

State Assessment Program Item Banks:

MODEL LANGUAGE for REQUEST for PROPOSALS (RFP) and CONTRACTS

THE COUNCIL OF CHIEF STATE SCHOOL OFFICERS

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STATE ASSESSMENT PROGRAM ITEM BANKS: MODEL LANGUAGE FOR REQUEST FOR PROPOSAL (RFPs) and CONTRACTS

This document provides recommendations for request for proposal (RFP)¹ and contract language that state education agencies can use to specify their requirements for access to test item banks. An item bank is a repository for test items and data about those items. Item banks are used by state agency staff to view items and associated data; to evaluate items; to search the database of items; to inventory the item bank, evaluate pool sufficiency, and project future item development needs; to view statistical results; to help manage the flow of test development work; and to collaborate with the test development contractor on forms construction. *The goal of this document is to help state education agencies develop appropriate language for inclusion in RFPs and contracts, language that assures state access to these critical functions during the contract period and ensures a smooth turnover of the item bank at the end of the contract to the state agency and/or a subsequent contractor.*

This document is based on the assumption that an agency does not wish to retain its existing item banking system (if any), but rather to acquire a new one as part of the contract. In this case any existing state items must be transferred by the vendor into the new item bank, as described in section 3.1 below. If, on the other hand, the agency already has an item banking system and wishes to continue to use it for new item development, different RFP/contract language will be needed to describe that system and the state's expectations. Some of the recommendations below may be useful in helping to describe such a situation, but it is not the intent of this document to fully address the continued use of an existing item banking system.

The recommendations that follow are divided into five categories; the first four cover each of the major topics that might be included in the item banking section of a typical RFP and contract. The fifth is a special category devoted to emerging developments in computer-based testing and the use of new or different item types. These emerging developments pose special challenges for item banking systems, specifically in storing and retrieving new kinds of information about innovative items and/or testing accommodations. The topics in this category span and incorporate by reference the four areas covered in the previous categories.

Individual state testing needs will determine which of these recommendations are relevant and how they may be used in writing the RFP and contract. Where appropriate, examples or exemplary text (in italics in the second column) are included to illustrate the recommendations. *Note that these are only examples, to be used selectively in conjunction with the recommendations in the first column. It is unlikely that any state would incorporate all of the recommendations or examples given below; to do so would likely be prohibitively expensive or result in disqualifying some suitable vendors.* Instead, the agency should use these recommendations and examples as a checklist or guide to possible RFP/contract terms, adopting (or adapting) those that are relevant to its particular situation. Some recommendations or examples may also be used to describe additional cost options.

¹ The term "request for proposal" (RFP) includes requests for information (RFIs) and other solicitations on the part of state testing agencies for testing services.

1. Item bank data requirements

RFP/Contract Requirement	Examples/Exemplary Text
<p>1.1 <u>Database</u>. Require the contractor to provide a single database containing all needed item bank components.</p>	<p><i>The contractor must provide a database that includes all items, passages, artwork, resources, rubrics, and other components developed under this contract, as well as all legacy items, passages, etc., provided by the previous contractor. These data must be in a single database; that is, it is not acceptable to provide multiple databases that must be subsequently merged by the state or a subsequent contractor.</i></p>
<p>1.2 <u>Identifiers</u>. Specify the coding scheme to be used to identify items and other components and whether multiple identifiers (e.g., legacy identifiers) will be required.</p>	<p><i>Include in the item bank unique identifiers for items, passages, artwork, resources, scoring rubrics, and other item bank components. Include where appropriate “parent-child” relationships, as for example with items appearing in different forms on multiple tests.</i></p>
<p>1.3 <u>Item metadata</u>. Specify the metadata that must be included in the item bank. These specifications should cover items, passages, artwork, resources, manipulatives, scoring rubrics and other item bank components, and links between these components. Possible data elements are indicated in the examples on the right. Provide specific requirements regarding the formats of these elements.</p> <p>Specify whether items will be aligned to multiple sets of content standards or multiple versions of those standards. Define the status codes to be assigned to items as they move through the test development and test administration processes.</p> <p>If possible, provide a complete list of all data elements needed in the item bank and a glossary defining metadata and other terms used in describing the item bank.</p>	<p><i>Maintain item content and classification data (e.g., grade, subject, cluster, objective) linking items to content standards. Include cognitive-level and depth-of-knowledge judgments, descriptors, word counts, reporting category, item type, and other data that may from time to time be required by the State.</i></p> <p><i>Maintain secure answer keys, scoring rubrics for polytomous items, and associated resources such as anchor papers, annotations, number of anchor papers per level, training sets, and qualifying sets. Include distractor rationales and references.</i></p> <p><i>Manage tracking/status data to help monitor the flow of items through the process. Status codes will be assigned to items based on the state definitions (attach). Include in the database committee and other third-party reviews (e.g., dates, ratings, comments), item history, versions, item clones, overlap, and other item relationships, public release dates, authorship, and source. Specify how items that appear in multiple versions are handled so the user knows which one is most current.</i></p> <p><i>Provide links between items and their associated passages. Maintain permissions and copyright data for items, passages, artwork, and graphics, including the holder, permission period(s), number of users, contact information, and whether permissions are different for paper-and-pencil and computer delivery. Provide code tables, such as content classification codes, availability codes, and status codes. Maintain anchor/linking designations.</i></p>

RFP/Contract Requirement	Examples/Exemplary Text
<p>1.4 <u>Statistical data</u>. Specify the statistical data that need to be computed and stored. Provide clear definitions of each statistical element, including how they are calculated, or require the bidder to do so. If different Item Response Theory (IRT) models are used (e.g., three-parameter and Rasch), distinguish between the parameters calculated under each model. Specify procedures for redundant calculations to verify the accuracy of statistical calculations. If a third party will verify calculations, specify the procedures for transferring the data needed by the third party to carry out the verification.</p>	<p><i>Compute and maintain statistical data from field and operational tests, including classical statistics, item parameters, IRT statistics, DIF statistics, etc., as defined in the attached document describing statistical calculations.</i></p> <p><i>Maintain bias flags indicating gender, race, or ethnic bias or orientation.</i></p> <p><i>Display item and test characteristic curves, information functions, and conditional standard of error curves for items, tests, and sets of items.</i></p> <p><i>The system must allow for tracking of separate statistics when an item is used in multiple administrations, in multiple types of tests (e.g., biology items used in other science tests), and for items aligned to multiple versions of content standards.</i></p>
<p>1.5 <u>Test construction data</u>. Specify the data that need to be stored in the item bank to support test construction functions.</p>	<p><i>Include in the item bank blueprint specifications for forms construction; forms data such as the list of items on a form, positions, keys, contribution to subscores, etc.; and field test design specifications, including data about the characteristics of field test participants.</i></p>
<p>1.6 <u>Items and item formats</u>. Specify how items, passages, artwork, etc., should be formatted so that images are accessible to the item banking system but do not need to be re-authored for the publication system. Specify whether multiple formats or resolutions will be needed, for example testing accommodations, or whether multiple languages must be supported. Provide a copy of the state assessment unit's publication style guide or other specifications that ensure images are formatted, used, and changed correctly.</p>	<p><i>The item bank may utilize low-resolution item images and item/passage graphics to maximize system speed and response time, but must provide direct access from each item/passage record to the corresponding high-resolution files that go into the publication system.</i></p> <p><i>Items must be formatted in accordance with the state assessment unit's publication style guide (attach a copy if one exists).</i></p> <p>or</p> <p><i>Items and item data must be provided in XML format to facilitate transitioning to and interfacing with other systems.</i></p>

2. Technical requirements

RFP/Contract Requirement	Examples/Exemplary Text
<p>2.1 <u>Database architecture</u>. The agency should involve the state information technology (IT) department early in the process to be certain IT standards and RFP procedures are adhered to. If the state has specific requirements for the database architecture these should be spelled out in the RFP and contract. Architecture requirements may include table definitions, links between and among tables, and a preferred or approved database management system (DBMS).</p>	<p><i>The database as delivered to the state must conform to the state’s IT standards (attach a copy of the state’s IT standards if available). The DBMS must be one of the supported components specified in those standards.</i></p> <p><i>The database design must include links that allow all components of an item (e.g., text, images, metadata, statistics) to be brought together through the software so that the user sees the whole item, even though these components are stored in separate tables.</i></p>
<p>2.2 <u>Documentation</u>. Specify documentation requirements, including technical specifications, data dictionaries, and descriptions of how data moves through the publications production process, how data is stored and retrieved for reporting, and how data is stored for item banking purposes. (See also section 4.2 for recommendations on user documentation.)</p>	<p><i>The contractor must provide a complete technical manual, including table definitions; data formats for text, images, and metadata; links between tables; complete descriptions of all table elements; file naming conventions; data flow descriptions and diagrams; detailed descriptions of all steps required to maintain and update the database; and complete technical documentation.</i></p>
<p>2.3 <u>Communications architecture</u>. Specify whether the item banking system should be a web application or should run on a secure local area network (LAN). Specify whether the contractor should host the application and provide for remote access by state users, or whether the state will host the application and receive updated versions of the database on a periodic schedule. Provide a copy of the state’s IT communications architecture standards if available.</p>	<p><i>The contractor must provide access to the item bank via a secure website. At the conclusion of the contract, the contractor must provide a complete system that can be replicated on the state’s internal website.</i></p> <p>or</p> <p><i>The item banking system must operate on the state’s in-house network (LAN). Specifications for the required communications architecture are attached.</i></p>

RFP/Contract Requirement	Examples/Exemplary Text
<p>2.4 <u>Software interfaces and interoperability</u>. Describe any requirements for interfaces among or interoperability with existing state office or internal software. Specify that materials must be provided in whatever format (e.g., PDF or other) the state requires. Describe any existing item bank or item banking software currently being used by the state, and any requirements for backward compatibility. Specify any standards the state imposes for interoperability with other systems.</p>	<p><i>The item banking system must interface with Microsoft Office applications such as Access, Excel, and Word. Graphics must be in standard formats and mathematics items must be created using _____ (specify required software). All items and other images must be available in xxx format. All graphics must be re-scalable.</i></p> <p><i>The system must use only the latest versions of commercially available software and must use non-proprietary data formats. The contractor must specify and acquire for the state licenses to any run-time components or other software (e.g., DBMS) that the state will need to obtain.</i></p> <p><i>The item banking software must be consistent with and operate within the state's technology environment and software standards (attach a copy of the state's IT standards if available).</i></p>
<p>2.5 <u>System versioning</u>. Specify software updating requirements and whether the item banking system will need to be expanded over time to capture new types of data or to provide additional software functions. If the system is to be built in phases, describe the phases and require a project plan that shows start and end dates for each phase. Describe any versioning requirements for existing graphics files.</p>	<p><i>The contractor must describe how the item banking software will be updated and remain current over time, including upgrades for operating system, hardware, and other technical changes.</i></p> <p><i>It must be possible to expand the item bank and software to include new data fields and new software functionality.</i></p> <p><i>Any enhancements and upgrades made to the item banking system provided by the contractor during the contract term must be applied to the state's item banking system.</i></p>
<p>2.6 <u>Acceptance testing</u>. Describe, or have the contractor describe, the procedures for software and database acceptance testing. List any technical benchmarks that must be met during the acceptance test, such as system load, user response times, and functions the software must be able to perform. General practice is to require a response time of one second or less and support for as many simultaneous agency staff as the state is likely to have.</p>	<p><i>The item banking system must accommodate xx simultaneous agency staff with maximum response times of x seconds. The contractor should describe any technical limitations that might be imposed by the state's required communications architecture (as identified in section 2.3).</i></p>

3. Item bank administration procedures

RFP/Contract Requirement	Examples/Exemplary Text
<p>3.1 <u>Item bank transfer</u>. The contractor should specify the procedures for loading legacy data at the beginning of the contract and for transferring the item bank to the state and/or a subsequent contractor at the end of the contract. Include in the RFP an inventory of existing items by format (printed, computer-delivered, Braille, etc.). If items must be recoded, for example to conform to a new standards hierarchy, specify the procedures and timeline for recoding, which items need to be recoded (if not all), and who will be responsible for carrying it out, updating the item bank and verifying its accuracy.</p>	<p><i>The contractor must describe the procedures, requirements, and time needed for converting and loading legacy data at the beginning of the contract and verifying the accuracy and completeness of the transfer.</i></p> <p><i>The contractor must provide a transition plan for turning the item bank and software over to the state at the end of the contract. The transition plan must include procedures for certifying the accuracy and completeness of the item bank as delivered to the state and interim deliverables (e.g., sample databases) that provide reassurance that the item bank will meet state expectations. The transition plan will ensure that the state has all the knowledge and resources necessary to operate the item bank, and/or transition it to a new contractor, at the end of the contract.</i></p> <p><i>The end-of-contract transition plan must include the transfer of all copyrights and permissions from the test development contractor to the state and/or a subsequent contractor.</i></p>
<p>3.2 <u>Item bank operation and update</u>. Specify the state's requirements and schedule for ongoing updating and operation of the item bank. Specify whether the state or the contractor will host and operate the item banking system. If appropriate, specify the state's preferred mechanism for transmitting data, for example, on physical media (CDs), via secure remote hosting, through secure web access, or through secure file transfer protocol (FTP). If the state might be transitioning to new standards during the contract period, specify the conversion requirements and whether the costs of recoding the item bank should be a separate cost option.</p>	<p><i>The contractor must describe the procedures for the physical transfer, installation, loading, and updating of the item bank on an ongoing basis, including procedures for loading statistics into the item bank after test administrations and the schedule and time required for delivering updates to agency staff. Updates must include an item inventory and item bank analyses that provide snapshots of the current status of the bank.</i></p> <p><i>The contractor must update statistical and tracking information in the item bank each time an item is used in a field test or operationally. Historical information must be retained for all items, including those developed prior to this contract.</i></p> <p><i>The contractor must update code tables (e.g., blueprints, content hierarchies, IRT test target curves, and other static tables) as needed.</i></p>

RFP/Contract Requirement	Examples/Exemplary Text
<p>3.3 <u>Quality control (QC) and auditing procedures</u>. Describe the requirements for auditing the item bank (by state staff or an independent consultant) and getting the contractor to correct errors. This should be done at initial item bank load or conversion, periodically (e.g., quarterly or yearly) during the contract, and at end-of-contract transfer of the item bank to the state.</p>	<p><i>The accuracy of updates to the item bank will be quality controlled through manual inspection of sample records and summary statistics automatically generated by the updating system.</i></p> <p><i>The item bank must contain the latest version of the item. Images must be clean; that is, not scanned from old test booklets.</i></p> <p><i>QC procedures must be described for each activity on the item bank development plan.</i></p>
<p>3.4 <u>Security and backup</u>. The contractor should describe their procedures for ensuring the security of the item bank, both during physical transfer and during operations. If appropriate, required levels of user security should be specified. The state's disaster recovery plan should be included and the contractor should be required to adhere to it.</p>	<p><i>Procedures must be included for protecting the security of sensitive data from general access, for ensuring that data is altered only by authorized users, and for restoring the item bank in case of data entry errors. Multiple levels of user security must be provided, for example to use the item bank for both secure and non-secure items and move items from one status to the other.</i></p> <p><i>The contractor must describe their provisions for off-site backup of the item bank, including a full backup of the item bank at least every xxx days.</i></p>
<p>3.5 <u>Roles and responsibilities</u>. Define the roles and responsibilities of the contractor(s), any external consultants, and state agency staff in item bank administration.</p>	<p><i>Each task on the development and operations project plan must designate the party responsible for its completion and the party with responsibility for reviewing the results.</i></p>
<p>3.6 <u>Ownership</u>. Specify the state's intention regarding ownership of the item banking system, including who will own the supporting applications described below (section 4.1). Possibilities include full state ownership or a license to use it for a stated purpose. In either case the state should retain full ownership of all data in the item bank and, if appropriate, should limit (or prohibit) use of items by the contractor for any other purpose.</p>	<p><i>The state will own all rights to the item banking system, including source code and documentation. These rights include distribution and use of the software for other purposes.</i></p> <p>or</p> <p><i>The item bank and all of the data in the item bank will be the sole property of the state. The contractor will retain ownership of the software and provide to the state a limited perpetual license to use it, with the right to receive any future enhancements that the contractor makes available to other parties.</i></p>

4. User support requirements

RFP/Contract Requirement	Examples/Exemplary Text
<p>4.1 <u>Application functions</u>. Describe the supporting software functions that need to be included in the item banking system. Some examples are on the right.</p> <p>Specify whether state users will need to update the item bank, add comments on individual items as they are reviewed, author items, or participate in assembling forms and generating form statistics and IRT curves. As agency staff becomes more involved in item and test construction, more of these software functions may be needed over time.</p> <p>Describe any standard reports that should be produced and the schedule on which they should be provided.</p>	<p><i>Typical supporting functions:</i></p> <ul style="list-style-type: none"> • <i>item entry and editing</i> • <i>search and retrieval</i> • <i>display of items, passages, artwork, resources, and rubrics</i> • <i>annotation of items as they move through the test development process</i> • <i>tracking of permissions</i> • <i>test construction/form assembly</i> • <i>display of item and test statistics and curves</i> • <i>ad hoc report generator</i> • <i>data import and export</i> • <i>item inventory and item bank analysis and evaluation</i> <p><i>Users must be able to perform searches on all available data fields, including text phrases within text fields. Once a set of records has been found, users must be able to export data from all available fields to Excel and to text (e.g., csv) files.</i></p> <p><i>Users must be able to identify items that have not appeared on a field test form or have not been used operationally over a specified time period.</i></p>
<p>4.2 <u>Training and documentation</u>. Specify training needs and requirements for both online and printed user guides. Describe the procedures for authorizing and setting up users. Specify whether a tutorial, using a non-secure version of the item bank, is needed.</p>	<p><i>User guides must at a minimum contain procedures for logging on to the item banking system; the basic flow and functions of the system; procedures for searching the database and retrieving sets of items, item worksheets, and other displays; all menu functions; procedures for constructing forms (if applicable); procedures for creating reports; data import and export functions; tools for item inventory and item bank analysis; and a complete data dictionary.</i></p>
<p>4.3 <u>Customer service</u>. Describe the state's requirements for customer service and technical support. Ask the contractor to describe its procedures for handling user requests for changes in system functionality.</p>	<p><i>The contractor must provide technical support between the hours of (insert required time period including applicable time zone), Monday through Friday.</i></p> <p><i>The system must include a provision for online submission and tracking of change requests by authorized users.</i></p>

5. Computer-based testing and new item types

In addition to the requirements listed above, computer-based delivery and testing accommodations create new requirements that need to be spelled out in the RFP and contract.

RFP/Contract Requirement	Examples/Exemplary Text
<p>5.1 <u>Item data and formats</u>. Computer-based items and items suitable for testing accommodations may be composed of new types of data or objects. Specify the characteristics of the items envisioned for computer delivery or testing accommodations; for example, whether they contain audio or video components and how many of each.</p> <p>Items will need to be formatted for computer display as well as printing. Specify whether the same item might be simultaneously used in both modes and/or for accommodations.</p>	<p><i>In addition to traditional text and graphics files, the item bank must be able to store audio files, video files, interactive (e.g., Flash) objects, and test-taker tools such as rulers, calculators, and protractors.</i></p> <p><i>The item bank may contain multiple versions of items for alternate formats, such as Braille, multiple technology delivery platforms, and alternate text for screen readers. The alternate versions must include any descriptions or art modifications needed to reproduce the item in these alternate forms. The system must be able to render items exactly as they will appear to the test taker.</i></p>
<p>5.2 <u>Item metadata</u>. New kinds of metadata will be needed to describe these item types and how they are used in the test. Specify and provide examples of the kinds of data the system will need to be able to store and maintain.</p>	<p><i>Provide protocols for navigating alternative item formats and complex items such as simulations, for example in the form of electronically recorded storyboards. Store these protocols in the item bank in a form that allows agency staff to see the path(s) the test taker will take through the item.</i></p>

RFP/Contract Requirement	Examples/Exemplary Text
<p>5.3 <u>Scoring and statistical data</u>. Scoring rubrics may involve complex rules, especially for simulation tasks. Describe what is known about the scoring process for each unique item type. Specify how the item bank will manage statistics for multiple versions of items, e.g., for an item administered in both computer and paper-and-pencil form or used on alternative test forms. Describe any unique statistics that must be stored for new item types.</p>	<p><i>The item bank must be able to store scoring rubrics that may be in the form of if/then tables or complex logic structures. The contractor should propose an interface that allows the user to view and validate these rubrics.</i></p> <p><i>The item bank must be able to distinguish between multiple sets of statistics for the same item delivered in alternative formats.</i></p> <p><i>The item bank must be able to store statistics relating to response times for computer-delivered items.</i></p>
<p>5.4 <u>Conversion to computer delivery and/or testing accommodations</u>. Specify how items will be converted from paper-and-pencil format to computer-based testing or alternative formats. Specify the number and format of items that need to be converted and the roles of each party in the conversion. This is especially important when different contractors provide paper-and-pencil testing and computer delivery, or when different contractors provide item development and test delivery.</p>	<p><i>The contractor must convert existing items formatted for paper-and-pencil administration to a format suitable for computer delivery according to specifications (attached) provided by the delivery contractor. The contractor must convert xx existing items to alternative formats suitable for testing accommodations.</i></p>
<p>5.5 <u>Software interfaces</u>. New software capabilities are needed to support computer-based testing, including the ability to display different kinds of items, the ability to construct pools of items for computer delivery, and the ability to capture and store test results. Describe the interfaces needed between these new systems and the item banking system.</p>	<p><i>The software must allow the user to retrieve and display/play audio files, video files, interactive objects, and test-taker tools. It must also be able to display the new kinds of metadata and scoring and statistical information described above.</i></p> <p><i>The item bank must interface with the computer adaptive testing (CAT) pool builder to provide item metadata the pool builder needs and to store information about the resulting CAT pools (e.g., lists of items in a pool).</i></p>