



Public-Private Standards  
Development and Use  
by Government

# FOR THE TALENT MARKETPLACE

DECEMBER 2019



U.S. CHAMBER OF COMMERCE FOUNDATION

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# EXECUTIVE SUMMARY

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The United States has developed a unique public-private approach to standards development and use. As data from public and private sources is increasingly leveraged to address challenges in the talent marketplace it is more important than ever to break down silos within and across sectors. The need for public-private data standards development and use is increasingly being recognized through language in the Federal Data Strategy<sup>1</sup> and other mechanisms, but it has yet to be fully addressed for data standards relevant to the talent marketplace.

The T3 Innovation Network™ (T3 Network) is comprised of more than 300 stakeholder groups working together to build an open, decentralized, public-private infrastructure for education and workforce data. As part of that effort, the T3 Network—managed by the U.S. Chamber of Commerce Foundation with support from the Lumina Foundation, Walmart, Google, Microsoft, Educational Testing Service (ETS), and the Bill & Melinda Gates Foundation—is exploring how the unique U.S. approach to standards development can be most effectively applied. The T3 Network has launched eight pilot projects to address different aspects of that challenge.

The U.S. approach to standards development is unique in its reliance on open, voluntary, consensus standards that are developed through public-private collaboration. This public-private approach is embraced by the federal government through documents such as Office of Management and Budget (OMB) Circular A-119 (A-119), which also outlines key guidelines, including requirements that voluntary consensus standards development processes meet specific definitions of openness, balance, due process, appeals process, and consensus.<sup>2</sup>

This paper makes recommendations on how to further strengthen public and private collaboration in the development and use of voluntary consensus standards. It includes recommendations for implementing guidelines reflected in A-119 and the leading practices of existing standards development organizations (SDOs) as well as federal and state policy. It also recommends the formation of a public-private standards collaborative (SC) with a work plan that promotes the benefits of public-private collaboration, strengthens government engagement at all levels, and addresses immediate opportunities to show impact starting with work on comprehensive learner/worker/military records.

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<sup>1</sup> Federal Data Strategy, accessed September 11, 2019, [strategy.data.gov](https://www.strategydata.gov)

<sup>2</sup> The White House Office of Management and Budget, “Circular A-119 Revised,” January 27, 2016, Accessed August 29, 2019, [https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A119/revised\\_circular\\_a-119\\_as\\_of\\_1\\_22.pdf](https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A119/revised_circular_a-119_as_of_1_22.pdf)



# INTRODUCTION

New technologies for sharing data and information have the potential to transform the talent marketplace, making it easier for employers to source and grow talent, learners and workers to share their skills and find job and learning opportunities, and for educators, credentialing organizations, and governments to address the needs of learners and workers as well as employers.<sup>3</sup> Nevertheless, information silos and a lack of data standards make it difficult to address the needs of all key stakeholders in the talent marketplace. Industry, government, education, and other stakeholders are starting to work together to align existing data standards and develop new ones where needed to realize the benefits of data and technology in the talent marketplace.

The T3 Network was created to address this opportunity by designing an open data and technology infrastructure for the talent marketplace. This network, launched by the U.S. Chamber of Commerce Foundation and the Lumina Foundation in early 2018, is bringing a broad group of stakeholders together to build an open, decentralized, public-private infrastructure for education and workforce data. This infrastructure will ultimately support applications that will make it easier to search for and find information on the open web and improve data exchange across the public and private sectors. The T3 Network has grown to encompass more than 300 organizations and has completed the first phase of its work, which entailed planning pilot projects to support its goals. The current, second phase of work includes promoting the T3 Network's Guiding Principles, growing its diversity and reach, and implementing eight pilot projects.

The T3 Network has asked the Center for Open Data Enterprise (CODE) to prepare this paper as part of the Public-Private Adoption of Open Data Standards project. This project is one of several T3 Network projects focused on open data standards for the talent marketplace. Projects consisting of Map and Harmonize Data Standards, Employment and Earnings Record Standards, Comprehensive Learner/Worker/Military Record Standards, and Data Collaboratives for Individual-Level Data will help inform the work of Public-Private Adoption of Open Data Standards. These projects serve as a testbed for standards development and use as well as public-private collaboration in the broader talent marketplace.<sup>4</sup>

This paper draws on a literature review, analysis of existing policies and practices, stakeholder interviews, lessons learned from other T3 Network pilot projects, and input from a stakeholder Roundtable to explore the context for public-private efforts to set data standards for the talent marketplace.

## The current context reflects two historical developments.

1. First, the goal of standard setting has evolved from purely physical standards to include standards for information technology and data.
2. Second, the process for standard setting in the U.S. evolved into a uniquely U.S. approach in which government collaborates with the private sector to develop and use voluntary consensus standards.

This paper identifies the attributes in A-119 as a starting point for discussion and development, and suggests key considerations for implementing them. The T3 Network held a Roundtable on September 17, 2019, to begin discussing and developing these recommendations. The implementation guidance presented in this paper was developed based on that Roundtable and additional stakeholder engagement. We hope that it will be useful for standards developers and future guidelines for improving public-private collaboration.

<sup>3</sup> For more on the T3 Innovation Network and its work on data standards, see "Improving the Talent Marketplace Through the Application of Web 3.0 Technologies" (March 2018) at [https://www.uschamberfoundation.org/sites/default/files/March%2007\\_Background%20Paper.pdf](https://www.uschamberfoundation.org/sites/default/files/March%2007_Background%20Paper.pdf); "The T3 Innovation Network" website at <https://www.uschamberfoundation.org/t3-innovation>; and the "T3 Innovation Network Phase 1 Report" (October 2018) at [https://www.uschamberfoundation.org/sites/default/files/T3Phase1\\_Report\\_FINAL\\_0.pdf](https://www.uschamberfoundation.org/sites/default/files/T3Phase1_Report_FINAL_0.pdf)

<sup>4</sup> Learn more about all of the T3 Network Pilot Projects here: <https://www.uschamberfoundation.org/t3-innovation/pilot-projects>



# PUBLIC-PRIVATE STANDARDS DEVELOPMENT

## HISTORY, POLICIES, AND PRACTICE

### Standards Development: From Products, to Process, to Data

The current drive to develop data standards in the talent marketplace, as well as in other areas, is part of a longstanding movement towards standardization in many fields.<sup>5</sup> Standards can be defined as common and repeated use of rules, conditions, guidelines, or characteristics for products or related processes and production methods, and related management systems practices; the definition of terms; classification of components; delineation of procedures; specification of dimensions, materials, performance, designs, or operations; measurement of quality and quantity in describing materials, processes, products, systems, services, or practices; test methods and sampling procedures; formats for information and communication exchange; or descriptions of fit and measurements of size or strength; and terminology, symbols, packaging, marking, or labeling requirements as they apply to a product, process, or production method.<sup>6</sup> They influence our day-to-day lives and underpin key parts of the modern economy, including the Internet itself.<sup>7</sup> Data standards make it easier to publish, share, and use data. They can boost data quality, open new markets, lead to the creation of innovative tools and services, lower costs for data production and use, support policy implementation, encourage collaboration, and more.<sup>8</sup>

In the talent marketplace, improved data standards can make it easier for workers to find jobs and employers to make hiring decisions. For example, data standards for learner records would allow job seekers to more easily present their relevant competencies and credentials to potential employers. Those employers would simultaneously be able to find qualified candidates and verify their competencies and credentials.<sup>9</sup> In addition, governments can leverage data standards to more effectively collect data and implement policy. For instance, data standards for employment and earnings records could greatly improve the quality of data now collected from employers at lower costs to both government and employers. This data could be used for a variety of purposes including government statistics that track employment trends and the creation of more comparable data on the average earnings of those attaining credentials.

### The Historical Context

The history of government involvement in standards development in the United States stretches at least as far back as the start of the 20th century and the establishment of the National Bureau of Standards (NBS).<sup>10</sup> The uniquely U.S. public-private approach that we know today emerged just a few years later when five engineering societies came together—along with three federal agencies—to launch the American Engineering Standards Committee (AESC).<sup>11</sup> The NBS and AESC were set up at a time of rapid economic expansion amid a growing consensus that progress was impeded by a lack of agreement on physical standards across various industries and branches of science.<sup>12</sup> For example, in 1900 there were no less than three different electrical standards in use across government, scientific laboratories, and industry. Meanwhile, in New York City alone, surveyors had to negotiate between four competing definitions of a foot.<sup>13</sup>

The NBS has now become the National Institute of Standards and Technology (NIST) and the AESC has become the American National Standards Institute (ANSI). Since their inception, standards have moved well beyond the realm of physical measurement. Now, beyond making it possible for everyone to agree on the answers to questions like “how long is a yard?” or “how much does a pound weigh?” standards help forge agreement not only in the material and physical sciences, but also for information technology, organizational process and performance assessment, and other areas.<sup>14</sup>

<sup>5</sup> While there is no canonical definition of a “data standard,” the T3 Network has settled on the following as guiding language, “Data standards are the rules by which data are organized, described, formatted, transmitted, and made available for different uses. Data standards include but are not limited to: Data Models, Data Elements, Data Formats, and Data Protocols.”

<sup>6</sup> The White House Office of Management and Budget, “Circular A-119 Revised,” January 27, 2016, Accessed August 29, 2019, [https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A119/revised\\_circular\\_a-119\\_as\\_of\\_1\\_22.pdf](https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A119/revised_circular_a-119_as_of_1_22.pdf)

<sup>7</sup> National Research Council 1995. Standards, Conformity Assessment, and Trade: Into the 21st Century. Washington, DC: The National Academies Press. <https://doi.org/10.17226/4921>, Pages 9, 15

<sup>8</sup> Open Data Institute, “Exploring the Development and Impact of Open Standards for Data,” <https://docs.google.com/document/d/1Sab5YmVj4PVqLjZD35hX8FTnMeeP6gLGGOxszuRMlaM/edit>

<sup>9</sup> From Pilot Project 3, “Developing Learner Use Case Scenarios and Related Diagrams”

<sup>10</sup> Rexmon C. Cochrane, Measures For Progress: A History of the National Bureau of Standards, United States Department of Commerce, 1966, Page 1

<sup>11</sup> “ANSI: Celebrating 100 years 1918-2018,” American National Standards Institute, Accessed August 29, 2019, [https://www.ansi.org/about\\_ansi/introduction/history](https://www.ansi.org/about_ansi/introduction/history)

<sup>12</sup> Cochrane, Measures for Progress, 41

<sup>13</sup> Cochrane, Measures for Progress, 36-37

<sup>14</sup> “NIST.gov,” The National Institute of Standards and Technology, United States Department of Commerce, Accessed August 29, 2019, <https://www.nist.gov/>



Today, international standards development has achieved prominence commensurate with globalization. Among the organizations that develop international standards is the International Organization for Standardization (ISO), which brings together 164 national standards bodies—including ANSI, a private, nonprofit organization that serves as the U.S. representative to the ISO—to develop common international standards through a voluntary, consensus-based model.<sup>15</sup> Meanwhile, in the U.S., a unique community grew around public-private collaboration and voluntary consensus-based standards development.

Over time, standards have been developed to modernize industry, develop infrastructure, improve safety at home and in the workplace, and respond to emerging technologies.<sup>16</sup> This includes a growing focus on data standards aimed to ease both data exchange within and across the public and private sectors as well as search and discovery on the open web.

## The Present Day

Data standards are being used to tackle interoperability issues and ease data exchange in a range of sectors. For example, better data standards for electronic health records are already being used to improve clinical efficiency and patient safety, lower costs, and reduce provider frustration.<sup>17</sup> In the talent marketplace, more robust data standards present a clear opportunity to lower costs and increase efficiency. For example, a recent study found that, on average, it takes employers more than 40 days and costs them more than \$4,000 to hire a new employee.<sup>18</sup> Data standards can help employers save time and money while identifying high-quality candidates.

Standardization is also helping average people find the information they need on the Internet and proving the value of public-private collaboration in this area. One advance has been Schema.org, a collaborative effort by a broad community that includes major search engines and other leading technology companies to provide standard ways to structure data on the web. Schema.org uses the World Wide Web Consortium (W3C) community groups to provide recommendations and develop consensus on adoption and use. Key stakeholders from Schema.org then make final decisions based on these recommendations.<sup>19</sup>

The White House Office of Science and Technology Policy worked with Schema.org to develop a new way to declare when a job posting on the web included preferences for or otherwise recognized veteran hires, so they could be more easily discovered by veterans looking for employment. This work allowed the United States Department of Veterans Affairs to develop a widget that helped veterans find job listings from employers that may want to hire them.<sup>20</sup>

# THE GOVERNMENT ROLE IN STANDARDS DEVELOPMENT CURRENT POLICIES, GUIDELINES, AND PRACTICES

## The Federal Government

The U.S. takes a unique approach to standards development. While most countries have a top-down, mandatory system for standards setting driven by a national standards body, the U.S. follows a more collaborative, market-driven model.

In the U.S. model, stakeholders from various sectors come together voluntarily to develop and agree on standards in a variety of fields. Federal law and policy specifically directs agencies to participate in these processes and use the resulting “voluntary consensus standards.”<sup>21</sup> These processes bring government, business, education, and other stakeholders together to seek consensus. They represent an end-to-end process that includes developing, setting, and maintaining a final standard. When successful, the resulting standards reflect and fulfill the needs of many market participants and are widely adopted and used. Government agencies can promote the resulting voluntary consensus standards by choosing to use them and even incorporating them specifically into guidance, regulations, and law.

<sup>15</sup> “Certification,” International Organization for Standardization, Accessed August 29, 2019, <https://www.iso.org/certification.html>

<sup>16</sup> “ANSI: Celebrating 100 years 1918-2018,” American National Standards Institute, Accessed August 29, 2019, [https://www.ansi.org/about\\_ansi/introduction/history](https://www.ansi.org/about_ansi/introduction/history)

<sup>17</sup> <https://ehrintelligence.com/news/standardization-biggest-barrier-to-healthcare-interoperability>

<sup>18</sup> Data Transparency Working Group, “White Paper on Interoperable Learning Records,” American Workforce Policy Advisory Board, September 2019, (Accessed October 14, 2019), [https://www.commerce.gov/sites/default/files/2019-09/ILR\\_White\\_Paper\\_FINAL\\_EBOOK.pdf](https://www.commerce.gov/sites/default/files/2019-09/ILR_White_Paper_FINAL_EBOOK.pdf), Page 6.

<sup>19</sup> About Schema.org, accessed September 11, 2019, <https://schema.org/docs/faq.html#0>

<sup>20</sup> “Schema.org support for job postings,” Schema Blog, Accessed August 29, 2019, <http://blog.schema.org/2011/11/schemaorg-support-for-job-postings.html>

<sup>21</sup> The White House Office of Management and Budget, “Circular A-119 Revised,” January 27, 2016, Accessed August 29, 2019, [https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A119/revised\\_circular\\_a-119\\_as\\_of\\_1\\_22.pdf](https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A119/revised_circular_a-119_as_of_1_22.pdf)



There is no formal definition of what makes up a voluntary consensus standards body or criteria for the standards they produce. However, the White House Office of Management and Budget (OMB) does describe five “attributes,” discussed later in this paper, that federal agencies must use to evaluate voluntary consensus standards development processes. Voluntary consensus standards are commonly developed under the auspices of a Standards Development Organization (SDO), which are dedicated to developing, setting, publishing, and maintaining standards for a particular market. More recently, as the number of data standards have multiplied, data-focused Standards Collaboratives (SCs) have emerged to coordinate their efforts and align and fill gaps where needed within and across sectors.

Since the early 1980s, federal policy has encouraged government agencies to work with voluntary consensus standards bodies to develop and use voluntary consensus standards. Several federal laws and policies set the framework for the U.S. approach to public-private standards setting. The National Technology Transfer and Advancement Act of 1995 (NTTAA) and OMB Circular A-119 (A-119) push the government towards voluntary consensus standards development wherever possible. A 2012 White House Memo (M-12-08) further clarifies the principles guiding federal engagement in standards activities.<sup>22</sup> Additional guidance and regulation has laid out NIST’s role in the standards development process and directed agencies to coordinate across government and with the private sector.

A-119 was originally promulgated in 1980 and has been revised several times since. It directs federal agencies to use voluntary consensus standards “rather than government-unique standards, except where inconsistent with applicable law or otherwise impractical.”<sup>23</sup> In the 1990s, industry and members of Congress were keen to strengthen A-119 and federal use of voluntary consensus standards more broadly and developed the NTTAA, in part, to do so.<sup>24</sup> NTTAA codified existing requirements of A-119 and required agencies to annually report their reasons to OMB, through NIST, if they chose to use government unique standards (GUS) in lieu of existing voluntary consensus standards.<sup>25</sup>

NIST plays several key roles in the implementation of federal standards policy. It is responsible for compiling reports from agencies on when they choose to use GUS, instead of existing voluntary consensus standards, and sharing that information with OMB. NIST also encourages agencies to consider voluntary consensus standards and coordinates agency efforts through the Interagency Committee on Standards Policy.<sup>26</sup>

The data on GUS use compiled by NIST shows that agencies rely upon voluntary consensus standards, although GUS are still used where necessary. The total number of GUS used in lieu of voluntary consensus standards since the implementation of the NTTAA has been limited. Out of thousands of standards used by the federal government, there were 68 GUS in 2005<sup>27</sup> and 73 in 2018.<sup>28</sup> As of 2016, not a single GUS was reported as being in use in lieu of a voluntary consensus standard for the talent marketplace.<sup>29</sup> Most agencies do their best to adhere to the requirements of A-119 and rely on voluntary consensus standards where possible.<sup>30</sup>

In some instances, federal agencies have taken the lead on public-private standards efforts that include stakeholders in industry and other levels of government. Notable government led efforts include the Federal Geographic Data Committee, the National Information Exchange Model (NIEM), and the Common Education Data Standards (CEDs), which will be discussed further in this paper.<sup>31</sup>

A-119 requires agencies to assess voluntary consensus standards processes based on their alignment with specific definitions of openness, balance, due process, appeals, and consensus.<sup>32</sup> This requirement provides a useful framework for agencies when considering participation in a standards process. Overall, the principles outlined in A-119 set the stage for government participation in voluntary consensus standards development.

<sup>22</sup> Aneesh Chopra, Miriam Sapiro, Cass R. Sunstein, “Principles for Federal Engagement in Standards Activities to Address National Priorities”, The White House, January 17, 2012, (accessed October 15, 2019), [https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2012/m-12-08\\_1.pdf](https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2012/m-12-08_1.pdf)

<sup>23</sup> Office of Management and Budget, OMB Circular A-119, 14

<sup>24</sup> “H. Rept. 104-390 - National Technology Transfer and Advancement Act of 1995,” United States House of Representatives, December 7, 1995, Accessed August 29, 2019, <https://www.congress.gov/congressional-report/104th-congress/house-report/390/1?overview=closed>

<sup>25</sup> “Public Law 104-113 - National Technology Transfer and Advancement Act of 1995,” United States Government Publishing Office, March 7, 1996, Accessed August 29, 2019, <https://www.govinfo.gov/content/pkg/PLAW-104publ113/pdf/PLAW-104publ113.pdf>

<sup>26</sup> “Interagency Committee on Standards Policy,” National Institute of Standards and Technology, Accessed September 2, 2019, <https://www.nist.gov/standardsgov/what-we-do/federal-policy-standards/interagency-committee-standards-policy-icsp>

<sup>27</sup> “Ninth Annual Report on Federal Agency Use of Voluntary Consensus Standards and Conformity Assessment,” United States Department of Commerce, National Institute of Standards and Technology, December 2006, Accessed August 29, 2019, <https://www.govinfo.gov/content/pkg/GOVPUB-C13-63a94ab269d5fa1726283d0c86109144/pdf/GOVPUB-C13-63a94ab269d5fa1726283d0c86109144.pdf>, 4

<sup>28</sup> Nathalie Rioux, “Twenty-First Annual Report on Federal Agency Use of Voluntary Consensus Standards and Conformity Assessment,” United States Department of Commerce, National Institute of Standards and Technology, August, 2018, Accessed August 29, 2019, <https://nvlpubs.nist.gov/nistpubs/ir/2018/NIST.IR.8223.pdf>, 2

<sup>29</sup> “FY2016 Government Unique Standards used in lieu of Voluntary Consensus Standards,” National Institute of Standards and Technology, (accessed October 14, 2019), [https://standards.gov/nttaa/resources/FY2016\\_GUSs\\_used\\_in\\_lieu\\_of\\_VCSs.pdf](https://standards.gov/nttaa/resources/FY2016_GUSs_used_in_lieu_of_VCSs.pdf)

<sup>30</sup> Nathalie Rioux, Twenty-First Annual Report, 2.

<sup>31</sup> See: <https://www.fgdc.gov/standards>, and <https://www.niem.gov/> for more information.

<sup>32</sup> Office of Management and Budget, Circular A-119, 16.



Meanwhile, M-12-08 provides additional details around when government should actively engage or even perform a “convening role” to boost standards development around identified “national priorities,” and how that engagement should play out. Specifically, it directs agencies to have clearly stated reasons for engagement, ensure effective coordination across government and communication with the private sector, maintain their commitments to standards development activities, provide continuous support to agency technical experts, and ultimately use the resulting standards.<sup>33</sup>

The need for agency participation is reinforced by two new mandates tied to federal data: The Federal Data Strategy and the Foundations for Evidence-Based Policymaking Act (FEBPA). The Federal Data Strategy, released in draft by OMB and partner agencies in 2019, lays out principles and practices for agencies to leverage the value of their data assets while protecting security, privacy, and confidentiality. The Federal Data Strategy Practices specifically encourage agencies to “leverage data standards” to boost quality and facilitate data access, interoperability, and use.<sup>34</sup> The Strategy also encourages federal data stewards more broadly to gather regular input from data users and stakeholders and plan for data reuse and interoperability from the start.<sup>35</sup>

FEBPA, which became law in 2019, lays out similar requirements for agencies to improve their data programs. Data standards can help agencies achieve the goals of FEBPA to use evidence to inform better policy. The Federal Data Strategy and FEBPA are also promoting more openly licensed and machine actionable data through Application Programming Interfaces (APIs) and portals.

The federal government has embraced the unique U.S. approach to standards development for decades and shows continued commitment to the model. However, the federal government is not the only public stakeholder involved in standards setting broadly or more specifically in the talent marketplace. State governments are also playing a growing role.

## State Governments

The states in the U.S. also have a long history of standards development. In the 19th century, there was often a wide “gap between so-called Federal and State standards.”<sup>36</sup> More recently, however, states and local governments have both regularly played a role in consensus driven and collaborative standards development processes that include federal efforts like NIEM, multistate agreements on appliance standards, and data standards in the education sector.<sup>37</sup> They also adopt voluntary consensus standards developed by private sector organizations like the National Fire Protection Association’s (NFPA) National Electrical Code (NEC) for safe installation of electrical wiring and equipment,<sup>38</sup> or the National Electrical Safety Code (NESC) which is developed by IEEE to ensure safety during installation, operation, and maintenance of electrical and communications equipment.<sup>39</sup>

Overall, states have been slow to require adherence to voluntary consensus standards for the talent marketplace. However, the Employment and Earnings Record Standards project will explore ways to encourage state governments to adopt voluntary consensus standards around Unemployment Insurance (UI) Wage Records, which are not currently standardized across state lines. Lessons from this effort may be applied more broadly to encourage states to adopt more generally applicable policies, more fully engage in the standards development ecosystem, and provide a more stable investment environment for employers and vendors.

States have been actively involved with data standards organizations including CEDS, the HR Open Standards Consortium (HR Open Standards), Access for Learning (A4L), Postsecondary Electronic Standards Council (PESC) and the IMS Global Learning Consortium (IMS Global).<sup>40</sup>

<sup>33</sup> “Principles for Federal Engagement in Standards Activities to Address National Priorities”, The White House, [https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2012/m-12-08\\_1.pdf](https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2012/m-12-08_1.pdf), pages 3-4

<sup>34</sup> “What are the practices?” Federal Data Strategy, Accessed August 29, 2019, <https://strategy.data.gov/practices/>

<sup>35</sup> “What are the principles?” Federal Data Strategy, Accessed August 29, 2019, <https://strategy.data.gov/principles/>

<sup>36</sup> Cochrane, “Measures for Progress,” 36

<sup>37</sup> See: <https://www.niem.gov/>, <https://www.appliancestandards.org/>, and <https://www.imsglobal.org/>

<sup>38</sup> “NEC Adoption Maps,” National Fire Protection Association, accessed September 2, 2019, <https://www.nfpa.org/nec/nec-adoption-and-use/nec-adoption-maps>

<sup>39</sup> The National Electrical Safety Code, IEEE Standards, Accessed September 2, 2019, <https://standards.ieee.org/products-services/nesc/index.html>

<sup>40</sup> See: <https://www.pesc.org/membership.html> and <https://www.imsglobal.org/membersandaffiliates.html>



# STANDARDS DEVELOPMENT ECOSYSTEM

## Standards Development Organizations

The ecosystem of Standards Development Organizations (SDOs) includes hundreds of private SDOs including industry organizations, professional and technical societies, and membership organizations. SDOs include organizations that address the needs of a wide variety of sectors ranging from manufacturing to healthcare and develop and maintain standards addressing safety, health, security, and environmental issues, among others.

A number of these standards developing organizations are coordinated by ANSI. ANSI, which evolved from the first public-private standards effort in the U.S., establishes guidelines for development of voluntary consensus standards to ensure they are developed through an open and balanced process that includes the opportunity for participation by all stakeholders. ANSI then accredits standard-developing organizations based on these guidelines. IEEE is an example of an ANSI-accredited standards organization that produces data and related standards relevant to the talent marketplace.<sup>41</sup> As of January 2018, there were nearly 240 ANSI-accredited SDOs.<sup>42</sup> The procedural criteria that ANSI uses to approve American National Standards (ANS) generally align with the “attributes” that A-119 lays out for voluntary standards organizations.<sup>43</sup>

Federal, state, and local government have formally adopted thousands of standards produced by the ANSI Federation.<sup>44</sup> Congress has also directed the executive branch to participate in voluntary consensus standards processes. For example, the Higher Education Programs Authorization Extension Bill (P.L. 105-244) requires the Department of Education to “encourage and participate in the establishment of voluntary consensus standards” via an ANSI-accredited SDO.<sup>45</sup>

On the international level, the ISO develops standards using a collaborative model. Its membership is made up of 164 national standards bodies.<sup>46</sup> A similar system exists in Europe where the European Committee for Standardization (CEN) brings together the national standards bodies from 34 European countries.<sup>47</sup>

For the talent marketplace, the data standards ecosystem also includes organizations and community groups working with the W3C, which is focused on web standards. Their efforts are growing in importance because of the central role of the web in building a public-private data and technology infrastructure for the talent marketplace. These voluntary consensus standards are developed under Open-Stand principles—as defined on open-stand.org and managed by the IEEE, W3C, IAB, IETF, and the Internet Society—for open standards and technology development, which place emphasis on cooperation, consensus, transparency, openness, availability, and voluntary adoption.<sup>48</sup>

The role now being played by ANSI and W3C provides useful lessons on the value of building a stronger and more coordinated data standards infrastructure for the talent marketplace. In some cases, data standards initiatives relevant to the talent marketplace require coordinated work between the W3C community and other standards organizations including those affiliated with ANSI.

One example is the Job Data Exchange (JDX).<sup>49</sup> The JDX initiative is developing a data standard for jobs that involves aligning and harmonizing standards from HR Open Standards and a newly formed Talent Marketplace Signaling W3C Community Group to propose changes to Schema.org.<sup>50</sup> This may ultimately help align current efforts that are separately focused on search and discovery on the open web and system-to-system data exchange respectively.

<sup>41</sup> “IEEE Standards Organization,” IEEE Standards Organization, Accessed August 29, 2019, <https://standards.ieee.org/>

<sup>42</sup> “Introduction to ANSI,” ANSI, Accessed August 29, 2019, [https://www.ansi.org/about\\_ansi/introduction/introduction](https://www.ansi.org/about_ansi/introduction/introduction)

<sup>43</sup> “ANSI Essential Requirements: Due process requirements for American National Standards,” ANSI, January 2019, Accessed November 27, 2019, <https://www.ansi.org/essentialrequirements>, 4.

<sup>44</sup> “Significant Federal Laws and Policies,” ANSI, Accessed August 29, 2019, [https://www.ansi.org/government\\_affairs/laws\\_policies/laws](https://www.ansi.org/government_affairs/laws_policies/laws)

<sup>45</sup> “Public Law 105-244 - the Higher Education Amendments Act of 1998,” Government Publishing Office, October 7, 1998, Accessed August 29, 2019, <https://www.govinfo.gov/content/pkg/PLAW-105publ244/pdf/PLAW-105publ244.pdf>

<sup>46</sup> “ISO,” ISO, Accessed November 27, 2019, <https://www.iso.org/home.html>

<sup>47</sup> “Who We Are,” European Committee for Standardization, Accessed August 29, 2019, <https://www.cen.eu/about/Pages/default.aspx>

<sup>48</sup> “Open-Stand Principles,” IEEE Standards Organization, Accessed August 29, 2019, <https://open-stand.org/about-us/principles/>

<sup>49</sup> Job Data Exchange (JDX), U.S. Chamber of Commerce Foundation, Accessed September 11, 2019, <https://www.uschamberfoundation.org/workforce-development/JDX>

<sup>50</sup> Job Data Exchange (JDX), U.S. Chamber of Commerce Foundation



A number of SDOs operate outside of formal relationships with ANSI, ISO, W3C or other cross sector organizations including many of the major SDOs relevant to the talent marketplace. However, some of these organizations, such as PESC, emerged from prior standards work done under the auspices of ANSI and then became an independent standards organization outside the ANSI federation, while still maintaining the principles of an open, voluntary, consensus standard as defined by ANSI.

Some of the key private sector SDOs that have joined the T3 Network include HR Open Standards, PESC, and IMS Global. The T3 Network also works with CEDS, a government-led, public-private standards development effort.

In addition, the T3 Network has a collaborative working relationship with Credential Engine, a nonprofit organization working to improve transparency of credentials based on the Credential Transparency Description Language (CTDL). Other organizations, including the Access for Learning Network (A4L), IEEE, and MedBiquitous are all part of a larger ecosystem that the T3 Network will engage with in the future.

The following are public and private organizations that develop standards and are actively working with the T3 Network.

### HR OPEN STANDARDS CONSORTIUM

HR Open Standards is a voluntary, consensus-based standards organization that develops global HR data vocabularies that are free, transparent, and open to all HR professionals and organizations.<sup>51</sup>

The T3 Network's Employment and Earnings Record Standards project will work with HR Open Standards to develop data standards for employee employment and earnings records that can be voluntarily used by federal and state agencies as well as reporting requirements for UI wage records. These records are the major data sources now being used for government program administration and evaluation, consumer information, and federal statistical systems.

The HR Open Standards work group will develop the standards and then work with a public-private coalition to promote their use in federal and state policies on enhancing UI wage records. This will produce both public and private benefits. Participation includes the U.S. Department of Labor, Bureau of Labor Statistics, and the National Association of State Workforce Agencies.

### POSTSECONDARY ELECTRONIC STANDARDS COUNCIL (PESC)

PESC is an open, voluntary, consensus-based, standards-development, and standards-setting body. Originally established in 1997 at the National Center for Higher Education, PESC works towards the establishment and adoption of open data standards across the education domain.<sup>52</sup> PESC approved standards cover everything from transcripts and academic records to course inventories and admission applications.<sup>53</sup> While PESC focuses on education data, they look both inside and outside the education space for coordination opportunities. This vision includes a partnership with HR Open Standards and A4L.<sup>54</sup>

PESC has also worked directly with the government on standardization initiatives. For example, Section 143 of the Higher Education Act specifically called on the Department of Education to encourage and participate in the establishment of voluntary consensus standards for student financial aid data.<sup>55</sup>

To achieve this goal, federal stakeholders in the office of Federal Student Aid (FSA) worked closely with PESC and the National Council on Higher Education Loan Programs (NCHELP) to develop a Common Record XML standard for student financial aid data.<sup>56</sup> This effort standardized elements across Pell Grant and Direct Lending Programs and had the goal of easing data exchange between schools, software providers, and servicers.<sup>57</sup>

<sup>51</sup> "HR Open Standards," HR Open Standards Consortium, Accessed August 29, 2019, <https://hropenstandards.org/>

<sup>52</sup> "About Us," Postsecondary Education Standards Council, Accessed August 29, 2019, <https://www.pesc.org/about-us.html>

<sup>53</sup> "PESC Approved Standards," Postsecondary Education Standards Council, Accessed August 29, 2019, <https://www.pesc.org/pesc-approved-standards.html>

<sup>54</sup> "PESC.org," Postsecondary Education Standards Council, Accessed August 29, 2019, <https://www.pesc.org/home.html>

<sup>55</sup> "Pubic Law 105-244 - the Higher Education Amendments Act of 1998," Government Publishing Office, October 7, 1998, Accessed August 29, 2019, <https://www.govinfo.gov/content/pkg/PLAW-105publ244/pdf/PLAW-105publ244.pdf>, 67

<sup>56</sup> "Adjusted XML Implementation Schedule," The Office of Federal Student Aid, July 2003

<sup>57</sup> Interview with Michael Sessa, American Student Assistance, August 16, 2019

## IMS GLOBAL LEARNING CONSORTIUM

IMS Global is a non-profit organization advancing technology to scale and improve teaching and lifelong learning experiences affordably and equitably. IMS work, among other things, includes community-owned and community-driven development of open interoperability standards. Since its inception, IMS Global has evolved from focusing solely on higher education to making standards a pervasive element across K-12, higher education, and corporate education.<sup>58</sup> IMS Global membership includes leading institutions, school districts, local and state education agencies, and technology suppliers.<sup>59</sup>

## COMMON EDUCATION DATA STANDARDS

Since 2009, the Common Education Data Standards (CEDS) have been developed by education data stakeholders and facilitated by the National Center for Education Statistics (NCES) at the U.S. Department of Education. CEDS is an effort to agree on a shared vocabulary for data across the education lifecycle, from early learning through postsecondary and workforce (P-20W).

CEDS consists of a common vocabulary, data models that reflect that vocabulary, tools to help stakeholders understand and use educational data, metadata from other education data initiatives, and a community of stakeholders who discuss and develop the standard. CEDS was originally developed by stakeholder groups and feedback was received through a public comment period. However, since version 6, CEDS has been developed and maintained by an open community, relying on subgroups when necessary and collaboration with other standards initiatives to focus expertise and produce proposals for approval. In version 8, CEDS is moving to a fully open source community model.

# STANDARDS ORGANIZATIONS

## AN OVERVIEW OF PROCESSES AND PRACTICES

The processes by which standards are produced in the U.S. vary widely. However, there are many common practices. Standards development processes usually begin with the formation or chartering of a technical committee or work group to address a specific market need for standards development. Participation in these committees and work groups is often open to all stakeholders, although in some cases participants may be required to be members of the standards organization. Standards organizations usually seek a balanced membership representing a diversity of interests and viewpoints across multiple stakeholders to ensure openness and improve the likelihood that consensus standards will be adopted and used.

Standards organizations develop a process for the development of standards which are approved via consensus. Once the process is completed and standards are set, standards are made available to the public. In some cases, standards organizations charge money for access to standards documents.<sup>60</sup>

Many standards organizations relevant to the talent marketplace make their standards freely available without charge but vary with regard to how much guidance and support documentation is provided for effective use. PESC, HR Open Standards, IMS Global, and CEDS all make their education and workforce related standards openly available to interested stakeholders.

To gain a better understanding of common processes and practices we have systematically examined internal governance structures, the roles and identities of stakeholders, funding sources, and the processes for developing and disseminating standards used by leading standards organizations in the talent marketplace.

<sup>58</sup> "IMS Global Learning Consortium Initiatives," IMS Global Learning Consortium, Accessed September 20, 2019, <https://www.imsglobal.org/institutions.html>

<sup>59</sup> "Contributing Members, Affiliates, and Alliance Participants, Accessed September 20, 2019, <https://www.imsglobal.org/members>

<sup>60</sup> It is worth noting that ANSI procedures require voluntary consensus standards developed by ANSI accredited standards developers and proposed as ANS to allow all materially affected stakeholders to participate as voting members of technical committees. Committee participation cannot be conditioned upon membership in any other organization. Additionally, ANSI procedures expressly state that there shall be no undue financial barriers to participation in voluntary consensus standards developed by ANSI accredited standards developers and proposed as ANS.

## Governance

Most standards organizations that we evaluated have a core governance structure that includes an executive committee that oversees high-level operations, specialized sub-committees that deal with specific standards, and a membership body made up of relevant stakeholders in government, industry, and elsewhere. PESC, HR Open Standards, and IMS Global are governed by boards of directors while standards development work is conducted by subcommittees or working groups.

Most, but not all, have formalized elections to determine executive leadership. PESC, IMS Global, and HR Open Standards all use elections.

## Membership

Independent standards organizations rely primarily on stakeholder organizations to make up their membership. These stakeholders are commonly organizations in the related sector or industry, but also include members from federal, state, and local governments and, in some cases, individual members.

Membership structures for standards organizations include full membership for active participation, while some also have observer status that allows for non-participatory observation of the standards collaboration and development process. In the talent marketplace, organizations that only offer full participation memberships include PESC. IMS Global offers three levels of membership with varying associated benefits, while HR Open Standards offers observer status.

## Funding

Standards organizations fund themselves in several ways. Membership dues and fees represent the most common funding structure. The only organizations in the talent marketplace that do not rely on this method are government managed like CEDS.

Standards organizations like HR Open Standards also seek out grants and sponsorships. In the education and workforce space, PESC, HR Open Standards, and IMS Global all host events that bring together stakeholders and, presumably, generate income. Finally, a few organizations, including HR Open Standards, charge fees for accreditation services or trainings and certifications.

## Deliberation and Collaboration

There are three prominent types of collaboration mechanisms present in the organizations surveyed.

The most formal collaborations are built around a centralized deliberative process in which full members are allowed to propose and deliberate on new standards or decide which standards to adopt. These processes are usually open and include methods of appeal. This approach is used by HR Open Standards among others. This approach usually includes some period of time set aside for public input, which allows non-members to comment on the standards and make suggestions. Final standards are often adopted through some sort of formal vote. This approach appears to be common in the talent marketplace, with PESC, HR Open Standards, and IMS Global using formal votes to some extent.

# PUBLIC-PRIVATE STANDARDS COLLABORATIVES

A number of different standards tend to emerge over time in a given sector; they are often relevant to different aspects of an industry's work or developed in response to the varying needs of multiple stakeholder groups.<sup>61</sup> More and more, the need to align and fill gaps in standards within and across industries is being recognized. The talent marketplace is no exception to this trend. In some industries, new collaborative groups have developed to encourage coordination.

The Public-Private Adoption of Open Data Standards team has identified these collaborative groups as Standards Collaboratives (SCs) and believes that they can be critical to align data standards and increase interoperability for data

<sup>61</sup> "About the HSC," Health Standards Collaborative, Accessed August 29, 2019, <http://healthstandardscollaborative.org/AboutUs.html>

across the talent marketplace. SCs are organizations designed to help align standards that apply within and across industries. SCs take many forms, ranging from highly centralized and formal bodies responsible for developing new standards to decentralized, loose affiliations that serve to exchange existing standards. There is no singular model for an SC; rather, several internal governance structures, collaborative processes, and membership types exist.

For example, the Health Standards Collaborative (HSC)—described in detail below—has an executive chair and is supported by a secretariat as well as subcommittees. The secretariat-subcommittee model is also popular among international standards organizations like ISO and CEN. Meanwhile ANSI manages unique SCs established to address coordination and mapping needs in areas of national importance; these forums are in addition to ANSI's accreditation of standards developers and approval of voluntary consensus standards as ANS.

While there is not yet an SC for the talent marketplace, the Standards Mapping Group, which has been supported and formalized by the Map and Harmonize Data Standards project, has begun the work of mapping and aligning workforce and education data standards. This project is developing a standards harmonization process and platform for stakeholders to discover and understand the relationships between relevant data standards.<sup>62</sup>

As with the JDX, SCs can also align efforts focused on easing search and discovery on the web and those oriented around improving data exchange across systems and sectors.

Public-private SCs work with stakeholders from industry, government, education, the nonprofit sector, and more. They include efforts by umbrella organizations like ANSI, but can also be sector specific, focusing on aligning and filling gaps in standards across industries like healthcare. In addition to the SCs in the education and workforce sectors described above, SCs in other sectors provide instructive use cases for showing how SCs can operate.

#### **Example: AMERICA MAKES & ANSI ADDITIVE MANUFACTURING STANDARDIZATION COLLABORATIVE**

The America Makes & ANSI Additive Manufacturing Standardization Collaborative (AMSC), launched in 2016, is a cross-sector coordinating body focused on standards in the additive manufacturing industry. The AMSC was launched to help coordinate a number of SDOs that are setting standards for various aspects of additive manufacturing.

The AMSC has identified existing standards and specifications as well as others in development, assessed gaps, and recommended areas where additional standards may be necessary. Its participants include representatives from private industry, original equipment manufacturers (OEMs), material suppliers, government, academia, SDOs, and more.<sup>63</sup>

#### **Example: HEALTH STANDARDS COLLABORATIVE**

The Health Standards Collaborative (HSC) is the result of numerous efforts to improve the coordination of healthcare data standards. HSC serves as a model for better coordinating public-private standards development that could be useful for the talent marketplace.

One goal of the HSC is to “unify and harmonize healthcare industry standards to meet the interoperability and standards definition needs of all healthcare stakeholders.” This is very consistent with T3 Network projects to map and harmonize data standards and focus on comprehensive learner/worker/military record standards. The future sustainability plan for the Map and Harmonize Data Standards project could be informed by the HSC approach.

<sup>62</sup> “T3 Network Pilot Projects: Map and Harmonize Data Standards,” U.S. Chamber of Commerce Foundation, (accessed November 1, 2019), <https://www.uschamberfoundation.org/t3-innovation/pilot-projects>

<sup>63</sup> “America Makes & ANSI Additive Manufacturing Standardization Collaborative,” ANSI, Accessed August 29, 2019, [https://www.ansi.org/standards\\_activities/standards\\_boards\\_panels/amsc/](https://www.ansi.org/standards_activities/standards_boards_panels/amsc/)

# GUIDING PRINCIPLES AND PRACTICES

## FOR PUBLIC-PRIVATE STANDARDS DEVELOPMENT AND USE BY GOVERNMENT

As discussed throughout this paper, federal participation in voluntary consensus standards processes and ultimate adoption of voluntary consensus standards is mandated by the NTTAA and detailed in A-119 with further clarification in M-12-08.

A-119 lays out the following attributes for a voluntary consensus standards process:<sup>64</sup>

- **Openness:** The procedures or processes used are open to interested parties. Such parties are provided meaningful opportunities to participate in standards development on a non-discriminatory basis. The procedures or processes for participating in standards development and for developing the standard are transparent.
- **Balance:** The standards development process should be balanced. Specifically, there should be meaningful involvement from a broad range of parties, with no single interest dominating the decision-making.
- **Due process:** Due process shall include documented and publicly available policies and procedures, adequate notice of meetings and standards development, sufficient time to review drafts and prepare views and objections, access to views and objections of other participants, and a fair and impartial process for resolving conflicting views.
- **Appeals process:** An appeals process shall be available for the impartial handling of procedural appeals.
- **Consensus:** Consensus is defined as general agreement, but not necessarily unanimity. During the development of consensus, comments and objections are considered using fair, impartial, open, and transparent processes.

The ANSI Essential Requirements include similar attribute definitions, but go into much greater detail on process and implementation.<sup>65</sup> Because of this synergy, federal agencies are quickly able to evaluate a standard processes' applicability as a voluntary consensus standard by checking to see if it has been approved by ANSI as an ANS.<sup>66</sup> Similarly, ANSI accreditation can be used to help assess whether an SDO's processes are appropriately aligned with the A-119 attributes.<sup>67</sup>

ANSI accreditation and ANS approval are useful sorting functions for agencies, but they may be viewed as limiting. The world of voluntary consensus standards is broader than those approved by ANSI and often government agencies will want to, and should, use standards that ANSI has not approved. In the talent marketplace, for example, a number of key standards are not developed by ANSI-accredited SDOs or approved as ANS. The most recent iteration of A-119 acknowledges this by recognizing "the contributions of standardization activities that take place outside of the voluntary consensus standards process" and encourages agencies to consider such standards before developing government standards, as long as they meet the agency's needs.<sup>68</sup>

Requirements for openness, balance of interests, due process, an appeals process, and consensus are useful starting points for public-private voluntary consensus standards efforts. Nevertheless, while A-119 provides a solid foundation, effective collaboration hinges on open and transparent communication and a shared understanding across the ecosystem. Government agencies need to be key players in the development of voluntary consensus standards in order to maximize their value.

All levels of government in the U.S. should be involved in the voluntary consensus standards process. Federal guidance provides a useful starting point, but state and local perspectives are necessary as well. Government stakeholders need to participate fully in the process, not just simply adopt or reject standards that are proposed at the end of the process.

The goal of Public-Private Adoption of Open Data Standards is to identify and elaborate on implementation guidance and suggestions that will draw federal, state, and local government stakeholders towards full participation in voluntary consensus standards development for the talent marketplace. What might that full participation look like?

<sup>64</sup> Office of Management and Budget, Circular A-119, 16.

<sup>65</sup> "ANSI Essential Requirements," ANSI, Accessed August 29, 2019, <https://www.ansi.org/essentialrequirements>, 4.

<sup>66</sup> Interview with Gordon Gellerman, August 28, 2018.

<sup>67</sup> ANSI's neutral oversight of ANSI-accredited standards developers and standards approved as ANS includes many checks and balances, including regular procedural audits, that are unique and in place to ensure the integrity of a given voluntary consensus standard process.

<sup>68</sup> Office of Management and Budget, Circular A-119, 19-20.



Ideally, government stakeholders should operate as “business owners” and work with SDOs throughout the standards development process. They should understand their own business problems and be able to elaborate specific business cases. Throughout the standards development process, agencies should present those cases to SDOs that can then develop more specific use cases. Agencies can vet those test cases against their original use cases and contribute to continuous improvement towards a finalized standard that addresses those use cases. Once a standard is finalized, agencies can play a key role in developing and communicating best practices and guidance for adoption and use of the standard.

Other T3 Network projects will serve as testbeds to explore guiding principles and practices for standards development and create a real-world playbook for developing and applying data standards to achieve the best results. For example, the work of the Comprehensive Learner/Worker/Military Record Standards project will ultimately provide lessons about how SDOs, governments, and other stakeholders develop and share use cases.

## EXPLORING IMPLEMENTATION GUIDANCE FOR PUBLIC-PRIVATE STANDARDS DEVELOPMENT IN THE TALENT MARKETPLACE

### Guidance for SDOs as they Implement Voluntary Consensus Standards Processes

OMB memo A-119 describes five attributes for voluntary consensus standards processes—openness, balance, due process, appeals process, and consensus—that provide a strong foundation for public-private collaboration on standards development. Through interviews and discussions at the September 2019 Roundtable, the T3 Network project team identified a number of opportunities to clarify existing criteria and provide guidance for implementation of voluntary consensus standards development processes that align with A-119.

The attributes outlined in A-119 provide a strong foundation for voluntary consensus standards development processes. Research, interviews, and discussions occurring before, during, and after the September 2019 Roundtable validated the importance of these attributes and provided more detailed and expanded criteria for SDOs to consider when aligning their processes with A-119.

What A-119 refers to as “openness” includes two important qualities—transparency and an open process. While transparency reflects access to information about SDOs’ work products and processes, open process refers to the ability to participate in the actual standards development process.

SDOs should be transparent around their work processes as well as their work products. They can achieve this goal by providing public visibility into their process and documentation as well as sharing their work products publicly without undue restrictions on access or use, undue intellectual property restrictions, or registration requirements. Additionally, SDOs must ensure that their processes, and the resulting standards products, are open by remaining neutral on questions of technology.

SDOs should also have an open process that allows broad engagement before final decisions are taken, even if decisions are made primarily by full dues-paying members. Many leading SDOs in the talent marketplace already follow an open process to at least some degree. To be meaningfully open, SDOs must also identify and engage underrepresented groups.

To achieve balance, standards processes need to include representation across stakeholder “interest categories,” not just organizations. For SDOs focused on education and workforce development, this might mean involving organizations that focus on the entire education and work lifecycle from early childhood education through postsecondary education, training, and employment. SDOs can also offer online participation or review of meeting minutes to involve organizations that cannot participate in person because of time, geographic, or resource constraints. In addition to ensuring balanced representation, SDOs should make sure that no single interest group or organization dominates the decision-making process.<sup>69</sup>

Once SDOs achieve balanced representation, they should provide adequate due process as well as a clear, transparent appeals process. These two concepts are tightly intertwined and apply to stakeholders in the standards development process that are not members of the SDO as well as full SDO participants. Due process should allow members of the public

<sup>69</sup> “Guidance on ‘Balance’ and Outreach Within the American National Standards Process,” American National Standards Institute, 2016, 2.

and members of the SDO to weigh in during the standards development process as well as on the final outputs of that process. This can function in a similar way to the federal government’s public comment system for proposed regulations. Internally, SDO members must have a right of appeal that is clear and transparent. Appeal processes typically extend to the standards development process itself, but SDO members should also have the opportunity to question dues, fees, or other functional aspects of participation in an SDO.

The final attribute of a voluntary consensus standards development process identified by A-119 is consensus. Here, a process should exist that allows for dissension without hindering the SDO’s ability to reach decisions and speak with one voice. All comments should be considered and good faith attempts made to resolve them during the process. A wide range of stakeholders should be involved in reaching consensus.

Finally, the T3 Network project team’s research suggested the need for a new attribute specifically applicable to SDOs: Sustainability. In order to remain truly independent and have the staff capacity to carry out their work, SDOs should have a plan for sustainability for the organization as well as the standards they produce beyond their initial development cycle.

What follows is a more detailed description of suggested guidance for implementation of public-private standards development processes from research, interviews, and discussions occurring around the September 2019 Roundtable. These recommendations are not intended to establish a new set of required procedures or supplant existing documents like A-119.

**OPENNESS:** Requires including a range of organizations and individuals representing materially affected stakeholders in the work process.

- Access to the work process should include engagement opportunities that fall outside of full, membership fee-based participation.
- SDOs should consider how to identify and engage underrepresented groups and voices in their standards development processes and have a plan to address unconscious bias throughout their work. Stakeholder identification and engagement should occur during the “problem definition” phase of the standards development process.
- SDOs must ensure that their processes, and the resulting standards products, are open and useable by all affected stakeholders by remaining neutral on questions of technology.

**TRANSPARENCY:** SDOs should be transparent about their work process and work products (or the “inputs” and “outputs”). Transparency can include:

- Public visibility into the work process,
- Publicly available documentation, and
- Open access to the work product—including drafts prior to final approval—via public channels without fees, registration, or membership requirements.

**BALANCE:** The process should be balanced across “interest categories” not just individual organizations.

- In addition to ensuring balanced representation of stakeholder interests in the process, no one component of the talent management chain should dominate.
- In the education marketplace, whenever possible, the standards process should engage the broadest possible range of stakeholders (i.e. early childhood, preschool, primary, secondary, postsecondary/higher education, workforce, and training). At a minimum, participants should be drawn from the level above and below that of the relevant use case (e.g. a use case that directly impacts secondary education should engage representatives of the postsecondary and primary school systems).
- Major stakeholders should be identified and engaged proactively as use cases are defined.
- To achieve balance, standards development processes should include options for participation that account for geography, time, and resource constraints. They should provide opportunities for online participation, and should make minutes of all meetings— including records of all votes and decisions—available to participants.

**DUE PROCESS AND APPEALS PROCESS:** These are closely connected.

- Due process should include enabling members of the public who are not necessarily full members of the SDO to comment on their decisions, similar to the public comment system used for government regulations.
- Due process should allow members of the public and members of the SDO to weigh in during the standards development process as well as on the final outputs of that process.
- The appeals process should enable members of the SDO and materially affected stakeholders including those who commented on a public draft to appeal anything from dues and fees to technical and policy issues and decisions of the group. The process should be simple, transparent, and available for all SDO members and affected stakeholders.

## CONSENSUS

- Standards development processes should reach consensus while allowing for dissension, considering comments, and making good faith attempts to resolve them while still enabling the group to reach decisions and speak with one voice.
- The decision-making process should involve wide representation of membership in committee votes, membership votes, and board votes.

## ADDITIONAL ATTRIBUTE: SUSTAINABILITY

- SDOs should have a documented plan for sustainability that balances the need for financial contributions through membership with the need for inclusivity and openness.

## Encouraging Government Participation

The work of the Public-Private Adoption of Open Data Standards project has shown a clear need for government stakeholders to work more closely with SDOs at every stage of the standards development process, not just at the beginning and the end, while being cognizant of America's unique, public-private standards setting ecosystem. Both government agencies and SDOs can take several actions to make that full, balanced collaboration possible.

To engage government stakeholders in the first place, SDOs should identify and explain the incentives for them to participate. For example, what are the expected economic benefits or potential cost savings that a successful standard will bring to government? Government agencies should respond by contributing financially where resources allow and incentives align.

Government agencies must also develop processes and mechanisms to evaluate different standards development opportunities. As described above, ANSI accreditation and ANS approval provide one such mechanism, but they do not cover all standards. Where multiple, competing voluntary consensus standards exist, agencies should consider how and where to use their limited resources to engage with the process. They should follow good regulatory practice where competing standards exist. It is also important for agencies to be open and transparent about the process they use to decide which standards to engage with and use without adding additional reporting burdens.

Once government agencies are on board, they need to act as full participants in the standards development process. They need to identify the use cases they are interested in early and often, engage at each stage of the standards development process, contribute financially where resources allow, and continue to participate even after publication of the final standard. This approach aligns with the guidance in M-12-08 which directs agencies, once committed to a standards development process, to maintain that commitment, resources permitting.<sup>70</sup> SDOs should also report on their work regularly to allow agencies to flag instances when the SDO's policies or processes are not living up to the requirements of A-119.

As they participate, agencies should ensure that they have at least one representative engaged throughout the entire standards development process. Internal government teams should be made up of at least one business leader with the ability to control budget and plan strategy as well as policy and technical subject matter experts. Additionally, agencies should be prepared to support their technical experts and leadership throughout the standards development process.<sup>71</sup>

<sup>70</sup> "Principles for Federal Engagement in Standards Activities to Address National Priorities", The White House, [https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2012/m-12-08\\_1.pdf](https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2012/m-12-08_1.pdf), 3

<sup>71</sup> "Principles for Federal Engagement in Standards Activities to Address National Priorities", The White House, [https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2012/m-12-08\\_1.pdf](https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2012/m-12-08_1.pdf), 4



This paper proposes the following as starting points in further developing implementation guidance for government engagement in developing and using voluntary consensus standards.

## GOVERNMENT ENGAGEMENT WITH VOLUNTARY CONSENSUS STANDARDS PROCESSES

- Government should identify processes and mechanisms to evaluate different standards development opportunities.
- Government involvement should be planned at each stage of the standards development process:
  - Problem/business case definition,
  - Developing technical use cases,
  - Developing standards,
  - Testing and developing guidance and best practice resources,
  - Approving, publishing, and communicating standards, and
  - Reviewing standards implementation and impact for continuous improvement.
- Participating government agencies should ensure that at least one representative is engaged throughout the entire process. Possible models listed below.
  - One business leader/strategist involved throughout the process, with the ability to bring in and delegate to subject matter experts (SMEs) as necessary.
  - Two or three representatives to engage throughout different points in the process—a business leader/strategist and technical and/or policy SMEs. All can be involved throughout the process, participating as appropriate, with the business leader as final decision maker.
- Government stakeholders should define their needs and use cases early and often during the standards development process. When those needs are not met by the SDO in question, government should point out gaps vis-a-vis A-119 requirements or the particular business requirement not being met.
- Government should engage in standards development processes as early as possible and throughout the process. This can include making participation in SDOs an acknowledged and required part of some employees' jobs.
- Government should commit to robust professional development around the voluntary consensus standards system and engagement with SDOs.
- Government should contribute financially where resources allow and incentives align.
- Government should seek balanced participation in voluntary consensus standards processes and avoid exerting extensive or undue influence given America's unique use of public-private data standards.

## GOVERNMENT USE OF VOLUNTARY CONSENSUS STANDARDS

- Government should follow good regulatory practice if competing open, voluntary, consensus standards exist.
- Government should be open and transparent about the process by which they chose which standards organizations to engage with and which standards to use. Government processes should promote transparency without placing undue burden on agencies.
- Government should ensure that the SDO has identified incentives for government participation in a standards development process (return on investment, cost-benefit analysis, business cases, etc.).
- Government should continue to engage with the process after the initial publication of a given standard.

# CONCLUSION AND NEXT STEPS

Public-private collaboration on data standards for the talent marketplace will benefit learners and workers, employers, education and training providers, credentialing organizations, governments, and more. Data standards will give learners and workers more control over information about their education and experience, making it easier for them to find new jobs or advance at their current organizations. Standards will help companies find the best candidates more quickly at lower costs. They will help education and training providers ensure that their students are being set up to succeed in a rapidly changing job market. Finally, data standards will help governments make more effective policies and more efficiently allocate resources to support education and workforce development.

The only way to achieve these benefits is for government and private sector stakeholders to find new, more effective ways to work together. The T3 Network project team proposes a few important next steps.

## **Establish a standards collaborative.**

Data standards organizations, government representatives and other stakeholders should work together to plan and launch a standards collaborative. This collaborative should be designed to:

- Provide a leadership forum for addressing the most critical stakeholder needs and use cases for standards development and improving public and private coordination.
- Further develop implementation guidance for voluntary consensus standards organizations building on the ideas presented in this paper.
- Promote leading professional practices in the development and use of standards and how stakeholders including government can best participate in the end-to-end standards development and implementation process described in this paper.
- Provide information and links to voluntary consensus standard organizations and their standards and related resources to promote effective implementation and use by all stakeholders.
- Promote the alignment and harmonization of the standards using the methods and tools developed in the Map and Harmonize Data Standards project.

## **Establish a work plan starting with comprehensive learner/worker/military records.**

These stakeholders should also establish a work plan for the collaborative in addressing the major critical use cases for improving the talent marketplace. The standards collaborative should focus on stakeholder priorities and use cases that can best illustrate the critical role of the collaborative and demonstrate immediate impacts. The T3 Network project team recommends for the collaborative to focus first on comprehensive learner/worker/military records.

## **Strengthen the engagement of federal, state, and local government partners.**

The work plan should also explore how to strengthen the engagement of federal, state, and local agencies in working with data standards organizations to address the most critical use cases. Stakeholders should explore how to promote the benefits of voluntary consensus data standards for the talent marketplace to government. These benefits are not well defined, but they can include financial savings, increased efficiency, better policy making, among others. Stakeholders also should build on the federal data strategy and OMB guidance to enable federal agencies to more fully participate in the collaborative and work with data standards organizations.

They also should explore how to establish state and local policies similar to federal policies, especially OMB A-119, that could provide a stronger foundation for state and local agency involvement. In particular, stakeholders should use the Employment and Earnings Record Standards project as a way to engage states in exploring the need for these policies.

# APPENDIX

## Standards Bodies and Other Organizations Included in this Report

A4L	Access for Learning	IPEDS	Integrated Postsecondary Education Data System
ACTFL	American Council for the Teaching of Foreign Languages	ISO	International Organization for Standardization
ADL	Advanced Distributed Learning Initiative	LOINC	Logical Observation Identifiers Names and Codes
ANSI	American National Standards Institute	PESC	Postsecondary Electronic Standards Council
CEDS	Common Education Data Standards	SHRC	Standard Health Record Collaborative
CE	Credential Engine	ULS	UL Standards
CEN	European Committee for Standardization	W3C	World Wide Web Consortium
HR Open	HR Open Standards Consortium		
HSC	Health Standards Collaborative		
IEEE	Institute of Electrical and Electronics Engineers		
IMS Global	IMS Global Learning Consortium		

## ACKNOWLEDGMENTS

This paper was authored by Matt Rumsey and Joel Gurin of the Center for Open Data Enterprise with significant contributions from Laura Faulkner and Natalie Evans Harris of BrightHive, Alex Jackl of Bardic Systems, Andrew Reamer and Robert Sheets of the George Washington University, and Joshua Westfall of the U.S. Chamber of Commerce Foundation.

We would also like to thank those who attended the T3 Innovation Network's September 17, 2019 Roundtable on Public-Private Standards Development and Use By Government as well as those who agreed to be interviewed and provide written feedback for the development of this paper.

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