



Making your value chain more visible, secure and sustainable.

Aerospace and Defense Visibility Initiative Executive Summary





What is Visibility

*Visibility is the ability to see **and act** on information*

- **Understanding the business processes that affect the “things” as they move through the supply chain**
- **Providing the ability to answer a broad range of questions**
 - Where is something now?
 - Where was it last week?
 - Is it authentic?
 - Did it deviate along the way?
 - Did it maintain a safe temperature?
 - Did anyone tamper with it?
- **Providing the ability to measure by supply chain performance metrics, such as:**
 - Customer Wait Time
 - Fill rate
 - Perfect Order %
 - Costs (e.g. inventory costs, processing costs, transportation costs)

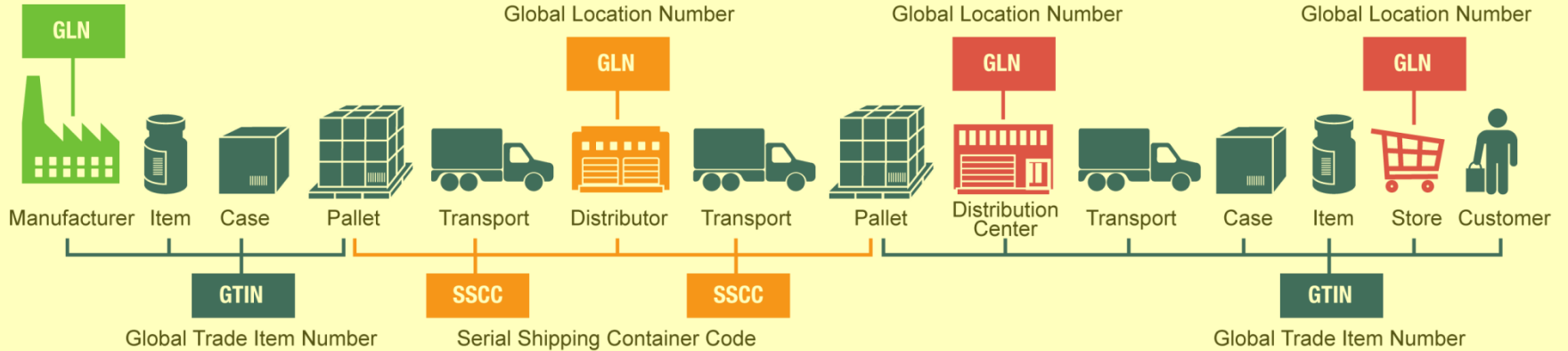




GS1 System of Standards

Identify

Global Location Number



Capture

GS1 System Data Carriers
Barcodes and EPC-enabled RFID tags



Share

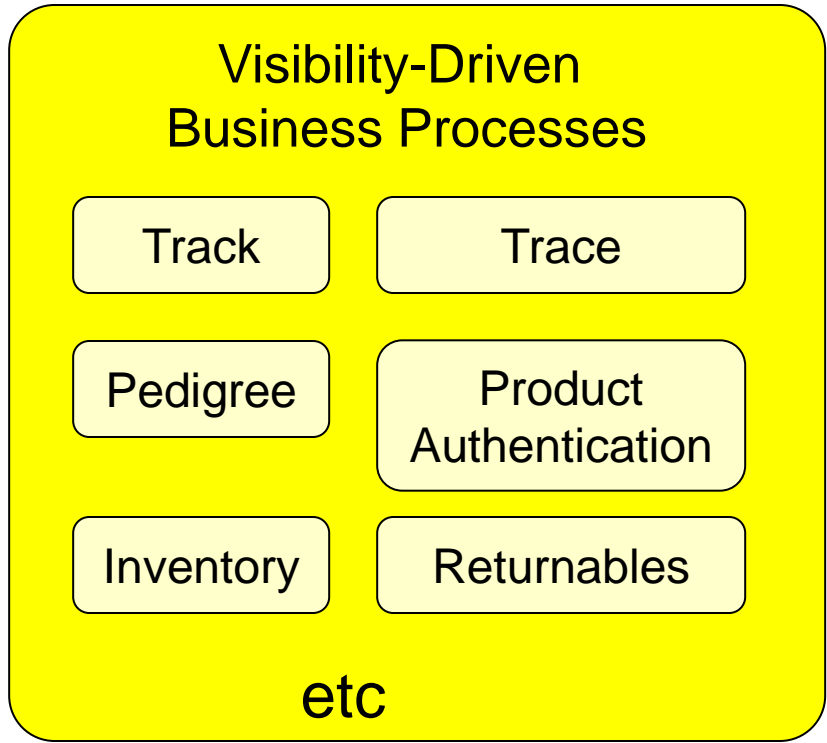
Electronic Commerce Information Flow

Master Data (GDSN) • Transactional Data (eCom) • Physical Event Data (EPCIS)





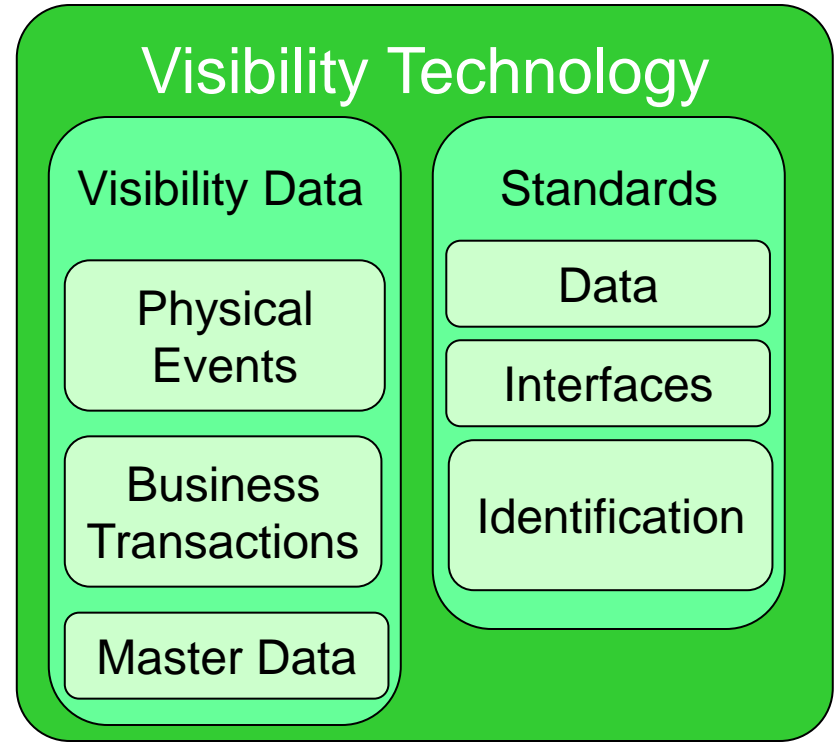
The Visibility Landscape



Business processes that rely upon, or are enhanced by, knowing where things are

**E
N
H
A
N
C
E
D

B
Y**



Technology that provides to business processes knowledge of where things are





Why Open Standards ?

- **Standards ensure that devices interoperate**
 - A reader from vendor A can read a tag from vendor B
- **Standards drive competition and innovation**
 - Vendors compete on performance
- **Standards give end user confidence**
 - A single vendor cannot monopolize the market
- **Standards drive adoption**
 - Multiple vendors delivering interoperable products allows end users to deploy complete solutions
 - Minimizes the requirement to interface with multiple, proprietary systems/solutions
- **Open standards allow for sharing data across a broad spectrum of supply chain participants and industries**





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Standards and Physical Event Data



But Why RFID?



This pallet has at least one “inner core”.

That means that there are cartons inside the pallet with no line of sight to their labels

Verifying all cartons present means you must

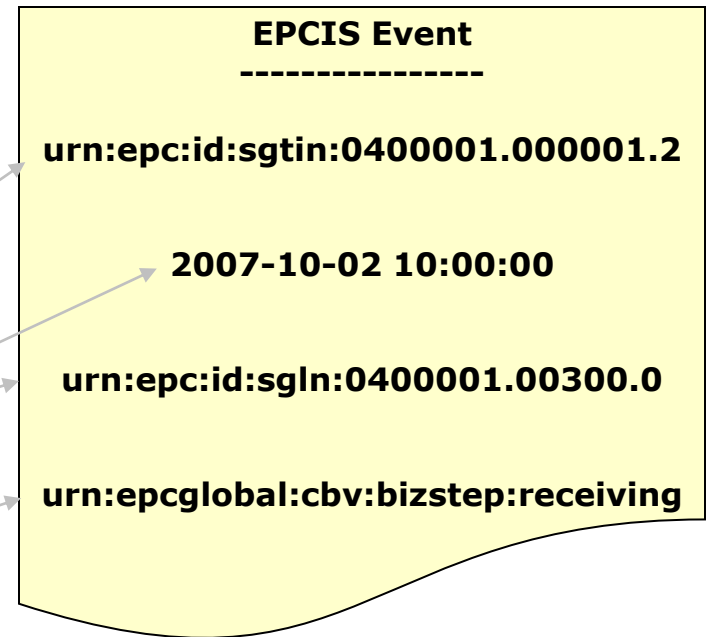
- Drop the pallet
- Break it down
- Line up the label and scan the barcode on each carton
- Rebuild and re-label the pallet

RFID can possibly read all labels as pallet passes the antennae without stopping at all



EPC Information Services (EPCIS)

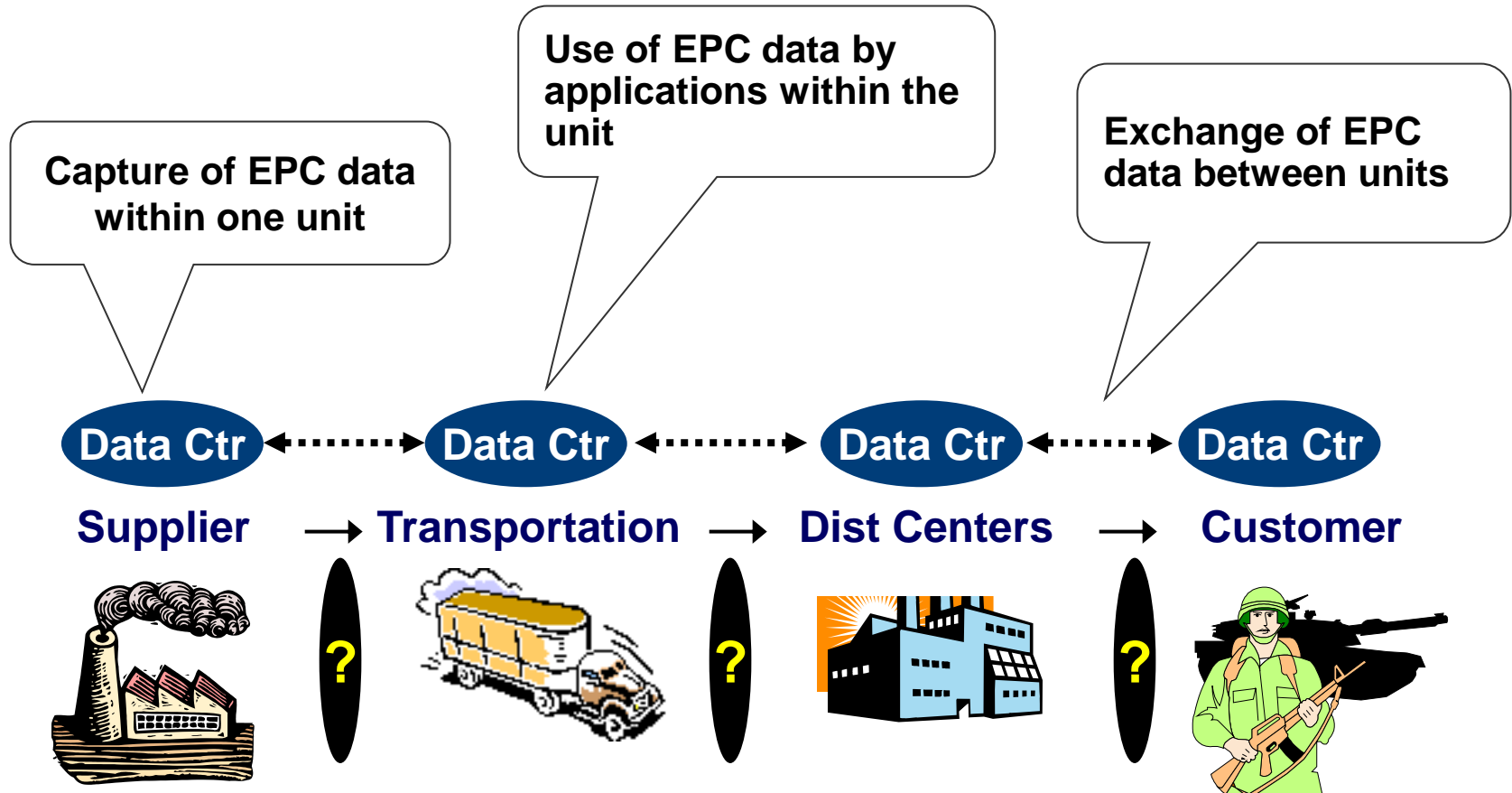
- EPCIS Data consists of data of **physical events** that happened in the real world
- Often, though not necessarily, triggered by reading an RFID tag or bar code
- An event answers 4 questions:
 - **What** physical objects were involved (EPC or other identifier)
 - **When** the event took place (timestamp)
 - **Where** the event took place (location identifier)
 - **Why** what business process step was being carried out





EPCIS Architecture

EPC-based Visibility Data Shared Within and Across Enterprises





Data Sharing Key Considerations

- Each company **keeps its own data**, and chooses when and with whom to share.
 - EPCIS is *not* a single combined “DB in the sky”
- EPCIS is a **point-to-point standard**
 - You have to know where the other EPCIS servers are
- Challenging if three or more parties are involved.
- EPC Discovery Services will provide the answer.





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Aerospace & Defence Visibility Initiative

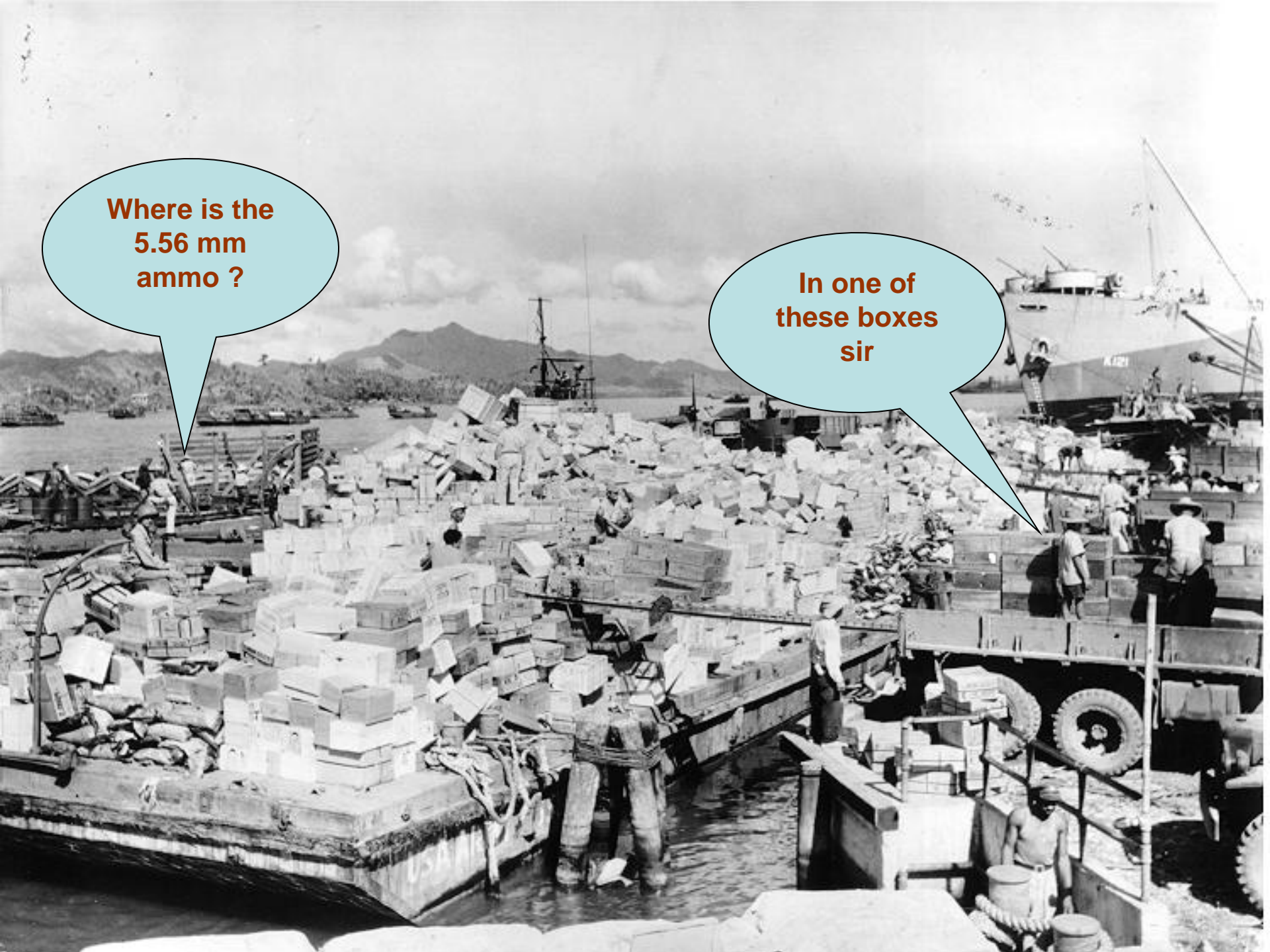




A&D Visibility Initiative – *Why*

- **To provide improved logistics war fighting support ...**
 - at a more efficient cost...
 - by providing increased and timely visibility into end-to-end DoD supply chain operations ...
 - that enables business process improvements ...
 - while maintaining information security...
 - using scalable open user-driven standards





**Where is the
5.56 mm
ammo ?**

**In one of
these boxes
sir**



A&D Visibility Initiative – *Why*

- **A&D Supply Chains have become increasingly complex**
 - Need for more efficient shipping and receiving
 - Industry collaboration on standardised visibility data plays a critical role
- **Defense spending will be significantly reduced in near term**
 - Increased emphasis on cost effectiveness/efficiency for DoD & suppliers
 - Need to leverage existing investments through greater interoperability (e.g. Passive RFID, Active RFID, barcodes, ERP)
 - DoD is required to use commercial off the shelf solutions and standards wherever possible
- **Systems integrators and suppliers want a standardized approach to visibility**
- **The A&D industry needs a common vision and direction.**





A&D Visibility Initiative – *What*

- **Conduct visibility pilot that:**
 - Proves implementation of EPCIS data sharing between supplier and receiving partners in a DoD environment
 - Analyses and identifies opportunities in business processes
 - Validate receiving RFID read matches:
 - Advance Shipping Notice (ASN)
 - Receipt inspection
 - RFID read at shipping
 - Understand processing time between shipments arriving and being processed
 - Identifies additional business opportunities utilizing EPCIS data, (e.g. inventory accuracy, maintenance history)
- **Focuses on part movement**
- **Utilizes passive EPC/RFID tags and readers**
- **Leverages EPCIS repositories on supply and demand sides**





A&D Visibility Initiative - *What*

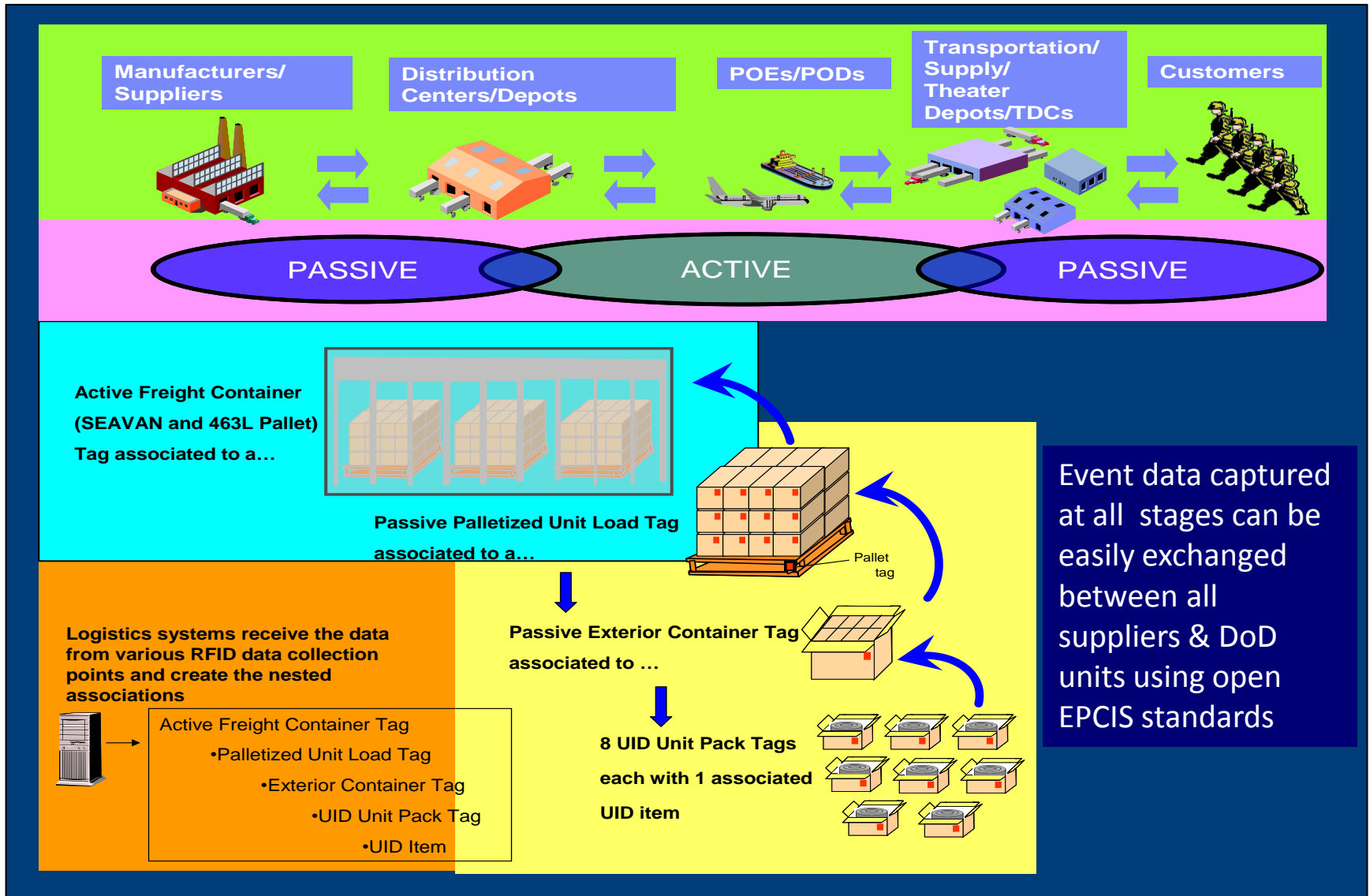
- **Share pilot results with the A&D Industry and other national defence departments**
 - Key findings
 - Benefits
 - ROI
 - Business processes impacted
 - Challenges

- **Future phases to include:**
 - Active Tag integration
 - Barcode integration (UID)





EPC/ RFID The Complete Supply Chain





A&D Visibility Initiative – *How*

- **Scope**

- Agreed pilot scope and participants
- Identified key use cases (e.g. receipts, process dwell times) providing benefits through increased visibility to participants
 - U.S. DoD
 - Systems Integrators
 - A&D Suppliers
- Engage certified Solution Providers, preferably companies with existing installed products
- Execute pilot and publish results





A&D Visibility Initiative – *How*

- **Understand the Data**

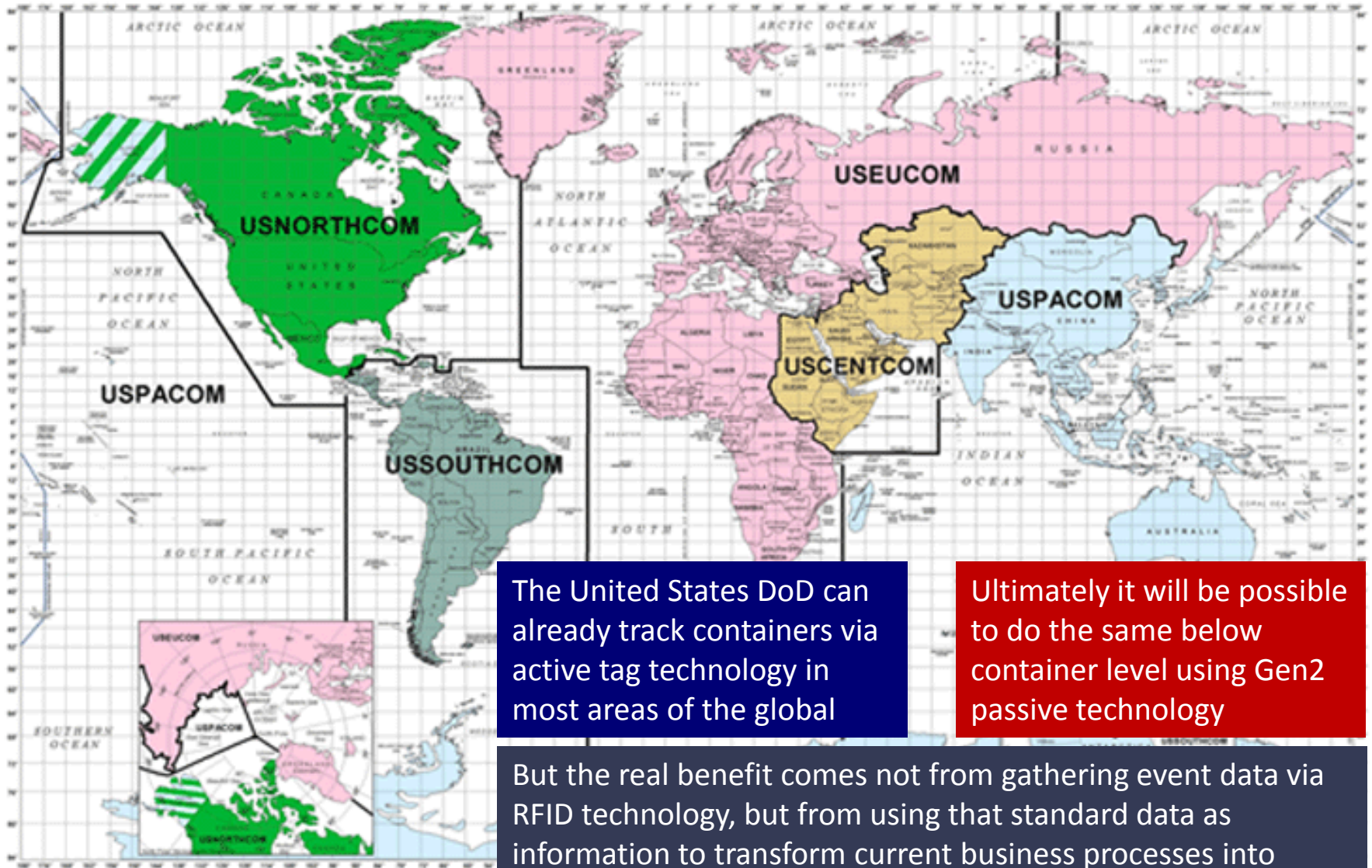
- Identify business processes that can be improved with physical event data
- Understand basic data governance
- What needs to be identified and will it be
 - **WHAT: Objects:** items, cases, pallets, assets
 - **WHERE: Locations:** shipping/receiving docks, ports, in theatre storage, en route
 - **WHEN:** time format (probably Zulu)
 - **WHY: Business Step:** what activities are essential to understanding context of a physical event for a particular process?
 - **MASTER DATA:** how will master data about objects and locations be shared/communicated

This ‘modeling’ activity is essential in understanding the data definition required for capturing good visibility data





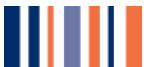
Ultimate Global Visibility



The United States DoD can already track containers via active tag technology in most areas of the global

Ultimately it will be possible to do the same below container level using Gen2 passive technology

But the real benefit comes not from gathering event data via RFID technology, but from using that standard data as information to transform current business processes into more efficient and effective ways to support front line forces





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