

Test Security Bulletin



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the economics of risk management: what does a pound of cure cost these days?

by Robert Pedigo
Senior Director of
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Running a testing program these days is challenging. The current business environment presents some formidable obstacles in the form of tight budgets, headcount restrictions, increasing pressure to perform, and more sophisticated security challenges to your tests.

It is no surprise that the knowledge necessary to create, promote, and protect a testing program is both strategic and detailed. Of those three essential tasks, one is increasingly problematic: protecting your program from the theft of your intellectual property (IP) and the effects of cheating. To successfully combat IP theft and misuse, you need a clear understanding of the value of your testing program and the business risks it faces. If you don't know what you have, how can you make intelligent decisions to safeguard your asset?

This article describes a method to identify the financial costs of security business risks facing your testing program. Based upon discussions with fellow education and testing managers over the last 15 years, it is clear to me that the costs of test security problems are often not fully understood and appreciated, and as a result, are underestimated even by highly-experienced test program managers.

What's at stake?

It is a poignant fact that test theft and misuse occur all the time. These attacks reduce the measurement accuracy of your tests, injure the reputation and utility of your program, and necessitate a variety of ongoing costs to fix the damage. Taken together, these costs represent your business exposure caused by IP theft, random or systematic acts of cheating, and test question overexposure.

These costs broadly fall into several categories:

- unplanned test redevelopment;
- loss of program credibility with the associated costs of damage control;
- loss of testing revenue and other related revenue streams;
- loss of test measurement reliability with associated legal liabilities;
- and, perhaps worst of all, reacting to constant emergencies instead of pursuing new profitable business (known as opportunity cost).

Because Caveon specializes in security for a wide variety of testing industry segments, not all of the costs listed here may apply to your program. Similarly, some costs that would accrue to your program may not be listed here.

Let's look at the broad categories of cost that are incurred by security problems in greater detail. Premature item exposure from cheating, or outright publication and sale of your test on the internet can require you to either rewrite your test well ahead of schedule or even pull the test from the market pending redevelopment.

The creation of a validated test is expensive. Organizing subject matter experts' time and travel, project management expense, psychometric consulting, test publication and delivery, and beta testing expenses can very easily exceed \$150,000 for a basic validated test. At best, an unplanned redevelopment effort is disruptive, stressful, inconvenient and embarrassing.

When test security is compromised, it creates a cascade of unwelcomed consequences. Individuals with unfair knowledge of tests typically do not fail; skewing the pass rate and reducing revenue from repeat testing. In time, word of mouth tends

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caveon security directors, your in-house security team

by Jerry Christensen
VP of Marketing



Jim Impara, Ph.D.

One of the biggest fears I experienced as a program manager of training and testing programs in the late 1980s was the realization that I was responsible not only for the overall success of my programs, but also for the security of these high stakes programs. I spent sleepless nights worrying about things that could go wrong, scenarios that could play out and my lack of control over so many aspects of security.

I have seen similar discomfort among the ranks of program managers in the testing industry over the last 15 years. With the entry of Caveon's security services into the market, we all now have security-focused resources to rely upon.

By subscribing to Caveon's security services, you can enlist a sophisticated security staff led by one of the Caveon security directors profiled below. These professionals have years of test security experience, and a staff of statisticians, psychometricians, lawyers and business managers from within the Caveon organization.

Caveon security services are strategic assets that will help you develop, deploy and maintain test security with confidence—and sleep easier at night.

Jim Impara, Ph.D.
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Impara has spent the past 33 years involved in testing. He has designed and managed statewide testing programs in two states. During his 20-year tenure in higher education, he also consulted with several other states on their assessment program. While serving as Director of the Buros Institute of Assessment Consultation and Outreach, from 1995 to 2003, he worked with clients within and outside of education. He has performed audits and accreditations of educational, licensure, and certification programs. Impara has also participated in the development of testing program quality standards for the Buros Institute, for the Conference for Food Protection, and for the National Association of State Contractor Agencies. He served as a reviewer for the "Guidelines for Computer Based Testing" developed and published by ATP.

Although Impara has conducted testing program audits that look at all aspects of testing, he specializes in

conducting security audits, preparing security plans and providing diagnoses of test security reports.

Impara has chaired and served on a variety of different committees for the American Educational Research Association and the National Council on Measurement in Education where he served a three-year term as a board member. He continues to be a reviewer for several measurement journals, while co-editing *Applied Measurement in Education*. He is also a co-editor of the prestigious *Mental Measurements Yearbook Series*.

Impara earned his Masters and Ph.D. in Educational Research and Testing from Florida State University.

Cyndy Fitzgerald, Ph.D.
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A veteran psychometrician and business professional in the testing industry, Fitzgerald is recognized for her pivotal role in building Microsoft's Certified Professional program as well as for her contribution in pioneering alternative item formats and simulation-based performance testing. Prior to her ten-year career at Microsoft, Fitzgerald had over a decade of consulting and teaching experience in the field of test design and analysis. Her more than 17 years of experience developing tests has earned her industry-wide recognition for her efforts to promote standards and the appropriate use of technology in the development of computer-based tests.

She was President of the Association of Test Publishers (ATP) for the fiscal year 2002-2003 and served on ATP's Board of Directors from 1999-2003. Fitzgerald spearheaded ATP's development of "Guidelines for Computer Based Testing" and has been a major contributor to their last four national conferences. Fitzgerald spent last year serving on the Editorial Board for *Certification Magazine* and on the Board of Directors for the Performance Testing Council. She is a frequent presenter at conferences such as NCME, AEA and ATP.



Cyndy Fitzgerald, Ph.D.



Rob Pedigo, MBA



Jamie Mulkey, Ed.D.



John Fremer, Ph.D.

Fitzgerald holds a Ph.D. in Applied Measurement and Statistics from Southern Illinois University and completed a post-doctoral fellowship at the University of New York at Stony Brook.

Robert Pedigo, MBA
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Pedigo is a Senior Director of Test Security Services for Caveon and is also the executive director of an IT industry trade association dedicated to the promotion of certification security. He is also the founder and principal consultant for Robert Pedigo & Associates, which advises private industry leaders and government agencies on the creation, development, and improvement of certification and measurement programs.

Formerly, Pedigo was the General Manager of Sun Microsystems Global Certification Program, and was the founding manager of Oracle Corporation's Certified Professional Program and Adobe Systems' Instructor Certification Program. Pedigo holds a MBA with an emphasis in Organizational Development from City University, graduating second in his class.

Jamie Mulkey, Ed.D.
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Jamie Mulkey most recently was the Manager of Exam Design and Management for Hewlett Packard. She has 16 years experience in analysis, design, development, and assessment of learning and performance interventions. She currently serves on the Board of Directors for the Performance Testing Council. A past Chair of the board of Directors for the Association of Test Publishers (ATP), she also was a contributor to "Guidelines for Computer Based Testing" developed and published by ATP. She spent three years on the Editorial Board for Certification Magazine, and continues to be a frequent contributor to the magazine.


Mulkey holds a Masters degree in Instructional Technology from San Jose State University and a Doctorate in Educational Psychology and Technology from the University of Southern California.

John Fremer, Ph.D.
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Fremer is the former Director of Education for the Global Institute of Educational Testing Service (ETS), where he provided international training in assessment. Fremer also served as the ETS Director of Test Development for School, College, and Professional Programs, and led the ETS team that worked with The College Board to revise the SAT. He was also the Director of Exercise Development for the National Assessment of Educational Progress.

Fremer is the former Vice President and Director of the Measurement Division of The Psychological Corporation.

Fremer served as President of the Association of Test Publishers (ATP), the National Council on Measurement in Education (NCME), and the Association for Assessment in Counseling (AAC). He was the Editor of the NCME journal Educational Measurement: Issues and Practice. In addition, he chaired the Joint Committee on Testing Practices as well as the committee that produced the "Code of Fair Testing Practices in Education," an industry-wide code of practice.

Fremer holds a Ph.D. in Measurement from Columbia University, where he studied with Robert L. Thorndike and Walter MacGinitie. Fremer is active in measurement-related associations. He is a frequent speaker on testing-related issues, particularly those related to testing standards, criticism of testing, and improving the quality of tests and test use. 

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to make many security problems public knowledge, resulting in a damaged reputation for your program. This leads quickly to a loss of revenue from sitting fees. For testing programs with ancillary revenue streams such as training and book sales, the revenue downturn is magnified.

Beyond the reduction in revenue, many costs are increased. Unplanned test development has already been discussed and, unfortunately, the costs don't stop there. Marketing and public relations costs must normally be increased to rebuild an injured program. Similarly, program operating costs tend to rise from an increase in test challenges and complaints.

A great deal of time, money and care go into the creation of a psychometrically validated test so that credentials are granted to qualified individuals. For some testing programs, granting a credential to an unqualified individual could create serious legal liabilities. Just as well-documented development procedures have become a legal standard, failure to maintain a reasonable standard of security throughout the test development, delivery, and scoring process could lead to heightened legal exposure.

There is one last element to calculate—opportunity cost. It's a straightforward concept. If you were able to redeploy the budget and headcount used to react to security problems toward building your program, what would be your return? Once you total the financial costs, opportunity cost, and revenue reductions, you have arrived at your security business exposure. Knowing clearly what is at risk allows you to proactively manage security rather than face the expense, frustration, and distraction of putting out fires.

Someone recently said to me that having effective security policies, procedures and detection tools was good insurance. At the time, I agreed. However, as I signed a check for an auto policy last weekend, I realized that I would be overjoyed if my insurance policy were able to reduce my car's operating costs, give it an extra 200,000 miles of engine life, and keep it washed and waxed. ✉ e-mail: rob.pedigo@caveon.com

Please contact Caveon to learn how we can help you reduce program and business exposure. A security expert will help determine your testing program's exposure and review cost-effective ways to take control of your test security.

cheating in the news

Read the full articles by visiting the news section of our website at: www.caveon.com/resources_news.htm

Teachers and school officials cheat in administering standardized tests in a minimum of four to five percent of elementary school classrooms, Harvard researchers recently reported.

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A former Nevada police officer who was dismissed from the Iowa Law Enforcement Academy on charges he cheated on a test is asking a Story County judge to reinstate him to the academy.

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Recent high school surveys show that 50 percent of high school students plagiarize work from the Internet; 74 percent admit to cheating on a test; and 97 percent say they copy homework.

The New York State Education Department will require principals in charge of teachers who monitor standardized tests to sign a certificate that students weren't helped to cheat.

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A recent high school graduate who maintained that he was unfairly denied the title of class valedictorian amid cheating allegations failed to convince a judge to give him the title.

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An Illinois State Board of Education investigation into test score patterns is zeroing in on Wyvetter H. Younge Middle School, whose principal last spring prevented about 100 special education students from taking the Illinois Standards Achievement Test.

Caveon offers comprehensive services to combat test fraud and piracy with **detection** services to identify security breaches, **remediation** services to confirm suspicions and leverage legal processes to halt abuses of sensitive test information, and **prevention** services to secure tests from compromise.

Visit our booth during the Association of Test Publishers conference, February 2-4, 2004 in Palm Springs, California.

Caveon, pronounced kav-ē-on, comes from the latin word caveo which means "to be on guard against", "to take care of", "to beware", and "to give security."

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