



Asset Visibility and the Army Supply Chain



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representing

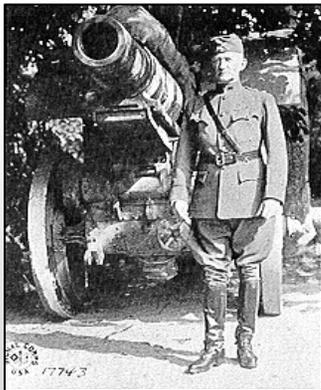
Mr. Tom Edwards

Deputy Chief of Staff HQDA G-4



The Historical Problem:

Asset Visibility and "Inside the Box" Visibility



"...we were put to the mortification of having to borrow transportation from the British and the French to keep men from starving to death. "

BG Edwards, Brigade Commander, 26th Infantry Division, France, 1917



"We found that if we followed instructions, supplies were forthcoming. Not a requisition was sent to the base that was not properly acknowledged, with a statement as to probability of supply. A wire was always received the day before the [container] so that preparations could be made to receive it. Carefully checked lists were always found in the railcars, showing exactly what they contained, and shortages almost never occurred."

Third Army Quartermaster report, France, 1918



"I don't know where it is either. Lets look in this one over here."

Al Barnes, Ad Dammam, Saudi Arabia 1991

Army Asset Visibility Agenda

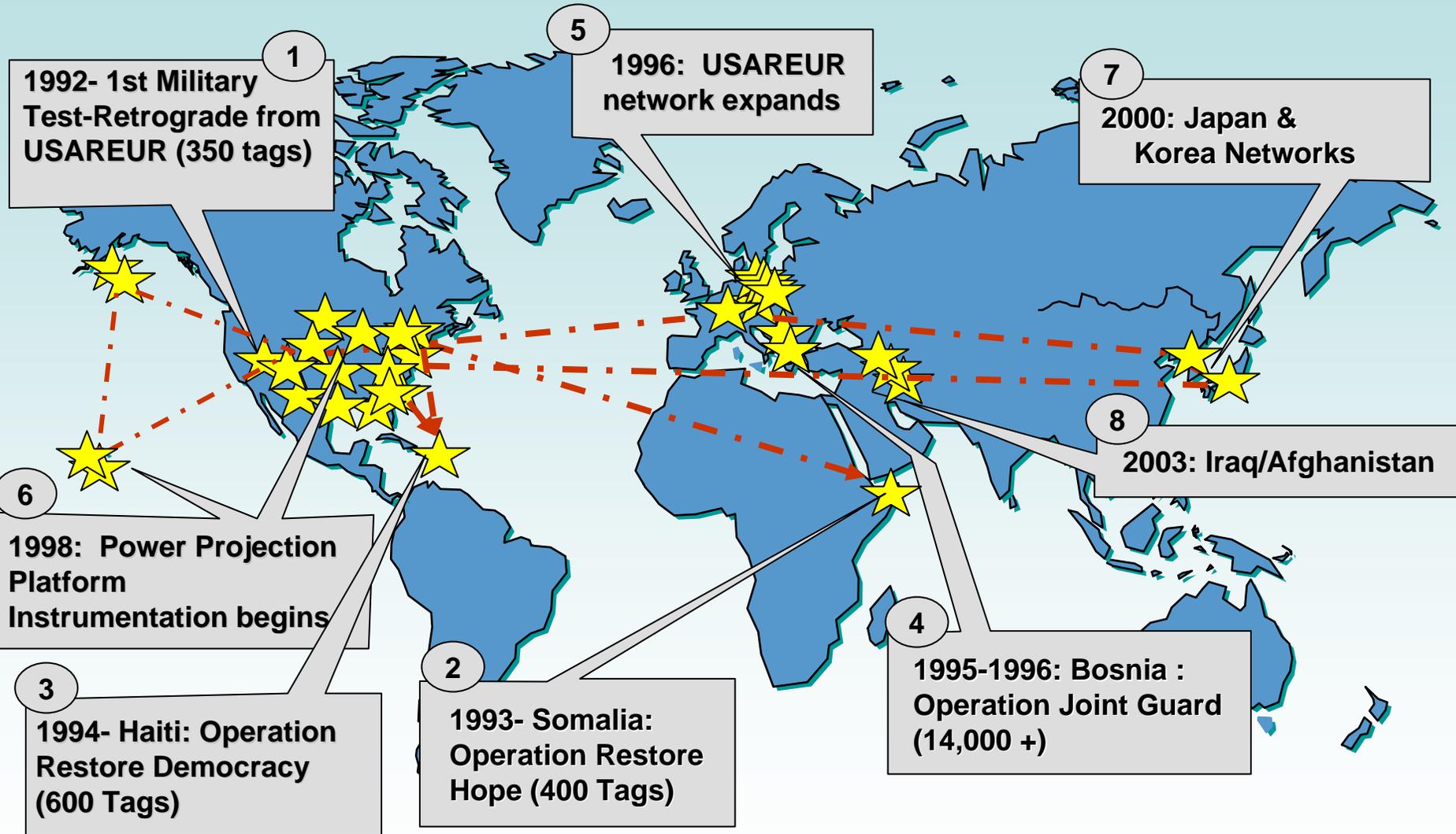
- **The path to today---How many miles to Babylon?**
- **Operational Infrastructure**
- **Integration with Supply Chain Automated Information Systems**
- **All Roads lead to Tikrit: Turning data into information**
- **Whats next? :**
 - MTS + (Movement Tracking System)**
 - Passive RFID in the Supply Chain**
 - Sensor Tags**
 - IUID (Item Unique Identification)**
- **Logistics Command and Control (LOG C2/BCS3)**
- **Conclusion: Why we do what we do...**

Defining Logistics Visibility

“access to logistics processes, resources, and requirements to provide the knowledge necessary to make effective **decisions.**”

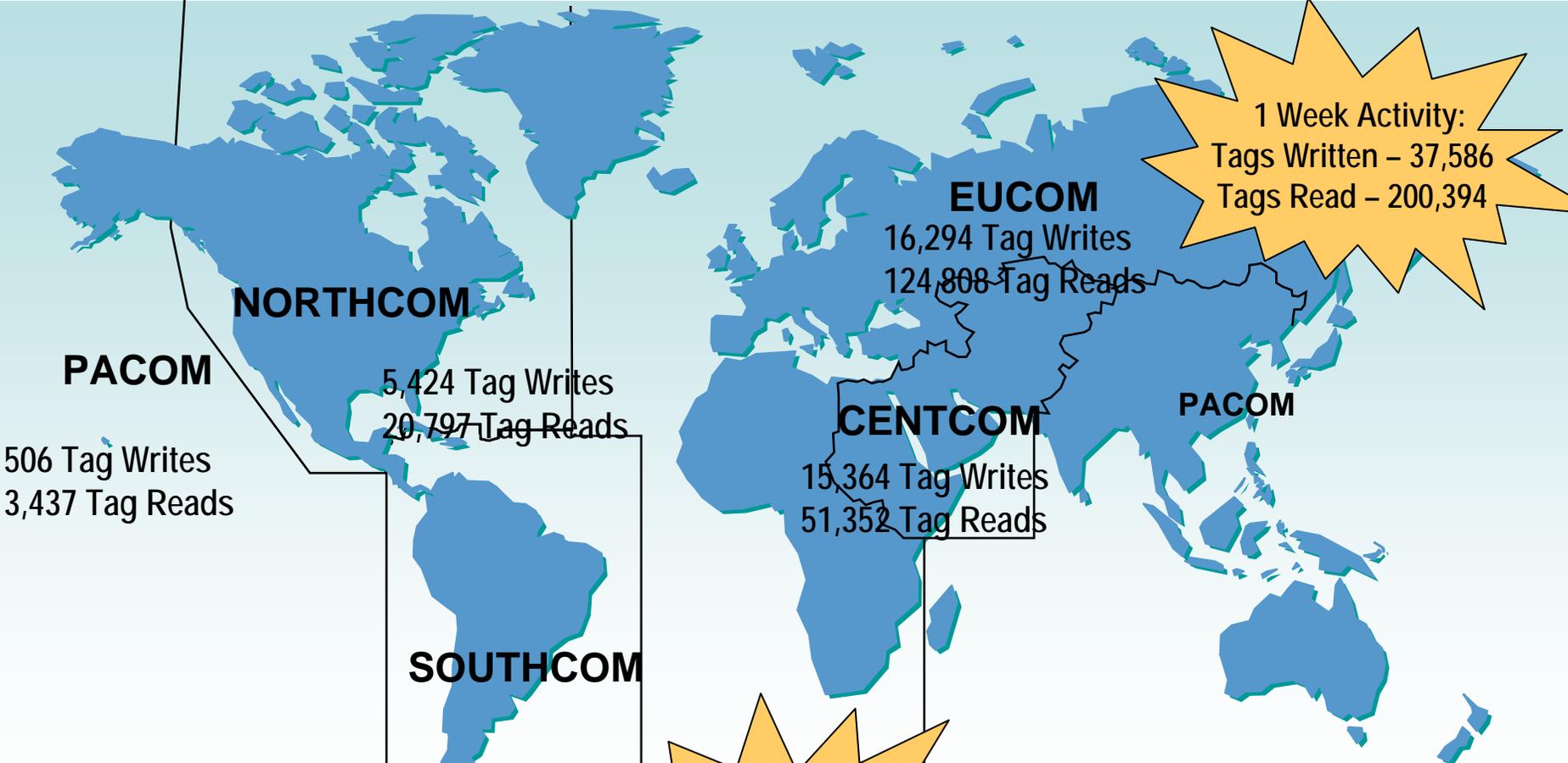
- **Logistics Processes:** a series of actions, functions, or changes that achieve an end or a result.
- **Resources - “total assets.”**
Total assets are defined as the aggregate of units, personnel, equipment, materiel, and supplies that are brought together in time and space to **generate mission capabilities** and their supporting processes.
- **Requirements:** are what the Soldier or Marine needs to accomplish the mission.

RFID: from a small beginning....



...a network grows

Volume of RF-ITV Transactions (Weekly)



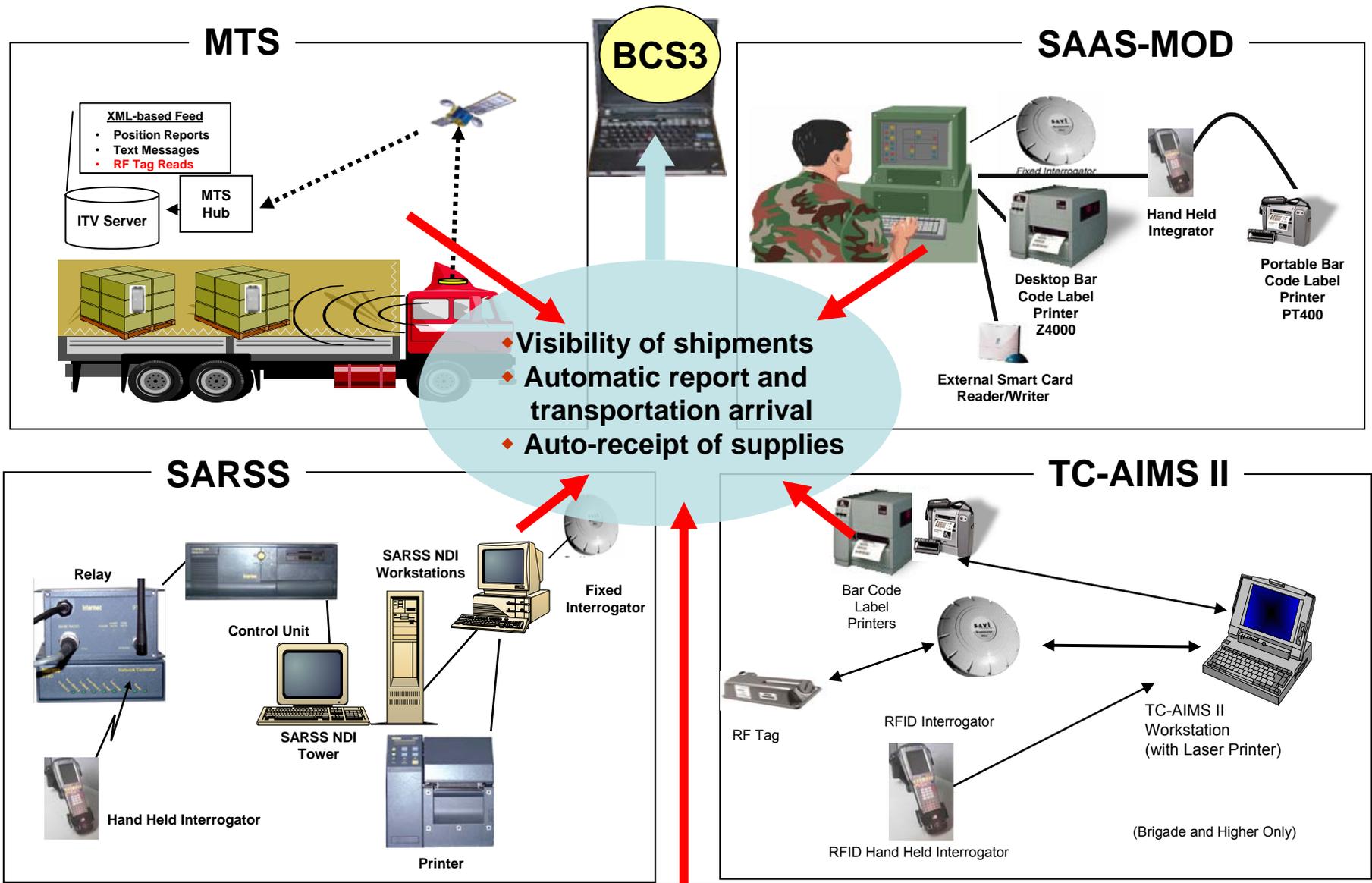
1 Week Activity:
 Tags Written – 37,586
 Tags Read – 200,394



**Currently
 Over 2,600 Read
 and Write Sites
 Worldwide**



Supply Chain Integrated Feeds To Operational ITV



DLA, GSA, 3rd Party Class VII Vendors, Class I Operators

GCSS-Army: A Critical Component of the Single Army Logistics Enterprise (SALE)

Current Systems

SAAS
PBUSE
ULLS-S4
SPBS-R
SAMS-E
ULLS-A
SAMS-1
SAMS-2
ULLS-G
SARSS-1
SARSS-2AC/B

GCSS-Army (F/T)'s functional scope will result in replacing current Unit and Retail Tactical Logistics Systems with one Integrated Logistics Enterprise

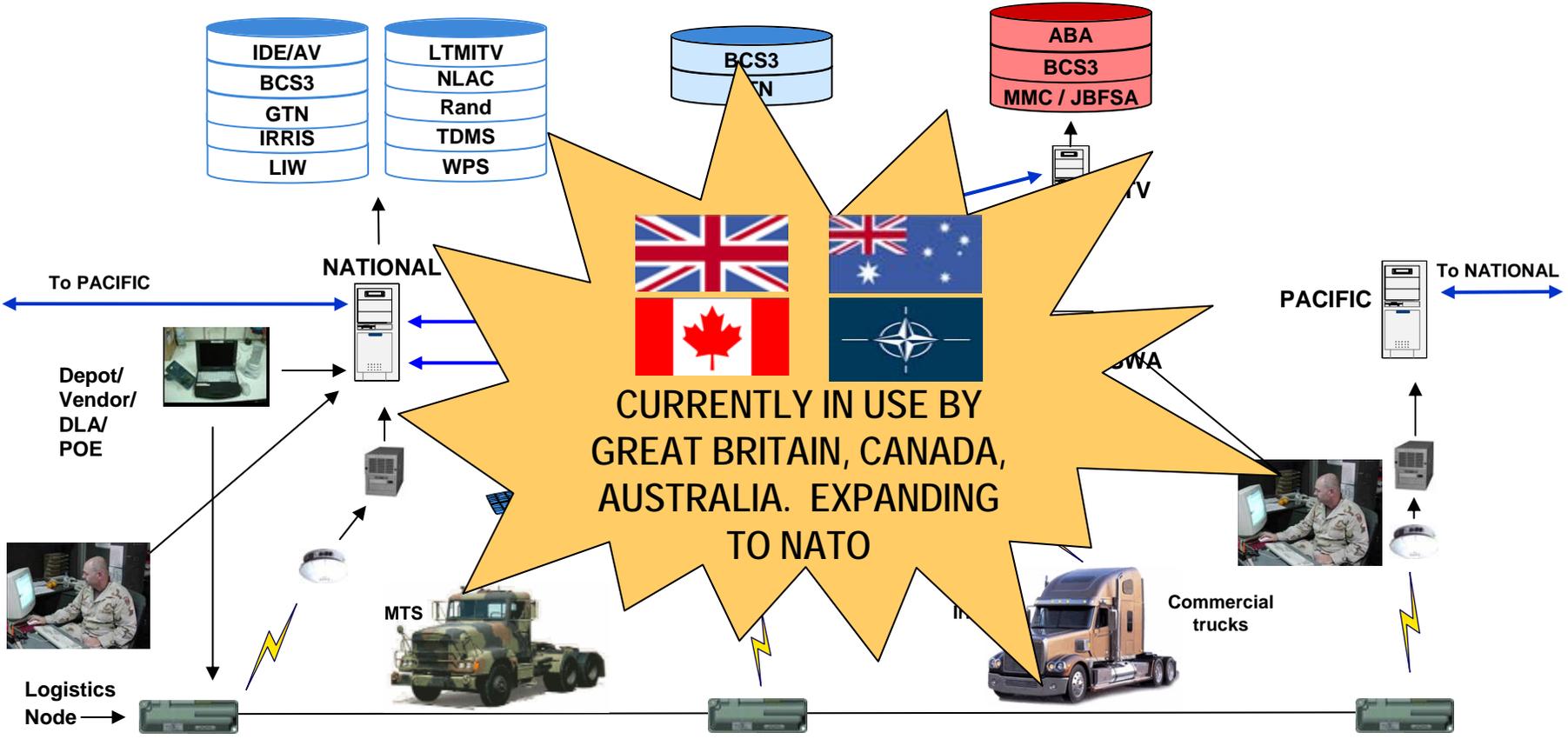
Enhances the Army's Modular Force capability



Benefits:

- Improved support for all operations
- Single set of Master Data Files
- Standardized business processes (National – Tactical level)
- Common Operating Picture
- Single access point
- Integrate RFID and other ITV capabilities

RFID ITV Operational Architecture



LEGEND

- RF Tag Interface (FOUO)
- STS Tag Interface (FOUO)
- Classified Interface
- Field Data Unit
- Military User
- Read/Write Station
- Radio Frequency (RF) Tag
- Satellite
- Electronic Data
- DoD Carrier with MTS
- Commercial Carrier with Satellite Tracking Device
- Interrogator
- RF-ITV Server
- Satellite Tracking System Control Station

All roads lead to Tikrit: turning data into information

Class IX via Air
from CONUS

DDSP	CHAS AFB	Incirlik	Tikrit
30 Nov	1 Dec	5 Dec	8 Dec

DDSP: 30 Nov
CHAS AFB: 1 Dec
Incirlik: 5 Dec
Tikrit: 8 Dec

DDDE GM: 21 Sep
Habur Gate: 2 Oct
QWest: 7 Oct
Tikrit: 11 Oct

Class II via Surface
from EUROM

DDKS	Al Mub AB	Tikrit AB	Tikrit
25 Nov	26 Nov	1 Dec	2 Dec

DDKS: 25 Nov
Al Mub AB: 26 Nov
Tikrit AB: 1 Dec
Tikrit: 2 Dec

Balad SSA: 27 Nov
Balad APOE: 27 Nov
Tikrit AB: 2 Dec
Tikrit: 3 Dec

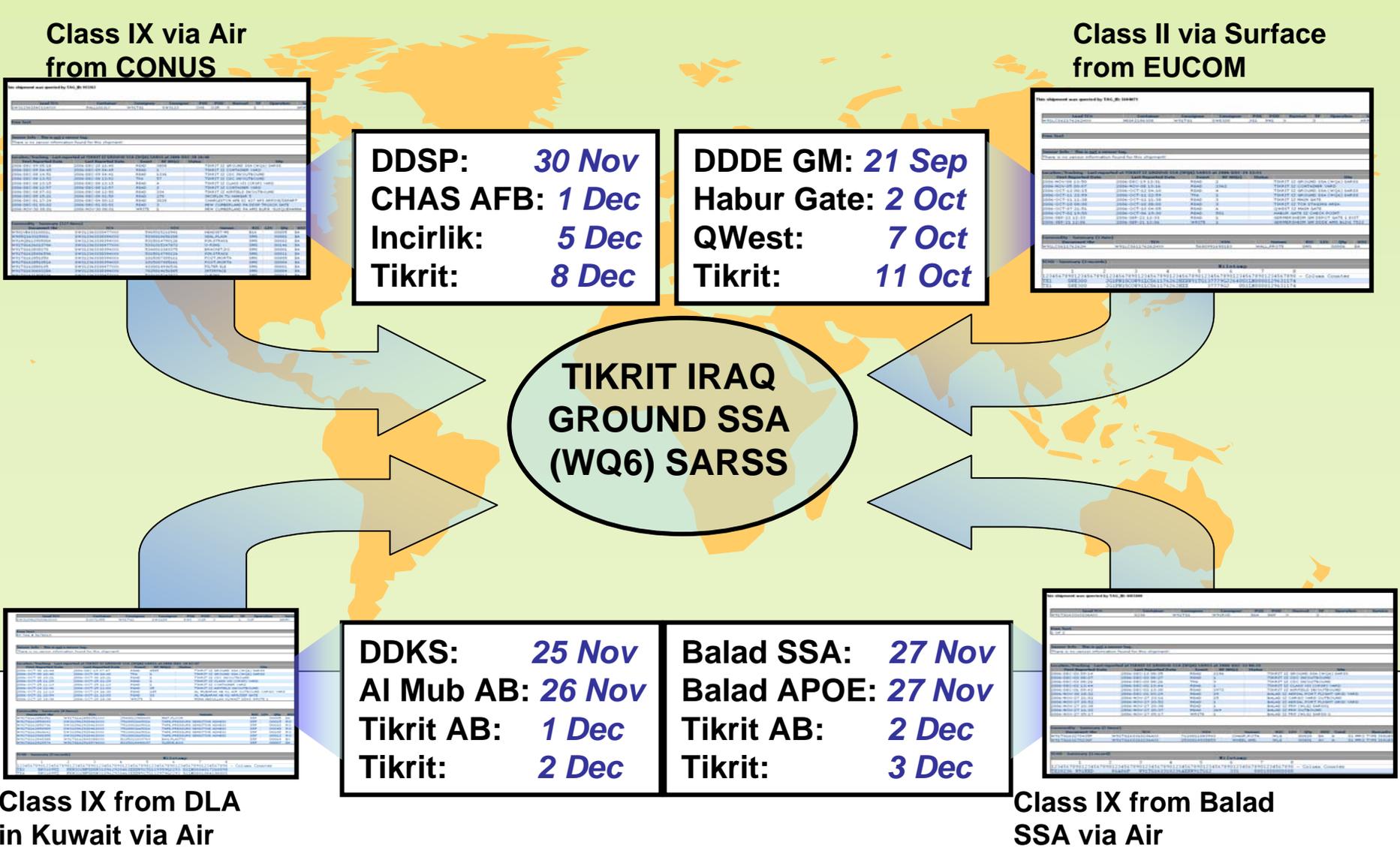
DDKS	Al Mub AB	Tikrit AB	Tikrit
25 Nov	26 Nov	1 Dec	2 Dec

Class IX from Balad
SSA via Air

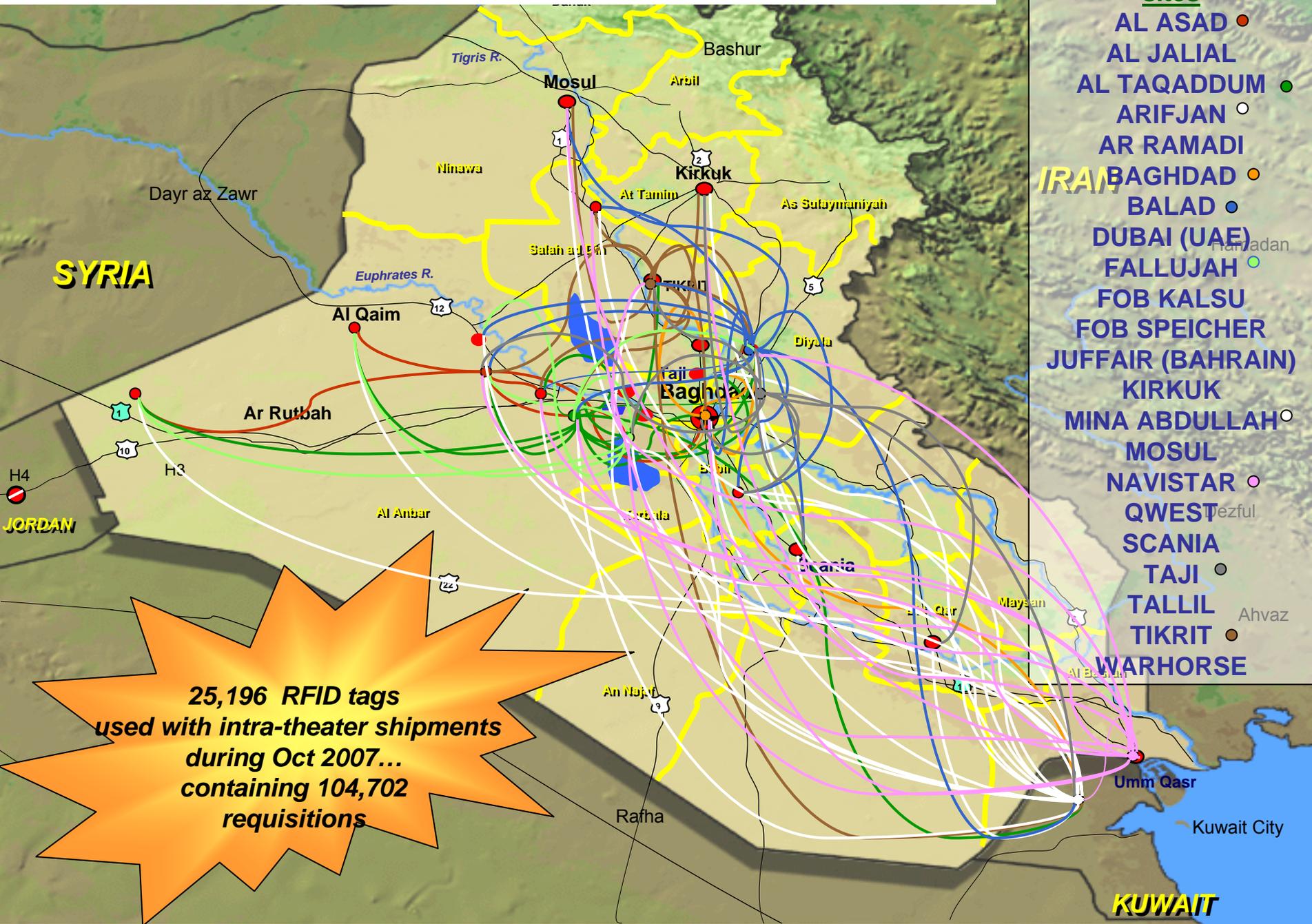
**TIKRIT IRAQ
GROUND SSA
(WQ6) SARSS**

DDKS	Al Mub AB	Tikrit AB	Tikrit
25 Nov	26 Nov	1 Dec	2 Dec

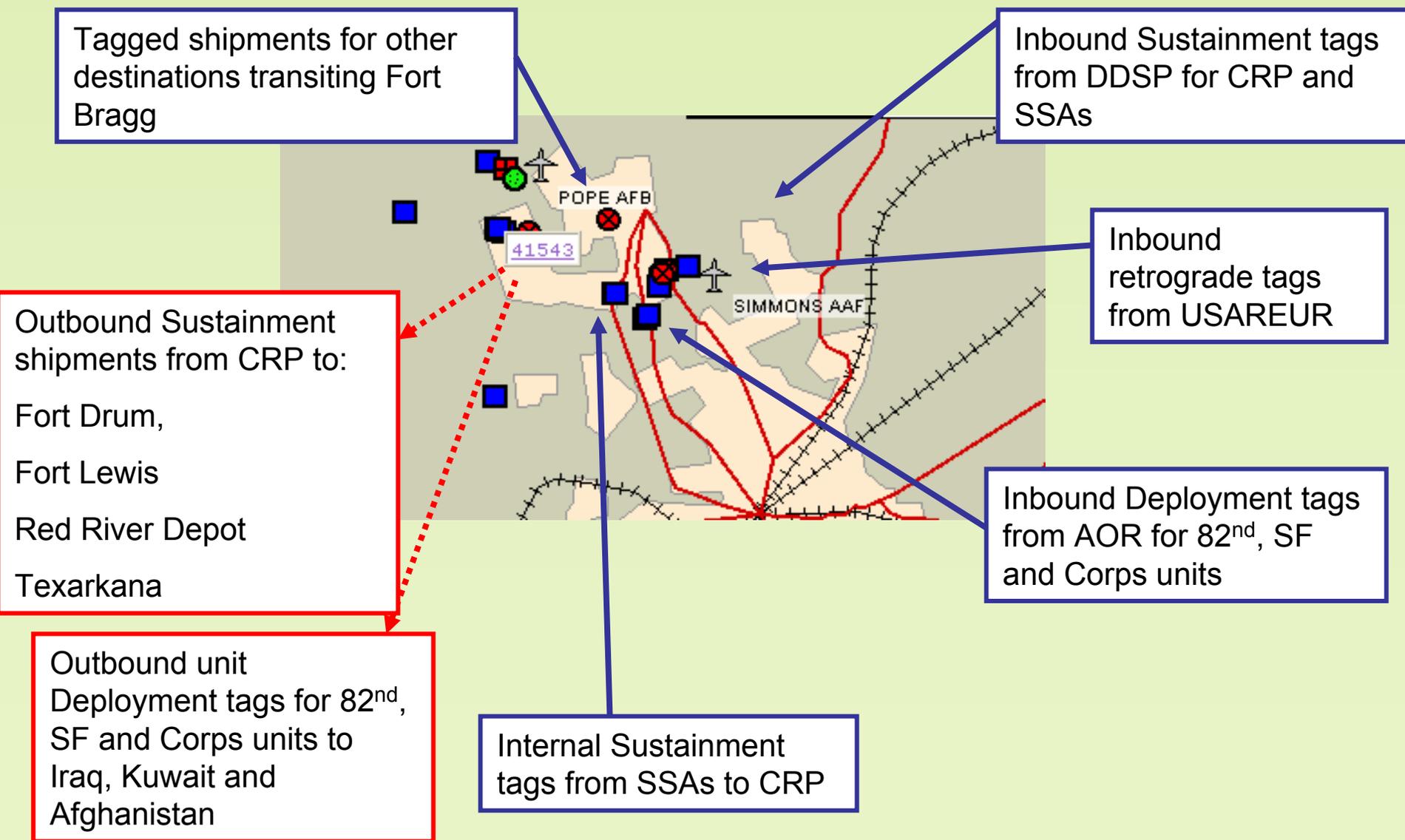
Class IX from DLA
in Kuwait via Air



RFID use in intra-theater movements



Active RF Tags in CONUS Supply Chain: the Fort Bragg view



Examples of Tags Passing Thru Fort Bragg on a Daily Basis

RFID Tags By Location - Microsoft

File Edit View Favorites Tools

Back

Address: https://national.rfity.army.mil

Number of Records: 100
Viewing: 1-100 of 109
Next Last

Lead TCN	Container	Consignee	Consignor	POE	POD	Hazmat	TP	Operation	Service	Class
AWABCAA\$0F00070XX			WABCAA	1PK	PN4	N	3	OIF	82 CS BN	QUAD

Unit Move

Free Text
STEVE WYKLE 9103963867 FT BRAGG NC USA

Commodity - Summary (2 items)										
Document Nbr	TCN	NSN	Nomen	RIC	LIN	Qty	UOI			
AWABCAA\$0F00070	AWABCAA\$0F00070XX	8115013540797	MISC COMM		XA076	001.0	EA			
			CONTAINER		YA0313	001.0	EA			

Tag ID	Sensor Tag	Shipment TCN	Container Number	Consignee	Consignor	POE	POD	UIC	ULN	Shipment Unit	Unit Home	Interrogator Description	Last Transaction Date
4234534	NO	AWAZ3C0\$0D00660XX											31-OCT-06 20:31:00
918584	NO	AWAZ3C0\$0D00060XX											31-OCT-06 20:31:00
5855829	NO	SW3124630030275XXX											31-OCT-06 18:31:00
5646587	NO	SW312462990362XXX											31-OCT-06 18:10:00
26330	NO	AWQ02U4\$0D00070XX											31-OCT-06 14:46:00
124308	NO	AWQ02U4\$0D00020XX	K200164	W90122	W918OK	PN4	2E1		T5QMC			BRAGG NC KNOX ST. ENTRANCE	31-OCT-06 14:46:00
124320	NO	AWQ02U4\$0D00050XX	10KA1100										
4411764	NO	AWQ02U4\$0D00140XX	6000M1G1100										
1025161	NO	W91P9H61510114AXX	CLHU8123847										
5855695	NO	SW312463000322XXX	CRST53270										
4269749	NO	AWQ02U4\$0D008150XX	10KA1165										
5673080	NO	W910E86289F002XXX	TX1										

Theater Retrograde

Commodity - Summary (1 item)										
Document Nbr	TCN	NSN	Nomen	RIC	LIN	Qty	UOI	Cond		
W91P9H61510114A			SEMB	W2N	00004	EA	F			31-OCT-06 20:31:00

TCMD - Summary (10 records)										
Hitstamp										
1	2	3	4	5	6	7	8			
- Column Counter										
1234567890123456789012345678901234567890123456789012345678901234567890										
TX223847CLHU 894Z9	W91P9H61510114AXXW81YT43	377	A1KI0001080001170							
TX423847W91P9H894Z9	W91P9H61510114AXXW81YT43	377	A1KI0001080001170							
TX923847 894Z9	W91P9H61510114AXXW81YT43CONTAINER # CLHU 812384-7	1								
TX923847 894Z9	W91P9H61510114AXXW81YT43RF TAG # 1025161	2								
TX923847 894Z9	W91P9H61510114AXXW81YT43SEAL # N-527131	3								
TX923847 894Z9	W91P9H61510114AXXW81YT43SHIP TO : W81YT4	4								
TX923847 894Z9	W91P9H61510114AXXW81YT43SR MMD COMPLEX STOR SITE	5								
TX923847 894Z9	W91P9H61510114AXXW81YT4372 SARSSO CL IX SITE	6								
TX923847 894Z9	W91P9H61510114AXXW81YT43ELDG Y 5015 MMD BLVD	7								
TX923847 894Z9	W91P9H61510114AXXW81YT43FT BRAGG NC 28310-5000	8								

DLA Shipments

Location/Tracking - Last reported at BRAGG NC KNOX ST. ENTRANCE at 2006-OCT-30 17:01						
First Reported Date	Last Reported Date	Event	RF Hit(s)	Status	Site	
2006-OCT-30 17:01	2006-OCT-30 17:01	READ	2		BRAGG NC KNOX ST. ENTRANCE	
2006-OCT-30 15:01	2006-OCT-30 15:01	READ	1		BRAGG NC WAR W2976 RECEIVING SARSS	
2006-OCT-30 06:41	2006-OCT-30 12:01	READ	27		BRAGG NC KNOX ST. ENTRANCE	
2006-OCT-28 18:55					NEWCUMBERLAND PA DDSP TRUCK GATE	
2006-OCT-28 16:19					NEW CUMBERLAND PA AMS WRITE-SW3124-S	

Commodity - Summary (570 items)										
Document Nbr	TCN	NSN	Nomen	RIC	LIN	Qty	UOI	Cond		
W36X0662990021	SW312463010059XXX	4720014286936	HOSE ASSEM	SMS	00001	EA	A			
W36X06613600918	SW312463010216XXX	6210013502053	LIGHT,INDI	SMS	00011	EA	A			
W36X0662860011	SW312463010216XXX	3040010981862	CONTROL AS	SMS	00001	EA	A			
W36X0662860018	SW312463010216XXX	6150010917010	CABLE ASSE	SMS	00001	EA	A			
W36X0662860023	SW312463010216XXX	5995011882740	CABLE ASSE	SMS	00001	EA	A			
W36X0662860024	SW312463010216XXX	5995010916374	CABLE ASSE	SMS	00001	EA	A			
W36X0662860030	SW312463010216XXX	5930011597610	SWITCH,THE	SMS	00001	EA	A			
W36X0662860034	SW312463010216XXX	5995010916672	CABLE ASSE	SMS	00001	EA	A			
W36X0662860035	SW312463010216XXX	5995011108227	CABLE ASSE	SMS	00001	EA	A			
W36X0662860039	SW312463010216XXX	5995010916666	CABLE ASSE	SMS	00001	EA	A			
W36X0662860040	SW312463010216XXX	6680123222918	INDICATOR,	SMS	00001	EA	A			
W36X0662860048	SW312463010216XXX	5995010917225	CABLE ASSE	SMS	00001	EA	A			

Menu ready for use

Internet

AIT Devices in support of Army Asset Visibility

Current and legacy requirements:

- Bar codes (3 of 9)
- 2-D Bar codes
- OMC
- Smart Cards
- Radio Frequency tags

Emerging Requirements:

- MTS +
- Passive RF ID
- Sensor Tags
- IUID

Benefits:

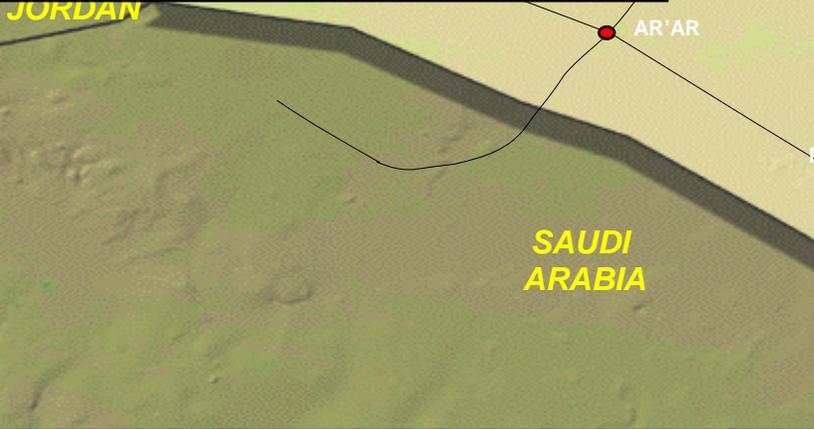
- Increased Accuracy
- Improved Quality
- Completeness
- Timely and Fast
- Increased Visibility
- Standardization



Movement Tracking System (Plus): Asset Visibility in motion

- OVER THE HORIZON
- TEXT MESSAGING
- SA OF ALL MTS VEHICLES
- 911 PANIC BUTTON
- RF INTERROGATOR INTEGRATED INTO MTS TRANSCEIVER
- AUTOMATIC DETECTION OF RFID TAGS
- READ DATA PROVIDED TO RF-ITV-I SERVER
- EMBEDDED GPS
- LARGER TOUCH SCREEN
- 80 GIG HARD DRIVE
- FEEDS ITV, BCS3, FBCB2

NET CONTROL STATION	TOUCH SCREEN WITH 911 KEY	MT 2012 RS RFID
		



Passive RFID in the Supply Chain

- **Potential:**

- * Increase inventory accuracy during cross-docking
- * Reduce labor by eliminating hand-scanning when stuffing containers
- * Many wholesale applications
- * Possible use in tactical arena for property inventory and automated functions such as: Receive, Store, Issue
- * Fixed Installation use



Passive AIT:

- Small label
- no battery
- 10-? characters
- Short range
- Read by "portal"
- Item, package, pallet level

- **Issues:**

- * Tactical automated system connectivity
- * Use with certain materials: fluids, metals
- * Funding/Current costs of hardware
- * Speed/Accuracy of reading

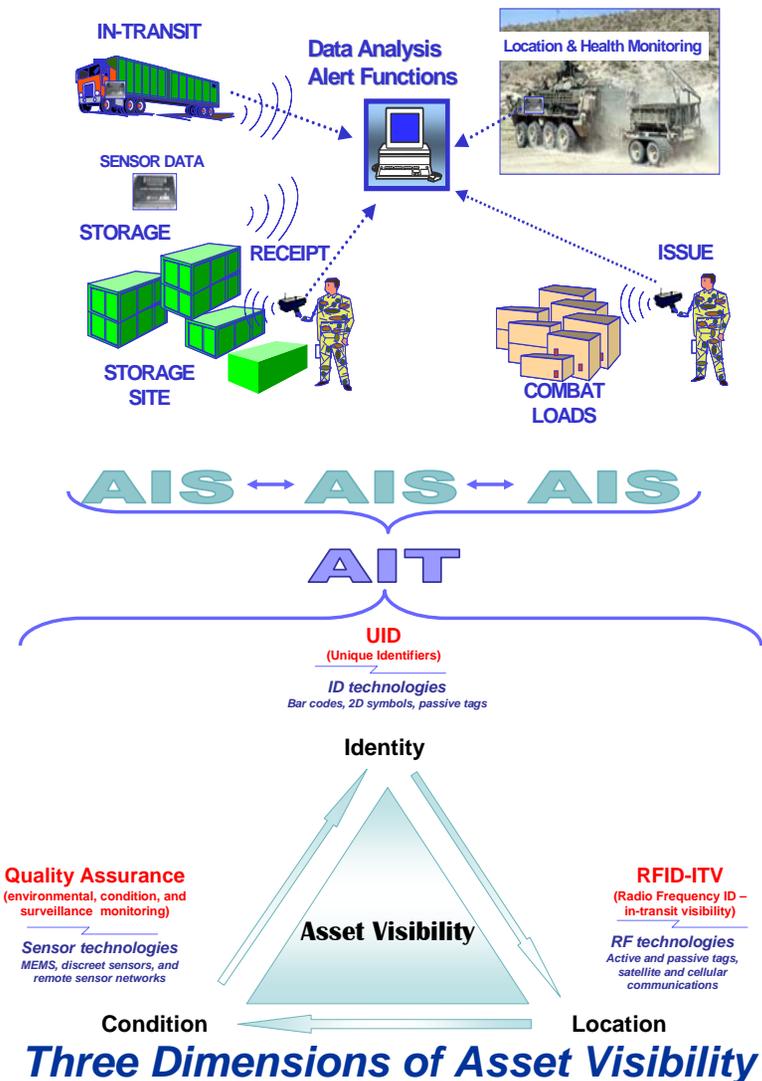
Sensor Tags

□ Application Areas

- Container Security
- Sensitive Items
- Individual Protective Equipment (IPE)
- Medical Supplies
- Ammunition
- Class I Refrigerated Supplies

□ Benefits

- Notification when container is compromised by unexpected opening or movement
- Ensure the serviceability of assets -- improve overall readiness and timeliness of soldier support
- Mitigate occurrence of assets compromised due to exposure to unacceptable environments
- Improve packaging, storage, handling, recovery
- Combine asset inventory and visibility with environmental monitoring under one AIT solution



IUID- Enabled Intensive Life Cycle Management

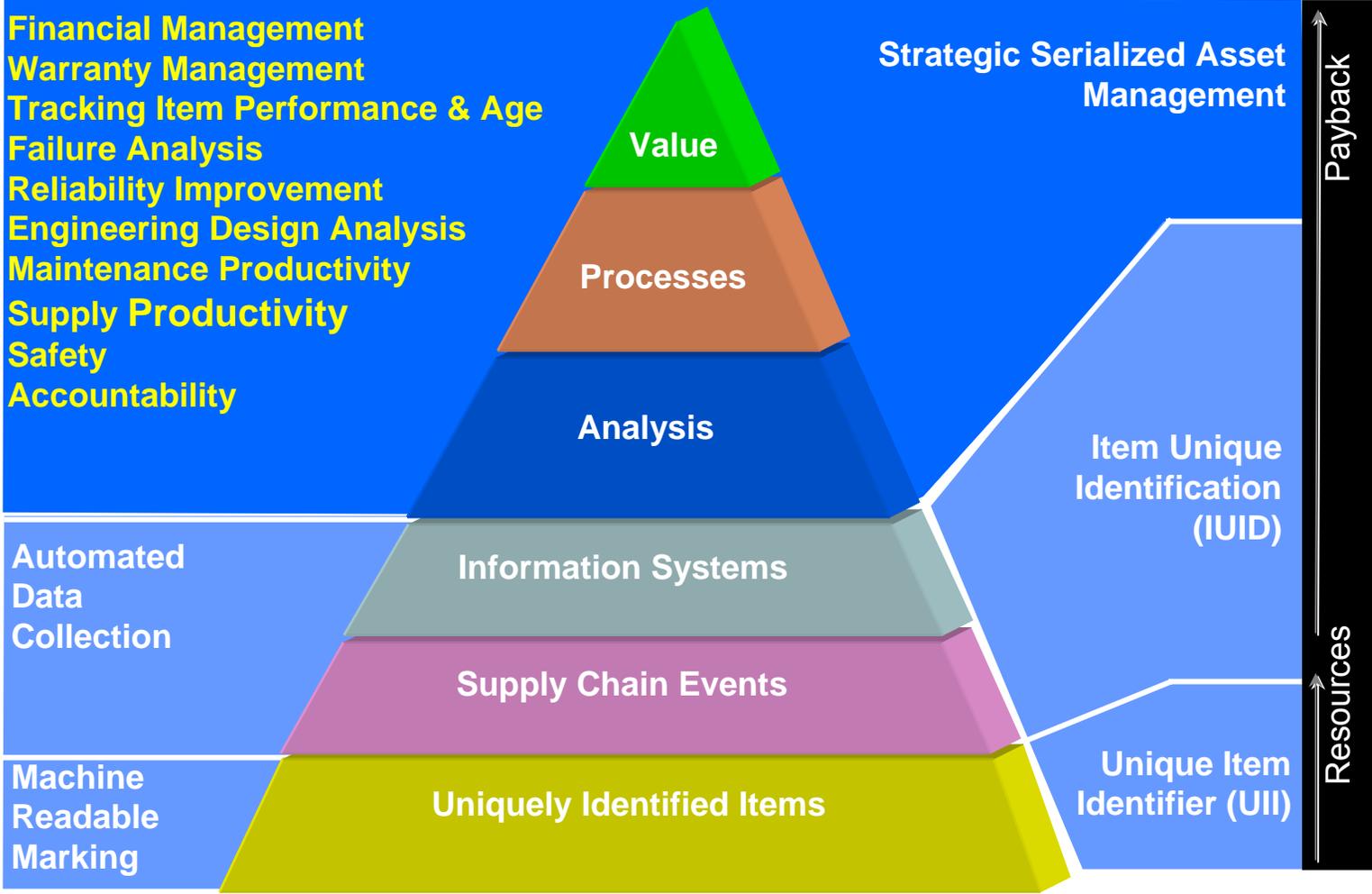


Speed and Precision in Data Capture

Capabilities

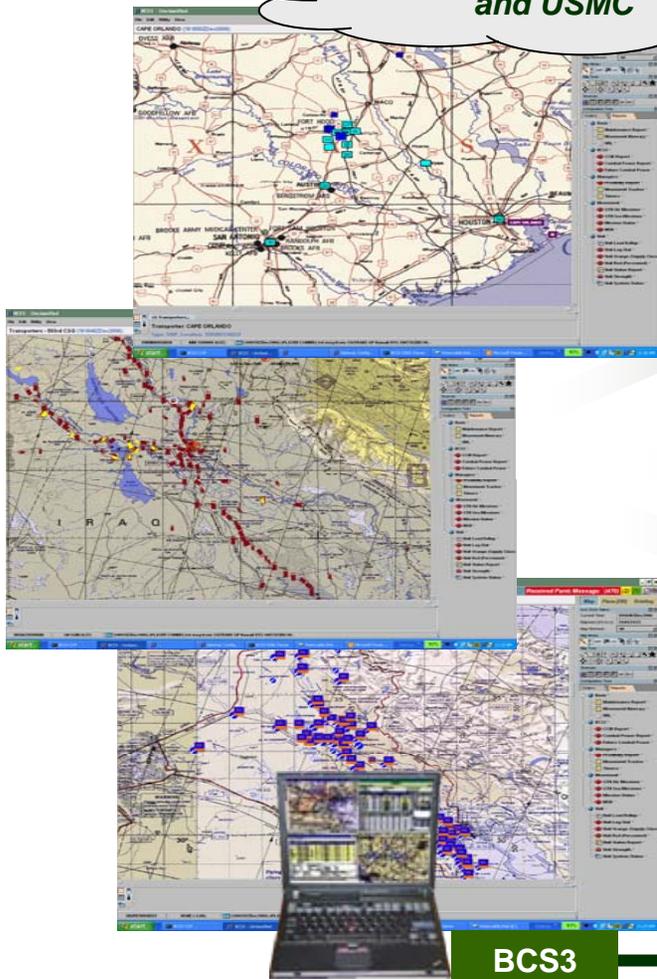
Requirements

Objectives



Battle Command Sustainment Support System (BCS3) Provides the Commander a View of Current AV / ITV

BCS3 in use today by Army and USMC



- Deployment/Redeployment/RSOI Tracking**
through RFID technology supporting ITV
- LOGSTAT Reporting Process**
simplified through an automated process from maneuver BN level
- Convoy Tracking**
through the use of satellite-based tracking devices (MTS, etc.)
- Commodity Management**
by querying any RIC/supply point
- Simplifying Report Process**
by briefing directly from the system and the ability to share /interface with higher HQ

Provides the “knowledge necessary to make effective **decisions**”

Conclusion:

- **AIT is integrated in our supply and transportation processes to support Asset Visibility requirements**
- **Certain shipments will be so critically important that special AIT will be required: the definition of what is critical will change based on mission and circumstances.**
- **Multiple AIT devices (including human readable) are required to provide flexibility or redundancy of reading based on operational conditions and requirements.**
- **ITV data from our business systems is critical to our Command and Control systems and to our decision making**
- **Work is ongoing to integrate new and emerging technologies**

**Where is the box?
What's inside the box?**



Iwo Jima 1945

Doha Kuwait 2004

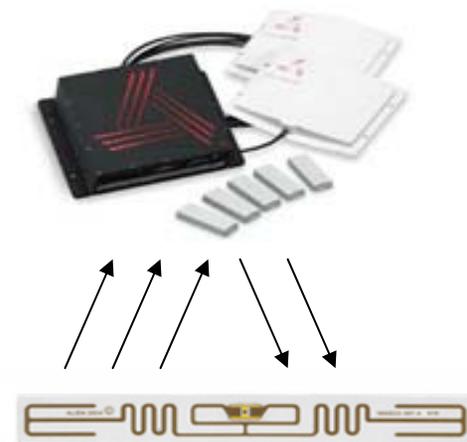


Why we do what we do.....



Backup Charts

Active and Passive RFID



Active

- Tags powered by batteries
- Tags generate high-level Radio Frequency (RF) signals
- Long-range read capability (> 100 Feet)
- Large data storage (> 100 Kbytes)
- Higher cost, finite battery life

Passive

- Tags powered by strong RF energy from reader
- No internal battery on the tags
- Tag modulates a low-level RF signal back to the reader
- Short-range read capability (5-15 ft)
- Limited data storage (96 Bits)
- Cheaper, almost unlimited life

Movement Tracking System (MTS)

