**SIF Data Model Extension Proposal**

**Data Model: Assessment**

**Topic Area: Assessment Student Results Objects**

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|  |  |  |  |
| --- | --- | --- | --- |
| Extension Proposal Version Control | | | |
| Version | Date: | Author/Organization: | Comments |
| 1.0 | July 6, 2011 | Wayne Ostler / Pearson | Initial Proposal |
| 1.1 | Aug 23, 2011 | Wayne Ostler / Pearson | Modified after AWG review   1. Use cases AR-3 and AR-4 were duplicates. Removed AR-4. 2. Added snapshot data as an issue 3. Added days of instruction as an issue 4. Added migration plan items |
| 1.2 | Aug 30, 2011 | Wayne Ostler / Pearson | Added details for what objects are required to publish an assessment results. |
| 1.3 | Sept 19, 2011 | Wayne Ostler / Pearson | Made changes after submission to tech board but prior to review.   1. Added “testing status” to registration object and added use case per e-mail exchange with Vlad and Jill 2. Renamed “special conditions” to “special events” on registration object 3. Added “score published date” to registration object and added use case 4. Enhanced description of start date for paper-based test usage. |
| 1.4 | Sept 20, 2011 | Wayne Ostler / Pearson | Updated XML examples for changes made in prior version. |
| 1.5 | Sept 21, 2011 | Wayne Ostler / Pearson | Realized that the registration relationship diagram was missing the student snapshot relationship. Added that relationship to the diagram. |
| 1.6 | Feb 21, 2012 | Wayne Ostler / Pearson | Making the following changes after the Dec 12, 2011 tech board design review.   * Adding all snapshot elements to the registration object in favor of removing them with a reference to snapshot. * Leaving the redundant refIDs from score set and response set objects to student personal and administration.   Follow up review on Dec 21, 2011   * Consider score “type” in the item score when multiple scores exist (ex: from rubric) * Correct “repeating” elements * Open issue on score set object   Follow up after tech board meeting in San Diego – Jan 2012   * Determined that we will deprecate all 2.5 assessment objects and the 2.6 specification will create a complete set of new objects and will prefix all object names with “sif3:” (name space)   Follow up review with Vince/Jill concerning Lists.   * Performing some cleanup of list structures in response set object definitions. |

# **1 Identification**

|  |  |
| --- | --- |
| Proposed Extension Name | Assessment Definition Objects |
| Submitted by (Project Team or Individual) | Assessment Working Group |
| Date of initial submittal | July 25, 2011 |
|  |  |
| What existing SIF object(s) if any will be affected? | AssessmentRegistration  StudentScoreSet  StudentResponseSet |
| What is the name of any new object(s)? | None |

**Status Tracker Phase 1: Documentation and Approval**

*The steps in this initial phase document the proposed extensions to the SIF Data Model to the point where they can be reviewed and approved by the Tech Board as deserving of further effort. Completion of the detailed design and evaluation of the dependencies and migration impacts are left until Phase II.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Template Section** | **Initial Draft Completed**  **(Owner / Date)** | **Reviewed (R) or Accepted (A)**  **(Owner / Date)** | **Comments** |
| Rational and Business Case | Wayne Ostler  **Date:** | Tech Board (A)  **Date:** | Assign to relevant Project Team(s) |
| Use Case(s) | Assessment Working Group  **Date:** | Assessment Working Group  **Date:** |  |
| Proposal approval | Assessment Working Group  **Date:** | Tech Board (A)  **Date:** | Placed in Fast Track or Object Pipeline |

# **2. Proposal**

*This section should be completed by the “Proposal Champion”. A champion is usually one of the authors of the business case (although it may be SIF staff). This individual is responsible for driving the proposal through the qualification and acceptance cycle.*

*The following two subsections must be completed before the process can begin.*

## 2.1 Rational for Extension

*In order to completely represent assessments throughout their lifecycle, the current SIF specification must be expanded. The assessment life cycle consists of the process areas illustrated in the diagram below.*

*The process areas that this document (Assessment student results) most closely aligns are: 1) Scoring, and 3) Reporting.*

*The recent focus of the education industry on open industry standards dictates that assessments become interoperable. The Race-to-the-Top and Common Core Assessment initiatives both suggest that all future developments are based on open industry standards. For Common Core Assessment state consortia (SMARTER Balanced and PARC), the call for fully interoperable content that can be shared across states, vendors, and delivery platforms is being written into RFI/RFPs as a mandatory requirement. Vendors are being asked to describe how their solutions will implement industry standards to support the desired level of interoperability. In order for the SIF specification to provide a viable alternative for representing item and form content, changes must be made.*

*The current 2.x SIF assessment specification has the following limitations that are being addressed by the changes proposed in this document:*

* *The current registration object did not support assignment to a specific assessment. It relied on the relationship to administration object which linked to an assessment form (also erroneous). A registration event must support identification of the assessment and optional administration with subsequent linking to a session.*
* *The current model did not distinguish between an administration (a large event such as the Fall 2011 state assessment) and an individual session (a group of students all testing at the same time and location). Both structures are required to support large-scale assessment programs (such as a state assessment).*
* *The item level scoring structures did not support multiple item scores, comment codes, or other feedback options (including teacher comments) that may occur with an open ended item.*
* *The sub test scoring did not support the identification of preliminary versus final scores.*
* *The ability to determine pass/fail was determined as a separate score metric and therefore required multiple scoring cut scores to be defined. It is more common that there is a pass/fail indicator associated with each performance level.*

*While the changes proposed in this document are not completely comprehensive, they do represent a significant step forward in supporting common assessment structures and processes that exist today and the standard will be well positioned for future expansion. Primarily due to the time commitments required and the planned release schedule, the following areas will continue to remain as open issues and will limit the level of true interoperability that the SIF specification can support.*

* *Scoring and feedback information is limited to the currently supported item types. More advanced item types will likely require addition feedback options.*
* *Does not support assessment “for credit” versus “not for credit”. I believe in the instructional assessment context that this distinction may be required?*
* *Does not support a “battery” test assignment process. In some cases, a single registration event may trigger multiple assessment registrations.*
* *Does not support highlighting or annotation of student responses (such as essays). This might be useful in pinpointing feedback for open ended items.*
* *Does not support student characteristic or anecdotal data. This was discussed with Drew Hinds in e-mail.*

## 2.2 Business Case

*With the increased focus on using assessment results to help inform, drive, or tailor instruction for individual students, more “feedback” options need to be built into the model. While system consumable feedback is most useful for algorithmically personalizing information, there is also need for comment or even anecdotal data from instructors or scoring professionals.*

*The scoring and feedback data that can be provided to students, teachers, and administrators is critical for personalizing instruction as well as determining teacher and program effectiveness. The objects in this document are intended to provide the individual “record level” details that can be used for further analysis and aggregation.*

*Multiple feedback options should be provided to enhance teaching and learning. The assessment content may be designed to provide feedback. Scoring professionals may provide comments or feedback that is valuable to students and educators. Teacher may wish to comment on student performance.*

*These changes will enhance the current specification’s capabilities and position the feedback structures well for future enhancements.*

# 3. Use Cases

## 3.1 Use Cases - AssessmentRegistration

### Use Case Title: AR-1 AssessmentRegistration Link with Assessment.

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Mandatory |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | LMS, SIS will be able to assign each registration to an assessment. Assessment Processing System will be able to identify all registrations for a given Assessment |
| **Actors:**  **Requesting Agent**  **Responding Agent** | Student Information System, Reporting System  Assessment Processing System |
| **Preconditions** | An AssessmentRegistration has been created |
| **Main Sequence of Events / Action Steps** | Registration is created -> Assessment Processing System assigns registration to an assessment and able to return it on request from Student Information system or Reporting system. |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | Generated report of all registrations for a given assessment, or an individual look up of each registration against an assessment. |
| **SIF Mandatory Objects** | AssessmentRefId |
| **SIF Optional Objects** |  |
| **Open Issues** |  |

### Use Case Title: AR-2 AssessmentRegistration Link with AdministrationSession.

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | LMS, SIS will be able to look-up administration session for each registration. Assessment Processing System will be able to identify all registrations for a given administration session |
| **Actors:**  **Requesting Agent**  **Responding Agent** | Delivery System, Reporting System  Assessment Processing System |
| **Preconditions** | An Assessment and AssessmentSession have been created |
| **Main Sequence of Events / Action Steps** | Registration is created -> Assessment Processing System assigns registration to an administration session and able to return it on request from delivery system or management reporting system. |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | Delivery System contains information about registrations for each session. Reporting system can produce reports identifying need for more admin sessions etc. |
| **SIF Mandatory Objects** |  |
| **SIF Optional Objects** | AssessmentSessionRefId |
| **Open Issues** |  |

### Use Case Title: AR-3 AssessmentRegistration Post-Administration Data.

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | LMS, Item Banking or Reporting system user requests a view or report that requires linking registration info to form and/or items delivered. Specific cases could be:   * Analysis of test form/item performance against test taker’s background info. * Analytical reporting on test-takers performance. |
| **Actors:**  **Requesting Agent**  **Responding Agent** | LMS, Item Banking or Reporting system  Assessment Processing System |
| **Preconditions** | An Assessment and AssessmentSession have been created |
| **Main Sequence of Events / Action Steps** | Registration is created -> Assessment Processing System or Test Delivery system updates registration info with form/version -> Item Banking or Reporting System run analytical reporting against data in Assessment Processing System (or an extract of it). |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | Reports have been generated to support statistical analysis or other types of reports. |
| **SIF Mandatory Objects** |  |
| **SIF Optional Objects** | AssessmentFormRefId |
| **Open Issues** |  |

### Use Case Title: AR-6 AssessmentRegistration Start and End Time

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | The registration should record the actual time started and ended for the test attempt. This can be used for analysis purposes. |
| **Actors:**  **Requesting Agent**  **Responding Agent** | Assessment Reporting System (for analysis)  Assessment Delivery System |
| **Precondition** | The test taker has completed an assessment. |
| **Main Sequence of Events / Action Steps** | 1. The test taker starts a test (could be login event or first question presented) 2. The Assessment Delivery System records start time. 3. The test taker submits the test for scoring. 4. The Assessment Delivery System records the end time. |
| **Post Conditions** | The registration object is updated to reflect the actual start and finish times. |
| **Alternative Sequence of Events / Action Steps** | 1. The student pauses or otherwise logs in/out of test.    1. Only first start time should be recorded. More detail can be obtained from item details. 2. The student is allowed to resume the test after final submission (typically an accidental submit).    1. Only first end time should be recorded. More detail can be obtained from the item details. |
| **SIF Mandatory Objects** | N/A |
| **SIF Optional Objects** | N/A |
| **Open Issues** | N/A |

### Use Case Title: AR-7 AssessmentRegistration Platform

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | The registration should record the platform that is planned for assessment administration and the actual assessment platform after the administration is complete. This can be used for analysis. |
| **Actors:**  **Requesting Agent**  **Responding Agent** | Assessment Reporting System (for analysis), Assessment Delivery System  Assessment Processing System |
| **Precondition** | The registration process indicates the preferred delivery platform.   * OR   The test taker has taken the test. |
| **Main Sequence of Events / Action Steps** | 1. The registration system records the preferred platform on the registration object. 2. The test delivery system notifies the registration system of the actual test delivery platform used to test |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | The registration object is updated to reflect the preferred or actual assessment platform. |
| **SIF Mandatory Objects** | N/A |
| **SIF Optional Objects** | N/A |
| **Open Issues** | N/A |

### Use Case Title: AR-8 AssessmentRegistration Days of Instruction

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | The registration should record the number of days of instruction the student has received prior to testing. The days of instruction may be used to normalize scores based on the amount of instruction received. |
| **Actors:**  **Requesting Agent**  **Responding Agent** | Assessment Scoring System  Assessment Management System |
| **Precondition** | The test taker is registered for an assessment and the number of days of instruction is provided with the registration information. |
| **Main Sequence of Events / Action Steps** | The registration system records the days of instruction. |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | The registration object is updated to reflect the number of days of instruction. |
| **SIF Mandatory Objects** | N/A |
| **SIF Optional Objects** | N/A |
| **Open Issues** | N/A |

### Use Case Title: AR-9 AssessmentRegistration Retest Indicator

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | The registration should record the fact that this is a retest registration. Retesting can occur when the student fails a prior attempt and is allowed to retest. |
| **Actors:**  **Requesting Agent**  **Responding Agent** | Assessment Reporting System (for analysis)  Assessment Processing System |
| **Precondition** | The test taker has registered for an assessment and this is a retest |
| **Main Sequence of Events / Action Steps** | The registration system records the retest indicator |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | The registration object is updated with the retest indicator |
| **SIF Mandatory Objects** | N/A |
| **SIF Optional Objects** | N/A |
| **Open Issues** | N/A |

### Use Case Title: AR-10 AssessmentRegistration Test Attempt Identifier

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | N/A |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | The registration should record the unique test attempt identifier after the test has been delivered. The identifier may be used to retrieve the actual test attempt (for example: retrieve the actual paper document). |
| **Actors:**  **Requesting Agent**  **Responding Agent** | User  Assessment Processing System |
| **Precondition** | The test taker has completed an assessment. |
| **Main Sequence of Events / Action Steps** | 1. The delivery system identifies the unique attempt identifier.    1. For paper testing, this is likely the batch/stack/serial number.    2. For online testing, this is likely a system generated unique identifier. 2. The delivery system provides the registration system the identifier 3. The registration system updates the unique identifier. |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | The registration object is updated with the unique attempt identifier. |
| **SIF Mandatory Objects** | N/A |
| **SIF Optional Objects** | N/A |
| **Open Issues** | N/A |

### Use Case Title: AR-11 AssessmentRegistration Student Snapshot

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | N/A |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | The current registration object contains only select student snapshot attributes. After reviewing the student snapshot object, most all of the snapshot attributes are useful for registration. This effectively identifies the student information at time of test. The link to StudentPersonal likely will continue to change data as the student progresses. For reporting, accountability, and longitudinal tracking purposes, all student snapshot data should be captured.  As an implementation decision, All snapshot elements will be added to the student registration data. |
| **Actors:**  **Requesting Agent**  **Responding Agent** | Assessment Reporting System (for analysis)  Assessment Processing System |
| **Precondition** | The test taker is registered for an assessment. |
| **Main Sequence of Events / Action Steps** | 1. The registration data provided for the student captures all required student demographic data as a snapshot (point-in-time). |
| **Alternative Sequence of Events / Action Steps** | 1. The registration process stores the snapshot in the registration object. |
| **Post Conditions** | The student snapshot data is recorded in the registration object. |
| **SIF Mandatory Objects** | N/A |
| **SIF Optional Objects** | N/A |
| **Open Issues** | N/A |

### Use Case Title: AR-12 AssessmentRegistration Administration Reference

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | N/A |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | The current registration object defines the refID to the AssessmentAdministration object as mandatory. For small-scale assessment, such as classroom assessment, quizzes, etc. an administration object is not required. We propose making the reference optional so that the model can support this use case. |
| **Actors:**  **Requesting Agent**  **Responding Agent** | Assessment Processing System |
| **Precondition** | Not applicable. |
| **Main Sequence of Events / Action Steps** | Not applicable. |
| **Alternative Sequence of Events / Action Steps** | Not applicable. |
| **Post Conditions** | Not applicable. |
| **SIF Mandatory Objects** | N/A |
| **SIF Optional Objects** | N/A |
| **Open Issues** | N/A |

### Use Case Title: AR-13 AssessmentRegistration Testing Status

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | N/A |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | It is very common practice that a testing status code is used to specifically identify conditions with the scoring process that cannot be identified with the score values themselves. Some examples of this might be the test taker did not attempt the test (based on attemptedness rules), the school or district does not want the test to be scored or the score included in summary information, the student took the same test multiple times (duplicate test), etc. |
| **Actors:**  **Requesting Agent**  **Responding Agent** | Assessment Scoring System |
| **Precondition** | The testing program administrators have defined the values for this status.  The test taker was registered to test and the test event occurred. |
| **Main Sequence of Events / Action Steps** | The scoring system has determined that there is a testing status condition that has been met based on the rules defined by the testing program. |
| **Alternative Sequence of Events / Action Steps** | The test administrators (local or state) have determined that the test should not be scored. |
| **Post Conditions** | The AssessmentRegistration object is updated with the appropriate testing status. |
| **SIF Mandatory Objects** | N/A |
| **SIF Optional Objects** | N/A |
| **Open Issues** | N/A |

### Use Case Title: AR-14 AssessmentRegistration Scores Published Date

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | N/A |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | It is very common practice that a testing program will identify when the scores have been published. This date may be used by consuming systems to ensure that they have the correct scores for a particular test taker. This date may be set as each individual test has been scored (such as for formative tests) or at a particular date when all tests have been released by the state (summative tests). |
| **Actors:**  **Requesting Agent**  **Responding Agent** | Assessment Scoring System (formative)  Assessment Processing System (summative) |
| **Precondition** | The testing program has identified the rules for setting this date.  The test taker was registered to test and the test event occurred. |
| **Main Sequence of Events / Action Steps** | Based on the rules established by the assessment program the system will:   1. The scoring system sets the date when the individual test is scored. 2. The processing system will set the date for a group of assessments when released by the testing program administrators. |
| **Alternative Sequence of Events / Action Steps** | In the event of a re-score, this date will likely be updated.  If preliminary scores are released with subsequent publishing of final scores, this date will likely be updated. |
| **Post Conditions** | The AssessmentRegistration object is updated with the appropriate score published date. |
| **SIF Mandatory Objects** | N/A |
| **SIF Optional Objects** | N/A |
| **Open Issues** | N/A |

## 3.2 Use Cases - StudentResponseSet

### Use Case Title: SRS-2 StudentResponseSet Response Status Attributes

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | The current assessment model contained a single value attribute whose list of values represented three separate constructs. In order to more accurately model the values and to support the ability to determine the correct status of the response to an item, we are breaking this element into three separate elements 1) an element indicating the response correctness, 2) an element indicating if the student viewed the item, and 3) an element indicating if the student attempted to answer the item. |
| **Actors:**  **Requesting Service**  **Responding Service** |  |
| **Pre Conditions** | The test taker has completed an assessment |
| **Main Sequence of Events / Action Steps** | The scoring system would derive the “response correctness” element  The delivery system (online only) would determine the “item viewed” element  The delivery system (online and paper) would determine the “attempted” element. |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | The response set contains the appropriate status settings. |
| **SIF Mandatory Objects** |  |
| **SIF Optional Objects** |  |
| **Open Issues** |  |

### Use Case Title: SRS-3 StudentResponseSet Feedback

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | There are multiple types and sources of feedback that can be provided a student based on an assessment item response. The current model supports a single diagnostic statement. The current model does not support multiple diagnostic statements or descriptions per response set nor does it identify the source of the feedback. These changes are also consistent with the changes recommended for the StudentScoreSet object. |
| **Actors:**  **Requesting Service**  **Responding Service** | Assessment Reporting, Learning Management System, or Gradebook  Assessment Scoring System |
| **Pre Conditions** | The test taker has completed an assessment |
| **Main Sequence of Events / Action Steps** | Based on the student response, the Assessment Scoring System should provide associated feedback based on the response. Associated feedback can originate from the item definition itself, from the scoring system itself, from a professional scorer, or from a teacher/administrator at the institution. |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | The response set is updated with all feedback. |
| **SIF Mandatory Objects** |  |
| **SIF Optional Objects** |  |
| **Open Issues** |  |

### Use Case Title: SRS-4 StudentResponseSet Tools Used

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | The current object model there is a single value for tools used on an item. If multiple tools where used, then this would have to be a delimited string in order to separate the values. In order to provide a more accurate representation of how tools are identified and used, we are making this into a list format so that each tool used can be identified individually. |
| **Actors:**  **Requesting Service**  **Responding Service** | Assessment Reporting System (or analysis system).  Assessment Delivery System |
| **Pre Conditions** | The test taker has complete a test. |
| **Main Sequence of Events / Action Steps** | All tools accessed in the online testing system are recorded for each item.  All tools accessed during a paper administration are recorded by the proctor and either bubbled in office use fields or are entered into the Assessment Registration System after the fact. |
| **Alternative Sequence of Events / Action Steps** | For online tests, the proctor may also be able to record “off-line” tools used – ex: the student may use a handheld calculator. |
| **Post Conditions** | All tools used by the test taker are recorded for each item. |
| **SIF Mandatory Objects** |  |
| **SIF Optional Objects** |  |
| **Open Issues** |  |

### Use Case Title: SRS-5 StudentResponseSet Multiple Item Scores

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | In the current object model there is a single value for item score. Some items, specifically open ended items, may generate multiple scores. For example, a writing essay item may generate an “overall” item score as well as scores about various traits of the item, such as main idea. The model must support the recording of multiple scores and designate each score with an identifier that identifies the “type” of score or trait that it is measuring. It is also valuable that each score can be given multiple feedback statements from various sources. |
| **Actors:**  **Requesting Service**  **Responding Service** | Assessment Reporting System  Assessment Scoring System. |
| **Pre Conditions** | A test taker has completed an assessment. |
| **Main Sequence of Events / Action Steps** | The item response is evaluated by the scoring system.  The scoring system records each score point for the item. |
| **Alternative Sequence of Events / Action Steps** | For professionally (or teacher) scored items, the item may provide for addition comments or feedback. |
| **Post Conditions** | The item response is updated with all score points (derived or entered by user). |
| **SIF Mandatory Objects** |  |
| **SIF Optional Objects** |  |
| **Open Issues** |  |

## 3.3 Use Cases – StudentScoreSet

### Use Case Title: SSS-2 StudentScoreSet Preliminary Scores

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | Many large scale assessment systems that take longer periods of time to process to get final results may release preliminary results to users early. This will allow users to plan for potential future steps necessary to facility a test retake (if available), remediate the student, plan for enrollment in future instruction (such as summer school), or to plan for promotion or graduation. One typical scenario is that the state may release early pass/fail indicators for planning purposes. |
| **Actors:**  **Requesting Service**  **Responding Service** | Assessment Reporting System, Instructional Management System or Gradebook.  Assessment Scoring System |
| **Pre Conditions** | A test taker has complete an assessment |
| **Main Sequence of Events / Action Steps** | 1. The assessment program has performed initial scoring and is able to release preliminary scores, including pass/fail indicators. 2. The scoring system records preliminary scores. |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | The Assessment Scoring System publishes preliminary score data in score set objects. |
| **SIF Mandatory Objects** |  |
| **SIF Optional Objects** |  |
| **Open Issues** |  |

### Use Case Title: SSS-3 StudentScoreSet Pass Fail Indicator

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | Most scoring systems will determine a pass/fail indicator based on a student’s raw or scale scores as compared to one or more “cut scores”. The existing assessment model supports performance level reporting but does not provide a method to indicate if the performance level is passing or failing if multiple passing and/or failing levels are possible. Adding a pass/fail indicator will allow the scoring system to identify this situation for each score metric reported (if it is applicable). |
| **Actors:**  **Requesting Service**  **Responding Service** | Assessment Reporting System, Learning Management System or Gradebook  Assessment Scoring System |
| **Pre Conditions** | The test taker has completed an assessment |
| **Main Sequence of Events / Action Steps** | 1. The sub test raw (or scaled) score has been determined. 2. The sub test raw (or scaled) score is compared to performance level cut scores in the score tables 3. The scoring system determines the performance level. 4. The scoring system uses the pass/fail indicator in the score table for the performance level |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | The score set object contains the appropriate pass/fail indicators |
| **SIF Mandatory Objects** |  |
| **SIF Optional Objects** |  |
| **Open Issues** |  |

### Use Case Title: SSS-4 StudentScoreSet Feedback

|  |  |
| --- | --- |
| **Type (Mandatory or Optional)** | Optional |
| **SIF Version** | SIF Implementation Specification 2.6 |
| **Summary Description** | There are multiple types and sources of feedback that can be provided a student based on an assessment result. The current model supports a single diagnostic statement and description. The current model does not support multiple diagnostic statements or descriptions per score set nor does it identify the source of the feedback. |
| **Actors:**  **Requesting Service**  **Responding Service** | Assessment Reporting System, Learning Management System or Gradebook  Assessment Scoring System |
| **Pre Conditions** | The test taker has completed an assessment. |
| **Main Sequence of Events / Action Steps** | The scoring system provides feedback to the student based upon their responses to items within a sub-test. Sources for feedback may be the sub test definition, the standards aligned to the sub test definition or from professional scorers or teachers. |
| **Alternative Sequence of Events / Action Steps** |  |
| **Post Conditions** | All feedback is record in the sub test object |
| **SIF Mandatory Objects** | AssessmentFormPlatform |
| **SIF Optional Objects** | AssessmentFormPlatforms (list) |
| **Open Issues** |  |

**Status Tracker Phase 2: Execution of Proposed Changes**

*At this point the initial Data Model extension proposal has been accepted by the Tech Board and is either in the object pipeline, or being fast-tracked. The following sections have to be completed and (where indicated) reviewed and approved before this proposal can be reflected in the SIF specification.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Template Section** | **Initial Draft Completed**  **(Owner / Date)** | **Reviewed I or Accepted (A)**  **(Owner / Date)** | **Comments** |
| Dependencies | Project Team / Staff  **Date:** | Internal Project Team review |  |
| Object Definition Table | Project Team  **Date:** | Tech Board I  **Date:** |  |
| Migration Plan | Staff / Project Team  **Date:** | Tech Board (A)  **Date:** | TB Approval is part of SIF Release cycle |
| Sample XML | Staff / Project Team  **Date:** | Optional | Generally provided as part of published specification |

## 4. Impact Assessment

*This section is the first to consider the actual implementation which will address the use cases previously identified. It requires assessing the impacts to both the existing objects and infrastructure, and to previously deployed applications. It would normally be produced by the Project Team (new or existing) assigned to this data model extension by the Tech Board at the time this proposal was approved.*

*In cases where a legacy object (one with no owning Project Team), is being changed, the task of assessing impact may be assigned to a Staff member to drive its completion.*

*The following two subsections must be completed.*

## 4.1 External Object Dependencies and Relation Map

The following is a global view of the Assessment data domain.

### 4.1.1 Object Dependencies and Relationship Map

*The relationship arrows originate in the object that contains the RefId. Orange relationships are proposed new relationships. Red relationships are proposed to be removed. Red objects are new objects.*

#### 4.1.1.1 AssessmentRegistration



#### 4.1.1.2 StudentScoreSet



#### 4.1.1.3 StudentResponseSet



## Publishing Student Results Objects

*Publishing a assessment results would vary depending upon the use cases needing to be satisfied. These relationship will be best described in the assessment services discussion that will be provided in later releases of the SIF specification. The following simple use scenarios are provided to help any publisher of assessment results.*

|  |  |
| --- | --- |
| *Scenario* | *Objects required* |
| *Scores only without item details* | *Assessment, AssessmentRegistration, StudentPersonal, StudentScoreSet, AssessmentSubTest* |
| *Scores only with item details* | *Assessment, AssessmentRegistration, StudentPersonal, StudentScoreSet, AssessmentSubTest, StudentResponseSet, AssessmentItem* |
| *Scores with administration and item details* | *Assessment, AssessmentRegistration, StudentPersonal, StudentScoreSet, AssessmentSubTest, StudentResponseSet, AssessmentItem, AssessmentSession, AssessmentAdministration* |

*Objects not discussed in this document are highlighted in green text above.*

*The above table is only listing objects that are required. Other objects may be included based upon you specific scenario or customer requirements.*

## 4.2 Infrastructure / International Dependencies and Relation Map

*Identify any dependencies on infrastructure technologies and / or deliverables from the International Technical Board (ITB) which are planned for a future release.*

*This could include requiring or relying on specific functionality from one or more of the following:*

* *Transport (ex: SOAP conventions)*
* *SIS Functional Profiles*
* *Identity Management Profiles*
* *Global Data Model Metadata*
* *Central Administration or Smart Zone*
* *Zone Services (ex: Assessment)*

|  |  |  |
| --- | --- | --- |
| **Proposed new Object, Element or Attribute** | **Infrastructure or International technology dependency** | **Specifics of dependency** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

# **5 Detailed Design**

*Place the detailed element by element, attribute by attribute breakdown of the Data Model Extension here. This work is normally done by members of the assigned Project Team.*

*The values of the “Char” column include one or more of the following:*

* ***M – Mandatory****. Item must appear in every Add Event and Response message for the object*
* ***R – Required****. Item must either appear in an Add Event or “eventually” be included in an Add Event.*
* ***S – Supported****. Item may or may not appear in any message relating to the object. However if its value is supplied / available, it must be included by the sender in Event and Response messages.*
* ***C******– Conditional.*** *Item is required if the included conditions are satisfied*
* ***I –******Immutable.*** *Item value cannot be changed once supplied.*
* ***U –******Unique.*** *Item value is unique from all other objects containing that item (ex: RefId)*
* ***O – Optional****. Item may or may not appear in any message relating to the object. It need not be supported by the sender*

*The “type” of each item is either an XML type (ex: integer) or a named SIF Global Type.*

*XML Facets can help to further define the value of an item. These can include length, range, and per-type value restrictions. They should be specified if known.*

*Fill out a separate copy of the following table for each affected new or existing SIF object.*

*IMPORTANT NOTE: To assist with helping users understand the object structures, a “Sample Data” document has been put on the collaboration site in the 2.6 directory. This sample data document provides a more complete representation of examples than is available with the sample XML in the specification. Please refer to that if you are having issues understanding how to implement these objects.*

## 5.1 AssessmentRegistration (modified object)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Object Name:** | **Object Description:** | | | |
| **AssessmentRegistration** | This object represents the assignment of a specific assessment to be taken by a student. A student will have multiple registrations if a given assessment is attempted more than once. This object will also track testing status information after the student has tested.  No use case, clarification to description only | | | |
| Element/@Attribute | Char | Description | Type | Values or additional comments |
| @ RefId | M | The GUID that uniquely identifies an instance of the object. | [RefIdType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#RefIdType) |  |
| @ StudentPersonalRefId | M | The student associated with the registration. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) |  |
| @ AssessmentAdministrationRefId | ~~M~~  O | The assessment administration associated with the registration. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) | Use case AR-12 |
| @ AssessmentRefId | M | The registration will identify the assessment that is to be taken by the student. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) | Use case AR-1 |
| AssessmentSessionRefId | O | Identifies the AssessmentSession that contains the location and scheduled time the assessment will/has been delivered. The session is likely identified at some time after the registration is initially created. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) | Use case AR-2 |
| AssessmentFormRefId | O | The assessment form may be identified as part of registration for accessibility purposes (or other purposes). The form actually taken (post-test) will also be recorded if it is not pre-assigned. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) | Use case AR-3 |
| CreationDateTime | M | Date/time assignment is made. | [xs:dateTime](http://www.w3.org/TR/xmlschema-2/#dateTime) |  |
| StartDateTime | O | Date/time the assignment actually started. Typically considered the login time. For paper-based tests, this would typically be the date of testing for this student. Note: if the student “pauses” or otherwise logs in/out of a test after starting, this only records the first event. If further detailed analysis is required, refer to the item level details. | [xs:dateTime](http://www.w3.org/TR/xmlschema-2/#dateTime) | Use case AR-6 |
| EndDateTime | O | Date/time the assignment actually ended. Typically considered the time the test has been submitted for scoring by the test taker. Likely used for online tests only. | [xs:dateTime](http://www.w3.org/TR/xmlschema-2/#dateTime) | Use case AR-6 |
| AssessmentPlatform | O | Indicates if the registration is for a specific assessment delivery platform. Should be updated post-test with the actual platform used. | Values are:  Paper  Computer  Mobile  Clicker  Mixed Mode  Other | Use case AR-7 |
| DaysOfInstruction | O | This indicates the number of days of instruction the student has taken prior to testing. | xs:int | Use case AR-8 |
| RetestIndicator | O | Indicates if this registration is for a retest (retake). Retest can occur if a student failed a prior attempt and is eligible to retake. Other retest scenarios also can occur. | Values are:  Y = yes  N = no | Use case AR-9 |
| TestAttemptIdentifier | O | If the assessment delivery system assigns a unique identifier for the test attempt, then the identifier can be provided. Examples of unique identifiers for paper-based tests are batch/stack/serial and for online tests is likely a unique internal identifier. Used to locate the original attempt. | xs:string | Use case AR-10 |
| StudentSpecialEvents | O | Records student-specific special event before, during or after the test. | [List](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#List) | Renamed Special Condition to Special Event.  Clarification only |
| StudentSpecialEvents/ StudentSpecialEvent | MR | A description of the special event. Student special event are different from special events of the test session. An example of a student special event may be “student became ill” or “student was detected attempting to cheat”. | [xs:normalizedString](http://www.w3.org/TR/xmlschema-2/#normalizedString) | Renamed Special Condition to Special Event.  Clarification only |
| @ Code | M | A code indicating the type of special condition. Code values are determined by the assessment program. | [xs:token](http://www.w3.org/TR/xmlschema-2/#token) | Clarification only |
| TestingStatus | O | Records student-specific special conditions before, during or after the test. | [List](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#List) | Use case AR-13 |
| @ TestingStatusCode | M | A code that identifies the specific testing status. Code values are determined by the testing program. |  | Use case AR-13 |
| TestingStatus/  TestingStatusDescription | MR | A description of the testing status. Values might include:  Did not attempt  Do not score  Do not report  Duplicate test | [xs:normalizedString](http://www.w3.org/TR/xmlschema-2/#normalizedString) | Use case AR-13 |
| ScorePublishedDate | O | This is the date set by the testing program when the test scores are published. For formative or classroom assessments, this will likely be the date when the scoring system scored the individual test. For summative assessments, this date is likely set for a group of assessments when the processing system releases the scores. | xs:dateTime | Use case AR-14 |
| StudentGradeLevel | O | Grade level of the student at the time of testing. | [GradeLevel](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#GradeLevel) |  |
| AssessmentGradeLevel | O | The grade or level at which the student is to be tested. This element should be omitted unless the student is being tested out-of-level. | [GradeLevel](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#GradeLevel) |  |
| AssessmentStudentSnapshot | O | The status of the student at the time of testing. ~~The source of this information may come from the student information system but the snapshot record is managed by the assessment system and not the student information system~~. |  | Use case AR-11  Clarified description here. |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| AssessmentStudentSnapshot/ Name | O | The name of the student. | [Name](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#Name) | Use case AR-11 |
| AssessmentStudentSnapshot/LocalId | M | The locally-defined identifier for this student. | [LocalId](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#LocalId) | Use case AR-11 |
| AssessmentStudentSnapshot/StateProvinceId | O | The state-assigned identifier for this student. | [StateProvinceId](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#StateProvinceId) | Use case AR-11 |
| AssessmentStudentSnapshot/Address | O | The address of the student. | [Address](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#Address) | Use case AR-11 |
| AssessmentStudentSnapshot/RaceList | O | Person's race | [RaceList](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#RaceList) | Use case AR-11 |
| AssessmentStudentSnapshot/HispanicLatino | O |  | [HispanicLatino](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#HispanicLatino) | Use case AR-11 |
| AssessmentStudentSnapshot/Gender | O | Person's gender. | Gender | Use case AR-11 |
| AssessmentStudentSnapshot/BirthDate | O | The person's date of birth. | [BirthDate](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#BirthDate) | Use case AR-11 |
| AssessmentStudentSnapshot/Age | O | The age (in years) of the student on the date in SnapDate. | [xs:unsignedInt](http://www.w3.org/TR/xmlschema-2/#unsignedInt) | Use case AR-11 |
| AssessmentStudentSnapshot/ProjectedGraduationYear | O | Currently projected graduation year. | [ProjectedGraduationYear](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#ProjectedGraduationYear) | Use case AR-11 |
| AssessmentStudentSnapshot/OnTimeGraduationYear | O | First projected graduation year, usually determined when student is accepted into ninth grade. | [OnTimeGraduationYear](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#OnTimeGraduationYear) | Use case AR-11 |
| AssessmentStudentSnapshot/GraduationDate | O | Date student officially graduated from secondary education. | [GraduationDate](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#GraduationDate) | Use case AR-11 |
| AssessmentStudentSnapshot/GraduationAward | O | The award received upon graduation. | **values:**  Diploma  Certificate  GED | Use case AR-11 |
| AssessmentStudentSnapshot/GraduationOnTime | O | Did the student graduate in the expected number of years? | **values:**  Yes  No  Unavailable  NA | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment | M | Enrollment-related information for the school that is responsible for reporting the student's membership/child accounting information. This is most likely the primary enrollment site for the student. |  | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment/StudentSchoolEnrollmentRefId | O | The Id (GUID) of the StudentSchoolEnrollment object from which the enrollment information is derived. | [IdRefType](http://specification.sifassociation.org/Implementation/US/2.5/html/CommonTypes.html#IdRefType) | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment/SchoolName | O | Name of the school. | [xs:normalizedString](http://www.w3.org/TR/xmlschema-2/#normalizedString) | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment/SchoolInfoRefId | C | The Id (GUID) of the school. Provide both the HomeEnrollment/SchoolInfoRefId and HomeEnrollment/LocalId elements if possible. If not, one or the other must be provided. | [IdRefType](http://specification.sifassociation.org/Implementation/US/2.5/html/CommonTypes.html#IdRefType) | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment/LocalId | C | The locally-defined identifier for this school. Provide both the HomeEnrollment/LocalId and HomeEnrollment/SchoolId elements if possible. If not, one or the other must be provided. | [LocalId](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#LocalId) | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment/StateProvinceId | O | The state or province defined identifier for this school. | [StateProvinceId](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#StateProvinceId) | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment/Status | M | Enrollment status as of the SnapDate. | **values:**  Active  Inactive  Unreported | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment/GradeLevel | M | Grade or academic level of student. | [GradeLevel](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#GradeLevel) | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment/Homeroom | O |  | [IdRefType](http://specification.sifassociation.org/Implementation/US/2.5/html/CommonTypes.html#IdRefType) | Use case AR-11 |
| AssessmentStudentSnapshot/SIF\_RefObject | M | The name of the SIF object referenced. | **values:**  RoomInfo | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment/HomeroomNumber | O | The locally-defined identifier for this room. | [HomeroomNumber](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#HomeroomNumber) | Use case AR-11 |
| AssessmentStudentSnapshot/HomeEnrollment/FullYearEnrollment | O | An indication as to whether or not the student was enrolled for the whole school year. If the SchoolYear is in progress as of the SnapDate, use the value "Unknown". | **values:**  Yes  No  Unknown | Use case AR-11 |
| AssessmentStudentSnapshot/IDEA | O |  | [IDEA](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#IDEA) | Use case AR-11 |
| AssessmentStudentSnapshot/Migrant | O |  | [Migrant](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#Migrant) | Use case AR-11 |
| AssessmentStudentSnapshot/Title1 | O |  | [Title1](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#Title1) | Use case AR-11 |
| AssessmentStudentSnapshot/GiftedTalented | O |  | [GiftedTalented](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#GiftedTalented) | Use case AR-11 |
| AssessmentStudentSnapshot/EconomicDisadvantage | O |  | [EconomicDisadvantage](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#EconomicDisadvantage) | Use case AR-11 |
| AssessmentStudentSnapshot/ELL | O |  | [ELL](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#ELL) | Use case AR-11 |
| AssessmentStudentSnapshot/Homeless | O |  | [Homeless](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#Homeless) | Use case AR-11 |
| AssessmentStudentSnapshot/Section504 | O |  | [Section504](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#Section504) | Use case AR-11 |
| AssessmentStudentSnapshot/VocationalConcentrator | O |  | [VocationalConcentrator](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#VocationalConcentrator) | Use case AR-11 |
| AssessmentStudentSnapshot/Immigrant | O |  | [Immigrant](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#Immigrant) | Use case AR-11 |
| AssessmentStudentSnapshot/NeglectedDelinquent | O |  | [NeglectedDelinquent](http://specification.sifassociation.org/Implementation/US/2.5/html/DataModel.html#NeglectedDelinquent) | Use case AR-11 |
| AssessmentStudentSnapshot/FreeAndReducedStatus | O | Student's eligibility for free and reduced meals. | **values:**  Free  Reduced  None  NA | Use case AR-11 |
| LEAInfoRefId | O | Optional reference to a district associated with the registration. | IdRefType |  |
| SchoolInfoRefId | O | Optional reference to a school associated with the registration. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) |  |
| StaffPersonalRefId | O | Optional reference to a staff person associated with the registration. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) |  |
| SectionInfoRefId | O | Optional reference to a section (or class) associated with the registration. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) |  |
| SIF\_Metadata | O |  | [SIF\_Metadata](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#SIF_Metadata) |  |
| SIF\_ExtendedElements | O |  | [SIF\_ExtendedElements](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#SIF_ExtendedElements) |  |

## 5.2 StudentResponseSet (modified object)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Object Name:** | **Object Description:** | | | |
| **StudentResponseSet** | This object transmits the student's responses to stimuli presented in an assessment. ~~These are the raw, unscored responses.~~ This object contains the raw responses as well as providing scores and feedback to the student based on those responses.  No use case, clarification to description only | | | |
| Element/@Attribute | Char | Description | Type | Values or additional comments |
| @ RefId | M | The GUID that uniquely identifies an instance of the object. | [RefIdType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#RefIdType) |  |
| @ AssessmentAdministrationRefId | M | The administration associated with the response set. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) |  |
| @ StudentPersonalRefId | M | The student associated with the response set. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) |  |
| @ AssessmentRegistrationRefId | ~~O~~  M | The registration associated with the response set. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) |  |
| Items | M | Container for item elements. | [List](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#List) |  |
| Items/Item | ~~OR~~  MR | The item contains response data and metadata for each item. |  | Make consistent use of option/mandatory in optional list. |
| @ AssessmentItemRefId | M | A GUID that identifies the item object associated with this student result. | [IdRefType](http://specification.sifinfo.org/Implementation/2.4/CommonTypes.html#IdRefType) |  |
| Items/Item/Response | O | Answer selected or student work in raw format.  Examples C 19 | [xs:string](http://www.w3.org/TR/xmlschema-2/#string) |  |
| Items/Item/ResponseLocation | O | An optional element that contains a URL pointing to the location of the response or additional response. | [xs:anyURI](http://www.w3.org/TR/xmlschema-2/#anyURI) |  |
| ~~Items/Item/ResponseStatus~~ | ~~O~~ | ~~Status of the response.~~ | ~~values:~~  ~~Correct~~  ~~Incorrect~~  ~~Complete~~  ~~PartiallyComplete~~  ~~Viewed~~  ~~NotViewed~~  ~~The item was not viewed by the student~~  ~~NotAnswered~~  ~~Attempted~~  ~~The item was viewed but no response given~~  ~~Incomplete~~ | Use case SRS-2  Breaking this element into three separate elements that follow. |
| Items/Item/ResponseCorrectness | O | After the test has been scored, this value will indicate the correctness of the response. This attribute would be missing if the response has not yet been scored. For open ended items that are scored using a rubric, this value will also likely be missing. These items do not fall nicely into the right/wrong category. | Values:  Correct  Incorrect  Partial (partially correct) | Use case SRS-2 |
| Items/Item/ItemViewed | O | This element will indicate if the item has been viewed or not by the student. Note this value can only be determined for online delivered tests. Paper tests should not use this attribute. | Values:  Yes (student viewed the item)  No (student did not view the items) | Use case SRS-2 |
| Items/Item/ItemAttempted | O | This element indicates if the student attempted the item. If a full or partial response is present then the item should be considered attempted. If the student never responded then the item was not attempted. If the item was answered and then later the answer was removed, then it is the rule of the assessment system that would determine if that was considered an attempt. For paper tests, an erasure would also be determined by the rules of the assessment system (assuming gray scanning scale capabilities). | Values:  Yes (the student attempted the item)  No (the student did not attempt the item) | Use case SRS-2 |
| Items/Item/NumberOfAttempts | O | The number of times a student changes their answer or attempts a response. For online tests, this would represent each time an item was changed after the original (complete) response was provided and the student navigated away from the item. For paper-based tests, if erasure analysis is performed, this could represent either the number of erasures or be set to 2 if multiple responses are detected. | [xs:unsignedInt](http://www.w3.org/TR/xmlschema-2/#unsignedInt) | Changed the position of this element to better align with like attributes.  Clarified description and included usage for online and paper-based tests. |
| Items/Item/~~Response~~TimeOnItem | O | The length of time the student spent viewing or answering this item. Only applies for online tests. If the student viewed the item multiple times, then this would be the accumulated total time spent on the item. As much as is possible, the delivery system should remove inter-item latency or item presentation time. | [xs:duration](http://www.w3.org/TR/xmlschema-2/#duration) | Renamed this element and expanded on the description to clarify. The original name of ResponseTime implies an alternate meaning (such as time to construct response) and generally cannot be measured. TimeOnItem is more clear and can be measured. This would include “think time”. |
| Items/Item/ItemNumber | O | Identifies the sequence of the item as it was delivered to this student. For adaptive testing, this is the sequence in which the item was delivered. This should be the item sequence starting at 1 and continue to the end of the test (spanning all sections). This should include all items such as sample items. | [xs:token](http://www.w3.org/TR/xmlschema-2/#token) | Clarified description. |
| Items/Item/ItemName | O | Identifies the item on the assessment by name. | [xs:token](http://www.w3.org/TR/xmlschema-2/#token) |  |
| Items/Item/ AssessmentRubricRefId | O | This identifies the rubric that was used to determine the score that is being recorded for this item response. This is only used for items that are scored using one or more rubrics. | [RefIdType](http://www.w3.org/TR/xmlschema-2/#normalizedString) | Use case SRS-? |
| Items/Item/ItemScore | O | This is the score the student received on the specific item. | [xs:normalizedString](http://www.w3.org/TR/xmlschema-2/#normalizedString) |  |
| Items/Item/ItemScoreCode | O | This is the score code the student received for the specific item. Generally only applies to open ended items. Values are program specific, but example values might be “BL = blank”, “OT = off topic”, “FL = foreign language”. | [xs:normalizedString](http://www.w3.org/TR/xmlschema-2/#normalizedString) |  |
| Items/Item/CommentCodes | O | If the scoring process provides for comment codes, then this list will contain each comment code provided with the item score. | List |  |
| @CommentCode | M | For each comment code provide, this will identify the specific code for the comment. These codes will be program specific (no standardized values). | xs:normalizedString |  |
| Items/Item/CommentCodeDescription | OR | Allows for the description of the comment code to be provided by the scoring system. | xs:string |  |
| Items/Item/TraitScores | O | If the item includes trait scores – typically open ended items – then this list will support one or more trait scores. | [List](http://www.w3.org/TR/xmlschema-2/#normalizedString) |  |
| Items/Item/TraitScore | MR | This is the container for the trait score elements. |  |  |
| Items/Item/TraitScores/TraitScore/ItemTraitScoreType | O | If trait scores are provided, then this identifies the specific trait score that is provided. This value will be program specific (i.e. no standardized list of values available). | [xs:string](http://www.w3.org/TR/xmlschema-2/#normalizedString) |  |
| Items/Item/TraitScores/TraitScore/ItemTraitScore | O | This will be the numeric trait score value. | xs:normalizedString |  |
| Items/Item/TraitScores/TraitScore/ItemTraitScoreCode | O | If there is a code associated with the trait score, then this will allow for identifying the code | xs:normalizedString |  |
| Items/Item/Feedback | O | This list will support providing feedback to the student from multiple sources. | List | Use case SRS-3 |
| Items/Item/Feedback/  FeedbackItem | O | This list will support providing feedback to the student from multiple sources. | List |  |
| Items/Item/Feedback/  FeedbackItem/  Code | O | If there is a coding system associated with the feedback concerning the score, then this will identify that code. The format and content of the code is determined by the assessment program. | [xs:string](http://www.w3.org/TR/xmlschema-2/#string) | Use case SRS-3 |
| Items/Item/Feedback/  FeedbackItem/  DiagnosticStatement | O | Psychometric purpose or design-related comment about the question. | [xs:string](http://www.w3.org/TR/xmlschema-2/#string) | Use case SRS-3 |
| Items/Item/Feedback/  FeedbackItem/  Description |  | This is further qualification of a Student Score. If this is a teacher scored item, then this may be comments the teacher is providing back to the student. | [xs:string](http://www.w3.org/TR/xmlschema-2/#string) | Use case SRS-3 |
| Items/Item/Feedback/  FeedbackItem/  Source |  | This will indicate the source for this feedback. May indicate if this is teacher, scorer, or system generated feedback. Values for this attribute would be determined by the assessment program. | [xs:string](http://www.w3.org/TR/xmlschema-2/#string) | Use case SRS-3 |
| Items/Item/ItemAidsUsed | O | This is a list of the item aids that were used (or accessed) by the student to answer the question. | List | Use case SRS-4 |
| Items/Item/ItemAidsUsed/ItemAidUsed | ~~O~~  MR | Each tool or aid set used while viewing the item. Such as “Scientific Calculator”, “Periodic Table”, etc. | [xs:string](http://www.w3.org/TR/xmlschema-2/#string) | Use case SRS-4  Moved this attribute into a list. |
| SIF\_Metadata | O |  | [SIF\_Metadata](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#SIF_Metadata) |  |
| SIF\_ExtendedElements | O |  | [SIF\_ExtendedElements](http://specification.sifinfo.org/Implementation/2.4/DataModel.html#SIF_ExtendedElements) |  |

## 5.3 StudentScoreSet (modified object)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Object Name:** | **Object Description:** | | | |
| **StudentScoreSet** | **The scored results from an assessment.** | | | |
| Element/@Attribute | Char | Description | Type |  |
| @ RefId | M | The GUID that uniquely identifies an instance of the object. | RefIdType |  |
| @ ScoreMetric | M | The metric or scale used to report the score. | NCES0056AssessmentReportingMethodType |  |
| @ AssessmentAdministrationRefId | M | The administration associated with this score set. | IdRefType |  |
| @ StudentPersonalRefId | M | The student associated with this score set. | IdRefType |  |
| @ AssessmentRegistrationRefId | ~~O~~  M | The registration associated with this score set. | IdRefType | Use case SSS-1 |
| Scores | M | Container for score elements. | List |  |
| Scores/Score | ~~O~~  OR | The score with other information related to the score. |  |  |
| @ AssessmentSubTestRefId | M | References the AssessmentSubTest that defines the score. | IdRefType |  |
| Scores/Score/PreliminaryIndicator | OR | If this score is preliminary, then this attribute value should be set. Preliminary scores may be provided for early use by the assessment program or user while final scoring is occurring. | Values are:  Y = this is a preliminary score  N = this is a final score | Use case SSS-2 |
| Scores/Score/ScoreValue | ~~M~~  MR | The value of the score. | xs:normalizedString |  |
| Scores/Score/PassFailIndicator | OR | If the score value also determines a pass/fail level, then this indicator will specify the value. | Values are:  P = pass  F = fail | Use case SSS-3 |
| Scores/Score/Feedback | OR | This list will support providing feedback to the student from multiple sources. | List | Use case SSS-4 |
| Scores/Score/Feedback/  FeedbackItem | OR | This bundles the feedback elements together. |  |  |
| Scores/Score/Feedback/  FeedbackItem/  DiagnosticStatement | ~~O~~  MR | Comment created by any logical analysis of this score. | xs:string | Note: we are putting the diagnostic statement and description in a list to support multiple feedback statements. |
| Scores/Score/Feedback/  FeedbackItem/  Description | OR | This is further qualification of a Student Score. | xs:string |  |
| Scores/Score/Feedback/  FeedbackItem/  Source | OR | This will indicate the source for this feedback. May indicate if this is teacher, scorer, or system generated feedback. Values for this attribute would be determined by the assessment program. | xs:string | Use case SSS-4 |
| Scores/Score/NumberOfResponses | O | This is the number of responses that are included with the StudentScoreSet. Responses are those items that were attempted (partially or fully answered) by the student and not necessarily the number of items in the sub test (which can be determined from the sub test object). | xs:unsignedInt | Adding clarification that this is the number of items that the student responded to and not the number of items in the sub-test. |
| SIF\_Metadata | O |  | SIF\_Metadata |  |
| SIF\_ExtendedElements | O |  | SIF\_ExtendedElements |  |

# **6 Migration Plan (for proposed changes to existing objects only)**

*One of the mandatory components of every Data Model Change proposal is the Migration Plan. This section describes the impact of the proposed change to legacy SIF Zones and the techniques, best practices and deployment guidelines designed to minimize that impact. It is normally filled out in coordination with SIF Staff or an experienced SIF Data Modeler.*

*All migration plans have the same overarching goal: allow an existing SIF Zone to migrate to the new change incrementally ... by changing only one component at a time while maintaining at least the previous level of functionality, and “breaking” nothing in the process.*

*Several common strategies (in order of desirability) are:*

***1. Add new elements rather than modify old ones***

*This places a requirement on new agents to support duplicate entries in order to maintain backwards compatibility with agents conforming to earlier versions of the standard. To use this strategy, there must be a clear mapping provided for agent writers to utilize. This would include mapping any new code set values to the collection of previously existing ones.*

***2. Constrain the impact to the ZIS***

*In this case the ZIS will transparently “bridge” between agents supporting this change and earlier versions. To use this strategy, there must be a clear mapping provided for ZIS vendors to utilize, and at least two vendors must “sign off” on this section of the proposal.*

***3. Reduce the impact***

*This approach is effective for changing only those parts of the SIF specification which have been minimally adopted. Start by mapping the set of changed elements against the CSQ matrices to determine the number of existing SIF-certified applications that will be affected. Work with SIF Staff to alert impacted vendors (those with certified, and where known, uncertified products) and identify the number of sites which will be affected. Depending upon the size of the impact, the change may be accepted for a minor release.*

***4. Extended Elements***

*Use the extended element construct to add the new changes. This has the advantage that it standardizes how the functionality will be introduced, but suffers from the disadvantage that conformance to the changes cannot be easily verified, and a further change will be required when moving forward to the next major release. It is the least desirable way to introduce changes into a minor release, and a strong justification for this approach should be prepared.*

***5. Wait until the next major release***

*Defer the proposed change until the next major release because a clear incremental migration strategy for it cannot be constructed.*

**Migration Plan:**

*Using the above techniques or alternative ones, specify the recommended series of incremental component upgrades or deployments (of application, agent or ZIS) which must be performed before the data model changes introduced by this proposal can be successfully incorporated into an existing SIF Zone.*

*The SIF technical board had determined that the proposed breaking changes to the SIF assessment objects in the 2.6 release will be handled as follows:*

1. *The current 2.5 objects will be deprecated in the 2.6 release. Any implementations of the 2.5 objects will continue to work when the 2.6 specification is released.*
2. *The new 2.6 objects will be released as a complete set of new objects and they will all be prefixed with a “sif3:” namespace tag.*

*The following table highlights the breaking changes in 2.6 for those applications that may be “upgrading” from 2.5 to 2.6.*

|  |  |  |
| --- | --- | --- |
| **Component Replaced** | **Increased Functionality (if any)** | **Effect on Legacy components (if any)** |
| AssessmentRegistration object | Added AssessmentRefId as a mandatory attribute. | Any agent/service publishing this object will need to add this attribute. This should be easily known at the time of registration as if you are not registering for an assessment, what are you registering for? |
|  |  |  |
| StudentResponseSet | Removing optional element ResponseStatus and adding new optional elements ResponseCorrectness, ItemViewed and ItemAttempted elements to more clearly define this value. | Any agent/service publishing the object will need to remove the reference to ResponseStatus and utilize the new elements. |
| StudentResponseSet | Renaming element ResponseTime to TimeOnItem. | Any agent/service publishing the object will need to rename this element. |
| StudentResponseSet | Putting element ItemAidUsed in a list. | Any agent/service publishing the object will need to put the ItemAidUsed in the list container. |
|  |  |  |

# **7 Issues**

*List any issues surrounding this proposal which the reviewers or approvers may need to consider.*

1. *This proposal suggests adding a link to the student snapshot as opposed to putting selected snapshot elements in the AssessmentRegistration object. The current 2.5 model has only a few selected elements from snapshot. Most snapshot elements will be of value to some programs. In lieu of replicating the snapshot definition, we propose just providing a reference to the snapshot object.*
   1. *Resolution: The design review indicated that we will replicate all snapshot elements in the registration object.*
2. *This proposal includes adding a “days of instruction” to the registration object. The working group thought that this might be better located in the student snapshot record. Currently, the snapshot record does not define the days of instruction. We can leave it in the registration record or add the attribute to the snapshot record.* 
   1. *Resolution, we will add element to registration data – it is an optional element.*

# **8 XML Example(s)**

*One or more examples of XML instances representing the items in the proposed extension should be placed here, as part of work done during the detailed design process.*

*The items in green are either new or altered from the prior version. Items in yellow are suggested additions in example data using existing tags to help with clarification.*

## 8.1 AssessmentRegistration

<AssessmentRegistration RefId="84243B2716EA4A68889B57A07E3707C9"

  StudentPersonalRefId="0D015F74DAB645FD92EFA8F43F2D79C3"

  AssessmentAdministrationRefId="6B08DF6E158941D9B8206D16E1FA6219">

  <AssessmentRefId>GS644H67JJ4HS4774JCSJ7VT45SGTHK3</ AssessmentRefId>

  <AssessmentSessionRefId>D4SGHW98G7D64C27AE977F29BXHSW35S</AssessmentSessionRefId >

  <AssessmentFormRefId>VT45SGTH46S3H78GDH36H0773BRY53EF</ AssessmentFormRefId>

  <CreationDateTime>2006-03-05T09:30:00-05:00</CreationDateTime>

  <StartDateTime>2006-13-05T09:00:00-05:00</StartDateTime>  
  <EndDateTime>2006-13-05T11:00:00-05:00</EndDateTime>

  <AssessmentPlatform>Computer</AssessmentPlatform>

  <DaysOfInstruction>80</DaysOfInstruction>

  <RetestIndicator>N</RetestIndicator>

  <TestAttemptIdentifier>594800385</TestAttemptIdentifier>

  <StudentSpecialEvents>

    <StudentSpecialEvent Code="45C">Student became ill during test.

    </StudentSpecialEvent>

  </StudentSpecialEvents>

  <TestingStatus>

    <TestingStatusDescription Code="15">Do not report

    </TestingStatusDescription>

  </TestingStatus>

  <StudentGradeLevel>

    <Code>04</Code>

  </StudentGradeLevel>

  <AssessmentGradeLevel>

    <Code>03</Code>

  </AssessmentGradeLevel>

  <AssessmentStudentSnapshot>

    <RaceList>

      <Race>

        <Code>1002</Code>

      </Race>

    </RaceList>

    <Gender>F</Gender>

    <BirthDate>1996-09-12</BirthDate>

    <Title1>Yes</Title1>

    <ELL>No</ELL>

  </AssessmentStudentSnapshot>

  <LEAInfoRefId>325335F330A24BCD85E263E5C1EAAF89</LEAInfoRefId>

  <SchoolInfoRefId>0578B825250649DE930BF8916175BBAB</SchoolInfoRefId>

  <StaffPersonalRefId>3CD4A20CE2D64C27AE977F02D2CE24B3</StaffPersonalRefId>

  <SectionInfoRefId>CE38829615A74E0E9D37CDBFB9F93295</SectionInfoRefId>

</AssessmentRegistration>

## 8.2 StudentResponseSet

<StudentResponseSet RefId="A32F55CC14004172A7CD8E8FB5187DD0"

AssessmentAdministrationRefId="BB181B05598C46D2B8D533483D91392E"

StudentPersonalRefId="8F0934CC2F0448F8BBD788AA1ADE691B"

AssessmentRegistration=”RRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR”>

<Items>

<Item AssessmentItemRefId=”IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII”>

<Response>C</Response>

<ResponseLocation>http://assessments-r-us.com/29834928374/2394/response.html

</ResponseLocation>

<ResponseCorrectness>Incorrect</ResponseStatus>

<ItemViewed>Yes</ItemViewed>

<ItemAttempted>Yes</ItemAttempted>

<NumberOfAttempts>2</NumberOfAttempts>

<TimeOnItem>PT32S</TimeOnItem>

<ItemNumber>27</ItemNumber>

<ItemName>Writing Sample 1</ItemName>

<ItemScore>5</ItemScore>

<Feedback>

<FeedbackItem>

<Code>C10</Code>

<DiagnosticStatement>Shows ability to determine symmetry

</DiagnosticStatement>

<Source>Learning Standards</Source>

</FeedbackItem>

</Feedback>

<ItemAidsUsed>

<ItemAidUsed>Scientific Calculator</ItemAidUsed>

<ItemAidUsed>Highlighter</ItemAidUsed>

</ItemAidsUsed>

</Item>

</Items>

</StudentResponseSet>

## 8.3 StudentScoreSet

<StudentScoreSet RefId="5810E283E928459CBBA76EFE1963F784"

ScoreMetric="0512"

AssessmentAdministrationRefId="1F971F3D414E4146932566638290E6C1"

StudentPersonalRefId="8F0934CC2F0448F8BBD788AA1ADE691B"

AssessmentRegistrationRefId=”RRRRRRRRRRRRRRRRRRRRRRRRRRR>

<Scores>

<Score AssessmentSubTestRefId="E5EDAE63A04D47E49D0224A32956B074">

<PreliminaryIndicator>N</PreliminaryIndicator>

<ScoreValue>25</ScoreValue>

<PassFailIndicator>P</PassFailIndicator>

<Feedback>

<FeedbackItem>

<DiagnosticStatement>Shows ability to identify symmetry.

</DiagnosticStatement>

<Source>Learning Standards</Source>

</FeedbackItem>

<FeedbackItem>

<DiagnosticStatement>Not a realist representation of student’s skills. He has

been doing very well on this standard during class.

</DiagnosticStatement>

<Source>Teacher</Source>

</FeedbackItem>

</Feedback>

</Score>

</Scores>

</StudentScoreSet>