

A SUCCESSFUL CONVERSION: THE BENEFITS AND BEST PRACTICES OF COMPUTER-BASED TESTING

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INTRODUCTION

Computer-based testing (CBT) has been available in various forms for more than four decades. In the past dozen years, CBT has grown from its initial focus on certification testing for the IT industry to a widely accepted delivery model serving elements of virtually every market once dominated by paper-and-pencil testing. Today, nearly a million tests per month are delivered in high-stakes, technology-enabled global testing centers around the world.

While computer-based testing is becoming an increasingly accepted testing solution, there are still many factors that must be considered when choosing and implementing a CBT delivery model. This guide will answer frequently asked questions about the paper-and-pencil to computer-based testing conversion process, explore the benefits of CBT and identify best practices for successful implementation and delivery procedures.

FAQ: CONVERTING FROM PAPER-AND-PENCIL TO COMPUTER-BASED TESTING

How long does it take to implement computer-based testing?

Your unique requirements will greatly influence the timeline. If you already have exam content, your program could be implemented within weeks. If you are building an entirely new program and need to develop and validate exam content, the implementation process may take a number of months.

Is it difficult to convert paper-and-pencil systems to computer-based systems?

No, the conversion process is not difficult. The conversion process varies depending on the *size* and *complexity* of your testing program and your organization's unique needs. Our successful implementation with some of the most complex computer-based exams in the world provides you with the *wisdom*, *experience* and *knowledge* needed to launch your program efficiently within months as opposed to years. Integrating your organization's unique needs with our experience and technical expertise enables the conversion to become a very manageable process. Prometric will work closely with you to evaluate your organization's specific needs and design a tailored solution that is *secure*, *effective*, and *affordable*.

Prometric can not only provide the technical support, but can provide consultation on how to inform and educate your key audiences about the move to computer-based systems and the benefits that can be derived from a computer-based format. Our experience has shown that reliable *communication* is an important, yet often overlooked program element – and one that can critically affect the successful adoption of your new program.

Is computer-based testing more expensive than paper-and-pencil testing?

No. In fact, just the opposite is often true when you consider the entire, end-to-end testing process, the lifecycle of test content, and the benefits experienced by your end-users. Taking full advantage of the application of technology may significantly reduce

the overall costs of test development, delivery and administration – making computer-based testing less expensive than the paper-and-pencil alternative.

Consider this:

- Scoring a paper-and-pencil test is expensive and time-consuming compared with the automation possible through a computerized test.
- Handling costs and scanning charges are eliminated with computerized tests.
- The extensive logistics required to locate and manage temporary paper-and-pencil testing locations are replaced by dedicated computer-based testing centers that achieve the economy of scale that supporting hundreds of testing programs provides.
- Data analysis and reporting are made less expensive through the volume of readily accessible data generated by the computer-based testing system.

How large does an exam item bank need to be to support CBT?

Many of the same test construction and psychometric issues faced by paper-and-pencil testing programs apply to computer-based testing as well. CBT, in and of itself, does not require a larger item bank than an equivalent paper-and-pencil exam.

The traditional item exposure factors, such as: content domain complexity, candidate demographics, test administration availability, pass rates, and re-test rules all have a more profound impact on the size of the item bank than the modality of test delivery. In fact, various test navigation and presentation strategies made possible through CBT can help to mitigate item exposure concerns. Randomization, or scrambling, of items can give candidates the impression that their test experience was unique, making the sharing of content after the event less likely. Electronic delivery also makes the development and administration of a large number of forms, all constructed from a common set of items, much more effective than the production and distribution of costly paper-and-pencil test materials.

Is computer-based testing secure?

The computer-based testing services provided by Prometric are highly secure. Our services significantly reduce the security risks traditionally associated with paper-and-pencil testing, such as the printing and distribution of test content, the potential inconsistencies of the testing experience and the degree of proctoring needed from location to location.

Here are some security features that are unique to computer-based testing:

- The use of test development software enables tighter controls during the item writing and test construction process.
- The ability to capture item, section and overall test timing information, along with candidate responses, facilitates statistical analyses and data forensics techniques designed to identify potential security breaches and unexpected performance trends.
- Tests results and other proprietary data are transmitted and retrieved over secure lines using advanced data encryption techniques.
- Test delivery techniques, such as random item and section presentation, branching and form selection algorithms, discourage cheating attempts and serve as a deterrent to other security threats.
- Biometrics, such as digital photographs of the candidates, can be linked electronically to the test result to provide additional confidence surrounding the authentication of the test-takers.

Prometric has been entrusted to provide highly secure delivery for the most prestigious, high profile and high-stakes testing programs, including Graduate Record Examination, National Board of Medical Examiners and the Microsoft Certified Systems Engineer certification. Prometric Testing Centers provide in-person and electronically monitored proctoring. Such redundancy mitigates the risk of examinees collaborating during tests.

How quickly does an examinee receive scoring feedback after a computer-based test is administered?

Program sponsors have complete control over the nature and timing of the scoring feedback for their examinees. This control extends from simple score reporting to more advanced capabilities such as diagnostic profiles and prescriptive responses. Examinees highly value this unique feature, as the information equips them to immediately begin planning additional training, education or re-testing. Alternatively, the test sponsor can elect to withhold test results from the candidate pending review.

How do examinees benefit from using computer-based testing?

Computer-based testing delivers a host of benefits directly to the examinee, including:

- Providing examinees with the convenience of scheduling their tests on the dates, times and locations most suitable for them
- Reducing examinee response errors by presenting questions one at a time, if the test sponsor opts for this delivery method. Often, this allows the examinee to better focus on each individual test item
- Facilitating re-testing by providing more immediate scoring and more frequent or continuous test administration
- Seamlessly supporting reference materials and a variety of multimedia for more engaging item presentation

What efficiencies do program sponsors gain by using computer-based testing?

- Computer-based testing starts with content development. Credentialing sponsors who use technology in the development phase reap the rewards of a defined structure and process flow. Technology enables test developers to produce test content far more quickly than conventional methods.
- High-stakes computer-based tests are published and immediately distributed to hundreds or thousands of secure test centers around the world. This rapid deployment makes tests conveniently available *wherever* and *whenever* needed.

- Comprehensive administrative services also are typically offered with computer-based testing – ensuring that tests are delivered securely while meeting the needs of the examinees and other stakeholders.
- Computer-based testing is ideal for low to medium-stakes programs, offering even greater *flexibility* through Internet-based testing.
- Computerized testing generates far more information about the testing experience than paper-and-pencil testing – providing greater opportunities for data mining and decision-making.

Is there a recommended conversion process?

There's no single universally accepted approach to the conversion from paper-and-pencil to computer-based testing. In fact, two radically different models have been used with equal success over the past dozen years.

“Keep It Simple”

Perhaps the most common model can best be characterized as the “Keep it Simple” approach. The idea is to maintain as much of the current program as possible, typically transferring existing test content to CBT. Virtually everything else about the tests – item types, presentation style, navigation, scoring and reporting – remain unchanged. This approach has several distinct advantages:

- Familiarity with the process often eases candidate anxiety
- Leveraging existing tests minimizes conversion costs
- Historical results can be readily analyzed and compared
- Stakeholder acceptance is often more easily achieved

“Complementary Initiatives”

The second approach, often undertaken by well-established testing programs, bundles conversion to CBT with other initiatives such as geographic expansion or the use of innovative, new item types. Change, particularly to something as important as a testing program, can be difficult for test sponsors as well as candidates. Recognizing this fact

prompts many organizations to plan their conversion to coincide with other *complementary initiatives*. The advantages of such an approach can include:

- Concentrated effort yields greater program stability and reduced overall cost
- Provides a “clean break” between the old and new methodologies
- Stakeholder excitement can stimulate candidate interest and drive testing demand
- Enhanced value justifies potential increase in testing fees

Will testing volume be impacted by a move to CBT?

Testing volumes often increase following the conversion because of a greater number of testing locations and more frequent scheduling opportunities. Some programs have experienced temporary reductions in demand, triggered by candidate apprehension regarding CBT and resulting in either a last-minute surge in testing during the final paper-and-pencil administrations or procrastination to the last possible computerized testing date. The simultaneous availability of paper-and-pencil and CBT administrations can also have a detrimental affect on testing volumes, feeding anxiety and further delaying adoption. Maintaining both testing models is also an extremely expensive approach because of the required duplication of effort. *The key to mitigating testing volume risk and ultimately generating increased demand is continuous marketing and candidate outreach.*

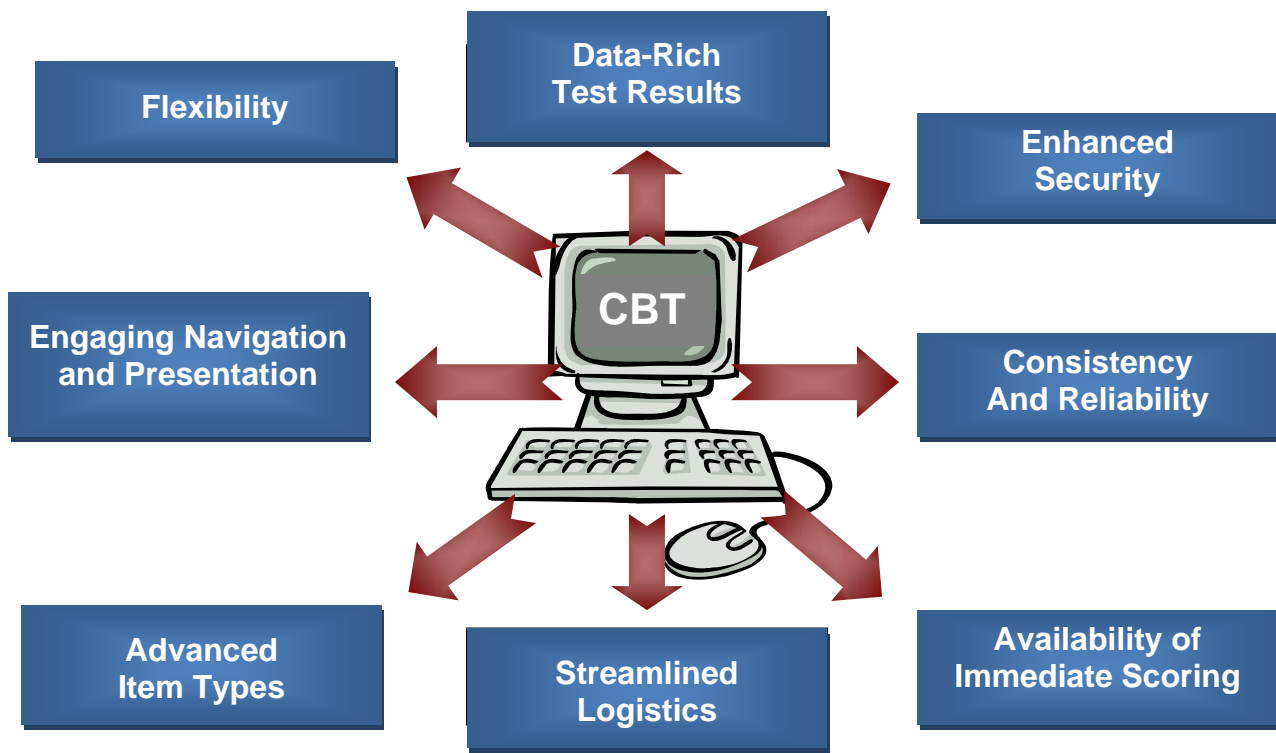
What can be done to promote the new computerized testing program?

Marketing can have a profound impact on stakeholder and candidate acceptance of CBT. A communications campaign should be launched very early in the conversion process to ease concerns and ultimately generate and maintain interest in the program.

Outreach efforts can take many forms, including:

- Educational presentations at conferences, user group meetings and other forums
- White papers and other vehicles highlighting the rationale for the change
- Newsletters, conference calls and Web site development
- Sample tests and tutorials to address pre-test anxiety
- Testimonials from early CBT candidates

THE BENEFITS OF COMPUTER-BASED TESTING



FLEXIBILITY

Computer-based testing offers *flexible* delivery of test administration windows. The full spectrum of delivery models is available – from *single-day* test administration windows (similar to that used in paper-pencil testing) to *continuous* availability for on-demand testing, or anything in between. The administrative approach chosen for a particular program will drive subsequent decisions, including candidate access, test security, item exposure, forms assembly, publishing frequency and standard setting.

Candidates realize optimum convenience when the test is offered on-demand, year-round. However, it is possible to schedule limited administration windows that improve candidate access compared to paper-based testing and simplify the security impact compared to on-demand delivery. Creating multiple exam forms makes it more difficult for item content to be jeopardized and minimizes the risk of item compromise. The

number of forms must be calculated on a test-by-test basis based on candidate testing volumes, the cohesiveness of the candidate community and the testing window duration(s).

Item exposure is managed by monitoring the amount of time an item is in the field and the number of candidates who see an item. Item statistics generated from ongoing test delivery results allow a test sponsor to monitor and react to item exposure. If the size of an item bank does not currently support enough forms for on-demand testing, computer-based delivery allows for quick analysis of both research items and overall forms performance from a particular testing window administration.

DATA-RICH TEST RESULTS

The need for valid measurement is at the heart of virtually every testing program and measurement is highly dependent on the availability of reliable data. Paper-and-pencil testing provides only the basic information required for simple analysis (Item number, response and the answer key). Beyond these basics, technology-based test delivery provides a rich array of data, including start and end time, break periods, time spent on each item/group/section and integrated survey responses. Constructed responses, such as freeform text and essays, can be collected electronically and easily scored without the challenges associated with hand-written responses.

Unlike paper-and-pencil responses that can be erased and changed multiple times, computer-based tests can record all interim answers through a process known as key-stroke capture. While this is a very resource-intensive means of delivery, it can be a valuable tool both for assessing candidate and test behavior as well as a source of data forensic for security investigations.

Computer-based testing can also provide direct access to data generated by third-party applications, including word processors, spreadsheets and other software packages such as simulation tools. This can provide a seamless integration of traditional theory or knowledge-based content with performance-based material.

The sheer volume of data generated by an advanced testing program can make effective information management a challenge. The use of a hosted data management service can *simplify* the storage, retrieval, analysis and reporting of test results. Such a repository not only provides the means of managing post-test results, it also can be instrumental in the continuous improvement of the exam creation and delivery process. Through a process known as *In-Service Analysis*, test results are analyzed for changes in item difficulty and test performance. Equipped with this information, test sponsors can modify their item bank or scoring parameters in response to changing conditions.

ENHANCED SECURITY

For logistical reasons, many paper-and-pencil testing programs are administered as single day test events, perhaps once or twice a year. In addition to simplifying the selection and management of testing sites, this approach also minimizes the cumulative impact of item exposure on subsequent administrations. The large number of permanent, computer-based testing centers often provides greater scheduling flexibility; however, this ubiquity increases concern regarding item exposure and test security.

There are three aspects of item exposure that should be considered:

1. the number of times that an item is delivered;
2. the number and frequency of test administration windows in which the item is delivered; and
3. the cumulative length of time that an item is live in the field.

If there is significant motivation for candidates or others to gain unauthorized access to the test content or if the candidate community is close knit and prone to discuss the test, it would be prudent to “cycle” items frequently. This can be accomplished by having a relatively large number of forms available at any one time or by refreshing a relatively small number of forms more frequently. While publishing costs can be minimized with the former, the availability of sufficient forms often requires that test sponsors utilize the latter approach.

Exposure is only one aspect of item security. Other issues include data transmission, candidate authentication and proctoring/invigilation. While CBT is inherently more secure than paper-and-pencil testing, CBT data (candidate demographics, test content, and test results) should be encrypted whenever they are transmitted or stored at a testing center. More sophisticated data protection involves a combination of encryption and segmentation that makes decryption and the proper reassembly of data virtually impossible. The intrinsic value of test content and the threat posed by “professional” test takers posing as authorized candidates demand that stringent authentication procedures be applied. Typically, this involves verification against multiple forms of ID and may include biometrics such as fingerprinting and a digital photograph of the candidate. Many of the proctoring techniques employed with paper-and-pencil testing apply with CBT, augmented with technologies such as audio and videotaping and a generally lower candidate to proctor ratio.

Often the maximum ratio of candidates to proctor is 15 to 1 and can be much lower depending on the size of the testing facility. Security is also enhanced by the sheer diversity of test-takers who might be taking any one of hundreds of different tests within a single testing center at any one time. This makes seating charts and interleaved forms a thing of the past.

ENGAGING NAVIGATION AND PRESENTATION

Paper-and-pencil tests are by definition linear – items are presented one after another in a pre-defined sequence. CBT items can be presented in several ways within a linear test: sequentially throughout the test, sequentially within sections that are randomly selected, and randomly within sections that are, in turn, randomly presented. This flexibility can provide a testing program with additional experience by virtue of a “unique” testing experience from one candidate to the next.

Other forms of test navigation are uniquely available with CBT. Linear on the Fly Testing (LOFT) allows a test author to pre-define the sequence of sections or testlets based on the performance of prior sections or testlets. LOFT can provide many of the benefits of adaptive testing with the simplicity and operational efficiency of linear testing. Adaptive testing, in which the presentation of items or testlets is dynamically determined based

on a candidate's performance earlier in a particular test, provides additional security by reducing item exposure. However, adaptive testing requires significant item-level analysis and a substantially larger item bank to accommodate all the possible selection criteria.

CBT also affords unique content presentation styles. For example, items may be presented individually, with one item per page, or clustered together in support of such elements as a scenario or reading passage. When presenting multiple items per page the items may appear on one part of the screen while the scenario or other content is presented elsewhere on the screen. Exhibits, reference works, multimedia components and other stimuli can all be displayed with this same presentation style. In addition, external applications such as calculators, spreadsheets, word processors and custom software can be invoked through simple interface controls with data flowing seamlessly to and from the test driver.

CONSISTENCY AND RELIABILITY

Paper-and-pencil test administrations can vary dramatically from day-to-day and across locations. The size and physical layout of the testing rooms, the number and diligence of the proctors, the adherence to administrative requirements and the test-takers themselves all contribute to the variability that can impact the quality and validity of the testing experience.

The dedicated testing centers typically used for computer-based testing apply a degree of standardization that would be very difficult to achieve with paper-and-pencil testing. Policies and procedures common to dozens of other programs are strictly adhered to within these "bricks and mortar" locations. Professional proctors, who are very familiar with these policies and procedures, provide completely impartial oversight with no motivation to have the candidates receive a higher score.

The structure of computer-based testing enforces a structure that ensures *consistency* and *reliability*. Timing is rigidly controlled so that every candidate has exactly the same

amount of time available. Any required reference materials or other test aides can be incorporated directly into the test, eliminating paper exhibits that can be lost or damaged.

ADVANCED ITEM TYPES

The types of items that can be presented within a CBT test are flexible. Advanced item types are now available that can test a candidate in an engaging fashion, which more closely replicates, or simulates, their work environment and activities. The integration of multimedia within an item provides an efficient means of delivering a large amount of relevant information to the candidate while testing such skills as comprehension and reasoning. CBT also provides test sponsors with the flexibility to produce custom item types tailored to the specific needs of their program.

The following are some of the item types that are unique to CBT:

- **Hot Spot/Point and Click** – The presentation of a specially prepared image in which various elements have been coded to return a score value. The candidate is asked to respond to the item by pointing to the “answer” with the mouse pointer and clicking the mouse button. The coordinates of this mouse click are compared against the pre-defined elements and the appropriate score is recorded.
- **Integrated Multimedia** – The ability to present brief audio and/or video clips as either reference and exhibit materials or stems and answer options. Care must be taken to balance the length and quality (audio fidelity and video frame-rate) with the expected delivery model. Internet-based tests typically encounter bandwidth constraints that must be taken into consideration.
- **Drag and Drop** – The ability to respond to items by moving various answer options to their appropriate location. Often used as an advanced matching item type, Drag and Drop animates the selection process and can be incorporated into performance-based testing models.

STREAMLINED LOGISTICS

Quite often the challenge of paper-and-pencil testing comes not from the actual administration of the event itself but from all the tasks that take place *before* and *after* test day. Months of work go into such tasks as securing testing facilities, hiring proctors, developing and printing test materials and arranging for secure delivery and storage of the test content. Post-test activities, such as the retrieval, scanning and scoring of test materials, can prove just as time-consuming and labor-intensive.

Computer-based testing eliminates many of these activities, particularly when delivered through a company such as Prometric. Leveraging technology and the economies of scale made possible through CBT, test sponsors can focus on important activities such as ensuring test validity and providing high-quality service to their constituents.

AVAILABILITY OF IMMEDIATE SCORING

Computer-based testing increases the speed and accuracy of score reporting. Test sponsors have the option to provide candidates with a test result immediately after completion of the test. Alternatively, results may be withheld until a later date, therefore providing only verification that the test was completed. Immediate scoring and reporting is often expected by CBT candidates. This requires that all forms be balanced with regard to difficulty, test time, content, and cut score. Immediate scoring impacts the size of the item bank, item selection, forms assembly and standard setting.

Creating multiple, equivalent forms will require an item bank with enough operational items to populate the initial test forms. The test sponsor's items must have supporting statistics to validate inclusion in the delivery forms. A psychometrician can help determine the required size of an item bank needed to support an on-demand computer-based testing program based on the attributes of the candidate population and the nature of the domains being tested.

Test sponsors must establish a process for creating, testing, and evaluating research items to be included as non-scored items during a candidate's exam. When an

adequate number of candidates have answered a research item, the item can be evaluated based upon *Classical Test Theory* or *Item Response Theory* statistics—a high standard that Prometric holds itself to. Items that perform well in this analysis are used to continuously supply the item bank with new, valid items.

Assembly of equivalent exam forms becomes a simpler task once the item bank is robust, having been fed by the use of ongoing research items. With the use of more exam forms, Prometric advises the scheduling of an Angoff meeting to determine the cut score for a single form. From the results of this meeting, all future forms can be statistically equated back to the single “benchmark” form. This practical, yet equitable and legally defensible, approach is commonly employed in on-demand computer-based testing, representing significant time- and cost-savings.

TEST RESULTS AND DATA COLLECTION

Unlike static paper-and-pencil answer sheets computer-based tests collect far more information than the candidate’s responses. Computer-based test results capture data regarding the test event (candidate name and ID, start time, end time, date, workstation ID, test center location, etc.) as well as item data (item sequence, item ID, correct response, candidate response, time spent on item, etc.). This information is valuable from a psychometric perspective, in terms of item difficulty and enables a degree of security analysis unheard of with paper-and-pencil testing. Such data forensics allows test sponsors to identify performance differences and isolate potential security risks.

ADDITIONAL ADVANTAGES OF CBT

The following are additional advantages that may be derived from a transition to computer-based testing:

1. Unbiased test administration and scoring
2. Fewer response entry and recognition errors
3. Increased delivery, administration and scoring efficiency
4. Fewer comprehension errors caused by the testing process
5. Convenience of individualized administration at requested date and location
6. Improved test security resulting from electronic transmission and encryption
7. Integration of pre-test, experimental, items into the body of the test
8. Real-world applicability of the test enhances candidate interest
9. Improved translation and localization with universal availability of content
10. Faster and more controlled test revision process with shorter response time
11. Increased candidate acceptance and satisfaction
12. Reduced costs for many elements of the testing lifecycle
13. Faster decision-making as the result of immediate scoring and reporting
14. Improved methods for accommodating special-needs candidates
15. Evolutionary step toward future testing methodologies

CONVERSION BEST PRACTICES

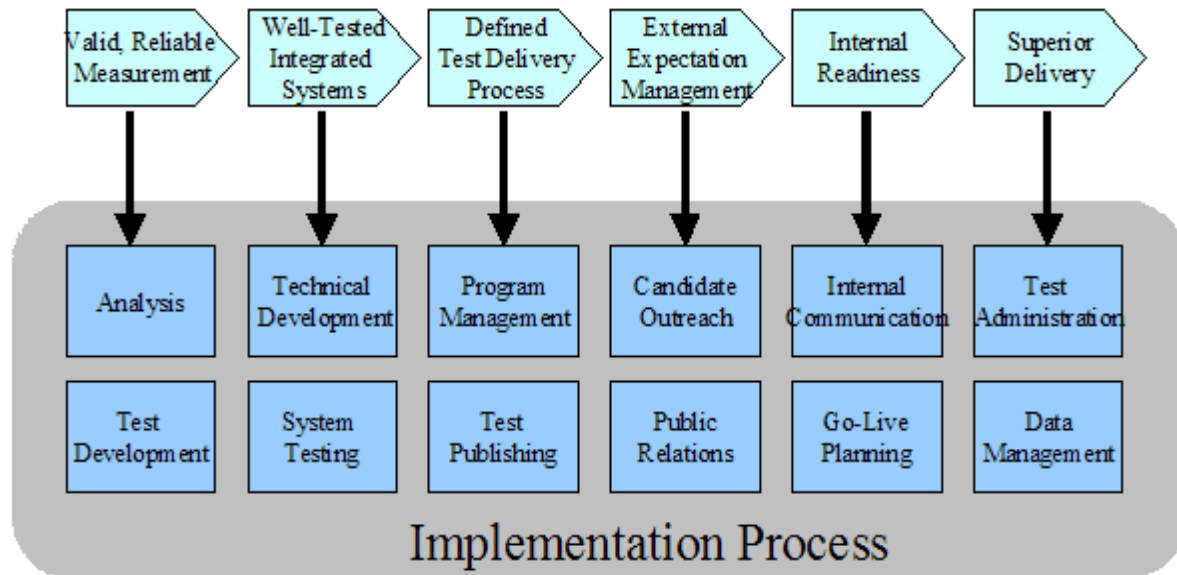
TRANSITION STRATEGIES

Migration to a computer-based testing environment, with its many advantages and considerations outlined above, provides an ideal opportunity to review your test development processes and tools. It is often feasible to reduce certain costs, improve quality and shorten timelines by incorporating overall program changes into the computer migration.

Numerous studies have shown that content delivered via computer yields performance results comparable to that of a paper-and-pencil equivalent. For this reason, it is generally recommended that tests simply be transferred to CBT. Maintaining the same content tends to ease any potential candidate test anxiety associated with the conversion and allows data to be readily compared between the two modalities. Once the candidate population has adjusted to the migration other changes can be introduced into the program more readily.

Typically, it is better to transition all test delivery to CBT rather than operating for a prolonged period with both paper-and-pencil and computer delivery. Providing both delivery options increases operating costs and complexity, and has the potential to foster concerns about the viability or comparability of CBT delivery.

Change Management Lifecycle



ANALYSIS AND TEST DEVELOPMENT

Although research has shown a high degree of comparability between paper-and-pencil and computer-based tests the transition to CBT is often viewed as an opportunity to implement structural changes to a testing program. Such an objective must be identified for very early on in the conversion plan and requires thorough analysis to assure that all subsequent steps in the process can accommodate such changes. Unexpected dependencies and constraints may surface late in the project unless the proper due diligence and planning is done at the outset.

During the analysis phase, it may be determined that the existing item bank and/or test forms may be inadequate for the new delivery model. There are many factors that might drive this decision, including geographic dispersion, more frequent testing events and the need for more frequent item trialing. With this assessment complete, a project plan can be built that includes all of the major milestones, including item development and validation, forms construction and standard setting.

At this stage, the foundation for future development is laid. More advanced navigation and scoring models, and future enhancements, can be explored. For example, a move to some form of adaptive testing might be preceded by the adoption of Item Response Theory scoring several years earlier.

TECHNICAL DEVELOPMENT AND SYSTEM TESTING

It has been Prometric's experience that many testing programs can be successfully converted to CBT without any modifications to our delivery systems. In addition to making such a transition cost-effective, CBT also allows test sponsors to benefit from the best practices employed by hundreds of other testing programs. If it is determined that modifications or enhancements are necessary, Prometric can build these changes into a development plan. Alternatively, either the test sponsor or a designated third-party organization can build some extensions to current capabilities. Extensive system testing involving quality assurance reviews as well as integration and load testing is conducted to ensure program accuracy and reliability.

PROGRAM MANAGEMENT AND TEST PUBLISHING

As with most complex systems, the success of a testing program is often dependent on the quality of the project or program management it receives from both the test sponsor and its testing partner. Program managers are accountable for all implementation and operational details regarding the program. As such, program managers must be technically knowledgeable and sensitive to the needs of their constituents.

Test publishing is the process of formatting and packaging tests for delivery within the selected testing software. Publishing includes item editing, graphics and exhibits, integration of special elements such as multimedia components, simulations and external applications, definition of navigation and presentation, and the development of scoring and reporting routines. While the test publishing team performs extensive quality assurance reviews the test sponsor should also take the opportunity to review the final test before it is deployed.

CANDIDATE OUTREACH AND PUBLIC RELATIONS

Frequent communication with the candidate base is essential throughout the migration process. In the absence of information, anxiety regarding the new delivery methodology will grow and candidate behavior may be impacted. If candidates perceive that the “new” tests will be more difficult, they may rush to participate in one of the last paper-and-pencil administrations or they may delay to the last possible moment before taking the CBT version. Not only will this reflect badly on the transition, the revenue stream from the testing program may be adversely affected. This is particularly true for voluntary testing programs where maintaining candidate motivation and enthusiasm is essential.

These challenges can be avoided with an active public relations campaign that promotes the value of CBT delivery from the candidates’ perspective (immediate scoring, testing on-demand, etc.). It is also important to generate interest and support from any other stakeholders such as a board of directors, state regulators, employers, etc. These promotional efforts should start long before the launch of computer delivery and may include the following:

- Marketing support from the test delivery vendor
- Formation of a CBT Task Force consisting of representatives from the various stakeholders and constituencies
- Presentations at conferences and/or other gatherings of potential candidates
- A white paper on the merits of CBT and its comparability and validity
- Periodic newsletters promoting completion of selected project milestones
- A CBT conversion Web site to serve as a clearinghouse for information
- Press releases targeted toward trade journals as well as general interest publications
- A a brief sample test posted on the Web site to familiarize candidates with the “look and feel” of the live test
- Delivery of a tutorial at the test center prior to the launch of the live test (Often this can be a generic tutorial of basic test driver functionality)

- A post-test survey to gather candidate feedback on the quality and effectiveness of the test
- Post-launch promotional activities: press releases, testing conference presentations, etc.

CBT's unparalleled data collection capabilities allow test sponsors to measure not only the validity of the initial test but the candidates' perceptions as well, through a post-test survey. The results can be used to improve future versions of the test, and the marketing and promotional activities developed in support of the program.

INTERNAL COMMUNICATIONS AND GO-LIVE PLANNING

It is during this phase of the conversion that all internal stakeholders, including test sponsor and test vendor personnel, are notified of the upcoming availability of the test. If registration and scheduling requests will be taken both via the Web as well as through a contact center, a script must be prepared and training conducted for all registrars. Similarly, test center employees must be notified and trained. Prometric staff participates in periodic computer-based certification exam based upon the Policies, Procedures and Practices manual used at all testing centers. A separate manual is prepared for each the hundreds of available testing programs to serve as a reference for all client-specific requirements.

While Go-Live Planning begins very early in the process of implementing a new computer-based test, the results of these efforts are not realized until just before the test's launch. Contingency plans are developed to address any anticipated problem as well as general strategies for dealing with the unexpected. A checklist is prepared and reviewed on an ongoing basis to ensure that all of the individual steps leading to the introduction of a new test have been completed and properly verified.

TEST ADMINISTRATION AND DATA MANAGEMENT

Test administration within a computer-based testing center network is generally highly standardized to assure the proper economies of scale. This standardization also promotes a high degree of consistency and quality of service because of familiarity with established policies and procedures. As a result, the introduction of new tests is typically quite seamless. Promotional materials, on-site tutorials and the test center staff all serve to reduce any candidate, test-day anxiety. Growing candidate acceptance of CBT as a convenient alternative to paper-and-pencil testing is further easing the transition.

To harness the full potential of any testing program, there must be a mechanism for retrieving, storing, analyzing and reporting on the volumes of data generated through CBT. Ideally this data will perform three functions: 1) inform test maintenance and development decisions, 2) manage certification/licensure processing and, 3) perhaps most importantly, serve as a management tool for the organization's strategic and operational planning. While these functionalities can be built and managed by the test sponsor a more efficient and cost-effective solution might be the outsourcing of data management services.

PROMETRIC'S CORPORATE CAPABILITIES

This guide highlights just a portion of the services that Prometric can provide as part of a comprehensive testing system. We would welcome the opportunity to explore a solution optimized for the specific needs of your testing program. With more than 15 years of experience converting hundreds of paper-and-pencil testing programs, Prometric has the resources and expertise to support any testing need.

For more information on computer-based testing, visit Prometric online at prometric.com

Prometric is the global leader in technology-enabled testing and assessment services for academic, professional, government, corporate and information technology markets. Prometric delivers standardized tests for 450 clients, in 26 languages, over the Web or through a global network of testing centers in 134 countries. Based in Baltimore, Md., Prometric employs 3,000 employees worldwide.

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