



# Smarter Balanced Implementation Readiness Package

V 1.2: PROJECT OVERVIEW

CENTER FOR RESEARCH ON EVALUATION, STANDARDS, AND STUDENT TESTING  
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# Smarter Balanced Implementation Readiness Package

## Overview

States are responsible for deploying and operating the Smarter Balanced Assessment Delivery System. In many cases they will contract for system services. Any platform used to deliver Smarter Balanced assessments should be verified to deliver assessment items with authenticity, score items and tests properly, and deliver assessment results to the Smarter Balanced Data Warehouse according to specifications.

To aid with this effort, an Implementation Readiness Package (IRP) is being developed. It will consist of a collection of software test-harnesses designed to assist states with their Assessment Delivery System compliance testing. Each module of the IRP is designed to test one or more specific capabilities, and to provide feedback on compliance status. The purpose of this document is to describe each of the modules of the IRP, and identify the specific functional requirements of the Assessment Delivery System that they will test.

## IRP Modules

Figure 1 below depicts the features of the Assessment Delivery System. Each circled letter in yellow represents a capability for which an IRP module can be developed. However, as of this writing, IRP modules are currently underway for items **A, B, C, and G only**, as these items address the required external capabilities of the Assessment Delivery System to function within the Smarter Balanced framework. An IRP module for item D (Adaptive Engine) is planned as well, but will be released at a later time, as performance parameters for the adaptive engine become finalized.

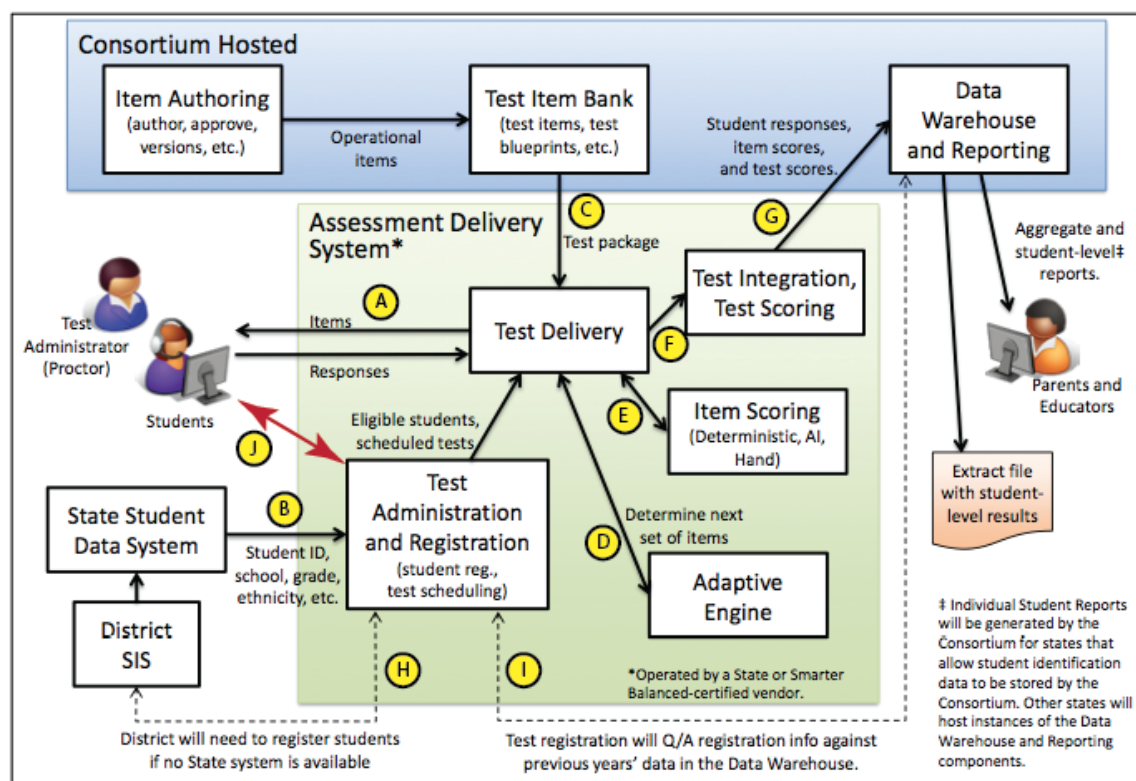


Figure 1: Features of the assessment delivery system

Table 1. IRP Module Descriptions

<b>IRP Module</b>	<b>Description</b>	<b>Interface</b>	<b>Functional Requirements Tested</b>
A	Compliance of test item delivery to the student.	Web Service to send requests (as a sample student) for test items, and to receive test item (response). Applies to (b) only.	<ul style="list-style-type: none"> <li>a. Correctness of item rendering (display) on screen (human visual test, not part of IRP software module)</li> <li>b. Correctness of test/test items delivered to student, given Student Data (provided by the state), Eligibility Requirements, and test data contained in the Test Package</li> </ul>
B	Compliance of receipt and processing of Student Registration data, and Student Accommodations data.	Web service to deliver Sample Student Data (function will be similar to authentic retrieval of Student Data from State Data System)	Receipt verification of School Data, Student Registration data, and Student Accommodations data (to be supplied via XML file in accordance with XSD specified in Smarter Balanced hosted document: SMARTERAPP INTERFACE SPECIFICATION for ADMINISTRATION AND REGISTRATION TOOL UPLOAD FILE FORMATS)
C	Compliance of receipt and processing of Test Package.	Web service to deliver Sample Test Package (function will be similar to authentic retrieval of Test Package from Smarter Balanced system)	Receipt verification of Test Packages (both fixed form and adaptive) containing representative test items from all item types/formats.
G	Compliance of delivery of fully scale scored XML documents to the Data Warehouse	Web service to receive exported fully scale scored data from Vendor (will simulate API to Data Warehouse)	<ul style="list-style-type: none"> <li>a. Adherence of exported data to the XSD specified in the Smarter Balanced hosted document: SMARTERAPP INTERFACE SPECIFICATION for TEST DELIVERY TO TEST INTEGRATION AND TEST INTEGRATION TO DATA WAREHOUSE.</li> <li>b. Completeness of the exported data (i.e. no missing data)</li> <li>c. Correctness of exported data: <ul style="list-style-type: none"> <li>i. Student information</li> <li>ii. Item scoring</li> <li>iii. Test scoring</li> </ul> </li> </ul>

## Implementation Readiness Package: Architecture and Process Flow

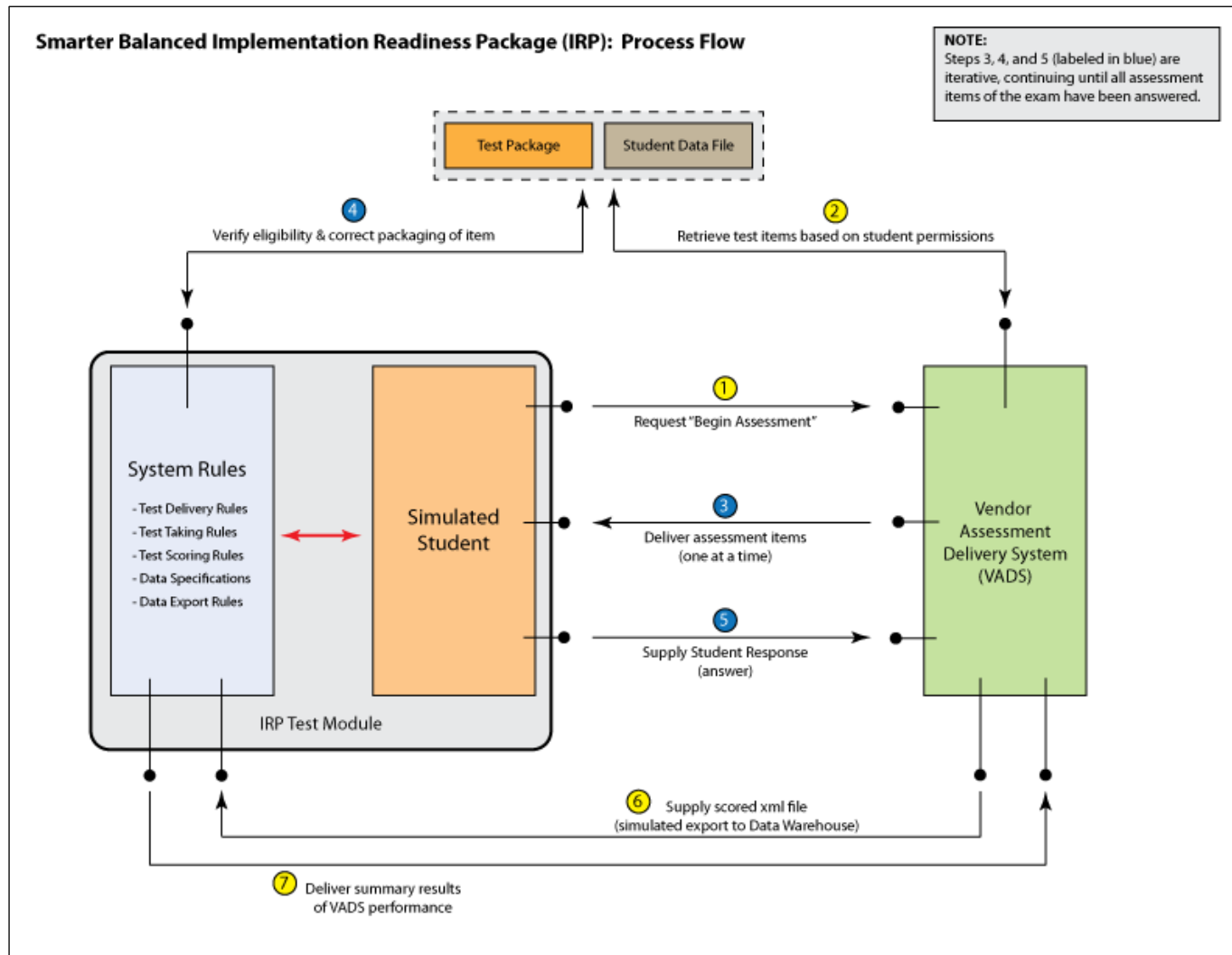


Figure 2: Implementation Readiness Package: Architecture and Process Flow

Figure 2 above shows the architecture and process flow of the IRP. This system will include a collection of web services through which the Vendor Assessment Delivery System (VADS) can interface. The purpose of this system is to simulate and test the functions required for administering an assessment, beginning with the initial request from the student (client) machine to start the test, to the final data export to the Data Warehouse. Prior to commencing the simulation, the VADS will be supplied with a test package and student data file for use in the test simulation. These same data files will be used by the Smarter Balanced IRP Test Module to evaluate the performance of the VADS, ensuring that all source data are consistent.

Each step of this simulated assessment administration is numbered in the diagram, and is described in detail below. Note that steps 3, 4, and 5 are repeated iteratively as the simulated assessment is in process, with each occurring for each assessment item delivered.

## Description of Process Steps

**Step 1:** After the VADS has initiated connection with the Smarter Balanced IRP Test Module, and has received the test package and student data file, the Smarter Balanced IRP Test Module will initiate a request (simulating a student at a client machine) to begin the assessment.

**Step 2:** The VADS will receive the “Begin Assessment” request and internally reference the test package and student data file to determine the items (and sequence for delivery) to be administered to the student. Note: this will require the VADS to internally process student eligibility, accessibility, accommodations, etc., according to the SBAC Test Delivery Specifications.

**Step 3:** The VADS will deliver (one at a time) the assessment items to the Smarter Balanced IRP Test Module.

**Step 4:** The Smarter Balanced IRP Test Module will analyze the received assessment item for item eligibility, item packaging completeness (i.e. are all associated images, text, etc. present that should be), and item accommodations (i.e. language, audio, etc.). NOTE: The Smarter Balanced IRP Test Module will NOT be able to determine the item’s adherence to SBAC rendering requirements. Rather, this is a human-conducted, visual test that the vendor must perform separately.

**Step 5:** The Smarter Balanced IRP Test Module will provide a student response (i.e. answer) to each assessment item, as fully correct, partially correct, or fully incorrect, based on the specific test case being run, and will internally keep track of all supplied responses.

**Step 6:** At the conclusion of the simulated assessment, the VADS will internally score and package the test results, and export them as an XML file to the Smarter Balanced IRP Test Module for analysis (NOTE: this simulates the VADS export to the Data Warehouse). This file will include all pertinent student data, individual item scoring, and aggregate item scoring, as well as all pertinent test parameters and session statistics, as detailed in the SBAC TEST INTEGRATION TO DATA WAREHOUSE specification.

**Step 7:** The Smarter Balanced IRP Test Module will analyze the test results file (described in Step 6) for adherence to SBAC specifications regarding formatting, content completeness, content accuracy, and scoring accuracy. The results will be packaged into a summary performance report that will describe the VADS’ compliance with SBAC specifications for item selection, item delivery, scoring, and results packaging.

## Test Cases

The Smarter Balanced IRP Test Module will enable a variety of test cases to be run, ranging from different student types (i.e. grade, accommodations, etc.), to different content areas, different item types, and different blends of correct vs. incorrect student responses within a given assessment. Variations in test cases will provide contrasts to enable the Smarter Balanced IRP Test Module to evaluate various VADS capabilities regarding IRP Modules A, B, C, and G.

The Implementation Readiness package will provide an interface for the VADS to configure test cases prior to the commencement of a simulated assessment.

## IRP Module Representation

In Figure 2, the IRP modules described in Table 1 are not explicitly listed. However the tasks/functionality they represent are addressed in one or more of the processes depicted, as listed in Table 2 below.

Table 2. IRP Module Mapping

<b>IRP Module</b>	<b>Corresponding Process Step(s)</b>
A	3, 4, 5
B	2
C	2
G	6

## Development Timeline

The Smarter Balanced IRP Test Module is being developed as an open-source project, and is planned\*\* to be available for use by states on or before December 31, 2014. All source code will be made available on the SmarterApp.org website, and can be used as is or modified (as desired) by vendors and states to accommodate their compliance testing needs.

\*\*Completion of the Smarter Balanced Implementation Readiness Package is dependent on the completion and availability of other Smarter Balanced software components currently under development.

Questions about this document should be addressed to Dr. Alan Koenig at [alan.koenig@ucla.edu](mailto:alan.koenig@ucla.edu)