

REMOTE SENSING COORDINATION FOR IMPROVED EMERGENCY RESPONSE

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ABSTRACT

To support the immediate needs of initial responders following catastrophic disasters a Remote Sensing Consultation & Coordination Team (RSCCT) should be compiled. Currently, the Federal Response Plan does not adequately support the dynamic environment of Remote Sensing Support. This paper addresses the current issues and defines the potential framework for the utilization of the best available technology on a near real-time basis. With the implementation of this system, future events would be managed more effectively, allowing for the sharing of data, resources, and products for all entities involved in the response and recovery operations.

THE PROBLEM

Historically the Federal Emergency Management Agency (FEMA) has relied on the execution of the Federal Response Plan (FRP) to acquire support from other federal agencies. The protocol for accessing technical and logistical support is well established and provides organization and structure to a chaotic environment through the responsibilities detailed in the twelve Emergency Support Functions (ESF). However, for FEMA to effectively respond to a wide variety of emergencies it needs the ability to access specific technical expertise quickly and develop solutions tailored to the current conditions of any situation. This is particularly true when using remote sensing technology to assess the status of a disaster. In the early hours of a disaster the lack of coordination in the implementation of technology can lead to poor decision making on data collection and analysis hampering the benefits of technology in support of an event. While the FRP is the structure through which federal agencies must act to work together during emergencies, it is still a bureaucratic process that does not always keep pace with the requirements for technical support.

In the weeks prior to the 2002 Winter Olympics in Salt Lake City, data providers were constantly asking FEMA Emergency Response Team (ERT) members, "What will you need if something happens? This was a question that could not be answered completely prior to the games. Would we be dealing with an earthquake, chemical release, weapon detonation, biologic release, flood, blizzard, or some awkward combination? Many agencies collected imagery and data products or had contracts in place to respond to a wide variety of presupposed scenarios.

The potential for duplication of efforts and sub-standard implementation of technology is very high in an emergency environment. The lack of communication between decision makers, potential data users, researchers, and the multitude of emergency operation offices may lead to multiple pursuits of basically the same products and services. Differing opinions on "best technology" and existing contracts based on different requirements compound the problems. Situations have been observed where data was acquired from multiple sources using similar technology and collection schedules, producing products from separate offices to meet the needs of the same requester. The opportunity exists for the opposite to happen as well, where a solution is implemented which does not effectively meet the needs but is utilized for the duration of the response activity.

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Can FEMA identify in advance what tool will best meet an unidentified requirement? Is it possible to do this in speculation of a mystery event that could occur at any time in the next two years? Technology is evolving at an incredible pace. New ideas emerge daily and existing ideas are refined on the same schedule.

Following the response to WTC, Assistant Fire Chief Harry Meyers of the New York Fire Department is quoted as saying; "Everybody that was working on some new type of technology shows up at the scene of an event like this. People trying to push their products and push their ideas". These products and ideas should be screened and evaluated before their champions are put in contact with the incident managers, their time should not be wasted. We must develop technical solutions that coordinate and manage data collection to gain the greatest benefit to the operation and reduce the time and expense incurred when duplication occurs or incorrect technology is pursued.

A SOLUTION

Create a Remote Sensing Consultation & Coordination Team (RSCCT) consisting of federal staff capable of making quick decisions concerning the use of current technology. This team would be responsible for developing technical solutions to evolving issues faced by first responders and other emergency response teams. The team would support FEMA's ERT or a FEMA designated lead while the ERT was in route to the emergency or setting up its Disaster Field Office (DFO). It is important that this group has no vested interests in any particular technology; whether the data source is commercial or government is not an issue. They need to make unbiased decisions to achieve the "best solution". At the time of the emergency the FEMA ERT lead or designated representative would contact the RSCCT and describe the state of the emergency to the best of his or her ability, listing in priority the questions to be addressed. The RSCCT would have a designated time in which to consider the problem and call the ERT to describe the solution. This solution would define a product based on a "best technology" assessment by the team. The recommendation would also address the technical specifications of the data to be acquired as well as the analytical processing to develop the required product. At this point FEMA is free to secure the services of private vendors or government assets to obtain the recommended product. If needed the RSCCT would deploy to the DFO and support the ERT in ongoing response efforts. At all times the RSCCT would support the FEMA ERT or designated lead. In this way the coordination of critical information would be maintained.

The need for remotely sensed information must be identified quickly and efficiently. Assessing the event and coordinating closely with all involved in the response and recovery efforts is the best way to do this. Once the need is identified, the team would be activated. As the lead federal agency in natural disasters and the lead for consequences in man made incidents, FEMA can lead this through the Technical Services Branch of ESF5.

The proposed RSCCT as a support function to FEMA has some amount of test and evaluation history. Following the work in New York supporting the World Trade Center response the problems were pondered and the idea of a technical team to advise on remote sensing emerged. In preparation for FEMA's support of the 2002 winter Olympics, the plan was put into place with representation from FEMA, USGS, NASA, NIMA, and USFS. The concept was simple; in the event of an emergency, local and federal emergency managers would identify the problem. The Tech Services Branch would initiate a conference call with the team to present the problem and answer any specific questions. There would be second call 15-30 minutes later to discuss potential data solutions and a decision would be made on which to pursue. The call would end, FEMA would acquire the data and a follow-up call would address all aspects of data analysis and dissemination. All emergency operation offices would be made aware of all decisions and timelines and the solution would be shared with all interested parties. Initially all team members would support the incident from their normal offices. If required, they could be deployed to the field as well. This state of readiness was maintained throughout the games and formally discontinued by FEMA when the ERT closed their operation in Salt Lake City.

CONCLUSION

Development and execution of 3 RSCCTs to support catastrophic disasters would provide an opportunity for federal agencies to better understand critical applications that have significant impact. Implementation of RSCCT would save lives, time, and money. Furthermore, the US investment in remote sensing technology would be utilized at it's greatest potential with minimal impact on team member's normal duties.

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REFERENCE

Smith, Dennis (2002). *Report from Ground Zero*. Penguin Putnam, New York, pp 164.