



Strategy Approach and Plan for Data Conversion

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Document Overview

Reason for Preparation

This document outlines what data needs to be converted, how it is to be cleansed, and how it will be converted and loaded into SCEIS. The primary objective of this document is to outline the overall approach to be used to convert the required Master and Transactional Data from legacy systems to the SCEIS SAP Solution.

Data Conversion Strategy

Introduction

One of the critical steps in the implementation of an SAP solution is data conversion planning and preparation. Data conversion is the translation of data from one format to another so that it can be used in another application or system. As with any new project/system implementation, the data conversion approach is a very important step that lays out the principles and guidelines for the data conversion process.

Guiding Principles/Assumptions

- Manual data loads will occur where data volumes are low and there is no time or cost benefit in automating the data loads. The exception would be high volume from agencies going live.
- Data conversion method will be tested prior to the production conversion, based upon established SCEIS load methodology. This is to forecast precise conversion timeframes and to validate/test programs.
- Business freeze in multiple areas will be a critical and required component of the conversion effort and must be established and reviewed with business data owners, management and auditors. Business freeze requirements will be addressed in detail in the Legacy Systems Freeze Approach document and timelines will be established in the cutover plan. For example, a freeze date should be defined when vendor invoices will no longer be posted to purchase orders.
- Historical financial and procurement transactional data conversion is not included in the scope. Only current transaction “open items,” such as customer invoices, open purchase orders, etc., will be loaded into SCEIS.
- Specific data conversion requirements will be refined early during the Realization phase. These requirements will include the data to be converted, the source of the data, and any rules needed to convert the data from legacy system format into SCEIS format.
- Legacy data must undergo data cleansing to reduce data volume and extract-program run time, to improve quality, and to minimize data integrity issues.
- Agency Support Teams (AST) will provide the input data to be loaded in the format expected by the SCEIS load programs. This responsibility will include the gathering and cleansing of source data.
- Converted data will be used during the different cycles of Integration Testing, which will help identify data conversion and integrity issues.

- SCEIS will not be available at the beginning of the State Financial Fiscal Year. Detailed Budget, General Ledger and Grants Budget data, as well as Customer and Vendor invoices, will not be in SCEIS for the months before the Go-Live date. Users will have to use the legacy system (in read-only mode) when there is a need to access this information.

Business Requirements

The data to be converted can be put into two basic categories: Master data and transactional data.

Master data is information that is relatively stable and changes only occasionally. Some examples of master data are GL Master, Vendor Master, Customer Master, Material Master, HR Master Data, etc. Since master data does not change very frequently, it can be loaded earlier during cutover.

Transactional data is information that is recorded in the course of completing business processes by executing SCEIS transactions. Examples of this type of data would be a GL Journal Entry, Vendor Payments, Purchase Order Creation, etc. Transactional data is very dynamic and hence can only be loaded in the final steps of the cutover process (just before Go-Live) so that current business activities are less impacted with the implementation of the new system

With the exception of vendors and customer open items, only transactional data balances will be converted to SCEIS. Historical Finance and Procurement information at the transaction level, dated before the Go-Live date, should be obtained from the legacy systems. This can be looked at on a case-by-case basis.

Historical data is any transactional data that has completed its business cycle and is generally needed for inquiry purposes (statistical analysis, trending, comparison generation and legal implications). Historical data is typically not converted from legacy systems to SAP because of the difficulty in reproducing all of the postings for a complete financial period. Converting historical data is a very large and complex undertaking. It will likely impact the implementation timeline because it always takes more time and resources than planned. It requires mapping legacy data to SAP, as well as cleansing of it in order to pass the SAP validations and controls. It is time consuming and requires a large number of business resources to reconcile the data back to the legacy systems.

Types of Conversions / Data Loads

Manual Data loads are typically items that require a limited number of entries into the system and/or that have higher level of complexity. In these cases it is difficult to justify investing the time and effort to code, test and tune an automated conversion. This information is manually input directly into the SCEIS input entry screens because of the limited amount of data and/or the complexity that requires special handling. Investing in additional resources to perform this type of conversion may be necessary. The state may also choose to do manual entry for training and knowledge transfer purposes.

Automated conversions are used to address large volumes of data. Legacy data is formatted into a temporary database or data files, validated, transformed (if needed) and loaded into the system.

Automated conversions require definition of clear rules in order to develop the corresponding programs.

Where custom SAP tables are required for a data conversion, the SCEIS technical team will be responsible for the creation of these tables with assistance from Agency resources.

The automated conversions will typically be performed using SAP standard load programs such as Legacy System Migration Workbench (LSMW), IDoc/ALE, eCATT or BAPIs.

In addition to the SAP delivered utilities, the SCEIS Project Team can develop custom conversion programs using ABAP language (SAP's programming language).

Data Conversion Process

The data conversion process is the foundation for documenting the scope, effort, and steps required to successfully perform each conversion. Each conversion identified during project preparation and blueprinting stages will go through the process of documentation, that involves development and creation of:

- Data conversion timeline
- Functional and possible technical specifications
- Data cleansing
- Legacy extract program(s) – agency task
- SAP load program(s)
- Data staging requirements/sequence
- Error handling/audit requirements/procedures
- Execution of data conversions
- Reconciliation process

SCEIS Data Migration Path

Development (DEV) System

Load programs will be developed in the DEV systems. Limited test loads will be performed to verify program functionality. Once it is verified then a program cycle can be performed.

Quality Assurance (QAS) System

Conversion/Data Load Objects will be imported from the development system using SAP's transport mechanism. Once data is imported from development, testing will begin in QAS system. Once data mapping has been completed, full test loads will be performed in the QAS system. Test cycles will continue in QAS until all data can be loaded without errors. If any errors still exist they will be noted and a strategy will be determined on how to correct them for the production loads. Once all programs function properly and data are cleansed they will be exported to the Production System.

Production (PRD) System

Once load programs are tested and signed off as ready in the QAS system, they will be imported into the system. When possible a test cycle will be performed to verify all configurations are ready for loads to be performed. The cutover plan will give the exact schedule and order of load programs into the production system.

Standard SAP 3 system Landscape

Each System has its own Database and is considered its own SAP system. This is critical to understand. When one system is updated or changed it does not affect any other system.



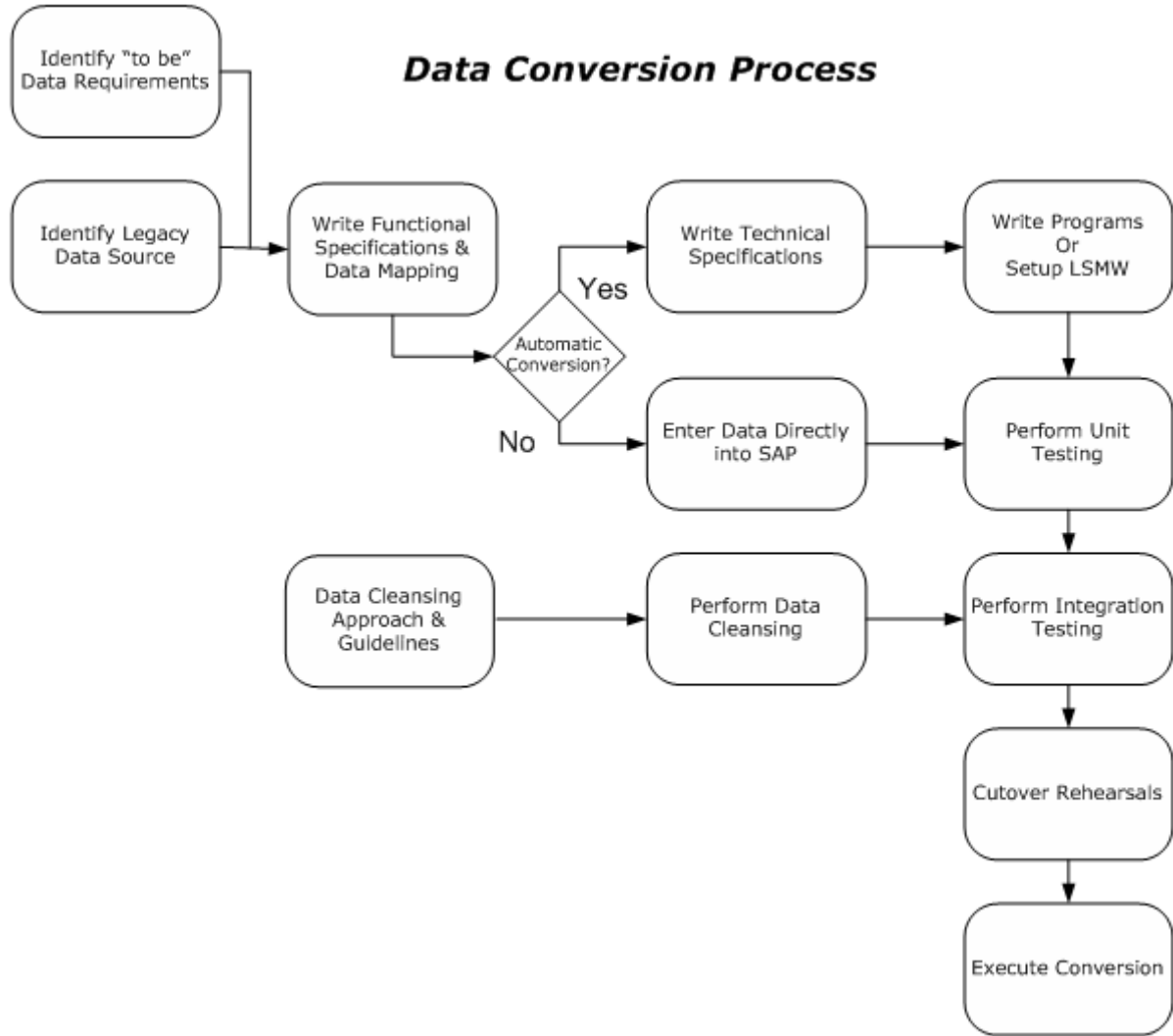
DEV
System



QAS
System



Prod
System



Functional and Technical Design Specifications

If custom development is required, functional design specifications (FDS) are created by SCEIS functional team members along with legacy system data or business owners. The specifications identify the source and target systems, legacy system data owners, data mappings between the legacy system fields and the SCEIS fields. Approved FDSs are submitted to the Development Team. Developers then initiate the creation of the technical design specifications (TDS) and develop programs to support the conversion. Among other information, the TDS has information on data format, programs, mapping tables, staging area, estimated number of records, unit test plans, design, coding review documentation, and running procedures.

Approved templates will be used to collect the information for FDS and TDS which typically have information such as:

- Complexity and time-to-complete
- Legacy system download requirements: Translations, data selection requirements, legacy data clean up, and general requirements for data extraction from the legacy system
- Data source identification: Identify source systems from which data will be converted
- Data cleansing efforts: Identifying clean-up efforts to correct various types of inconsistencies, making any required modifications, eliminating duplicate entries, validating the correctness of data and any other functional cleanup activities. The best practice is to clean data at the source. See Data Cleansing section for more detail
- SCEIS data mapping: Business process team members in partnership with legacy system owners or application programmers will map the SCEIS data requirements to the available legacy data. Once the legacy data is mapped, data gaps and data transformation rules should be developed. Also, cross reference value tables mapping legacy and SCEIS data object numbers will have to be developed, e.g., legacy G/L account number vs. SCEIS G/L account number.

Mapping is done for both fields and rules which will be used in the new system. Mapping must be defined prior to any conversion program. Mapping involves mapping the old/legacy system business dimensions to the new SAP coding block. This also includes how missing data will be created, what data transformations are required, and what verifications will have to be performed. Data mapping may use the following information:

- SAP transaction, field and table name
- SAP transaction screen program and screen number
- SAP field business description, or short description
- SAP field technical characteristics, including field type and length
- Legacy source data set or file name
- Legacy source field and database layout (positioning, field characteristics such as the field business description and technical characteristics)
- Special conditions handling, either programmatic or hard-coded or specifying default values if needed
- Table and field or report against which validation will be performed if required

- A record of any type of translation or calculation logic that must be performed in the translation program. During data mapping, the decision should be made as to whether modifications to the existing legacy data will be made during the extract phase to a flat file, or during the load phase through a program.
- Technical testing procedures: Document processes and procedures that are needed to validate test data loads and define success criteria.
- Functional conversion verification and reconciliation: Procedures by which the SCEIS business process team members will verify and sign-off that the data conversion is successful. This includes steps to perform, reports to execute, and transactions that must be run.

Time line/milestones for Data Migration

DEV Test Loads

Development of load programs will start as soon as the development system is available to the Integration team. Actual testing begins when the Organization Structure and Base configuration is completed.

Note: Once the development system is ready for the Data Migration Coordinator, the conversion load objects will be built in DEV to support the data migration.

Note: If LSMW is used, the LSMW project should be exported daily from the DEV system, in case the client is refreshed. If the client is refreshed the team can import back into the refreshed client so no work will be lost.

Note: Realization Phase is from 4/01/09 – 6/26/09.

QAS Test Loads

All data loads into the QAS system will be coordinated with the Base Configuration move to the QAS system. Loads cannot begin in the QAS before the base configuration is moved.

Note: Integration testing is from 6/29/09 – 9/12/09.

Production Loads

All master data files will be loaded a minimum of 30 days in advance of the go-live date. Transactional data loads will be scheduled during cut over with the goal of loading as much in advance of go-live as possible.

Note: Final prep/cutover is from 9/14/09 – 11/2/09.

Monitor Data Migration

As data is loaded into each system, a spreadsheet (SCEIS DM Status Report.xls) will be updated with the current status of the data loads. Included in this spreadsheet are Tabs for DEV, QAS and PRD master data loads, and a Data Migration (DM) issues log to track open issues with each data object.

Data Cleansing

The data cleansing process results in relevant and accurate data being converted from the legacy systems into SCEIS. Data cleansing analyzes legacy application data to verify that data are correct, complete, consistent and convertible.

Data cleansing includes:

- Eliminating unnecessary data records
- Identifying and correcting inaccurate data
- Merging duplicated data, e.g., multiple vendor masters files, which will need to be consolidated for a single vendor
- Reformatting and standardizing data so that it can be converted
- Gathering information that does not exist in any legacy system but is required in the SCEIS solution

Data cleansing is critical to the success of any SAP implementation as SAP is a data-centric system. If data are not set up correctly, then business processes will not operate as designed. Unfortunately data cleansing is very often not assigned the appropriate priority in organizations and subsequently not assigned enough resources for completion. Data cleansing always takes more time and more resources than anyone anticipates. It is for this reason that data cleansing efforts will be launched as early as possible to provide agencies with as much time as possible.

Data can be cleansed in the source system or in a staging area. Due to audit requirements and for ease of cleansing, it is recommended that all data cleansing be performed in legacy systems unless not viable. As part of the SCEIS Data Conversion Strategy, legacy data must be cleansed before loading it into SCEIS. Due to the nature of the SCEIS system, it is very difficult to do data cleansing after Go-Live, and un-cleansed data should not be brought in.

Agencies, with support from the agency technical group and SCEIS core Integration/Functional teams, are responsible for cleansing their legacy data prior to conversion. The approach for agency data cleansing includes working with SCEIS Integration/Functional teams to define/execute automated data cleansing.

Data cleansing tasks include the following:

- **Fix_Duplicates**
Execute procedures for identifying/marketing duplicate data so only one record is included in extracts
- **Establish_Data_Relationships/Mappings**
Agency data owners will work with Functional Team members, who understand the SCEIS data requirements and configuration of the system, to complete functional specifications and detailed field mappings. This document clearly identifies the data requirements in SCEIS and the legacy data that will be used to meet those requirements
- **Cleanse_Extract_and_Cleanse**
Multiple cycles of cleansing will take place. Extracts are made periodically for validation of cleansing activities and can be handed off to the Technical Development team for sample loads into SCEIS
- **Reconciliation_Against_SCEIS**
Extracts from legacy are validated against data loaded in SCEIS to verify that all records have been correctly converted.

Data Staging Requirements

All available data in the source system will be identified and staged. Data can be emailed to SCEIS AST Communication email box. SCEIS-AST@SCEIS.SC.GOV.

Large-volume data that are not practical for email can be sent to an FTP site. Agencies that would like to use this approach can contact the Integration Team and they will assist with the FTP site. SCEISConversionTeam@sceis.sc.gov.

Error Handling and Auditing Requirements

Data load programs produce a report that can be used to log and validate the results:

- Record counts from the legacy input data, records with errors, records without errors, and total records
- Record counts for the converted output data
- Counts for the anticipated number of SCEIS transactions
- Date and time of the start and end of the run
- Any codes that were not found in the crosswalk table, and the record in which they were encountered
- Any fields missing or in error and not found in the conversion table
- Summarized dollar values comparable with legacy system subtotals/totals.

This will help maintain the conversion tables, enable SCEIS functional teams to verify that the data loaded match the data extracted, allow the Integration Team to estimate the execution time required for future conversion runs and provide an audit tracking mechanism.

The following strategy is recommended after analyzing and correcting the errors, and loading into SCEIS:

- If the error is coming in from legacy – “System of Record” – clean it in the legacy extraction process and re-run in SCEIS.
- If the error is due to a change in conversion rules, a configuration change or a program error, correct the logic in SAP/Configuration and reload these records.
- If the error records are obsolete records, verify with functional team to resolve the issue.

Execute Data Conversion

After the SCEIS load program and legacy extract program are developed, the conversion team will be responsible for executing and validating all data conversions for each of the test cycles, cutover rehearsals and go-live conversions.

Roles and Responsibilities

The high level Roles and Responsibilities of each team are provided below:

- Agency Support Team (AST) resources will provide the input data to be loaded in the format expected by the SCEIS load programs. This responsibility will include the gathering and cleansing of source data.
- Legacy/Agency teams handle the cleansing of legacy data. This process reduces data volume and extract-program run time, improves quality, and minimizes data-integrity issues.
- The SCEIS Project Team has the responsibility for development of the legacy extract programs, as needed.
- Agency resources will validate the data after it is loaded into SCEIS, and will sign-off formally at the end of unit testing and integration testing, as well as at go-live conversion/cutover.
- The SCEIS data migration team is responsible for data conversion on SAP.
- The SCEIS functional team members are responsible for executing and validating all data conversions for each of the test cycles, cutover rehearsals and actual go-live conversions, after the SAP load program and legacy extract program are developed,

Data Objects to be converted

Below is the list of data objects to be converted. Not all objects are applicable for all agencies. Each agency needs to determine which objects apply to them and which need automated conversions vs. manual loads. If there is uncertainty of which approach to take, contact the Data Migration team and they will assist you. SCEISConversionTeam@sceis.sc.gov.

Master Object Types:

- Grant Upload
- Customer Master
- Bills of Materials
- Pricing Conditions
- Asset Master
- Sponsored Programs
- PS Work Breakdown Structures (WBS)

Transactional Object Types:

- Grant Budget
- Inventory Purchase Orders
- Inventory Balances
- Agency Contracts
- Open Purchase Orders
- Open Purchase Orders, No Account Assignments
- Open Sales Contracts
- Open Sales Orders
- Open Accounts Receivable Invoices