



MTAPP POSITION PAPER

Small Business Support of Air Force and Department of Defense

Small Business RFID Strategies





September 2006

DoD Supply Chain RFID What Small Businesses Must Know

Why MTAPP covers this topic?

Radio frequency identification (RFID), despite fits and starts, is on track for full deployment throughout the DoD supply chain by 2010. RFID represents a material burden on small business manufacturers who operate within the DoD supply chain.

With RFID, it is not a question of IF, but a question of WHEN your organization should address RFID through:

- Requirements planning
- Best practices outreach
- Updates to value chain assumptions
- Solution provider research
- RFQs for identified requirements

Many MTAPP suppliers have already begun these efforts and have shared insights into the process for successfully meeting customer RFID requirements while limiting your own business impact.

In addition to the DoD and its many individual procurement organizations, commercial OEMs, major prime contractors, and logistics companies have defined their own policies for supplier compliance to RFID requirements. These “flow-down” requirements must be integrated into your planning efforts.

What this report presents?

This report has been written to provide MTAPP Member suppliers with an accurate status report on the efforts and policies of the top organizations that represent the MTAPP customer base. This report does not make the case for RFID. Your customers have made this for us. Instead, this report should prepare you for your RFID preparation activities.

What MTAPP found:

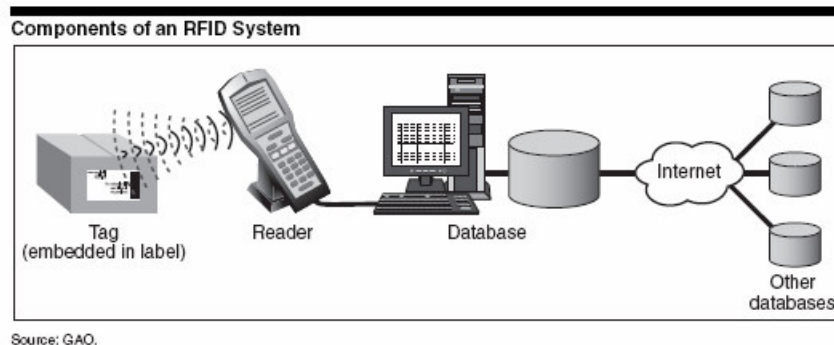
- The DoD has addressed RFID as a “Strategic Imperative” defined both by explicit “Policy Memo’s” from the Office of the Undersecretary of Defense” and by individual procurement organization implementation strategies.
- Initial projection made in 2003 that all suppliers would be RFID equipped by Jan 1, 2005 have not been met.
- Schedules of implementation within the individual organizations will define the time line for your own RFID efforts.
- DoD RFID capability and technology requirements studies/pilot efforts are being completed and contracts for extensive deployment efforts are already being given to RFID vendors.
- Commercial primes (Lockheed, Raytheon, Northrop Grumman) are not waiting for DoD maturity to establish their own policies and begin their own deployment efforts.
- MTAPP customer organizations are varying levels of maturity and requirement leaving the small business manufacturers to determine their own “portfolio” of requirements within their customer base
- RFID is a relatively straight forward technology with a limited down side risk in terms of:
 - Extensive cost and cost overruns
 - Standards non compliance
 - Outdated technology
 - Business disruption

RFID Technology Overview:

Radio frequency identification (RFID) is an automated data capture technology that can be used to electronically identify, track, and store information contained on a tag that is attached to or embedded in an object, such as a product, case, or pallet. RFID represents a technology solution to a pre-existing DoD requirement for unique identification (IUID) data to be applied to all “tangible” purchased items over \$5,000.00 DoD agencies have now begun implementation of RFID technology, which offers new capabilities and efficiencies in operations.

The main technology components of an RFID system are the tag, reader, and database. **(Exhibit 1)**

EXHIBIT 1 RFID Technology



At present, there are two categories of RFID each with a unique requirement both in terms of the supply chain, and more importantly, the impact on small business. These are:

Active RFID –In-transit visibility of consolidated shipments

- 433 Mhz readers & tags
- DoD tag data formats (migrating to MH-10)
- Suppliers rarely obligated to apply tags
- No wide scale commercial use

Passive RFID –Visibility and Automated Processing at box and pallet level

- EPCglobal Class 0 and Class 1 (migrating


-
- Class 1, Gen 2 only) readers & tags
 - EPC tag data formats (includes DoD tag data construct)
 - Suppliers contractually obligated to tag
 - Wide scale commercial implementations

Currently, MTAPP has only been informed of ongoing supplier requirements in the area of Passive RFID.


According to the DoD RFID Website (www.dodrfid.org) RFID will supplement, not supplant bar codes for tracking items. The difference between RFID and bar codes is that RFID does not require line-of-sight. The bar code must be seen by the scanner in order to read it, while an entire shipment of goods labeled with passive RFID tags can be moved through an RFID reader, and all items in the shipment are identified at once. Since RFID tags include unique identifier information, RFID readers can scan tags several times in a short time period but only record the item once. This reduces multiple item data capture errors that can occur with the use of bar codes.

What MTAPP members can expect from a customer in terms of communications on the use of RFID will vary widely. What you must receive, is guidance on the data requirements of the information receivers system. As an example, OC-ALC held an “Item Unique Identification, Depot Maintenance Customer Day” in June 2006. Here they detailed the technology requirements within a RFID definition session as follows: **(Exhibit 2)**

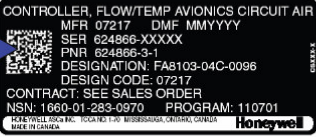
EXHIBIT 2 RFID Tag Example



Definition



Data Matrix →



CONTROLLER, FLOW/TEMP AVIONICS CIRCUIT AIR
 MFR 07217 DMF MMYYYY
 SER 624866-XXXX
 PNR 624866-S-1
 DESIGNATION: FAB103-04C-0096
 DESIGN CODE: 07217
 CONTRACT: SEE SALES ORDER
 NSN: 1660-01-283-0970 PROGRAM: 110701
HONEYWELL ELECTRONICS TECHNOLOGIES MISSISSAUGA, ONTARIO, CANADA **Honeywell**

- **High density 2 dimensional matrix style bar code symbology that can encode up to 3116 characters**
- **DoD mandate; complete marking by 31 Dec 2010**
- **Applicability as follows:**
 - **Government's procurement cost is \$5,000.00 or more**
 - **Serialized sub-assembly or embedded items**
 - **Serially managed, mission essential, controlled inventory**
 - **Program requirements**

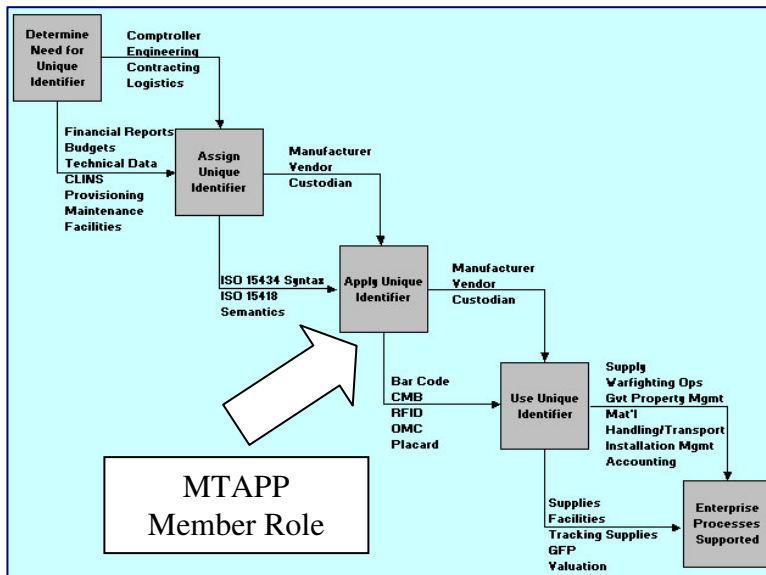
RFID DoD Strategic Objectives and Small Business Role

To fully understand the DoD RFID solution technology requirements, it is important to begin with the desired outcomes from this effort. The DoD views the use of RFID as having a significant benefit within both “Sustainment and Material Readiness” and “Property Management” transformation initiatives. At the most basic level, DoD expects the following benefits from enterprise-wide use of RFID technology:

- Always know what property the DoD owns
- Always be able to account for it
 - Know where it is
 - Know who has custody of it
 - Know who is accountable for it
 - Know how it has been maintained
 - Know what it cost
 - Know it's value
- And use this information to:
 - Enable capability-based readiness

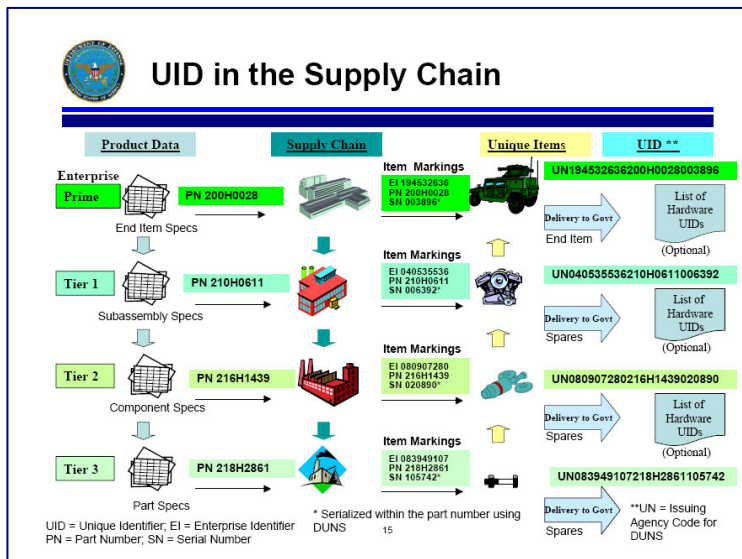
- Support planning, forecasting, and budgeting
- Identify gaps in capabilities
- Improve reliability and warranty management
- Improve processes
- Reduce cycle time

The process driving the flow down of requirements for small business manufacturers (component part supplier) is well underway. Fortunately, MTAPP Members will only need to ensure that their systems infrastructure can handle information requests/tag input from multiple customer requests.



At the supply chain level, RFID requirements will extend across all supply chain tiers. (See Exhibit 3)

EXHIBIT 3



DoD RFID Commitment and Timing Expectations:

The critical thing for small businesses to note at this point is the commitment that the DoD has placed to successfully deploy RFID technology. The data visibility afforded by RFID has been tied directly to critical warfighter concepts such as joint-operability and network-centric warfare. Secretary of the Air Force, Michael Wynne has commented on the subject of knowledge-based warfare that:

“The overriding objective of U.S. defense acquisition is acquiring materiel and systems that enable knowledge-based warfare. Also known as knowledge-enabled warfare, this kind of warfare is the direction we are moving in. We are also moving toward knowledge-enabled logistics and knowledge-enabled business. Any product generated in the next few years that does not move our defense-enterprise posture in this direction is unlikely to reach the field.

A specific example: Since January 2004, we require that all purchases be marked with a unique identifier and that the value of that marked part be recorded in our inventory. This process is a prelude to two future processes: First, starting in July 2004, any DoD-purchased item costing more than \$5,000 will need to have a radio-frequency ID (RFID) tag, or Smart Tag. Second, this marking and recording will enable us to hold an accurate audit. *While we are woefully late with unique identification (UID), we will be on the leading edge for RFID.”*

The final statement by Mr. Wynne should be taken as an indication that while you may not have had to address RFID requirements within your organization as of yet, you can expect that within the next 12-18 months, at least one of your customers will request an RFID planning document.

The latest projected time line for DoD RFID implementation forecasts the realization of the end-to-end RFID enabled supply chain in 2010. (See Exhibit 4)



EXHIBIT 4

Milestone	Responsibility	Q1 FY05	Q2 FY05	Q3 FY05	Q4 FY05	FY06	FY07	FY08	FY09	FY10	FY11
Quality Assurance Plan for UID	DCMA		Jan-05								
OSD UID Budget Guidance to Components	OSD AT&L			Apr-05							
Legacy UID Implementation Plan for DoD Depots	OSD L&MR			May-05							
UID Program Plans (ACAT 1D)	Pgm Mgr			Jun-05							
IOC Legacy Marking Capability at Pilot Organic Depots	Military Departments				Jul-05						
FOC UID CONOPS for DoD Maintenance	OSD L&MR					May 06					
UID Program Plans (All Programs)	Pgm Mgr/Item Mgr					Jan-06					
All GFE Meets UID Policy Requirements	Pgm Mgr/Item Mgr					Jan-06					
All Existing Serialized Assets Entered in UID Registry	Pgm Mgr/Item Mgr						Sep-07				
FOC Legacy Marking Capability at All Organic Depots	Military Departments						Sep-07				
Complete UID Marking of All Legacy Items	Pgm Mgr/Item Mgr										Dec-10

Commercial Prime Contractor RFID Commitment and Timing Expectations:

To date, the majority of activity within the prime contractor community in the areas of RFID has come in lock step with the efforts of the DoD. Boeing’s announcement of DoD compliance in June 2005 demonstrates this close tie:

"RFID is a transformational technology fundamentally enhancing the effectiveness of the Department of Defense supply chain," said Alan Estevez, assistant deputy under secretary of Defense. "We are delighted that our business partners are actively engaged in our efforts to provide the best possible asset visibility to the war fighter."

"While the use of this technology is not yet a contractual requirement, we firmly believe RFID will increase product value and tracking ability," said Steve Georgeritch, Boeing supply chain manager.

"With that in mind, Boeing decided to move ahead with proving the technology and in support of the DoD's direction."

In another market-based signal to the growing strategic importance of RFID technologies to the commercial sector, Lockheed Martin acquired an RFID technology leader Savi, Inc. in May 2005. Then in March 2006, Lockheed Martin announced RFID requirements for JSF/F-35 Low Rate Initial Production (LRIP) items. Lockheed Martin now required that suppliers affix passive RFID tags to all shipping containers containing JSF/F-35 LRIP items.

At present, no major prime or commercial entity has announced a mandated RFID supplier requirement that would expedite the DoD based schedule.

What You Should Do to Prepare:

The first step in preparing for RFID as a small business manufacturer is to determine what the DoD requirement and timeline are for your commodity type. The DoD supplier implementation plan is phased by classes of supply as follows: (MTAPP areas highlighted)

Class	Descriptor
I	Subsistence and gratuitous health and comfort items
II	Clothing, individual equipment, tentage, organizational tool sets
III	Petroleum fuels
IV	Construction materiel
V	Ammunition of all types, bombs, explosives, mines, fuses, detonators, pyrotechnics, missiles, rockets, propellants, and other associated items.
VI	Personal demand items such as snack foods etc
VII	Major end items such as launchers, tanks, mobile machine shops, and vehicles.
VIII	Medical materiel, including repair parts peculiar to medical equipment.
IX	Repair parts & components to include kits, assemblies & subassemblies which are required for maintenance support of all equipment.
IX	Materiel to support non-military programs

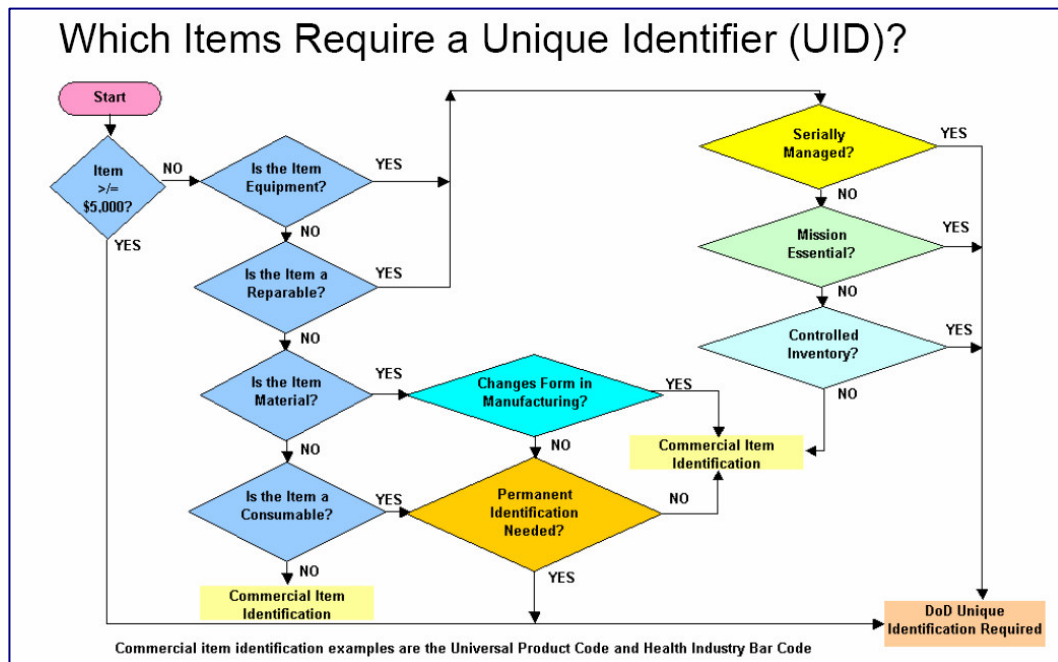
At present, schedules for RFID at the pallet level have been set and are listed at the following web site for many FSCs: <http://www.acq.osd.mil/log/rfid/FSC.htm>

FSCs of particular importance to MTAPP and their dates are as follows:

FSC	Date of Passive RFID Requirement
1560	FY 2005
1620	FY 2005
1680	FY 2005
2840	FY 2005
5995	FY 2005
6150	FY 2005

In addition, the DoD has published the following decision diagram for their own RFID decision making:

EXHIBIT 5



Once you have determined what the DoD requirements will be for your product solutions, the next step is to determine the volume of tags that you would need to prepare on an annual basis. This data should be used to solicit requests for quote from vendors of RFID equipment. You should also determine what your own internal requirements are. If you do not know or are unsure about your requirements, you can use the following resources to help determine these:

- www.rfidjournal.com
- www.dodrfid.org

Companies that have already implemented RFID recommend two basic approaches:

Solution #1: Pre-Programmed DoD RFID Tags: Programmed DoD RFID Tags:

- Recommended for businesses shipping under 5,000 cases Recommended for businesses shipping under 5,000 cases of product (shipping containers) to DoD annually.
- Great solution for contractors that only need passive RFID solution for contractors that only need passive RFID

Benefits:

- Pre Pre-programmed tags are simple
 - Labels are peel and place for shipping container,
 - You can add the label number to your label on a shipping container,
 - Attach label to advanced shipping notice
- Guaranteed Solution
 - Pre-programmed tags are guaranteed DoD compatible through December 2007
 - No software or hardware systems to implement
 - Does require an existing barcode scanner, to scan the RFID label
 - Or you can hand read the RFID number off the label in order to hand-type type the number into DoD's advanced shipping notice system. the number into DoD's advanced shipping notice system.

Cost: \$4,000-\$6,000

Solution#2: DoD On-Demand Printing Solution

- Recommended for businesses shipping over 5,000 cases to DoD annually.
- Suppliers that have multiple CAGE codes.

Benefits:

-
- Cost efficient: By printing your own labels, you can negotiate bulk label pricing and lower your tag costs.
 - You can also more readily use the label for EPC compliance customers.
 - No changes to your existing systems: Simply plug in printer, load labels, enter CAGE code and print.
 - Electronically import RFID codes: RFID codes directly to your advanced shipping notice.
 - Generally, installation, training and technical support are included in set up pricing.

Cost: \$7,000-\$10,000

Conclusion:

The benefits of RFID to the DoD, your customer, have already been established:

- Integrate item data across government and industry asset management systems, resulting in:
 - Improved data quality and global interoperability
 - Rationalization of systems and infrastructure
 - Improve item management and accountability
 - Improve asset visibility and life-cycle management through life cycle traceability

The timing of the flow down of these requirements is uncertain but the speed at which commodity groups are being added has increased. As a small business manufacturer looking to continue to build competitive advantage within your market, RFID represents an opportunity to prove your customer focus and to make the strategic adjustments prior to them being mandated.