



**Aerospace Industry Guideline
for RFID Data Exchange
Between Partner and Prime**

Version 1.0.1

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Developed By:
**Electronic Enterprise Integration Committee
Aerospace Industries Association, Inc.**

Aerospace Industry Guideline for RFID Data Exchange Between Partner and Prime

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Aerospace Industry Guideline for RFID Data Exchange Between Partner and Prime

History Page

Date	Version	Change	Reason
4-19-2006	1.0.0		Original Release
6-09-2006	1.0.1	Section 6.2.2. Changed filename convention to support format with and without Prime's Purchase Order Number	To satisfy the business needs of prime's and partner's filename conventions with and without Prime's Purchase Order Number are needed.

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Aerospace Industry Guideline for RFID Data Exchange Between Partner and Prime

1. Executive Overview

Issue: All DoD prime contractors are required to supply specified RFID data elements to the DoD for all shipped items that meet the criteria as required in DFARS 252.211-7006. To satisfy the DoD requirements, Primes may need to electronically receive RFID data from suppliers and subcontractors (partners). A common solution set defining the exchange RFID data between partners and primes is critical to the Primes' ability to deliver and maintain accurate RFID data.

Solution: AIA member companies chartered the Electronic Enterprise Integration Committee (EEIC) to develop this common solution set for the Aerospace Industry.

Deliverable: Create a document entitled "***Aerospace Industry Guideline for RFID Data Exchange Between Partner and Prime***" assisting trading partners in implementing partner to prime RFID data exchanges. This Industry Wide Best Practice provides a common set of data exchange formats and transmission methods (protocols). From this common set each partner may choose those that best match their company's technical capabilities. Please keep in mind that this document is provided as a GUIDELINE and not a mandatory standard. Trading partners are encouraged to use this guideline. Use of it will simplify the data exchange process and reduce costs in the supply chain. Voluntarily use of this common instruction guide will ensure consistent formats and methods for RFID reporting.

Target Audience: All DoD contractors, primes and suppliers as trading partners.

When Used: The data formats and data transfer methods in this guideline should be used whenever partners need to satisfy the prime's RFID data requirements identified in the purchase order for a RFID tagged shipment.

Benefits: Use of this Industry wide Best Practice will facilitate, simplify, and reduce the cost of compliance with Prime RFID requirements by:

1. Minimizing the number of data formats and data exchange methods required for partners to support. We have identified four data formats: Microsoft Excel, Flat File (ASCII text), ANSI X12 4010, and XML; and four Data Exchange Methods: Email, FTP, EDI, and Web Portal.
2. Limiting the number of interfaces needed by primes and partners from their legacy systems, which would otherwise have been needed to support these data exchanges in an environment where a common industry guideline did not exist.

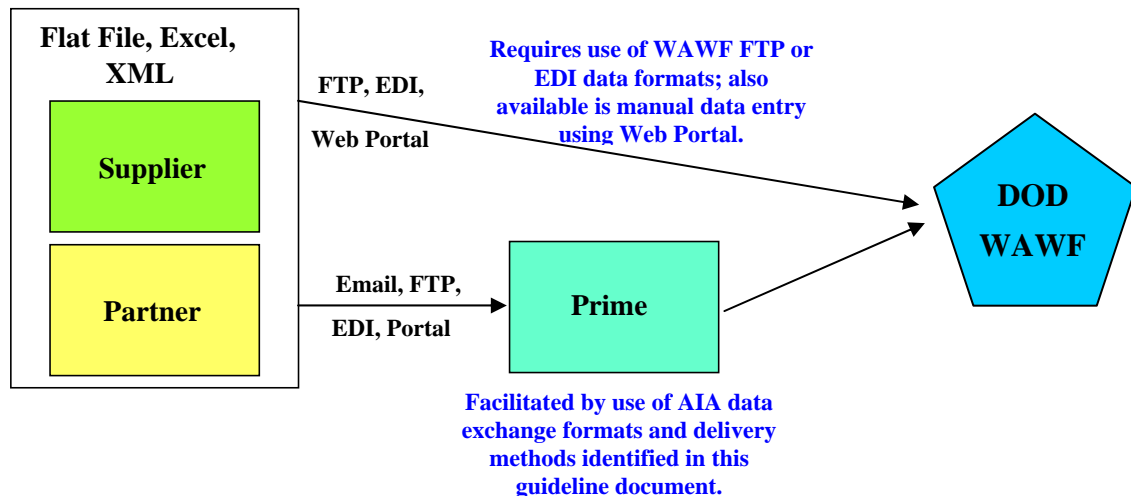
Implementation & Affordability: The AIA RFID Data Exchange Guideline was modeled on the AIA IUID Data Exchange Guideline. The same design philosophy is used for both guidelines. The IUID pilot was successful in demonstrating many aspects of the Guidance Document using tools currently available in the marketplace. The common format was established based upon the DoD IUID Flat File Specification requirements and modified by adding additional fields to address information partners may need. The AIA EEIC RFID Data Exchange Guideline development team will conduct a separate pilot to validate this guideline.

Aerospace Industry Guideline for RFID Data Exchange Between Partner and Prime

2. Guiding Principles for Use:

- In this document, a customer is always called a “prime” and a supplier, subcontractor, or partner is always called a “partner”.
- This document should be used whenever a trading partner has a contractual requirement from the prime to supply RFID shipment data for an item procured by the prime.
- If the prime contracts with a partner to direct ship an item to the DoD the following options exist:
 - a.) The prime can request that the RFID shipment data be sent back to them using the data formats and exchange methods defined in this guideline.
 - b.) The prime can request that the partner send the RFID shipment data directly to the DoD. In this case the partner must use the DoD data formats and exchange methods. The data formats and DoD guidance are available from the DoD web site:
www.acq.osd.mil/log/rfid/index.htm
 - c.) Both “a” and “b”.
- Primes should support the acceptance of data in one or more of these Data Formats and Data Exchange Methods that support the capabilities of their partners. It is recommended that large primes support as many as possible of the Data Formats or at least the Email and FTP Data Exchange Methods.
- Trading Partners (prime and partner) must agree on the Data Format, Data Exchange Method, and Data Security to be used. This agreement may be documented via a Global Trading Partner Agreement (GTPA). The GTPA provides a documented common set of rules by which trading partners agree to exchange data electronically, thus minimizing barriers encountered when engaging with new trading partners. A copy of this agreement may be downloaded for public use at (www.aia-aerospace.org/library/ebusiness/ebusiness.cfm/GTPA_mode_2k4_tmp.doc).

3. High Level RFID Process Flow



4. Purpose of this Guideline Document

This is a GUIDELINE and not a standard. Trading Partners (primes and partners) are not bound by the AIA to use this guideline. However, use of it will simplify the data exchange process and reduce costs in the supply chain. Voluntary use of this common instruction guide will ensure consistent formats and methods for RFID reporting.

The purpose of this document is to facilitate the flow of data from partners (suppliers and subcontractors) to the primes as needed to meet Prime RFID contract requirements. Typically, each prime and their respective partners would handle similar data deliverables differently. The lack of a common industry approach adds complexity and cost to the supply chain. Partners are too often forced to support multiple data formats and transmission methods. The same problem exists when primes exchange data with other primes.

Partners have varying technical capabilities and resources. In addition, partners may have limited demand to supply items requiring RFID shipment data. This guideline document provides options from which a partner can choose to match their capabilities to the solution approach.

The fundamental core component of this Guideline is the WAWF Receiving Report Pack Update Transaction, version 3.0.9 and higher. However, when the AIA Project Team began to analyze the RFID requirements in the industry in more detail, it became apparent that some additional industry only requirements needed to be added. Therefore, our Industry Guideline was constructed to satisfy both DoD and Industry requirements. The AIA Project Team intends to incorporate any DoD and/or Industry specification changes in future releases of this document, as compliance requirements change.

Four different data formats have been identified that will satisfy each company's needs.

4.1 Data Format

Data Format	When Used	Skill Level
Microsoft Excel Template	<ol style="list-style-type: none"> Where requirements to support RFID are low. In the interim to meet RFID data deliverable requirements while a more sophisticated approach is developed. 	Low
User Defined Format or (Flat File)	<ol style="list-style-type: none"> Created as a simple output interface from COTS packages like Microsoft Access. As an output format generated from any legacy application. 	Moderate
XML Schema	<ol style="list-style-type: none"> As an output format generated from any legacy application. As an output format available from many database query tools. 	Advanced
ANSI X12	<ol style="list-style-type: none"> As an output format generated from any legacy application. Required use of the AIA 856 Ship Notice / Manifest Version 005 – Release 010 Implementation Convention. 	Advanced

Table 1 Data Format

To transport this data between trading partners four different transmission methods have been identified. Each transmission option will support any of the four data formats.

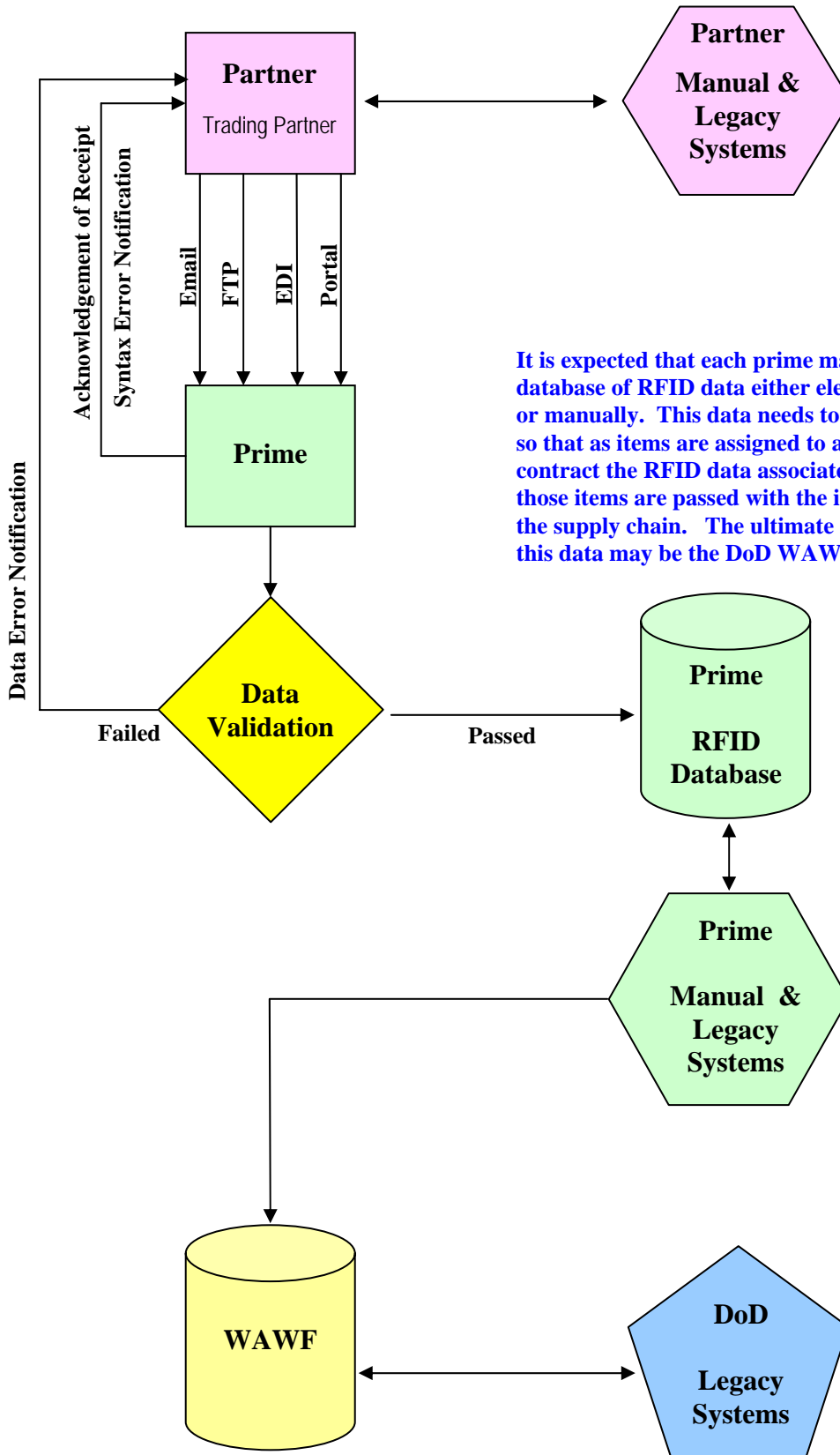
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4.2 Transmission Methods

Transmission Methods	When Used	Skill Level
Email (SMTP)	1. All trading partners can support email. The selected data format file is attached to the email and sent to the email address supplied by each prime.	Low
FTP (File Transfer Protocol)	1. This is a cost free transfer method that can be used to transfer any of the data formats to a location provided by the prime. The setup cost is minimal. User Id and password must be supplied by the prime.	Moderate
Web Portal	1. This is only available when the prime has a Web Portal application. Each prime must provide instructions for logging into and uploading/downloading data files.	Moderate
EDI	1. This requires the use of ANSI X12 transactions and may or may not require the use of a 3 rd party Value Added Network or VAN. Use of 3 rd party VAN will involve additional costs. 2. This method will likely only be used by those partners who are already exchanging data using this method.	Advanced

Table 2 Transmission Methods

5. End-to-End RFID Process Flow



6. Technical Specifications

6.1 Data Element Dictionary

The data exchange specifications for all formats is based on the same AIA RFID Data Element Dictionary. The data element naming convention and all data element definitions are consistent throughout the Excel, Flat File and XML formats. The ANSI X12 format requires strict adherence to the ANSI X12 data conventions and is therefore not consistent with the other three formats.

The AIA RFID Data Element Dictionary can be found in the AIA RFID Flat File Specification.xls as part of the full guideline package. This data dictionary is the basis for all AIA Data Exchange Formats. The tan colored column shows the “Industry Requirement” or usage of the data element.

6.2 Data Formats & Examples

Three types of data elements are defined for use: Data elements that are always “Mandatory”, those that are needed on a “Conditional” basis (as-required), and those that are “Optional” at this time.

Four data format types will satisfy the needs of partners and primes. The format types are Microsoft Excel, Flat file, XML, ANSI X12. The exact same full set of data elements exists in all four data format types. The structures of three data element formats are also the same, for example a Record Number in the Flat File format is identical to a Spreadsheet Name in the Excel format or a Record Tag Name in XML. So Our Flat File Record Number and Data Elements map to ANSI X12 Data Segments and Data Elements. The ANSI X12 formats follows the ANSI X12 data convention.

Flat File Record Number = Excel Spreadsheet = XML Record Tag Name

Available on the AIA Public Web Site (www.aia-aerospace.org/library/library.cfm) are the Microsoft Excel Template, the Flat File layout, the XML Schema, and Sample Files that you will need to follow in implementing the data exchange. To use the ANSI X12 data format you will need the AIA 856 Ship Notice / Manifest Version 005 – Release 010 is available on the AIA available at (<http://www.aia-aerospace.org/library/ebusiness/NAS20856-4.pdf>)

6.2.1 Understanding and Using the Structure in more Detail

As stated in section 6.2 the structures of three data element formats are the same; a Record Number in the Flat File format is identical to a Spreadsheet Name in the Excel format or a Record Tag Name in XML.

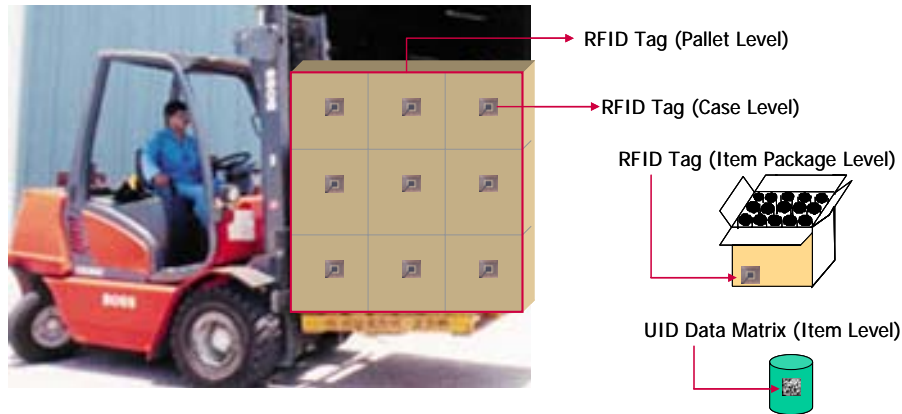
Flat File Record Number = Excel Spreadsheet = XML Record Tag Name

Since all are identical, we will explain the structure using the Flat File Record Number. Besides the Record Number we have a Record Type which, except for the “H” - Header and “T” - Trailer denotes the action you are trying to perform. Currently, the only valid action Record Types is “A” – Add. “Add” record types are just what they imply, you are sending the prime new RFID data for a new item that has never been sent before.

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The list of Record Numbers and a brief description of each:

- 000 – Header.** (Mandatory, denotes the beginning of a file and identifies the sending entity.)
- 100 – RFID Record.** (Required to provide packing levels and associated RFID tag information, at least one RFID Record per transaction.)
- 200 – Accounting Information Record.** (As-Required one Accounting Information Record is required as a child to the lowest RFID Packaging Level (Item Packaging Level). Data elements needed are Buyer's Purchase Order Number, Entity Identifier, Line Number, Item Description, and Quantity.)
- 300 – Item Information Record. (As-Required as a child to each Accounting Information Record.** If used the total ItemCount values on all Item Information Records must equal the Quantity in their parent Accounting Information Record. Data elements are PartNumberBatchLot, Serial Number, and UUI.)
- 900 – Trailer. (Mandatory, denoted the end of the file, the date it was sent and the Record Number count. This count is used to verify that a complete file was transmitted.)**



The sequencing of the records is also important. Each file must begin with a 000 – Header and end with a 900 – Trailer. In between you must have all the records in the following order.

- H^000^... Header Records
- A^100^... RFID Records (Pallet Level – Highest Level - “0”)
- A^100^... RFID Records (Case Package Level – Middle Level – “1”)
- A^100^... RFID Records (Item Package Level – Lowest Level – “2”)
- A^200^... Accounting Information Records (Required as a child to the lowest RFID Packaging Level (Item Packaging Level). Can be repeated at that level as often as needed.
- A^300^... Item Information Records (Required as a child to each Accounting Information Record only if the PartNumberBatchLot data element on the Item Information Record is not empty.)
- T^900^... Trailer Record

This record sequence is utilized in three data exchange format types. In the Flat File and the XML the record sequence must be as above. In the Excel Spreadsheet format simply load the data into the spreadsheet under the appropriate tab name; the receiver must sort the data as needed. It is recommended that the receiver of the file sort the data, regardless of format sent, into what they need to load their database. The 4th data exchange format type, ANSI X12, follows its own sequencing scheme contained in the AIA 856 Ship Notice / Manifest Version 005 – Release 010, which is available on the AIA web site.

Understanding RFID Levels

- a. One RFID Record is generated for each RFID Tag.
- b. One RFID Tag is required per each level of packaging (e.g., Item Package / Case Package / Small Intermediate Container / Large Intermediate Container / Pallet) included in the shipment.
- c. Up to 5 levels of packaging may be supported [Coding: 0, 1 thru 4, where 0 = Highest (e.g., Pallet) thru 4 = Lowest (e.g., Item Package) in the shipment]. This corresponds to DoD RFID requirements.
 - i. Example 1, if two levels are needed - 0 = Shipping Container, 1 = Item.
 - ii. Example 2, if three levels are needed - 0 = Pallet, 1 = Case, 2 = Item.
 - iii. Example 3, if five levels are needed - 0 = Pallet, 1 = Large Intermediate Container (stacked on the Pallet), 2 = Small Intermediate Container (packed within the Large Intermediate Container), 3 = Case (packed within the Small Intermediate Container), and 4 = Item (packed within the Case).

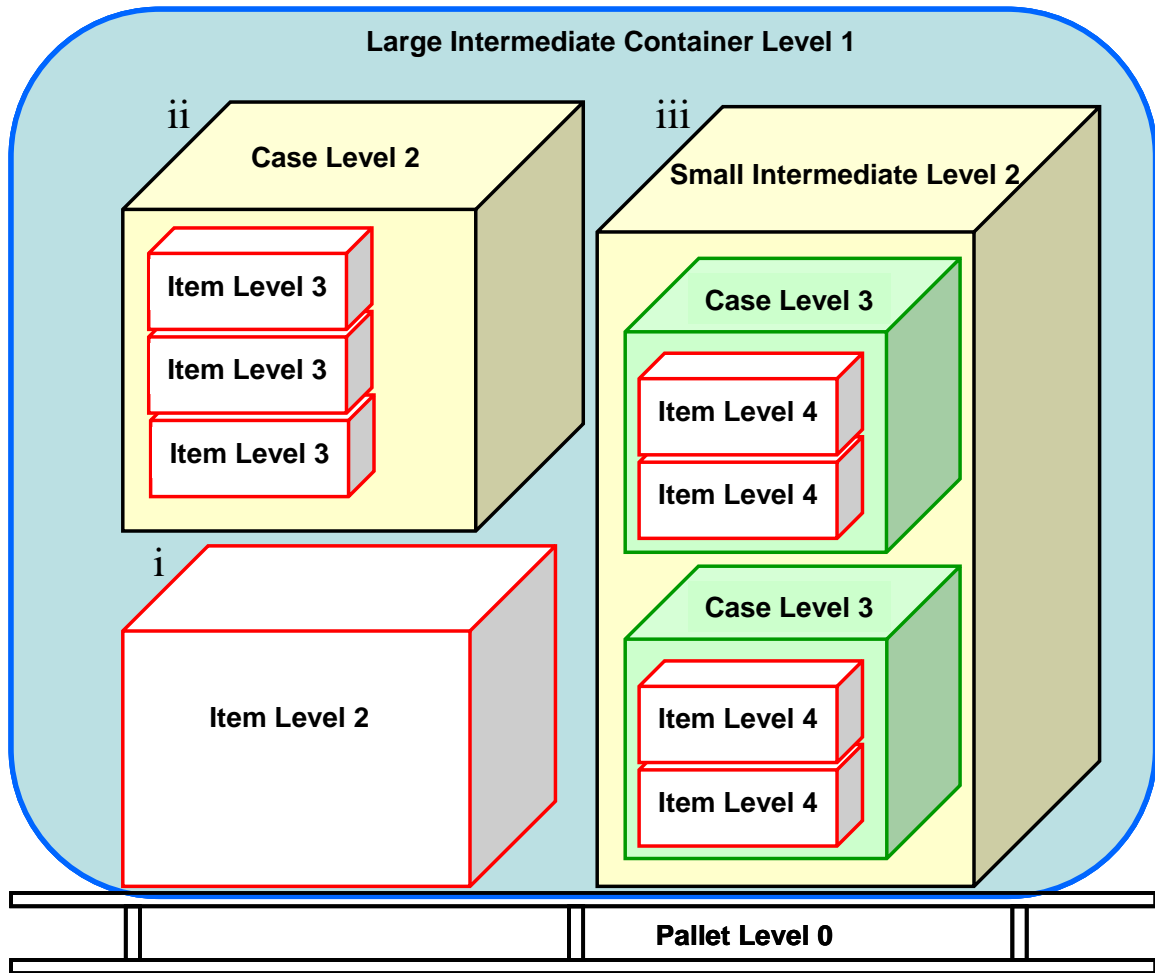


Figure 1 Understanding RFID Levels

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6.2.2 File Naming:

In order to ensure that all files are unique and to assist in tracking and reporting it is important that a file naming convention guideline be established. The recommended formats are as follows:

(Partner's CAGE Code or DUNS Number)_CCYYMMDD_HHMMSS.(txt or xls or xml)

or

(Partner's CAGE Code or DUNS Number)_Prime's Purchase Order Number_CCYYMMDD_HHMMSS.(txt or xls or xml)

Note: The use of the Prime's Purchase Order Number in the file name is required only if requested by the prime.

Example: Where partner's (supplier or subcontractor) Cage Code is 70070 and Purchase Order Number is PO1122334455

Flat File: 70070_PO1122334455_20050615_143556.txt
Excel: 70070_PO1122334455_20050615_143556.xls
XML: 70070_PO1122334455_20050615_143556.xml
ANSI X12: 70070_PO1122334455_20050615_143556.x12 (If sent via E-Mail, FTP, or Web-Portal. Traditional EDI using a Value Added Network does not support this convention.)

or without Purchase Order Number

Example: Where partner's (supplier or subcontractor) Cage Code is 70070

Flat File: 70070_20050615_143556.txt
Excel: 70070_20050615_143556.xls
XML: 70070_20050615_143556.xml
ANSI X12: 70070_20050615_143556.x12 (If sent via E-Mail, FTP, or Web-Portal. Traditional EDI using a Value Added Network does not support this convention.)

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6.2.3 Microsoft Excel Template

This Excel template has all the data elements built into its structure as well as the rules for use. Data cannot be saved into the template; data can only be saved into an Excel spreadsheet based on the template. All the “Mandatory” data elements are shaded in green; the “Conditional” are shaded in beige and the “Optional” data elements are in white. If clicked, the red triangle in the column-heading cell of each column provides some rules for loading the data. The only mandatory spreadsheets are the Header and Trailer. All the other spreadsheets are used as-required. If a spreadsheet is used then the data elements on that spreadsheet must be supplied according to the requirements outlined in the AIA RFID Data Element Dictionary. Unneeded columns can be removed from the spreadsheet and the columns can be rearrange to simplify data loading. However, the column header in row 1 **MUST NOT** be deleted or changed in any way. Also, the name on the spreadsheet tabs **MUST NOT** be changed. Data loaded into a spreadsheet is not validated until the spreadsheet is sent to the prime, so reviewing the data for correctness before sending is important. After the spreadsheet is populated it must be sent to the prime using one of the agreed upon data exchange methods.

RecordType	RecordNumber	TagID	TagIDParent	RFIDPackagingLevel	TagType	SenderShipmentNumber	SenderShipmentDate
A	100	ABCDEF1234567890		0	RFID	ShipNbr0001	2006-02-13
A	100	BCDEF1234567890A	ABCDEF1234567890	1	RFID		
A	100	CDEF1234567890AB	BCDEF1234567890A	2	RFID		
A	100	DEF1234567890ABC	CDEF1234567890AB	2	RFID		
A	100	EF1234567890ABCD		0	RFID	ShipNbr0002	2006-02-13

Figure 2 Microsoft Excel Template Example

6.2.4 Flat file

The File layout is available from the AIA web site referenced in section 6.1 of this guideline. The Flat File format is identical to the Excel format, each spreadsheet equates to a Record Number. The only mandatory record numbers are the Header and Trailer. All the other record numbers are used as-required. If a record number is used, then the data elements on that record number must be supplied according to the requirements outlined in the AIA RFID Data Element Dictionary. Data element fields must be separated by the “^” (Hex 5E) character. Each line of data must end with a carriage return and line feed (Hex. 0D0A). The file name must have an extension of “txt”. Data loaded into a flat file is not validated until the file is sent to the prime, so reviewing the data for correctness before sending is important. After the file is populated it must be sent to the prime using one of the agreed upon data exchange methods.

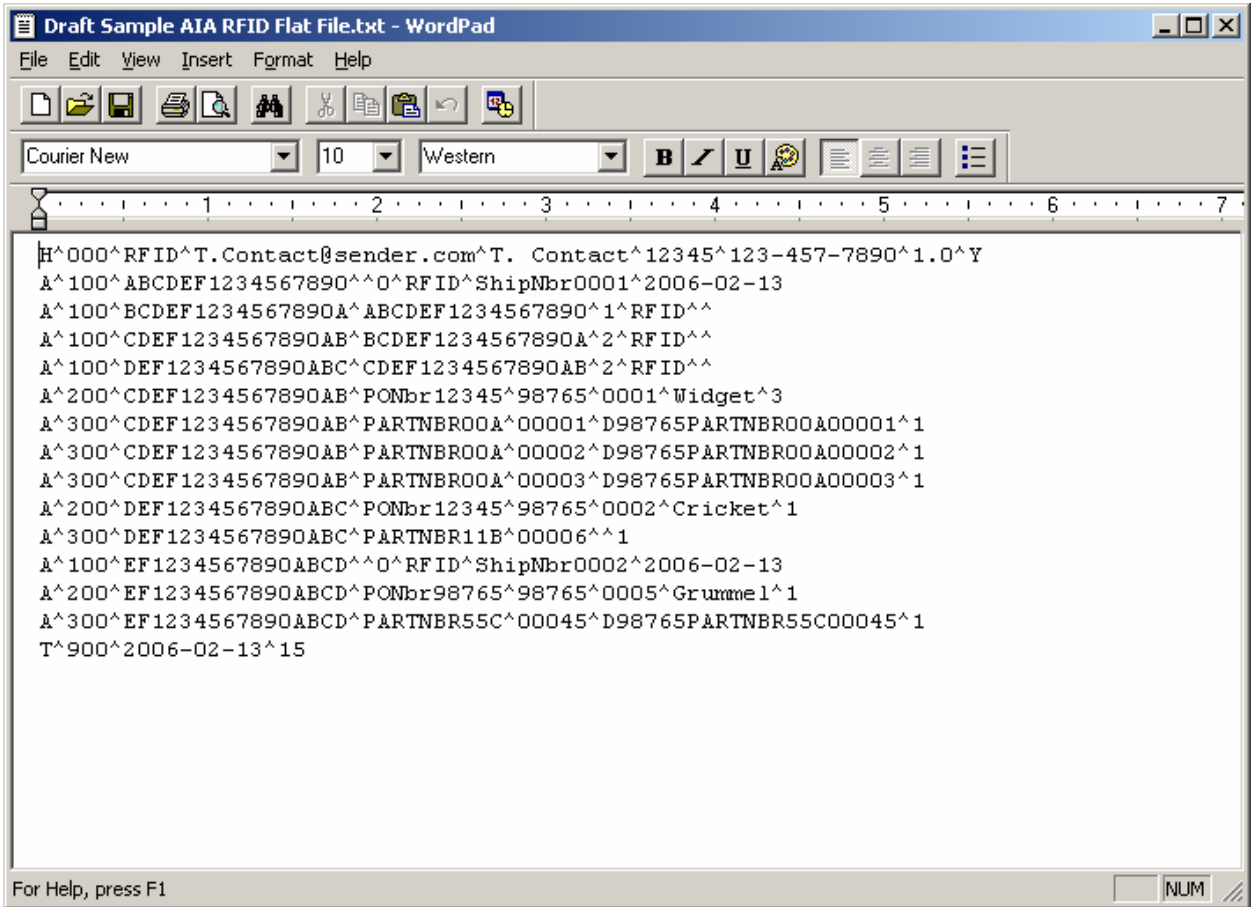
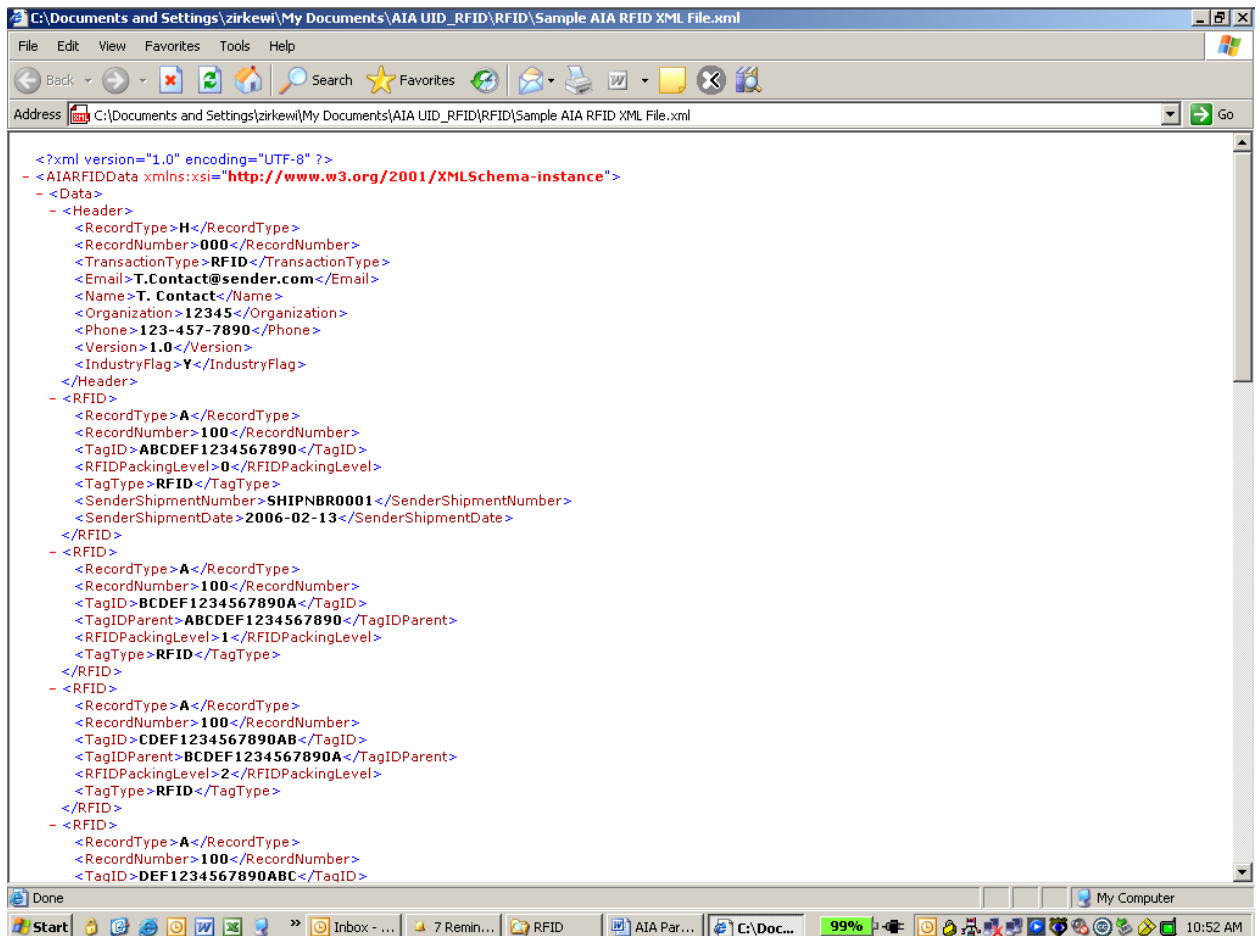


Figure 3 Flat File Template Example

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6.2.5 XML Schema

The XML Schema is identical in structure to both the Excel template and Flat File format. The only mandatory record tag names are the Header and Trailer. All the other record tag names are used as-required. If a record tag name is used then the data elements on that record type must be supplied according to the requirements outlined in the AIA RFID Data Element Dictionary. Data elements must be provided in the sequence they are listed in the schema but unused data elements can be dropped. If you validate the XML file against the XML schema before sending a syntax check will be performed which will confirm that you data satisfies all the data element rules. The XML file must then be sent to the prime using one of the agreed upon data exchange methods.



```
<?xml version="1.0" encoding="UTF-8" ?>
- <AIA RFID Data xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
- <Data>
- <Header>
  <RecordType>H</RecordType>
  <RecordNumber>000</RecordNumber>
  <TransactionType>RFID</TransactionType>
  <Email>T.Contact@sender.com</Email>
  <Name>T. Contact</Name>
  <Organization>12345</Organization>
  <Phone>123-457-7890</Phone>
  <Version>1.0</Version>
  <IndustryFlag>Y</IndustryFlag>
</Header>
- <RFID>
  <RecordType>A</RecordType>
  <RecordNumber>100</RecordNumber>
  <TagID>ABCDEF1234567890</TagID>
  <RFIDPackingLevel>0</RFIDPackingLevel>
  <TagType>RFID</TagType>
  <SenderShipmentNumber>SHIPNBR0001</SenderShipmentNumber>
  <SenderShipmentDate>2006-02-13</SenderShipmentDate>
</RFID>
- <RFID>
  <RecordType>A</RecordType>
  <RecordNumber>100</RecordNumber>
  <TagID>BCDEF1234567890A</TagID>
  <TagIDParent>ABCDEF1234567890</TagIDParent>
  <RFIDPackingLevel>1</RFIDPackingLevel>
  <TagType>RFID</TagType>
</RFID>
- <RFID>
  <RecordType>A</RecordType>
  <RecordNumber>100</RecordNumber>
  <TagID>CDEF1234567890AB</TagID>
  <TagIDParent>BCDEF1234567890A</TagIDParent>
  <RFIDPackingLevel>2</RFIDPackingLevel>
  <TagType>RFID</TagType>
</RFID>
- <RFID>
  <RecordType>A</RecordType>
  <RecordNumber>100</RecordNumber>
  <TagID>DEF1234567890ABC</TagID>
```

Figure 4 XML Schema Example

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6.2.6 ANSI X12

The ANSI X12 solutions requires the use of the AIA 856 Ship Notice / Manifest Version 005 – Release 010 Implementation Convention or higher. Data must be provided in the sequence they are listed in the AIA 856 Ship Notice / Manifest Version 005 – Release 010 Implementation Convention. The X12 file must then be sent to the prime using one of the agreed upon data exchange methods. The sample below is a subset of one that exists in the AIA 856 Ship Notice / Manifest Version 005 – Release 010 Implementation Convention and is not similar to the others in this document. Review the AIA 856 Ship Notice / Manifest Version 005 – Release 010 Implementation Convention for a more complete understanding of this example,

```
BSN*00*SHP00001*0935*0002^
DTM*017*19991101^
HL*01**S*1^
TD5***SR^
N1*ST*ABC Aerospace^
N2*Material Div*Rec. Bldg #1^
N3*11911 NE First*P0 BOX 3707^
N4*Seattle*WA*98124-2207*US^
HL*02*01*0*1^
PRF*1BE0001^
REF*OR*18700^
REF*IV*718722^
REF*PK*7KB010^
REF*P4*410A^
REF*URL*https://ABC.com/barcd.html^
HL*03*02*I*0^
LIN*100*MG*221A00125A^
SN1**2*EA^
SLN*100.01**I*1*EA****SN*S221-00680^
SLN*100.02**I*1*EA****SN*S221-00681^
P04*2*2*EX*BOX*G*100***IN*60*36*12*CT*1^
HL*04*03*D*1^
SLN*1**0*1*EA*5000**KF*UID2*MF*11111*MG*221A00125*XZ*D*B8*B52101*VU*22222*DS*D^
REF*U3*S221-00680*D11111221A00125S221-00680^
REF*U3*S221-00681*D11111221A00125S221-00681^
HL*05*04*J*0^
SLN*1**0*1*EA*5000**MG*221A00125A^
DTM*007*19990901^
HL*06*01*P*1^
REF*JH**C3789AB75600000D^
HL*07*06*P^
REF*JH**C3789AB756000001^
REF*U3*D11111221A00125S221-00680^
SDQ*ZZ**100*1^
HL*08*06*P^
REF*JH**C3789AB756000002^
REF*U3*D11111221A00125S221-00681^
SDQ*ZZ**100*1^
HL*09*06*P^
REF*JH**C3789AB756000003^
CTT*1^
SE*43*0001^
```

Figure 5 ANSI X12 Example

6.3 Data Exchange Methods

Email (SMTP) – Email is the simplest method for exchange files between trading partners. Each prime must provide their partners with an email address to which emails containing one of the data formatted file above must be sent. These simple rules must be followed:

- a. The subject of the email must be: **RFIDDATA**, case does not matter. The prime must be able to identify that the email contains an RFID data file regardless of the case used in the subject. Even **RfiDDaTa** must be identified as being **RFIDDATA**.
- b. Attach the data file to the email. Multiple files can be attached as long as they don't have the same file name. The only file types accepted are: txt, xls, and xml.
- c. Since a computer may automatically process these emails, any embedded messages in the body of the email will be ignored. Messages should be directed to the buyer or whomever else the prime identifies as the contact.

FTP – The FTP utility is included at no cost with most operating systems, such as Windows, Linux, Unix, etc. If the prime supports FTP, as a data transfer method that prime must provide each partner with an ID and password for logging into the prime's FTP server and the IP address to which the files will be sent. We recommend that the prime's FTP server be located outside of their firewall. This eliminates the need for the prime to setup firewall rules and for the partner to supply a fixed IP address to the prime. If however, the prime's FTP server is located behind a firewall (or within a DMZ), the prime will need to know the IP address from which the partner is sending files and that IP address cannot be changed without notifying the prime. The steps in using FTP follow:

- a. The partner must log into the prime's FTP server using the FTP utility on their system with the IP address, ID and password the prime provided.
- b. The RFID data files must be sent to the FTP server using the commands provided with the FTP utility. Multiple files can be uploaded during one logon session. Care must be taken to not repeat the same file name. A second file sent with the same name as a previously sent file will overlay the previous file, if was not already processed by the prime. The only file types accepted are: txt, xls, and xml.
- c. Files are usually transferred almost immediately. After the last file is sent in the session, the user must logoff the prime's FTP server.

Web Portal – A web portal is often unique to a particular prime. Therefore, the instructions for uploading data into that Web Portal must be provided by that prime. We only ask that the data format types match in type and structure those defined in this Guideline.

EDI – Electronic Data Interchange today can be done in a variety of ways but most still require the use of proprietary data translators and data exchange software. Therefore, the instructions for exchanging data via EDI are determined by the software used.

6.4 Prime to Partner Acknowledgement and Syntax Error Reporting Process

For files received via Email.

- a. Upon receipt of an email with a subject of **RFIDDATA** the prime must extract the attachments from the email.
- b. The file will then be checked for simple syntax errors. An email acknowledging receipt of the file and whether it was accepted or rejected must be sent back to the partner using the partner's contact email address provided in the file.

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- c. If the file was rejected, the reason for rejection must be provide back to the partner so they can resend a corrected file.
- d. It is recommended that the above steps be performed within 1 business day of receiving the file.
- e. Additional error reporting may be identified in Section 6.5.

For files received via FTP.

- a. Upon receipt of a file via FTP the prime must move the file from its ftp server and perform similar processing to what was performed for Email above.
- b. The file will then be checked for simple syntax errors. An email acknowledging receipt of the file and whether it was accepted or rejected must be sent back to the partner using the partner's contact email address provided in the file.
- c. If the file was rejected the reason for rejection must be provide back to the partner so they can resend a corrected file.
- d. It is recommended that the above steps be performed within 1 business day of receiving the file.
- e. Additional error reporting may be identified in Section 6.5.

For files uploaded through a Web Portal.

- a. Uploading files through a prime's web portal is very different from the more batch-oriented processes used in the Email and FTP transfers. Acceptance notification and syntax error reporting are performed according to how the application was designed. Each prime is responsible for instructing their partners how and when acceptance notification and syntax error reporting are handled. Some applications may combine the syntax error reporting and data error reporting into the same process.
- b. If the file was rejected, the reason for rejection must be provide back to the partner so they can resend a corrected file.
- c. It is recommended that the above steps be performed within 1 business day of receiving the file.
- d. Additional error reporting may be identified in Section 6.5.

For files uploaded through EDI.

- a. Transactions exchanged via EDI are normally acknowledged by the use of the ANSI X12 997 transactions. Data issues can be reported back to the sender through use of the X12 824 – Application Advice transaction set. The AIA Implementation Convention for the 824 is also available on the AIA web site. Use of the ANSI X12 997 and 824 is the traditional way to notify trading partners of transaction receipt and problems; but we are not limited to using this method for these notifications.
- b. Acceptance notification and syntax error reporting are performed according to how the EDI data exchange trading partner agreement between prime and partner was established. Each prime is responsible for instructing their partners how and when acceptance notification and syntax error reporting are handled. Some applications may combine the syntax error reporting and data error reporting into the same process.
- c. If the file was rejected, the reason for rejection must be provide back to the partner so they can resend a corrected file.
- d. It is recommended that the above steps be performed within 1 business day of receiving the file.
- e. Additional error reporting may be identified in Section 6.5.

6.5 Prime to Partner Data Error Reporting Process

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Data error reporting is different from simple syntax error reporting. Syntax error reporting only validates that all mandatory data elements are present and that the structure of the data provided matches the requirements of data layout or schema. Data error reporting is often performed as a separate process when the data is loaded into prime's database. Types of errors that could be found:

- a. Duplicate RFID already in database.
- b. Date provided falls beyond acceptable date range limits.
- c. Others

Any of these errors will cause the file to be rejected:

- a. If the file was rejected the reason for rejection must be communicated back to the partner, so they can resend a corrected file. An email notification should be sent to the email address supplied in the partner's contact email address field in the data file. If the transaction was sent via EDI this communication may be done using the 824 AIA Application Advice transaction.
- b. It is recommended that the above steps be performed within 1 business day of receiving the file.

6.6 Data Correction Process.

The inadvertent transfer of inaccurate data is always a problem; therefore, a means to correct inaccurate data is necessary. Our team is working with the Industry and the DoD to develop a common approach to handling the correction of data. When a common approach is determined it will be included in a future release of this guideline.

In the meantime it is the partner's responsibility to notify the buying organization of his prime as soon as possible of any anomalies in the transmitted data. The prime must then instruct the partner as to the correction process. For example, the prime may simply be able to manually correct the data in their database or the prime may delete the erroneous data from their database and ask the partner to send correct data.

Each prime must decide on their own what level of audit trail reporting is required to log these corrections. Keep in mind that the Prime and/or the DoD may require documentation at some point to explain by whom, when, and why the correction or deletion was required.

6.7 Data Security.

The nature of the data exchanged to support the RFID effort does not require special security considerations. However, that does not eliminate the need for data security should one of the parties consider the data sensitive. Data security must be addressed between each prime and partner that may result in data security requirements being added to the data exchange process.

7. Disclaimer:

This guideline document only provides guidance for the requirements that have been released as of the date of this document. Future enhancements, updates, and/or corrections will be made to this guideline document as needed.

8. Appendix:

8.1 Use Case 1 - Guidance Document Agreement

Use Case Element	Use Case Element Data
Use Case Title:	Guidance Document Agreement
Use Case User/Actor:	Partner and Prime
Use Case Fit Criterion:	Agreement is sought between prime and partner at the beginning of the RFID flow down process in order to establish proper reporting and data exchange.
Use Case Scenario:	<ul style="list-style-type: none"> • Prime provides partner copy of this guidance document. • Partner reviews guidance document and then notifies prime of their readiness to reach an agreement. • Prime and partner discuss the options to determine the data format, data exchange method and any security requirements that may apply. Timing of the RFID data exchange to the prime must also be agreed upon. Understanding is reached for future data exchange. • Prime drafts agreement according to meeting minutes, business best practice and/or corporate methodology and submits to partner. • Partner concurs with agreement and guidance document becomes bound in RFID data exchange process.
Use Case Notes:	Example can be used to assist buyer and seller with mutual agreement for using the Aerospace Industry Guideline for RFID Data Exchange Between Partner and Prime.

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8.2 Use Case 2 - Simulated Data Exchange

Use Case Element	Use Case Element Data
Use Case Title:	Simulated Data Exchange
Use Case User/Actor:	Partner and Prime
Use Case Fit Criterion:	Partner receives purchase order from prime for items that need RFID with data reporting requirements. The data exchange format and method have already been agreed upon. Agreement indicates that the data exchange format is Excel and the method is Email. No special security on the data exchange is required. The data transfer must occur so that the prime receives the data 2 business days before the shipment is to arrive at the ship-to point.
Use Case Scenario:	<ul style="list-style-type: none"> • Partner tags the package with the RFID and ships. • Partner loads RFID data into a spreadsheet created from the AIA RFID Excel Template. • The spreadsheet containing the data is attached to an email and sent to the email address provided by the prime. The subject of the Email is RFIDDATA. • The Email is sent so that it arrives at least 2 business days before the shipment arrives at the ship-to point identified by the prime in the purchase order. • The prime receives the email, extracts the attachment, and validates the syntax of the data. • If the file passed validation the prime Emails a confirmation to the partner notifying them that the file was "Accepted". If the file fails validation the prime Emails the partner notifying them that the file was "Rejected". The reason(s) for rejection must be provided in the Email. The partner must correct the data and resend the data. • After the prime accepts the file it still may need to be loaded into the prime RFID database. During that load process some other anomaly may occur because of the data causing the data to be rejected. The prime Emails the partner notifying them that specific data failed to load and the data was "Rejected". The reason(s) for rejection must be provided in the Email. The partner must correct the data and resend the data. Example of errors: <ol style="list-style-type: none"> 1. RFID sent was a duplicate to one already in the file. 2. Purchase Order Number of the Buying Entity is invalid • The prime successfully loads the RFID data into their RFID database. • Data exchange process completed. • If the partner determines that some of the data sent is inaccurate the partner must notify the prime's buying organization as soon as possible. Some corrective action will need to be taken.
Use Case Notes:	The same scenario can be followed using the other data exchange formats and methods.

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8.3 Glossary

Most of the Glossary term definitions below are taken from the DoD UID and RFID Program Office websites and may not exactly match the DFAR definitions. The exact DFAR definitions are available in the latest DFAR clauses for part marking and packaging.

ANSI X12	The ANSI (American National Standards Institute) X12 committee specified standards for transaction sets, a data element dictionary, and transmission control. The ANSI X12 standard is used in the USA, Canada and to a degree throughout the world. The X12 transaction sets cover a wide range of industry sectors, including administration, education, finance and government:
EDI	Electronic Data Interchange (EDI) incorporates standard layouts for all business documents. However, there are different standards available. The decision as to which standard to adopt is usually determined by what is already in general use within your business sector and by mutual agreement with your trading partner.
Item	An item is a single hardware article or a single unit formed by a grouping of subassemblies, components, or constituent parts.
Marking	The application of legible numbers, letters, labels, tags, symbols, or colors to ensure proper handling and identification during shipment and storage.
Partner	The business enterprise that is a supplier, subcontractor, or partner to a customer (prime).
Prime	Is the enterprise procuring an item from another enterprise (partner)
RFID	Radio Frequency Identification
UID	Unique Identification; A <u>system</u> of establishing globally ubiquitous unique identifiers within the Department of Defense, which serves to distinguish a discrete entity or relationship from other like and unlike entities or relationships.
UII	<p>A character string, number or sequence of bits assigned to a discrete entity or its associated attribute, which serves to uniquely distinguish it from other like and unlike entities. Each unique identifier has only one occurrence within its defined scope of use. The unique item identifier (UII) is defined in two separate contexts:</p> <p>1. DoD UII Data Set. A UII is a set of data elements marked on an item that is globally unique and unambiguous. For items that are serialized within the enterprise identifier, the UII data set includes the data elements of enterprise identifier and a unique serial number (Construct #1). For items that are serialized within the part, lot or batch number within the enterprise identifier, the UII data set includes the data elements of enterprise identifier, the original part, lot or batch number, and the serial number (Construct #2).</p> <p>2. Use. The generic term, UII, has evolved through usage to mean the concatenated UII as a common data base key without regard to the data set construct being used. In this context, the term "UII" may be used to designate UII Constructs #1 and #2, or the DoD recognized RFID equivalents of Global Individual Asset Identifier (GIAI), Global Returnable Asset Identifier (GRAI), Vehicle Identification Number (VIN), or Electronic Serial Number ((ESN), for cell phones only).</p>

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8.4 External References:

- **Aerospace Industry Association** www.aia-aerospace.org
- **AIA Model Global Trading Partner Agreement**
www.aia-aerospace.org/library/ebusiness/ebusiness.cfm/GTPA_mode_2k4_tmp.doc
- **OSD Defense Procurement and Acquisition Policy / UID** www.acq.osd.mil/dpap/UID
This site contains the DoD data formats and educational material, such as UID 101, to assist you in supplying data directly to the DoD.
- **OSD Radio Frequency Identification** www.acq.osd.mil/log/rfid/index.htm
This site contains the DoD data formats and educational material on RFID to assist users in supplying data directly to the DoD.
- **DOD Wide Area Work Flow** <https://wawf.eb.mil/>
User ID and password is required to access data exchange implementations conventions.

8.5 Inventory of the Guideline Package Toolbox

The complete guideline package is available on the AIA Public Web Site (www.aia-aerospace.org/library/library.cfm).

The complete package contains the following documents:

1. AIA Partner to Prime RFID Data Exchange Guideline.doc
2. AIA RFID Flat File Specification.xls (and AIA RFID Data Element Dictionary)
3. AIA RFID Excel Template.xsd
4. AIA RFID XML Schema.xdr
5. Samples:
 - i. Sample AIA RFID Flat File.txt
 - ii. Sample AIA RFID Excel Spreadsheet.xls
 - iii. Sample of AIA RFID XML File.xml
 - iv. Sample of AIA RFID ANSI X12 File.txt

The AIA 856 Ship Notice / Manifest Version 005 – Release 010 ANSI X12 Implementation Convention is not included in the above package but is available on the AIA available at: (<http://www.aia-aerospace.org/library/ebusiness/NAS20856-4.pdf>)