

Modern Roles and Processes
in Standards Development

IMPLICATIONS FOR PUBLIC-PRIVATE COLLABORATION

APRIL 2020



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INTRODUCTION & OVERVIEW

Both data standards and the standards development organizations (SDO) that develop, set, and maintain standards have grown in quantity and use over the years. This has been especially true for data standards relevant to the dynamic talent marketplace addressed by the T3 Innovation Network (T3 Network).

The focus of this paper is the U.S. approach to standards development and its application to data standards used in the talent marketplace by education and workforce partners. The U.S. approach is unique in its reliance on voluntary consensus standards that are developed through public-private collaboration among employers, government agencies, education, training and credentialing organizations, and SDOs. This public-private approach is embraced by the federal government through documents such as the Office of Management and Budget (OMB) Circular A-119¹ (A-119), that is used by federal agencies to evaluate the voluntary consensus standards development processes of SDOs before working with SDOs in the development or adoption of voluntary consensus standards.

The T3 Innovation Network² covered the unique approach to standards development in greater detail in the paper on “Public-Private Standards Development and Use by Government for the Talent Marketplace”³. That paper provided recommendations on how to further strengthen public and private collaboration in the development and use of voluntary consensus standards. It included recommendations for implementing guidelines reflected in A-119, encouraging government to participate in the standards development process, and providing additional guidance to SDOs for engaging government agencies as they develop public-private standards. It also included a recommendation to explore a public-private standards collaborative.

This paper complements and builds on that paper by further exploring the key roles of public and private stakeholders in the standards development process including employers, government agencies, and education, training and credentialing organizations with a special focus on the role of the business owner—who represent the process owners of their organization’s work, product, or solution and anyone that has a use case important to their work. This paper outlines and explains a model approach for standards development consistent with existing SDO processes. The model approach outlined in this paper is intended to promote a common understanding of the SDO process leading to greater transparency and participation from various stakeholders, including government agencies. In particular, it is intended to clarify when and how business owners and technical participants from stakeholder organizations should participate in the process to maintain the necessary balance for achieving results that matter to both public and private stakeholders.

This paper and the model roles and processes for standards development outlined below were reviewed and discussed with SDOs, government agencies, and other organizations during a December 18, 2019 webinar and additional conversations with stakeholders. What follows is a high-level overview of the involvement of business owners in the standards development process. Then the paper presents a model approach to standards development through a 14-step diagram and analysis of each step (the actors involved in each step and what they are expected to do). It is important to note that this paper was developed taking into consideration the plethora of SDO processes that exist in this space. It is not directive or prescriptive to one approach but rather an idealized way of looking at the general processes that allow a business owner to engage. The paper concludes with implications for sustainability when data standards development processes are open and transparent, provide a clear role for business owners and their return on investment (money, time, and resources).

1 Office of Management and Budget, Circular A-119, 16

2 The T3 Innovation Network is comprised of more than 450 public and private stakeholders representing business, government, education, and technology that are voluntarily working together to build an open, public-private data and technology infrastructure for a more equitable future. This network is exploring emerging technologies and data standards to better align education, workforce, and credentialing data with the needs of the new economy.

3 “Public-Private Standards Development and Use by Government for the Talent Marketplace,” U.S. Chamber of Commerce Foundation, December 2019, https://www.uschamberfoundation.org/sites/default/files/T3NetworkReport_PublicPrivateStandardsDevelopmentandUse.pdf



INVOLVING BUSINESS OWNERS IN THE PROCESS

As noted above, the intent of this paper is to increase the participation of the business owners in the standards development process. This has two facets:

1. Balancing the roles of business owners, data standards organizations (SDOs), and technical participants.
2. Improving government involvement while maintaining a balance of public and private stakeholders.

Business owners are individuals in an organization that represent the process owners of their organization's work, product, or solution and anyone that has a use case important to their work. Business owners represent a wide variety of organizations including employers, education, training and credentialing organizations, and government agencies (federal, state and/or local governments).

Some examples of business owners include a manager of data collection at a department of workforce development, a hiring manager for a large software firm, the CEO of a small business, and an admission's officer at an institution of higher education.

The business owner understands:

1. Their own business problems and the issues that they need to solve in the area the standard operates in.
2. What works and doesn't work in their business cases. Their business cases should be a framing of their issues, what the desired outcomes are, and who is involved.
3. The business owners' representative must have a basic understanding to compare their business cases against a more rigorous, technical use case or cases that fall out of their business case.
4. The importance for employers, education, training and credentialing organizations, and government agencies to be formal members of standards organizations, giving them a say in formally approving the standards they have reviewed as meeting their needs. Additionally, the importance of working with standards organizations to publish standards in ways that make them openly available to those organizations that are actively involved in referring to the standards in policies, regulations, data collection systems, etc.
5. The incentives and disincentives, level of effort, and complexities in their organization that may speed or slow the adoption of standards. These considerations can inform a strategy for standards development that is user-centered and balances complex requirements that can facilitate wider adoption and stakeholder buy-in early in the process.

As defined in the T3 Network's paper, "Public-Private Standards Development and Use by Government for the Talent Marketplace", when we refer to **Standards Development Organizations (SDOs)** we are referring to open, voluntary, consensus-based organizations that create, set, and maintain standards. Examples of SDOs include HR Open Standards Consortium (HR Open Standards), Access for Learning (A4L), Postsecondary Electronic Standards Council (PESC), IMS Global Learning Consortium (IMS Global), the Institute of Electrical and Electronics Engineers Standards Association (IEEE-SA), and the Common Education Data Standards (CEDS)—a government-led public-private standards development effort.

Technical participants are staff who have the expertise to build out the technical part of the standard and prototype its use in the field. Technical staff can come from the business owners (employers, government agencies, military, education, training and credentialing organizations, SDOs, or vendors) that are prototyping or piloting a new standard.

Why This Conversation Matters

Government is expected to use open, voluntary, consensus-based standards except where inconsistent with applicable law or otherwise impractical⁴. Yet, when voluntary, consensus-based standards are not available, there is a temptation to create a government standard instead of a voluntary, consensus-based standard that may become expensive, hard to maintain, and may not be widely accepted or used across public and private stakeholders.

⁴ Office of Management and Budget, Circular A-119, 16



As recognized in the “Public-Private Standards Development and Use by Government for the Talent Marketplace” this public-private collaboration must also consider the concerns of government agencies. One concern is unintentionally picking winners by working with certain SDOs over others. Another concern is participating in an unbalanced standards development process where there is a business case including only a few dominant market players who provide solutions.

This paper asserts that one answer to these concerns is the involvement of business owners from government as well as the private sector, throughout the voluntary, consensus-based standards process. There are three core reasons for this:

1. SDOs continuously strive to maintain an open, voluntary, consensus-based standards process that meet the needs of business owners. The “Public-Private Standards Development and Use by Government for the Talent Marketplace” paper addresses this in part. As understood by SDOs, if you participate in an open, voluntary, consensus-based standard process the resulting standard will be much more likely to produce the results that business owners need and allow them to see the SDO as a critical partner in achieving their goals.
2. However, the process of standard development is not always clearly understood by business owners that may not have a technical background or fully understand the role of standards. Additionally, it may not be clear for business owners where and how the business owner should be involved in the standards development process. This is especially applicable to government agencies that may not be aware of the important role of SDOs as laid out in federal policy.
3. Most SDOs rely primarily on stakeholder organizations to make up their membership and rely on membership fees for their operating budgets. Business owners, especially those from government agencies, are often uncertain on how they can participate in SDOs and whether they can join as members. Business owners can make SDOs stronger and more responsive to their needs if they encourage their organizations to join as members and be fully involved in the standards development process along with technical experts from their organizations.

In response to the second core reason listed above, this paper describes an ideal process that will provide a way for business owners to engage and balance the interests of government agencies and the private sector. We explore how to optimize business owners (including business owners from government agencies) involvement in critical steps of standards development to:

1. Ensure standards are addressing critical stakeholder needs (as defined in the business case).
2. Confirm the support of business case owners (e.g., employers, government agencies, education, training, and credentialing organizations) and the technology community (e.g., vendors, app developers) which will allow standards to be widely adopted, used, and relevant to the business case.

Given that standards affect all government levels and agencies, this paper explores the level of government involvement that is realistic and what types of government expertise are required at each stage (e.g., non-technical business case owners, standards experts, technical participants).

The final key piece is adoption of standards because widespread adoption of standards and their use in addressing the original business use case is the only way to achieve impact in the marketplace.

This paper is the beginning of a conversation, not the end point. It is our intention that this paper will spark conversations in the standards development community on how to strengthen the engagement of business owners to achieve results in the talent marketplace.

THE STANDARDS SETTING PROCESS

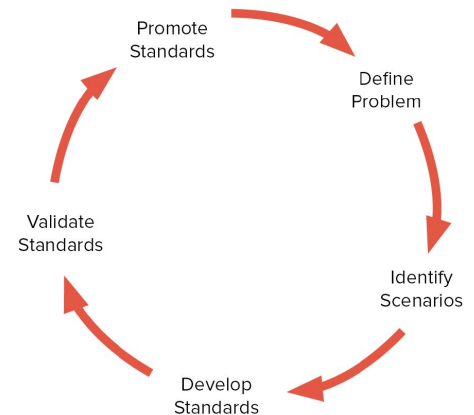
High Level Overview

Before presenting the 14-step model roles and processes for standards development, we will provide a brief overview of the five stages of standards development to provide a foundational understanding of the process and the challenges and opportunities that it creates. It is important to understand that we deliberately did not try to represent the decision-making process in this overview as the voting process and committee structure in each SDO is unique and this paper does not intend to evaluate, discuss, or critique those structures.

The five stages of developing standards are:

1. Define Problem
2. Identify Scenarios
3. Develop Standards
4. Validate Standards
5. Promote Standards

As explained below, the standards development process is iterative between stages and allows for multiple engagement opportunities for a specific stage until participants have consensus to move the process forward.



DEFINE PROBLEM

Develop a business use case on the problem to be solved and who are the major stakeholders that need to be engaged in exploring a standards solution to address the problem. This stage is used to define the mission and scope of a standards work group (e.g., charter).

This stage should involve people who have the role and authority to define business owner priorities and can devote the staff and resources to help develop and implement the standards solution. Additionally, this stage must include people that will stay engaged at different steps of the process, ensuring the technical uses are on point and testing if the standard can achieve results if adopted and implemented. Finally, participants in this stage should be prepared to promote the adoption and use of the standard in government and the private sector.

It is critical that teams or individuals assigned to the standards development process must collectively or singularly have some competence in data, technology, and policy so that they can engage with the policy implications of the business cases, the data realities of the information needed to support the business cases, and the technical expertise to deal with the technical standard itself. In rare cases this may be one person, but more often a team of people will be needed to engage with these different aspects.

IDENTIFY SCENARIOS

Translate the business use case into one or more technical use cases that are sufficiently worked out to explore standards solutions and develop draft standards. This involves building artifacts that can be understood by business owners while capturing technical and data issues for technical participants.

This stage involves business use case owners and technical participants working as a team to ensure there is proper translation and alignment of the use cases. This is where the business owner's involvement transitions to more technical staff while keeping the business use case owner briefed on progress.

DEVELOP STANDARDS

Development of proposed standards and the review of standards against the technical use cases. This involves building artifacts like short briefs (one -pagers or easy to understand diagrams) to keep business owners abreast of the technical and data development.

This stage involves standards and technical experts who will keep the business use case owner updated on progress.

VALIDATE STANDARDS

Test and revise standards against use cases. This involves engaging end-users and technical experts in the field on whether and how the standard can be effectively implemented and used to get the expected impact (results) in the business use case. In addition to validating the anticipated impact of the business case, this stage should also help benchmark the level of effort involved to implement a standard within existing real-world scenarios since this can be a major determinant in the success of a standard. Once tested and shown effective, the next step is to develop guidance and best practice resources to promote further adoption and use.

This stage involves SDOs and technical partners who receive suggestions from the business case owner on who to engage in the testing while keeping the business use case owner updated on progress. A diverse group of representative user testing and support for the standards is critical for future adoption and use.

PROMOTE STANDARDS

Publishing and communicating the standard to stakeholders is key for standards to be shared, used, and adopted by stakeholders. This is critical because a standard is only useful to the extent to which it is widely deployed. It is the business owner that can and should drive this process.

This stage involves the business case owner as the lead in working with their teams to understand the incentives that drive adoption and promote implementation.

MODEL ROLES & PROCESSES FOR STANDARDS DEVELOPMENT

The model roles and processes for standards development are outlined below through a 14-step diagram and analysis of each step. As noted, the model roles and processes are not a directive or prescriptive to one SDO approach but rather an idealized way of looking at the general processes that allow a business owner (definition on page 4) to engage. Although the diagram resembles a waterfall design it is intended to show the interaction between stages and allow for multiple iterations of a specific stage until participants have consensus to move the process forward. Additionally, the diagram and text exclude the voting and approval processes of each SDO as those processes are vastly different from one another and are not being considered in this paper.

We are sharing the model roles, processes diagram, and text as a guide for government stakeholders and other business owners to have a clear view of when and how they can engage in standards development processes. This paper can also serve as a resource for SDOs on how they can support business owner engagement in their standards development processes.

KEY DEFINITIONS

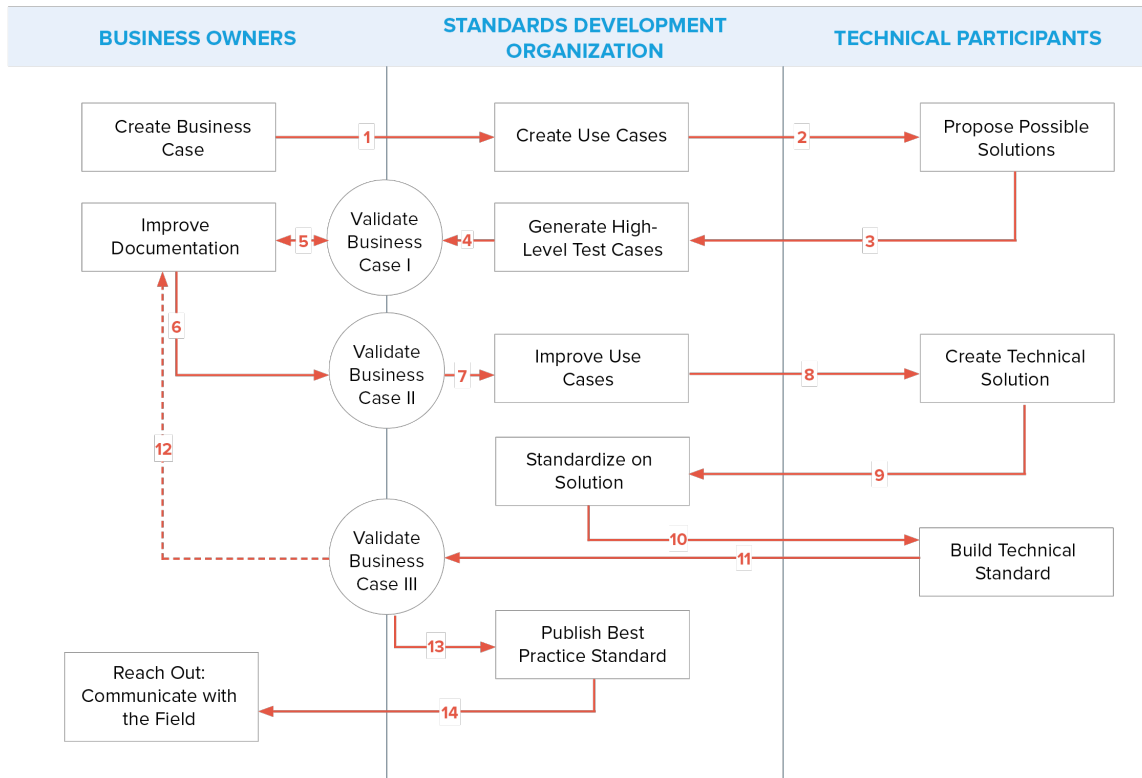
There are three terms used throughout the model roles and processes for standards development diagram and steps that are important to define in the context of this paper.

Business Case: This represents the interests, issues, and needs of the person—defined in this paper as the business owner—who would be using the standard. It represents some business problem and/or some function(s) or feature(s) of the business process that could be improved or resolved by standardization.

Use Case: A use case describes the specific workflows, stakeholder participants, and participating systems in describing the business case. There can be multiple use cases associated with any one business case.

Test Case: A test case describes a set of conditions and actions one can take to ensure any solution or standard developed is actually solving the use case.

Diagram 1: 14-Step Model Roles and Processes for Standards Development



STEP 1: Create Business Case⁵

Actors⁶: Business Owners

Business Context: Define Problem

The business owner would create the business case. They would be responsible for describing the problem space they are operating in and the specific business problems within the problem space (e.g., technical, data, process, or political). They would work with the SDO to turn their business cases into more rigorous and specific use cases. This would result in the output of a business case document and corresponding use case documents.

STEP 2: Create Use Cases

Actors: SDO

Business Context: Identify Scenarios

The SDO—through its staff and/or volunteer members—would take the business case and create more technical use cases from the business case. There may be multiple relationships between the business case and the more technical use cases.

⁵ A business owner could create more than one business case in this process.

⁶ The actors listed for each step are the actors needed to make the standards development process work. However, the actors listed do not need to be the only ones involved. If there is interest, time, and value to additional stakeholders, they can and should participate.

STEP 3: Propose Possible Solutions

Actors: Technical Participants

Business Context: Develop Standards

This is an opportunity for the technical participants, including those engaged through the business owner's organization, to brainstorm different solutions that might resolve the use cases in the context of the business cases they represent. This is designed to be done quickly in a short narrative structure to sketch out a path or paths forward.

STEP 4: Generate High-Level Test Cases

Actors: SDO and Technical Participants

Business Context: Identify Scenarios

Here the SDO will analyze the possible solutions, weed out ones that will not match the business needs and then refine them into high-level test cases. These are not technical test cases but a rigorous expression of the possible solution so that the business owners can understand the way the data, technical, and policy aspects of the solution would impact their business case.

STEP 5: Validate Business Case I

Actors: Business Owners

Business Context: Define Problem

Once the high-level test cases have been created by the SDO and the technical participants, the business owners would then vet that against the business case.

If the solution is perfect, the system would skip right to Step 8. Otherwise we would continue to Step 6.

STEP 6: Improve Documentation

Actors: Business Owners

Business Context: Define Problem

The business owners would then improve the business case to clarify their needs and required outcomes.

STEP 7: Validate Business Case II

Actors: Business Owners and SDO

Business Context: Validate Standard

The SDO and the business owners would validate the business case together using the previously established test cases.

STEP 8: Improve Use Cases

Actors: SDO

Business Context: Validate Standard

The SDO would work to improve the use cases. If these steps need to be re-iterated, they would be.

STEP 9: Design Technical Solution

Actors: Technical Participants

Business Context: Develop Standards

Once the use cases are agreed upon the technical participants would devise a technical solution design based on the use cases. This would take the form of a proposed standard object or service design.

STEP 10: Standardize Solution

Actors: SDO

Business Context: Develop Standards

The SDO would take the technical solution design developed by the technical participants and put it into the SDO standard output format and include some non-normative descriptive documentation (e.g., an executive summary).

STEP 11: Build Technical Standard

Actors: Technical Participants and SDO

Business Context: Develop Standards

The technical solution design would go through one more iteration with the technical participants and the SDO working together to refine the technical solution and get it in near final format including use case and business case documentation.

STEP 12: Validate Business Case III

Actors: Business Owners and SDO

Business Context: Validate Standard

The business owner and SDO would validate the technical standard against the business case as a final review and opportunity to adjust.

Validation at this point would include ways to validate that the standard benefits the ultimate beneficiary of the business case (end users) and validate the standard can be reasonably implemented by those responsible for managing the technical systems that deliver on that business case.

If there were serious issues it would go through one more iteration of steps 6-12. If there are minor adjustments those would be made by the SDO and move to Step 13.

STEP 13: Publish Best Practice Standard

Actors: Business Owners and SDO

Business Context: Promote Standard

The business owners and the SDO would work together to build a best practice and guidance document around the standard.

The quality and accessibility of documentation around a standard also has a significant impact on its success. It is important to validate and iterate on the quality of documentation.

STEP 14: Reach Out and Communicate with the Field

Actors: Business Owners, supported by the SDO

Business Context: Promote Standard

The final step is for the business owners—supported by the SDO—to do communication, outreach, and adoption pushes to get the standard implemented in their organizations, work, and communities.

RECOMMENDATIONS & CONCLUSION

This paper is part of a larger conversation around strengthening public-private collaboration in ways that improve SDO effectiveness and sustainability. This can be achieved in part by following three key recommendations from this paper:

- Provide transparency into the data standards development process, especially to business owners who play major roles in standards development participation and implementation.
- Clarify the roles of business owners and technical experts to help more stakeholders understand and participate in the data standards work.
- Show value in getting the results that matter to business owners in government as well as the private sector.

Openness and transparency of the data standards development process is key to getting more public and private stakeholders interested in and committed to the critical work of SDOs. This includes outlining expectations for when and how business owners and technical experts should participate in specific steps of the data standards development process. Additionally, providing greater insight into the data standards work and full process—as outlined in the 14-step model roles and process above—would allow stakeholders to better analyze the amount of time required and the right person within their organization to be involved in specific aspects of the work.

Transparency is also necessary to clarify how the SDO process will address the results that matter to business owners. It is necessary to help business owners understand the return on investment (ROI) they will receive from being members of SDOs and full participants at both the business owner and technical expert levels in the standards development process.

CONCLUSION

The T3 Network’s paper on “Public-Private Standards Development and Use by Government for the Talent Marketplace” extended the public discourse on the topic of standards development with recommendations on how to further strengthen public and private collaboration in the development and use of voluntary consensus standards. This paper builds on that approach by further exploring the key roles of public and private stakeholders in the standards development process with a focus on the role of the business owner. As recommended above, strengthening public-private collaboration in ways that improve SDO effectiveness and sustainability can be achieved when data standards development processes are open and transparent and provide a clear role for business owners and their return on investment (money, time, and resources).

To achieve better results, business owners must play more active roles in promoting the implementation and use of standards they helped develop. This includes supporting the use of standards with the developer community and their customers. They must also become full and active members of SDOs in ways that maintain an appropriate public-private balance and improve the funding and sustainability of SDOs. All stakeholders in the standards development process—employers, government agencies, SDOs, and education, training and credentialing organizations—have an important role to play to ensure that standards for education and workforce partners are appropriately developed, implemented, and utilized as a foundational part of an open, public-private data and technology infrastructure that meets the needs of an ever-changing talent marketplace.

ACKNOWLEDGMENTS

This paper was authored by Alex Jackl of Bardic Systems with input from 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 participated in the December 18, 2019 webinar on Model Roles and Processes for Standards Development as well as the SDOs, government agencies, and other organizations that provided feedback for the development of this paper.



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