TRANSFORMING U.S. WORKFORCE DEVELOPMENT POLICIES

FOR THE 21st CENTURY

EDITORS
Carl Van Horn, John J. Heldrich Center for Workforce Development at Rutgers University
Tammy Edwards, Federal Reserve Bank of Kansas City
Todd Greene, Federal Reserve Bank of Atlanta

Transforming U.S. Workforce Development Policies for the 21st Century

Carl Van Horn
Tammy Edwards
Todd Greene
Editors

2015

W.E. Upjohn Institute for Employment Research
Kalamazoo, Michigan

Part 2

Redesigning Workforce Development Strategies

7

Creating and Communicating Critical Information about Workforce Credentials

Stephen Crawford
Robert Sheets
George Washington University

The past decade has seen enormous growth in the number and variety of college degrees, educational certificates, industry certifications, occupational licenses, and badges that schools and certification bodies award, and which recipients present to employers as evidence of specific competencies. One result is increased uncertainty about the quality and value of labor market credentials and how they relate to each other. Employers wonder what holders of credentials really know and can do; students wonder about the value of a particular credential, compared to others, as they decide whether to invest time and money to obtain it. Regulators and student loan managers share these concerns, and all this uncertainty makes the labor market function much less efficiently than it would if there were greater transparency and trust.

This chapter argues that the solution to this problem is the voluntary standardization of the terms used to describe and endorse labor market credentials, combined with an open data registry for posting and accessing the resulting information. This standardization of terms would focus on the most important features of credentials—those that are essential for determining and comparing their quality, portability, and value in the labor market. It also argues that this solution can be achieved through a public-private collaborative and voluntary action.

In fact, an initiative along these lines is already well under way. Funded by a Lumina Foundation grant to George Washington University's Institute of Public Policy, in partnership with the American National Standards Institute (ANSI), this initiative involves more than

four dozen major credentialing stakeholders, including the nation's leading business and higher education associations and the U.S. Departments of Commerce, Education, Labor, Defense, Energy, and Health and Human Services. It encompasses all labor market credentials, from college degrees and educational certificates to industry certifications and occupational licenses to such microcredentials as "badges." This initiative is engaging these stakeholders through an open and collaborative process established by ANSI that has been successful in promoting transparency, interoperability, and trust in other sectors, including health care and energy. This process is designed to explore the role of a national public-private collaborative.

The results so far have been impressive. For many of 18 or so credential "descriptors" (i.e., relevant features critical in determining quality, portability, and value), the initiative has not only developed definitions, it has laid out the standardization problem, explained the basic dimensions and related coding schema, and spelled out paths to implementation. It has also developed detailed plans for a "reference model" for cross-walking competency statements written by different communities of practice, an open metadata registry for posting and accessing comparable credentialing information, pilot projects for testing several registry applications, and a collaborative of stakeholders that will assess the lessons learned from the pilots and decide whether to try to take the system to scale and make it sustainable through an appropriate governance structure and business model.

STANDARDIZATION AS A PUBLIC POLICY TOOL

This chapter's argument exemplifies a promising but underdeveloped approach to public policy implementation in education and workforce development: the use of standards to create or improve markets to serve public purposes. Standards are agreed-upon definitions of the fundamental characteristics and interfaces of all types of entities in the marketplace, including products, services, processes, systems, organizations, and even people. The United States and other countries promote the development and implementation of national and global standards and conformity assessment systems to facilitate trade, improve the

performance of industry, protect consumers, and increase competition (National Research Council 1995). Standards promote competition—and collaboration—by facilitating transparency and fostering "interoperability," thereby reducing information complexity and switching costs. Conformity assessment systems define the approaches for certifying that an entity conforms to the standards used to describe it in the marketplace, and they promote confidence and trust in the marketplace.

Unfortunately, standardization has received little attention in examinations of public policy tools. For example, Kamarck (2007) contrasts "government by market" to government by network (through contracts with private service providers) and government by traditional bureaucracy. Government by market, she argues, is the best option "when a policy consensus is reached that requires many hundreds of businesses or many thousands of people to change their behaviors" (p. 20). Most of Kamarck's examples, from bottle deposit laws to tradable pollution permits, involve financial incentives. She does not discuss the role of standards in creating markets that are transparent enough for incentives to work, much less the benefits standards can provide even without financial incentives. This can be seen clearly in how standardization has been used to promote comparability and improve quality in health care and improve environmental reporting and management.

Standards help create more effective markets by making products or services comparable enough that consumers can weigh their relative merits and determine the price-value trade-off. Such informed choice creates competition to deliver the qualities that consumers most value at prices they are willing to pay. If employers and students could make more informed choices about which credentials best meet their needs, they could obtain better results with lower transaction costs. Similarly, the economy would benefit from a more highly skilled workforce whose education and training were provided by more productive institutions.

The first section of this chapter examines the credentialing problem, offers a vision of an effective credentialing system, and explains the need for a broadly coordinated effort to realize that vision. The second section describes three complementary strategies for achieving the vision: 1) developing more standardized terminology for describing the market-relevant features of credentials; 2) developing similar standardized terminology for describing the quality assurance (QA) entities such as accreditation organizations that accredit, approve, or endorse

these credentials; and 3) creating a public-private "registry" for making available essential and comparable information about credentials and QA entities. The third section describes the kinds of registry applications that employers, students, workers, and others are likely to value, and explains the role of a "credentialing collaborative" in this initiative, modeled on ANSI collaboratives that have been used to coordinate standardization initiatives in other sectors. A final section summarizes the argument and draws some conclusions.

THE CREDENTIALING PROBLEM

Labor market credentials are attestations to the completion of specific training or education programs by students or to the passing of career-related knowledge and skill tests by candidates. They include but are not limited to educational degrees, certificates, industry certifications, and occupational licenses. Employers rely on them to provide second- or third-party validation—by a reputable credentialing organization or third-party assessor—of a job applicant's possession of certain knowledge and skills. The public relies on them for assurance that certain workers—from welders and electricians to pilots and physicians— are qualified to practice a particular occupation or work role.

An Increasingly Chaotic Credentialing Marketplace

For a modern, knowledge-based economy to function efficiently, the meaning of various credentials must be clear. Employers need to know what kind and level of knowledge and skill the holder of credential A has, compared to the holder of credential B, and how much to trust the claims made. Students and workers who seek to improve their position in the labor market need to know what jobs various credentials will qualify them for, what bump in earnings capacity they are likely to experience, how often they may have to renew a particular credential, and whether it is a stepping stone to higher-level credentials.

Similarly, those who give or lend students and workers money to pursue new credentials, including taxpayers, need to know what vari-

ous credentials mean and which education and training organizations to trust. Finally, credentialing organizations themselves, especially the good ones, have an interest in the ability of the market to recognize the distinctive features and value of the credentials they award.

In short, nearly all Americans have a stake in the nation's credentialing system, but unfortunately, the current system is not meeting their needs. Many employers express frustration at the difficulty of finding job candidates who possess the needed knowledge and skills, despite large numbers of people seeking work. Service veterans struggle to translate skills they learned in the military into civilian credentials and jobs. Young adults entering the labor market do not know what credentials will get them where they want to go and how best to obtain them. Individuals who need or wish to change careers find it difficult to translate skills and knowledge that may be of value in other occupations into credentials that will be recognized or college credits that will count toward a degree.

From the perspective of these "consumers" of credentials, the problem is the uncertainty about what different credentials signify. From the perspective of reformers, however, the problem is more systemic. It is the lack of transparency, trust, and portability in the nation's highly fragmented and complex credentialing "system." The result is unnecessarily high costs, wasted time, and inadequately informed decision making.

Skeptics may ask, if we've lived with this reality for so long, why bother trying to change it now? The answer is threefold. First, the problem has become more serious, as rapid growth in the number and variety of credentials, combined with the breakdown of traditional boundaries between different types of credentials (i.e., degrees, industry certifications), has intensified doubts about the quality and value of many credentials. Second, recent advances in information technology make it possible and practical, for the first time, to fix the problem. Finally, there is a new willingness among the key stakeholders to do the work required, due in part to their concerns about new competitors (e.g., for-profit, online, and competency-based providers) and growing pressure on governments to ensure the value of investments in postsecondary education.

Silos and communities of practice

Today's complex and fragmented credentialing "system" developed over many years, through the interplay of loosely connected education and training providers, personnel certification bodies, accreditation organizations and federal and state regulatory agencies and boards. One result has been the emergence of different "communities of practice," each using its own technical language and quality criteria that other communities find difficult to decipher. Further complicating matters, these communities are supported by highly specialized reporting and data systems, which, though designed to promote transparency within certain sectors, are difficult to integrate with systems designed for other communities. For example, higher education institutions participate in a community of practice that includes accreditation bodies and federal and state education agencies. This community has its own language and terminology for describing degrees and certificates, as well as its own quality criteria established through its accreditation systems and federal and state regulatory agencies. Similarly, industry and professional certification organizations participate in their own communities of practice—communities with different languages and quality criteria (i.e., standards) and different accreditation and regulatory bodies. More generally, education and training in the United States is highly decentralized and subject to limited oversight by the federal government and most state governments.

At the same time, there are overlaps among these communities, such as when college and university degrees are linked to certification or licensing systems—this is often the case in engineering and health care. These links are even used by the academic community as outcomes to demonstrate the quality of the education they provide. Such a segmented and complex system makes it very difficult for employers, students, workers, and government funders to compare and evaluate the major features and overall value of different credentials.

Growing number and variety of credentials

The credentialing marketplace is growing rapidly, as more employers require credentials beyond high school and more people pursue them. Increasingly, these credentials include educational certificates, industry certifications, and occupational licenses. A recent report

(Ewert and Kominski 2014) reveals that fully one-quarter of adults in the United States, many of whom have a degree as well, have one or more nondegree credentials, and that full-time workers with them have higher median earnings than those without.

The greatest growth has been in educational certificates, which now represent half of all community college credentials awarded. According to Georgetown University's Center on Education and the Workforce (Carnevale, Rose, and Hanson 2012), "Certificates have grown from 6 percent of postsecondary awards in 1989 to 22 percent today . . . [and] have superseded associate's and master's degrees as the second most common award in the American postsecondary education and career training system" (p. 3).

These new credentials have different and frequently changing names and claims regarding their quality and value. They vary as well in how they present their scopes of application, such as the types of employers and jobs that value them. They also vary in their claims regarding how they can be transferred, bundled, and stacked with other credentials, and whether and how they recognize prior learning. The lack of "stackability" of many credentials poses problems for students and employers. That's one reason employers in some industries (e.g., oil and gas, information technology) set rigorous standards for certifications, which has prompted several Texas community colleges to partner with them to create stackable credentials that allow students to reenter college seamlessly when they need more training (Garcia 2014). There has also been considerable growth in the numbers and types of industry and professional certifications offered in such major industries as health care, energy, information technology, and manufacturing. ANSI estimates that the number has climbed from 3,000 a few years ago to more than 4,000 now, with fewer than 10 percent of them accredited.[1]

Many of these certifications are sponsored or endorsed by long-standing industry and professional associations with strong employer engagement. Others, however, are the creations of independent assessment vendors with varying levels of industry involvement and recognition. In short, certifications vary widely in how to qualify for and attain them, and in their cost and market value.

Finally, there is the rapid expansion of "badges," MOOC (massive open online courses) certificates of mastery, and other "microcredentials" that can be aggregated into higher credentials. Badges are now

offered by such credible schools and programs as the Kahn Academy, Carnegie Mellon, MITx, and edX. This movement resembles the growth in "competency-based" resumes and portfolios, with links to documentation and evidence of performance, and in the skill profiles now being used in professional networking sites (e.g., LinkedIn), which have become a major resource for employer recruitment and hiring.

New credentialing models and breakdowns in traditional boundaries

The credentialing market is also witnessing the emergence of new, hybrid credentialing models that combine various features of the traditional models. To be sure, there have always been relationships among different types of credentials, such as when professional certifications require certain educational credentials and are integrated into education degree and certificate programs. However, such combining has grown more complex and varied. Competency-based credentialing, involving direct and prior learning, is leading many colleges and universities to adopt characteristics normally associated with industry and professional certifications. Some institutions are "unbundling" assessment and credentialing from education and training, making them look even more like certification organizations.

In addition, many college programs, especially those moving to competency-based models, are now fully integrating industry and professional certifications into their degrees and certificates, and folding the costs of these certifications into tuition and fees. This integration is being reinforced by industry- and government-led initiatives to promote comprehensive education and career pathways. Some colleges are developing industry certifications in cooperation with national and regional industry partners and/or the federal government, and are seeking accreditation from industry accreditation organizations in addition to traditional higher education accreditation bodies.

On the other hand, some industry and professional certification programs do not share many of the features normally associated with certification systems, such as ongoing renewal requirements and due process procedures for "removing" a certification from an individual. At the same time, they are developing programs or partnering with others to offer online education and training services, much like educational

degree and certificate programs. This growing trend is bringing down the traditional "arms-length" relationships between industry certification and education and training programs, and is now raising major questions about the third-party, independent status of industry certification organizations.

Finally, the badge movement and related efforts regarding competency-based portfolios and skill profiles on professional networking Web sites are sparking further innovation in credentialing. These developments challenge widely held assumptions about what credentials are and what differentiates them from each other and from other attestations of competencies now circulating in the marketplace. In short, there is growing heterogeneity within these communities but increasing overlap among them, adding to the complexity of the broader credentialing "system."

Crisis of Confidence

The rapid growth and change in the world of credentialing is shaking confidence in the quality and value of almost all credentials. Employers increasingly complain that college graduates lack the skills expected and needed. According to a recent poll (Gallup and Lumina Foundation 2014), 96 percent of chief academic officers think their institutions are equipping their graduates for the workforce, but only 11 percent of employers strongly agree. At the same time, high unemployment and debt among college graduates is causing students and families to question the value of many higher education credentials. All this is sparking spirited debates about whether and how colleges and universities should work with employers to better understand their needs and to better communicate the knowledge and skills they teach and the assessment practices they use.

In response, "accountability initiatives" have arisen that are pushing educational institutions to define and operationalize program outcomes, including student learning, credential attainment, and employment and earnings. Similarly, competency-based credentialing is raising questions about the competencies involved and the assessments and QAs used to create confidence in them. Reinforcing these questions are growing concerns about credit transfer, prior learning assessment, and the lack of recognition of competencies of posttraditional students with

extensive work experience and training, including returning veterans. The proliferation of industry and professional certifications, including similar ones competing in the same industry, is raising related concerns in the certification community, where there is a growing awareness that certifications have varying levels of employer support and recognition.

Most efforts to address these problems have focused on one credentialing silo or issue. Now, however, several initiatives are building connections among credentialing reform efforts. They include the Lumina Foundation's Degree Qualifications Profile, Department of Labor initiatives around industry-based competency models and competency-based work profiling systems (using O*NET), state initiatives around career cluster frameworks and sector-based pathways, industry endorsement initiatives, and such global initiatives as Europass, which is promoting the standardization of credentialing documentation across Europe. Most of these show considerable promise in their chosen arenas and are starting to make connections to other related initiatives. Yet, their varying frameworks, technical terminologies, and quality criteria are not likely to yield the improvements needed in comparability and interoperability (e.g., mutual recognition, credit transfer) across different types and dimensions of credentials. Real progress requires a more comprehensive approach.

A decade or two ago, talk of a comprehensive approach would have been utopian. Three recent developments, however, suggest that the time has come to attempt it. First, the growing support for and practice of competency-based education has set the stage for a shift to credentials that describe the competencies achieved, preferably in comparable terms. Second, any attempt in the United States to create a more coherent credentialing marketplace stands to benefit from the wealth of experience acquired by other countries making similar efforts, most notably those in the European Union. Finally and most importantly, advances in Web technologies now make it reasonably cheap and easy to create more standardized terminology and a public-private registry for all kinds of credentials.

A comprehensive approach begins with a broad vision of an effective credentialing system and spells out ways to achieve it. Given the preceding analysis of the problem, we believe that the vision should be of a competency-based credentialing system characterized by high lev-

els of transparency, quality, trust, and portability. Transparency would enable interested employers, whether individual firms or industry associations, to communicate clearly their competency requirements. Such communication would be via a standardized terminology that is also used by—or readily translated into—the terminology used by credentialing organizations. It also would enable reporting the distribution and concentration of employers providing this information. The quality and trustworthiness of credentials would be as high as needed, because credentialing organizations could be easily assessed on whether they address employer-defined competencies and whether the level of QA assures that credential holders have the competencies represented by the credentials.

Trust would be high because employers could clearly communicate the level of QA they require, using a standardized terminology for describing quality criteria that is also used by credentialing organizations and those who accredit and endorse them. This would allow students to use these quality criteria and accreditation and endorsement signals to choose pathways for attaining high-quality and trusted credentials. Finally, credentials would be more portable than today because employers everywhere would use more standardized terminology to define competency and credentialing requirements (including QA criteria), and credentialing organizations would do the same. This improved portability would allow students to build competency-based, stackable credentials from multiple credentialing organizations that are more flexible in meeting variable and changing employer requirements.

In summary, the fragmented and complex nature of labor market credentialing in the United States, with its distinct communities of practice using different technical languages and quality criteria, make it very difficult for stakeholders to compare and evaluate different credentials. The recent growth in the numbers and kinds of credentials is exacerbating this problem and producing a crisis of confidence in credential quality and value. The solution involves taking advantage of recent advances in information technology to create a credentialing system characterized by high levels of transparency, quality, trust, and portability.

Three Complementary Strategies for Solving the Credentialing Problem

Let us turn then to the nature of and requirements for transparency, trust, quality, and portability.

Transparency is present when labor market participants (such as students, workers, and employers) and stakeholders (such as funders and regulators) have access to complete, accurate, and "comparable" information on all the features of credentials that are important for determining quality and value. These features include how credentials can be attained and used, eligibility, costs, where they can be applied, and how different credentials relate to each other in terms of mutual recognition and transfer as well as pathways to other credentials and careers.

Quality has many meanings but in general can be defined as "fitness for intended use." Determining whether a credential is fit for its intended use requires information on intended application and how competencies were developed and validated with employers for this intended relevance and whether employers confirm or endorse their application. It also requires information on intended value, including labor market value (e.g., employment and earnings) and transfer value (e.g., credit transfer). Another widely cited dimension of quality is whether a product or service is provided "defect free." Applied to credentialing, this dimension refers to whether individual credential holders actually have the competencies described in their credentials within acceptable levels of variance. Ascertaining that requires information on the type of assessment used to determine competency and the degree of validity and reliability involved in awarding credentials. It also requires information on QA systems.

Trust is critical because it permits confidence that the information provided in the marketplace is complete, accurate, and up-to-date, and that there are systems in place to review and reaffirm this over time. Different types of credentials require different levels of confidence, depending on employer needs, government regulations, and the risk tolerance of market participants. Of course, providing higher levels of confidence usually means higher costs. In some cases, employers may settle for self-declaration by individuals; in others, they may demand evidence from credentialing organizations. In more critical cases, how-

ever, they may require some type of third-party review to ensure accurate and reliable information.

Portability is present when credentials are sufficiently "interoperable" to allow mutual recognition of competency attainment across various types of credentials, and are recognized across different industries and occupations as well as states and eventually countries. Interoperability is the necessary foundation for competency-based, stackable credentials from multiple credentialing organizations that are more flexible in meeting changing employer requirements.

Improving transparency, quality, trust, and portability requires robust data systems for publishing and accessing comparable information on key features of credentials. It also requires credentialing organizations and their accreditation and regulatory partners to voluntarily post these data to some kind of registry. Doing so need not be costly; indeed, today's technologies make it possible to automate the updating of posted information. Below we spell out the three strategies we recommend for realizing this vision of a credentialing system characterized by high levels of transparency, quality, trust, and portability.

Strategy 1: Developing More Standardized Language

The first strategy addresses the need for comparable information about all types of credentials related to quality and value. There are many different ways to provide comparable information, but they all require some type of standardized terminology involving common definitions and classification frameworks and typologies. Below is our first cut at defining the key features or "descriptors" of credentials and credentialing organizations for promoting transparency, portability, trust, and quality.

Transparency and portability: What do market participants need to know?

- Credential name, version, and type. The name(s) used to describe the credential in the marketplace, along with related classification names (e.g., CIP codes) used in reporting systems; the version of the credential that is being described; and the type of credential based on common definitions of credential types such as degree, certificate, certification, and license.

- Competency requirements. The competencies required to earn a credential, expressed in a formal and structured language that make any competency description easily comparable to competency descriptions expressed in other formal and structured languages. Further explanation is provided below.

- Type and scope of primary application. The intended type of application and the scope of the primary application, such as job roles (e.g., types of occupations), industry context (e.g., health care), and geographic area.

- Labor market value. The degree of employer recognition and support, and the expected career returns in terms of employment and earnings or other types of recipient valuation, such as recognition and status.

- Credential transfer value. How the credential relates to other credentials for transfer or recognition of competencies (e.g., eligibility, mutual recognition, credit transfer, advanced standing) and to meet the requirements of other credentials.

- Education and career pathway connections. How the credential fits with other credentials within education and career pathways.

- Eligibility requirements. What is needed to get the credential in terms of assessment, work experience, education (e.g., high school diploma, college degree), and other eligibility requirements?

- Education and training opportunities. The available education and training opportunities to prepare for assessments, gain necessary education requirements, and become credentialed.

- Credential holder profile. The number and characteristics of credentialed individuals and their geographic locations.

- Occupational regulation and licensing. The relationship to federal and state occupational and professional regulation and licensing requirements.

- Maintaining credentials. What is needed to maintain a credential's status in terms of continuing education or other requirements?

- Credential removal. Can the credential be revoked and if so, what is the process?

- Costs. The costs involved in meeting eligibility requirements and receiving and maintaining the credential.

Trust and quality: What assurances do market participants need?

- Competency development and validation. The process used to identify, develop, and validate competencies based on the scope of application.
- Assessment. How competencies are assessed and documented and what level of assurance (i.e., validity and reliability) is provided that people have the required competencies.
- Quality assurance. What systems do credentialing organizations have in place to assure that all requirements, including assessments, are met in awarding credentials; that the credential is providing the intended value (e.g., labor market value); that all information provided to the market (transparency) is accurate and reliable; and what third-party QA entity accredits, approves, or endorses their credentials?
- Authentication. What systems do credentialing organizations have in place to authenticate credential holders and communicate the current credentialing status of all credential holders to employers and other labor market participants, as well as to education and workforce development funders and regulators?
- Version management and control. How the system manages changes in all major features over time and keeps records on credentialing system versions (e.g., competency requirements, assessment systems, costs).

It will not be easy to develop a more standardized terminology for these key descriptors across all segments of the credentialing marketplace. The major segments already have long-established and specialized languages that may be difficult to integrate into a common overarching framework. Success will require the development of frameworks or reference models that enable different credentialing communities to crosswalk and translate different languages, allow for constant change and adaptations, and promote greater harmonization over time. It also will require standardized terminology that permits enough customization to meet the needs of specialized communities without losing

comparability. Other challenges include how to operationalize many of these descriptors and establish a data infrastructure for sharing the resulting data. Finally, another challenge is how to provide the necessary market incentives for credentialing organizations to provide this comparable information.

Despite these challenges, developing a more standardized terminology is entirely possible. Moreover, it would provide the needed foundation for public and private initiatives to improve credentialing *quality* in the United States.

- Industry organizations could more clearly define the quality criteria they use to recognize and endorse credentialing systems, and could align and harmonize endorsed systems in their career and education pathway frameworks.

- Higher education degree frameworks such as the Degree Qualifications Profile (DQP) could use this terminology to improve the understanding of competency levels for each type of degree and to improve the capacity of institutions to develop clear and assessable competency statements—statements that are appropriate for their degree level and their connections to other types of credentials (e.g., industry certifications).

- Credentialing organizations could more easily benchmark themselves against other credentialing organizations, national standards, quality criteria established by industry organizations, and the quality criteria established by reform initiatives and leading qualification frameworks.

- Third-party higher education accreditation organizations and accreditation organizations for industry certifications could use the more standardized terminology to align and harmonize their QA systems.

- Government agencies could use the terminology to align and harmonize their own quality criteria with accreditation organizations and industry and reform initiatives. The new language could also provide a clearer and more consistent funding and regulatory environment.

- Federal and state government agencies could use this terminology to build better consumer and labor market information systems based on a registry.

Strategy 2: Aligning QA Systems

The second strategy addresses the need to align and harmonize accreditation systems and industry endorsement systems, as well as related credentialing reform initiatives attempting to improve QA in the credentialing marketplace. As in the first strategy for credentials, it focuses on using more standardized terminology to communicate clear and comparable quality criteria for all types of credentialing. It also addresses how these QA systems and related initiatives could leverage the proposed registry to improve "transparency" in the credentialing organizations they endorse, accredit, or otherwise approve.

Alignment and harmonization of quality criteria

As described above, the existing credentialing system involves a wide variety of accreditation, approval, and recognition organizations using a broad range of criteria to provide QA. Although there have been attempts at collaboration among these organizations, little progress has occurred.

In higher education, the national, regional, and specialized organizations that accredit institutions and programs express criteria for quality in very specialized languages and terminologies that their communicates of practice have developed over decades. Similarly, in the world of industry and professional certification, a wide variety of national and international accreditation organizations use their own quality criteria. There are points of connection between higher education and industry accreditation involving professional associations (e.g., engineering), but most organizations operate largely within their respective QA silos.

This situation is further complicated by the tendency of federal and state regulatory and licensing agencies to use still different criteria for assuring quality, and leading national and state industry associations to endorse credentials as "industry-recognized," using yet different criteria. In addition, state education agencies (e.g., Career and Technical Education offices) produce their own lists of recognized industry credentials, and federal, state, and local workforce development agencies designate approved providers of education and training.

Given the confusion in the credentialing marketplace described in the problem statement above, there is a clear need to align and harmonize the quality criteria used by these public and private QA orga-

nizations. There are many approaches to doing that. One is to use a common terminology to standardize the way these organizations classify and communicate their quality criteria, as well as the actions (e.g., status granted to a credentialing organization or specific credential) they take and what they are assuring when they accredit, approve, or endorse. This would provide greater transparency in comparing quality criteria without requiring adoption of the same criteria. It would allow stakeholders to compare and contrast the quality criteria among different accreditation organizations so they more fully understand what accreditation means for a credentialing system or organization. Such a change would respond to the recommendations of accreditation expert Paul Gaston (2014) for moving toward more consensus, alignment, and coordination of accreditation standards, protocols, actions (e.g., accreditation status), and vocabulary.

This also could serve as a useful first step toward further alignment and harmonization across higher education and industry accreditation, as well as industry and government recognition and endorsement systems. This increased transparency and identification of commonalities would lower costs for institutions and reduce the redundancy of QA processes that could lead to further collaboration among QA systems. There are many commonalities among various credentialing QA systems. For example, most QA bodies are moving toward the assessment of outcomes rather than on the many processes that lead to outcomes. Inclusion of these common components in a credentialing registry would increase the transparency and comparability of QA systems, which themselves would experience market and regulatory pressure to cooperate once the opportunity existed.

In sum, the second strategy would align endorsement, approval, and accreditation quality criteria; facilitate transparency and benchmarking; and engage QA systems in encouraging credentialing organizations to use the registry to meet transparency requirements. Success would require an unprecedented but entirely plausible coordination of all public and private organizations involved with QA in the credentialing marketplace, ranging from higher education and industry accreditation organizations to federal and state regulatory agencies to industry-led endorsement systems. The credentialing initiative described in the beginning of the chapter involves many of these bodies, and thanks to its partnership with ANSI, it is well situated to reach out to others.

Strategy 3: Creating a Public-Private Credentialing Registry

The third strategy addresses how, in practice, to provide more comparable and trustworthy information to the credentialing marketplace based on the standardized terminology and related frameworks described above. This plan reflects three assumptions. First, whatever the approach, it is vital to address the scale of the challenge—the growing number and variety of credentials and the sheer number of documents and data systems that must be accessed and integrated to provide comparable information on the proposed descriptors. Second, effectiveness requires building from existing procedures used by credentialing organizations to communicate information in the marketplace and related data infrastructures that support these efforts. Third, it is important not to impose additional reporting burdens on credentialing organizations and their accreditation and regulatory bodies, as well as other QA entities.

Finally, transparency requires guides and tools that can present comparable information in usable ways. A sound approach will promote the development of guides and tools for employers, students, and other stakeholders who may use this information to improve credentialing quality. This could involve using techniques like those employed in national and state "open data" initiatives in health care and transportation. These initiatives would provide applications developers with free access to a rich data infrastructure to create a wide variety of applications ("apps") for different types of stakeholders.

Harnessing the power of credentialing Web sites

Publicly accessible and searchable Web sites based on widely adopted Web technology standards are by far the most widely used "one-stop" mechanism for communication within the credentialing marketplace. These sites use content management systems to publish information from multiple sources, including both documents and databases. Most credentialing organizations already use their Web sites to publish information on some of the proposed "descriptors" for credentialing systems and provide linkages to internal or external supporting documents and databases. They also use their sites to address "transparency" requirements from federal and state regulatory agencies and accreditation organizations.

For example, most universities, four-year colleges, and community colleges use their Web sites to provide information on their different programs, including those programs' scopes of application, course requirements (which may involve student learning outcomes), and application and eligibility criteria as well as tuition, fees, and other costs. They also provide linkages to documents that contain more detailed information, including college catalogs and reports on institutional and program performance and accreditation status. Starting with credentialing Web sites addresses the problem of scale, because existing Web sites already contain more detailed information on more types of credentials than is currently available in any existing national or state reporting system.

These Web sites will soon be able to do much more. The World Wide Web Consortium (W3C) and related global and national standardization organizations are helping to promote Web technologies that move the Web from a "Web of documents" to a "Web of data," housed in distributed data systems throughout the world. Semantic Web technologies enable people to publish data on the Web in the form of structured documents and databases; build common terminology, vocabularies, and advanced ontologies; and develop query languages for accessing and using these data through applications. These Web technologies, plus advances in computational linguistics or natural language processing, provide the foundation for the Credentialing Registry discussed later in this chapter.

There are two major problems with using existing credentialing Web sites as the building blocks for a national public-private data infrastructure. First, these sites provide noncomparable information presented in widely varying formats and organizing structures. This information is also drawn from a variety of source documents and databases, some of which are managed by other organizations, such as data clearinghouses and state regulatory agencies. Second, they are not usually designed to regularly publish and share information with other data systems and maintain a regular updating schedule or manage version control with historical records of previous versions. However, these problems can be fixed with the following two solutions:

1) **Develop data standards for the common terminology.** Examples include standards developed through the Common Education Data Standards and the Postsecondary Education Standards Council as well as standards developed for human

resource information systems, such as work undertaken by the HR Open Standards Consortium. These data standards should address all types of data contained in both traditional data systems and structured documents (e.g., competency statements found in technical documents) consistent with Web standards and tools discussed earlier.

2) **Develop a public-private registry.** Establish an open public-private registry similar in design and function to the existing Learning Registry.[2] This registry could be based on a decentralized and open distribution network model that fully reflects the diversity and segmentation of the credentialing marketplace and the diversity of the communities organized around different types (e.g., degrees and certificates) and domains (e.g., industry pathways, state licensing, and regulation) of credentialing. The distribution network could involve network nodes within and across communities that could be used by both producers (i.e., credentialing organizations) and users (e.g., applications developers).

   • **Share credentialing system data**. The registry could be used to publish, share, and access comparable data about all types of credentialing systems based on data standards for the common language using formal, comparable definitions, coding systems and dictionaries, and frameworks, taxonomies, and other types of schema. Credentialing systems would be able to publish (push) data about themselves and access (pull) comparable data about other systems. This could include the publishing and sharing of descriptor schema (e.g., coding schemes, taxonomies, classification frameworks) and crosswalks. It could include guides and tools for publishing, accessing, comparing, and analyzing credentialing system descriptions and schema.

   • **Link to related registries and data systems**. Establish linkages with related registries such as the Learning Registry as well as with possible future registries for occupational descriptions or e-portfolios, especially registries that contain common or related data items such as competencies. Establish linkages to other data systems including national and state longitudinal data systems and clearinghouses.

- **Create an applications marketplace**. Support an open marketplace of Web-based applications. These applications would be designed to improve transparency for stakeholders, including employers, education, and training providers, and federal and state government funding and regulatory agencies. They could provide guidance on writing competency statements, provide more accessible and valid consumer and labor market information based on career pathway and education qualifications frameworks, develop more efficient clearinghouses for credit transfer and market value recognition, develop credentialing resource centers for compiling and sharing information on different types of credentials or those meeting specified quality criteria, and develop employer and industry endorsement systems or consumer rating systems for credentialing systems based on their credentialing transfer and labor market value.

This strategy will require the alignment and harmonization of current data standards initiatives, as well as the leveraging of Web technology standards that are critical in harnessing the potential power of credentialing Web sites and registries. These requirements are addressed below when discussing the role of a credentialing collaborative.

BUILDING AN OPEN APPLICATIONS MARKETPLACE

The ultimate value of a credentialing registry containing comparable data on credentials and QA entities will be determined by how it is actually used by employers, students, and workers, and by labor market intermediaries to improve the credentialing marketplace. This will require an open applications marketplace with application developers providing new Web tools and resources for all major stakeholders in the credentialing marketplace. Guided by an advisory committee representing these stakeholders, the initiative described here has identified several potential applications that could add value in the credentialing marketplace. The next phase of the initiative will refine and test several "apps," including the following three, on a beta-version of the credentialing registry.

1) **Credentialing guidance**—compiling directories or inventories of credentials that are based on the criteria (e.g., scope of application, market value) defined by industry groups, government agencies, and career and education guidance systems.

2) **Employer signaling and talent pipeline management**—providing tools for employers to use for communicating their competency and credentialing requirements, and working with education and training and credentialing partners to improve their talent pipeline performance.

3) **Credentialing transfer value**—providing tools to improve the transfer value of credentials based on competencies rather than more traditional currencies, such as credit hours through competency-based clearinghouse applications that can analyze a wide variety of credentials, such as degrees, certifications, badges, and prior learning assessments.

ROLE AND SCOPE OF A CREDENTIALING COLLABORATIVE

At the beginning of the chapter, we said that government by market could be achieved through the use of standards and financial incentives. But how do standards get developed and enforced? Informal de facto standards are based on widespread use or the dominance of one or more players that use or support them. Formal standards are developed through a process managed by recognized standards development groups under the coordination of national and global standards governance bodies. These can be voluntary and implemented based on their value and acceptance in the marketplace (and often promoted through government policies). Alternatively, they can be involuntary and enforced through laws, regulations, and other policy tools. We favor voluntary standards for defining credentials in the United States.

The development and implementation of voluntary credentialing standards requires a broad-based public-private partnership that brings together all the major stakeholders (public and private). The best way to do all this is through a credentialing collaborative similar in role and function to public-private collaboratives facilitated by ANSI.

Background: ANSI and the Global Standards Network

The United States and other countries promote national and global standards and conformity assessment systems for a wide variety of purposes, including facilitating global trade, improving industrial performance, increasing competition, and protecting consumers. ANSI facilitates the development of American National Standards by accrediting standards-developing organizations. It also accredits conformity assessment organizations to determine the fulfillment of standards requirements. ANSI also provides the bridge to global standards and conformity assessment initiatives and serves as the official liaison to such international bodies as the International Organization for Standardization and the International Accreditation Forum. This is an important connection, enabling the United States to address increasingly global credentialing challenges in cooperation with other countries.

Need for a Credentialing Collaborative

Quite separately from its accrediting work, ANSI frequently establishes "standards collaboratives" (formerly called panels) to explore the need for improvements in critical areas. It established a Healthcare Information Technology Panel to harmonize and integrate standards for sharing health care information for clinical and business applications. It has conducted similar collaboratives for energy efficiency, homeland security, nanotechnology, nuclear energy, biofuels, and electronic vehicles. In each case it staffed these as a neutral convener of all the major stakeholders. An ANSI-sponsored collaborative does not develop standards itself but rather works with stakeholders to harmonize existing ones, identifies any need for additional ones, and develops plans for their development by others.

The next phase of this credentialing transparency initiative will involve the formation of a similar standards panel on credentialing, with one minor and one more substantive difference. The minor one is that the collaborative will be convened and hosted by ANSI's affiliate, Workcred, rather than ANSI itself. The bigger difference is that the stakeholders in this collaborative will focus on evaluating the value produced and lessons learned from the next phase's testing of a beta-version of the registry and of the three "apps" mentioned above. Early

in the process, working committees of stakeholders will establish the performance measures, metrics, and benchmarks. Later they will assess the test results against these benchmarks and determine whether and how to take the system to scale, including what kinds of governance and business models would make it sustainable.

CONCLUSION

This chapter began by showing how a complex and confusing credentialing system is hurting employers, students, workers, and the economy. It then presented three strategies for making the system more coherent and efficient. Together, these strategies emphasize the use of voluntary standardization to achieve transparency, consistency, and comparability in descriptions of all credentials and to align all quality criteria. They employ a distributed, Web-based data infrastructure—a registry—to enable cheap and easy access to meaningful and current credentialing information. The chapter also described an existing initiative that has engaged all the key stakeholders in a promising effort to implement these strategies. Future publications will report on its results.

Notes

1. Personal communication from Dr. Roy Swift, ANSI's Chief Workforce Development Officer, April 2014.
2. The Learning Registry is a new approach to capturing, connecting, and sharing data about learning resources available online established by the Departments of Education and Defense but supported by many other organizations, including the Library of Congress. For more information, see www.learningregistry.org.

References

Carnevale, Anthony, Stephen J. Rose, and Andrew Hanson. 2012. *Certificates: Gateway to Gainful Employment and College Degrees: Executive Summary*. Washington, DC: Georgetown University Center on Education and the Workforce.

Ewert, Stephanie, and Robert Kominski. 2014. *Measuring Alternative Educational Credentials: 2012*. Washington, DC: U.S. Department of Commerce, U.S. Census Bureau.

Gallup and Lumina Foundation. 2014. *What America Needs to Know about Higher Education Redesign: The 2013 Lumina Study of the American Public's Opinion on Higher Education and U.S. Business Leaders Poll on Higher Education*. Washington, DC, and Indianapolis, IN: Gallup and Lumina Foundation.

Garcia, Reynaldo. 2014. "Stackable Credentials: An Approach for Middle Jobs and Beyond." *Educause Review* Online, January 27.

Gaston, Paul, L. 2014. *Higher Education Accreditation: How It's Changing, Why It Must*. Sterling, VA: Stylus.

Kamarck, Elaine, C. 2007. *The End of Government . . . As We Know It: Making Public Policy Work*. Boulder, CO: Lynne Rienner Publishers.

National Research Council. 1995. *Standards, Conformity Assessment and Trade into the 21st Century*. Washington, DC: National Academy Press.