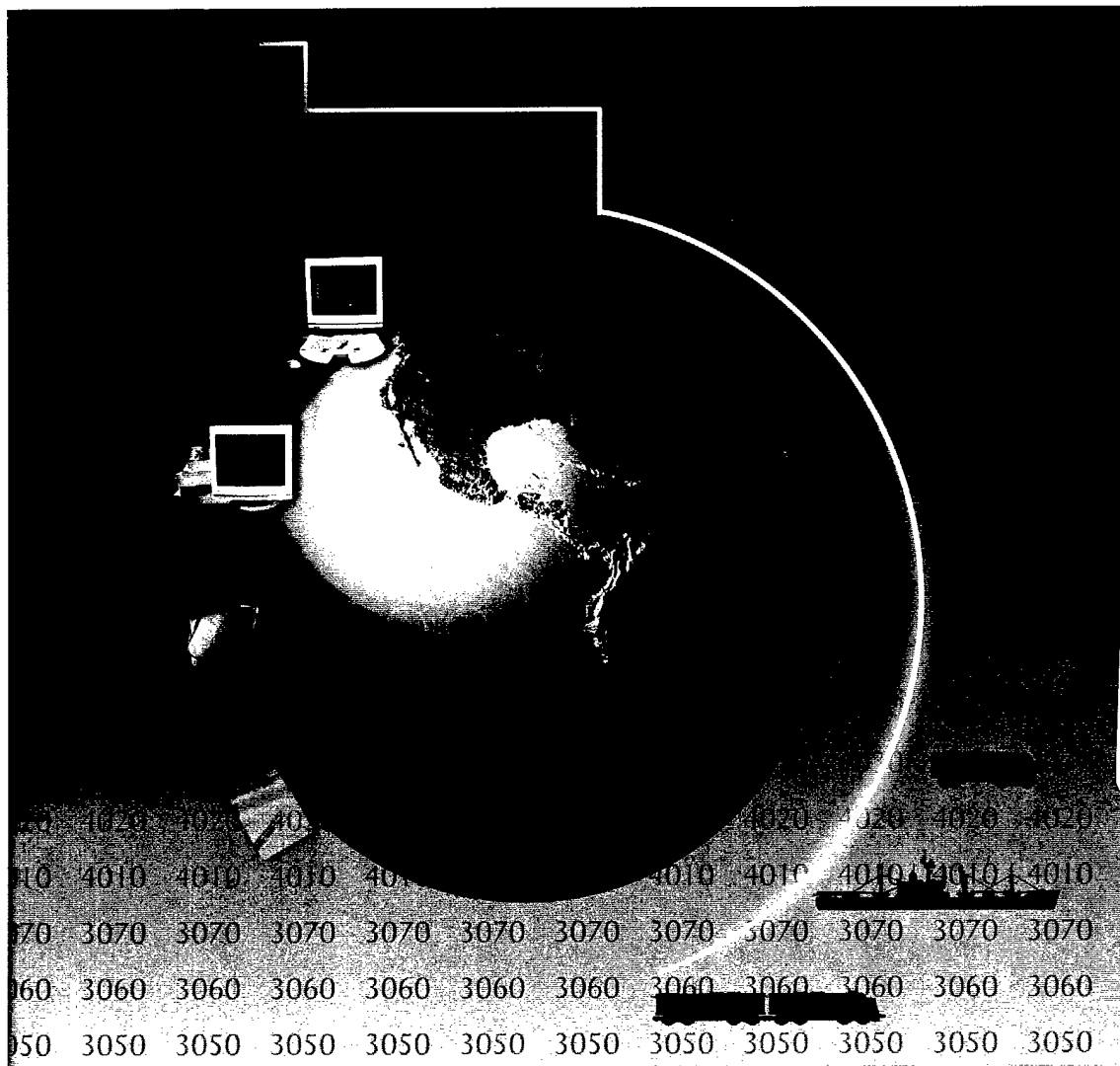


X12 Version Migration

A Procedure for Defense Transportation EDI Trading Partners

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Contents

Chapter 1 Introduction	1-1
WHAT IS VERSION MIGRATION?	1-1
WHY DEVELOP MIGRATION PROCEDURES?.....	1-1
HOW IS THIS REPORT ORGANIZED?.....	1-1
Chapter 2 Justify Migration	2-1
OLD STANDARDS CANNOT SUPPORT DATA REQUIREMENT	2-1
NEW POLICY REQUIRES MIGRATION	2-1
Chapter 3 Assess and Approve Migration.....	3-1
ASSESS NEW X12 STANDARDS	3-1
IDENTIFY SIZE OF THE MIGRATION	3-2
MIGRATION RECOMMENDATION.....	3-2
GAIN DTEDI APPROVAL OF MIGRATION	3-3
Chapter 4 Prepare for Migration.....	4-1
Chapter 5 Implement Migration Version.....	5-1
UPGRADE TRADING PARTNER SYSTEMS.....	5-1
PERFORM INTERNAL SYSTEM TESTS.....	5-1
PERFORM SYSTEM INTEGRATION TEST	5-1
DECLARE PRODUCTION DATE	5-2
Appendix A Implementation Convention Publication and Data Maintenance	
Appendix B System Integration Test	
Appendix C Abbreviations	

Chapter 1

Introduction

This report presents procedures that identify how Defense transportation electronic data interchange (DTEDI) trading partners implement a new version of the Accredited Standards Committee (ASC) X12 electronic data interchange (EDI) standard. To successfully prepare and implement an EDI migration, trading partners need to justify migration, assess and approve the migration, prepare for migration, and implement the migration version in a production environment. By following this procedure, trading partners can ensure a smooth implementation.

WHAT IS VERSION MIGRATION?

Upgrading EDI-capable computer systems to a new version of an X12 EDI standard is commonly called "migration." It calls on trading partners to update EDI translation software, user-defined file formats, and application database systems. However, migration is not only a technical accomplishment. In addition to upgrading systems, migration calls on trading partners to implement new business requirements. For example, in the near future, the DTEDI community will implement a new business practice for managing and exchanging line of accounting information. As the community migrates to a new version of the X12 standard, it will need to migrate to a new business practice.

WHY DEVELOP MIGRATION PROCEDURES?

EDI translation software allows a nearly transparent migration between versions of the X12 standards. However, the Defense experience with a 3050 migration has been arduous and has taken over a year to implement. Consequently, this procedure was developed to enable a structured migration.

HOW IS THIS REPORT ORGANIZED?

This report establishes a procedure for future migrations and addresses key topics in the following four chapters:

- ◆ Chapter 2 describes business and technical conditions that dictate a requirement to migrate.
- ◆ Chapter 3 explains how the data maintenance (DM) task group evaluates a potential migration, recommends the migration, and gains DTEDI Committee approval.

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- ◆ Chapter 4 describes the key steps DTEDI trading partners take to prepare for migration.
 - ◆ Chapter 5 outlines the final implementation process.

In addition, Appendix A identifies the procedures for implementation convention (IC) publication and DM during migration. Appendix B describes the system integration test (SIT) for certifying trading partners' readiness for implementation. Appendix C lists abbreviations used in this report.

Chapter 2

Justify Migration

The publication of a new version of an ASC X12 standard version presents an opportunity, but not the requirement, for a business community to migrate. Two conditions require a migration: old standards cannot support current data requirements and a policy external to the DTEDI community requires its compliance.

OLD STANDARDS CANNOT SUPPORT DATA REQUIREMENT

The X12 Committee revises its standards in response to the business demands of a very large EDI community. The revisions include adding code values, increasing field sizes to accommodate data requirements, or restructuring transactions to handle more complex data groupings. Two or more trading partners clearly need to migrate to an accommodating version of X12 if their business processes require the implementation of those revisions.

NEW POLICY REQUIRES MIGRATION

Migration may also be required if the government establishes a new or has an existing policy that requires the DTEDI community's compliance. The following examples illustrate the two types of new policies:

- ◆ *Defense policy.* After becoming the lead agent to manage the electronic commerce telecommunications infrastructure for the Department of Defense, the Defense Information Systems Agency (DISA) mandated that the Defense transportation community migrate its implementation conventions to ASC X12 Version 003050. This action was required because DISA had established the 003050 version as its baseline for X12 standards compliance edits.
- ◆ *Federal policy.* If the federal government mandates that all EDI trading partners become year 2000 compliant, Defense transportation trading partners need to migrate to ASC X12 Version 004010.

Chapter 3

Assess and Approve Migration

The DTEDI community assesses and approves a migration in three steps. First, when the annual revision to the X12 standards has been released, the DTEDI DM task group assesses the new X12 standards by comparing all existing DTEDI transactions to the annual revision. Next, the DM task group identifies the size of the migration. The task group then recommends to migrate a transaction or bypass migration. Finally, the DTEDI Committee approves the migration.

ASSESS NEW X12 STANDARDS

The ASC X12 releases a new version of the EDI X12 standards annually. Each new version presents DTEDI trading partners an opportunity for upgrading their supported EDI transactions. The DTEDI community does not upgrade its transactions with every new version. Nevertheless, the DM task group should evaluate each release to determine the benefits obtained by a migration. If the DM task group determines that a new release provides insufficient benefits, the DTEDI community need not support it. However, the DM task group assesses the X12 standard when it perceives that an upgrade is advantageous. The assessment identifies all differences between the most recently supported version and the new X12 version. During the assessment, the DTEDI Committee identifies new code values and lists mapping and structural changes that affect any DTEDI IC.

Identify New Code Values

The DM task group may recommend a migration if an X12 release introduces a significant number of new codes that support DTEDI business processes. Migrating enables trading partners to rely on EDI translation software to monitor data quality. Further, the community may use borrowed codes until valid codes are available.¹ Migration makes the borrowed codes available for future use.

¹ A borrowed code is a valid unused X12 code intended for another context.

List Mapping and Structural Changes

The assignment of data to data elements is called “mapping.” A new version can discontinue support of data elements or segments. Accordingly, the DM task group identifies new data elements for any information formerly carried in the discontinued data elements. The DM task group lists all mapping changes.

The DM task group identifies structural differences between the new and currently supported versions. The task group examines field sizes; elimination or addition of elements within segments; elimination, addition, or change in usage of segments; and changes in usage or structure of loops.

IDENTIFY SIZE OF THE MIGRATION

As a result of the standards assessment, the DM task group selects ICs to migrate and identifies trading partners affected by the migration.

Select ICs to Migrate

The DM task group evaluates ICs it needs to migrate. It assesses all transactions exchanged through trading partner interfaces. After determining that an IC requires significant changes as a result of the standards assessment, the task group selects the IC as a candidate for migration.

Identify Trading Partners

After selecting the migration ICs, the DTEDI community identifies the information exchanges affected by the migration. As a result, the task group can identify the trading partners who use the IC. The trading partners should be included in all migration activities.

MIGRATION RECOMMENDATION

Based on the results of its evaluation, the DM task group develops a recommendation for each DTEDI transaction. The recommendation can be to migrate the transaction or bypass migration. The DM task group sends its recommendation to the DTEDI Committee.

Migrate Transaction

When the DM task group recommends to migrate a transaction, it prepares a list of new code values and mapping changes imposed by the new X12 version.

Bypass Migration

The DM task group recommends to bypass migration if it determines the migration does not benefit the DTEDI community. A bypass recommendation retires the inquiry until the next X12 version or a significant change occurs in the DTEDI community's business needs.

GAIN DTEDI APPROVAL OF MIGRATION

A decision to migrate requires the concurrence and cooperation of all participants on the DTEDI Committee. Following its standard voting procedures, the committee votes on the DM task group's recommendation. After deciding to migrate a transaction, the community begins to prepare for migration.

Chapter 4

Prepare for Migration

To prepare for migration, the DTEDI Committee completes the following tasks:

- ◆ *Perform preliminary impact analyses.* Each trading partner compares its current IC data requirements with the X12 standards assessment completed by the DM task group. Trading partners develop appropriate system change requests and estimate the time required to complete programming work orders.
- ◆ *Create a new IC.* Using the X12 standards assessment, the DM task group develops draft ICs for all transactions scheduled for migration. The draft ICs reflect current DTEDI business requirements. The DM task group follows established procedures for managing IC publication and DM during a migration. Appendix A describes the IC publication and DM procedures.
- ◆ *Align trading partners' application system requirements.* Participating trading partners cooperate in a step-by-step check of each new IC and, where necessary, adjust their EDI techniques to accommodate new business practices. As a result of this cooperative activity, trading partners develop final programming schedules for system change requests.
- ◆ *Publish an approved IC.* When trading partners have completed their alignment actions, the DTEDI Committee approves and publishes all migration ICs.
- ◆ *Prepare a draft migration plan.* The DM task group prepares a draft migration plan that includes a schedule and milestones for testing and implementing the migration. This plan is based on all system development schedules. Chapter 5 outlines implementation actions.

Chapter 5

Implement Migration Version

When preparations for migration are completed, the DTEDI community completes and implements the migration through the following actions: trading partners upgrade systems, perform required internal system tests, and perform an SIT; and the DTEDI Committee declares a production date.

UPGRADE TRADING PARTNER SYSTEMS

To prepare for migration testing, trading partners may need to enhance their translation software and application programs to meet any migration-related requirements.

- ◆ *Translation software.* To enable their translation software to process the latest version of the standards, trading partners need to upgrade their translation tables to the latest version of the X12 standards. In addition, changes in business requirements may require an upgrade to the user-defined file (UDF) sent between the translator and the application programs. To achieve the upgrade, trading partners need to change the mapping tables used by the translator to produce the UDF.
- ◆ *Application programs.* Migration provides trading partners the opportunity to upgrade application programs to meet the latest business requirements. This upgrade may require changes to input, output, and processing computer programs. Further, it may require changes to the application database structure.

PERFORM INTERNAL SYSTEM TESTS

Because trading partners use different systems, quality and acceptance testing may be needed for new system requirements. Trading partners need to finish internal tests in the assigned time before participating in the SIT.

PERFORM SYSTEM INTEGRATION TEST

Trading partners execute the SIT plan in Appendix B. Based on the results of the SIT, the test director (an organization identified in the plan) prepares a final test report for the DTEDI Committee.

DECLARE PRODUCTION DATE

When the DTEDI Committee declares that the SIT is successful, it establishes a date that all trading partners can process the new migration version.

Appendix A

Implementation Convention Publication and Data Maintenance

This appendix presents the seven steps the DTEDI community follows when it migrates ICs to new versions of the X12 standards. Implementing a new EDI standard version requires that trading partners develop new ICs to replace existing versions. At its January 1997 meeting, the DTEDI DM task group identified the following steps for managing IC publication and DM during a migration:

- ◆ Suspend current IC maintenance
- ◆ Publish an initial draft IC
- ◆ Review the initial draft IC
- ◆ Host a review group
- ◆ Publish and proofread the revised draft IC
- ◆ Publish and distribute the final draft IC
- ◆ Resume IC maintenance.

The DTEDI technical secretariat takes these seven steps after the trading partners complete their preliminary impact analysis.

SUSPEND CURRENT IC MAINTENANCE

During the life of a supported X12 version, the DTEDI DM task group may modify its ICs because of changing business requirements. DM actions, voted by the DM task group, accommodate the changes. The modifications pertain to only the most recent IC version supported and are not related to any additional previous version being maintained.

When a decision is made to migrate to a new version, the DM task group suspends all DM activities until a new version is implemented. The DM task group selects a DM item to mark the DM suspension point. That DM work request is the last piece of maintenance included in the new IC. (The community may continue to file maintenance requests after the suspension point, but they remain deferred until a new IC has been certified for implementation.) After DM is resumed, all deferred DM actions apply only to the new IC version.

PUBLISH INITIAL DRAFT IC

The DM task group designates a trading partner who develops and publishes an initial draft for a new IC. The draft contains all information relevant to a final IC, including an application matrix, examples, and code lists. The developer provides a copy of the initial draft to the DM task group. The DM task group designates the Logistics Management Institute (LMI) or the Defense Logistics Management Standards Office (DLMSO) to distribute it to the community via the World Wide Web.

REVIEW INITIAL DRAFT IC

The community reviews the initial draft IC before it convenes to discuss final changes. In preparation for the review group meeting, each trading partner reviews the IC for accuracy and completeness and prepares comments.

HOST REVIEW GROUP

The developer hosts an IC review group meeting and invites all trading partners who plan to implement the new IC. The group ensures that all legacy requirements and pending maintenance items (to the DM suspension point) are included in the initial draft IC. In addition, the group ensures that the IC follows EDI standards syntax requirements and semantic guidelines.

PUBLISH AND PROOFREAD REVISED DRAFT IC

After revising the initial draft IC with review group comments, the developer produces a revised draft IC. The DM task group distributes it via the Internet to the review group. Each review group member proofreads the IC to verify the accuracy of the revised draft and provides corrections in writing to the developer.

PUBLISH AND DISTRIBUTE FINAL DRAFT IC

Based on review group comments on the revised draft, the developer publishes a final draft IC for the DTEDI community. The chair of the DTEDI Committee provides notice announcing the publication of a final draft IC. In the letter, the chair requires that all trading partners perform an impact analysis of their systems. DLMSO or LMI, as directed by the DM task group, distributes the final draft to DTEDI trading partners via the Internet.

RESUME IC MAINTENANCE

The DM task group does not perform DM until the new IC has been tested successfully and is exchanged routinely within the new standards version. When those conditions have been met, the DM task group announces to the community it is beginning DM for the new IC.

Appendix B

System Integration Test

This appendix presents a summary approach for conducting an SIT. It is derived from activities performed during the SIT for the government bill of lading (GBL) migration to X12 Version 003050.

The DTEDI community conducts an SIT to ensure that any change necessitated by X12 standards revision and all new business requirements has been correctly incorporated by all trading partners. Based on migration test results, the DTEDI Committee decides when to terminate the SIT and proceed with implementation.

TEST ROLES AND RESPONSIBILITIES

The DTEDI community selects a trading partner to be the test director. The test director gathers and coordinates test data, oversees activities by the trading partners to accomplish the test objectives, and presents results to the DTEDI Committee.

Representatives from each migrating system constitute the test team. The test director is provided a primary point of contact for each system involved in the test. The points of contacts are the data gathering coordinators who report test results for their system to the test director. Data gathering coordinators monitor test transactions; collect test statistics required by the test director; and identify and report all technical problems (these include communications, data quality, standard edits, missing data, transaction formats, error correction, and translation) and other aspects of the test. Each trading partner determines if the objective has been successfully accomplished at its interface for each testing stage.

TEST PLAN

The DM task group prepares a plan for testing the migration to a new version. The plan addresses the following five distinct stages of the test: test data preparation, measures of performance (MOPs) development, translation test, application test, and overall evaluation. Testing at each stage needs to be satisfactorily completed by a trading partner for all test cases.

Prepare Test Data

This step calls for test participants to prepare test cases for translation and application testing and assign test identification data, such as fictitious GBL numbers, Department of Defense activity address codes, and GBL office codes.

Trading partners are selected to generate test data that they exchange using the various EDI interfaces. In addition, the test director develops a test activity form template for recording test activities and distributes it to all test participants.

Develop Measures of Performance

For trading partners to gauge their test results on an equal scale, they develop MOPs for the test and identify a rating scale for each measure. For example, a MOP can be that the translation should result in only one syntax error per 10,000 transaction sets. The MOPs ensure that all trading partners are satisfied with the integration test before they implement the migration.

Perform Translation Test

During the translation test, trading partners process each test case to authenticate the ability of translation software of each participating system to accept and translate incoming transactions and generate ASC X12 transaction sets 997, and reject incoming transactions and generate 997s. This action also verifies that translators are checking ASC X12 syntax.

To participate in the test, all affected trading partners

- ◆ exchange applicable test cases and 997s with their usual trading partners,
- ◆ record results on test activity forms, and
- ◆ resolve problems and retransmit test cases as necessary.

Translation testing is complete when all participating trading partners have successfully translated and recorded results for each test case.

Perform Application Test

The application test evaluates the use of test data by the trading partners' application systems and enables trading partners to modify their systems as required.

To test applications, each trading partner

- ◆ repeats the exchange of translation test data (including all compliance checking),

- ◆ records results on test activity forms, and
- ◆ resolves problems and reprocess test cases as necessary.

Application testing is complete when all participating trading partners have successfully processed test case data and recorded results for each test case exchanged.

Report Final Evaluation

As test transactions are processed throughout the entire system, trading partners gather data on any problem caused by migration version changes. After concluding testing, the test team holds a test evaluation meeting to evaluate all findings. It prepares a test analysis report and presents it to the DTEDI Committee. The report addresses any corrective action needed. Based on the corrective actions, the DTEDI Committee decides to terminate or extend the migration test.

PERFORM INTEGRATION TEST

This step tests the end-to-end EDI process. All trading partners who exchange transactions need to participate in this step and perform the following activities for each IC identified for migration. For each test case that trading partners exchange during the integration test, the following steps are used:

- ◆ The sending partner
 - generates the outbound UDFs from its application system,
 - uses translation software to translate the UDF into an outbound EDI transaction, and
 - sends the outbound EDI transaction to the receiving partner.
- ◆ The receiving partner
 - receives the inbound EDI transaction,
 - uses translation software to translate the inbound transaction into a UDF and generate a functional acknowledgment for each transaction and returns the functional acknowledgement to the sending partner,
 - processes the UDF into the application system, and
 - performs application edit checks on the inbound transaction data as required.

Trading partners may develop performance reports for each step and rate the results of the step using the MOPs. Trading partners declare a SIT successful when they are satisfied that performance is acceptable.

Appendix C

Abbreviations

ASC	Accredited Standards Committee
DISA	Defense Information Systems Agency
DLMSO	Defense Logistics Management Standards Office
DM	data maintenance
DTEDI	Defense Transportation Electronic Data Interchange
EDI	electronic data interchange
GBL	government bill of lading
IC	implementation convention
LMI	Logistics Management Institute
MOP	measure of performance
SIT	system integration test
UDF	user-defined file

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