

**BY ORDER OF THE COMMANDER  
AIR FORCE MATERIEL COMMAND**



**AIR FORCE INSTRUCTION 33-110**

**AIR FORCE MATERIEL COMMAND  
Supplement 1**

**27 March 1997**

**Communications and Information**

**DATA ADMINISTRATION PROGRAM**

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This supplement contains guidance and procedures to administer the Air Force Materiel Command (AFMC) Data Administration Program. It applies to all AFMC organizations that plan, design, model, synchronize, standardize, and control AFMC data at all echelons. It does not apply to the Air National Guard or US Air Force Reserve units and members. Contact the AFMC MAJCOM Data Administrator (MDAd) to obtain copies of the documents referenced in this supplement.

### **SUMMARY OF REVISIONS**

This revision updates the entire document.

#### **AFI 33-110, 1 January 1997, is supplemented as follows:**

3.1. (Added) AFMC Candidate Standard Data Elements. Within AFMC, all development of candidate standard data elements will be based on an Integration Definition for Information Modeling (IDEF1X) Data Model. Data modeling concepts are more fully described in DoDM 8320.1-M-x, *DoD Enterprise Data Model Development, Approval, and Maintenance Procedures*. The IDEF1X standard, with rules, semantics, and methodology, is defined in Federal Information Processing Standards (FIPS) Publication 184, *Specifications for Integration Definition for Information Modeling (IDEF1X)*.

3.1.1. (Added) Data Model Relationship to the DoD Data Model. All data models developed within AFMC will be developed, approved, and maintained as extensions to a specific subject area view of the DoD Data Model. (*Data model developers should secure access or obtain a copy of the applicable subject area view of the current DoD data model, to ensure data models are developed as valid extensions to the DoD model. Procedures and assistance in obtaining the DoD Data Model in electronic format are available from AFMC CSO/SCWT.*)

3.1.2. (Added) Use of Activity Models (Process Models) Within AFMC. DoD IDEF1X data models may be based on activity models; however, activity models are not a requirement for data model development. The purpose and development stages for activity models are covered in DoDM 8320.1-M, *DoD Data*

*Administration Procedures*, appendix D, D-1 through D-3. An example of an activity modeling methodology is the Integration Definition for Function Modeling (IDEFO) standard, defined in FIPS Publication 183, *Integration Definition for Function Modeling (IDEFO)*.

3.1.3. (Added) References for Data Model Development Procedures. DoD Data Model development procedures are a combination of the procedures for developing, extending, and approving the DoD Data Model described in DoDM 8320.1-M-x, and procedures for developing IDEF1X data models as described in FIPS Publication 184. DoDM 8320.1-M, 4-5 through 4-7 and appendix D, D-3 through D-4, also contain general procedures for the development, approval, and maintenance of data models.

3.1.3.1. (Added) Obtaining FIPS Publication 184. Data model developers should obtain a copy of FIPS Publication 184 through the following address:

The National Technical Information Service (NTIS)

US Department of Commerce

Springfield, VA 22161

NTIS Sales Desk: (703) 487-4650

3.1.3.2. (Added) IDEF1X Data Model Development Methodology. IDEF1X data models are developed as a collaborative effort of the system development project manager, data modeler, and functional (subject matter) experts. Typically, the model is developed in a series of modeling sessions facilitated by the data modeler. The process for developing an IDEF1X data model is contained in FIPS Publication 184, Annex A (section A3). An example process is contained in attachment 5(Added).

3.1.3.3. (Added) Developing IDEF1X Data Models as Extensions of the DoD Data Model. DoDM 8320.1-M-x contains requirements and procedures for development and approval of data models as extensions to the DoD Data Model. with the entities of the proposed model related to existing entities of the DoD model. An AFMC proposed model, with entity and attribute metadata, is submitted through the AFMC (MDAd) for DoD approval as an extension of the DoD Data Model by means of a Data Standardization Proposal Package (attachment 4(Added)).

3.1.3.4. (Added) Data Modeling Software Tools. Within AFMC, all data models developed for software development or modification projects that are subject to the data standardization applicability criteria of AFI 33-110, section 4.2, must be developed and submitted through the AFMC MDAd for approval on IDEF1X-compliant software tools. IDEF1X-compliant models are necessary to facilitate DoD review of data models and associated entities and attributes.

3.1.3.5. (Added) Data Modeling Assistance. The AFMC MDAd provides technical assistance and on-site support to AFMC organizations in data modeling, on an as-required basis. This support includes planning, facilitating, and technical support of data modeling sessions utilizing a software modeling tool.

3.1.3.6. (Added) Storage of Data Models. A central DoD repository for storage of data models is in development, but has not yet been implemented. Until DoD determines the central repository to be used for storage and management of data models, AFMC model developers will develop and store all data models using IDEF1X-compliant local software tools.

4.1. AFMC organizations may use the Air Force Data Dictionary, Corporate Data Repository System, or other repositories or data dictionaries in current AFMC use to manage legacy data elements until this function is supported by the Defense Data Repository System (DDRS)/Defense Data Dictionary System (DDDS).

4.5. (Added) Development of New Standard Data Elements. Standard data elements will be supported with an associated IDEF1X data model, and be developed according to procedures provided in DoDM 8320.1-M-1, *DoD Data Element Standardization Procedures*, chapter 4, and DoDM 8320.1-M, chapter 4 and appendix E. Guidelines for entity (corresponding to prime word) design, definition, and naming are also contained in DoDM 8320.1-M-x.

4.6. (Added) Submittal of Data Standardization Proposal Packages. The data standardization proposal package (attachment 4(Added)) (also referred to as a standard data element proposal package or data model package in AFI 33-110) is used to propose a data model, with its associated data entities and attributes, for incorporation into the DoD Data Model. Upon agreement by DoD, the entities and attributes of the data model become approved data elements (prime words, standard data elements, and generic data elements) in the DDDS. The primary reference for preparation and submittal of the data standardization proposal package is DoDM 8320.1-M-x.

4.6.1. (Added) Format. The required format of data standardization proposal packages is defined in DoDM 8320.1-M-x, chapter 5. The sample format for AFMC proposal packages, found in attachment 4(Added), consists of a cover letter with six attachments: (1) Basic Package Information, (2) Entity Information, (3) Attribute Information, (4) Relationship Information, (5) Model View, and (6) Request for Registration of Use (this is an addition to the DoDM 8320.1-M-x format). A copy of the Request for Registration of Use form is to be completed for each data element reused from DDDS. The purpose of submitting this form is to provide feedback on which data elements are being reused by DoD activities. All parts of the proposal package are to be submitted electronically.

4.6.1.1. (Added) Preparation Checklist References. DoDM 8320.1-M-x, appendix C, contains a set of checklists which may assist in preparing a data standardization proposal package. Included are a Basic Proposal Package Information Checklist, Entity Information Checklist, Attribute Information Checklist, Relationship Information Checklist, and a Compliance Checklist.

4.6.1.2. (Added) Size. If a large model is being used in a proposal package, it should be partitioned into subsets that can be submitted in multiple proposal packages, each generally limited to approximately 20 entities and 200 attributes. Each subset of the larger model should represent a logical grouping of entities based on related functional content. This does not imply that much smaller packages, or larger data models that cannot be subdivided to separate packages of this size, cannot be submitted. Proposal packages limited to this size have a manageable scope and the greatest chance of providing approved data elements within a reasonable period of time. For further information, see DoDM 8320.1-M-x, chapter 5 (B).

4.6.2. (Added) Responsibilities for Preparation of Data Standardization Proposal Packages. The software developer prepares data models and data element metadata in a format as close to that used in the proposal package attachments as possible. The organization's Data Administration staff performs a technical review of the proposal package and prepares the final proposal package. Deviations from this process are permitted based on organization structure and expertise, so long as the end product is the same. Packages requiring further actions will be returned.

4.6.3. (Added) Submittal for Approval of Data Standardization Proposal Packages. AFMC units without waiver letters from the HQ AFMC MDAd are to submit electronic proposal packages to the MDAd, who will review the packages, revise if necessary, and forward to HQ AFCA/XPD. The AFMC MDAd will only review initial submissions to ensure acceptable data standardization procedures are in place before proposal packages are sent out of the command. Thereafter, The AFMC MDAd will certify an AFMC organization by granting a waiver, by letter, per-mitting submission of proposal packages directly to

HQ AFCA/XPD. The proposal package cover letter is to be signed by the unit Data Administrator (DAd) or head of the Data Administration activity. The proposal package submission should be submitted electronically to the MDAd or on 3 1/2 diskette. Submit the proposal package to:

Without waiver:

AFMC CSO/SCWT

Attn: AFMC Data Administrator

4225 Logistics Ave Ste 18

WPAFB OH 45433-5757

With waiver:

HQ AFCA/XPD

203 W. Losey Street, Rm. 1065

Scott AFB IL 62225-5224

4.7. (Added) Defense Data Dictionary System (DDDS). AFMC organizations will query DDDS during software development, and apply the DoD approved, candidate, or developmental standard data elements in their application development, if available. If suitable approved, candidate, or developmental data elements are not available in DDDS, AFMC organizations will develop new standard data elements and submit them for DoD approval. The DDDS database is accessed and utilized through two methods: remote DDDS access, or through use of the Personal Computer Access Tool (PCAT). DDDS remote access has the advantage of always providing the most current data base information; PCAT has advantages of providing a different, more user-friendly interface and flexible search and reporting capabilities; monthly DDDS data base updates for PCAT are available. Technical assistance and current procedures for accessing DDDS and PCAT are available from AFMC MDAd.

9.1. AFMC organizations execute the Air Force DA program within their areas of responsibility using DoD, Air Force, and AFMC policies, standards, and procedures. AFMC organizations designate a DAd or Data Administration point of contact to enforce standards, identify requirements and perform data management duties for the organization. Whether a DAd or point of contact is designated, and whether this position is full or part time, depends on the level of organization, amount of software development conducted, and the judgment of the organization commander as to staffing required to meet requirements of the AF DA program.

9.1.1. (Added) AFMC Field Operating Agency Data Administrator (DAd) Responsibilities. The DAd:

- Ensures a viable data administration program is established and that prescribed standards are followed.
- Identifies, and submits through established channels, short- and long-range resource requirements for implementing the data administration program.
- Ensures the inclusion of data administration requirements into unit information management plans, and in appropriate organization initiatives.
- Establishes liaison with the communications-computer community to ensure the Command, Control, Communications, Computer (C4) Systems Requirements Document (C4SRD) review process observes the use of standard data elements in new or modified information systems.

- Ensures information system designs, developments, modifications, modernizations, implementations, and life-cycle management efforts are accomplished to support the AFMC Data Administration Program.
- Assists systems developers in data model development, coordinates on data models prior to new system development or major reengineering efforts, and forwards models, data elements, and supporting metadata to the MDAd for validation and submission to HQ AFCA/XPD.
- Identifies organization data administration training requirements to meet AFMC Data Administration Strategic Plan goals.
- Provides training requirements to HQ AFCA.

9.1.2. (Added) DAd Training. Funding and scheduling for AFMC personnel to attend training courses in DoD Data Administration are currently available from HQ AFCA/XPD, Scott AFB IL. Course descriptions of the following are available from HQ AFCA/XPD (DSN 576-5699) or from the AFMC MDAd (AFMC CSO/SCWT, DSN 787-1858). It is recommended that AFMC DAd accomplish the following minimum training:

- IDEF1X training: The IDEF1X standard is the basis of DoD data modeling. The “IDEFO and IDEFIX Modeling” course (POC: HQ AFCA/XPD) or equivalent meets this requirement training.
- The “Data Standardization and Defense Data Dictionary System (DDDS)” course (POC: HQ AFCA/XPD) or equivalent meets this requirement.
- In addition to the above training, vendor training in an IDEF1X data modeling software tool is directly beneficial to a DAd or other personnel in Data Administration. Funding and scheduling for this training are available through HQ AFCA/XPD.

10.4. Data models and data elements will be submitted as Data Standardization Proposal Packages (see paragraph 4.6, this supplement).

10.5. See paragraph 3.1, this supplement for IDEF1X development procedures.

10.8. See paragraph 4.5, this supplement.

### **Attachment 1, Terms**

**Data Model**-A graphical and textual representation that identifies the data needed by an organization to achieve its mission, functions, goals, objectives, and strategies. It describes the scope, boundaries, and types of data needed to support the functional activities at all levels of the organization.

**Integration Definition for Information Modeling (IDEFIX)**-Data models constructed of entities (a set of real or abstract things), attributes (entity characteristics or properties), and relationships (associations between entities).

**Activity (function) Models**-Activity or function models document the functional activities of an organization.

**Attachment 4 (Added AFMC)**

**SAMPLE COVER LETTER  
DATA STANDARDIZATION PROPOSAL PACKAGE**

DEPARTMENT OF THE AIR FORCE  
DATA MODELING CENTER (DMC)  
MAXWELL AFB, GUNTER ANNEX AL 36114-3005

MEMORANDUM FOR HQ AFCA/XPDS  
HQ AFMC CSO/SCWT

9 May 1995

FROM: DMC/ENSD  
200 East Moore Drive  
Maxwell AFB, Gunter Annex 36114-3004

SUBJECT: Proposal Package

1. The Data Modeling Center (DMC) is submitting the attached proposal package for inclusion in the DoD Data Model. DMC's model is a logical view of entities used in software applications developed at the DMC; this particular proposal package deals solely with the logistics area. Many of the software applications developed at DMC not only interface with one another, but represent cross-functional data sharing.
2. My POC is (Name), (organization), DSN: (number), E-Mail: address.

(Name)  
(Rank/Grade), USAF  
Chief, Data Standards Branch

6 Attachments:

1. Basic Package Information
2. Entity Information
3. Attribute Information
4. Relationship Information
5. Model View
6. Request for Registration of Use Forms

**BASIC PACKAGE INFORMATION**

1. DoD Sponsoring Organization: DMC/ENSD  
200 East Moore Drive  
Maxwell AFB, Gunter Annex AL 36114-3004  
POC: (Name)  
DSN: 555-1234  
Comm: (205) 555-1234  
E-Mail: (E-Mail Address of POC)
2. Version Number And Date Of The DoD Data Model: 4-94, 30 Sep 94.
3. Component (or Functional) Data Administrator: HQ AFCA/XPDS
4. Proposal Package Functional Data Steward: DUSD(L)/DUSD(ES)
5. Functional Area ID: 009/079
6. Model Component Count:
  - View 1. MATERIEL  
Number of Entities: 13 new; 6 reuse  
Number of Attributes: 25 new; 6 reuse  
Number of Relationships: 26
  
  - View 2. SHIPMENT-UNIT-PLAN  
Number of Entities: 10 new; 2 reuse  
Number of Attributes: 42 new; 4 reuse  
Number of Relationships: 16
7. Tool Used: Design/IDEF, Version 2.5.1
8. Information Systems Supported by the Diagram: Conceptually, the data depicted in the attached model views supports the Logistics Module-Base Level (LOGMOD-B) system. LOGMOD-B supports logistics planning by supporting the following base-level processes: Unit Type Code (UTC) development; reporting materiel data to MAJCOM and other units; mobility planning; execution; tailoring; and feasibility/capability analysis.
9. Proposal packages based on non-IDEF1X data models shall provide the additional information:
  - a. Technique used to develop model.
  - b. Type of schema and notations used in the model.

**ENTITY INFORMATION****Entities in DDDS**

DDS Counter ID	Functional Area ID	Entity Name
1947	009	SHIPMENT-UNIT-PLAN
1535	009	SHIPMENT-UNIT-PLAN-ITEM

**Entities NOT in DDDS**

**1. Entity Name:** CARGO-CATEGORY

**2. Entity Definition:** A classification of transportable goods by physical characteristics.

**3. Functional Area ID:** 009

**4. Entity Submission Type:** Developmental

**5. Attributes:**

Name: CARGO-CATEGORY CONTAINERIZATION CODE

Key Designation: Primary Key

Name: CARGO-CATEGORY TYPE CODE

Key Designation: Primary Key/Foreign Key

Name: CARGO-CATEGORY EXTENT CODE

Key Designation: Primary Key

**6. Prime Word (Entity) Using Proponent Model Name:** Wing Logistics Model #1

**ATTRIBUTE INFORMATION****Attributes in DDDS**

DDRS

Counter ID      Attribute Name**Attributes NOT in DDDS****1. Attribute:**

Name: CARGO-CATEGORY EXTENT CODE

Definition: The code that represents the dimensional category of transportable goods.

**2. Attribute Role: Primary Key****3. Metadata Information:**

Functional Area ID: 009

Proposed Steward Name: ASD(P&amp;L)

Authority Reference Text: DoD 8320.1

Comment Text: This data element represents the second position in the commonly used three-character composite data element CARGO-CATEGORY CODE.

Data Value Source List Text: JCS Pub 1-03.21 Table 18

Domain Definition Text: A specific domain of ASCII characters 0-9 and A-D.

Formula Definition Text:

Decimal Place Count Quantity:

Derivation Type Name: 3

Low Range Identifier:

High Range Identifier:

Maximum Character Count:1

Data Type Name: Character-String

Security Classification Code: Unclassified

Unit Measure Name:

Domain Values:

Identifier	Definition Text
0	Nonair Transportable unit equipment cargo: (A) Exceeds any of the dimensions 1453" x 216" x 156" or (B) has height between 114" and 156" and a width that exceeds 144."
1	Oversized unit equipment cargo: Exceeds 1090" x 117" x 105" and is qualified by MILSTAMP aircraft air dimension code (too large for C-130/C141).
2	Oversized unit equipment cargo: Exceeds usable dimensions of 463L pallet (104" x 84" x 96") or height is established by the cargo envelope of the particular model of aircraft.

**RELATIONSHIP INFORMATION****1. Between Proposed Entities:**

Parent Entity: Cargo-Category  
Child Entity: Shipment-Unit-Plan  
Verb Phrase: Describes

Parent Entity: Cargo-Category  
Child Entity: Shipment-Unit-Plan-Item  
Verb Phrase: Describes

**2. With DoD Data Model:**

Parent Entity: Materiel  
Child Entity: Materiel-Item  
Verb Phrase: Describes

**3. Business Rules, Including Cardinality for Each Relationship:**

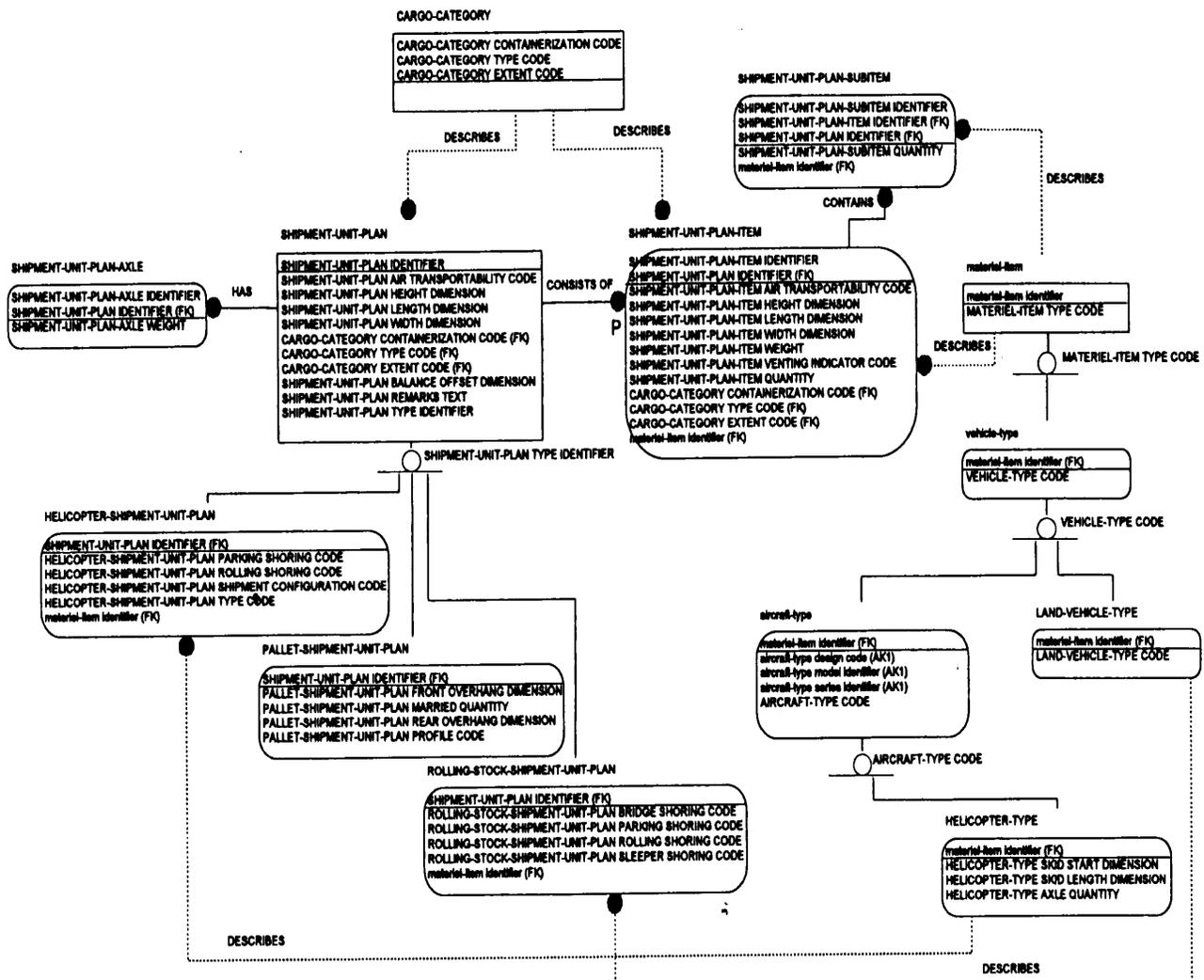
A CARGO-CATEGORY describes zero to many SHIPMENT-UNIT-PLANs.

A CARGO-CATEGORY describes zero to many SHIPMENT-UNIT-PLAN-ITEMs.

MODEL VIEW

A COPY OF ALL YOUR MODEL VIEWS WILL BE PLACED IN ATTACHMENT 5

SHIPMENT-UNIT-PLAN



**REQUEST FOR REGISTRATION OF USE**

Element Name \_\_\_\_\_

Element Counter ID \_\_\_\_\_

Element Version Number \_\_\_\_\_

Name of the System Owning the Element \_\_\_\_\_

Your System Name \_\_\_\_\_

Is this a: Prime Word \_\_\_\_\_

Generic Data Element \_\_\_\_\_

Standard Data Element \_\_\_\_\_

**Attachment 5 (Added AFMC)****IDEFIX DATA MODEL DEVELOPMENT EXAMPLE**

- 1. Phase Zero - - Project Initiation.** Establish modeling objectives, develop modeling plan, organize team, collect source material, and adopt author conventions for the data model.
- 2. Phase One - - Entity Definition.** Identify and define entities.
- 3. Phase Two - - Relationship Definition.** Identify related entities, define relationships, and construct entity-level diagrams.
- 4. Phase Three - - Key Definition.** Resolve nonspecific relationships, depict function views, identify key attributes, migrate primary keys, validate keys and relationships, define key attributes, and depict phase three results.
- 5. Phase Four - - Attribute Definition.** Identify nonkey attributes, establish attribute ownership, define attributes, refine model, and depict phase four results.

WILLIE McCLADDIE, Col, USAF  
Director of Communications and Information