



2. X Wave Requirements

Document Overview

Student Information Systems

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VERSION 1.14

Oklahoma State Department of Education
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1 - Introduction

The Oklahoma State Department of Education (OSDE) developed and implemented a comprehensive statewide student record tracking and reporting system, branded *The Wave*, as a multi-year, phased project that revolutionized the manner in which district data are collected, managed, and analyzed by the state and local school districts. In accordance with 70 O.S. § 3-104, state law authorized the Oklahoma State Board of Education and the Oklahoma State Department of Education to collect data from schools necessary to perform required duties and functions.

Using *The Wave*, OSDE staff are able to manage data for decision making and statistical reporting at the state level, routinely provide pertinent information to school districts and satisfy mandated state and federal reporting requirements improving the ability of the OSDE to address accountability issues, student mobility, longitudinal studies, emerging policy matters, federal reporting mandates, and other related items.

Legislation requires that student information and instructional management systems used within Oklahoma school districts, beginning with the 2005-2006 school year, comply with XML standards and SIF specifications. These requirements, when combined with state data collection and submission requirements, define the external requirements districts and schools must address when deciding how to best meet their needs.

This document outlines the collection of student information system (SIS) student demographic and enrollment data from districts. The collection of this data includes event-based reporting as well as scheduled (request-based) collections.

1.1 - Purpose

The purpose of this document is to provide information necessary for the collection of required student demographic, enrollment, teacher, and course data, within *The Wave*. This requirements document is for SIS vendors to use in mapping the elements necessary for data collection. **Oklahoma school district personnel must ensure their vendor is provided with this documentation and is able to meet the defined data submission requirements.** Vendors may utilize this document as a vital starting point for SIF agent development as it clearly identifies Oklahoma's expectations in regard to the SIF 2.0r1 Implementation Specification. Data objects and elements identified in this document, to be collected through *The Wave*, fall under the same School Laws of Oklahoma as all reports required of school districts in that all persons charged with the collection of data through *The Wave* shall maintain event and scheduled data collections with the highest degree of diligence, accuracy, and good faith in reflecting the truth.

1.2 - How to Use this Document

This document provides the necessary requirements for the SIS to properly submit and receive SIF messages to/from *The Wave*. Subsequent sections identify SIF Objects and Elements, OSDE business rules, applicable Code tables, and data validation rules. To ensure success with *The Wave*, reference must be made to all four of the above-mentioned aspects. If questions or uncertainty regarding specific aspects arise, please contact the OSDE Data & Information Systems Office at (405) 521-2030 for clarification.

This document is to be used in conjunction with the SIF 2.0r1 Implementation Specification.

1.3 - How this Document is Organized

This document is divided into five sections, and two appendices designed to answer a wide range of questions about operational considerations and technical requirements for implementing the district's interface with *The Wave*.

Section 1: Introduction - provides information regarding the document itself.

Section 2: Configuration Components - provides information regarding the necessary components for successful connection to *The Wave* and to enable successful submission of required data.

Section 3: Student Testing Number Assignment - provides information regarding the assignment of Student Testing Numbers.

Section 4: SIF_Event Processing - provides information regarding event-based SIF objects/elements.

Section 5: SIF_Request Processing - provides information regarding request-based SIF objects/elements.

Separate Document: SIF Object Mapping - provides information regarding the specific requirements for SIF objects/elements within *The Wave*.

Separate Document: Schools Interoperability Framework Code Set-Option Set Tables - provides information regarding the acceptable code values for elements identified in SIF Object Mapping Document.

1.4 - Definitions

This table lists a variety of terms and acronyms used within this document. Since these terms are understood by vendors developing student information packages, they have been listed here in summary as a point of reference.

Term	Brief Description
Event	A change to existing district-level data that results in a SIF message being sent to the zone.
HTTPS	Hyper Text Transfer Protocol Secure
Initial Assignment	The one-time process of assigning state-provided student testing numbers to currently enrolled students within a district.
Initial Load	The submission of student data provided by districts for the initial assignment or revalidation of state-provided student testing numbers. The initial load will occur at the beginning of each school year.
OSDE	Oklahoma State Department of Education
SIF	Schools Interoperability Framework: SIF is an open standard specification to ensure K-12 instructional and administrative software applications share information quickly and efficiently. SIF is platform-independent and vendor-neutral.
SIF Application Agent	Refers to the part of a SIS or other application that sends/receives data in accordance with SIF specifications.
SIF XSD	Schools Interoperability Framework eXtensible Markup Language Schema Definition/Documentation. Refers to the specification standard that is used by ZIS/SIF Agents to validate data coming from another SIF Agent ensuring it has met the required standard.
SIS	Student Information System: A software program used by a school or district to collect and manage student information. Sometimes referred to as a Student Information Package (SIP).
SSL	Secure Socket Layer: A protocol for transmitting private documents via the Internet.
STN	Student Testing Number: A unique, state-provided number assigned to all students by <i>The Wave</i> .
<i>The Wave</i>	A customized and secure electronic statewide student information system established to benefit districts with federal and state reporting requirements.
XML	eXtensible Markup Language: A flexible way to create information formats and share both the format and the data on the World Wide Web, intranets, and elsewhere.
ZIS	Zone Integration Server: Middleware software designed to manage data routing, data security, and message delivery.

2 - Configuration Components

The specific configuration of each district will involve three key components: Student Information Systems (SIS), the Schools Interoperability Framework (SIF) Agent, and District Zone registration.

2.1 - Student Information Systems (SIS)

Student Information Systems (SIS) are applications at the district/site level that track data necessary for reporting and accountability purposes. There are numerous vendors, applications, and versions available to Oklahoma districts. The specific selection is determined by the individual needs of each district. These systems must meet three requirements to be considered “compliant” with *The Wave*. First, SIS applications must be certified to the identified SIF Implementation Specification, 2.0r1, and submit data in the 2.0r1 format. Second, SIS applications must go through a pilot process for effective message verification with *The Wave*. Third, SIS applications must continue to maintain the standards outlined in this document throughout the school year.

Districts unsure about potential SIS vendors can contact the Data & Information Systems office or view the SIF Certification Register by visiting the SIF Web site at <https://www.a4l.org/page/SIFCertRegistry>. These three requirements apply to any SIS vendor desiring to do business with districts in Oklahoma. Once a vendor has met the first two steps (SIF Certification and Pilot Process) and has shown compliance throughout a single school year, there will not be a need to meet step two (Pilot Process) again. They must continue to renew their SIF Certification yearly and show continued compliance with the current Wave requirements document and any updates to the documentation.

2.2 - Schools Interoperability Framework (SIF) Agent

For a district’s SIS application to submit data to *The Wave*, there must be a working SIF agent connected to both the SIS application and the State zone integrated server (ZIS). Many SIS vendors develop these agents for their application. For SIS applications that do not have a SIF Agent, developed, a third-party vendor may need to be selected to provide the SIF agent. Regardless of the configuration, the application and the SIF Agent must comply with the current Wave Requirements documentation.

2.3 - District Zone Registration

Once a district has an SIS and a working 2.0r1 SIF agent, meeting the requirements identified in 2.2, the district will be ready to register into a specific zone within *The Wave*. The zone information will be made available to district SIF agent vendors as they identify their readiness to connect to *The Wave*.

District SIF agents will register into a zone located at the state. The OSDE will provide a single monitored zone for each district. This single zone will be the channel for data transfer to and from *The Wave*. For Student Testing Number assignment, SIS/SIF vendors must be capable of receiving the StudentPersonal object change from the single district zone and populate the STN to the appropriate district or site level application.

For further information regarding this process, please contact OMES via the OMES Help Desk at (405) 521-2444.

3 - Student Testing Number Assignment

Districts enrolling a new student or a student new to their district will enter the STN assignment process based on four SIF objects. The objects utilized for STN assignment are StudentPersonal, StudentContact, SchoolInfo, and StudentSchoolEnrollment. The SchoolInfo object should be received at the beginning of the school year. The remaining three objects will be sent to *The Wave* upon enrollment of the student within the district and will be utilized to determine whether the student record is unique or currently exists within the OSDE data warehouse. Upon assignment of a STN, *The Wave* will publish a change on the StudentPersonal object. The StudentPersonal/StateProvinceId element will contain the state-assigned unique 10-digit identifier or STN that begins with "100". Student Information Systems (SIS) must be capable of receiving the StudentPersonal object change from the single district zone located at the state and populate the STN to the appropriate district or site level application.

4 - SIF_Event Processing

The SIF 2.0r1 Implementation Specification identifies a SIF_Event as follows:

When an application or a back-end process, allowed by an application vendor, adds, changes or deletes data represented in one or more Zone Contexts, its Agent should publish the corresponding Add, Change or Delete SIF_Event to the Zone.

For the objects identified as being event-based, *The Wave* requires SIF_Event messages be published by the SIF Agent to the ZIS when adds, changes or deletes occur at a daily minimum even if there has been no SIF_Request made. These SIF_Event messages will then update *The Wave*. Refer to the Schools Interoperability Framework Implementation Specification Version 2.0r1 for SIF_Event object information. Refer to document SIF Object mapping information for each object.

The following SIF Objects are required to have SIF_Event reporting: AttendanceCodeInfo, CalendarDate, CalendarSummary, DisciplineIncident, LEAInfo, RoomInfo, SchoolCourseInfo, SchoolInfo, SectionInfo, StaffAssignment, StaffPersonal, StudentContact, StudentDailyAttendance, StudentPersonal, StudentSchoolEnrollment, StudentSectionEnrollment, StudentSectionMarks, MarkInfo, MarkValueInfo, and TermInfo. For more information and mapping for these objects, refer to—SIF Object Mapping.

4.1 – New Year Reporting (NYR)

In conjunction with a SIS New Year Rollover process, a SIF_Sleep message shall be sent to the assigned district zone prior to roll over to the following school year. A Push-mode Agent can send a SIF_Sleep message to the ZIS to change its state to "asleep," indicating that the ZIS should not send the Agent messages until it "wakes up" by sending a SIF_Wakeupmessage or re-registering with SIF_Register. A Pull-mode Agent can also change its state to "sleeping," but this has no effect other than indicating to other Agents via SIF_ZoneStatus that it is "sleeping" and not processing messages in its queue. Sending a SIF_Wakeup or SIF_GetMessage will indicate that the Agent is "awake," as will re-registering with SIF_Register. SIF agent rollover processes should not occur any earlier than July 15th. All data changes that are made during rollover will be

If rollover processes are conducted prior to this date and those processes lead to data changes within the Wave, OSDE will NOT allow any further changes. If a district fails to ensure that their zone is asleep prior to conducting the rollover process, any data changed through those processes will be received and processed as legitimate changes to the district's official data. Changes to the data after that time will be considered on a case-by-case basis and a data verification request (DVR) may be required.

5 - SIF_Request Processing

The Wave for any of the identified objects may issue SIF_Requests at any time. The SIS application agent must be able to respond to these requests. If SIF_Query, is not used in the request, *The Wave* will expect to receive all data for the object requested for the current school fiscal year. If SIF_Query is used in the request, the agent must be able to a multi conditional SIF_Query request. Data for previous years may be sent as well, but at a minimum, the complete current school fiscal year data must be provided. The school fiscal year runs from July 1st to June 30th of the following year. For example, if *The Wave* requested all StudentPersonal and StudentSchoolEnrollment data, we would expect at minimum to receive data on all students who attended at any point during the fiscal school year. If the request was made in May 2019, students who began attending in August 2018 and exited prior to May 2019 would be in the response along with the students currently attending. Refer to the Schools Interoperability Framework Implementation Specification Version 2.0r1 for SIF_Request information. Refer to document SIF Object Mapping information for each object.