*For instructions on using this template, please see Notes to Author/Template Instructions on page 25. Notes on accessibility: This template has been tested and is best accessible with JAWS 11.0 or higher. For questions about using this template and To request changes to the template, please contact* [*CMS IT Governance*](mailto:IT_Governance@cms.hhs.gov) *(*[*IT\_Governance@cms.hhs.gov*](mailto:IT_Governance@cms.hhs.gov)*).*



<Project Name/Acronym>

# Data Conversion Plan

Version X.X

MM/DD/YYYY

Document Number: <document’s configuration item control number>

Contract Number: <current contract number of company maintaining document>

Table of Contents

[1. Introduction 1](#_Toc434300464)

[1.1 Purpose of the Data Conversion Plan 1](#_Toc434300465)

[2. System Overview 2](#_Toc434300466)

[3. Data Conversion Objectives 3](#_Toc434300467)

[4. Assumptions/Constraints/Risks 4](#_Toc434300468)

[4.1 Assumptions 4](#_Toc434300469)

[4.2 Constraints 4](#_Toc434300470)

[4.3 Risks 4](#_Toc434300471)

[5. Data Conversion Strategy 6](#_Toc434300472)

[5.1 Conversion Scope 6](#_Toc434300473)

[5.2 Conversion Approach 6](#_Toc434300474)

[5.3 Roles and Responsibilities 7](#_Toc434300475)

[5.4 Conversion Schedule 7](#_Toc434300476)

[5.5 Data Quality Assurance and Control 9](#_Toc434300477)

[6. Data Conversion Preparation 10](#_Toc434300478)

[6.1 Prerequisites 10](#_Toc434300479)

[6.2 Backup Strategy 10](#_Toc434300480)

[6.3 Restore Process 10](#_Toc434300481)

[7. Data Conversion Specifications 11](#_Toc434300482)

[Appendix A: Record of Changes 12](#_Toc434300483)

[Appendix B: Acronyms 13](#_Toc434300484)

[Appendix C: Glossary 14](#_Toc434300485)

[Appendix D: Referenced Documents 15](#_Toc434300486)

[Appendix E: Approvals 16](#_Toc434300487)

[Appendix F: Notes to the Author/Template Instructions 17](#_Toc434300488)

[Appendix G: Template Revision History 18](#_Toc434300489)

[Appendix H: Additional Appendices 19](#_Toc434300490)

List of Figures

No table of figures entries found.

List of Tables

[Table 1 - Conversion Schedule 8](#_Toc434300520)

[Table 2 - Data Conversion Specifications 11](#_Toc434300521)

[Table 3 - Record of Changes 12](#_Toc434300522)

[Table 4 - Acronyms 13](#_Toc434300523)

[Table 5 - Glossary 14](#_Toc434300524)

[Table 6 - Referenced Documents 15](#_Toc434300525)

[Table 7 - Approvals 16](#_Toc434300526)

[Table 8 - Template Revision History 18](#_Toc434300527)

## Introduction

### Purpose of the Data Conversion Plan

Instructions: Describe the purpose of the Data Conversion Plan. Provide full identifying information for the automated system, application, or situation for which the Data Conversion Plan applies, including as applicable, identifications number(s), title(s)/name(s), abbreviation(s)/acronym(s), part number(s), version number(s), and release number(s). Summarize the purpose of the document, the scope of activities that resulted in its development, the intended audience for the document, and expected evolution of the document. Also describe any security or privacy considerations associated with use of the Data Conversion Plan.

This Data Conversion Plan (DCP) describes the strategy, preparation, and specifications for converting data from <source system(s)> to the <target system(s) or within an existing system>. This plan describes the overall approach, assumptions, and processes that will be used in the data conversion. It includes an inventory and cross reference of source and target data elements, schema, metadata and all self-describing files; process for data extraction, transformation and loading for each data source; tools needed to execute the conversion; and strategy for data quality assurance and control.

The intended audience of the <Project Name> DCP is the Business Sponsor and the Integrated Project Team.

## System Overview

Instructions: Provide a technical overview of the source and target system and major components involved in the conversion. At a high-level, describe the purpose of the applications, how the data are stored, the criticality of the data, the sensitivity of the data, etc. Describe the function of the data in the old system and identify if the use will be the same or different in the new system.

## Data Conversion Objectives

Instructions: Describe objectives of the Data Conversion Plan.

* Insert here the description of the first objective.
* Insert here description of the second objective.
* Add additional bullets as necessary

## Assumptions/Constraints/Risks

### Assumptions

This section identifies the statements believed to be true for the DCP.

Instructions: Describe any assumptions or dependencies regarding the data conversion effort. These may concern such issues as: related software or hardware, operating systems, end-user characteristics, and/or the data that must be available for the conversion.

* Insert here the description of the first assumption.
* Insert here the description of the second assumption.
* Add additional bullets as necessary

### Constraints

This section identifies any limitation that must be taken into consideration prior to the data conversion from the old to the new product or IT system.

Instructions: Describe any limitations or constraints that have a significant impact on the data conversion effort. Such constraints may be imposed by any of the following (the list is not exhaustive):

* Hardware or software environment
* End-user environment (e.g., user work and delivery schedules, timeframes for reports, etc.)
* Availability of resources
* Interoperability requirements (e.g., the order that data is processed by each system involved in the conversion)
* Interface/protocol requirements
* Data repository and distribution requirements (e.g., volume considerations, such as the size of the database and amount of data to be converted; the number of reads and the time required for conversions)
* Referential data integrity
* Time allowed to complete the conversion process
* Security Requirements
* Insert here the description of the first constraint.
* Insert here the description of the second constraint.
* Add additional bullets as necessary.

### Risks

Instructions: Describe any risks associated with the data conversion and proposed mitigation strategies. Include any risks that could affect conversion feasibility, technical performance of the converted system, the conversion schedule, costs, backup and recovery procedures, etc.

* Insert description of the first risk.
* Insert description of the second risk.
* Add additional bullets as necessary.

## Data Conversion Strategy

### Conversion Scope

Instructions: Provide a rationale for the conversion and a general description of the boundaries of the data conversion effort. This may include, but not be limited to, specific system functions affected and functions/data not affected/converted. Provide a high-level mapping of the data and data types to be converted or migrated to the new system (e.g., the amount, type, and quality of the data; the original and target sources and formats; and any cross-reference complexities.)

\*\*ATTENTION\*\*: Any external data modification/cleanup or pre-loading of the database (prior to production) with data other than the application’s “runtime properties” is considered a data conversion process. Data conversion and validation procedures must be developed and executed as part of the CMS IT Life Cycle.

### Conversion Approach

Instructions: Describe the approach that will be used to extract, transform/cleanse and load data from the source to target destinations during the conversion/migration process. The following should be considered and addressed in this section and/or appropriate subsections, if applicable:

* Identify if the conversion process will be implemented in phases or stages, and if so, identify which components will undergo conversion in each phase.
* Identify what data related to specific business processes will be converted first.
* Describe any automated data conversion tools that will be used (e.g., Extract, Transform, and Load (ETL) tools).
* Identify and describe any part of the conversion process that will be performed manually.
* Identify and describe any custom-developed conversion programs that will be needed, and associated performance tuning.
* Identify criteria for a Go/No-Go decision.
* Identify staffing approach.
* Identify if parallel runs of the old and new systems will be necessary during the conversion process, or if there will be a one-time cut-over to the new system.
* Identify whether data availability and use should be limited during the conversion process.
* Describe security and privacy controls required for the conversion process.
* Describe the disposition of obsolete or unused data that is not converted
* Identify the retention policy for the data that has been converted in case of fall-back and have to rerun the conversion process.
* Consider NARA retention policies.

### Roles and Responsibilities

Instructions: List all stakeholders and document their roles and responsibilities in the conversion process.

### Conversion Schedule

Instructions: Provide a schedule of conversion activities to be accomplished in accordance with this Data Conversion Plan. Show the required tasks in chronological order, with beginning and ending dates of each task, the key person(s) responsible for the task, dependencies, and milestones. If appropriate, tables and/or graphics may be used to present the schedule. Ensure that this information is appropriately integrated into the overall project schedule. The schedule should be as comprehensive as possible; however, the schedule may be revised as needed at later points in the lifecycle. Rather than providing this schedule in the table below, the schedule may be added as an Appendix and may be developed in a project management tool.

Table - Conversion Schedule

| Task # | Task Description | Begin Date | End Date | Key Person(s) Responsible | Dependencies | Milestones |
| --- | --- | --- | --- | --- | --- | --- |
| <#> | <Description> | <MM/DD/YYYY> | <MM/DD/YYYY> | <First Name Last Name> | <Dependencies> | <Milestones> |
| <#> | <Description> | <MM/DD/YYYY> | <MM/DD/YYYY> | <First Name Last Name> | <Dependencies> | <Milestones> |
| <#> | <Description> | <MM/DD/YYYY> | <MM/DD/YYYY> | <First Name Last Name> | <Dependencies> | <Milestones> |

### Data Quality Assurance and Control

Instructions: Identify the types of data quality problems that may occur, including but not limited to the following considerations:

* Data type redefinitions (e.g., alphas in dates and numbers, embedded information in codes and intelligent keys, implied content);
* Garbled content (e.g., multiple uses for a single field, freeform text values, corrupted data, un-initialized data);
* Invalid record relationships (e.g., broken chains in set relationships, orphan records (on natural key), mismatched keys (set vs. natural key));
* Invalid content (e.g., values out of defined range, code fields not on a valid list of values or lookup table, blank fields (optionality), inconsistent use of defaults);
* Context changes (e.g., import of external data, historic changes to operational parameters (system upgrades), synchronization timing of duplicated denormalized data); and
* Behavior issues (e.g., variations in actual data from planned constraints of size, data type, validation rules, and relationships).

Describe the strategy to be used to ensure data quality before and after all data conversions. Also describe the approach to data scrubbing and quality assessment of data before they are moved to the new or converted system. Describe the manual and/or automated controls and methods to be used to validate the conversion and to ensure that all data intended for conversion have been converted. Describe the process for data error detection and correction, and the process for resolving anomalies.

## Data Conversion Preparation

### Prerequisites

Instructions: Describe all preparatory and/or initiation processes that must be completed prior to data conversion. Describe specific data preparation requirements. If the data will be transported from the original system, provide a detailed description of the data handling, conversion, and loading procedures. If the data will be transported using machine-readable media, describe the characteristics of that media. Identify any support materials needed for the conversion process.

### Backup Strategy

Instructions: Describe how the source and target data baselines will be created and managed prior to any manipulation or migration. Also describe backups that may occur incrementally while stepping through the process of preparing, moving, and manipulating the data during conversion.

### Restore Process

Instructions: Describe the process to restore the source data if the need to revert to a previous back-up is identified at any point during the conversion process.

## Data Conversion Specifications

Instructions: Provide a cross reference of the input (source) data that is to be converted to the resultant output (target) data. Also identify if any of the data are derived from other data. Provide transformation/cleansing rules for each data element and any other additional considerations. Transformation and cleansing rules may include, but not limited to, the following:

* Translation of literal value(s) to literal value(s)
* Default null to literal value
* Empty field processing (i.e., null to space or space to null)
* Formulas (i.e., simple equations and mathematical expressions)

Table - Data Conversion Specifications

| Source | Source Data Element | Destination | Target Data Element | Transformation/Cleansing Rules | Notes |
| --- | --- | --- | --- | --- | --- |
| <Source> | <Source Data Element> | <Destination> | <Target Data Element> | <Transformation/Cleansing Rules> | <Notes> |
| <Source> | <Source Data Element> | <Destination> | <Target Data Element> | <Transformation/Cleansing Rules> | <Notes> |
| <Source> | <Source Data Element> | <Destination> | <Target Data Element> | <Transformation/Cleansing Rules> | <Notes> |
| <Source> | <Source Data Element> | <Destination> | <Target Data Element> | <Transformation/Cleansing Rules> | <Notes> |
| <Source> | <Source Data Element> | <Destination> | <Target Data Element> | <Transformation/Cleansing Rules> | <Notes> |

Appendix A: Record of Changes

Instructions: Provide information on how the development and distribution of the Data Conversion Plan will be controlled and tracked. Use the table below to provide the version number, the date of the version, the author/owner of the version, and a brief description of the reason for creating the revised version.

Table - Record of Changes

| Version Number | Date | Author/Owner | Description of Change |
| --- | --- | --- | --- |
| <X.X> | <MM/DD/YYYY> | CMS | <Description of Change> |
| <X.X> | <MM/DD/YYYY> | CMS | <Description of Change> |
| <X.X> | <MM/DD/YYYY> | CMS | <Description of Change> |
| <X.X> | <MM/DD/YYYY> | CMS | <Description of Change> |
| <X.X> | <MM/DD/YYYY> | CMS | <Description of Change> |

Appendix B: Acronyms

Instructions: Provide a list of acronyms and associated literal translations used within the document. List the acronyms in alphabetical order using a tabular format as depicted below.

Table - Acronyms

| Acronym | Literal Translation |
| --- | --- |
| <Acronym> | <Literal Translation> |
| <Acronym> | <Literal Translation> |
| <Acronym> | <Literal Translation> |
| <Acronym> | <Literal Translation> |
| <Acronym> | <Literal Translation> |

Appendix C: Glossary

Instructions: Provide clear and concise definitions for terms used in this document that may be unfamiliar to readers of the document. Terms are to be listed in alphabetical order.

Table - Glossary

| Term | Acronym | Definition |
| --- | --- | --- |
| <Term> | <Acronym> | <Definition> |
| <Term> | <Acronym> | <Definition> |
| <Term> | <Acronym> | <Definition> |
| <Term> | <Acronym> | <Definition> |
| <Term> | <Acronym> | <Definition> |

Appendix D: Referenced Documents

Instructions: Summarize the relationship of this document to other relevant documents. Provide identifying information for all documents used to arrive at and/or referenced within this document (e.g., related and/or companion documents, prerequisite documents, relevant technical documentation, etc.).

Table - Referenced Documents

| Document Name | Document Location and/or URL | Issuance Date |
| --- | --- | --- |
| <Document Name> | <Document Location and/or URL> | <MM/DD/YYYY> |
| <Document Name> | <Document Location and/or URL> | <MM/DD/YYYY> |
| <Document Name> | <Document Location and/or URL> | <MM/DD/YYYY> |
| <Document Name> | <Document Location and/or URL> | <MM/DD/YYYY> |
| <Document Name> | <Document Location and/or URL> | <MM/DD/YYYY> |

Appendix E: Approvals

The undersigned acknowledge that they have reviewed the DCP and agree with the information presented within this document. Changes to this DCP will be coordinated with, and approved by, the undersigned, or their designated representatives.

Instructions: List the individuals whose signatures are desired. Examples of such individuals are Business Owner, Project Manager (if identified), and any appropriate stakeholders. Add additional lines for signature as necessary.

Table - Approvals

| Document Approved By | Date Approved |
| --- | --- |
| Name: <Name>, <Job Title> - <Company> | Date |
| Name: <Name>, <Job Title> - <Company> | Date |
| Name: <Name>, <Job Title> - <Company> | Date |
| Name: <Name>, <Job Title> - <Company> | Date |

Appendix F: Notes to the Author/Template Instructions

This document is a template for creating a Data Conversion Plan for a given investment or project. The final document should be delivered in an electronically searchable format. The Data Conversion Plan should stand on its own with all elements explained and acronyms spelled out for reader/reviewers, including reviewers outside CMS who may not be familiar with CMS projects and investments.

This template includes instructions, boilerplate text, and fields. The developer should note that:

* Each section provides instructions or describes the intent, assumptions, and context for content included in that section. Instructional text appears in blue italicized font throughout this template.
* Instructional text in each section should be replaced with information specific to the particular investment.
* Some text and tables are provided as boilerplate examples of wording and formats that may be used or modified as appropriate.

When using this template, follow these steps:

1. Table captions and descriptions are to be placed left-aligned, above the table.
2. Modify any boilerplate text, as appropriate, to your specific investment.
3. Do not delete any headings. If the heading is not applicable to the investment, type “Not Applicable” under the heading.
4. All documents must be compliant with Section 508 requirements.
5. Figure captions and descriptions are to be placed left-aligned, below the figure. All figures must have an associated tag providing appropriate alternative text for Section 508 compliance.
6. Delete this “Notes to the Author / Template Instructions” page and all instructions to the author before finalizing the initial draft of the document.

Appendix G: Template Revision History

The following table records information regarding changes made to the template over time. To provide information about the controlling and tracking of this artifact, please refer to the Record of Changes section of this document.

Table - Template Revision History

| Version Number | Date | Author/Owner | Description of Change |
| --- | --- | --- | --- |
| 1.0 | 07/29/2020 | Alex Smith, CMS/OIT/ICPG | Baseline document |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Appendix H: Additional Appendices

Instructions: Utilize additional appendices to facilitate ease of use and maintenance of the document.