



DoD RFID Summit for Industry

6-8 April 2004, Washington D.C., USA

RFID in the Business Process

A faint world map in the background with several circular RFID icons (concentric circles) placed over various geographical locations, including North America, Europe, and Asia.

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Overview

- RFID: linking the world
- UID: identifying the world
- Applications: the power of the system
- Product Integrity: Authentication, Track, and Trace
- The Road Ahead

Radio Frequency Identification



Linking the World



Radio Frequency Identification (RFID)

- RFID...

- ...is an automated identification technology.

- ...is not simply a bar code replacement.

- ...has greater identification capabilities than bar codes.

- .Read through obstacles

- .Read in hostile environments

- ...has greater functional capabilities than bar codes.

- .Read/Write memory possible

- .On-tag sensors possible

- .Active communication possible



RFID: The Copper Bullet

- RFID is an enabling technology.
- RFID is a copper bullet.

Unique Identification



Identifying the World



Unique Identification (UID)

- Unique item identification...
 - ...is required to capture item specific information.
 - ...enables a plethora of applications.
 - ...enables specific asset management
 - ...enables the synchronization of financial flows, information flows, and physical flows.

- ...is mandated by the DoD UID policy.



UID: the Copper Bullet

- UID is an enabling system feature.
- UID is a **copper** bullet.

Applications



The Power of the System



Applications: Getting Things Done

- Applications...

- ...determine what data is collected.

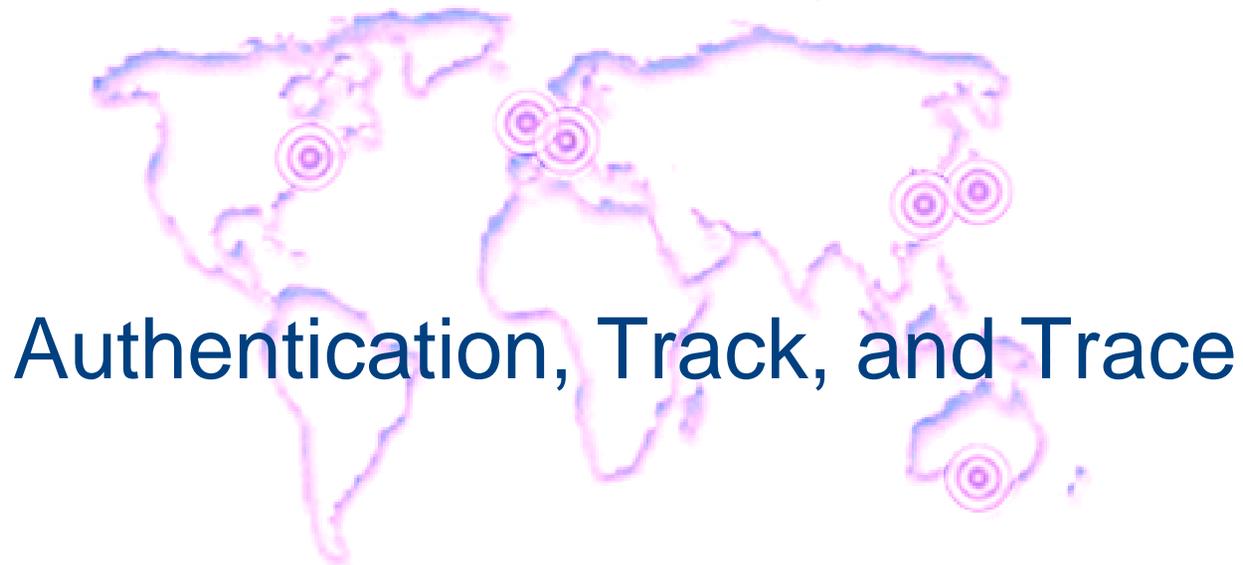
- ...must manage the data collection.

- ...must manage the data collected.

- ...must utilize the data.

- ...yield the benefits of the system.

Product Integrity



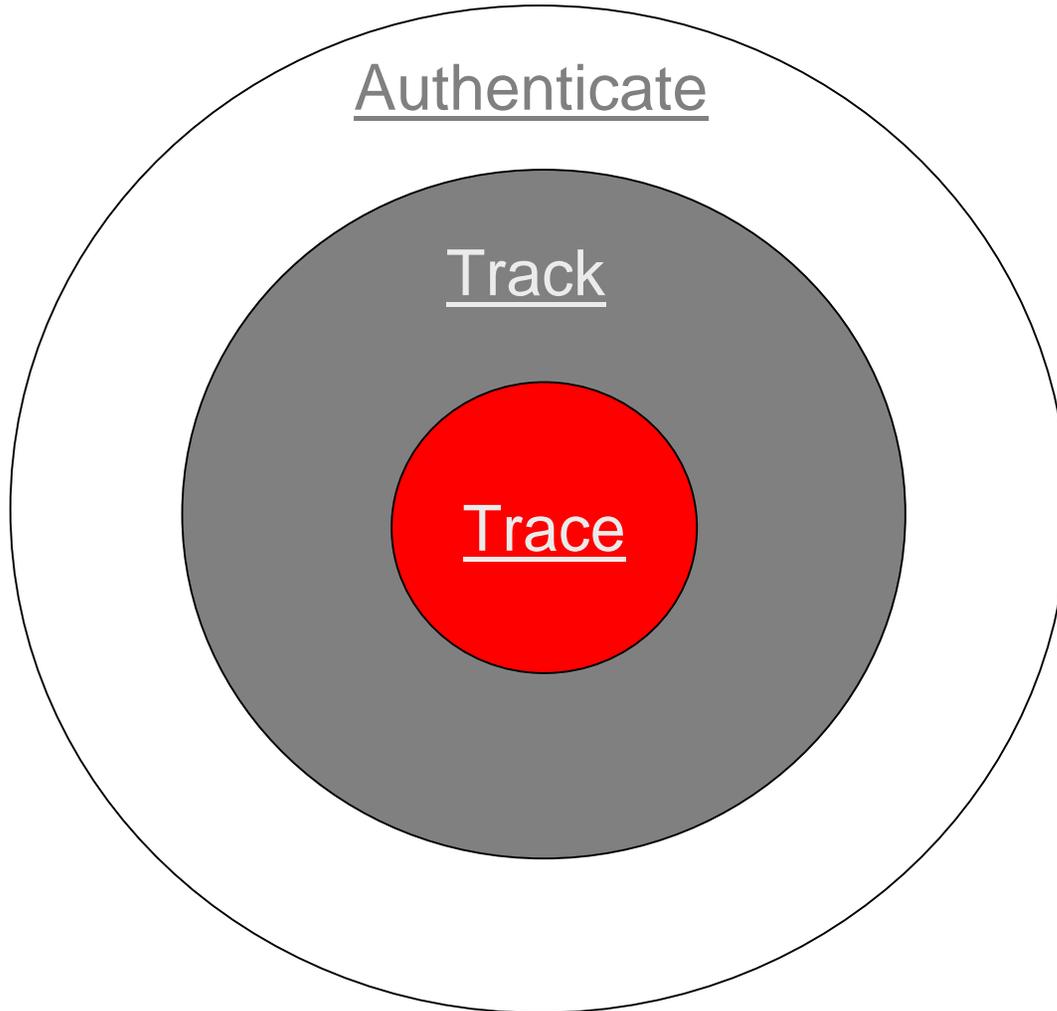


Product Integrity

- False Product
- Tampered Product
 - Adulteration
 - Substitution
 - Re Labeling
- Unacceptable Status of Product
 - Expired
 - Discarded
 - Recalled
 - Poor Quality



Product Integrity

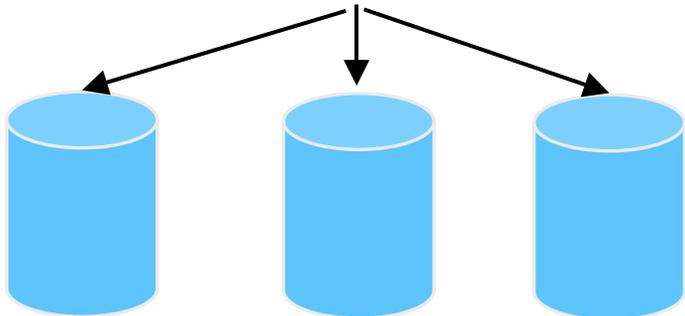


Authenticate

Identity

- Valid identifier

01.0000978.004488.001357008



Manufacturer Wholesaler Retail

Repositories

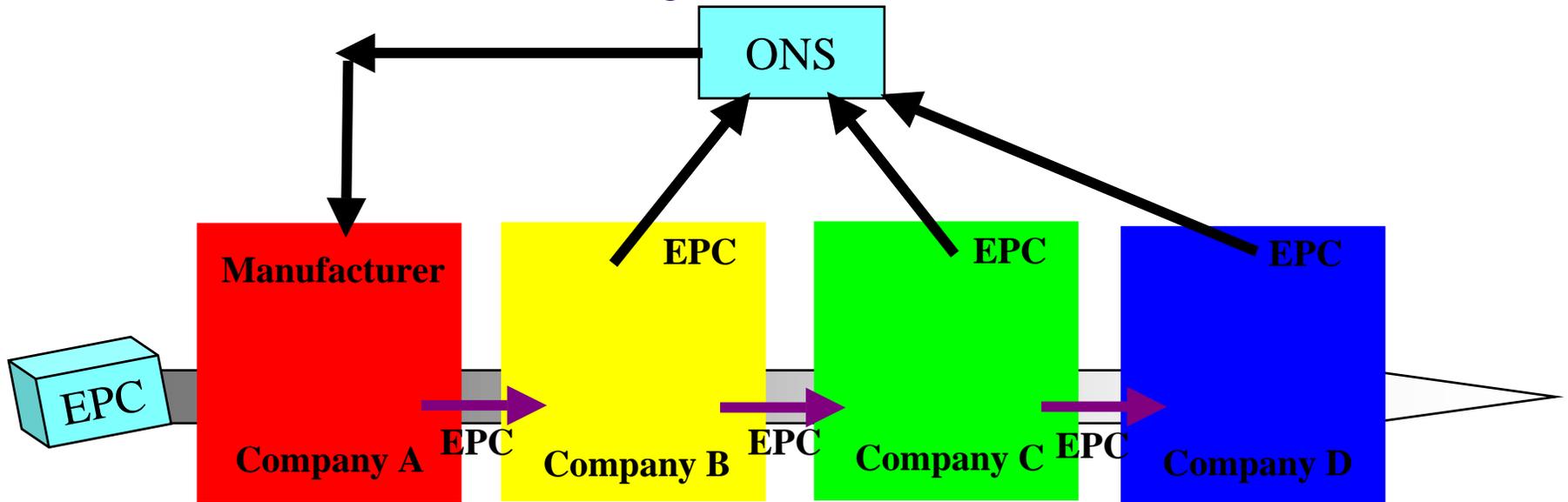
Physical Product

- Watermarks
- Holograms
- Markings
- Colorants



Products shown for illustration purposes only

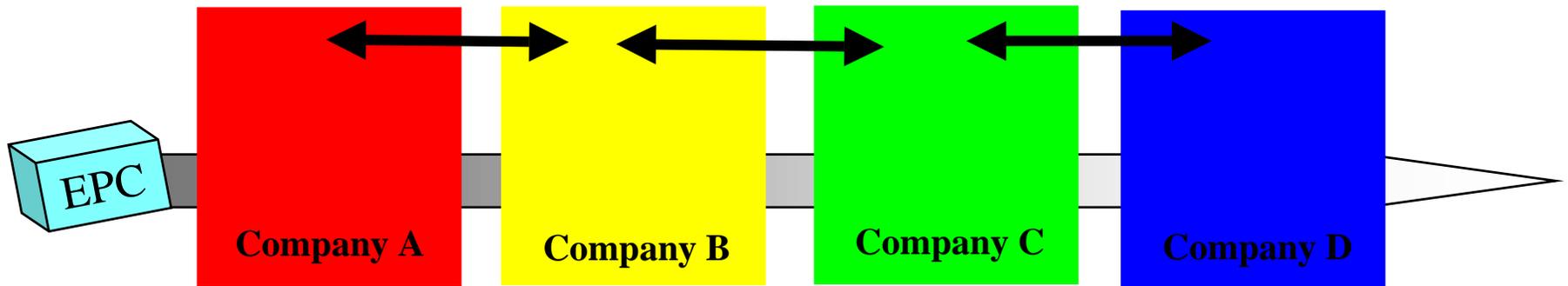
- Maintain control of goods going forward in time
- Shipment & Receiving Verification
 - Pre-Positioning of Information
 - Pre-Processing of Information





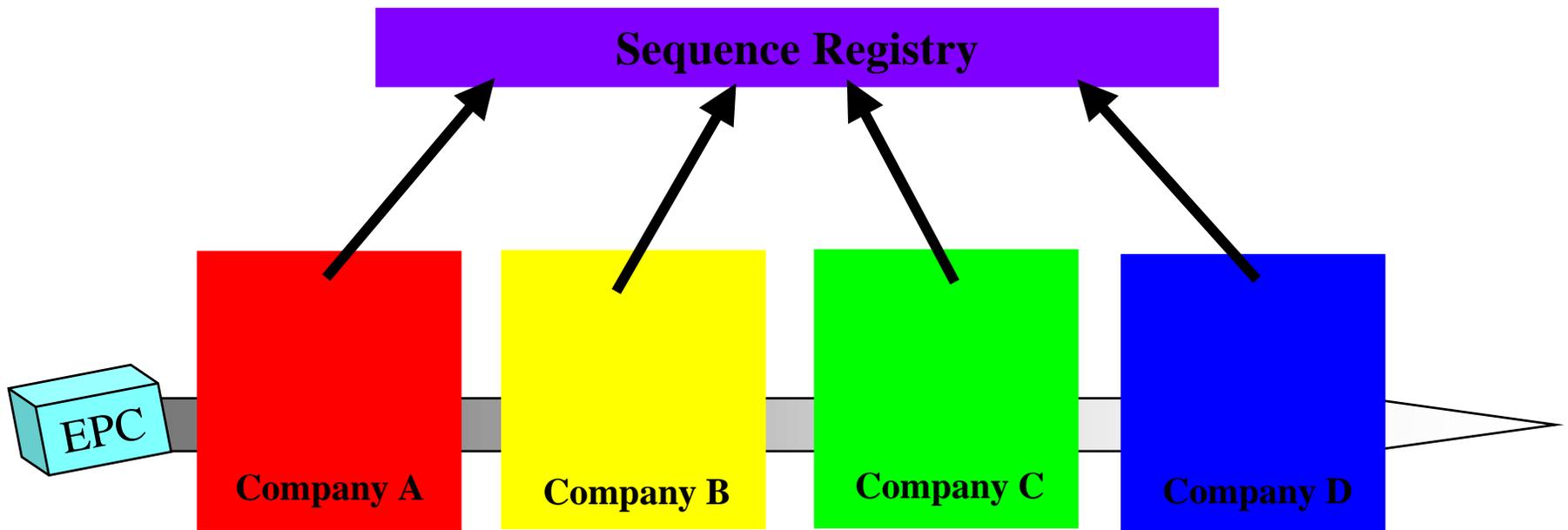
Trace: Daisy Chain

- Building history and an audit trail for a product
Daisy Chain



Trace: Sequence Registry

- Building history and an audit trail for a product
Sequence Registry



The Road Ahead





Problems to Address

- Which frequency is appropriate
 - Impact on product
 - Impact on operating environment
 - Impact on process
- Tag antenna and packaging
- Reader deployment
- Aggregations & Associations
- Compliance to Regulations
- Cold Chain



Deployment Issues

- **RFID use is immature.**
 - Few experts
 - Little large scale deployment experience
- **RFID products are not generalized.**
 - Product specific optimization.
 - Location specific optimization
- **Business Processes need to accommodate RFID**
 - Current design for barcodes or simple human
 - Limitations of RFID must be accommodated



Summary

- RFID is a **copper** bullet.
- UID is a **copper** bullet.
- Unique identification is the key to the benefits.
- Authentication, Track, and Trace are fundamental applications and key to obtaining benefits.
- We have only just begun.



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