



**Vermont Agency of Education**

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Vermont Longitudinal Data System Vertical Reporting:

Instructions for Flat File Specifications

Includes:

Submission and Data Element Information Packet Instructions for Alignment

Instructions for use of data collection definitions, business rules, and building flat file data collection submissions.

Note: This document references new specification document versions in support of addition of prekindergarten requirements.

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## 1 Documents Included in Submission and Data Element Information Packet

### Document Name

### Purpose of Document

1\_SubmissionOverview\_PK\_UPDATEv1.xlsx

Provides an overview of the submissions that will be part of the Vertical Reporting. Note: A submission is a logical component of a data collection. **This document has been changed to include new prek requirements.**

2\_InstructionsForFlatFileSpecs\_v4\_PK\_UPATE.pdf

Provides information about contents of flat file specification and instructions on how to use documents. . **This document has been changed to include new prek requirements.**

3\_MasterDataElementsBySubmission\_v5\_PK\_UPDATExlsx

List of data elements by Data Submission. **This document has been changed to include new prek requirements.** This Element list includes name, data type, length, definition tag for composite primary keys and codeset identification. It also includes list of codeset values for all codesets. Also includes columns that can be used to “map” system and field name that district will use as a source for each data element.

4\_DC\_Definition\_v2\_with\_PK\_Update.xlsx

This document contains a list of data collections with submissions that are to be included in each collection. The data collection type (official/unofficial) is also included – as is the frequency of each collection. **This document has been changed to include new prek requirements.**

5\_DC\_SubmissionBuildGuidance\_v3\_with\_PK\_Update.xlsx

This document contains guidance on building flat file submissions by data collection. **This document has been changed to include new prek requirements.** See “1\_Version Information” for information about changes in this version of this document.

6\_BusinessRules\_v6\_withPK\_Updates.xlsx

This document contains business rules needed by SU/SD source systems in order to implement VR submissions. **This document has been changed to include new prek requirements.** See tab regarding versioning info for list of changes made between versions.

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## 2 Version Information

Version: Version 4  
Current Version date: January 10, 2019  
Description: Release of VT SLDS Vertical Reporting:  
Instructions for Flat File Specifications Packet with PK update.

This version of this document has been updated to include the following changes:

- updated version numbers for all current documents

## 3 Vertical Reporting Overview

The Vertical Reporting (VR) component of the Vermont Statewide Longitudinal Data System (SLDS) project will automate the bulk of data reporting currently managed through separate data collection activities. The normalized design of these data sets will allow for more frequent upload of data in an automated process. The automated reporting sourced directly from district information systems will greatly reduce the reporting burden shouldered by Vermont's school districts while synchronization of updates to these data will provide education stakeholders real-time access to actionable information. Over the course of the school year, these same sets of data will be submitted as part of data collections with more stringent business rules timed to support state or federal reporting requirements.

## 4 Purpose of this Document

The purpose of this document is to communicate the specifications supporting the development of flat files that can be submitted by Vermont Supervisory Unions/Districts via VR to the Vermont Agency of Education's SLDS. This data will be submitted via data collections defined within the documents included in this packet. The scope of data to be included with these data collections is described in discrete groups of data elements that are called submissions. A data collection is made up of groups of submissions.

The list of submissions that represent the scope of what will be included in these collections was released with the first round of documentation in August of 2016, but this information is also included in this release. The defined data collections, supporting business rules, and guidance for building flat file submissions in each data collection are also provided in this packet.

In addition to this document, the documentation included in this packet includes the following information that was released in August of 2016:

- An overview of the submissions which will describe the submissions and highlight the most significant differences between this new design and the existing collections that they will replace.
- A submission detail that includes the data elements included within each submission, composite primary key information, data element definitions, metadata information (data type, length), optionality information, and codeset values. **Please see the "Versioning Information!" worksheet for a detailed list of all changes made between versions.**

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- The data collection definition document lists the data collection, the approximate timeframe for the collection and the submissions that are to be included within each data collection. This also contains an informational table that shows how new submissions align with the collections they are replacing.
- Guidance for building submissions within each defined data collection. (**Note: Build guidance varies by data collection.**) This document also includes high level rules for building data collection submissions. This document also includes guidance for building the match submission and other information for building and submitting the other data collection. Lastly, this document also contains a worksheet that outlines submissions that are “child” submissions to submissions. This information is provided to serve as a “quick reference key”, so developers of flat file submissions can understand potential impact of changes made to parent records.
- Detailed business rules for official and unofficial collections. This document includes business rules organized by submission/focus element, as well as business rules at submission and data collections levels and business rules for match submissions. (**Note: business rules by submission are the same for all data collections that are classified as “Official”. Business rules are the same for all submissions included in data collections defined as “Unofficial”.**)

## 5 Background

The Vertical Reporting submissions represent the normalized version of the following existing VT AOE data collections:

1. Fall Student Census
2. Spring Student Census
3. Tuitioned Student Census
4. Educator Census
5. Combined Incident Reporting Software (CIRS)
6. Student Educator Course Transcript (SECT) collection

The addition of PREK components to Vertical Reporting is a new requirement.

## 6 Glossary

1. **Access 4 Learning (A4L) Community**: Previously known as the SIF Association, the Access 4 Learning Community is a non-profit collaboration composed of schools, districts, local authorities, states, US and International Ministries of Education, software vendors and consultants who collectively address all aspects of learning information management and access to support learning. This community is responsible for managing and expanding the “SIF” specifications.

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2. **Average Daily Membership (ADM):** Average Daily Membership (ADM) is a count of resident and state-placed students who receive an elementary or secondary education at public expense; data are listed by town according to a student's residence. Resident students are counted during the period from the 11th to the 30th day of the current school year, while state-placed students are counted for the school year prior to the current census period. Data are used in calculating equalized pupils which are used to determine the homestead tax rates.
3. **Codeset:** A list of allowable values that may be submitted in a data element.
4. **Composite Primary Keys:** A combination of two or more elements in a submission that, taken together, uniquely identify a single row or record. This determines the 'granularity' of the data. **(Note: All submissions use composite primary keys versus a single primary key.)**
5. **Data Collection:** A collection of one or more predefined groupings of submissions to the state via a vertical reporting mechanism.
6. **Data Element:** A specific field in which data is collected.
7. **Granularity:** The level of detail of a set of detail. Granularity for a submission is defined by the composite primary keys of a submission.
8. **Local Data Reporting Manager:** For the purpose of this document, local data reporting manager refers to the person(s) responsible for managing the data in the local student information system. This person should be an expert on the data within the system. This includes understanding how the data elements are defined, primary key usage and knowledge of codesets and reporting requirements.
9. **Optionality:** Refers to whether a data element is classified as one of the following:
  - a. **Mandatory (M):** A value must always be submitted for this data element.
  - b. **Optional (O):** A value may or may not be submitted for this data element.
  - c. **Conditionally Mandatory (CM):** A value is required to be submitted for this data element under certain conditions. This is usually related to the value of another field. For example, in the 4\_PS\_Enroll submission, the field "EXITTYPE" is mandatory if the "ENRENDDATE" field is not null. If "ENRENDDATE" is null, then "EXITTYPE" may be submitted as a null value.

**(Note: Optionality is defined by data collection. This means a given data element may be "Optional" in an unofficial collection – but mandatory in an official collection.)**

10. **Official Data Collection:** A data collection that is implemented with more stringent business rules (than unofficial collections) because the data will be used for required state or federal reporting.

An example of an official collection will be the data collection that supports the ADM calculation. Given that ADM is used for education funding, the data that is used to calculate ADM will be subject to a higher level of business rules enforcement than the same data submitted through unofficial collections.

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11. **Schools Interoperability Framework (SIF):**

“The Schools Interoperability Framework, Systems Interoperability Framework (UK), or SIF, is a data sharing open specification for academic institutions from kindergarten through workforce. This specification is being used primarily in the United States, Canada, the UK, and Australia; however, it is increasingly being implemented in India, and elsewhere.

The specification is composed of two parts: an XML specification for modeling educational data which is specific to the educational locale (such as North America, Australia or UK), and a Service-Oriented Architecture (SOA) specification based on both direct and brokered RESTful-models for sharing that data between institutions, which is international and shared between the locales.

SIF is not a product, but an industry initiative that enables diverse applications to interact and share data. As of March 2007, SIF is estimated to have been used in more than 48 states and 6 countries, supporting five million students.” (Definition, courtesy of Wikipedia.)

12. **Submission:** A group of data elements as captured at a granularity that is defined by composite primary keys.

13. **Unofficial Data Collection:** A data collection that is implemented with slightly less stringent business rules (than official collections) so that data can be submitted at a frequency that will enable access to reports of timely data that can be used to inform program administration and instructional practice. Official collections of same submissions will be scheduled to ensure data required for state and federal reporting is of higher quality.

14. **Vertical Reporting:** Refers to the automation of the transfer of data (via a data collection) to the state from a supervisory union/supervisory district using SIF or Flat File format. Vertical reporting is intended to greatly reduce the manual effort currently required to meet data reporting requirements.

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## 7 Acronyms

A4L: The Access 4 Learning Community

ADM: Average Daily Membership

AOE: Vermont Agency of Education

CIRS: Combined Incident Reporting Software

EDW: Education Data Warehouse

ELL: English Language Learner(s)

HMH: Houghton Mifflin Harcourt

LDRM: Local Data Reporting Manager

POS: Place of Service

SECT: Student Educator Course Transcript collection

SIF: Schools Interoperability Framework

SIS: (Local) Student Information System

SLDS: Statewide Longitudinal Data System

SU/SD: Supervisory Union/Supervisory District

VR: Vertical Reporting

## 8 Guidelines for Using Master Data Element and Submission Documentation

**The first document to review is the 1\_SubmissionOverview\_PK\_UPDATEv1.pdf. This provides an overview of all submissions and highlights the major differences between VR and existing data collections. In addition, the submission overview includes other important information about submissions.**

**Open the 3\_MasterDataElementsBySubmission\_v5\_PK\_UPDATE.xlsx. document. Use this information to assess alignment of current SU/SD Student Information Systems with the**



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### submission and data elements in 3\_MasterDataElementsBySubmission\_v5\_PK\_UPDATE.xlsx.

1. Open the “VersioningInformation!” worksheet and review the detailed list of all changes made between versions.
2. Open the “ReadMe” worksheet. Note that the file contains information for data that will be collected from two separate data sources:
  - a. “SIS\_VR\_Submissions” worksheet contains information typically stored in SU/SD information systems. This includes information in the following areas:
    - Student Enrollment/Average Daily Membership Information
    - Student Grade Progression
    - Staff Assignment
    - Course/Course Section
    - Student Course Association
    - Student Course Results
    - Educator by Employing Org and Place of Assignment
    - Educator Course Assignment
    - Discipline Information
    - Organization Information

Note: The information on this sheet is organized by “submission” – which reflects the order and data elements of the flat files specifications. **This tab has been updated with prek requirements.**

- b. “TuitionedStudentVR\_Submissions” worksheet contains information currently maintained and obtained from SU/SD Business Managers in support of ADM. This includes:
      - i. Tuitioned Student Enrollment and ADM information
      - ii. Town District Level English Language Learners (ELL) Proficiency information

Note: The information on this sheet is also organized by “submission” – which reflects the order and data elements of the flat files specifications. These submissions will be grouped in official data collections that will be defined in the next specification release. There are currently no unofficial data collections for Tuitioned Student VR Submissions since these submissions are not expected to be pulled directly from SU/SD information systems.

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3. Go back to the “SIS\_VR\_Submissions” worksheet.
  - a. Review Composite Primary Key information. This can be accessed by navigating to column “D” (labeled Composite Primary Key Tag) and selecting “X” from the column filter. This will filter the submissions to show only the data elements that are part of the composite primary key. The local data reporting manager(s) familiar with this data should assess if your SU/SD’s SIS system stores data elements in each submission at the same granularity level as defined by the composite primary key for the each submission. For example, submission “4\_PS\_Enroll” has a composite primary key consisting of AdminID (SU/SD ID), Enrolling OrgID, School Year, Permnumber (this is the statewide unique student id), and Enrbegdate (the date the student is enrolled in a school). This means that information captured in this record is at *the instance of student enrollment*. You will want to confirm that your SIS system can associate the data elements included in this submission with a specific instance of enrollment for each student. When you are done looking at the composite primary keys, don’t forget to go back to the column filter and “check” select all in order to view all elements.
  - b. To help you assess alignment of the information already captured by your local SIS system, columns M, N and O offer a place where your team can “map” the source system and source data element in your system that aligns to each data element included in VR submissions. These fields are labeled “\*SU/SD Mapping Field\*”. Column M is intended to serve as a place to identify your “Source Local SIS System Name” and Column N is intended to serve as a place to identify the “Local Field Name” used in that source system. Column O (labeled “SU/SD Notes About Mapping”) can be used for noting potential differences in the field. Difference could include different codeset values or if the data element in local system is defined differently than the definition provided. SUs/SDs are free to use the notes field in any way that makes sense to them.

An example of the type of alignment exercise that might take place:

A SU/SD local data reporting manager is reviewing the submission documentation. The 4\_PS\_Enroll submission contains a field called ENRBEGDATE. This Enrollment Begin Date field is defined in submission documentation as “*The month, day, and year on which an individual enters and begins to receive instructional services in a school or an institution during a given session.*” The SU/SD local data reporting manager notes that in the local SIS, the field named Enrollment Begin Date represents the date the enrollment record is entered in the SIS, which may not be the same as the date the individual enters and receives instructional services. Though the field name is the same, the data in the SIS does not align with AOE’s element definition, so the local data reporting manager notes that the fields are misaligned. If no other field exists in the SIS

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that already corresponds to the provided definition, a decision must be made on whether to add a new field to the local SIS that aligns to the provided definition, or to change the definition for the field in the SIS system to conform to the provided definition. Please make note of any gaps. These gaps will be reviewed with you and your SIS vendor when the AOE contracts with vendors to complete this work.

- c. If the data element is tagged as being a codeset (see column E) then look up the value of the codeset in the “SIS\_VR\_Codesets” worksheet. You can look up the values for elements by going to the top row of column labels and filtering by submission name and data element name. If the codesets are different from those used in the SU/SD SIS, it will have to be determined if the codeset required by the state can be calculated or derived from the existing SIS codeset, or if a new field or new codeset will need to be added to the SIS system. Please make note of any gaps. These gaps will be reviewed with you and your SIS vendor when the AOE contracts with vendors to complete this work.
- d. A process should be identified to complete the mapping process for the data on both worksheets. It will have to be determined if the manner your SIS maintains information required for VR will need to be altered in order to capture the information required. Please make note of any gaps. These gaps will be reviewed with you and your SIS vendor when the AOE contracts with vendors to complete this work.

## 9 Guidelines for Using Data Collection Definition Documentation

Use this information to develop flat file submissions for data collections. This file identifies the submissions that are included in each collection – as well as important information about naming submissions, rules for submitting files, how to structure flat files, delimiter information and submission frequency information. Developers should use this information for creating flat file submissions. The requirements communicated in this document should be used within scope of work for those developing systems that will produce flat files.

1. Open the “4\_DC\_Definition\_v2\_with\_PK\_Update.xlsx” document.
2. If a new version of this file is issued, navigate to the “0\_VersionInformation” worksheet to see a list of changes to this document.
3. Navigate to the “1\_ReadMe” worksheet. Review all the notes about file naming conventions, delimiter and file structure information.

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4. Navigate to the “2\_Submissions\_per\_Collection” worksheet. Look at the collection name, frequency and submission list for each of the seven (7) data collections.
5. Navigate to the “3\_AlignmentforFormerDataColl” worksheet and see how new submissions align to the collections they are replacing.
6. Develop a process within your SU/SD to align the student and staff “match” fields with AOE’s student and staff ID fields – in order to prevent errors when submitting 0\_Student\_Identity and 0\_Staff\_Identity submissions. (See note #2 on “ReadMe” worksheet.)

### 10 Guidelines for Using Data Submission Build Guidance

Review this information to understand the records that should be included when building submissions across the different data collections. The rules do vary for submissions across collections. Also use this information for understanding parent/child relationships between submissions. This file also contains guidance on how to handle add/updates and deletes for prior submissions. **The information in this file is intended to mitigate the risks of implicit assumptions that could result in finding errors during testing. Please review carefully.** This information should be used in the scope of work that describes the requirements for systems that are developed to produce flat file submissions.

1. Open the “5\_DC\_SubmissionBuildGuidance\_v3\_with\_PK\_Update.xlsx” document.
2. If a new version of this file is issued, navigate to the “1\_Version Information” worksheet to see a list of changes to this document.
3. Navigate to the “2\_DC\_SubmissionBuildGuidance” worksheet. Note the top rows that list the “Rules covering all submissions within each data collection.” (Note: Information related to Match Submissions (Data Collection 1 & 2) are outlined in the “3\_MatchSubmissionBuildGuidance” worksheet.

Look at the table below these rules. Note each column represents a data collection. The rows represent submissions. Important information on records to include in each data collection submission are listed in table cells.

4. Navigate to the “3\_MatchSubmissionBuildGuidance” worksheet. Note the top rows that list the “Rules covering match submissions.”

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Look at the table below these rules. Note each column represents a “match collection”. The rows represent each match submissions. Important information on records to include in each data collection submission are listed in table cells.

5. Navigate to “4\_QuickKey\_Submiss\_Parent” worksheet. This “quick key” is a reference of parent/child tables for each submission. It is important that submissions are built in a way that prevents orphan records. Also note there are business rules that require associated records across tables for both official and unofficial collections.

### 11 Guidelines for Using Business Rule Documentation

Use this document to implement business rules on local system that will ensure data violating these rules are not included in data submitted to the state. These rules should be used as part of scope of work for entities that are VR solution on behalf of the district.

1. Open the “6\_BusinessRules\_v6\_withPK\_Updates.xlsx” document.
2. If a new version of this file is issued, navigate to the “0\_Version Information” worksheet to see a list of changes to this document.
3. Navigate to the “1\_ReadMe” worksheet. Review this information to understand how the business rule document is organized and how to use the information to ensure the flat files include only valid data that do not result in errors in return files.
4. Note worksheets 2-6, that contain business rules that will be enforced by the new system.

The "2\_RulesforPS\_SUBMISSIONS" worksheet contains the business rules that should be enforced while creating VR submissions for the following collections:

- DC#03\_NightlyCollection\_Unofficial
- DC#04\_YearEndCollection\_Official
- DC#06\_FALL\_ADM\_Official
- DC#07\_Spring\_Official

5. The worksheet, "3\_RulesforTS\_Submission" contains the business rules that should be enforced while creating VR submissions for the following collections:
  - DC#05\_Tuition\_Students\_Official

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6. The "4\_RulesforMatch\_Submissions" worksheet contains the business rules that should be enforced while creating VR submissions for the following collections:
  - DC# 01: Student\_Match
  - DC# 02: Staff\_Match
7. The "5\_SubmissionLevelRules" worksheet contains business rules that apply to submission level errors -- as opposed to rules on worksheets 1, 2 and 3 that apply to submission – focus element and collection type levels. An example of a submission level rule is a submission that does not contain the correct number of fields.
8. The "6\_DataCollectionLevelRules" worksheet contains business rules that apply to submission level errors -- as opposed to rules on worksheets 1, 2 and 3 that apply to submission, focus element and collection type levels. An example of a submission level rule is a submission that does not contain the correct number of fields.
9. The "7\_RulesImplementAtAOEOnly" worksheet contains the business rules that are implemented on the AOE "backend" database. Some of the rules that are included relate to checks that can only be checked after data from all districts are collected. An example of this are disputed students (students reported as enrolled by multiple schools during the same time period). Other rules are implemented this way because they flag cases that may look unusual, but may turn out to be accurate.

## 12 How NOT to use this document

1. DO NOT use this document for SIF development. The SIF Specification for submitting the data using SIF are included in the following documents:
  - 7\_OverviewOfSifSpecsv3.pdf
  - 8\_Normalized\_VR\_SIF\_PK\_UPDATE\_with\_Mapping.xlsx
  - 9\_VT\_SIF\_DataFlow.pdf
  - 10\_Vermont SIF API Developer Guide v0.4.pdf

The SIF technical infrastructure (for data transport) will use version 3.2 and the SIF data model version will be 3.4 .

## 13 Rollout Approach for New PreK VR

1. AOE will be working with your designated vendor to enable vendor to access AOE test environment.
2. The designated vendor for your SU/SD is to review current data alignment with the new prek VR specifications. This vendor will make required changes needed to bring the

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current system(s) in line with these requirements. The vendor will ensure business rules provided in these specifications are implemented in order to include VR submissions are able to pass these business rules on submission.

3. A state level test environment will be available so vendors can certify that the solution provided to the SU/SD does in fact produce submission files in accordance with the VR specifications.

### 14 Next Steps in Vertical Reporting Specification Release

The following guidance will be provided by AOE:

1. Checklist and Process for Testing and Validation

The purpose of this document is to outline the process that designated vendors will follow to initiate testing and validation of new prek VR flat file and SIF submissions. This includes a checklist of work that must be completed before testing can begin, and the process for initiating testing on the VT SLDS test environment.

Note: The name of the system housing the State Longitudinal Data System (SLDS) is named edFusion and is a product of Houghton Mifflin Harcourt (HMH).

Once testing has been completed and your submission methodology has been “validated”, then additional guidance will be provided that will guide your SU/SD on processes needed to link to the SLDS pre-production and production environments.