

**MIL PAC**  
TECHNOLOGY



## The Basics of RFID Explained

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Mil-Pac Technology

*Serving the Defense Industry since 1982*

Rev 200910-01



# Agenda



- Introduction
- Why RFID
- RFID Mandate
- Basics of RFID
- RFID Applied
- Questions



# Mil-Pac Introduction



- Mil-Pac Technology provides innovative compliance software applications for the defense industry.
- Roots in Mil-Spec Packaging Industry
- Commercial Off-the-Shelf (COTS) Software Developer for over 2 decades
- 2,100+ installs
  - ◆ Prime Contractors
  - ◆ Subcontractors
  - ◆ Packaging Houses



# Mil-Pac Customers

**BAE SYSTEMS**



*GE Aircraft Engines*

**GOODRICH**

**GENERAL DYNAMICS**

**Honeywell**

**LOCKHEED MARTIN**

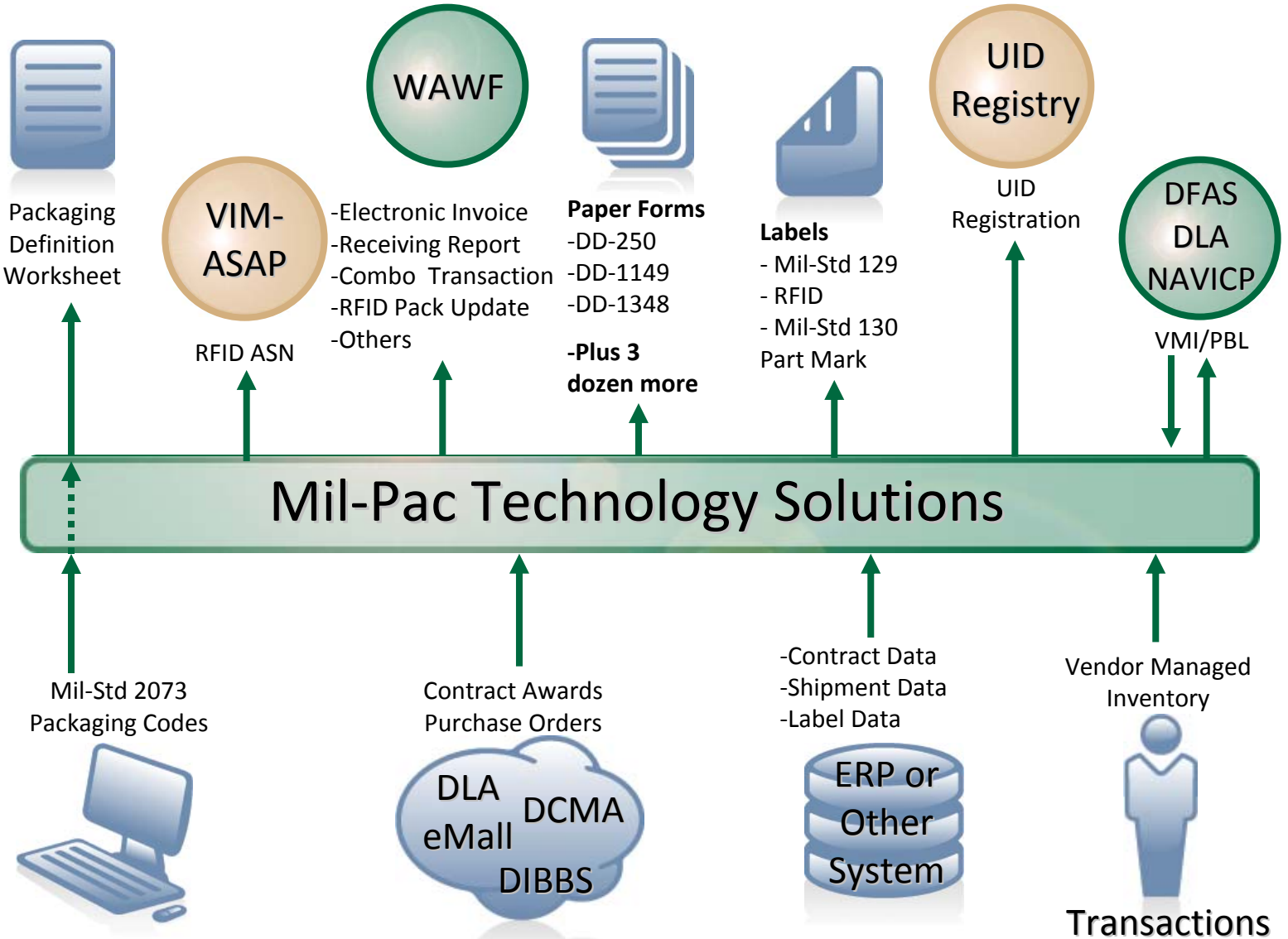


***NORTHROP GRUMMAN***

**Raytheon**



# Mil-Pac Solutions





# Why RFID in DoD?



## DoD Logistics is Transforming

- Transforming to meet the demands of the warfighter
- Transforming to meet the demands of the American tax payer
- Transforming to improve support for National Security





# Why RFID in DoD?



## DoD Logistics is Transforming

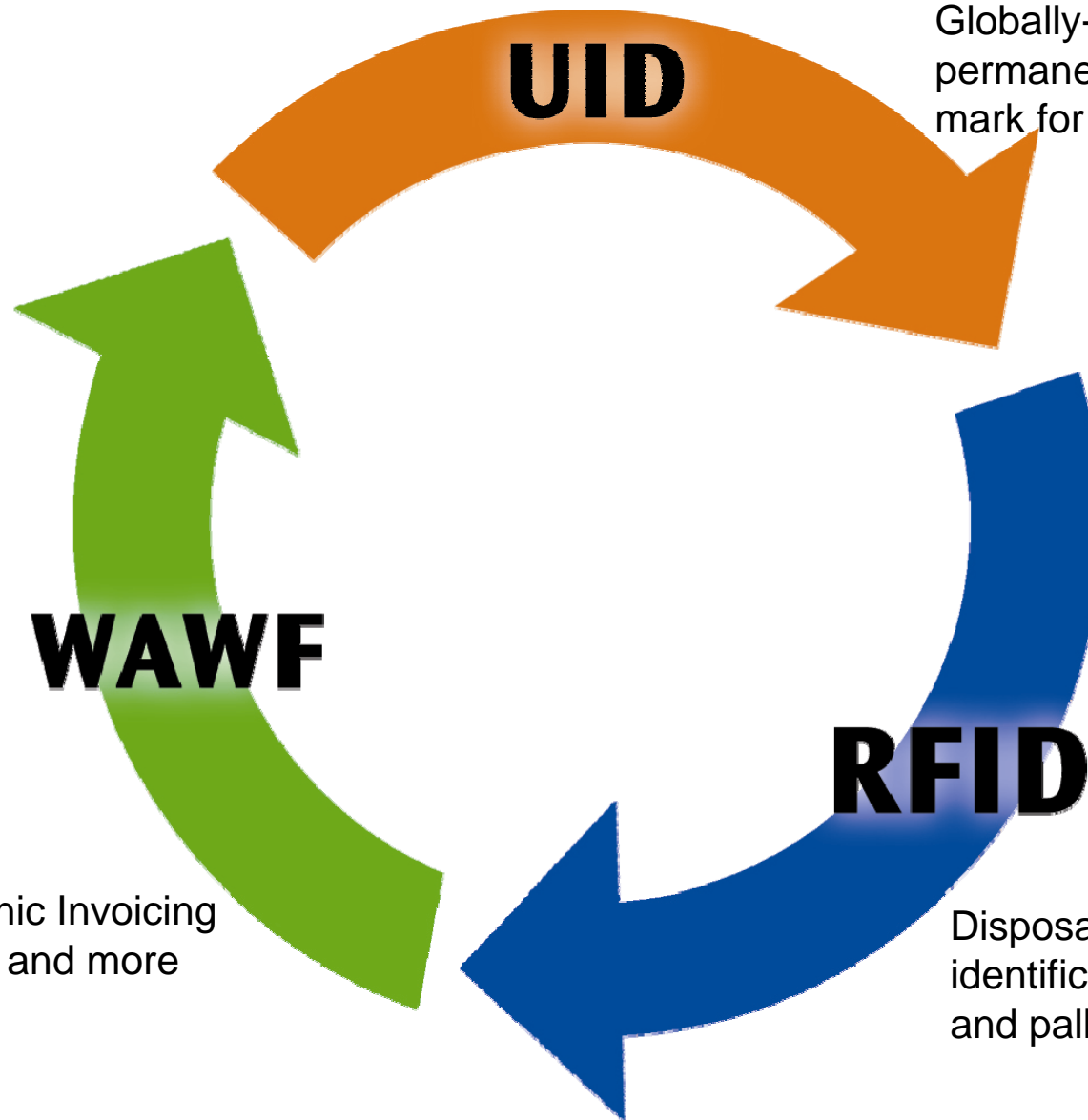
- Defense Logistics Agency (DLA) processed 70% more products/services in 2004 than in 2001
- DLA staffing (military/civilian) at lowest level since 1963

# ***Why we need RFID . . .***





# DoD Mandates



Globally-unique, permanent, serialized mark for a specific item

Electronic Invoicing system and more

Disposable package identification for cases and pallets



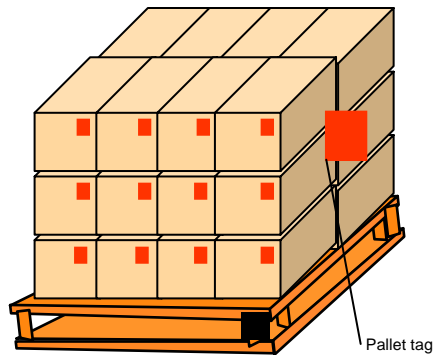
# RFID Mandate

- Official Guidance –
  - ◆ Mil-Std 129\*
  - ◆ Passive RFID Suppliers Guide\*
  - ◆ DoD RFID website\*
- Mandate Fundamentals:
  - ◆ **Mark the shipments**
  - ◆ **Tell WAWF what you marked**

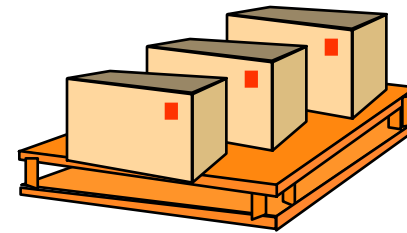
\*[www.milpac.com/resources](http://www.milpac.com/resources)



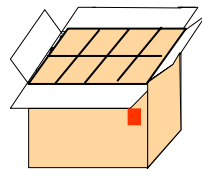
# Level of Tagging



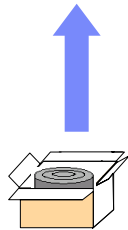
Palletized Unit Load Tag  
YES



Shipping Container  
YES



Exterior Container  
YES



UID Item Unit Pack\*  
NO

\*If the UID Packaging is also an External Container or a Shipping Container, it will have an RFID tag.



# Tag Performance



- **Portal**-Palletized Unit Loads pass through a portal at 10MPH and read at a minimum distance of 3 meters w/ **100% accuracy**
- **Conveyor**-Individual shipping container/external container on a conveyor with a minimum read distance of 1 meter at 600 feet per minute w/ **100% accuracy**



# RFID 101



# What is RFID?

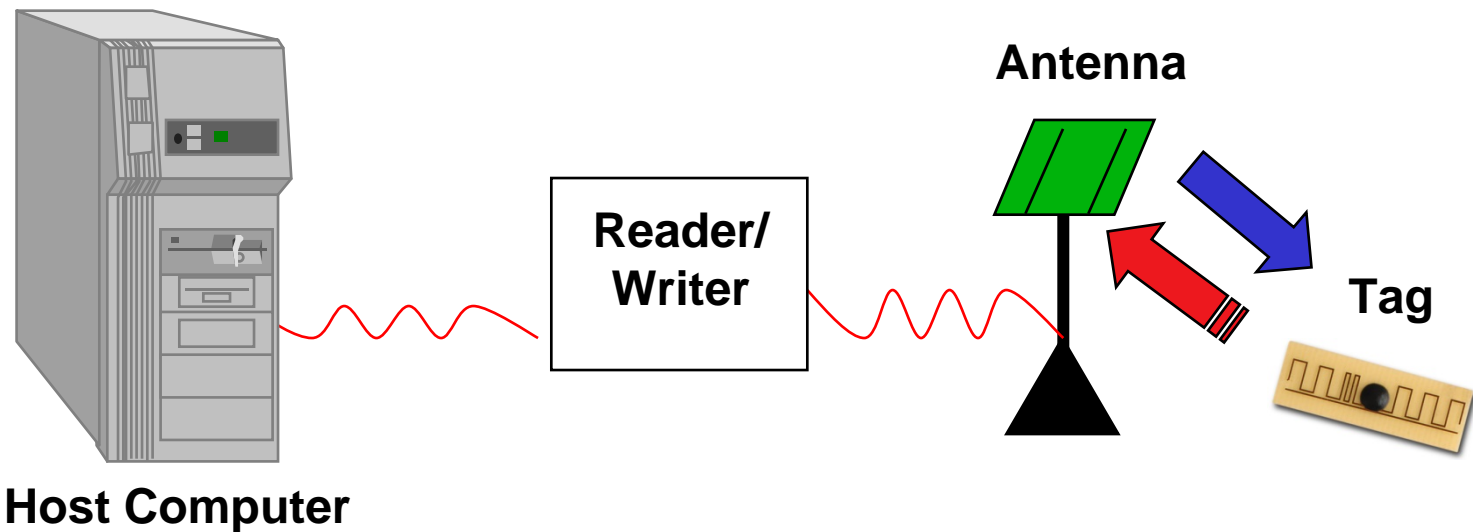
- **RFID** stands for **R**adio **F**requency **I**dentification
- RFID is an ADC (automatic data capture) technology that uses radio-frequency waves to transfer data between a reader and a movable item to identify, categorize, track...
- RFID is **fast, reliable**, and does not require **physical sight or contact** between reader/scanner and the tagged item



# What is RFID?



- Basic System Components
  - ◆ Tag (Transponder)
  - ◆ Reader/Writer (Interrogator/Antenna)
  - ◆ Host Computer(s)





# Tags



- Basic Types:

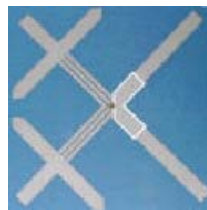
- ◆ Active

- Tag transmits radio signal
- Battery (usually) powered memory, radio & circuitry
- High Read Range (300 feet)



- ◆ Passive

- Tag reflects radio signal from reader
- Reader powered
- Shorter Read Range (4 inches - 15 feet)



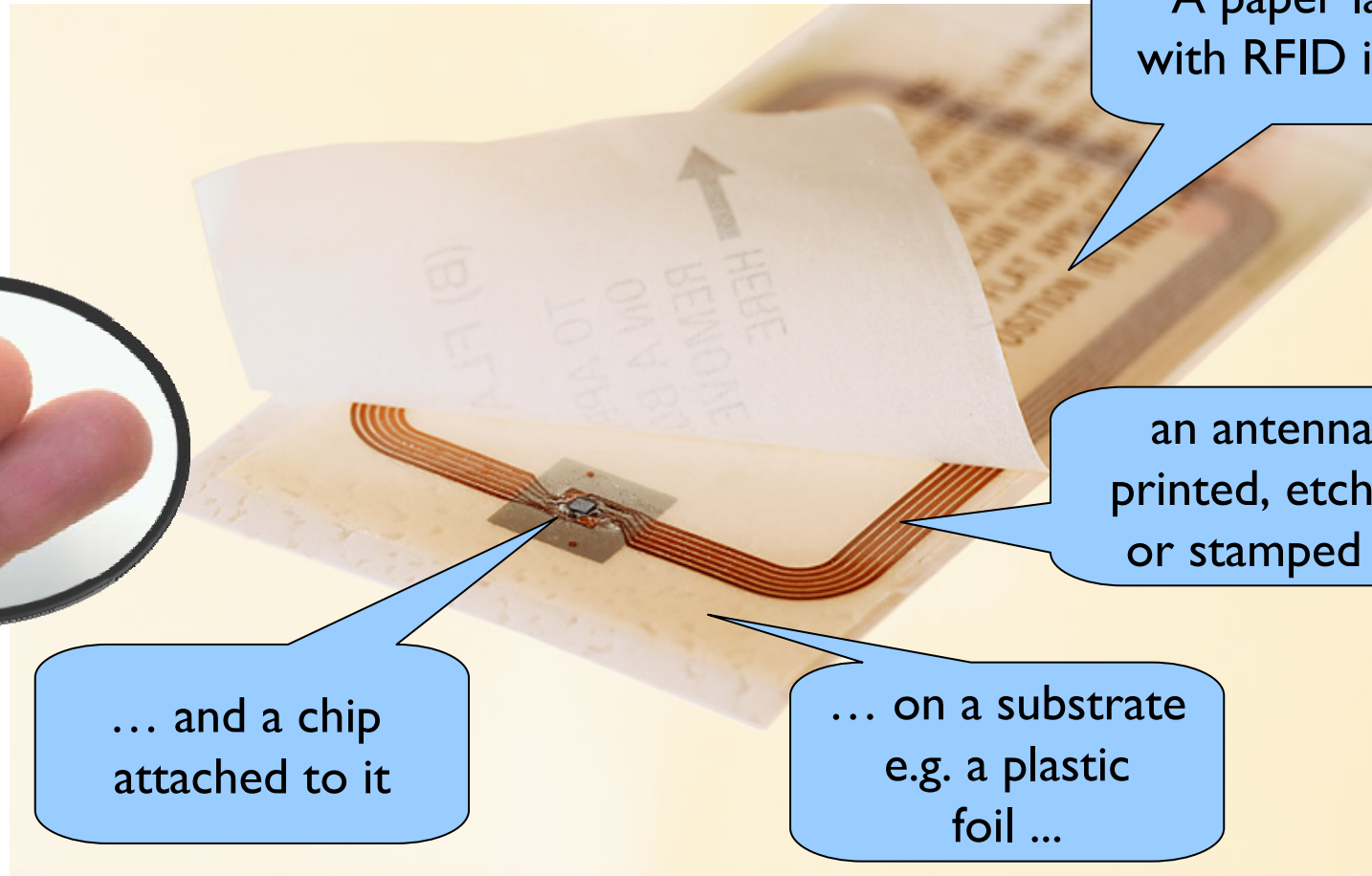


# Tags



- Tags can be read-only or read-write
- Tag memory can be factory or field programmed, partitionable, and optionally permanently locked
- Bytes left unlocked can be rewritten more than 100,000 times

# RFID Enabled Label

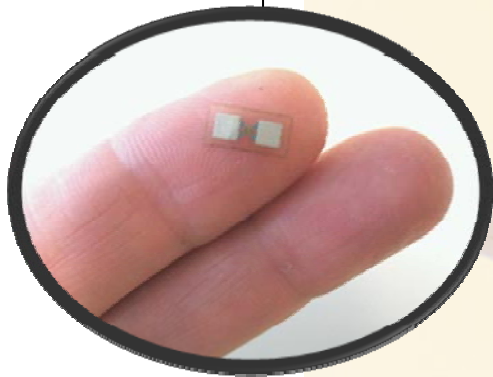


A paper label with RFID inside

an antenna, printed, etched or stamped ...

... on a substrate e.g. a plastic foil ...

... and a chip attached to it





# Tags

- Tags can be attached to almost anything:
  - ◆ Pallets or cases of product
  - ◆ Vehicles
  - ◆ Company assets or personnel
  - ◆ Items such as apparel, luggage, laundry
  - ◆ People, livestock, or pets
  - ◆ High value electronics such as computers, TVs, camcorders





# Readers

- Readers (interrogators) can be at a fixed point such as

- ◆ Entrance/exit
- ◆ Warehouse
- ◆ Conveyor



- RFID Readers can also be tethered or wireless, hand-held or fixed-mounted

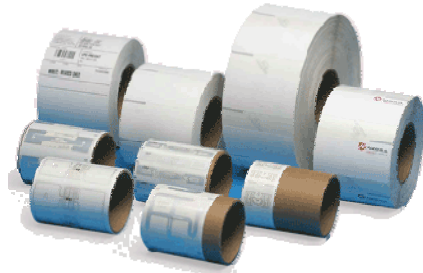




# RFID Applied



# RFID Mark on Containers



VS.



VS.

RFID CASE

CASE	PALLET
	1

2F12031484C4439000000348



2F12031484C4439000000348



# Advance Shipment Notice



- Advance Shipment Notice (ASNs)
  - ◆ EDI
  - ◆ Web-based or user defined format via Wide Area Workflow (WAWF)
- Includes the following data:
  - ◆ Contract information
  - ◆ Product description
  - ◆ RFID Tag Data

Wide Area Workflow (WAWF)

Information and registration at:

<https://wawf.eb.mil/>





# Required Data – RFID & more



- RFID:
  - ◆ Typical data string:  
**2F03031484C443900000001D**
- UID:
  - ◆ Typical data string:  
**D1HLD923X8872311134001**
- WAWF:
  - ◆ Receiving Reports
  - ◆ Electronic Invoicing

**MATERIAL INSPECTION AND RECEIVING REPORT**

1. PROCUREMENT INSTRUMENT ID (CONTRACT) NO. **DIA900-05-X-WAWF** ORDER NO. **0002** 6. INVOICE NO.

2. SHIPMENT NO. **MPT0785** 3. DATE SHIPPED **2005AUG15E** 4. BIL TCH

9. PRIME CONTRACTOR CODE **1HLD9** 10. ADMINISTER **USA WH DIRECTN ATTEN WHITE**

11. SHIPPED FROM **MIL-PAC TECHNOLOGY 406 14TH STREET** CODE **1HLD9** FOB: **S** 12. PAYMENT 1

**WAWF Receiving Report / Invoice**

CONTRACT TYPE:  Goods  Services  RFID Data Included  RFID To Follow  RFID Not Applicable

TCN **X1HLD99103X001XXX**

From **MIL-PAC TECHNOLOGY 123 MAIN STREET RAMONA, CA 92065** **1HLD9** TAC/Type Service/Postage **SURF EXPRS** RFID PALLET **2F02031484C443900000198**

Piece **1 of 1** Weight (lb.) **150** Date Shipped **04/02/09** Project **RDD**

Cube (ft.) **2** **121** FMS Cas

Priority **3** MSL Supply & TCMD Data

EID CAGE **1HLD9** ORIG P/N **WDG-0022335-235A** SER NO **WD-232-00001**

RFID UID-UNIT **CEF1133E31000C35**

**CEF1133E31000C35**

RFID-tagged UID Unit Container Label

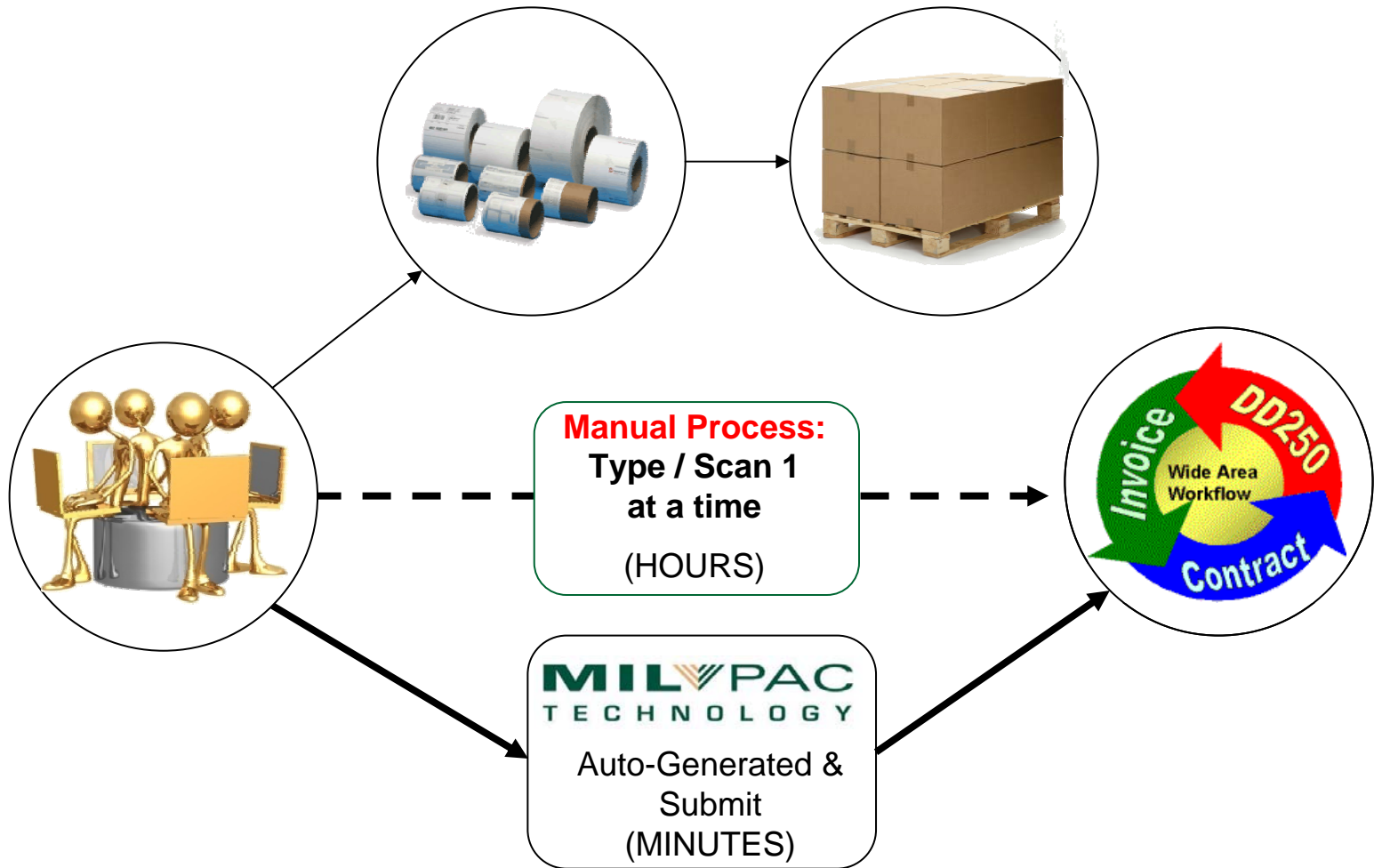
SPORTATION OFFICER  
NEW CUMBERLAND FACILITY  
NORMANDY DRIVE  
CUMBERLAND, PA 17070-5002

Consignee  
TRANSPORTATION OFFICER  
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2001 NORMANDY DRIVE  
NEW CUMBERLAND, PA 17070-5

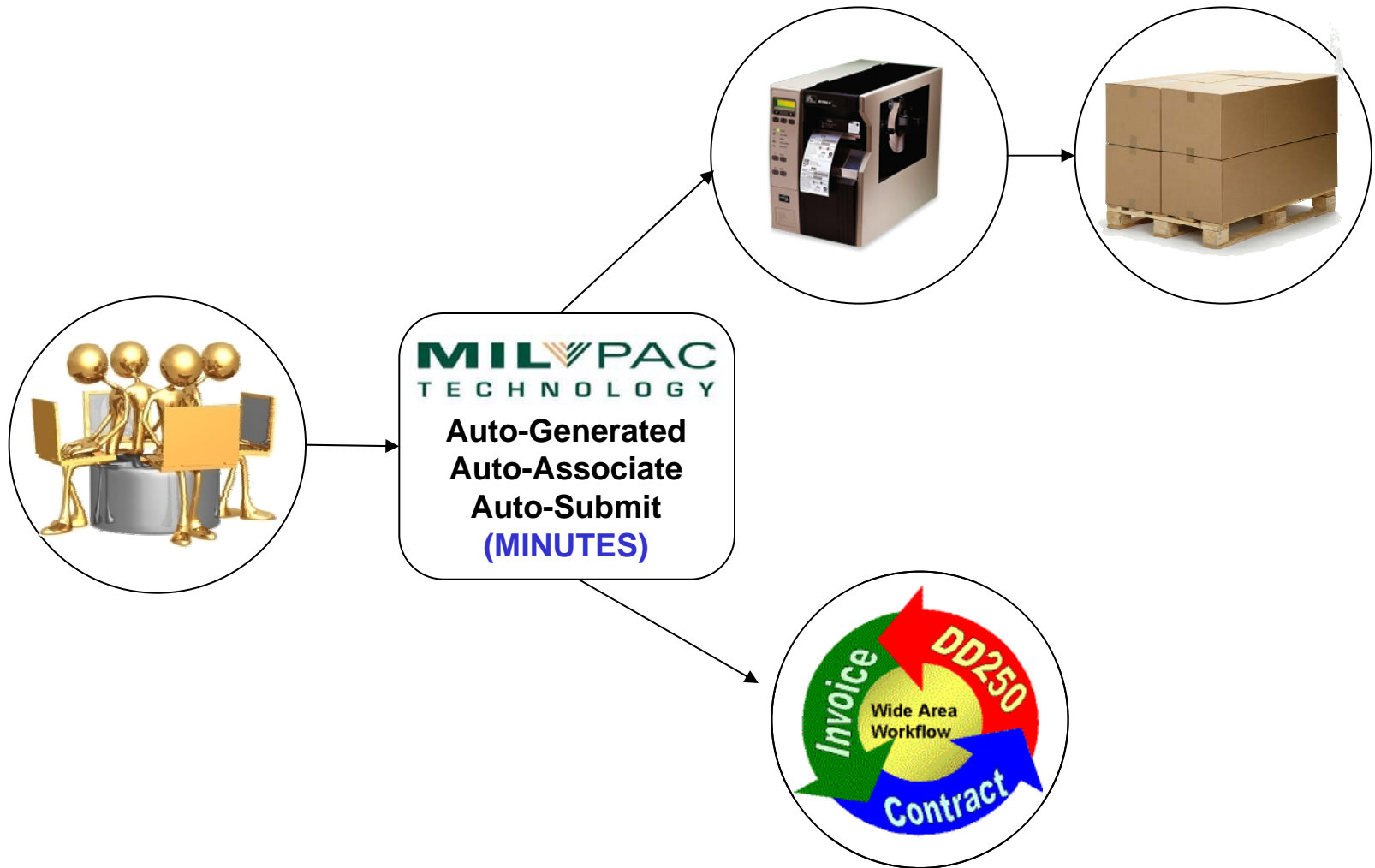




# RFID Process – Pre-Encoded



# RFID Process – Print On Demand





# Resources

- Mil-Pac Technology website
  - ◆ Demos web page ([milpac.com/demos](http://milpac.com/demos))
  - ◆ Resources ([milpac.com/resources.html](http://milpac.com/resources.html))
  - ◆ DoD Supplier Wiki ([www.dod-supply.com](http://www.dod-supply.com))
- Next Mil-Pac Webinar ([milpac.com/events.html](http://milpac.com/events.html))



# Questions?

- Methods for Questions:
  - ◆ Open Control Panel for GoToWebinar
  - ◆ Type questions in chat panel
  
- Contact Info:
  - ◆ 760-788-3030
  - ◆ [info@milpac.com](mailto:info@milpac.com)

