

1 NSTIC IDESG
2 STANDARDS COORDINATION COMMITTEE
3 WORKING PAPER ON STANDARDS ADOPTION CRITERIA

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7 *This working paper elaborates the principles and plans described in the presentation titled*
8 *"Standards Adoption Criteria, Draft considerations 11/08/2012" and proposes a set of*
9 *"Standards Adoption Criteria" for use in IDESG reviews and ased on analysis of Information*
10 *and Communication Technologies ("ICT") open standards relevant to identity ecosystems.*
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12 **SECTION 1. PURPOSE OF STANDARDS CRITERIA**
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14 The purpose of an "open standards" criterion within the IDESG system is to implement the
15 call of the White House NSTIC (the "National Strategy") for the use of open standards as the
16 preferred methodology for interactions in data regarding identity between independent
17 parties within identity ecosystems. As noted in the National Strategy, and multiple prior
18 governmental directives and best practices, widespread adoption and success for identity
19 ecosystems depends on the voluntary participation. While some identity ecologies may have
20 their own satisfactory proprietary or closed methods, the NSTIC open and scalable
21 ecosystem concept depends on the ability of large groups of enterprises, institutions and
22 individuals to federate and conduct interactions regarding identity data, voluntarily, with
23 confidence that they will be able to use their own systems and methods, within their own
24 environment, while confidently relying on identity data interactions with each other across
25 organizational boundaries by means of stable, vendor-neutral methods with well-declared
26 meanings.
27

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

- 32 • Neutral as to vendors, and more accessible by DIY implementers. The transparency
33 and quality generated in an open standards process generally results in higher quality,
34 and methods less tied to the peculiarities of any one offering. These requirements
35 also help address competition law issues, so that a government policy is not seen to
36 favor a specific supplier.
- 37 • Open accessibility of a system to any implementer, regardless of system or software,
38 also enhances positive network scale effects, by making it easier for newcomers to
39 federate and transact without high switching costs. When a higher volume of
40 transactions is enabled, this also can result in cost savings from the creation and
41 marketing of common interfaces, tools and service providers.
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SECTION 2. STANDARDS CRITERIA

From the foregoing, it appears that there is a common constellation of principles generally used to determine the suitability of proposed specifications, for broader implementation in the service of public policy goals. Each of the following requirements appears in some manner in each 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 are 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.
 - Description of the proposed functions also allows a review process to assess the market demand, and the ecosystem niche or role which the reviewed method may fill – thus supplying guidance on the appropriateness of its inclusion.
 - 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. Examples of function-oriented descriptions usually can be found in the scope statements of open standards projects, where intended outcomes and boundaries are described in detail, but proprietary processes generally are not referenced.
- *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, noted for process rules, above, also should apply here, so that stakeholders who adopt or contribute to a project can do so with reasonable knowledge of the known rights consequences.

- 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 3. SPECIAL REQUIREMENTS FOR EXPERIMENTAL PROGRAMS

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, modifications and new technologies are coming along constantly. At any given time, there always are worthy projects in development that have not yet fully brought themselves into an accredited standards process. At the same time, of course, there also are private projects that either have no intent of becoming open, or publicly available; or that present themselves as "standards" without ever satisfying the openness needs suitable to public policy use. Accordingly, any identity ecosystem, and its implementers, must make choices about the adoption of methods that might later lead to open standards, or might turn out to be an unsupported dead end, or a proprietary path under the control of 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, incomplete proposed methodologies for handling and structuring information. Here are some draft principles for further consideration:

While long-term, large-scale deployments and dependencies require the assurances and qualities sought 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 not be applied to experimental pre-standardization projects. The other four criteria, plus one additional special one, should still be applied even to the assessment of early-stage efforts:

- *Transparency to the public;* Transparency often still is needed, even if to a lesser degree, so that the outputs of a proposed methodology can be evaluated by a ecosystem participants. As an example, note that the NSTIC funded pilot projects have been required by NIST to make public interim reports to the IDESG. The

171 projects are not obligated to produce all results publicly. However, some some degree
172 of public information and reporting puts the IDESG and stakeholders in a position to
173 assess whether to consider incorporating a candidate technology into broader
174 systems; and whether open standardization or sourcing of that technology would be
175 an appropriate next goal.

- 176 • *Function-oriented method descriptions:* The ability to understand a project's methods,
177 free of specific proprietary product or method use, significantly assists implementers in
178 replicating the experiment's success with different tools. That view into a project more
179 readily lends itself to future standardization and broad use , than would a statement
180 like "we used the Foo Inc. product."
- 181 • *Minimum public review procedures:* Similarly, external projects that seek preliminary
182 endorsement or use in the ecosystem should be subject to exposure for meaningful
183 feedback, as the cost of that interim recognition. Without that mechanism, there would
184 be little opportunity or motivation for those emerging methods to socialize into, and
185 collaborate with, other technologies so as to become sufficiently interoperable.
- 186 • *Intellectual property rules:* To some degree, the eventual license availability of a
187 developing technology should be clear from a project's launch. Often the license terms
188 applicable to a final standard are dictated by the practices used, and contributions,
189 permitted during its formation. For that reason, any experimental method that seeks to
190 be embraced as part of a large and widely available ecosystem should be able, *at its*
191 *initiation*, to demonstrate adequate open licensing and availability will be possible, on
192 terms are reasonable in light of its intended use. In that way the ecosystem can be
193 reasonably assured that its resources are doing more than providing public support to
194 private for-profit product development. For that reason, [a] / [some kind of] statement
195 of intent or declaration about future IPR availability [should be required] / [may be
196 appropriate] at a very early stage. (For example, if a particular functional domain was
197 expected to be directly accessible to consumers without cost, it might be an
198 appropriate constraint, imposed by the IDESG endorsement process, that projects to
199 develop standards needed to implement that function be scoped not to bear royalties.)
- 200 • *Prospective commitment to open standardization:* If an identity ecology is asked to
201 give early recognition or support to an emerging method which is not yet standardized
202 -- as contemplated by the applicable public policy -- an IDESG endorsement process
203 should [assess whether to] require a commitment to completing its standardization, as
204 a condition of the initial support or endorsement. A variety of approaches are possible,
205 including (a) seeking aspirational but unenforceable statements of intent; (b) making
206 some kind of support contingent on progress; or (c) taking binding contributions on a
207 delayed basis for later use, subject to updating.

208 209 **SECTION 4. IMPLEMENTATION**

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211 The IDESG workplan assumes that various projects and methods will be brought forward for
212 endorsement or approval, and that the Standards Committee will be asked for its feedback as
213 a part of that process. A primary goal of that inquiry is confirmation that the goals of the
214 National Strategy and IDESG regarding use of open standards are being met.
215

216 This section assumes that the Standards Committee will use a set of criteria, like those
217 described above, in that evaluation. Thus, if they were to be used as described above, the
218 committee would use some process to evaluate the following matters for each candidate
219 standard or method:
220

221 *(This chart summarizes the criteria described in the prior sections.)*
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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*
- *Commitment to open standardization*

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225 After consideration of multiple evaluation process options, the Committee recommends that
226 the foregoing criteria be applied to relevant ICT standards using a structured feedback
227 process, hosted but not dictated solely by the Standards Committee. When a methodology or
228 project is proposed for endorsement or approval by the IDESG, for use within its identity
229 ecosystem, the specifications and standards used in that proposal will be evaluated against
230 the criteria in this paper, as part of the proposal's evaluation, as follows:
231

232 (i) Early in the life of the proposal, the subject methodology or project should be examined
233 for the inclusion of ICT specifications, and those which are included should be explicitly
234 announced as potential standards on which IDESG seeks feedback according to the criteria;
235

236 (ii) Each of those specifications should be made the subject of an open opportunity and
237 meeting to review the application of the criteria; and
238

239 (iii) The Standards Committee shall prepare a summary report integrating received
240 feedback on application of the criteria, to that methodology or project, to be approved by the
241 committee and forwarded to the Plenary prior to its approval action, so as to inform the
242 Plenary about the extent to which the proposal conforms to open standardization expectations
243 (as represented by the criteria).
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245 See the "Standards Adoption Timeline" draft document.
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APPENDIX A

EXAMPLES OF OPEN STANDARDS CRITERIA

Traditionally, public administrations tend to be conservative in recognizing the stability, neutrality, and appropriateness of a data standard proposed for widespread use. Several examples of specific filters that have been used by established authorities 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.

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 standards development, including some requirements for transparency and responsive treatment of comments; and
- Whether the standards development was conducted under appropriate open 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 agency determination, which is a discretionary function for each agency, 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.

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