

**Smartphone Application Enabling Global
Graph Exploitation and Research
(Revised Fiscal Year 2014)**

by Mark R Mittrick

ARL-TN-0628

September 2014

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ARL-TN-0628

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REPORT DOCUMENTATION PAGE				Form Approved OMB No0704-0188	
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1. REPORT DATE (DD-MM-YYYY) September 2014		2. REPORT TYPE Final		3. DATES COVERED (From - To) October 2012–September 2013	
4. TITLE AND SUBTITLE Smartphone Application Enabling Global Graph Exploitation and Research (Revised Fiscal Year 2014)				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Mark R Mittrick				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) US Army Research Laboratory ATTN: RDRL-II-C Aberdeen Proving Ground, MD 21005-5066				8. PERFORMING ORGANIZATION REPORT NUMBER ARL-TN-0628	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT A new weapon being developed is changing combat as we know it: Smartphone applications have revolutionized information sharing around the globe for military and civilians alike. The US Army Research Laboratory (ARL) is developing a smartphone application that will promote rapid sharing of tactical information between Soldiers in the field and military intelligence analysts in a company intelligence support team. This application allows a Soldier to enter tactical information into the Distributed Common Ground System-Army Global Graph to enable near-real-time analysis using the ARL heterogeneous data proximity tool. This report is a fiscal year 2014 update with added Value of Information functionality and revised data elements and values.					
15. SUBJECT TERMS smartphone, HDPT, global graph, ozone widget framework, distributed common ground system, web service					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 14	19a. NAME OF RESPONSIBLE PERSON Mark R Mittrick
REPORT Unclassified	ABSTRACT Unclassified	THIS PAGE Unclassified			19b. TELEPHONE NUMBER (Include area code) 410-278-4148

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1. Introduction

A new weapon being developed is changing combat as we know it: Smartphone applications have revolutionized information sharing around the globe for military and civilians alike. The US Army Research Laboratory (ARL) is developing a smartphone application that will promote rapid sharing of tactical information between Soldiers in the field and military intelligence analysts in a company intelligence support team (COIST).

This application allows a Soldier to enter tactical information into the Distributed Common Ground System-Army (DCGS-A) Global Graph to enable near-real-time analysis using the ARL heterogeneous data proximity tool (HDPT).

This report focuses on ARL's HDPT smartphone application and its interaction with the DCGS-A Global Graph and HDPT at the fiscal year 2013 (FY13) On the Move (OTM) exercise. The OTM exercise, which focuses on cutting-edge technologies for the future force, is held annually at Fort Dix, NJ, and for ARL represented the culmination of several months of work to integrate new technologies into tactical networks.

This report updates a previous technical report with the same title from May 2013, ARL-TR-6439. Changes include Value of Information (VoI) functionality and revised data elements and values.

2. HDPT Report Application

The HDPT report application has three main tabs: <Create Person>, <Modify Person>, and <Settings>. These tabs allow the Soldier to collect intelligence information from the field and perform various tasks with the collected information, such as inputting new information, updating old information, or removing inaccurate information. Once Soldiers have entered the information, they are presented with a VoI screen that allows them to grade the information based on content and reliability before submitting the information to HDPT.

2.1 Create Person

When the HDPT report application is initiated, the user is presented with the <Create Person> tab (see Fig. 1), which allows a Soldier to create a new person of interest. The Soldier then enters all of the information from the field into the text and drop-down boxes and submits it via the <Send Report> button to the DCGS-A Global Graph for analysis by HDPT.



Fig. 1 HDPT report application:
<Create Person>

The following Table shows the possible elements and values when creating a new person for use in this exercise. Not all elements need to be answered for the information to be submitted for analysis.

Table Revised data elements and possible values

Data Element Name	Possible Values
Name	Suspect's name
Nationality	Muslim, Afghan
Tribal affiliation	Pashtu, Baloch, Hazara, Tajik
Criminal record	Has record, no record
Education	High, medium, low
Employment	Cleric, laborer, professional, retired, unemployed
Religion	High, medium, low
Address	Times Square Village, Viet Nam Village, Vertol Village, Hanover Village, Cook Corner Village, Gredge Town, Utes Village, Horizon Village

2.2 Modify Person

The <Modify Person> tab is very similar to the <Create Person> tab. When new information becomes available in the field, the Soldier might need to update the Global Graph. To do so, the Soldier must first locate the suspect in question from a list of suspects in the Global Graph (see Fig. 2). The Soldier can then modify the suspects' characteristics, as described in section 2.1.

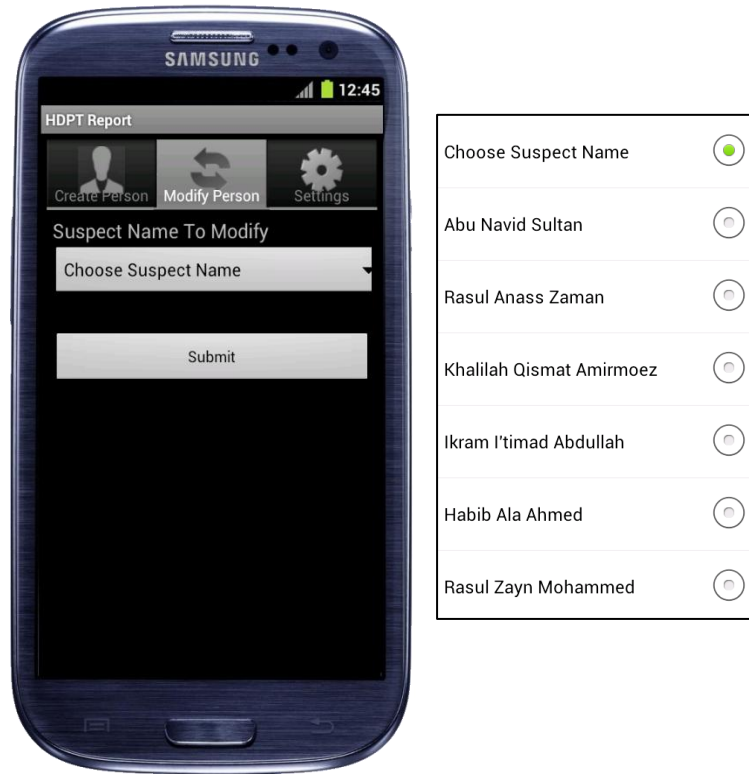


Fig. 2 HDPT report application: <Modify Person> with example drop-down box

2.3 Settings

The <Settings> tab is used to select a DCGS-A Global Graph server (see Fig. 3). This allows the Soldier the ability to quickly and easily change servers as necessary. In this exercise, we had one operational server and a backup in case the main server was not functioning properly, ensuring that the smartphone application would always be available.



Fig. 3 HDPT report application:
<Settings>

2.4 VoI

The VOI screen is used determine the value of information (see Fig. 4). This allows the Soldier to quickly and easily grade information (information content and reliability) being entered into the Global Graph.



Fig. 4 HDPT report application: <VOI>

3. Conclusion

ARL's HDPT smartphone application allows Soldiers to enter tactical information from the field into the DCGS-A Global Graph for near-real-time analysis. ARL was able to take the lessons learned from the FY13 OTM exercise and successfully build upon it. This is the first step in promoting the rapid sharing of information between Soldiers and military intelligence analysts. In the future, additional features and refinements will be added to further enhance ARL's smartphone technology.

4. Bibliography

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