MAKING THE BUSINESS CASE FOR MICRO-CREDENTIALS
Welcome

Professional Testing, Inc. is pleased to share four unique models of micro-credentials as we think forward with our clients to design and build credentialing programs that meet the needs of their constituents and end-users in an evolving credentialing landscape.

Professional Testing, Inc. would like to extend its gratitude to and acknowledge the following organizations for their work in the development of micro-credentials, and for their collaboration and contribution to this report on *Making the Business Case for Micro-Credentials*:

- International Association of Accessibility Professionals
- Interstate Renewable Energy Council in conjunction with:
  - National Apartment Association Education Institute
  - National Network of Business and Industry Associations
  - National Renewable Energy Laboratory
  - Department of Energy Weatherization Assistance Program
  - Building Performance Institute
- The Risk and Insurance Management Society, Inc.
- The Association for Federal Enterprise Risk Management

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MAKING THE BUSINESS CASE FOR MICRO-CREDENTIALS

INTRODUCTION

The emergence of alternative credentials is well documented as part of the credentialing landscape, and in some instances redefining its future. Some of these evolving forms of credentialing include digital badges, nano-degrees, verified certificates, stackable credentials, and micro-credentials. While “traditional” certifications continue to serve the needs of many credentialing enterprises, models of micro-credentials are emerging as enterprises make the business case for adding micro-credentials to their portfolio of credential offerings. This is being done for a number of reasons, including:

- repurposing existing certifications that may not be meeting the needs of industry and/or workers
- reducing redundancies within the suite of credential portfolio offerings
- seeking opportunities to partner with other industry sectors to fill the need for skilled workers and/or advance opportunities for workers
- offering a credentialing product to a broader audience for which a full-scope certification program may not be necessary
- providing a credential for a specific job function for a unique group of workers
- increasing the skills of workers in a specific job area and/or function
- providing stackable credentials workers can earn and build their skills upon
- and/or any combination of the above.

Still largely undefined, but generally agreed to as a smaller, discrete, specialized opportunity for education and skills assessment, micro-credentials are useful for both learners wanting to demonstrate a level of proficiency in a skill and/or job function, and workers seeking

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1Professional certifications are typically comprised of the components associated with awarding a certification, including a certification examination, eligibility for certification and qualifying for the exam, recertification, Code of Ethics and disciplinary procedures, governance structure and policies. Education and training are sought elsewhere.
Making the Business Case for Micro-Credentials

Some workers may need to remain current in and/or advance in their jobs, some of which may already require training or certification. Micro-credentials are also an opportunity for credentialing enterprises to maximize resources and expand their existing credentialing portfolio, focusing on job “functions” or a unique area of the job, rather than on the full slate of competencies associated with performing in an occupation or profession as reflected in professional certifications.

Professional Testing, Inc. has worked with several credentialing enterprises in the development of micro-credentials, each time uniquely finding the approach to best fit the needs of the enterprise and its stakeholders. While there are several approaches organizations can take in developing micro-credentials, the models herein presented are assessment based, stemming from both professional certifications and certificate-awarding programs. Understanding the need of the enterprise informed the methodology utilized to develop the micro-credential, and helped make the business case to support its development and implementation. The models of micro-credentials that emerged are, therefore, unique to each credentialing enterprise.

PRINCIPLES UPON WHICH TO DEVELOP MICRO-CREDENTIALS

Whether the credentialing enterprises elected to develop micro-credentials from professional certifications or certificate-awarding programs, the assessment was a key component of the micro-credential. It was of critical importance to each credentialing entity that the assessments from the micro-credentials follow acceptable industry standards. The following practices were agreed to by each enterprise, and implemented by Professional Testing psychometricians in the development of the micro-credentials:

- Development of the foundation from a credible approach such as a job-task analysis (JTA), or review of an existing JTA
- Conceptualization of the job function as a smaller, discrete, specialized opportunity for skills/competency assessment, not the entire job
- Identification of unique and/or specialized knowledge must come from subject-matter-experts (SMEs) and be applicable across the scope of the micro-credential
- Development of an assessment (examination) that is valid, reliable and follows acceptable psychometric practices
- Facilitation of the examination development process by a psychometrician, involving SMEs for content review, item-writing and review, exam form review, and setting the passing score
- Linkage of all items to the content outline to assure the assessment of only the competency requirements of the micro-credential
- Utilization of resources such as industry standards and protocols during item writing to assist SMEs in writing items at the correct degree of difficulty
- Requirement of a criterion-referenced passing score study to determine the pass/fail point for the candidate

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• Review of item statistics utilizing SMEs to review and revise any questionably performing items

• Routine maintenance of the examination to include updates with input from SMEs.

Because fewer SMEs are generally required given the narrowed scope of the job function and assessment content coverage, not only is it critical to identify those best suited for the role, but consideration also needs to be given to adequate representation of the scope throughout the development process. As with certification programs, SMEs are tasked with developing and reviewing the items for micro-credentials. This process can be managed remotely and in a short period of time given the fact the exam has much fewer items than a traditional certification exam, for example, 50 - 75 items for the micro-credentials, while certification exams typically contain 100 – 120+ questions.

A management system must be in place where a given SME can draft items and have the capability to review item submission by other item writers. SMEs must be provided the opportunity to finalize any items requiring additional review, which can be conducted via webinar and/or facilitated via a collaborative online item development tool. Following this process, a form of the exam is developed to match the test specifications and should be reviewed and approved by the SMEs prior to administration. The first administration of the micro-credential is very important as statistical and written feedback (examinee comments and possibly direct questions to examinees) can be used to make final content and scoring decisions. For example, if an item is not performing well statistically, changes to the items are made. If comments are made about the content of an item, SMEs can make final decisions about the appropriateness of the item, for example, is the item poorly written, or does the item not meet test specifications. Once the statistical and comment reviews have taken place, the exam is ready to have a passing standard applied. While there are many approaches to setting the passing standard, a traditional modified Angoff procedure worked well for this type of assessment using SMEs remotely via a webinar.

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—Christine D. Niero, PhD
Vice President, Professional Certification
Professional Testing, Inc.
MODELS OF MICRO-CREDENTIALS

I. MAKING THE BUSINESS DECISION

The industry of risk management has a full-scope certification program developed and administered by The Risk and Insurance Management Society, Inc. (RIMS), the RIMS-CRMP Certified Risk Management Professional. The scope of the RIMS-CRMP supports the development and implementation of risk management practices that enable an organization to make risk-effective decisions that create and sustain value. Professional Testing, Inc. worked with RIMS to develop the RIMS-CRMP, which contains eligibility requirements, an examination, recertification requirements and a Code of Ethics certified persons must uphold. The examination is 120 multiple-choice questions, with 100 questions scored, and 20 unscored pilot items, and covers five domains.

The Association for Federal Enterprise Risk Management (AFERM) is a professional organization dedicated to the advancement of Federal Enterprise Risk Management. AFERM wished to offer a “credential” for public-sector risk managers, with the scope of the credential to focus on risk management within the Federal government environment, which includes promoting the achievement of the agency’s mission, goals and objectives by leading and supporting the development and implementation of risk management practices. The
competencies required of this credential would focus on risk management related activities performed within the Federal government environment. In 2016, the Office of Management and Budget (OMB) issued an updated Circular A-123, requiring federal organizations to implement enterprise risk management. The “credential” would support the goal of building and strengthening the federal workforce in its ability to meet this requirement.

II. METHODOLOGY

The mission of RIMS is to educate, engage and advocate for the global risk community. The RIMS-CRMP certification was developed to support the mission. RIMS also planned to pursue opportunities in the future to align with like-minded organizations to develop micro-credentials to serve an even greater professional community.

RIMS collaborated with AFERM to develop the micro-credential, with each organization providing subject-matter-experts to participate in the planning and development of the public-sector risk management micro-credential. Professional Testing facilitated the development of the micro-credential, based on the agreement by both organizations that a micro-credential would be the best type of credential since the RIMS-CRMP already covered the core risk management concepts. The micro-credential would cover additional unique elements specific to implementing risk management within the Federal government environment. One of the considerations during planning was that to qualify for the micro-credential, one must hold the RIMS-CRMP. This would assure a comprehensive understanding of risk management and allow the micro-credential to focus on competencies applicable to the work of risk management within the Federal government thereby reducing any redundancies between credentials.

For reasons of continuity, RIMS provided SMEs who had participated in the development of the RIMS-CRMP certification. Prior to conducting the job analysis, a total of eight SMEs met for a one-day face-to-face feasibility meeting to determine if there were enough unique elements of risk management in the Federal government environment to warrant creating the micro-credential. Professional Testing facilitated the meeting, with the following objectives to be completed:

1. Review the job-description (scope) of the RIMS-CRMP Risk Management Professional and modify for the work of Federal employees in risk management

2. Review the RIMS-CRMP content outline (examination blueprint) to identify content applicable to the work of Federal employees in enterprise risk management

3. Identify content that is unique to the work of Federal employees and not included in the RIMS-CRMP certification

4. Identify what content (broad job categories) needs to be developed for Federal employees

5. Identify job-categories of Federal employees the micro-credential will likely apply to.

At the completion of the meeting, it was determined that enough content unique to the work of risk management within the Federal government environment existed for the development of an assessment based micro-credential (examination, not training.) Of critical importance to both organizations, was the adherence to acceptable industry standards in the development of the credentialing program and assessment.
Following the outcome of the feasibility meeting, Professional Testing facilitated the development of the micro-credential assessment beginning with a job analysis. Two webinars were conducted with 8 SMEs each to define the domains and major tasks associated with the competencies unique to the work of Federal employees, and not included in the RIMS-CRMP examination. Following the webinars, a validation survey was developed and sent to the SMEs. Domains and tasks were rated by an importance scale. From the validation survey data, an examination blueprint was developed and reviewed by 7 SMEs via webinar.

Professional Testing facilitated one three-day face-to-face meeting involving 11 SMEs to complete the item-writing and item-review phases of examination development. The sponsoring organizations opted for a face-to-face meeting as many of the SMEs are located in the same geographic area, given their connection to the Federal government. The face-to-face meeting assured the completion of this phase of the initiative in a timely manner. Professional Testing then created the examination form containing 50 multiple-choice questions, which was piloted as a paper and pencil exam to enable the collection of sufficient data for psychometric review of item performance.

Following the analysis of items, Professional Testing conducted an item analysis review meeting with 3 SMEs via webinar to determine if any scoring changes were required, after which, a remote passing-score study was conducted with 5 SMEs. The micro-credential was ready to launch “live” to qualified candidates.
I. MAKING THE BUSINESS DECISION

The Interstate Renewable Energy Council, Inc. (IREC)² contracted with Professional Testing, Inc. to develop a micro-credential on behalf of the National Renewable Energy Laboratory (NREL) for the Quality Control Inspector (QCI) job function. As a full-scope certification program, QCI was one of several certification schemes, including Energy Auditor (EA), owned by NREL and licensed and managed by the Building Performance Institute³ (BPI). However, as separate certifications, the market was observing considerable overlap in competency areas between the EA and QCI exams, with candidates repeating test content when taking both. With this feedback in mind, NREL’s certification scheme committee took a comprehensive look at the EA and QCI job task analyses (JTAs) in 2017 and restructured both to streamline the content outlines. It was determined that the skills being assessed for the QCI were at a level above that of an auditor, and that the knowledge areas in the auditor JTA were truly pre-requisites for a QCI. IREC convened two exam committees in 2018 to develop new examinations based on the updated JTAs for EA and QCI, which supported removing overlapping test content from the QCI certification and focusing on QCI-specific

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² The Interstate Renewable Energy Council (IREC) is a non-profit whose mission is to increase access to sustainable energy and energy efficiency through independent, fact-based policy leadership, quality workforce development and consumer empowerment (www.irecusa.org).
³ www.bpi.org
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II. METHODOLOGY

JTAs had been conducted for both the QCI and EA. The process of developing the micro-credential began with a review of the QCI examination blueprint with SMEs, distilling the QCI competencies into an examination outline with 3 domains and 6 tasks. The blueprint for the micro-credential assessment supported a 50 question multiple-choice examination focused solely on the competencies required of the QCI. IREC also began the process of creating a new item bank by identifying items in the original QCI item bank relevant to the scope of the micro-credential, subject to revision.

The process of item writing and review followed and included Professional Testing training approximately 10 SMEs to write test items. The SMEs managed by IREC were instructed to work independently and collaboratively in small groups to review and revise existing items relevant to the new exam, and to draft new items. A SME panel review/approval process of the items was then conducted via webinar with facilitation provided by Professional Testing. Once item writing and review was completed, examination forms were developed. BPI then administered the pilot examination using computer-based testing. When sufficient data became available, Professional Testing analyzed the performance of the items and facilitated an item analysis review session with SMEs to evaluate and revise items and determine any needed scoring changes. Following this stage of examination development, a remote passing score study was conducted by Professional Testing using 10 SMEs. At the time of writing, the micro-credential has been finalized and BPI is preparing its launch in 2019. The certification is mandated by one of the leading Federally-funded energy efficiency programs in the United States, and utility programs are also considering adoption of this new micro-credential for relevant job functions aligned with the updated JTA.
I. MAKING THE BUSINESS DECISION

The Interstate Renewable Energy Council (IREC) contracted with Professional Testing to develop a micro-credential in energy efficiency for apartment maintenance technicians and managers holding the Certificate for Apartment Maintenance Technician (CAMT), an accredited certificate program to the ANSI/ASTM E-2659 Standard for Certificate Programs. The CAMT is one of several credentialing programs offered by the National Apartment Association Education Institute (NAAEI), with holders of the CAMT demonstrating proficiency and professionalism as apartment housing managers and technicians. To earn the CAMT, candidates must pass a 100-question examination focused on knowledge and skills for maintaining safe, comfortable, and high-quality apartment communities. NAA identified the need to further skill apartment maintenance technicians in the planning, procuring and managing of energy upgrades and retrofits, and investigated the development of a micro-credential in energy efficiency as a viable alternative to offering a full-scope certification. This was done in an effort to reduce costs and bring this opportunity to CAMTs quickly. With its dedication to clean energy and credentialing expertise, IREC was the perfect partner for NAAEI to launch this initiative. The CAMT+E (Energy Efficiency) became the credentialing option for apartment technicians and managers to add to their certificate to reflect their knowledge of strategies for reducing energy and costs and improving building performance.
II. METHODOLOGY

The content for an energy efficiency add-on to CAMT had not been developed, so IREC took an approach similar to conducting a job task analysis (JTA), but defining narrower, functional skills rather than the duties and tasks associated with an entire job. In an effort to reduce the costs in the development of the micro-credential, all activities were conducted virtually, via webinar and online validation surveys. The JTA process followed established practices including the selection of SMEs representative of the scope of the micro-credential, and facilitation in the determination of the duties and tasks in energy efficiency expected of apartment technicians and managers. Once the JTA was completed, SMEs convened to finalize the content outline and examination blueprint. Item writers were convened via webinar for training in item writing provided by Professional Testing. The SMEs were instructed to write items on their own, with the item writing process managed by IREC. The item bank was developed using the newly drafted items that were reviewed and approved by SMEs via webinars facilitated by Professional Testing and IREC. Examination forms were created, resulting in a 50-question multiple-choice exam. The exam was pilot tested, and once a significant number of candidates tested, Professional Testing conducted an analysis of the performance of the items. The results of the item analysis were reviewed by a panel of SMEs via webinar facilitated by Professional Testing to determine any scoring changes to the items.

Following this stage of examination development, Professional Testing facilitated a remote passing score study involving 5 SMEs. Once the passing score was completed, the examination was ready to be exported to NAAEI’s testing platform and launched.
I. MAKING THE BUSINESS DECISION

The International Association of Accessibility Professionals (IAAP) offers the Certified Professional in Accessibility Core Competencies (CPACC), a full-scope certification program representing broad, cross-disciplinary conceptual knowledge about disabilities, associated challenges, and assistive technologies; accessibility and universal design; and accessibility-related standards, laws and management strategies. Primarily for persons who manage and support accessibility, individuals earning the CPACC may not personally design, implement or evaluate the details of accessible solutions. IAAP wanted to develop a credential for persons who design, develop, implement or manage the technical details of accessible web solutions in order for them to demonstrate they have the tools, skills and abilities to incorporate accessibility into information and communications technology. The Web Accessibility Specialist (WAS) represents that unique skill set but does not encompass the full “core-competencies” of accessibility professionals. Intended for intermediate professionals with 3 – 5 years working experience in one of many team roles related to accessible web solutions, the WAS is ideal for professionals who design, develop, implement, evaluate or manage accessible web-based content, projects and services. In making the business decision, IAAP envisioned the WAS as serving accessibility and IT personnel seeking to demonstrate their ability to recognize and identify issues in programmatic content, explain what is missing or incorrect, understand usability and testing practices, and provide a contextual understanding of the impact on the end-user. Offered as stand-alone programs, both the CPACC and the WAS are independent credentials offered by IAAP, with those holding the CPACC who earn the WAS being awarded the Certified Professional in Web Accessibility (CPWA) to recognize both credentials. The WAS micro-credential is offered to any IT personnel seeking to specialize in web-accessibility and is awarded as the WAS credential.
II. METHODOLOGY

Every stage in the development of the WAS was conducted remotely. Professional Testing worked with IAAP personnel who identified a group of approximately 14 SMEs with expertise in web accessibility to participate as members of the examination development committee. Development began with conducting a JTA for the micro-credential. This process was done through a series of webinars to develop a functional definition of the Web Accessibility Specialist and a list of domains and tasks. The outcome of the webinars was validated through a web-based survey which asked Web Accessibility Specialists to rank the importance of the task statements relative to their jobs. The results of the 148 respondents was analyzed. The survey results were used by the examination committee to finalize the examination blueprint. The finalized blueprint contained 14 tasks across three domains. Once the examination blueprint was finalized, SMEs on the examination committee started the item writing and review process, which was facilitated by Professional Testing and initiated with a session to train item writers. The item writers then wrote items independently using an online item development tool. The items were then reviewed via webinar using 6 - 7 SMEs from the examination development committee. Professional Testing established the item bank, and one examination form of 75 multiple-choice questions was developed. The examination form was piloted, and once sufficient data were available, Professional Testing conducted an item analysis. The results of the item analysis were reviewed by a panel of SMEs facilitated by Professional Testing to determine any scoring changes to the items. Then a remote passing score study was conducted involving 5 SMEs and facilitated by Professional Testing. Once the passing score was completed, the examination was ready to be launched.
OUTCOMES

RIMS Certified Risk Management Professional for Federal Government RIMS-CRMP-FED™

By the end of October 2018, the first “class” of 65 RIMS-CRMP-FED™ micro-credential holders was announced, and the computer based examination opened to all test-takers early in 2019. The approach to building what is unique to the work of risk management professionals working within a Federal government environment from an established certification has resulted in a reduction of duplication of competencies and enabled the SMEs to focus on the specific competencies of job incumbents—not the entire job. With the development of the RIMS-CRMP and wide acceptance of the competencies by stakeholders, the development of the micro-credential was streamlined as SMEs were able to focus on the “gaps” relative to the Federal government risk management professionals. While there are many different types of micro-credentials, this public-private sector collaboration model started with buy-in and endorsement of the core risk management competencies established by the RIMS-CRMP. Development of a micro-credential could then fill the gap for the Federal government workforce, be developed faster, eliminate duplication of competencies, and maximize resources in terms of time and money.

The bonus to risk management professionals working within the Federal government environment is that this model meets the general understanding of a micro-credential as a smaller, discrete, specialized opportunity for competency assessment for professionals to achieve a level of proficiency in a skill or area, while at the same time remaining current in and/or advancing in their careers. Given that this micro-credential is applicable to risk management professionals across Federal agencies, the expectation of comparability and consistency among professionals in risk management is a realistic one. It places RIMS and AFERM at the forefront of the movement to create consistency in the application of best practices in the field of enterprise risk management.

Certificate for Apartment Maintenance Technician + Energy

After completion of the CAMT+E examination, NAAEI elected to partner with IREC in developing an e-learning course aligned to the CAMT+E task analysis prior to launching the examination to allow CAMT certificate holders the opportunity to increase their knowledge and skill base in energy efficiency. The interactive online course was completed in 2018, and both the course and the examination are set for widespread release in 2019. Preliminary feedback from professionals in the apartment management industry indicates excitement about the new avenue for professional development offered by CAMT+E.

The CAMT+E is designed to promote continued professional development for CAMTs and is the first in a series of stackable credentials envisioned for apartment maintenance and management professionals. A second micro-credential for CAMT certificate holders focused on leadership skills is also currently under development by IREC and NAAEI. While not yet finalized by NAAEI, the possibility of developing a “capstone” credential upon successful completion of a series of micro-credentials is being evaluated as another way to expand professional development opportunities and career pathways.

Certified Professional in Accessibility Core Competencies and Web Accessibility Specialist

IAAP launched the pilot WAS micro-credential examination in the summer of 2017 to 30 participants. By the end of 2018, 347 people had applied to sit for the WAS examination
and IAAP awarded 225 WAS credentials, with 137 of the credential holders also earning the CPACC. By the end of 2019, IAAP anticipates reaching 450 WAS credentialed persons world-wide.

When the examination first came to market IAAP received mixed reviews, positive input from those working to establish professional standards for the technical industry, and negative reports from senior level expert coders and developers who felt the WAS was not a stringent test of advanced code writing ability. As a result, IAAP worked to clarify the intention of the WAS to illustrate that the credential is targeted to intermediate level technical professionals with 3 - 5 years of hands-on experience not just with the code and development, but also with an understanding of usability testing, how people use assistive technology, and the impact of accessibility or the lack thereof on the end-user. This challenges candidates to illustrate and or expand their knowledge beyond normative data to include both the technical and human interaction components of web accessibility, the “micro” focus of the credential.

The passing score further illustrates that the content of the WAS credential is not for the beginner or new entrants to the field of web accessibility. Data collected on successful candidates shows 20% have 3 - 5 years of experience, 24% have 5 - 10 years of experience, and 24% have 10+ years of professional experience. Of the remainder of successful candidates, 24% have 1 - 3 years of experience, and 8% have less than one year of experience. On average, IAAP does not approve 6% of the applications in each examination window as applicants self-identify as not having any work experience in the 12 content areas of the examination. The trends of those who do not pass the examination align with candidates who have less than five years of experience.

IAAP is pleased to report an average of 10 - 15 new job posts each week from online job boards listing the WAS credential as a preferred qualification. In tracking the job posts for six months, 90% of the organizations posting these job opportunities are not members of IAAP. IAAP believes this is a good market indicator that the WAS credential is beginning to find its mark as an industry accepted benchmark for hiring managers in web accessibility. In the last quarter of 2018 the WAS credential was featured in several industry thought leader articles online as a logical program for IT professionals to pursue to illustrate their skills, as well as an indicator that more senior professionals find value in the credential as a benchmark for this newly forming professional across several industries.

**PSYCHOMETRIC CONSIDERATIONS**

As with the development of all credentials, SMEs are heavily relied upon, as is the ability of credentialing enterprises to select SMEs who can meet the time and work commitments and have the flexibility to work in face-to-face and/or virtual environments. In almost all instances, the SMEs worked intensely in short periods of time, in succession, regardless of the meeting format. The commitment and adaptability of SMEs, coupled with the skills of psychometrician facilitators and program managers, enabled the credentialing enterprises to bring the micro-credentials to market quickly, while not compromising the quality or integrity of the end-products.

Of the three types of work settings involving SMEs, those who worked remotely with quick deadlines sometimes found meeting production goals challenging, as some SMEs lost momentum working in seclusion. Those who worked with a partner tended to better meet production requirements. Professional Testing facilitators experienced the best output in
terms of timeliness and quality of product working in-person with SMEs. This was especially apparent with projects that moved quickly.

As noted in the Introductory section of this Report, of paramount importance to the credentialing enterprises is adhering to psychometric practices that produce reliable and valid examinations. Basic steps in exam development, therefore, were followed. This included:

1. Content/blueprint development—in some cases existing functions were used from existing JTAs and content outlines, and in other cases they were developed from scratch.
2. Item writing and item review—in some cases this was performed remotely, and in other cases it was done in-person, but each time included training SMEs, conducting item analysis studies, and utilizing psychometricians to assure the final items are of good quality and performance.
3. Exam form development matching the blueprint—in some cases this was done remotely, and in other cases it was done in-person, each time facilitated by a psychometrician.
4. Passing score studies—some were conducted in person, and others remotely with the facilitation of a psychometrician.
5. Moving forward, unique strategies for examination maintenance will need to be developed and will depend on several factors, including candidate volume, content currency, and form equivalency. These considerations should be linked to item and form statistical analyses, item reviews, and passing standards.

**CHALLENGES**

We learned many lessons along the way. One important lesson is to adequately staff the project with SMEs to avoid overloading too few SMEs. This will help to keep the project on schedule and SMEs engaged. As more micro-credentials were developed, Professional Testing strongly encouraged credentialing enterprises to engage more SMEs. Because credentialing enterprises face time constraints, all parties must be proactive with respect to staffing and managing SMEs for various micro-credential development activities.

With the development of assessments, there is great responsibility placed on the SMEs. If resources require working with fewer SMEs, credentialing enterprises should be open with SMEs regarding the commitment they will be making. Remote or virtual meetings also required more intense project management by the credentialing enterprise, and greater discipline by SMEs to meet deadlines. Ultimately, managing the SMEs and creating a process matching the intended project timeline are key to a successful outcome.

As we became more proficient in developing micro-credentials, Professional Testing psychometricians found that another challenge was moving through the development process too rapidly. While one purpose of developing micro-credentials is to enter the market more quickly than full-scope certifications, the credentialing enterprises must permit ample and realistic time for the processes to occur, to market the micro-credential, and to announce any changes. For example, if a micro-credential replaces a full credential, notice must be given to credential holders and time must be permitted for credentialing enterprises to make the necessary modifications to their administrative practices, update policies, and market the new
It is, therefore, important for credentialing enterprises to align micro-credentials with their strategic goals and anticipated deliverables.

Exam monitoring and item statistical monitoring play a large role in the development of micro-credentials and their continued validation strategy. For the micro-credentials that did not have item statistics at the time of the passing-score study, pass rates need to be monitored immediately to identify any potential flaws in a given item (e.g., poor item statistics) or the established passing score (e.g., nobody passes the exam). This also holds true for reviewing item statistics as soon as practical, which may include conducting an item analysis as soon as enough candidates have taken the exam, or annually. Each program’s needs will differ depending on volume, exam length, pass rates, etc. For the micro-credentials that piloted the exams prior to conducting the passing score study, item statistics were available for SMEs to review and revise, as necessary.

In adhering to psychometric principles in the development and maintenance of the micro-credentials, end-users will understand that “micro” speaks to scope and function, not less quality, or “less-than” a professional certification or designation. It is, therefore, important for credentialing enterprises to market the “credibility” and “integrity” of micro-credentials to all users—certified persons, workers enhancing their skill-set, and employers seeking workers with specific skills and knowledge. This will assist credentialing enterprises in building the brand and maintaining their reputation.

Finally, credentialing enterprises must consider the “un-learning” of traditional certification development methods for both themselves, and for SMEs. In many stages of development, processes are similar, but the differences need to be highlighted, for example, working with fewer SMEs, expectations of SMEs, expectations of psychometricians, and less flexibility with deadlines and deliverables. This may be modestly disruptive for both SMEs and certification enterprise management.

**MAXIMIZING RESOURCES**

Credentialing enterprises were able to support the business case for developing micro-credentials based on several areas of cost savings. First, the micro-credentials had existing JTAs from which to determine the job functions specific to the micro-credential, or from which to base the scope of the micro-credential. The JTA processes utilized by each entity typically involved fewer SMEs due to the narrower scope. SMEs had the option to work remotely, or in a face-to-face setting, depending on the preferences of the enterprise. Either way, the time to conduct the JTAs for the micro-credential and the cost of meeting travel and support was reduced. Utilizing a psychometrician assured smooth facilitation and the completion of the JTAs.

Because of the narrow scope of the job function and assessment content coverage of micro-credentials, fewer SMEs could be tasked with item-writing, providing they were able to meet deliverables. Psychometricians advised on utilizing more SMEs for item review to assure the population as a whole for the micro-credential is represented. In some instances, as few as half the number of SMEs were used versus the number typically participating in full-scope certification examination development activities, and in other instances the same number of SMEs for full-scope certification examination development activities participated in the development of the micro-credential assessments. There is no formula to apply in determining the number of SMEs required to develop a micro-credential; rather, the characteristics of the SMEs and the credentialing enterprise will determine the
The work of SMEs can be managed remotely, or in a face-to-face setting, depending on the comfort level of SMEs, availability of SMEs, experience of SMEs and the timeline given to develop the micro-credential. The assessments for the micro-credentials averaged 50 items, with one containing 75 items. This resulted in a reduction of item-writing and review time for both virtual and face-to-face meetings and a cost savings to the certification enterprise. Facilitation by a psychometrician assured the production of quality and usable items saving time for examination production and post examination administration maintenance.

On average, the time for examination development—JTA through pilot administration—averaged 3 – 6 months, sometimes more if a functional analysis or JTA needed to be developed from the outset. As noted in the “Challenges” section above, some credentialing enterprises experienced delays in the examination development process, typically associated with the SMEs production of items in a remote setting, minus direct facilitation by a psychometrician.

The following chart depicts the typical examination development life-cycle for most micro-credentials.

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“By adhering to acceptable psychometric practices and methodologies, end-users will understand and appreciate that “micro” speaks to the scope and function of the credential, not to less quality.”

—Reed Castle, PhD
Executive Vice President
& Psychometrician
Professional Testing, Inc.

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Generic Micro-credential Development Flow Chart

1. Planning Meeting to Determine Need
   - JTA
     - Define domain and major tasks
     - Validation survey
     - Develop content outline
   - Item Writing/Review
   - Form Creation
   - Pilot Testing
     - Item Analysis and Standard Setting
       - Conduct item analysis
       - Review flagged items with SMEs
       - Apply any scoring changes
       - Conduct remote standard setting study and determine passing score
   - Exam Administration
In instances in which the time to market was more of a driving factor, the need to deliver the micro-credential may outweigh the need to reduce resources, for example, conducting face-to-face meetings which are more expensive.

Given the number of items on the examinations, the time for conducting a remote passing-score study was typically 2 - 3 hours depending on the length of the examination and number of forms, versus a day to day-and-a-half for a 100 – 120 question certification examination. The cost of psychometric services was also reduced with the reduction in the number of meeting days and the amount of measurement and analysis required.

For each credentialing enterprise, administrative procedures are in place that can accommodate the additional micro-credential(s), including item-writing systems, item-banks, examination administration procedures and platforms, application processing and customer/candidate service. In some instances, candidates are able to take the full certification examination at a computer-based testing center, and if they are successful, can then take the micro-credential in the same sitting. With instant score-reporting, this streamlines and makes convenient the examination process for candidates.

On average, the typical savings in research and development is about two-thirds from traditional JTA studies and exam development activities required to support certification examinations. Bringing the micro-credential to market sooner enables the certification enterprise to start recouping costs. Many cost savings were accomplished with remote work and virtual facilitation, however, as noted in the “Challenges” section above, the credentialing enterprise may expend more time and resources managing and following-up with SMEs. Finally, the savings in costs may be passed through to candidates, which may make earning the micro-credential an attractive option for candidates compared to other opportunities in the field.
NEXT STEPS

The models of micro-credentials presented in this Report are unique to the needs and strategic objectives of each credentialing enterprise and the industries and professions they support. While “one approach does not fit all” we are starting to see some efficiencies in psychometric and development practices that are enabling certification entities to reduce costs and maximize resources, while maintaining program integrity. Clearly this supports making the business decision. We are also learning several important strategic considerations that are also a part of making the business decision, for example, understanding the prospective market(s); knowing the characteristics and needs of the credential earner; clearly articulating the need the micro-credential is filling; addressing the perceptions from end-users; understanding the potential for internal competition with other credentials and their holders; predicting the potential impact on the reputation of the enterprise; anticipating how competing enterprises may respond; and determining metrics to assess outcomes. As with the introduction of any new product or service, careful consideration needs to be given to how the micro-credential will be received as well as its bearing on existing credentialing products.

In 2015 when Professional Testing scoped out an approach to developing the first micro-credential, we concluded that there was a role for micro-credentials in the credentialing landscape. Three years later with the development of additional micro-credentials, each filling a different need, the “role” has evolved into robust credentialing options for many certification enterprises. As we head into 2019, even more models and approaches are emerging.

ABOUT THE AUTHOR

Dr. Christine Niero is the Vice President, Professional Certification and Client Development, and provides expertise to clients in developing and implementing viable credentialing programs, policy development, establishing governance structures, optimizing management functions, leadership development, strategic planning and accreditation. Dr. Niero serves on the WorkCred Council for WorkCred, a subsidiary corporation of ANSI, whose mission is to strengthen workforce quality by improving the credentialing system, ensuring its ongoing relevance, and preparing employers, workers, educators, and governments to use it effectively. Also in the area of workforce development, Dr. Niero serves on the Apprenticeship Powered by Industry (API) Leadership Committee, providing expertise on accreditation and certification serving in an advisory capacity to the U.S. Department of Labor. Dr. Niero participates in the International Accreditation Forum (IAF) and serves on the ANSI/Governmental Inter-Agency work group, providing expertise on certification and testing.

Dr. Niero has held leadership roles in national organizations, including committee member and Vice-Chair of the Personnel Certification Accreditation Committee (PCAC) for the American National Standards Institute (ANSI) world standard for personnel certification, ISO/IEC 17024, and ANSI Conformity Assessment Policy Committee (CAPC), National Policy Committee (NPC) and Committee on Education (COE). Dr. Niero participated at a national level on the ANSI Energy Efficiency Standardization Coordination Collaborative (EESCC) as an authority on workforce credentialing. Dr. Niero recently completed six years of service on the Board of Directors for the Association of Test Publishers (ATP).

For a white paper on the development of this micro-credential, please visit the Store for a free download at www.proftesting.com/store/product/microcredentials-white-paper/
and has served on several ATP Innovations Committees. Regarded as an industry leader, she presents nationally and internationally on accreditation, certification, governance, and strategic leadership for boards. Dr. Niero served as an Officer of the Board of the Institute for Credentialing Excellence (ICE).

Dr. Reed Castle is the Executive Vice President for Professional Testing, Inc. and directs psychometric services. Dr. Castle received his doctorate from the University of Nebraska in quantitative methods. In his 20+ years of experience, Dr. Castle has conducted over 85 Job Analysis Studies and numerous cut-score studies. As an expert, he has testified in legal cases on psychometric and certification issues. His research interests include job analysis techniques and transitioning traditional paper-based testing programs to computer adaptive testing programs. Applying his research interest to practice, Dr. Castle has built Computer Adaptive Testing systems.

Dr. Castle presents at national and international conferences including the Institute for Credentialing Excellence (ICE), Association of Test Publishers (ATP), National Council on Measurement in Education (NCME) and the Council on Licensure, Enforcement and Regulation (CLEAR). His presentations focus on innovative approaches to testing and providing introductory education on classical and modern measurement techniques applied to certification. He was a contributing author to Clear Exam Review Journal, served a six-year term as a psychometric commissioner for the National Council for Certifying Agencies, and currently serves on the Personnel Certification Accreditation Committee (PCAC), the decision-making body for ANSI for accreditation standard ISO/IEC 17024 Conformity assessment—General requirements for bodies operating certification of persons.

Ms. Christine DePascale has 20 years of experience in the area of psychometrics and test development. Ms. DePascale focuses on various types of credentialing examinations, including examinations tied to accredited full-scope certifications programs, certificate programs, and micro-credentials. Ms. DePascale joined Professional Testing, Inc. in January 2014 where she serves as a psychometrician managing the development, implementation, and monitoring of credentialing examinations. She also provides meeting facilitation, conducts job-task analyses and cut score studies, and conducts item/examination analyses. Ms. DePascale presents at national conferences, and has been invited to provide workshops on item development to the National Organization of Nurse Practitioner Faculties, the American Psychiatric Nurses Association, and she has co-presented on the development of innovative item types at the Association of Test Publishers (ATP).

ABOUT PROFESSIONAL TESTING

Professional Testing, Inc. is a professional certification and credential development and management firm providing services to certification bodies, licensing authorities, and governmental agencies for the development and maintenance of credentialing programs (certification, certificate, micro-credential and licensure programs). Professional Testing has been in business for over 40 years and has helped its clients ensure their credentialing programs are effective, valid, fair, reliable, and legally defensible. Professional Testing focuses on continuous improvement of certification programs to achieve compliance with professional and accreditation standards, and assists organizations with providing the highest quality professional credentialing programs while maintaining high levels of client service and satisfaction.

Professional Testing is a privately held corporation with offices in Orlando, Florida, Denver, Colorado, and Washington, D.C. Professional Testing’s employees have expertise in
psychometrics, test development, curriculum development, certification policies and procedures, standards development, and accreditation. Professional Testing’s experience includes development of high stakes professional licensing examinations, professional certification examinations, job/task or practice analyses for occupations, passing score studies, training and curriculum development, legal defense, policy development, governance and organizational structures, strategic planning, and other activities related to credential development and maintenance, assessment and evaluation. Professional Testing has assisted numerous credentialing programs in achieving and maintaining accreditation to ISO/IEC 17024 Conformity assessment—General requirements for bodies operating certification of persons and the NCCA Standards for the Accreditation of Certification Programs.

Professional Testing is frequently selected as a testing company for credentialing programs based on its reputation for building and maintaining quality programs and for its insights to matters such as accreditation, governance, and policy development. Professional Testing has extensive experience in all aspects of developing and maintaining credentialing programs including:

- conducting job analyses
- conducting passing score studies
- developing examination items and exams
- managing item banks
- delivering examinations in paper-and-pencil and computer-based formats
- transitioning exams from paper-and-pencil to computer-based delivery
- translating exams
- conducting statistical analyses
- developing the organizational structure for the certification body
- drafting policies and procedures to guide all certification decisions in conformity with accreditation requirements
- developing eligibility and recertification requirements that align with the competence requirements determined at the practice analysis stage and subsequent revalidation
- developing and updating candidate handbooks and applications
- working with certification staff to re-engineer administrative structures to accommodate certification programs, including capturing candidate information, maintaining confidentiality requirements, and separating certification and training activities to avoid conflicts-of-interest.

Within the field of credentialing, Professional Testing is known as the test development company whose services should be contracted for organizations interested in developing and maintaining innovative credentialing programs that represent best practices and meet accreditation and measurement standards.