may be advisable to obtain a commitment to completing its standardization, as a condition of the initial support or endorsement. A variety of approaches are possible, including (a) seeking aspirational but unenforceable statements of intent; (b) making some kind of support contingent on progress; or (c) taking binding contributions on a delayed basis for later use, subject to updating.

SECTION 5. IMPLEMENTATION

The IDESG workplan assumes that various projects and methods will be brought forward for endorsement or approval, and that the Standards Committee will be asked for its feedback as a part of that process. A primary goal of that inquiry is confirmation that the goals of the National Strategy (and IDESG) regarding use of open standards are being met.

This section assumes that the Standards Committee will use a set of criteria, like those described above, in that evaluation. Thus, if they were to be used as described above, the committee would use some process to evaluate each of the following matters for each candidate standard or method:

For established projects:

- *Participatory openness*
- *Fairness and due process*
- *Stable hosting arrangements*
- *Transparency to the public*
- *Function-oriented method descriptions*
- *Minimum public review procedures*
- *Adequate intellectual property rules and licensing*

For experimental or pilot-scale projects:

- *Limited transparency to the public*
- *Function-oriented method descriptions*
- *Minimum public review procedures*
- *Adequate intellectual property rules and licensing*
- *Prospective commitment to open standardization*

The Committee could take one of several approaches to this determination:

- Limit itself to nonnormative descriptions of the desired criteria, for informative purposes, and leave their determination to IDESG Plenary member votes.
- Defer to the relevant government agencies to make NTTAA determinations.
- Conduct an open opportunity for feedback from IDESG members and the public regarding the satisfaction of the criteria, for each nominated project.
- Make determinations regarding each of the criteria as a committee, resulting in a pass or fail recommendation to the Plenary.

Additionally, these methods might be applied at different times: an evaluation might take place early in a project's appearance in the IDESG or ecosystem "pipeline," or only later when it is close to Plenary or other endorsement.

These options should be discussed and weighed by the Committee. This working paper makes only some preliminary suggestions, which require further thought.

(a) The first option, which leaves these "voluntary consensus standards" issues to Plenary members for an unguided exploration, seems at first glance like abdication that would not ensure workmanlike consideration of the issues raised by the National Strategy.

(b) A complete deferral to government agencies in this matter simply robs the agencies of the chance to receive meaningful feedback on this point from ecosystem stakeholders. Agencies still will be required to comply with the NTTAA and Circular A-119. But the IDESG potentially could play a useful role in providing expert and stakeholder opinions to influence and support those NTTAA determinations.

(c) A structured feedback process, hosted but not dictated solely by the Standards Committee, seems promising. One possible protocol could be for each candidate method in the ecosystem "pipeline" to be (i) noted, early in its reference, as a potential standard on which IDESG seeks feedback according to the criteria, and then (ii) made the subject, at a later time closer to Plenary action, of an open opportunity and meeting to review the application of the criteria, resulting in (iii) a summary report integrating the feedback, to be approved by the committee and forwarded to the Plenary prior to its approval action.

(d) A Standards Committee that makes official determinations regarding each of the criteria, as applied to each candidate method, also is possible. Likely that protocol would require a larger investment of time. One way to mitigate that volunteer time cost would be only to apply it to methods that survive the early IDESG pipeline process, and are drawing close to Plenary action.

Again, more discussion is needed of these and other possible options for applying criteria to the methods expected to be evaluated by the IDESG Plenary.

SECTION 6. NEXT STEPS

The following actions by the Committee are recommended:

(a) Discussion to confirm whether the "assess by criteria" scheme of this working paper generally is correct.

(b) If so, review of the criteria in Section 3, and such others as may be suggested, with the goal of approving a set for application to proposed IDESG standards and specifications generally.

(c) Discussion of whether the limited approach recommended for experimental non-standards and pre-standards methodologies in Section 4, or some other approach, is appropriate.

(d) Review of the procedural options and protocols for application of criteria, as described in Section 5, and such others as may be possible, for potential implementation by the Committee.

(e) Implement according to the decisions made.

Respectfully submitted
J B Clark