

# Revolutionize Standardized Testing with Open-Source Software

How to Cut Costs, Minimize Risk, & Raise Quality of Large-Scale Testing Programs

## Executive Summary

According to the Auditor General of Pennsylvania, "between 2015 and 2021, Pennsylvania will have spent nearly $100 million," on standardized tests.[1] And EdWeek reported that standardized testing costs states well over a billion dollars every year.[2] While some states today are delivering a majority of tests online, the cost of testing is still much higher in the U.S. than in countries around the world.

For example, research into Italy's National Institute for the Evaluation of the Education and Training System shows that Italy's annual testing budget is approximately $2.6 Million in U.S. dollars (USD), delivering around 4.2 million tests to schools each year. This equates to approximately 0.64 cents per test in USD. How does Italy keep costs down? One way is Italy uses an open-source assessment system used in over 100 countries, avoiding the steep, annual licensing fees that come with proprietary testing platforms common in the U.S. Another is Italy creates their national assessments with teachers, and not consultants working for a private company as is often the case in the U.S.

By comparison, according to the Pennsylvania Department of Education,[3] in 2019 the state administered 2,099,199 tests. With the total cost of state testing in Pennsylvania at approximately $100,000,000 over 6 years, the average annual cost is around $16,666,666. Dividing the average cost per year ($16,666,666) by number of tests administered (2,099,199) the average cost of a state test in Pennsylvania is approximately $8.00, more than eight items what Italy and other countries spend using open-source assessment systems. This is because Pennsylvania, like other states, uses a proprietary application that comes with steep, annual license fees. Were Pennsylvania to switch to open source, the state would save millions per year on state testing.

Standardizing on open-source assessment systems not only saves states significant taxpayer dollars, it also saves time at the state, district, and school levels as administrators, teachers, and students do not have to manage multiple platforms and learn a new assessment system every time a vendor changes. The benefits are huge: quality goes up, costs come down, and the risk of disruptive failures diminishes, too. The recommendations below show states and districts how easy it is to switch to open-source assessment:

- **Standardize on one, open-source assessment delivery system**
- **Standardize on one, open-source assessment item bank**
- **Join the global open-source assessment community**

[1] https://triblive.com/news/pennsylvania/auditor-generals-report-slams-unnecessary-cost-of-using-keystone-exams-for-schools/
[2] https://www.edweek.org/teaching-learning/standardized-testing-costs-states-1-7-billion-a-year-study-says/2012/11
[3] https://www.education.pa.gov/DataAndReporting/Pages/AssessmentResults.aspx

## STANDARDIZE ON ONE, **OPEN-SOURCE ASSESSMENT DELIVERY SYSTEM**

In the U.S., the constant shuffling of state assessment vendors has disastrous consequences for schools. According to research by the National Center for Fair and Open Testing[4], large-scale, online testing failures have been reported in many states across the U.S. every year since 2013, hindering the progress of students who need to pass tests to advance to the next grade or to graduate. The problems were so serious in one state that testing was canceled for the entire school year. So how can a state deliver online assessments to all students without the risk of large-scale, online testing failures? By standardizing on an open-source assessment delivery system that is state-owned and does not change every time a new testing contract results in a new vendor.

Changing assessment delivery systems every time an assessment contract expires is not necessary, as ministries of education across the world have figured out (France, Italy, and Norway, to name a few). To offer an analogy, think of a company that standardizes on Windows or Linux operating systems. Can you imagine what would happen if an organization with a million employees changed operating systems every five years?

In the U.S., states support as many as five different online assessment systems, and districts manage even more. All these assessment systems must be managed in schools, which means a great deal of time and human resources are wasted at the school level – time that could be spent supporting teaching and learning instead of managing assessment systems. Open-source assessment systems, widely used across Europe and other parts of the world, offer not only a less expensive solution, but also an opportunity for collaboration between schools, districts, and states that further reduces cost.

When states or districts standardize on open-source assessment software, there is less risk and greater long-term cost savings because the development required to customize the system benefits the state or district, not a private company.

With open-source assessment software, states and districts own the delivery system, and the item bank, avoiding the hefty yearly licensing fees that come with proprietary systems. With an open-source assessment model, millions of taxpayer dollars go back to the state every year.

Just as Linux has become the norm for open-source operating systems, TAO has established itself as the gold standard for open-source assessment. Countries in Europe and Asia have standardized on TAO, and the Program for International Student Assessment (PISA), run by The Organization for Economic Co-Operation and Development (OECD)[5], started using TAO in 2009 to administer the PISA in more than 20 countries across the world. In 2015, OECD selected TAO again to deliver the international PISA.

The New York City Department of Education (NYCDOE) adopted the TAO open-source assessment system in 2018 to administer world language assessments and achieved significant savings related to logistics and cost in the process. Using open-source technology, NYCDOE successfully delivered language proficiency exams with listening and reading sections. In the conventional paper-and-pencil format, the listening section presented logistical and monetary challenges, because it required native speakers of the target language to proctor and read from a script during test administration, but with the flexibility of an open-source system, the listening component for several of the exams could be delivered via multimedia files, without the need for specialized administrators to be on site, which is costly. In addition to raising the quality of exams, and decreasing the cost of assessment by thousands of dollars annually, NYCDOE's digital assessment content can be reused, creating additional cost savings and minimizing risk for future deployments.

[4] https://www.fairtest.org/computerized-testing-problems-chronology
[5] https://www.oecd.org/pisa/

## Benefits of Standardizing on One, Open-Source Assessment Delivery System

- Quality improves when a state-owned, open-source delivery system is used and features and functionality from the global open-source community are shared, as opposed to the current proprietary model in the U.S. where the vendor reaps the rewards by keeping states in silos.
- Costs decrease when the online assessment training developed to support students, teachers, and administrators can be reused year after year. In fact, the need to constantly retrain will disappear.
- Risk is minimized when the delivery system does not change, multiple assessment systems can be eliminated, and one open-source system can be used for all of a state or district's tests.

# STANDARDIZE ON ONE, **OPEN-SOURCE ASSESSMENT ITEM BANK**

Even after spending millions of dollars annually on proprietary testing applications, most states and districts do not have control of their assessment content because it resides within proprietary vendor-controlled item banking systems. With an open-source item bank, aligned to the Question and Test Interoperability (QTI) standard, a state or district can take control of its assessments, digitize legacy assessment content, and repurpose it for future assessments. Also, by standardizing on one, open-source assessment item bank, states and districts do not have to migrate their assessment content from one vendor to another at the end of a testing contract, a process that creates additional cost, risk, and adds time to projects.

With open-source item banking software, it is easy to create tests with teachers and, in the process, state taxpayer dollars go back into the state and not to consultants often living elsewhere. Also, the financial investment that a state puts into its own item bank to develop new features benefits the state education system, and not a private company. Finally, assessment items built with an open-source item bank can be shared among states, districts, and schools, creating additional time and monetary savings.

## Benefits of Standardizing on One, Open-Source Item Bank System

- Quality goes up when states take control of their assessment content in a state-owned, open-source item bank and can reap the rewards of the global open-source assessment community, as opposed to the current model in the U.S. where vendors keep states in silos to maximize profits.
- Costs go down when states and districts can share assessment content, especially expensive items like simulations in science and technology-enhanced items in mathematics, language arts, and social studies that more effectively measure critical thinking.
- Risk is minimized when states control their test content in a state-owned item bank and they don't have to migrate thousands of items from one vendor to another every time a contract ends.

**So how can a state or district pull this off?** By joining the global open-source assessment community!

## JOIN THE **GLOBAL OPEN-SOURCE ASSESSMENT COMMUNITY**

States and districts who want to reap the rewards of standardizing on open-source assessment should not wait for current testing contracts to expire to switch to this less expensive, more secure, and more flexible model. Below are action items that can be completed in one year or less, which would enable states and districts to begin the migration to open-source assessment with minimal risk:

- **Procure an open-source assessment system, such as TAO**
- **Migrate assessment content into an open-source item bank aligned to QTI**
- **Build an assessment or practice test and deliver it to schools**

When the proof of concept is completed, states and districts will then need to require, in future requests for proposals (RFPs), that their open-source assessment delivery and item banking systems are used to deliver tests. They will also need to require, in future RFPs, that vendors are certified in the QTI standard to ensure that the test content is coded in a uniform manner, for test items that are procured, creating needed interoperability, accessibility, and opportunities for collaboration.

As part of the global open-source assessment community, states and districts will be able to benefit from the sharing of test content, as well as new features and functionality needed to develop more complex test items that better measure critical thinking and other 21st century problem-solving skills. And the millions in savings accrued each year can be directed back to schools to support teaching and learning.

About the Author

Dale Cornelius is the founding chair of IMS Global Learning's Assessment Innovation Leadership Network, where he brought states and districts together to develop online assessments that were accessible to all students and went beyond multiple choice to better assess critical thinking. He most recently served as the Chief Information Officer for the Maryland State Department of Education. A former teacher, he has worked in educational technology at school, district, and state levels, as well in the private sector.

## Learn more about TAO

Contact us today if you're interested in learning more about using TAO to deliver better learning and assessment opportunities.

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