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Global In Transit Visibility (GITV) Final Report

United States Joint Forces Command J45

Final Report Date: 01/15/2008

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Table of Contents

1.	Executive Summary	pg.3
2.	Project Introduction	pg.4
3.	Concept Overview	pg. 4-6
	3.1 Operational policies and concepts	
	3.2 Current systems or operations	
	3.3 Objectives	
	3.4 Concept for the proposed solution	
4.	Milestone	pg. 7
5.	Project Technical Development/Solution	pg. 8
6.	Evaluations/Experiments/Validation of Technical Solution	pg. 9-10
7.	Security Aspects	pg. 10-11
	7.1 Protecting Systems and Resources	
	7.2 Incident Response and Data Collection	
	7.3 Confidentiality and Notification	
	7.4 Awareness	
8.	Synchronization Efforts	pg. 11-12
9.	Finances	pg. 12-15
	Funding for project	
	Partner Contributions	
10.	Possible Future Technical Capabilities	pg. 15-16
11.	Future Growth/Expansion of Capability	pg. 17
12.	Conclusion	pg. 17
13.	Partner Remarks	pg. 18-22
14.	Points of Contacts	pg. 23

Executive Summary

The work of the Global In-Transit Visibility (GITV) project was one that was funded for discovery.

Looking for interoperability - a methodology for integrating US and Multination RFID and barcode

The objective of GITV was to provide a globally enabled capability to route consignment tracking data between partner nations in order to increase the synergy between ITV systems. This would be done by connecting the currently closed and disparate in-transit visibility systems of partner nations together in order to exponentially increase the ITV capabilities of each partner. This effort is propelled by the Operational Commander's requirement for better and more thorough visibility of the consignment as it moves through the supply chain and by nations' desire to work together in order to save resources. The GITV Project does not create a new "system" but rather it links together nations' individual in-transit visibility systems. As such, the work revolved around developing methods to pass consignment data from one nation to another, as opposed to creating a system that each nation must purchase and implement.

The GITV Project's concept and vision is a product of an ad hoc group of logisticians who saw a need for cooperation in order to save resources. United States Joint Forces Command J45 facilitated the Project. The Chief of Staff, USJFCOM sent letters to each of its 44 Foreign Liaison Officers and National Liaison Representatives, inviting their participation in the Project. Currently, 25 nations and NATO have agreed to collaborate on the project. The nations are:

Australia, Austria, Bulgaria, Canada, Croatia, Denmark, Estonia, Ecuador, Finland, France, Germany, Greece, Hungary, Japan, South Korea, Mexico, Netherlands, New Zealand, Romania, Singapore, Slovakia, Sweden, Switzerland, United Kingdom, United States and NATO.

The capability is operational and USJFCOM J45's leadership of the Project concluded in September 2007. The U.S. and NATO Radio Frequency Identification (RFID) servers are able to pass ITV data between each other. The U.S. and Australia RFID servers are able to pass ITV data and Australia and Denmark RFID servers are investigating incorporating the RFID solution. Denmark, the U.S., Korea, Canada, Singapore and NATO were instrumental in testing and validating the operational capability to pass bar code ITV data.

The project was able to work several Radio Frequency DoD Policy data standards changes/improvements and capture/provide metrics from demonstrations, exercises and assessments now being worked with TRANSCOM and DLA to transfer and/or transition into their coalition ITV applications residing in their Integrated Data Environment (IDE-phase 1) and Global Transportation Network (GTN) Convergence being called IGC as a multinational RFITV solution set.

In addition to satisfying a valid warfighting requirement for a very low (<\$2.5M) cost, the GITV partners have laid important groundwork for future Multinational Information Sharing (MNIS) efforts by **creating a framework for passing unclassified data and a network of informed logisticians who are able to affect change within their nations.**

2. Introduction

The Global In-Transit Visibility Project is a multinational, collaborative effort implemented in order to create a globally connected in-transit visibility “network”. This capability is enabled by active Radio Frequency Identification (RFID) and bar codes and provides for multinational data exchange. The data exchange is unclassified “license plate” data with an end state of a globally enable capability to capture and route ITV data between partners in order to increase the ITV “reach” of each partner. There are many benefits for participants, one of which is from a resources/funding perspective. It would allow the role of smaller nations to expand in GWOT, disaster relief and humanitarian efforts. It also provides an enhanced capability for the Warfighter and Coalition commanders in decision making and satisfies identified shortfalls in the logistics supply chain.

This capability can be employed by individual nations using their existing infrastructure, asset tracking systems, and the agreed upon international data standards.

3. Concept Overview

The project was initiated by US Joint Forces Command. Forty-four nations were invited to begin discussions, with twenty-five accepting and joining the first conference. These nations included NATO, non-NATO and PFP members. Members are: Australia, Austria, Bulgaria, Canada, Croatia, Denmark, Estonia, Ecuador, Finland, France, Germany, Greece, Hungary, Japan, South Korea, Mexico, Netherlands, New Zealand, Romania, Singapore, Slovakia, Sweden, Switzerland, United Kingdom, United States and NATO. The initial meeting introduced the group to the concept of GITV, sought buy in and laid the foundation for the strategic plan. Although twenty five nations were involved in the effort, some nations were in observer status versus active participants based on their nation’s acquisition and implementation of AIT systems.

There were 5 conferences held in total, each time hosted by different partner nation, as well as bimonthly teleconferences. The Program Management Office produced minutes for all face to face conferences and for all teleconferences. The first two conferences were mainly focused on standardization and the commonalities that would exist in the framework. Also introduced were the draft foundation documentations: The Operational Concept Document (OCD) and The Business Process Model (BPM). The conferences thereafter tackled creating a technical solution, developing testing objectives and conducting field evaluations.

3.1 Operational policies and concepts

- Operational Policy: Global ITV supports the NATO Defense Capability Initiative (DCI) SL 1, 4 and 14; and NATO Force proposals that require NATO and nations will have an interoperable asset tracking system by 2008.
- Global ITV supports the Australia/Canada/U.S/U.K Quadrilateral Logistics Forum (QLF) agreement to capitalize on each others ITV systems.
- Global ITV is being harmonized with NATO’s Interim Consignment Tracking Capability for ISAF (ICTC).

- U.S. Joint Vision 2020, Multinational Logistics: “We will optimize logistics operations across and between all echelons, coalitions and host nations by improving logistics interoperability with partner nations, and continuing to share logistics information technology.”
- U.S. Department of Defense Radio Frequency Identification (RFID) Policy letter of instruction directs the U.S. to capitalize on any available RFID infrastructure.

The spiral development of this project has yielded both short-term and long-term solutions to our warfighter’s coalition interoperability challenges. The project capitalized on readily available technology, and facilitated the codification of supporting business processes and doctrine in order to posture US/coalition operations for future success.

3.2 Current Systems or Situations

Currently, consignment tracking is accomplished through country’s independent efforts and architectures. There is no collaboration or integrated method which allows for visibility into partnered nations systems. There are no mechanisms in place to allow information sharing (See Figure 1). Nations who participate together in an operation employ their ITV systems in parallel.

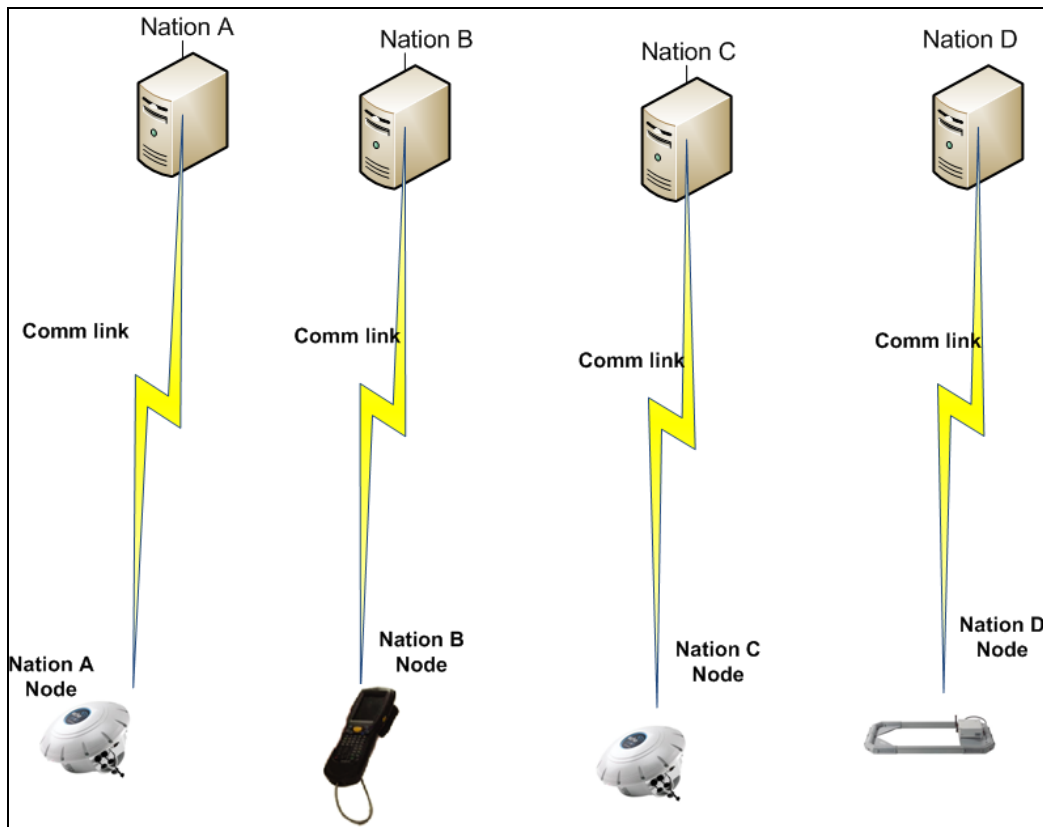


Figure 1 – Current National “As-Is” ITV Architecture

3.3 Objective

1. Develop a mechanism that:
 - uses agreed international data format standards

- uses each partner’s existing business processes and ITV infrastructure, to the greatest extent possible
 - enables ITV captured data to be transmitted to the address(es) identified by the partner
 - The anticipated Data elements are:
 - Sender Nation (Who is sending the information)
 - Consignment Identifier
 - Location Identifier (where the consignment is)
 - Date/Time (Date and time Consignment was detected/scanned)
 - Owner Nation (Where to send the information)
2. Conduct an evaluation in a field environment in order to test the mechanism, using each individual partner’s ITV infrastructure.
 3. Promote interoperability between partners’ systems.
 4. Identify the national security accreditation requirements for this type of information exchange.

3.4 Concept for the Proposed Solution

Figure 2 shows the envisioned Global ITV “To-Be” Architecture, which is significantly different than the As-Is Architecture depicted in Figure 1. The connection request between any two national servers in the figure actually goes through a Value-Added Network (VAN) or similar mechanism. Currently the NATO Mailbox System (NMBS) is the VAN of choice.

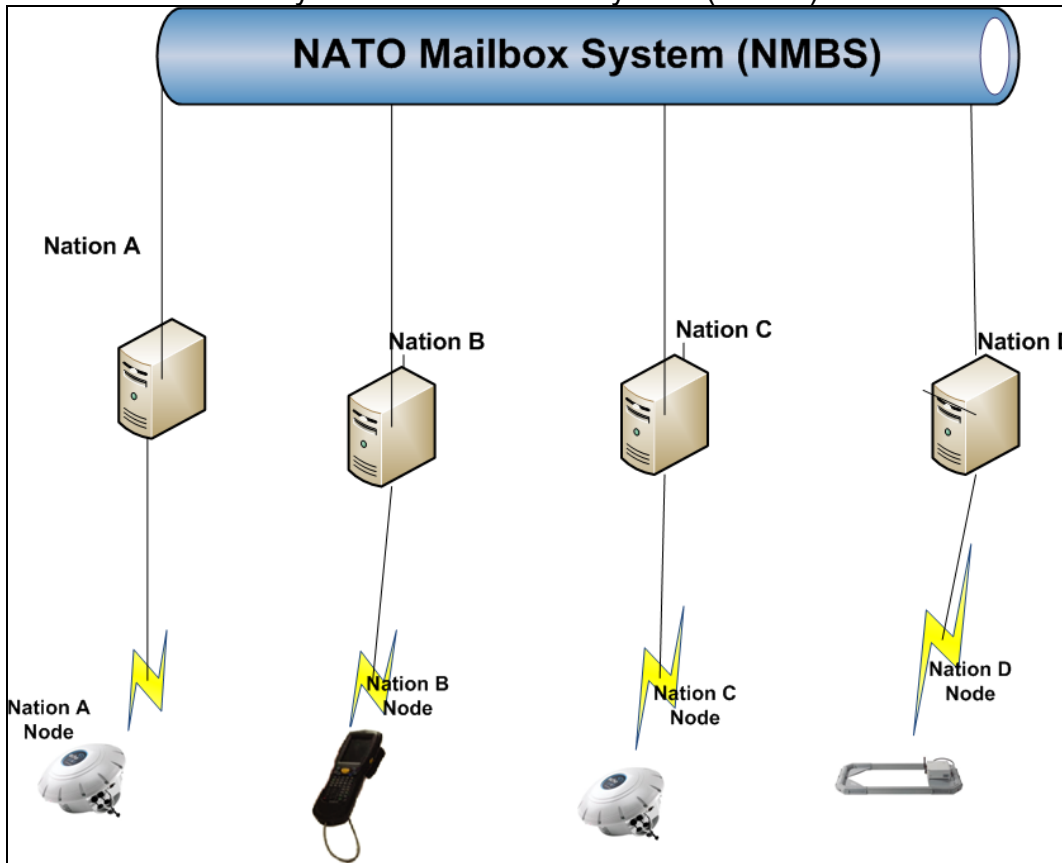


Figure 2 - Global ITV "To Be" Architecture

4. Milestones

The below phased approach (Figure 3) was used to progressively develop the capability. The completion of each phase represented a milestone in the project's development. The synergy among the partner nations was key in accomplishing the milestones. Phase I proved to be the most challenging since all had to agree on the business rules, scope and objectives. Phase II had its share of challenges too and required many hours of writing, editing and capturing all the data in the OCD and BPM. Phase III was the most exciting! We were able to test and successfully document the capability during the field evaluations.

The project achieved a critical milestone during the 3rd GITV Conference held in Denmark. Synergy among the member nations led to the first operational use of the GITV capability. This synergy resulted in the U.S. and NATO Radio Frequency Identification (RFID) servers are able to pass ITV data between each other as well as setting the stage for Australia to work with PACOM and TRANSCOM to demonstrate the GITV capability during Talisman Saber 07.

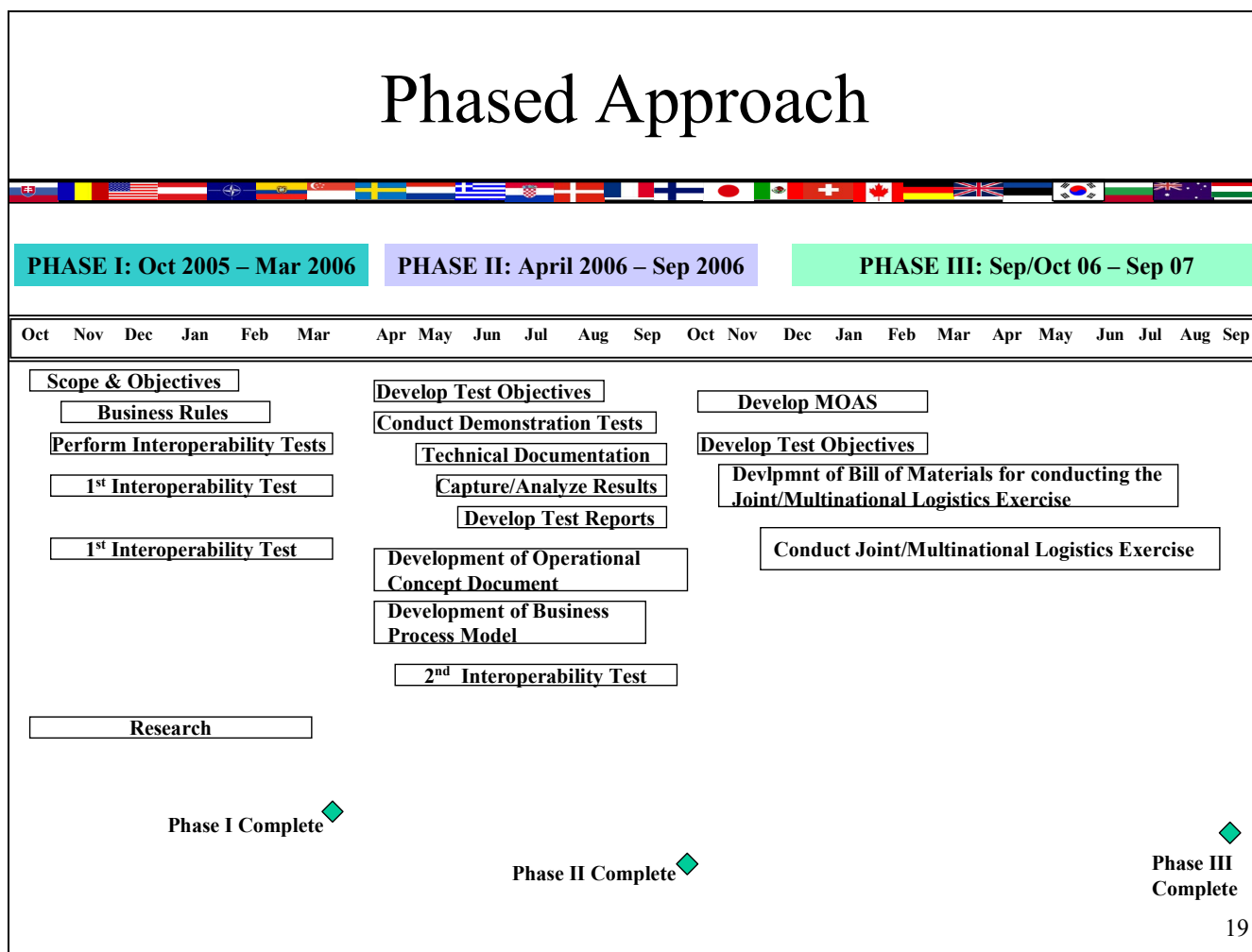


Figure 3

5. Project Technical Development/Solution

One of the major challenges of the project was defining the specific technical way ahead. The requirement needed to satisfy the GITV capability as well as maintain the integrity and security of each nation's systems was daunting. The technical solution needed to be flexible enough for mature systems and nations in the development process of their systems. The idea of using a value added network (VAN) to pass the GITV data evolved as one of the best solutions. The VAN alleviated the security hurdle while maintaining enough adaptability to accommodate the needs of all nations.

The technical solutions decided upon are the following:

- The NATO Mailbox System (NMBS), a VAN already in existence owned and operated by NAMSA which most GITV nations have membership, is used for routing (5) data elements for barcode enabled ITV Systems (See Figure 4)
- The RF server to server connection for compatible/like components was established to create an operational capability which messages will be passed automatically as nation A tag transit nation B interrogator. (See Figure 5)

The technical solution is broken out into two phases with different roles. In Phase I Role I, all countries routing data have to know the Communication Routing Identifier (COMMRI) of the nation receiving the data (owning nation). In Phase I Role II, which is currently in place, countries sending the data do not need to know the COMMRI of the receiving nation. The responsibility was shifted to NAMSA thus streamlining the data routing process.

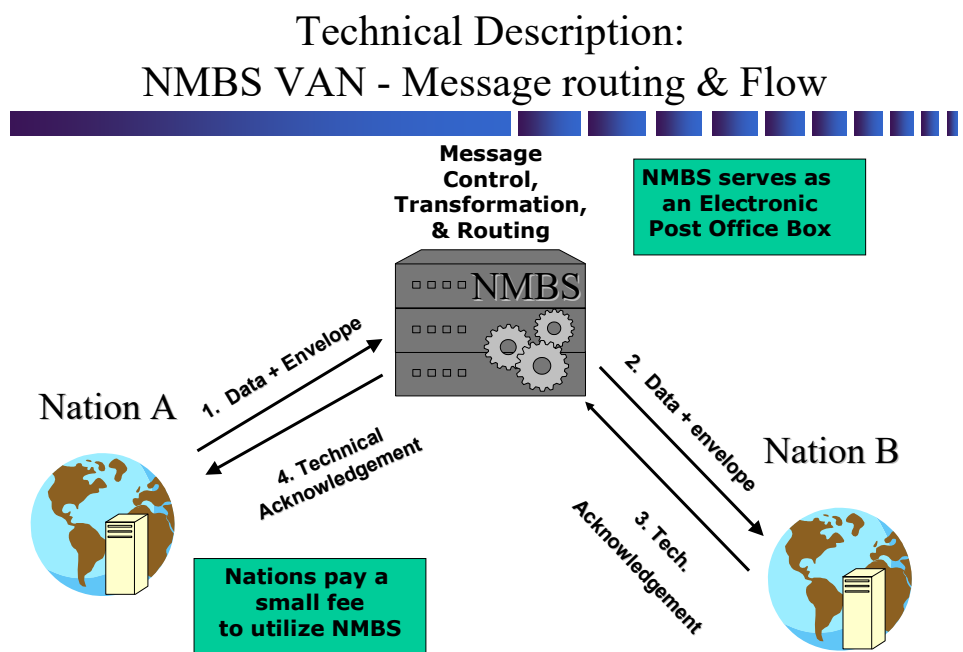


Figure 4

Technical Description: RF ITV Server to Server

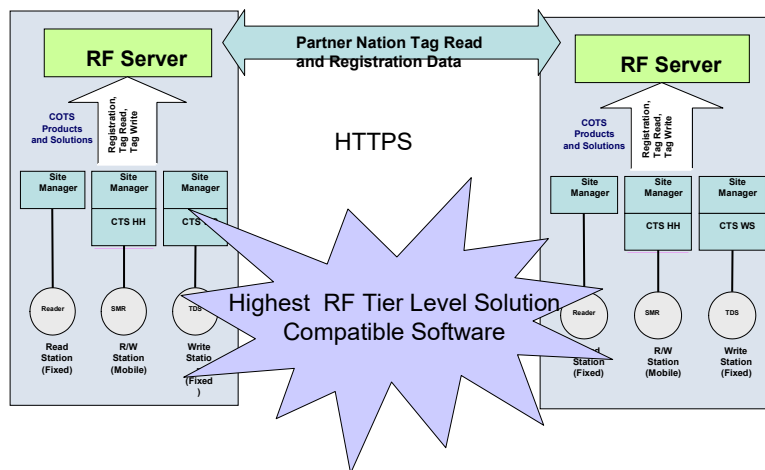


Figure 5

6. Evaluations/Experiments/Validation of Technical Solution

The GITV capability provided key data for BCS3-NoMaDD Common Operating Picture (COP) during exercise Talisman Saber 07. The GITV capability and BCS3-NoMaDD COP were the backbone for PACOM's Geospatial Logistics Management. Talisman Saber 07 also provided a valuable test bed to evaluate the interoperability of Australian and U.S. RFID infrastructure. During the RSOI phase the interrogators of both countries provided the only visibility to track Marine cargo from the Sea Port of Debarkation (SPOD) through Rockhampton to the intermediate staging area Shoalwater Bay Training Area (SWBTA). The network provided visibility of the 360+ pieces of Maritime Prepositioning Ship cargo and the 700+ pieces of equipment downloaded off the Strong American. The interoperability testing identified the need to use a standard interrogator naming convention. Currently the logistics operations in SWA are benefiting from the GITV capability.

The GITV capability was effectively integrated, demonstrated and evaluated in the Republic Of Korea MND process during RSOI 07. This field experiment consisted of using two active RFITV technologies to track 59,133 F15-K aircraft parts from the US to Daegu Air Base ROK. In-transit visibility was captured and data was passed using the current US RFITV equipment, technologies and infrastructure; and the ROK newly developed KPC RF equipment, technologies and infrastructure. The experiment proved that two countries, each with their own interrogators and types of tags, can both provide shared visibility as cargo moves from an origin in one country and a destination in another country. This also can include transiting intermediate ports, with both countries obtaining better visibility through GITV than they would have had individually. This provided an experimental foundation for both countries to pursue enhanced future ITV sharing. This initiative during RSOI 07 also provided a test bed to assess existing and potential linkages between the Joint Force Support Component

Commander's (JFSCC) tools specifically, Joint Experimental Deployment and Support (JxDS), and the GITV capability. The JFCOM J9 team agreed additional collaboration between GITV and JxDS is necessary. US and Korean counterparts involved in the exercise are eager to engage in further testing to develop technical solution sets for future data routing which will accommodate a fully automated process.

The GITV nations were successful in identifying, testing and documenting hardware. During the development of the barcode solution we learned that several handheld terminals (HHT) were capable of reading both linear and 2D barcode labels. The need to invest in new HHT was quickly eliminated and helped show that at many levels we are working in parallel with each other. By using the lowest common denominator it was/is possible to have readers supporting multiple standards or even multi-technology readers supporting RFID and barcodes together. Barcode label standards utilize EAN-128 and Symbol 3100.

7. Security

Security is a great concern among partners. The GITV PMO contracted out the security portion of the concept and the following were the results of the work and agreements from partners.

The need to understand and agree to a basic set of practices for implementation of the Global ITV Framework is essential. The failure of any Member Nations to honor the commitments described in this document would undermine the security of the Global ITV framework as a whole.

7.1 Protecting Systems and Resources

It is expected that Member Nations participating in this Project will take an active effort in understanding and implementing the security policies within this document.

Member Nations agree to:

- Follow baseline security practices
- Maintain all systems participating in the Global ITV Framework with the latest security patches, closing vulnerabilities in a timely manner commensurate with risk levels of the particular vulnerability
- Protect and secure their Passwords/Crypto Keys/Certificates from compromise
- Ensure access to systems participating in the Global ITV Framework are protected logically and physically

7.2 Incident Response and Data Collection

By participating in the Global ITV Project, Member Nation interaction requires some level of trust relationships. A security incident to a system that is directly connected to the Global ITV Framework could have an impact on the security of other Member Nations.

In the event of an incident that involves systems directly connected to the Global ITV Framework Member Nations agree (when the case warrants) to:

- Ensure that system administrators and security personnel cooperate with the Security Response Groups of other Member Nations in a timely manner and investigate their own systems.
- Collect relevant security data, monitor, and investigate security incidents, and provide

this data or summary of data to the Security Response Groups of other Member Nations if requested as part of an incident response.

7.3 Confidentiality and Notification

This section is intended to help Member Nations participating to determine what information can be disclosed to outside of the MOU participants. This includes Global ITV information that is either stored or shared via any means, such as electronic information, information on paper, and information shared orally or visually (such as telephone, video conferencing, or meeting in person).

Member Nations sites agree to:

- Protect Global ITV information
- Disclose Global ITV information internally and externally on strictly a need-to-know basis and only to participants of the Global ITV Project
- In the event of an Incident, respect the confidentiality of other Member Nations, allowing the Member Nations to determine when, how, and what information will be made public (if any). This means Member Nations will not comment about or disclose information about an incident of another Member Nation other than within the Security Points of Contact identified by that Member Nation and, as necessary, to local management
- Immediately notify the Member Nations Security Officer in the event of any incident or compromise. This ensures timely and accurate disclosure, as necessary, to the other Member Nations.

7.4 Awareness

The goal of security awareness is to reduce risks by participant involvement and communication.

Because of this, Member Nations sites agree to:

- Make all security policies, guidelines, and procedures readily available to their staff and users.
- Educate staff and users regarding their responsibilities in implementing the security requirements of the GLOBAL ITV Framework
- Provide a current name and a contact phone number and email address for a primary and backup Security Point of Contact to the other Member Nation participants and ensure that this information stays current

More information on security may be found in the Operational Concept Document vs. 1.3.

8. Synchronization Efforts

The GITV PMO interacted with the below organizations and worked with national partners who supported the project. (see Figure 6)

- Joint Chiefs of Staff Director of Logistics (DJ4) OSD Transportation and Policy; Directed change to DTR; DTS will incorporate SSCC
- Product Manager, Joint Automatic Identification Technology (PM J-AIT)-Provides engineering and SME support. PM-JAIT created the RF-ITV solution that enabled partner

nations to share the US RF ITV network while partner nation's investment in RF increases the US visibility while reducing funds.

- USTRANSCOM's Global Transportation Network (GTN) PMO in an integral part of the technical team and solution. GTN provides engineering and policy and procedures support/SMEs.
- Defense Automatic Addressing System Center (DAASC) is key technical solution and the link between the Defense Transportation System (DTS) and the partner nations. They are also critical to systems capability security.
- USPACOM; GITV capability is an integrated component in the maturation of multinational information sharing and a key concept for PACOM's Geospatial Logistics ACTD.
- CENTCOM, NORTHCOM & EUCOM – participate as observers
- Army Logistics Support Agency (LOGSA)

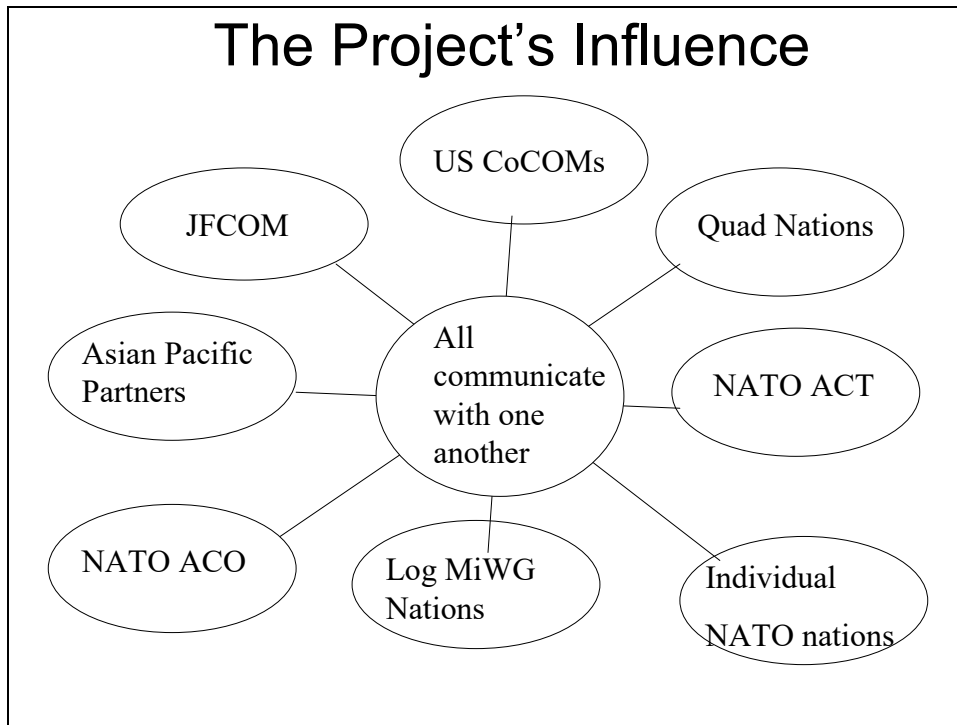


Figure 6

9. Finances

Award of funding in the amount of \$832K was provided from the Coalition Warfare Program after the competitive process of project submissions was complete. This funding was dispersed over a two year period Fy06-07 (Tables 1-3) Additional monies from the United States came in the form of RTD&E expiring funds: \$850K as well as various involved US entities. (see Other non-CWP Contributions)

GITV Final Report
Unclassified

Table 1

FY06	Planned	Actual – FY06\$
October	\$0K	0
November	\$0K	0
December	\$38K	0
January	\$38K	\$30K
February	\$38K	0
March	\$53K	0
April	\$53K	\$150K
May	\$53K	0
June	\$53K	\$69K
July	\$38K	\$83K
August	\$38K	\$41K
September	\$38K	0

Table 2

FY07	Planned	Actual – FY07\$
October	\$0K	0
November	\$0K	0
December	\$122K	\$122K
January	\$0K	0
February	\$0K	0
March	\$45K	\$45K
April	\$0K	0
May	\$30K	\$27K
June	\$104K	\$50K
July	\$87K	\$122K
August	\$28K	\$46K
September	\$0K	\$2K

Table 3

FY	Funds	COM	OBL	EXP
FY-06	\$416K	\$393K	\$373K	\$373K
FY-07	416K	\$416K	\$414K	\$414K
TOTAL	\$832K	\$789K	\$787K	\$787K

Other, US non-CWP Contributions (Total \$1,564,600 USD)

- FY04/05 RTD & E expiring funds \$850K Joint Staff
- USA MAT COM Log (LOGSA) \$52K in personnel and travel costs
- PM JAIT non-contract support personnel and travel \$122K
- GTN ROM to implement two requirements-travel costs and changes in systems \$540,660-\$571,850

Identification of any expiring CW funds

FY 06 funds returned total of 43K
 FY 07 funds of approximately \$2K will be returned

Contracts

NC3A PM JAIT SPAWAR GENERAL DYNAMICS

GITV Final Report
Unclassified

9.2 Foreign Partner Contributions \$3,217,101.00- Table 4

**All partners notified by email and telephone of the use of the information provided (contribution costs)*

County	Contribution	Other Contribution	Total
Australia	Conference attendance and hosting \$83,774USD Purchase of additional hardware/software and testing \$1,079,041USD Ongoing to support capability \$532,490 USD	Conference attendance Norfolk-1person Washington-2 people Denmark-1 person Australia-3 people Ottawa-2 people Hosting a conference Technical/ICC input	\$1,695,304 USD
Austria	Not Reported	1 Conference Attendance Norfolk	
Bulgaria	Not Reported	1 Conference Attendance Norfolk	
Canada	\$39,874USD 120 Man days	Conference Attendance Norfolk-1person Washington-2 people Denmark-2people Australia-3people Ottawa-3people Business Process Model Workgroup-1 person Hosting a conference Engineer/technical input ICC input	\$39,874USD
Croatia	\$10,000 USD	Conference Attendance Norfolk-1person Washington- 1 person Denmark-2 people Australia-1 person Business Process Model Workgroup-1 person ICC input	\$10,000 USD
Denmark	\$106,923 USD	Conference Attendance Norfolk-1person Washington-2 people Denmark-2people Australia-3people Ottawa-3people Business Process Model Workgroup-1 person Hosting a conference Engineer/technical input ICC input	\$106,923 USD
Ecuador	\$0		
Estonia	\$0	1 Conference Attendance Denmark	
Finland	\$0		
France	Not Reported	3 Conference Attendance Norfolk Washington DC Canada	
Germany	\$0		
Greece	\$0	1 Conference Attendance Norfolk	14
Hungary	\$0		
Italy	\$0		
Japan	\$0		

GITV Final Report
Unclassified

Country	Monetary Contribution	Other Contributions	Total
Korea	Not Reported	Conference Attendance Norfolk-6 people Washington-1 person Denmark-3 people Ottawa-3people Host RSOI 07 Evaluation	
Mexico	\$0		
NATO	\$5,000 USD	140 Manhours	\$5,000
The Netherlands	\$11,200 USD	2 Conference Attendance Teleconference attendance	
New Zealand	\$20,000 USD	Conference Attendance Denmark- 1 person Australia- 1 person Ottawa-1 person Exercise observer Talisman Sabre 07	\$20,000
Poland	\$0		
Romania	\$0		
Singapore	\$150,000	\$1,200,000 Purchase of AIT Hardware Attended all Conferences	\$1,350,000
Slovakia	\$0	1 Conference Attendance Denmark	
Sweden		1 Conference Attendance Denmark	
Switzerland	\$0		
United Kingdom	Not Reported	Conference Attendance Norfolk- 1 person Denmark- 1 person Australia- 1 person	

10. Possible Future Technical Capabilities

The technical solutions developed, tested and implemented in the GITV project leave room for expansion and advancement. A third proposed technical solution was created in order to explore using the NMBS to send and receive RFID messages. The NMBS would be the entity to receive the messages and routes the data to its owner, with similar functionality of a central server. (See Figure 7)

Technical Description: RF to VAN

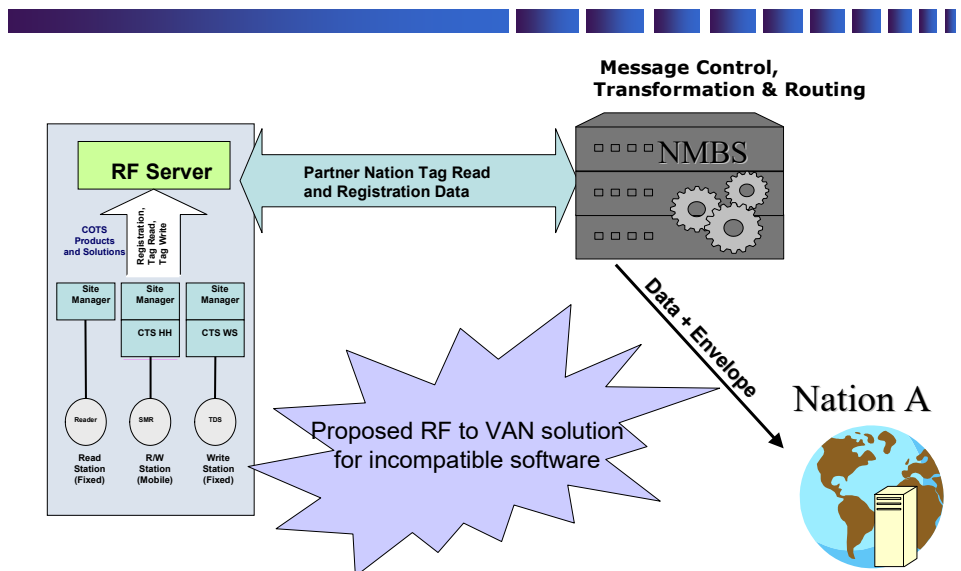


Figure 7

Possible Costs associated with RF to VAN Solution

The chart below depicts the approximate cost to implement the RF to VAN solution. This cost estimate is from NAMSA and is dated 10 Oct 2007. A request for cost would be required at the time of implementation.(Table 5)

Requirements for the HUB using NMBS	Costs in USD	Costs in Euros
HUB License for the SAVI systems (up to 5 system connected)	50,000	
Maintenance first year	11,000	
HUB Implementation service	39,800	
Server HW/SW	25,000	
Sub-Total for the SAVI Hub portion	125,800	
NMBS updates to support GITV Phase II as agreed by Nations in Ottawa		50,000
Support of TIP/XML translation		15,000
Support of XML messages for RFID		9,000
Support of XML message Routing for RFID		25,000
Link with SAVI		15,000
Sub-Total for the NMBS Hub portion		114,000
Grant total a & b for a GITV HUB for Phase II using NMBS & supporting SAVI systems & TIP messages	93,881	207,881

Table 5

There would be a cost for each nation to participate in this solution as well as sponsorship requirements for non-NATO countries.

11. Future Growth/Expansion of Capability

In addition, the GITV capability can be expanded to multinational Inter-Agency (IA) activities and Non-governmental Organizations (NGOs) for the purpose of using the GITV capability in Humanitarian Relief/Disaster Assistance (HR/DA) operations. It would also benefit the US to conduct a study in order to identify the next most valuable technical iteration of the GITV capability.

12. Conclusion

The Project has created an operational capability which is now in place. The U.S. and NATO Radio Frequency Identification (RFID) servers are able to pass ITV data between each other. The U.S. and Australia RFID servers are able to pass ITV data and Australia and Denmark RFID servers are investigating incorporating the RFID solution. Denmark, the U.S., Korea, Canada, Singapore and NATO were instrumental in testing and validating the operational capability to pass bar code ITV data. The number of nations will continue to grow with time. It is important to maintain this collaborative group until all nations have the ability to pass both bar code and RFID ITV data. This Project has laid important groundwork for other Multinational Information Sharing efforts to follow in addition to yielding a highly valuable tool for the warfighter at an extremely low (<\$2M) cost.

Success points

The GITV Capability did not create a new “system”, but rather it enables nations’ individual in-transit visibility systems to route each other in a “federation of systems” configuration. As such, the framework revolves around developed methods to pass ITV data from one nation to another, as opposed to creating a system that each nation must purchase and implement.

- The project was able to work several Radio Frequency DoD Policy data standards changes/improvements, and capture/provide metrics from demonstrations, exercises and assessments now being worked with TRANSCOM and DLA to transfer and/or transition into their coalition ITV applications residing in their Integrated Data Environment (IDE-phase 1) and Global Transportation Network (GTN) Convergence being called IGC as a multinational RFITV solution set.
- There was an “Out of Cycle” change to the Defense Transportation Regulations DTR, Part II, Chapter 203, Paragraph B.7 and to Appendix M, Table M-13. Accommodation of the SSCC in the DTR TCMD will help ensure success of the GITV effort, provide better warfighter support, reduce re-orders and lift requirements, and ultimately reduce ITV infrastructure cost for the DOD and coalition partners. The SSCC will be codified in the TCMD T_9 record in such a manner that it can be parsed out from the other TCMD miscellaneous information by GTN business processes for association with a TCN assigned to the respective shipment unit.
- The current use of the NMBS is one option of many Value Added Networks available. The key to remember is the VAN is the linkage between the partners. What has been proven is a method that’s allowing multiple nations to share resources.

Challenges

The project had its share of challenges but many were overcome with the face-to-face conferences and the Term of References.

At the beginning of the project the US perspective was each nation would be starting at the same level and each nation had the funding and systems flexibility to implement changes as the program moved through the three phases. Also, the US took it for granted all nations wanted and would implement both the barcode and RFID solution. Again, this would not be the case. Some nations are sharing barcode only and some only sharing RFID. The US is supporting both GITV solutions and may implement GITV Level II in the future.

In their collaborative efforts the US has to be mindful of the limitations of our partners. Our partner nations do not have the resources or the in-place infrastructure to implement rapid changes. One of the key aspects of the GITV framework is that nations can implement the capability as they need.

The technical solution of the NATO Mailbox System as the Value Added Network of choice brought to light issues with non-NATO/PFP nations. Although all listed partners have a current NMBS account, it is for codification purposes only. Sponsorship for non-NATO/PFP nations was given for this purpose only. In order to use the NMBS as the VAN of choice for the GITV capability, sponsorship must be pursued on a country by country basis.

13. Partner Comments

Australia, Mr. Selby Dyer, Participant

Value

The AS/US GITV interoperability trial conducted during the build up phase of Exercise Talisman Sabre 07 was a very important activity for Australia. The aim of the trial was to demonstrate the ability of AS and US RFID infrastructure to read the RFID tags of both nations and route all reads back to the owner nation.

The value for Australia is clear: when working with the US anywhere in the world, AS will have the ability to greatly increase its cargo and asset visibility through the use of US RFID infrastructure. This increased visibility will come at a very low cost to Australia, yet it represents an opportunity to achieve significant savings such as avoiding the costs associated with lost or delayed cargo.

Operational Impact

The operational impact of the trial will be significant for the reasons outlined above. AS works very closely with the US in the Middle East and is a common user of a range of sea and air ports that form the supply chain into both Iraq and Afghanistan.

The ability to benefit from the extensive US RFID infrastructure that is currently in place will greatly improve AS capacity to support its troops in theatre. The fact that this improved speed and accuracy will be achieved at little marginal cost and generate savings for the AS DoD cannot be emphasized enough.

Cultural Change

Most cultural change is already beginning in the Australian DoD thanks to the introduction of a national RFID capability. Improved performance measurement has enabled the easy identification and remediation of bottlenecks in the supply chain. Increased confidence in the system is reducing in-theatre stocks and greatly reducing the number of duplicate orders in the system. Both of these factors are having a very positive effect on supply chain performance. Global access to US RFID infrastructure will serve to greatly increase the speed and impact of these improvements

Canada, Ms. Michelle Renner, Participant

Participation in the GITV Project has allowed Canada to engage with multinational partners in the creation of a viable data exchange solution for consignment tracking. The opportunity to share lessons learned and to expand our knowledge of existing and emerging technologies will positively impact our future evolution of consignment tracking, In-Transit Visibility and related business.

United States Forces Korea C4, LTC John McCoy Representative

The GITV program allowed shared-ITV between the US and the ROK to take a large step forward in information sharing it otherwise wouldn't have taken. As CFC transforms, the GITV initiative provides an excellent and valuable way to maintain military logistic ties between the ROK and the US that can endure beyond expected CFC transformation. The overall project was a great push in helping the US with its international military logistic relations as well as helping in its economic, political, and informational relations.

NATO ACT-Wing Commander Steve Barbour, Participant

"GITV Concept is self-evidently sensible and will remain of significant value as long as the results from it are captured effectively....may be in terms of identified lessons.."

Issues:

No Cost Effort

There was a strong push early on to persuade participants that this could be achieved as, essentially, a 'no-cost' effort. It is clear, although the costs are relatively small for most, there are costs and they can't be avoided. An up-front acknowledgement of required running costs might have led to a greater acceptance later on of a commercial solution to the GITV capability.

Sovereignty of Data

The concept started with an almost inalienable right that data would only ever pass between the consignor/asset owner and whoever had the consignment at the time. The impression that this tenet had effectively disappeared by the end of the project is concerning. It is a very important issue and needs very clear articulation.

NATO's Involvement

The use of NATO's infrastructure as a basis for trialing a prototype GITV system is supported. However, clearly many of the nations thought it would naturally migrate into the final solution.

Issues with such a migration:

- The use of a NATO infrastructure for a permanent the GITV solution
- Clearly not without cost as well as fundamental approval issues over the use of a multi-nationally funded infrastructure for purposes not subscribed to by the contributing nations.
- The use of the NATO mailbox (NMBS) by non-NATO nations to support NATO codification activities and specific weapon system is not necessarily a precedent for its use in GITV. GITV involves the potential transmission of live operational data, possibly between two non-NATO nations.
 - This use is to support codification activities or specific weapon system support activities for specific NATO nations; it is not to transmit live operational data possibly between two non-NATO nations.
- Who could participate in the GITV activity
 - The potentially open-ended agreements that could be reached on data sharing with GITV means NATO would have difficulty controlling access to, and use of, NMBS. This could lead to potential access control issues in the future.

Way Forward

The work should not go to waste. Certainly full documentation is required and it might be worth investigating through the NATO Asset Tracking Working Group whether a supplementary to a STANAG is possible. This could be considered in the light of introducing the GITV protocols as a mechanism for NATO nations to interact with non-NATO/PfP participants in multi-national operations and exercises. A further alternative might be to see whether the Logistic Multinational Interoperability Working Group (LOG MIWG) might wish to take the idea further forward, perhaps developing a capability through that forum.

DENMARK-Major J.J. Molvig, Participant

The commitment from Denmark (DNK) to Global In-Transit Visibility (GITV) Project was carried by the Defence Acquisition and Logistics Organisation (DALO) with assistance from the Defence IT Organisation. Denmark joined in from the first phase of the project with the same team that already represented Denmark in NATO Asset Tracking Working Group.

As a small nation with a high dedication to military peace and stabilisation missions, Denmark believes in multinational cooperation and burden sharing in order to achieve the maximum effect with the minimum resources. From the Danish point of view, the GITV project is an enabler of such burden sharing with long term strategic partners as well as with ad hoc partners in separate coalitions.

Looking back on the process, Denmark finds that the original ambition of a global network may have been a little overambitious, but less will do. Denmark expects that in the near future the capability will remain driven by some 4-5 of the nations who have consistently

shown a high level of engagement and commitment. As long as those leading nations includes the USA, and under the condition that a solution will be found to enable exchange of data between Denmark and her strategic partners within the GITV community, Denmark is satisfied with the outcome of the process.

Realizing that further development is necessary to bring the GITV capability up to a fully operational condition, Denmark remains content that the products derived from the GITV Project will support multinational logistics cooperation in the field. Denmark will maintain her commitment to the project and on the short run continue to dedicate resources to the further development.

In the short run, Denmark does not find it of vital importance that a large number of nations or organisations join in at this first phase. A small group of dedicated nations would be sufficient to carry the capability into the future. More important is it that the capability very soon shows results in terms of real life data exchanges in the framework of real life deployments or supply lines.

As Denmark often is engaged in missions where other GITV partners have deployed troops, Denmark expects that opportunities to test the capability will arise soon.

THE NETHERLANDS, Hugo Verwijs CDR RNLN, Participant

The Netherlands see an interoperable network of multinational coalition in-transit visibility (ITV) systems as a powerful and efficient tool. Therefore The Netherlands contributes a lot to the development of the NATO consignment tracking Stanags and conducted interoperability tests with NC3A. Unfortunately The Netherlands did not have sufficient resources to engage fully in the GITV project and implement the developed interface.

NEW ZEALAND-Mr. Christopher Summerville, Participant

In 2006 the New Zealand Defence Force embarked on a program to automate the tracking of consignments and assets throughout the supply chain, irrespective of location. The GITV project has enabled us to gain invaluable information of other armed forces' development and operations based on hard experience that will shorten our development timeline and assist us in making the most appropriate direction in development. The GITV capability also provides the solution to what we had identified as a potential gap in our capability in terms of interoperability with likely coalition partners. We look forward to continuing to work with the GITV partners in the future to ensure the capability is maintained and extended for the benefit of all.

SINGAPORE-LTC Liau Eng Soon, Participant

The participation in the GITV collaboration project has allowed Singapore to better understand and appreciate the benefits of in-transit visibility capability. While Singapore has enabled ITV via RFID, the Operational Concept Document published collectively will allow Singapore to explore barcode asset tagging as a possible future capability. In addition, Global ITV has enabled information exchange between in-transit visibility systems of partner nations. This increases the overall capability and yet conserves resource for each partner. Singapore is eager to test our newly established system with partner nations in order to ensure

compatibly and contribute to this global effort. We hope that funding is available to verify NMBS as the final interim solution for information exchange among nations. This collaboration project has also acted as a catalyst for Singapore to invest for the set-up of our RF-ITV system. We appreciate the opportunity to participate in this project.

UNITED KINGDOM-Lt Col Nick Heath Participant (comments provided by UK ACDS Log Ops)

The UK has adopted Observer Status regarding the GITV Project because the national information systems required to facilitate the capability are currently subject to an incremental development programme and UK is unable to take an active role until the development programme is completed. The UK remains fully supportive of the international aspiration to establish an international interoperable network to facilitate the flow of "licence plate" identification on the whereabouts of national consignments.

The GITV Project has generated an in depth review of consignment tracking processes between the nations and has highlighted and exposed the complex interaction between the physical processes within supply chains, the information flows required to support effective consignment tracking and the Automated Identification Technologies (AIT) that can be employed to support international interoperability. The GITV Team has successfully identified and made effective use of the 5 key data elements necessary to enable international interoperability (Consignment Identifier, Location, Date Time Group, Message Reporting Nation ID, Consignment Owning Nation ID) and it has been a significant achievement to agree the information exchange requirement and standards to support information sharing.

The GITV Project has rightly adopted an open standard that will enable nations to share consignment level details using a variety of AIT media (Bar Codes, RFID Tags, GPS Tags). This strategy enables an all inclusive approach and will allow any participating nation to select either traditional or more cutting edge technologies to support data transfer. The decision to adopt an architecture where national readers route read events from other nations consignments via a single router is to be applauded as it limits the number of interfaces between systems and is the most efficient way to use scarce bandwidth. The GITV Team has encouraged an all inclusive approach and have adopted the design which allows both bi-lateral and multi national agreements to be forged between nations which will ensure that the GITV process can be used for a wide range of applications and across a wide spectrum of operations.

The UK is currently delivering an incremental improvement programme of its key consignment tracking capabilities which, once completed, will enable the UK capability to deliver international interoperability using either the existing active RFID system or Serial Shipping Container Code (SSCC) compliant Bar Codes.

Although the UK is not currently in a position to become an active participant within the GITV capability the UK embraces the principles espoused within the project ethos and documentation to deliver international visibility at the consignment level.

14. Points of Contact

Karl Speights
Division Director
United States Joint Forces Command
Requirements, Readiness and Initiatives J45
757-836-5184
karl.speights@jfc.com

Capt Gia Wilson-Mackey
Military Lead
United States Joint Forces Command
Requirements, Readiness and Initiatives J45
757-836-5189/757-203-3170
gia.wilsonmackey@je.jfc.com

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