

APPENDIX D

DATA INTERFACE TRANSACTIONS

D.1 SCOPE.

D.1.1 Scope. This appendix describes the messages, transaction sets and data information packets to be used when ordering data.

D.2 APPLICABLE DOCUMENTS.

Extensible Markup Language (XML) 1.0, W3C Recommendation, 10 February 1998

D.3 DEFINITIONS.

The acronyms and definitions in Section 3 of this standard apply to this appendix.

D.4 GENERAL REQUIREMENTS.

D.4.1 Introduction.

D.4.1.1 This section has been divided into two sub-sections. The first section discusses the presentation tool for the DIPs and information on how to navigate the tool. It also discusses the terminology and symbology used in the DIPs. The second section discusses each of the DIPs, their content and relationship to each other.

D.4.1.2 DIP Structure

D.4.1.2.1 A DIP is a hierarchical structure of elements. The DIPs are presented in a database in a Microsoft Office 97 version of ACCESS. This database provides all of the information required for each of the individual DIPs, including pop-up access to the appropriate Data Element Definitions (DED), with attributes, from Appendix C. Before launching the Access tool, the reader should become familiar with the linked [readme](#) file. Once you have read and followed its instructions, then the reader can launch the Access tool using this [link](#).

D.4.1.2.2 The first screen presented is titled AMC Standard 2549 Rev A Data Information Packets. It contains basic information about the elements and their relationship to each other. The relationships are shown through a structure of indentation with elements of the same stature having the same amount of indenture. The structure (top of screen) is navigated by clicking on the boxes alongside the element names to expand or contract the structure and by clicking on the element name to display its attributes. The fields (bottom of screen) are described as follows:

The “DED” number is the element number that relates back to Appendix C.

The “Type of Element” may be one of three types – a field, group or choice. A ‘group’ associates a parent (or group) name with a set of children. For example, a “Date-Time Group” (parent) would consist of a “Date” element and a “Time” element (children). A ‘choice’ associates a group name with a set of choices. For example, a “Document-Revision-Group” allows a choice of one of two methods for identifying a revision to a document – either a “Revision-Date-Time-Group” or an “Alphanumeric-Revision-Identifier”. For a given document, only one of the choices would be selected and transmitted.

The “Cardinality” is defined as the number of times an element can be associated with its parent. The following table defines the cardinality used in the DIPs.

APPENDIX D

Cardinality	Meaning
1	Mandatory element that must occur only once.
0:1	Optional element that, if occurs, may only occur once.
0:N	Optional element that, if occurs, may occur many times.
1:N	Mandatory element that must occur once, but may occur many times.
2:N	Mandatory element that must occur twice, but may occur many times

Table D-1

The “Element” is the name of a data element for a specific use in a specific indenture. The Appendix C name may be used many times for various purposes. The element name is only used where the specific application is exactly the same.

The “Definition Name Found in Appendix C” is the name of that CM element in a format that complies with DoD 8320.1-M-1. Because these names may be extremely long, and unwieldy, the elements have been renamed for use in the DIPs as “Elements”. This name is also called the “role” name.

The “Business Rule” contains validation information specific to this parent child relationship.

The “Definitions” button provides additional attributes about the DED. When selected, it will present a second screen that provides the following:

The “Type” is the characteristics of the DED.

The “Decimal” is the placement of the decimal within the element when it is a floating-point or fixed-point number.

The “Size” is the number of character positions in the element. If the length is variable, the maximum length is specified.

The “Justification” specifies from which side of the field the characters are entered.

The “Paragraph” is the specific definition for the element (role) used in a particular DIP. If there are questions about the definition, the user should refer to Appendix C.

D.4.2 DIP Content and Relationships

D.4.2.1 DIP Content

D.4.2.1.1 Data Information Packets (DIP) are used as building blocks that can be assembled into data transaction sets or messages for submitting deliverables that satisfy contractual data requirements or that exchange data between databases. DIPs define the metadata and relationship structure that describes the products, product structure and documents needed for configuration

**Data Information Packets**

- Products
  - Parts
  - Software
- Product Structure
  - Part Relationship
- Documents
  - Product Definition Documents
    - Drawing
    - Associated List
    - Specification
    - Standard
    - Part Model
    - Software Documentation
  - Configuration Control Documents
    - Engineering Change Proposal
    - Notice of Revision
    - Request for Deviation
  - Other Product Related Documents
    - Technical Manual
    - General document
    - Document Supplement

Figure D-1

## APPENDIX D

management of a weapon system throughout its life cycle. The DIPs addressed in the current revision of this document are shown in Figure D-1. Additional DIPs will be addressed in later revisions.

The DIPs associated with Products are Parts and Software. The Product DIPs define metadata about the products, such as their identifier, their defining documents, and, if applicable, suitable replacement products.

The DIP associated with Product Structure defines the metadata about part relationships and attributes of that relationship. The metadata includes the assembly identifier, the component or document identifier, and attributes of the relationship, as appropriate. These attributes include quantity, unit of measure, and alternate/substitute parts. The specific relationships covered in this DIP are: assemblies to subassemblies, assemblies to component parts, assemblies to component software, assemblies (or piece parts) to inspection or packaging products, and assemblies (or piece parts) to documents that support manufacture, test, inspection, or packaging.

The DIPs associated with Documents have been organized into three major areas: 1. Documents that are traditionally identified with product definition, test, inspection, and packaging; 2. Documents used in controlling product configuration; and 3. Other product related documents. These DIPs contain metadata such as the document identifier, author, current change authority, title, revision and identification of the products being defined.

#### D.4.2.2 DIP Relationships

D.4.2.2.1 Each DIP is a combination of elements to satisfy a specific need. They should be used in combination to fully describe a product and its documentation. For example, a drawing is created that defines two parts. Additionally, a supplemental quality assurance document is prepared. To transmit this information, the following DIPS should be created. DIP 1 – Drawing, DIP 2 – General Document (QAP), DIP 3 – Part, DIP 4 – Part, DIP 5 – Part Relationship, DIP 6 – Part Relationship. However, the specific DIPs needed must be determined by the level of configuration management required at a given point in a products life cycle.

### D.5 DETAIL REQUIREMENTS

#### D.5.1 Introduction

D.5.1.1 The formulation of the message used to transmit a transaction set must be developed in exacting detail to allow for the successful transmission/acceptance of the transaction set. The information in this section provides the detailed requirements to format and develop the message.

#### D.5.1.2 Message Preparation

D.5.1.2.1 The form of a message used to transmit a transaction set shall be an ASCII text file that conforms to the World Wide Web's recommendations for XML version 1.0. The message shall consist of three parts: a header, the data information packets and the footer.

#### D.5.1.2.2 Preparing the Header

The Header information shall consist of a line that identifies the XML version, a line that identifies the location of the Document Type Definition that an XML capable browser will use to validate the form of the message, and a line that initiates the message and gives specific information about the message. The specific message information includes an attribute that references this standard, an attribute that identifies the organization that prepared the message, an attribute that is used to identify the message, an attribute that identifies a person to call in case of questions, an attribute that identifies the relevant contract number, and an attribute that lists the purpose(s) of the transaction. The three lines are as follows:

```
<?xml version = "1.0"?>
```

## APPENDIX D

```
<!DOCTYPE Data-Information-Packets SYSTEM "http://ria-
iea.ria.army.mil/ai/eng_data/ai/eng_data/dtd/amc-std-2549-reva.dtd">
<Data-Information-Packets
  Standard = "AMC STD 2549 Rev A"
  Message-Source = "UUU"
  Message-ID = "XXX"
  Point-Of-Contact = "YYY"
  Contract-Number = "ZZZ"
  Transaction-Purpose = "WWW">
```

where UUU is the name of the originating organization, XXX is a reference identifier assigned by the message originator, YYY is the name and phone number of a person who can be contacted about the message, ZZZ is the contract number requiring the delivery of this transaction(s) and WWW is a statement of the purpose(s) of the transaction.

#### D.5.1.3 Preparing the Data Information Packets

XML uses tags to mark the beginning and end of a specific piece of data. The element names given in the detailed requirements section will be used as part of the tag. Tags are a matched pair and have the following form:

```
<Element-Name>DDDD</Element-Name>
```

where DDDD is the specific data. Thus, the first and the last tag of any data information packet would be: <Packet-Name>packet data</Packet-Name>. The message may contain as many DIPs of as many different types as necessary to accomplish the transaction.

Each DIP has its own structure as described in section 5.2. Detailed Requirements. As discussed above, elements have a cardinality and are of one of three types – field, group and choice. Cardinality determines whether a tagged set is optional, required and/or repeatable. “Field” tags are constructed from field element names and are used to mark the specific data that is defined by the DED and role name with which it is associated. “Group” tags are used to mark a series of tags that are to be treated as a unit. “Choice” tags are used to mark the element that was chosen. The following three examples will illustrate each of these types.

If a document is identified by an identifier, “XYZ”, and the corresponding DIP element name is “Document-Identifier” having a type “field”, then the message fragment would look like:

```
<Document-Identifier>XYZ</Document-Identifier>.
```

A “Date-Time-Group” is frequently used within the DIPs. It consists of the “Date” field and the “Time” field, (optional). If the date is 3 November 2000 and the time is 12:01:30 central standard time, it would look like:

```
<Date-Time-Group>
  <Date>20001103</Date>
  <Time>120130-6</Time>
</Date-Time-Group>.
```

If only the date were to be sent, it would look like:

```
<Date-Time-Group><Date>20001103</Date></Date-Time-Group>.
```

## APPENDIX D

A “Revision-Identification-Group” is also frequently used within the DIPs. It consists of a choice of either an “Alphanumeric-Identifier” field or a “Date-Time-Group”. If a document has a revision identifier of “B”, it would look like:

```
<Revision-Identification-Group>
<Alphanumeric-Identifier>B</Alphanumeric-Identier>
</Revision-Identication-Group>.
```

On the other hand, if the document’s revision identifier is 3 November 2000, it would look like:

```
<Revision-Identification-Group>
  <Date-Time-Group>
    <Date>20001103</Date>
  </Date-Time-Group>
</Revision-Identification-Group>.
```

#### D.5.1.4 Preparing the footer

The footer is simply the closing tag of the DIP and would look like

```
</Data-Information-Packets>
```

#### D.5.2 Detail DIP Description

D.5.2.1 Each DIP has been developed in an indented hierarchical design to display the relationships and information required for the development of the transaction set. This format provides an easily viewed structure. The transaction set must be formulated using the requirements defined in D.5.1.3 to ensure successful transmission/acceptance of the data.