Considerations When Creating a New Certification Program

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ATP Certification and Licensure Subcommittee

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Executive Summary

This paper is intended to serve as a resource for any organization that plans to develop a new certification program. In this context, certification is defined as an official record that attests to a status or level of achievement, such as individual competence or competent use of a product or process. Certification programs yield tangible benefits to participating organizations, to individual practitioners, and to society at-large. This document highlights issues to address and questions to ask when determining an organization’s readiness to start the development of a new certification program. Many of the challenges, opportunities, and operational mandates are outlined herein, and are based on the collective education and experiences of the authors.

This report is divided into three sections that include:

- Should we do this?
- How do we design a certification program?
- How do we execute the program?

Note that the scope of this publication focuses on personnel certification programs, where certification is a voluntary, nongovernmental process by which an individual is determined by a certification body to have successfully completed the requirements of a certification program and may be identified to the public and other stakeholders as a certificant.¹ This is not to be confused with certificate (or assessment-based certificate) programs, which provide training and instruction that are tied to specific learning outcomes. Though certification and certificate programs share many common issues, certificate programs, per se, are not included in the scope of this publication.

The intent of this work is to provide a resource to organizations when assessing readiness to implement a certification program.

Section One: Should we do this?

Define the Purpose

The first step to take when considering the creation of a certification program is to identify the gaps or needs that the potential program can fill. If addressing gaps in education or training is the primary need, then a certificate program, or assessment-based certificate program, focused on providing a focused learning opportunity with specific learning objectives may be a better option than certification. However, if the primary need is focused on the assessment or recognition of knowledge, skills, and/or abilities needed to perform in a job or role, then certification would be appropriate. This paper focuses on key considerations for certification programs.

After confirming the need and focus of a new certification program, the step is to determine whether the proposed program aligns with the organization’s mission, vision, and goals. If it does, then preliminary information and data collection should include:

- An environmental scan: Gather information including the availability (or lack thereof) existing education/training, existing certificate and/or certification programs, existing or potential competitors, credibility of any existing competitors, etc. While development of educational resources should occur separately from development of a certification program, an appropriate education and training curriculum should occur to support certification candidates.
- An evaluation of requests from employers or other stakeholders: Determine if employers and stakeholders are primarily interested in filling a training gap, assessing skills, or both. Evaluate the depth and breadth of interest to understand if requests are coming from a few vocal sources or many diverse sources.
- An understanding of relevant historical background: Gather information about any previous interest in similar programs as well as any previous certification or certificate programs. Evaluate lessons learned that can inform the decision-making process.

Without a clearly defined need and an understanding of the purpose the proposed program fills, development activities may go in the wrong direction, wasting significant effort and resources. A program that does not fill a key within the target professional need is likely to fail.
Feasibility study

Feasibility studies provide essential information needed to inform decision making and assess the practicality of the proposed certification program. A well-designed feasibility study helps identify known risks and potential benefits before beginning development work. Potential benefits include not only providing data needed to inform decision making, but also to identify challenges and opportunities, evaluate multiple options, narrow alternatives, and identify internal and/or external constraints.

Feasibility studies typically include the following steps.

1. Define the scope of the study.
2. Define objectives, such as what information is needed to inform decision making.
3. Identify target audiences and key stakeholders for study (e.g., potential certificants, employers, educators, and regulators).
4. Conduct the study. Depending on the scope and objectives, the study may examine one or more of the following:
   - Market, including demographics, interest by target audience(s), pricing, etc.;
   - Technical feasibility (e.g., does the organization have the technical resources and capacity for the new program?);
   - Economic feasibility, which may include a cost/benefit analysis;
   - Legal feasibility, which may address tax status implications and the impact of the project on the existing governance/structure of the organization;
   - Operational feasibility, such as the extent to which the new program will meet the identified needs; and
   - Scheduling feasibility, such as whether the project can be created within the projected timeframe.

Business or project planning

Availability of resources and potential benefits are two key factors to consider when deciding to move forward with a certification program. To address these, it may be useful to begin with a detailed project plan or similar component of a business plan. At a minimum, a project plan should outline financing, marketing, and procedural requirements.

Context of the proposed program will drive the type of plan(s) needed. For example, if the proposed program is a completely new certification and entity, then a business plan may be needed. However, if the certification is for a new certification within an existing entity, then a project plan may be more appropriate.
Regardless of the type of plan(s) needed for a given certification program, the plan(s) should contain measurable goals and a clear appreciation of prospective customers’ needs. Results of the feasibility study provide key information about stakeholder issues and priorities. Anticipating project and organizational obstacles is critical to reaching milestones, managing budget(s), and meeting project deadlines in a timely fashion.

**Steering committee**

Establishing a steering committee is a critical component of the project planning process. The steering committee’s focus can provide general oversight and detailed planning of a certification project. It can consist of individuals from inside the group planning the certification, or it may include both individuals from inside and outside the group, such as external stakeholders. Generally speaking, this group is most effective in advising on the general overview of the process.

Committee composition should include a variety of individuals associated with or representative of the certification in question. Such representatives could come from several possible categories:

- Practitioners who are currently performing the technical skills that the certification will assess;
- Owners of entities for whom practitioners work;
- Product vendors related to the work being performed;
- Federal (or if outside the US, international), state, or local regulators of the work;
- Agencies that provide skill training for practitioners; and
- Existing associations directly or tangentially related to the work.

Steering committees typically provide oversight and guidance regarding the certification program’s development and may help to establish reporting benchmarks to keep the project on target. Although having a steering committee is not mandatory, its inclusion represents a best practice in that it provides a forum for discussion of diverse views. The inclusion of a steering committee also can increase community support for a particular certification project, which in turn can promote transparency of purpose among those involved.
Section Two: How should we design a certification program?

_Accreditation_

Decide early in the planning process whether there is interest in seeking accreditation for the new certification program. Optional third-party accreditation provides an independent, peer-reviewed process to demonstrate that the certification meets predetermined standards across a wide-range of program components from governance and impartiality to test development and delivery.

For organizations that pursue accreditation, the application process occurs after the program is up and running. Determining accreditation goals in the early stages of program development saves time and resources by ensuring that certification development meets accreditation requirements thus avoiding the need to backtrack or correct key steps to achieve accreditation compliance later. Even if an organization later chooses not to seek accreditation, alignment with accreditation standards provides a solid foundation for any certification program. Achieving accreditation helps build credibility, provides a competitive edge, and in some cases, may be needed to meet regulatory or legislative requirements.

For organizations interested in pursuing accreditation, next steps include choosing accreditation standards and an accreditation body. Some factors to consider include short- and long-term costs, the name recognition of the accrediting body within the target industry, any regulatory or legislative requirements, and the specific requirements of each set of standards.

In the United States, there are three primary accrediting choices:

- Accreditation from the ISO/IEC 17024 Conformity Assessment – General Requirements for Bodies Operating Certification of Persons (17024 Standards) from the ANSI National Accreditation Board (ANAB) or the International Accreditation Service (IAS);
- Accreditation from the NCCA Standards for the Accreditation of Certification Programs (NCCA Standards) from the National Commission for Certifying Agencies (NCCA), the accrediting body of the Institute for Credentialing Excellence (I.C.E.); and
- Accreditation from both the 17024 Standards and NCCA Standards through a partnership with the NCCA and the IAS.

These organizations also accredit international programs. Additionally, since ISO/IEC 17024 is an international standard, it is possible to get a program accredited in other countries. For example, the Standards Council of Canada offers accreditation to the 17024 Standard. It
should be noted that accreditation is optional, and many certification programs have achieved their credibility without it.

**Structure & governance**

New certification programs require early establishment of a governance structure that is transparent and fits the program’s purpose. In addition to project and program managers, it is also important to include key stakeholders in the governance structure. Doing so will help drive the success of the program. During early phases of development, it is advisable to establish an Advisory Board or Steering Committee of major stakeholders (internal and external) and to institute regular strategy and implementation reviews with this committee (see the Steering Committee Section in Section One). These stakeholders provide key input on policy development and are key drivers and program advocates.

Once fully established, the certification program should have a permanent governing body. For certification programs housed within a membership association, company, or other agency, the certification governing body should be charged with establishing essential certification program policies without undue influence from other organizational interests, such as education or membership. Representation on the governing body should be diverse and include a variety of key stakeholders, including certificants.

For existing organizations, the certification team is often embedded within the education arm of a membership organization. The obvious benefits of this situation include access to subject matter experts and alignment with training, but it is essential to ensure that the certification organization maintains autonomy from other roles and competing interests within the organization. A disadvantage of being embedded in an education organization can be the “pull” towards creating a post-training assessment where the primary objective is selling training rather than validating knowledge and skills. “Teaching to the test” is a role better suited for an assessment-based certificate program. In certification, such a situation may lead to a conflict of interest and can dilute the credibility of the certification. A firewall between the organization’s training functions and the certification program is recommended, and in some cases, may be required. The development of certification examinations is a separate function from the creation and marketing of any educational products. Such a separation reflects best practices and is necessary for accreditation compliance.

**Program policies & criteria**

Program policies guide countless decisions and operational considerations while ensuring fairness and mitigating risk. Most core policies should be decided early in the program’s
development and aligned with the program’s goals and purpose. Factors influencing policy
development include practical considerations (e.g., size of program staff, outside vendor
capabilities, application requirements) and information gathered during the job analysis
process, such as certification scope, eligibility requirements, type of assessment. Details such
as exam length, time allowed, and preferred item types are in fact policy decisions just as much
as are whether recertification is required and the determination of disciplinary processes.
Exam-related policies should be guided by psychometric best practices and accreditation
requirements, if applicable, whereas policy decisions rest with the program’s governing body.

Common policies and procedures, as outlined in Certification: The ICE Handbook (Henderson,
2019), typically address the following topics: governance and structure, program
administration, financial management, assessment system design, requirements for published
information, candidate processing, nondiscrimination, confidentiality, exam development, test
administration, security, scoring and results reporting, record retention, document
management, code of conduct, disciplinary policy, complaints and appeals, trademark usage
guidelines, conflict of interest, certification program maintenance, marketing, and program
evaluation.

**Credentialing management**

Moving from program design to program launch may include adopting a credential
management system. Other options include using an organization’s customer relationship
management software (CRM) and/or using the credential management capabilities within a
third-party exam vendor’s system.

A credential management system enables the program to develop a database of applicants and
certificants and includes everything from contact information to exam results to recertification
dates. The biggest return on investment with a properly vetted credential management system
is the ability to automate traditionally manual processes, such as application processing, that
are both time consuming and prone to entry errors. An automated system frees up staff time
and resources. It also allows credentialing staff to focus their attention on other areas of the
program while providing candidates and external stakeholders expedited access to accurate
information about a credential or a candidate’s disposition in the process. NOTE: Such a
database contains personally identifiable information of applicants and certificants, so the
program must address the privacy and security requirements related to that information.

When searching for a credential management system for a new certification program, it is
important to fully understand the program’s data requirements and needs before investigating
vendor capabilities. Determining system needs can be achieved by spending time meeting with
stakeholders to identify primary and secondary needs of the organization from multiple perspectives. Areas of discussion may include:

- The primary functionality of the system software;
- System access and integration (i.e., interoperability) with other software platforms, i.e., test delivery vendor;
- Eligibility requirements and tracking;
- Application processing;
- E-commerce/payment collection (exam fees & products, PCI compliance);
- Continuing education credits tracking/recertification processes;
- Candidate communications;
- Capacity for portal system accessible by applicants/certificants;
- Reporting capabilities for internal and external stakeholders;
- Data privacy management and security processes and capabilities, such as data retention, data sharing, privacy statement, requests for data removal, data security, data breaches, staff training;
- Training and on-going vendor support; and
- Cost-benefit analysis

Programs should invest the time necessary to assure the selected platform is the best fit from both technical and service perspectives. Discuss with each vendor its approach to ongoing service and support. Differences will exist from one vendor to the next, so understand thoroughly what the vendor-client partnership will be post-purchase. If the vendor’s expectations are misaligned with the program’s, then the partnership is unlikely to be one of strong commitment, dependability, and trust.

**Section Three: How do we execute the program?**

**Candidate materials**

It is critically important to know the target audience when defining the required candidate materials and in developing the marketing and communications plan. When documenting the candidate population, the program should define the expected (or required) professional background, education level, and basic demographics, if applicable. It may also be relevant to establish candidate personas, especially if there are multiple personas, and document typical behaviors, preferences regarding communication channels, appropriate levels of detail needed, and comfort level with technology.
A candidate handbook (also known as a candidate bulletin or exam bulletin) is an important resource intended to provide candidates a single source document with all of the information needed to apply for, earn, and maintain certification. Handbooks usually include information about eligibility requirements, how to schedule and apply for accommodations, how to behave ethically (e.g., code of conduct), scope of the assessment, how to obtain score reports and/or certificates, guidance on credential usage, the terms of use of the testing platform and/or a candidate agreement, and much more. The following list of topics is a starting point for a candidate handbook; it may be helpful to review handbooks from successful certification programs:

- Applications: initial certification, recertification, requests for accommodations, etc.;
- Website framework for candidate information;
- Examination blueprint (exam content outline);
- Exam specifications, such as the number of questions, question formats, time limits, and rules regarding breaks;
- Ethical requirements (e.g., non-disclosure agreement, code of conduct);
- Credential usage guidelines;
- How to obtain certification (application instructions, exam scheduling);
- FAQs;
- How to prepare for exam (study tips, reference list or prep/practice materials when applicable);
- Fees and e-commerce (prep/practice materials when applicable, certificant bling/promo items);
- What to expect on exam day; and
- How to maintain certification, including recertification or renewal requirements.

**Marketing and communications**

During the lifecycle of the certification, there will probably be a need to identify and promote its value. Before tackling the tactical communications components, consider building a value proposition that aligns with the organizational mission statement. Such content is used to promote the certification and communicate value to stakeholders. The following topics are typically included in a communication plan:

- A mission statement that aligns with the stated goal and purpose of certification;
- A value proposition, including the value of certification (e.g., to confirm essential knowledge, skills, and abilities; to validate to stakeholder’s career growth opportunities, to provide bases for pay increases, or to provide a standardized and measurable way for certificants to keep up with changes within a profession;
• Operational direction, such as how to apply for and/or schedule, reschedule, or cancel an exam session;
• Operational communications, such as eligibility requirements, instructions for scheduling, confirming, or canceling an exam session;
• Information regarding the launch campaign;
• Information regarding the nurture campaign;
• A list of certificant touchpoints, such as how to keep in touch or initiatives that promote recertification; and
• Promotions.

Exam development

Examination development requires a careful orchestration of events between both the certification program team and test development experts. Outcomes from a job analysis study, also sometimes referred to as a job/task analysis, practice analysis, or role delineation study, are used to establish the foundation of certification programs in that they document the knowledge, skills, and abilities (KSAs) required to perform the job or practice area being certified. Successful certification programs usually require the expertise of test development experts specializing in such analyses and psychometric support, which can be provided by an external consultant or an in-house psychometrician.

Most new certification programs contract with an examination vendor and/or a psychometric service provider. Choosing a vendor or psychometric service provider typically begins with a request for proposals (RFP). The following is a list of issues to consider when preparing an RFP (also see section on Exam Administration below at pp. 15-16):

- Will the exam be paper-based or online, or available in both formats, and how will it be administered (see below)?
- Does the program need an all-inclusive vendor or would a-la-carte services be a better fit?
- What are the program’s needs, expectations, and timelines?
- Is the review of the RFP and resulting proposals a board function or a staff function?
- With whom or with what office does approval of financial decisions rest: the Board, a steering committee, a designated staff member?

Once it is time to begin developing exam content, the first step is to recruit subject matter experts (SMEs) to work on various parts of the exam development process. SME committees should be reflective of the practitioners who are currently performing the technical skills that the certification will assess. In addition, SME’s qualifications, years of experience, areas of
expertise, practice settings, and general demographics, such as geographic location, should be documented and considered prior to assigning SMEs to various test development committees. It is important to cast a wide net in recruiting SMEs and ensure that SME committees collectively represent the diversity of the practice and target practitioners. Also, SME duties, roles, expectations, and terms of tenure should be documented and formalized in the program’s policies and procedures manual. NOTE: Every SME should be required to sign a Non-Disclosure Agreement (NDA) agreeing to conform to the policies and procedures, as well as to protect the Program’s Intellectual Property from disclosure.

Avenues for recruiting subject matter experts include:

- Contacting related associations for recommendations;
- Conducting an internal call for volunteers; and
- Launching an independent call for volunteers with parameters in place (i.e., requiring a resume/CV or a form that is filled out to gather necessary data to keep the SME pool balanced).

The essential role that SMEs play in the test development process cannot be overstated. SMEs serve as workhorses of the development process, and as such, should be recognized and compensated for their work. This may not necessarily mean paying for services, but recognition and/or compensation should align with company-wide policies and abilities, such as:

- Offering continuing education units for service;
- Paying expenses to on-site meetings, such as travel expenses, lodging, and a per diem stipend; and
- Providing a thank-you letter and/or certificate of attendance or other recognition to share with employers and justify time away from work.

Once a vendor and SMEs are selected, the examination development process can begin. In most cases the first step is to conduct a job/task analysis (JTA). The purpose of a JTA is to identify the knowledge, skills, and abilities (KSAs), along with their relative importance, that are necessary for successful performance in the target practice area. JTA outcomes should be validated prior to use; once approved, outcomes will inform the examination’s blueprint, also referred to as the examination content outline, and round out the exam specifications. Proponents of a new certification program often have strong ideas about examination content, but a JTA is necessary to ensure that the breadth and depth of content is defensible.

With the framework of the examination in place, the buildout requires more work from the SMEs and the vendor, including:
● Item writing training and item writing assignments;
● Item review meetings to conduct quality checks of newly written items (e.g., confirm the answer keys, confirm coding to the blueprint, confirm that references and any other required information have been provided, etc.);
● Assembly of test forms in alignment with the examination’s blueprint and other specifications or targets; and
● Establishment of performance standards via an appropriate cut score method (e.g., Angoff, Nedelsky, Bookmark, based on exam design and psychometric recommendations).

Collectively, these steps outline the initial exam development process. Keep in mind that ongoing examination maintenance and updates are necessary. The frequency of examination maintenance and update activities (i.e., item development activities, plans for launching new exam forms, schedule and methods for monitoring item, candidate, and exam form performance, including planned item analyses, and updates of job/task analysis studies) should be detailed in the program’s policies.

**Exam administration**

The test delivery vendor plays a vital role in providing exam security and ensuring a quality candidate experience, so vetting vendors in terms of fit with program needs and needs of the candidates they will serve is very important. To assess this fit, consider the following questions through the lens of the target audience (the potential candidate base):

- Where do candidates reside (geographic footprint)?
- Is test center delivery going to meet testing capacity requirements given the geographic distribution of candidates?
- What modes of test administration best address security requirements and candidate needs (e.g., traditional test centers, online proctoring)?
- Does the program have timing considerations (e.g., are your candidates completing an educational or training program that may determine when you should offer the exam)?

Another key consideration when selecting a vendor relates to test construction. There are a host of questions that also require unequivocal answers, such as the following:

- What are the technical requirements needed to assemble and deliver your exam?
- How many items (questions) is the exam in total? Which of these items will contribute towards candidates’ scores and which, if any, will serve as pretest items?
• What type of items will be presented to the candidate (multiple choice questions, multiple select, case studies, open-ended response, drag and drop, hot spot, fill-in-the-blank, performance, etc.)?
• How will the items be delivered (e.g., paper-based, computer-based)? Will computer-based exams be delivered in a fixed order? Will any type of adaptive technology be used in assembling/delivering the exams?
• How much time will candidates be allowed to complete their test session?
• Will breaks be allowed, and if so, how will the integrity and security of the exam be protected while candidates are away from personnel assigned to proctor the exam session?
• What are the requirements for exam scoring and reporting?
  o What scoring model will be used (compensatory vs. conjunctive)?
  o How will scores be reported (number-correct, percent-correct, scaled scores)?
  o Will the exam be scored in real-time by the vendor’s test driver (delivery software), and if so, how?
  o Will scores be reported immediately upon a candidates submission of their exam?
  o How (and when) will the program validate score results and communicate an official score to the test taker?

It is common for vendors to support different types of test construction as well as different delivery and proctoring models. Still, it is important to determine a vendor’s strengths and weaknesses when it comes to these issues. Consulting with independent experts and interviewing some of a vendor’s clients can provide useful information.

Although releasing a Request for Proposals (RFP) is a common approach, new programs may be better served by engaging in conversation with targeted vendors before drafting an RFP. Here are some additional topics to consider when assessing the technical capabilities of potential vendors:

- Industry experience with new and/or smaller and/or international programs, as relevant;
- Test center network (if required), including types of test centers and geographical footprint of the network;
- Test delivery options (e.g., paper-based, computer-based, event testing);
- Test assembly options (e.g., linear fixed forms (LFF), computer adaptive testing (CAT), linear-on-the-fly (LOFT));
- Test proctoring options (e.g., in-person but not in a test center, at a test center, or some type of remote proctoring)
○ If remote proctoring, what type (live remote, record and review)?

- Test publishing process (including file formats supported, if applicable, and how updates are managed);
- Program launch process, timing, and support;
- Other services offered outside of test delivery (e.g., test development, measurement, item banking software, candidate management system, and/or marketing support);
- General composition of the team that will support your program;
- Customer support plan/philosophy;
- Approach to security and privacy, and any security certifications; and
- Costs, including all ongoing and support costs.

It is impossible to overstate the importance of conducting formal due diligence when selecting a delivery vendor. For the candidate, the chosen vendor serves as the face of the certification program. When a candidate sits for a computer-based exam, whether administered at a brick-and-mortar testing center or via a remote test session (e.g., online proctored exam), the candidate identifies the vendor as a representative of the certification program. Thinking of a potential partnership in these terms may help when determining and prioritizing each vendor’s approach and capabilities. It is easy to get caught up in the technical side of test delivery when vetting vendors. While the technical capabilities of the selected test delivery vendor are critical, it is equally important to find a partner (i.e., vendor) who is candidate-centered in its approach to customer service.

Security and privacy

Two additional considerations are exam security and candidate privacy.

When designing a certification program, it is important to consider the risks to the confidentiality, integrity, and availability of the system and to put in place appropriate measures and mitigations to these risks. Such measures often consist of a combination of measures to prevent and deter test fraud or cheating and in some cases, to also respond to it. Exam security is a broad subject, and there is useful guidance in the following documents: ATP publications entitled, *Assessment Security Options: Considerations by Delivery Channel and Assessment Model* (2013), and the International Test Commission and Association of Test Publishers (ITC/ATP) *Guidelines for Technology-Based Assessment* (2022).

Regarding privacy, it is critically important to respect the privacy of candidates, to protect the confidentiality of their personal data, and to ensure compliance with increasingly widespread privacy laws and regulations. Programs that plan to test outside of the United States should also be aware of international and other regulatory requirements regarding privacy. Best practices call for programs to only collect the minimally needed personal data, use it only for
the purposes of the testing program, retain it only for as long as required, and to be transparent with candidates about its use.

This is particularly important if any candidates are citizens of the European Union, which is likely to make the program subject to the European General Data Protection Regulation (GDPR). Given that privacy laws are being enacted in many countries and in some U.S. States, most programs may need to adhere to known best practices regarding privacy. ATP provides two very useful guidance documents on privacy, which are the *EU General Data Protection Regulation Compliance Guide* (2017) and *Privacy Guidance When Using Video in The Testing Industry* (2020). In addition, the ATP International Privacy Subcommittee has produced a useful series of bulletins on a variety of privacy topics. These bulletins are available through the ATP Bookstore.

**Conclusion**

This paper is predicated on three framing questions: Should we do this?, How do we design a certification program?, and How do we execute the program? Clearly, these questions lead to a myriad of subsequent issues and questions. Gathering answers to these questions should lead to informed decisions about the program’s potential, its viability, and its value to the targeted community.

As discussed earlier, when addressing these questions, it is helpful to seek input from different sources, such as established programs, different groups of stakeholders, and from industry partners. Consult resources from organizations such as the Association of Test Publishers (ATP), the Institute for Credentialing Excellence (I.C.E.), and the International Test Commission (ITC).

Information provided in this paper deals primarily with preliminary considerations. Obviously, there are many other steps in the process for setting up and maintaining a certification program, however the authors of this document have seen what can happen when a decision to create a certification moves forward without spending enough time on the preliminaries. Typically, it leads to unnecessary problems and can lead to wasted time and money, and in the worst-case situations, can lead to the failure of a program. It should be emphasized that dedicating time and resources in the early phase of assessing feasibility of creating a certification program is worthwhile. Such investment of effort will measurably improve the chances of making correct decisions and ultimately, creating a successful certification program.
Resources and Further Reading

- *Why Get Certified? The Value of IT Certification: An IT Certification White Paper.* (Cooper, 2021, ITCC)
- *Standards for the Accreditation of Certification Programs.* (National Commission for Certifying Agencies, 2014)
- Association of Test Publishers web site. [www.testpublishers.org](http://www.testpublishers.org)
- Institute for Credentialing Excellence web site. [www.credentialingexcellence.org](http://www.credentialingexcellence.org)
- IT Certification Council web site. [itcertcouncil.org](http://itcertcouncil.org)
- The International Test Commission web site. [https://www.intestcom.org/](https://www.intestcom.org/)
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