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Paper 001: On Facilitating Stability Operations: A Net-Centric, Federated Approach to Information Sharing

Topics:

1. Information Sharing and Collaboration Processes and Behaviors

2. C2 Architectures and Technologies

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ABSTRACT

In November 2006, the US Department of Defense issued a new policy entitled Stability, Security, Transition and Reconstruction Operations (DoDD 3000.05). This policy mandated that the US military must treat SSTR Operations, now shortened to Stability Operations, on par with major combat operations. Recent efforts in Haiti indicate there remain significant challenges to civil-military coordination. On the critical path to successful accomplishment of Stability Operations is the ability to communicate, collaborate, translate and engage with the civil portion of the calculus. From a military perspective, neither will the civil side be commanded nor will it often be controlled. Therefore, traditional C2 methods are not applicable in managing processes that cross the civil-military boundary while engaged in Stability Operations. The focus of this paper regards research into a methodological approach to bridging civil and military systems that support their distinct business processes with a view towards enhancing shared situational awareness, a common assessment framework, providing a common basis for planning, and a synchronized ability to execute those plans.

1. Introduction

In 2004, the Defense Science Board Summer Study indicated a need for policy that would place Stability, Security, Transition, and Reconstruction Operations on par with Major Combat Operations. On par in terms of a placing the responsibility for planning and conducting them with the commanders engaged in operations. Twenty-three months later, this finding resulted in Department of Defense Directive (DODD) 3000.05 *Military Support for Security Stability Transition and Reconstruction Operations.* In 2009, the Directive was revised and published at a DOD Instruction (DODI) 3000.05 *Stability Operations*. The net effect of the Directive and Instruction was to not place any one Service in the lead for Stability Operations. In the view of the author, this led to a very slow recognition of the need to effect changes with regard to how Stability Operations are to be conducted. This is especially true with regard to information and communications technology challenges surrounding Stability Operations.

Alberts, Christman, & Dowdy (2007) described the nature of the problem with regard to information sharing to and from the Defense enterprise with the anticipated mission partners. The information security paradigm of "need to protect" was transforming to "must share" in order to enable the business processes of the Defense enterprise, the whole of government, and the plethora of organizations outside the United State Government that share the Stability Operations mission space.

2. Real World Challenges: Recent cases that underscore the nature of the problem

2.1 Operation Enduring Freedom

Operation Enduring Freedom-Afghanistan began in October 2001 (Stewart, 2004, p. 10) and quickly saw the demise of the Taliban government. Following the military victory, a decision was made to quickly stand up a new sovereign interim Afghan government followed by elections as quickly as possible. This would afford Afghanistan a democratically elected government for the first time in its history (Gouttierre, 2010). The campaign transitioned from major combat operations to stability operations with a heavy emphasis on international development and reconstruction efforts (Wentz, Kramer & Starr, 2008, p.8). Despite the nearly eight years of stability operations and over $38 billion for Afghan reconstruction appropriated in the United States alone, one still finds there are information sharing challenges that are prevalent within the US Inter Agency (SIGAR, 2009, p.iii). Despite a variety of information systems available to manage reconstruction and stability operations efforts, there remains a lack of integrated information to afford key leaders with a common overview of the various efforts (SIGAR).

2.2 Operation Iraqi Freedom

Operation Iraqi Freedom began in March 2003 and major combat operations were declared over on May 1, 2003 (Deese, 2010). As with operations in Afghanistan, reconstruction and stabilization operations ensued following major combat. Since

stability operations have commenced, the United States Congress has appropriated $50 billion for Iraq relief and reconstruction (SIGIR, 2010). In 2009, the Special Inspector General for Iraq published *Hard Lessons* which chronicled the struggles confronted by the US Interagency in its efforts to perform the reconstruction and relief mission in Iraq. Amongst other issues, the report cites a lack of access to information and poor inter agency coordination (p.95). The report expounds on this theme: "The delay in creating an integrated information system that could track projects had long-term consequences, hampering program and project management for years to come" (p.111).

2.3 Operation Unified Assistance

On December 26, 2004, a power earthquake registering 9.0 on the Richter scale off the coast of Sumatra resulted in generating a tsunami tidal wave that caused widespread devastation across the Indian Ocean basin. In response, the United States Pacific Command was placed in charge of the US response. On December 28, 2004 Operation Unified Assistance was begun. The operation was vast and included 16,000 personnel delivering 16 million pounds of supplies (Dorsett, 2005). By the end of the operation, it had included military contributions from 18 nations and included the involvement of well over 90 non-governmental organizations (NGOs) (Dorsett). Despite herculean efforts to mitigate suffering, it was once again quite clear that the US military is fairly well suited for internal information sharing but lacks the capability to readily share information outside of the dot mil domain to other mission partners. Extensive use of swivel chairing operations from one network domain to another; couriers with hard copies; hand carrying imagery and other documents; sending emails; and extensive phone calls and video teleconferences were the rule (Dorsett). These methods of sharing information are clearly contrary to the spirit and intent of tenets described in Department of Defense Directive (DODD) 8320.02 *Data sharing in a net-centric Department of Defense*. This policy document mandates that data generated by Defense information systems must be accessible, visible, understandable, trusted and discoverable. To agencies and organizations outside the Defense enterprise, critical mission information could not be characterized as adhering to these tenets.

2.4 Operation Unified Response

On January 12, 2010, a 7.0 earthquake struck Haiti and caused significant loss of life and massive damage to the city of Port-au-Prince (Goldberg, 2010). United States Southern Command (USSOUTHCOM) launched Operation Unified Response to conduct Humanitarian Assistance / Disaster Relief Operations. The Operation involves more than 17,000 US military personnel, 19 ships, and 120 aircraft (Earthquake, 2010). Despite the very rapid and formidable response by the United States, there remain coordination problems amongst the expected mission partners in this type of operation. "Supplies are not reaching victims of the massive earthquake that hit Haiti on Tuesday because of coordination failure among military operations and humanitarian agencies" Admiral Ted N. Branch, USN (Schmall, 2010).

2.4.1 Leveraging the TISC JCTD

Coincidental to the earthquake, the Transnational Information Sharing Cooperation (TISC) Joint Concept and Technology Demonstration (JCTD) had been ongoing since 2008. It will conclude and transition from a technology demonstration to a program of record in 2010. The TISC JCTD seeks to provide a collaborative information environment that is completely unclassified and available to all mission partners. In this case, it meant principally the Host Nation, International Organizations, Non Governmental Organizations, Private Voluntary Organizations, and the US Inter Agency (amongst others). The portal platform that has emerged as the candidate to transition to a program of record is the All Partners Access Network (APAN). APAN is a dot org environment that, with a nominal registration process, enables users to enter mission-specific workspaces – in this case Haiti HA/DR. One of the organizations sponsoring the JCTD is USSOUTHCOM. USSOUTHCOM staff personnel requested a workspace be provisioned for Operation Unified Response. As of January 20, 2010 there were over 1,200 members of the Haiti HA/DR workspace as shown in figure 1. (Reyers, 2010).
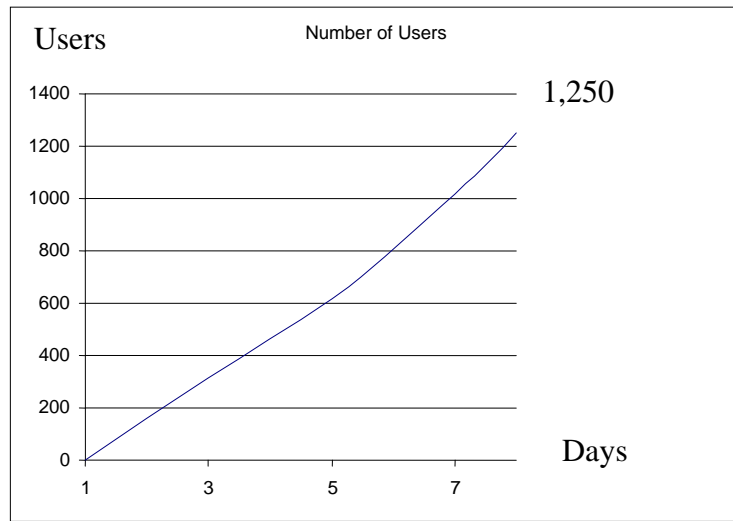
2.4.2 All Partners Access Network

Despite the relatively large volume of users from various roles in the mission space, the remarks of Admiral Branch still stand. When one examines the types of information that are being shared on the APAN portal, it is apparent that in its current configuration, the portal lacks structured business processes and rules that lead to action. Actionable information must be complete (who, what, when, where, why, how), geospatially referenced, accurate, and authoritative. In its current form, any logged-in user can post anything at anytime to file lists, wikis, and discussion forums that require consequential parsing and analysis before one can obtain the desired level of actionable information. Furthermore, the data that is posted to the portal remains within the confines of the portal and is not shared in a net-centric manner with military programs of record that can
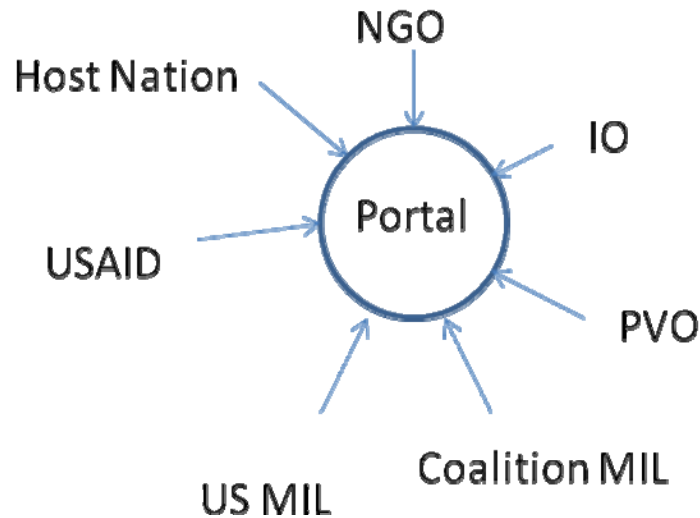
Figure 2. Disparate mission partners entering the portal and collaborating.

consume the data in order to enable military business processes such as assess, analyze, plan, and execute. This is not meant to disparage APAN. The portal was designed with an inward focus on collaboration from the onset. In other words, it was meant to provide a collaboration space for users to come into and share information about the environment in question and coordinate on next steps. The portal was never intended to be a pivotal information sharing platform to enable external business processes in an automated, net-centric manner. This necessarily requires leaving your native work environment and logging into APAN to enable the collaborative experience to occur. Figure 2 illustrates the modeled mission partner profile for the APAN environment. The inward arrows represent logging in and sharing information to the environment. Where one finds relevant information and makes use of the information outside the portal, the arrow would be outward away from the portal.

Wells, Wentz & Hardy (2009) discuss the notion of information sharing and coalition building. They offer sound advice that is not getting traction, from a net-centric perspective when one examines the APAN portal. They provide the following to consider:

> In practice, the focus of military commanders and support personnel will be more on the needs of the Joint or Coalition force than on the civilian players in the operation. However, if there is to be an effective coalition, there must be external links to mission partners beyond the boundary of the military, and these links require that unclassified information be shared in both directions. Unclassified information sharing is harder than it might seem, and all branches of the US Government need to pay more attention to doing it well in stressed environment."
> p. 295

Yes, one can say that APAN provides a means for information exchange. One can publish and consume information posted in the portal. However, the current implementation does not take that posted information as data and share it in a net-centric manner (i.e., accessible, visible, understandable, trusted to all mission partners that require it).

3. A Net-Centric Approach

In July 2008, the Assistant Secretary of Defense for Networks and Information Integration tasked the Integrated Information and Communications Technology Support Directorate with creating a Stability Operations Community of Interest (COI) Working Group (WG) to increase the body of knowledge pertaining to impediments to information sharing amongst the diverse mission partners that operate in the Stability Operations mission space. As the nature of the information sharing impediments became clear, it was thought that solutions could be identified. Quite often, before solutions can be discerned, high-level capabilities must be identified first. Or, more simply, we were to listen to the practitioners, apply our knowledge of technology, and then develop a road map to ultimately direct the Community towards a well-constructed pilot program (Christman, 2009). The pilot was to illustrate how technology could be applied to this problem and lead to a set of capabilities that solve the original state impediments. The Stab Ops COI WG efforts began on 1 October 2008 and culminated in a pilot program that was demonstrated in September 2009. It took the portal concept further and leveraged its ability to serve as a pivotal data integration hub that is at the nexus of information sharing links that Wells, et al, describe above. The demonstrated model focused on the major environments that must publish and consume data: military; civil-military; and, civil.

This model (Wells, et al, p. 297) in figure 3 illustrates an affected nation view of the disparate mission partners one can anticipate in a given Stability Operation.
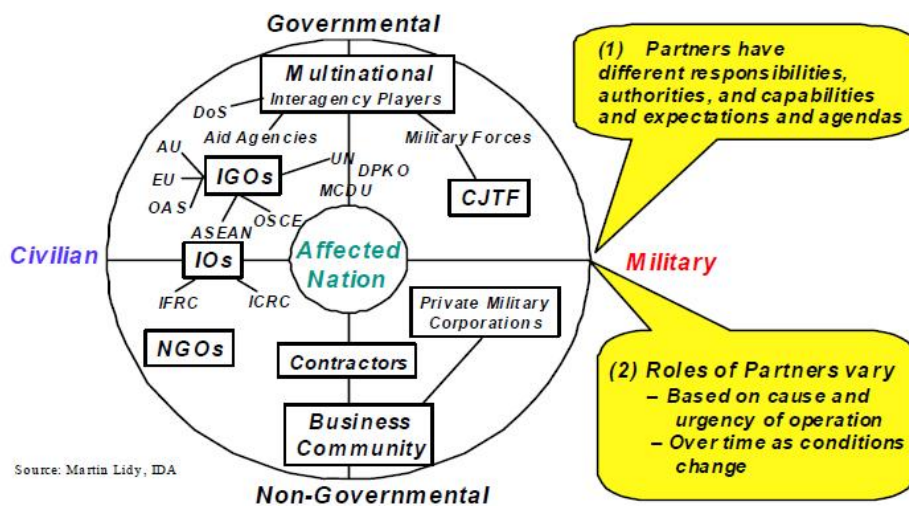

Figure 3. Civil-Military Players in Complex Operations

This figure captures the larger categories and names of actors that respond to an affected nation. Christman (2009) expressed the model more simply and provided conceptual flows of information based upon the types of capabilities and Web services available in the portal environment. Figure 4 depicts the military, the civil-military, and civil environments that are analogous to the players represented in figure 3. The figures shows the screen views of the information that a military operations center person would see on the left; the civil-military players in the portal would see in the center; and, the map view with geospatially referenced data available to the purely civil actors on the right. What was demonstrated in September 2009 was assessment and request information for food, water, and shelter posted to the portal via an XML-based schema and rendered on a map view for those that operate in the portal. Office of Foreign Disaster Assistance (OFDA) Request For Assistance form 82 was Web-enabled via an XML schema and published to the MIL side then consumed by Maneuver Control System (MCS) without any further intervention, swivel chair, hand carry, or courier. By extension, through the Multinational Interoperability Program (MIP) Data Exchange Mechanism (DEM) that is inherent on current MCS devices, the data could also be published in NATO STANAG 5525 format for consumption by Command and Control systems of 26 nations that have acceded to these standards. Moving to the right of the model, one can envision any of the IO, NGO, PVO, or Host Nation portals that pertain to Complex Operations being able to consume XML-based data being published out of the Civ-Mil portal environment and consumed directly by their native business processes without retyping, re-entering or swivel chairing. The pilot was solely focused on food, water, and shelter. However, the concept can easily be expanded to include other sources of assessment information.
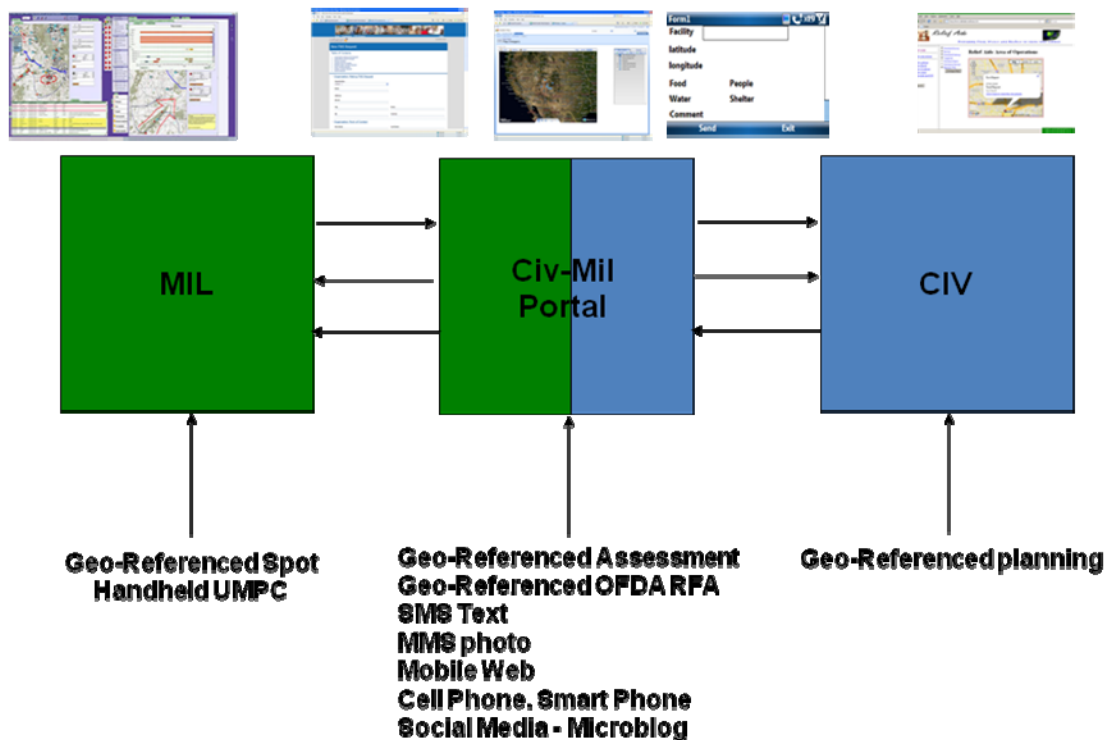

Figure 4. Illustrates demonstrated net-centric civil-military information sharing as demonstrated in the September 2009 Stab Ops pilot (Christman, 2009)

4. Summary

This paper has documented the ongoing nature of the civil-military information sharing problem that has been underscored as a result of the US military's elevated role in a panoply of Stability Operations. Engaging a disparate set of mission partners is the way ahead for the foreseeable future. It is clear that some variation on APAN will become the U.S. Defense enterprise solution for unclassified information sharing in 2010 as it transitions from a JCTD to a program of record. Although it provides an order of magnitude improvement in capability over that which existed in 2002, it still lacks the ability to fully leverage the tenets of net-centricity enshrined in existing DoD policy.

5. Future Research

As decisions are made regarding portal functionality to transition to a program of record, future efforts should be focused on ensuring that information that is posted to the portal is complete, accurate, geo-spatially referenced, and authoritative. This can be done in the XML schema-based Orbeon XForms Forms builder demonstrated via the Stab Ops pilot. Orbeon XForms Forms builder is an open source tools that provides the code necessary to build customizable forms to suite mission requirements. Furthermore, to aid discoverability, a strong archiving tool be integrated into the portal so that one can readily discover the information that enables time sensitive business processes. Another open source candidate is a product called D-Space. It is free and open source software developed by MIT and Hewlett Packard. It is in use by 500 leading research and academic organizations. It can be customized to suit civil-military files of a wide range of formats and organizes them into coherent collections.

As one looks to address the needs of Theater Security Cooperation endeavors, these types of services can readily be adapted to meet the information sharing needs across the US Inter Agency. Rather than seeking to harmonize disparate business processes amongst Federal agencies, future efforts should focus on provision of the information in the form of data that enables these disparate processes (i.e., actionable). In this way the Inter Agency processes will be synchronized since they will all be enabled by common data. With that common foundation, outcomes should be more effective and effects more coherent with regard to building partner capacity in a national or regional perspective.

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