

Stability, Security, Transition, and Reconstruction

Observations and Recommendations from the Field

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Reconstruction after natural disasters often occurs in volatile environments that expose cultural, ethnic, socio-political, and economic fault lines, and the conditions are often worse when the disaster is man-made. Most of the contributing authors on this document have seen both. We have, separately, been involved in a range of international Stability, Security, Transition, and Reconstruction (SSTR) operations over the past decade and have accrued observations and recommendations for improving SSTR strategy and conduct. Those thoughts are encapsulated in this working document.

List of Abbreviations

BGAN	Broadband Global Area Network
COTS	Commercial Off The Shelf
DoD	Department of Defense
DoDD	Department of Defense Directive
FOUO	For Official Use Only
HADR	Humanitarian Assistance/Disaster Relief
HIU	Humanitarian Information Unit
IO	International Organization
LIMDIS	Limited Distribution
NGO	Non-Governmental Organization
SSTR	Stability, Security, Transition, and Reconstruction
TTP	Tactics, Techniques, and Procedures
UNOSAT	UN Programme for Satellite Applications
USB	Universal Serial Bus

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Executive Summary

Problems Observed in the Field

If the civil authorities do not provide social services reliably, its population may seek alternatives that undermine the legitimacy of the state

A WWII maxim cautioned, “when the fighting stops, be seen cleaning up.” Our assistance in the efficient and effective provisioning of social services by the host government is critical to the daily comfort and security of the affected population. We must be prepared to support the creation of legitimate state authorities that have the capability to serve their citizens. When Stability, Security, Transition, and Reconstruction (SSTR) efforts are neglected by the US military, and the legitimate authorities cannot deliver social services effectively, the population will seek alternatives that may supplant the legitimacy of a central authority and reduce trust in the capacity of the State to rebuild.

Military personnel lack SSTR training and equipment

Although Department of Defense Directive (DoDD) 3000.05 clearly articulates US policy on conducting SSTR operations with non-traditional partners, military personnel are neither trained nor equipped to operate within an SSTR environment. The result is a loss in efficiency and effectiveness when assisting a disrupted society. Personnel also lack professional incentive to pursue SSTR billets.

US policies undermine efforts of far-forward SSTR personnel

An SSTR response requires rapid, effective, and broad-based information sharing with international and non-military partners. US policy and doctrine undermine the ability of far-forward personnel to cooperate with those partners and to work effectively with the affected population and the host government. These shortfalls are compounded by several factors:

Lack of Reliable Civ-Mil Communications. Military personnel far-forward often lack reliable and interoperable communications links with local and international partners. Bidirectional communications have also been impeded by bureaucratic approval processes that have proven unable to flex rapidly enough to meet mission needs.

Restricted Ability to Share Information with SSTR Partners. Despite the high value found in sharing maps, imagery, and other information with our local and international partners, these data are often kept classified or otherwise limited in distribution for reasons that are not always valid. US personnel are also prohibited from transferring these data on removable media such as USB drives, despite these tools often being the only universal and ubiquitous means of information exchange in harsh SSTR environments.

Lack of Tools for Disconnected Cooperation. Many SSTR missions are conducted while disconnected from any inter-organizational communications capability or internet connectivity. By policy, US personnel often cannot use the commercial off-the-shelf (COTS) software tools for disconnected cooperation which international partners have found effective. They consequently find it difficult to tap into the mesh of information flow within the international SSTR community and occasionally fail to receive critical information from SSTR partners.

SSTR Field Rotation Policies Break Fragile Bonds. Some cultures highly value a single trusted face in the context of daily operations. When personnel rotations from SSTR positions substitute one individual for another and fail to allow for overlap between the departing and incoming personnel, SSTR staff may be unable to prevent significant disruptions in the relationships and the consequent degradation of nascent and delicate networks of trust.

Recommendations Overview

Planners must establish a detailed, systematic, and reproducible approach to conducting SSTR operations. We must be prepared to assist the host country with provisioning social services as soon as the circumstances are safe to do so, and US forces must perform such SSTR operations efficiently and effectively. SSTR operations must also have policies that actively integrate SSTR personnel into the activities and mesh of information flow between non-traditional partners and the local population. Suggestions follow:

1. OPERATIONS AND FIELD POLICY

Develop a Systematic Approach to SSTR Operations

Establish processes to ensure that SSTR development under DoDD 3000.05 occurs on a level commensurate with conflict planning.

Ensure that SSTR personnel develop methods for cooperating with all partners to strengthen both the core infrastructure and civil society in regions likely to require SSTR operations. Direct that such planning should transfer those responsibilities to the host government incrementally as capabilities develop.

Delegate Administration of Social Services to the Host Government

Empower the host government to design, manage, and implement policy and hold it accountable for its effective implementation. Clearly specify roles and responsibilities for all partners. Establish benchmarks that track the increase in state capacity over time. Establish timeframes for the host government to assume administration of social services and plan for non-state actors to exit SSTR operations.

Cooperate with Non-Military Partners

Provide clear guidance that close cooperation and complementary efforts with non-military partners is a desirable, necessary, and expected component of any SSTR response (recalling DoDD 3000.05 sections 4.4 and 4.5).

Delegate Authority to Local Commanders

Enable far-forward commanders to determine the methods and tactics by which they implement an SSTR plan. To facilitate trust-building with non-traditional partners, authorize far-forward commanders to share information with them proactively.

Implement Overlapping Rotations for SSTR Personnel

Permit departing personnel to build trust between non-traditional partners and incoming US personnel by convening all parties in irreplaceable face-to-face meetings

Use virtual communities after a rotation has occurred to enable departed personnel to advise their replacements and continue to participate in discussions with non-traditional partners.

2. TRAINING AND ORGANIZATIONAL DESIGN

Develop a Core Competence in SSTR

Recognize and Cultivate Expertise

Identify SSTR experts and convene them regularly to determine policy and to develop Tactics, Techniques & Procedures (TTPs) for SSTR.

Establish a cadre of personnel who have been trained in the technical, cultural, and social aspects of SSTR operations.

Encourage SSTR personnel to build trust and actively foster mutually beneficial relationships with organizations that are likely SSTR partners.

Educate SSTR personnel in the procedures and treaties to which we are signatories and which define our obligations.

Mandate SSTR Training for Ground Forces

Change pre-deployment training for ground combat forces to embed SSTR objectives into core combat training. Ensure personnel understand their responsibilities to cooperate with local and international SSTR partners under DoDD 3000.05.

Alter TTPs to ensure that personnel receive sufficient hands-on SSTR training to operate safely and effectively in an SSTR environment.

Motivate Military Personnel to Pursue SSTR Billets

Create methods and incentives for military personnel to gain SSTR experience in the field with non-military partners and tie that experience to career advancement.

Extend US Linguistic and Cultural Capabilities

Develop translators steeped in the language within a cultural context, including the region's history, philosophy, poetry, music, literature, and religious texts.

3. INFORMATION FLOW

Encourage Immediate Information Sharing and Cooperation.

Adapt classification policies to allow for the active offering of maps and imagery to partners, as well as other necessary classes of information that enhance SSTR effectiveness, subject only to the approval of a far-forward commander. Direct and enable personnel to proactively share such vital information.

Adopt and Integrate Commonly-used Communications Protocols and Data Formats

Consider adopting and integrating the open-standards based protocols and data formats already in common use among non-traditional SSTR partners.

Establish Bidirectional Civ-Mil Communications in Austere Environments

Provision teams with interoperable communications tools—including satellite and cellular links, and disconnected cooperation software—for sharing with local and international partners. Be prepared to leave that shared communications equipment behind as part of the reconstruction effort.

1. Operations and Field Policy

Observations and Working Recommendations

1.1 Develop a Systematic Approach to SSTR Operations

Ad-hoc approaches to SSTR operations have proven ineffective for implementing US policy. For future SSTR responses, DoD should systematically operationalize 3000.05 through a three-fold approach:

A Formulate a Comprehensive SSTR Operational Plan.

Assemble a core team of experienced policy and SSTR field staff to fully define the proposed intervention and associated priorities through a Logical Framework Analysis or other comprehensive project planning techniques. Such discussions should seek to leverage existing resources within the host country, but should not assume that the existing government in any SSTR host country is the legitimate government.

B Build an International Coalition of SSTR Partners.

Ensure that SSTR personnel develop methods for cooperating with all partners who share in the goal of strengthening core infrastructure and civil society in regions likely to require SSTR operations. Such cooperation needs to be founded upon an acute sensitivity to issues of gender, culture, socio-political and ethnic groups and religion. Planning resulting from such cooperation should incrementally transfer responsibilities for effective implementation to the host region as capabilities develop.

C Integrate SSTR Coalition Partners into the Planning Process.

Establish strategic partnerships to assess SSTR planning and perform contingency analyses. Map issues related to gender, religion, ethno-political groupings, economy and culture that may affect the nature of SSTR operations and influence the selection of field personnel deployed to the region.

Develop a parallel and associated set of quantitative and qualitative effectiveness indicators that facilitates analysis of SSTR operations in the region. Measures of Effectiveness should be chosen for their direct impact on the population served (e.g. evaluation of power provisioning not merely by the number of hours per day power is available, but on whether small businesses can serve their customers).

1.2 Delegate Administration of Social Services to the Host Government

Administering humanitarian aid and reconstruction is never a neutral process. These undertakings generate resources, jobs, and training opportunities, create new hierarchies, and alter access to government, media and financial resources. Such opportunities and services empower those who are involved in SSTR operations. Therefore, who controls and participates in aid and reconstruction efforts has far-reaching implications for failed and fragile states.

A Use Existing Host Region Resources to Provision Social Services

SSTR response design under DoDD 3000.05 must provide social services within the cultural, religious, linguistic, and economic context of the host region. Such services should involve professional civil administrators from the host government, international partners, and the affected population and should enlist the support of that population in their own care and administrative management. To ensure stability in the country and to offer US forces a viable means of exit, our efforts must ensure that the host government assumes long-term responsibility and accountability for the provisioning of social services.

B Assist with Measuring and Managing Core Infrastructure

SSTR operations require a two-phase approach to provisioning critical services and resources. First, for each sector, initial assessments should identify the immediate needs of the population, and should determine whether subsequent, deeper assessments are required. Those initial assessments should cover the following sectors:

- energy
- clean water
- sanitation services
- mass transportation
- food distribution
- civil administration (including budget management, property rights, the courts and imposition of the rule of law through civil authorities)
- education
- environmental protection
- health care
- communications infrastructure
- security
- public information (including street signs, maps, personal and administrative directories, informative and bi-directional websites, television, and radio)

Second, and while assisting any local legitimate authority in the provisioning of the items listed above, deeper sectoral assessment can begin, with the development of metrics as the region begins to be understood. We stress that all assessments should be performed in concert with the host government and population to the greatest extent possible.

We would urge very strong consideration be given to the acceptance of existing capabilities (for example, laws) that are “good enough” for an initial reconstruction effort. Acceptance of existing resources serves to

1. Instill the local community with a sense of purpose and belonging.
2. Provide evidence that the response agencies find the population are capable partners.
3. Alleviate frustration and boredom in a disrupted population.
4. Establish livelihood creation and resurrect local small industry.
5. Prevent extortion by non-state actors on imported goods.
6. Avoid establishing a corrosive dependency model that is difficult to ameliorate later.

1.3 Cooperate with Non-Military Partners

We have seen significant value in close cooperation with UN, international organizations (IO), and NGO relief agencies geographically co-located with US staff in the field. The training, experience, expertise, and longevity of these agencies in SSTR areas provide a resource not commonly available within most US response organizations.

A Direct Personnel to Cooperate with Non-military Partners.

Provide clear guidance that close cooperation and complementary efforts with non-military partners is a desirable, necessary, and expected component of any SSTR response (recalling DoDD 3000.05 sections 4.4 and 4.5).

B Conduct Meetings with Partners on Neutral Ground

Identify a mutually acceptable location within the host country, particularly in conflict zones, for meetings with non-military partners to avoid compromising the safety and charter of non-military agencies. Accept that many interactions will be virtual, avoiding a visible association.

C Direct Personnel to Learn the Structures and Capacities of International SSTR Agencies

Provide clear direction that learning the structure and capacity of international SSTR agencies responding with us in the field is an integral part of professional military education and is an Implied Task within DoDD 3000.05.

D Explain 3000.05 Clearly and Consistently to International SSTR Community

Address the tension between the mandated focus on US interests in SSTR responses (DoDD 3000.05, section 3.2) and the recognition that US interests may not always be congruent with local needs in the region in which SSTR operations are occurring. Many global organizations are intimately familiar with 3000.05; the clause in section 3.2 has raised serious and repeated concerns of apparent self-interest and perceived disdain for the objective needs of the population in crisis. Consider changing the wording or developing a formal consistent response to explain the intent of the clause.

1.4 Implement Overlapping Rotations for SSTR Personnel

From the perspective of our local and international partners, personnel rotations from SSTR positions lead to significant disruptions. Turnover often leaves little time for outgoing staff to introduce the incoming SSTR personnel to the members of local and international partners, and places the incoming staff in the difficult position of having to build trust nearly from scratch. Such trust building may become particularly difficult when the members of the SSTR social network understand that these US newcomers themselves will leave in a short time.

To ameliorate the effects of personnel rotations on the successful completion of SSTR operations, we make the following recommendations:

A Time Rotations to Ensure Continuity of Operations

Assess SSTR rotations on an individual basis when positions involve significant interactions with the local population or may disrupt SSTR activities that are underway. Consult with the partners on the ground regarding both the length of turnover periods and timing of the rotations, with the goal of ensuring that ongoing efforts will not be lost in the transition and that previous work—often costly in many ways—will not need to be re-done. Employ business continuity practices to minimize the impact of personnel rotations.

B Tailor Rotation Methods to Local Culture

While some cultures highly value a single trusted face at the table each day, other cultures may want assurance that—whoever is present—intelligence, sensitivity, and responsiveness will be assured by the nature of the selection process. Knowing which preference dominates in the culture should affect our rotation methods. Regardless of method, communicate the occurrence of rotations to the local population well in advance of the rotation taking place.

C Use Virtual Cooperation Tools to Create Continuity

Enable departed personnel to use online civil-military cooperation tools to continue to assist in relationship building and the continuity of SSTR operations after they have left the geographic location of their former billet. Their continued presence can prevent disruptions to team dynamics, the loss of institutional knowledge, and the degradation of the social network.

2. Training and Organizational Design

Observations and Working Recommendations

2.1 Develop a Core Competence in SSTR Operations

A RECOGNIZE AND CULTIVATE EXPERTISE

- 1. Identify Experienced Personnel.** Educated and experienced staff should be coded and recognizable within the personnel systems of DoD. Ensure that critical skills can be rapidly identified and efficiently employed for ongoing educational roles, pre-deployment briefings, missions in the field, and advice to senior leadership.
- 2. Cultivate a standing network of SSTR experts.** Establish a cadre of personnel trained for cultural and social behaviors that reflect the special relationships needed in a foreign country. Specific topic areas should include the provisioning of medicines and medical care, information sharing, transportation logistics, recognition of gender bias, and ethno-religious insight.
- 3. Create Central Repository of Best Practices for SSTR.** Establish a central repository of best practices, organizational charters, pre-built topic briefings, scenario modeling, and lessons learned for education, pre-deployment SSTR briefings, and field reference. Include blogs from the field, topical wikis for field updates to existing information, and other standard modern resources for information sharing.
- 4. Train Personnel in Ethno-political Conflict Resolution.** Many geographical areas of SSTR interest have long-standing, deep-rooted, complex ethno-political conflicts that are often violent and a risk to SSTR responders. Make the basic skills of ethno-political conflict resolution both a training requirement and a core competency within SSTR response agencies. Enlist current conflict-resolution practitioners to assist in this training mission.
- 5. Design, Develop, and Deploy IT and Communications Technologies to Support SSTR.** Design, develop, and deploy information and communications technologies that support and strengthen SSTR operations by providing tools to understand—and possibly transform—conflicts between religions, ethnicity, castes, cultures, social economics, and political parties. The techniques range from machine-based language translation, through sophisticated decision support systems, to research in cultural modeling systems. Each can assist in the reduction of misunderstandings and help avoid the unnecessary volatility that can endanger DoD personnel.

B MANDATE SSTR TRAINING FOR GROUND FORCES

- 1. Rethink Training Requirements.** Restructure training requirements for ground combat forces to embed SSTR concepts and goals at every level. The mission of SSTR must be understood as a natural extension of the campaign.
- 2. Develop TTPs for SSTR Incorporating International Standards.** Train US personnel in the procedures and treaties used by the international SSTR community. Train and equip them with the communications tools in common use within these international agencies. Military personnel should be fully prepared to collaborate and coordinate with non-traditional partners.

C MOTIVATE HIGH-PERFORMING MILITARY PERSONNEL TO PURSUE SSTR BILLETS

Without assurance that SSTR integration expertise is valued by, for example, Promotion Boards and Detailers, DoD personnel may lag behind requirements through an understandable concern for their careers. We urge that DoD provide both method and incentive for military personnel to gain experience in the field with non-military partners as an integral component of DoDD 3000.05. There are international military models for such integration (e.g., Finland and Italy), and those models appear to be effective.

2.2 Extend US Linguistic and Cultural Capabilities

The American military has only a small number of available translators, despite our military obligations that often mandate interactions with non-English speakers on topics critical to force protection and local population support. Our translators must have significant cultural insight and must understand infrastructure vulnerability, the political import of graffiti, the religious, ethnic, or cultural significance of a gesture, and the interpretation of silence, articles of clothing, or subtleties of deportment.

A Translator Training

Develop translators steeped in the language within a cultural context, including a region's history, philosophy, poetry, music, literature, and religious texts.

B Cultural Modeling

Explore the ongoing development of advanced cultural modeling tools, particularly in areas of conflict mediation.

C Publish Documents in Local Language

Leverage translation capabilities for publishing shared documents that affect the local population, civil-administration, and NGOs. Distribute such local-language documents through both paper and electronic media to the widest possible extent.

D Recruit Expatriates and Refugees for Language Support and Translator Training

Ask expatriate and refugee populations for language and culture support; also, request assistance from appropriate first-generation immigrants. These communities have articulated a desire to help SSTR operations and possess underutilized language and cultural skills. Our conversations within these communities indicate that they would like to be involved, but are rarely asked to assist with SSTR-related activities.

E Create Remote Translation Capabilities

When appropriate, grant field staff permission to use common, free, encrypted commercial VOIP software (e.g. Skype) to call remote translators and enlist their aid with conducting conversations between two or more languages. Online conversation can be transcribed electronically, either simultaneously in chat mode or asynchronously with a full transcription. Because most VOIP tools also have full digital recording capability, original statements can be replayed for nuance and easily verified by a second translator.

F Fund Research in Machine-based Translation

Support research on machine-based language translation as an aid to field staff, recognizing the current shortfalls and long lead-time expected for the training of competent human translators.

3. Information Flow

Observations and Working Recommendations

3.1 Enable Proactive Cooperation and Information Sharing

A DELEGATE AUTHORITY TO FAR-FORWARD COMMANDERS

Enable far-forward commanders to determine the methods and tactics by which they implement the overall SSTR plan and cooperate with SSTR partners. To facilitate trust-building with non-traditional partners, enable far-forward commanders to share information with them proactively. We observe that rear-echelon policies can impede the implementation of local procedures designed to respond to a defined objective, and that procedure-based actions toward a goal are often more advantageous than policy-based decisions.

B INFORMATION CLASSIFICATION IMPEDIMENTS

Maps, imagery, and information are often kept classified or otherwise limited for distribution for a number of reasons which are not always valid. Such resources, when released after declassification, are used very effectively by non-military organizations to save lives and reduce tension during SSTR responses. Historically, timely declassification and release of these materials for use by humanitarian organizations has been problematic due to delays in declassification, widespread use of half-classifications (e.g., LIMDIS, FOUO), and policies that prevent DoD personnel from proactively offering declassified materials to international civilians.

1. Declassify Effectively and Rapidly

Ensure that a rapid and effective process for the declassification and release of useful information is established early in the mission planning phase and re-emphasized when necessary. It should be clear in the Commander's Intent that such careful declassification and release is to be a routine activity within integrated operations.

2. Make SSTR Information Below SECRET Available Unless Specifically Withheld

Consider issuance of a DoD Directive that all SSTR maps, assessments, field reports, logistics timetables, transportation schedules, and imagery below SECRET classification be assumed releasable to all SSTR/HADR response participants for the duration of a response unless specifically withheld by the local on-scene commander.

C BI-DIRECTIONAL COMMUNICATION WITH THE POPULATION

Develop requirements for bi-directional community-based information sharing through all useful modes during SSTR operations. These requirements should be in addition to any local civil-authority communications requirements.

D DEVELOP STANDARDS FOR PERSONAL INFORMATION SECURITY

Determine through international consensus the methods for personal information security employed in SSTR information management.

3.2 Establish Bidirectional Civ-Mil Communications

Provision teams to provide interoperable communications tools as needed for local and international partners. Include satellite, cellular, and disconnected cooperation tools. Be prepared to leave that shared communications equipment behind as part of the SSTR reconstruction efforts.

A BUILDING TRUST: CROSSING THE CIV-MIL DIVIDE

We note that compromise in SSTR implementation is often unacceptable to the civilian side because of the perceived imbalance of power: they do not want to be seen as capitulating to military force, either by themselves or by others. Their defenses against this imbalance vary: to ignore the military and refuse interaction; to adopt an antagonistic stance that assumes a lack of common interest; to erect bureaucratic obstacles to military activity; and so on. Notwithstanding the validity of their concerns, the military must take account of these issues and adopt a position that emphasizes the role of the military in serving civilian administration of SSTR.

The best approach for the military to take in working with civilian agencies is based on building trust. Information sharing is the best starting point for this.

1. Clearly State Policies on Information Sharing

DoD should release a clear statement of military policies on information sharing at the outset to avoid partner frustration.

2. Identify Common Interests

DoD staff working with non-military agencies should clearly identify common interests and relative capabilities as a basis for coordinating movement and activity.

B SEAMLESS SOFTWARE AND MEDIA EXCHANGE IN AN INFORMATION MESH

Effective participation in an SSTR response requires extremely rapid, effective, and broad-based information sharing with a large number of international and non-military partners. Information flow within an SSTR response is often collected from non-standard partners and is subsequently distributed across a wide range of individuals and organizations, each of which may be able to contribute something unique and valuable to the response. Therefore, the flow of information requires the development of a less-hierarchical structure—a model closer to a mesh.

1. Learn to Implement Data Mesh Designs

Data-mesh designs (and center-mesh hybrids) are understood, but are not commonly employed in the field. Further development of the capability to design, model, simulate, train, and employ such an information flow design would enhance our response capacity.

2. Use Standard SSTR Tools

Adopt as DoD standards the existing, mature, best-of-breed applications and resources already in use by the international SSTR community. SSTR response should consider using software tools identical to or compatible with those in use in the majority of non-military response organizations, or become seamlessly interoperable with the data formats in use within those organizations.

3.3 Master Austere and Disconnected Communications

Far-forward personnel often lack reliable communications with the range of local and international partners necessary to ensure an effective implementation of US policy. During SSTR missions, personnel are frequently disconnected from any interorganizational communications capability. Such lack of connectivity must not be an obstacle to cooperative, timely, and proactive sharing of information.

Information on contacts, plans, policies, processes, images, maps, and other critical resources must be present with those who are working in the field. When appropriate, personnel must be able to share this information with partners who are assisting in the response.

A Enable Asynchronous and Discontinuous Access to Data

Employ collaborative software tools that allow far-forward SSTR personnel to read and write all important information while disconnected from the net. Software should allow the continued collection of information even while disconnected and deployed in the field. That software should offer personnel the ability to synchronize or integrate information from the field with others involved in the mission once connectivity is re-established.

B Provision Commercial Satellite Equipment

Provision teams in the field with portable commercial satellite communications equipment and an adequate bandwidth budget to ensure effective and reliable communications with all useful partners. Recent examples include the very successful use of the Hughes 9201 BGAN units deployed with the USNS MERCY (TAH-3) by the Naval Postgraduate School during the 2006 MERCY deployment to Southeast Asia.

C Use Wireless Networking Technologies to Blanket SSTR Operations Theatre

Investigate the use of Wi-Max / Wi-Fi and similar technology in SSTR to provide wider coverage in theatre and ensure that a range of partners have access to the internet. Where non-military actors do not wish to participate in such networks, ensure interoperability with other networks that are established on the ground; *i.e.*, local government, UN, or NGO.

D Provide Communications Support to Non-military Partners

Ensure that any non-military SSTR-HADR partners working within a hosted military environment be provided with a normal communications capability for their own use outside of the military network. That may require the provisioning of computer access to a non-military system and the use of VOIP and email—including web-based email—for the duration of their presence within a DoD environment.

E Leverage the Strengths of Amateur Radio (HAM)

Establish Amateur Radio (HAM) as a routine asset for SSTR and HADR. Consider implementation of existing global integration designs that were well-characterized in Strong Angel III, a disaster response demonstration.

3.4 Establish Field-expedient Communications Policies

A MANAGE POLICY SYSTEMS FOR STABILITY OPERATIONS

On multiple occasions over the course of several recent SSTR responses, necessary action in communication has been impeded by processes unable to flex to meet mission needs as determined far-forward. DoD should consider the re-tasking of some existing unit to manage Policy Systems for Stability Operations. This office would facilitate alterations in existing policy to encourage an adaptive process and agility in the field. It would focus on establishing a flexible and accessible communications architecture and cultivating the social networks critically necessary for effective stabilization.

1. Establish Communications Ombudsman for Non-military Partners.

Establish a reliable point of contact for SSTR response coordination with non-military partners **prior** to deployment. Since very few non-military partners have any idea where to call to coordinate with us as we begin to respond, a single number and website might be very useful, as would personal outreach to SSTR and HADR organizations to explain our response capabilities and intentions.

2. Use Open Standard Data Formats and Protocols.

Consider adopting open-standards protocols and data formats already in common use among non-traditional SSTR partners.

B PROVISION GSM CELL PHONES

1. Provision Internationally-compatible Cellular Telephones

In many post-disaster environments, the only communications tool reliably shared between DoD, relief agencies, and the local population is a GSM cell phone. DoD personnel often share personal cell phone numbers with members of organizations with whom they need to cooperate. The cost of such calls billed personally can be prohibitive; consequently, for personal financial reasons, necessary communications do not take place.

2. Provision teams in the field with tri-band GSM Smartphones for cellular telephone connectivity

In the vast majority of the regions where SSTR operations might occur, the local GSM infrastructure provides adequate cell coverage and SMS service to justify provisioning standard Smartphones to SSTR personnel. Capabilities can include voice, SMS text, speakerphone, area handheld radio, camera, video recorder, voice recorder (even for another language to be translated later), GPS, data storage (2Gig is routine), Bluetooth, and IR data exchange. Power is available from batteries, 120/240v, 12/24v, solar panels, USB ports on laptops, and the charging capacities of hand-crank radios.

3. Streamline Compensation for GSM Charges during SSTR Operations

Ensure that a streamlined process is in place for DoD personnel to be compensated for cell phone communications during SSTR and HADR operations. We should note that calls that local partners place to the US mobile phone numbers of DoD personnel working in a foreign country are still billed as international calls, even if the originator calls from within the same country. In many parts of the developing world, a 1-minute international call may cost a day's wage for a local partner. As a courtesy to the local population, ensure that US personnel are provided with 2 GSM cell phone numbers: one for receiving international calls from the US, and one for locals who cannot afford to call the international number.

3.5 Provide Immediate Access to Imagery

During SSTR operations, imagery that is current and of high-resolution is profoundly valuable for a wide range of competent and experienced response agencies. DoD purchases such commercial imagery each year. Unfortunately, it is rarely available to other responders due to either DoD classification or the cost of the data purchased directly from commercial imagery providers.

A Establish an Alternate Workpath for Commercial Imagery

Establish an alternate workflow path to provide commercial imagery data to special processing centers (often in academia) for responder use in SSTR. There is precedent for such a pathway in the academic centers used for Katrina imagery, for Banda Aceh, and for the recent Java earthquake and volcanic eruptions. An alternative to a permanent pathway would be the provisioning of adequate funding to satellite vendors for imagery to be sent directly to pre-identified centers when an SSTR response is declared.

B Provide Commercial Imagery in the Most Useful Formats

Change the DoD ordering method for the purchase of imagery data to ensure that the imagery provided is in a useful form for SSTR responders. Most current imagery is bought as raw data and that is not optimally useful. Buying imagery already sharpened (with panchromatic bands, for example) would save dozens of hours of high-intensity computer processing on each scene. Simply checking a different box on the order form would save several days when requesting access to imagery for an SSTR response.

C Provide Spectral Imaging Where Possible

Because spectral imaging is often significantly more useful than visual imaging for many SSTR response issues (studying vegetation growth, water, drought, crops, fires, pollution in air and water, plankton, flooding, and many more), it should be provided for SSTR responses. Fortunately, these data sets are taken globally 4-6 times every two days over the entire world, and current images can easily be provided when needed. Concerns about military risk should be very low because of the low resolution of these images (15 m to 250 m), but the value is extraordinary. Spectral imaging could be provided by simply processing the already-existing data and giving it to SSTR responders, almost none of whom have access to such data now.

D Provide Elevation Data at 10 meter Resolution

Global elevation both of land and water (bathymetry) should be released at 10 meter resolution. DoD rules currently limit bathymetry to very crude 90 m resolution data, even though global 10m data are available routinely within DoD through the Space Shuttle Topographic Radar program. Making 10 m data available globally would greatly improve the usefulness of elevation assessments in SSTR response for radio coverage, watersheds, terrain mobility, damage assessments, and infrastructure reconstruction. Interestingly, most domestic urban areas already have elevation models of less than 1m because cell towers and coverage determination require it. We suggest that the outdated and artificial 90-meter limitation be relaxed to 10m for SSTR responses.

E Use International Standards for Data Sharing

Convert US and UN imagery to electronic format using a global standard for file sharing. Most data that are supplied by the UN (UNOSAT) or the US State Department's Humanitarian Information Unit (HIU), are only available in paper copies or as very large files and are extremely restricted in their availability to civilian groups. Even when made available, neither of these are of use in the disaster area, most often because the paper copies are in Switzerland (UNOSAT) or Washington (HIU), and because the files are too large to transmit on challenged bandwidth. Processing response area imagery into a standard open-source format (e.g. GeoFusion) could dramatically help the delivery of current imagery to those working in an SSTR response. National sites are already experienced in such conversions.

F Routinely Analyze Imagery for Changes due to War, Drought, or Pestilence

Routinely analyze imagery alterations that occur as a result of war, drought, and pestilence, both over both short- and long-term periods in SSTR and HADR operations.

G Provide Drainage and Water Level Imagery

Make Synthetic Aperture Radar imaging available to non-military partners within an SSTR or HADR operation for the purpose of finding drainage patterns and water levels under sand. Availability of such data is of particular importance to those SSTR operations that involve displaced populations.

H Acquire Geo-registered High-resolution Digital Camera Images

Routinely pursue the acquisition of geo-registered high-resolution digital camera data for SSTR responses. It is very easy and inexpensive to obtain extremely high quality data from small UAVs and other military assets, or simply from GPS-enabled digital cameras in a helicopter. Provide workflow methods for processing and incorporating these ultra-high resolution images into a common, open-source format, especially when the SSTR response occurs in areas where frequent cloud cover prevents the acquisition of non-radar satellite imagery.

Contributors

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Paul Currion runs a consultancy specialising in information management for humanitarian operations. He is currently a Manager for the Emergency Capacity Building Project of the Interagency Working Group, developing ways of improving NGO use of ICT to respond to emergencies. He is also a domain expert for Sahana, the open source software for disaster response, looking at how to improve the capacity of developing countries and organisations. Previously, Paul was Regional Information Manager for the tsunami response with the World Food Programme, and developed the Humanitarian Information Centre (HICs) concept for the United Nations, working on HICs in Kosovo, Afghanistan, Iraq and Liberia.

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Eric Frost is Co-Director of the SDSU Viz Center and Co-Director of the Homeland Security Master's Program and several other centers focused on data fusion and visualization of sensors and complex imagery of many types linked together in support of humanitarian efforts globally and Homeland Security efforts in the US. He acted as Regional Coordinator for Strong Angel III and helped host the event within the context of both civilian and military, as well as international contacts with Indonesia, China, Mexico, Netherlands, Sweden, and numerous other countries.

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John Graham is Chief Scientist at the SDSU Viz Center and builds global data sets in support of humanitarian operations such as Katrina, Banda Aceh, Indonesian earthquakes and volcanoes, and many other events. He integrates multiple forms of communication, high-performance computation, amateur radio, and geospatial visualizations into coherent, mostly Open Source solutions for the NGO and geospatial communities. He helped establish several of the communication and visualization efforts for Strong Angel III and acted as CTO of Strong Angel II.

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Pete Griffiths was recently selected to head-up Operations and Logistics for CommsFirst, LLC, a communications and networking company specializing in critical communications. Pete is a recently retired US Navy Commander who worked within the Office of the Secretary of Defense (OSD) providing expertise in a variety of areas including disaster response & humanitarian relief. Pete led the civil-military coordination effort for Strong Angel III; was a Strong Angel II participant; and deployed in 2005 for hurricane Katrina relief assisting with provisioning of critical network & communications connectivity.

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Doug Hanchard is the former Director of Signature Engagements at Bell Canada, where he was responsible for solutions that provide Disaster & Rapid Emergency Communications services, enabling Satellite, Wireless Technologies such as Analog and Digital Radio, Wi-Fi and Wi-Max Data products that integrate into a common I.P. platform, thus providing crisis management agencies alternate communications tools and solutions. Mr. Hanchard has 15 years of commercial and government telecommunications experience.

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As President of U.S. Corporate Networks, Brooks King specializes in information technology including systems integration, network operations, business continuity and related fields. Brooks was responsible for academic involvement in Strong Angel III, and was co-director of communications and power systems. The challenge of heterogeneous systems and technical reduction, exploring each of their potential roles in effective HADR/SSTR operations, is a focus of his current work.

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Robert Kirkpatrick is Lead Architect for Microsoft Humanitarian Systems. He conducts applied research on enabling collaboration across the civil-military boundary in austere field environments. Robert directed collaboration for Strong Angel II, application integration for Strong Angel III, and has implemented solutions for HADR and SSTR in Iraq, Afghanistan, Indonesia, Pakistan, and New Orleans.

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Clare Lockhart is Director of the State Effectiveness Initiative, a program established in 2005 to develop, refine and apply approaches to and toolkits for state-building. The program has designed a State Effectiveness Index, Sourcebook and training methodologies and applied analysis in Nepal, Lebanon, Sudan and Afghanistan. Previously, she worked as Chief Adviser to the Afghanistan Government on budget, financial strategy and program design between 2001 and 2004; and as a lawyer on the UN Bonn Negotiation team. Before 2001, she managed a program on state-building at the World Bank and practiced law as a barrister on public and commercial law in the UK.

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Gay Mathews, CEO of a Hawaii Island community development credit union, has held key roles in all three Strong Angel efforts, serving in a variety of capacities including volunteer coordination and integration, regional director, site and logistics coordinator. She has extensive microcredit, cultural, and rural development experience as well as working on a number of other projects and charrettes focusing on humanitarian relief.

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Suzanne Mikawa recently returned from mission in Kabul, Afghanistan with the United Nations Development Program (UNDP) where she worked to promote Afghan youth and women's education and participation in the field of Information Technology. Suzanne's work in developing and post-conflict countries is focused on the use of technology to improve people's lives, with a goal to address issues of inequity in the international system.

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Eric Rasmussen, MD, MDM, FACP, directed each of the three Strong Angel international humanitarian support demonstrations. He is a Navy Commander, on active duty, with more than 15 international deployments over the past 30 years. He received his undergraduate and medical degrees from Stanford University and an International Master's Degree in Disaster Medicine from the European Center for Disaster Medicine (CEMEC). Formerly the Fleet Surgeon for the US Navy's Third Fleet, he is now Chairman of the Department of Medicine at Naval Hospital Bremerton near Seattle, Washington.

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Brian Steckler is Associate Chair for Special Programs at the US Naval Postgraduate School (NPS) in Monterey, CA. He specializes in telecommunications, information technology, operations, and warfare, as well as computer network attack/defense, ecommerce, and related fields. Currently Brian, a 20 year veteran in the US Navy, provides business development expertise to NPS's Research Department in areas that include: basic networking (LAN/WAN), Computer Network Defense, Attack, & Exploitation, Operations Security, and others. Brian also conducts research

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Dave Warner M.D., PhD, is the Director of Medical Intelligence and MindTel, devoted to solving leading-edge problems in communication, healthcare, education, and recreation. He is highly versed in Civil-Military Communications. His most recent efforts have , been focused on Civil Support to Stability Operations in Iraq, Afghanistan, Indonesia Africa and South America.

