Designing Crisis Management Training and Exercises for Strategic Leaders

Strategic leaders — those who sit at the apex of organizations and have primary responsibility for charting the course and achieving positive short and long term results for their various constituencies — play a crucial role in crisis situations. It is increasingly recognized that they, like other key players in crisis management and societal (homeland) security need to be prepared for this responsibility and that training and exercises are a fundamental part of this preparation. While significant attention in recent decades has been devoted to developing techniques and designs for operational training and exercises, rather less attention and ink have been devoted to problems of designing crisis management training and exercises for strategic level leaders in governmental organizations — the focus of this report.

This publication is a result of a unique partnership between academic, private sector, and governmental experts from the United States and Sweden. It was developed through a series of collaborative bilateral workshops held in Stockholm and Washington, D.C. during 2013 and 2014.

"Clearly, U.S. and Swedish experts can learn from each other in order to better prepare our leaders for high stakes decision making. None of us can afford the luxury of 'not invented here' syndrome — rather we must share our experiences and technologies in order to build communities of good practices on both sides of the Atlantic — and beyond. This volume points to many good practices and promising technologies that can be used to better prepare public sector leaders for the crises to come. I think that many of the findings and recommendations are relevant also for the needs of corporate leaders, who are vital partners in the shared responsibility to enhance societal resilience."

Helena Lindberg – Director-General, Swedish Civil Contingencies Agency

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Designing Crisis Management Training and Exercises for Strategic Leaders

A Swedish and United States Collaborative Project

Edited by Professor Eric K. Stern
Swedish National Defense College

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Foreword

In the effort to make our societies and communities more resilient it is clear that a key link in the chain is our leadership. Resilient societies demand resilient leadership — leadership that is prepared to act in an agile, decisive, forward-looking and legitimate way even under the most extreme and difficult conditions. Even the most experienced and qualified leaders (and their advisors) need to cultivate crisis management skills and practice regularly in order to be prepared when crisis comes. Designing and conducting exercises for strategic leaders is a vital but demanding task and one where inspiration from abroad can be very helpful.

For example, I have noted the Thunderbolt drills that serve to surprise US leaders with some regularity. In Sweden, something similar could be developed to keep our top level leaders, including myself, on our toes. Training programs for strategic leaders is an area where there is still room for improvement in many countries, small and large alike.

In both Sweden and the United States, there is increased recognition of the need to invest in "enabling the decision-maker". While this phrase is often used to motivate worthy investments in information technology for enhanced situational awareness, enabling the decision maker is also about giving them opportunities to refine their institutional systems and advisory group dynamics under crisis-like conditions. Well designed training and exercises tailored to the needs of strategic leaders can raise awareness regarding potential crisis challenges, and not least, contribute to developing and maintaining critical problem-solving and communication skill sets.

This useful publication is the result of an extended dialogue among U.S. and Swedish experts from government agencies, the military, the private sector and the academic world. This bilateral project has been part of the ongo-

ing collaboration between Sweden and the Department of Homeland Security under the Agreement on Science and Technology Cooperation that was signed in 2007. Since then many bilateral projects in various subject areas have been conducted and important knowledge, technology, and exchanges of information have been delivered to the signatory parties. As Executive Agent for the Swedish Government of this Agreement, I am pleased to add this volume to our list of successes and to thank the two project leaders Jalal Mapar of DHS Science and Technology and Lars Hedström of the Swedish National Defense College. A special thank you to the editor of the volume, Professor Eric Stern, who by birth, education, professional conduct, and residency bridges our two societies.

Clearly, U.S. and Swedish experts can learn from each other in order to better prepare our leaders for high stakes decision making. None of us can afford the luxury of 'not invented here' syndrome — rather we must share our experiences and technologies in order to build communities of good practices on both sides of the Atlantic — and beyond.

This volume points to the many good practices and promising technologies that can be used to better prepare public sector leaders for the crises to come. I think that many of the findings and recommendations are relevant also for the needs of corporate leaders, who are vital partners in the shared responsibility to enhance societal resilience.

Let me end with a call to the contributors to this project and to the readers of this publication: Build upon this science based foundation and work together to develop the next generation of practically useful and scientifically informed tools and techniques for training and exercising strategic level managers before the next mega-crisis hits with full impact.

November 15, 2014

Helena Lindberg
Director General
Swedish Civil Contingencies Agency

Acknowledgments

sions at the OECD/Swiss Federal Government Workshop on Strategic Crisis Management Exercises which took place in Geneva in June 2014.[2]

Special thanks to Helena Lindberg, Bengt Sundelius, Niklas Karlsson, Anne Lindquist-Anderberg, and Åsa Kyrk-Gere for their support of and input to the project, to Jalal Mapar, Kristin Wyckoff, Keith Holtermann, and John Vehmeyer of DHS S&T for inspiration, excellent collaboration, administrative support, and outstanding 'head-hunting' for the project. Thanks also to Pär Daléus, Ulrika Kumlien, Per-Ake Mårtensson, and Prof. Berndt Brehmer of the Swedish National Defense College. Last but not least, thanks to Stephanie Young of CRISMART, SNDC, for her help with preparations for the workshops, copy editing, layout, and shepherding this manuscript through the publication process.

Director Lars Hedström
Swedish National Defense College
Project Coordinator

Professor Eric Stern
Swedish National Defense College and University of Delaware Editor

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2   See http://www.slideshare.net/OECD-GOV/2014-strategic-crisis-management-workshop-1213-june-geneva for more information.

Chapter 1
Introduction

Eric Stern and Lars Hedström

Strategic leaders – those who sit at the apex of organizations and have primary responsibility for charting the course and achieving positive short and long term results for their various constituencies – play a crucial role in crisis situations. Whether they choose to delegate authority to others or to personally make key crisis decisions and communications, they will be held accountable for outcomes on their 'watch'.

Increasingly it is recognized that crisis management is a key function of leadership in public, private, and non-profit organizations. This is highly challenging even for organizations used to fast-paced 'steady state' operations, such as first responders. It is illustrative that even leaders of media organizations – used to covering rapidly developing events on a 24/7 basis – need to develop processes and leader skill sets appropriate to covering major news events or risk falling behind and failing in the moment of truth (Olsson, 2008).

While significant attention has been devoted to developing techniques and designs for operational training and exercise in the public sector in both civilian (e.g. for so called blue light organizations) and military organizations (c.f. Crego, 1996; Crichton et al., 2002; Crichton, 2009), rather less attention has been devoted to problems of designing crisis management training and exercises for strategic level leaders in governmental organizations and existing practices is of varying degrees of quality and effectiveness (c.f. Borodzizc and Van Haparen, 2002).

Furthermore, while small and relatively closed communities of experts in various countries have developed know-how in this rather arcane area, relatively little exchange of knowledge and good practices tends to take place. The topic is somewhat sensitive and governments may be understandably reluctant to share information about what they are doing in this area. Experts may regard their knowledge as a canon best passed on through mentor-mentee communication and informal apprenticeship or their designs as proprietary trade secrets best left undocumented and undiffused.

This publication is the result of a unique partnership between academic, private sector, and governmental experts from the United States and Sweden. It has developed through a series of collaborative bilateral workshops held in Stockholm and Washington DC during 2013 and 2014.

Project Background

In 2013, the Department of Homeland Security, Science and Technology Directorate (DHS S & T), in collaboration with the Swedish Civil Contingencies Agency (MSB) and Swedish National Defense College (SNDC), embarked upon a joint project focused on scenario and simulation based training and exercise tools for strategic leadership training and education in crisis management. As part of the project and bilateral agreement with both government agencies, three workshops aimed at discussing executive strategic interactive training and education modules were held; one in Sweden and two in the U.S. These will be described in more detail below.

The first workshop was held on June 12-13, 2013, in Stockholm, Sweden. The workshop was hosted by the Institute for National Defense and Security Policy Studies, which is a part of the Swedish National Defense College (SNDC). Representatives from across the SNDC (including from CRISMART, the Swedish National Center for Crisis Management Research and Training), the Swedish Civil Contingencies Agency, the Swedish Prime Minister's Office, and local fire departments among others participated in the workshop. A second 'mirror' workshop took place on January 29, 2014 at DHS Science and Technology Directorate in Washington D.C. U.S. participants from DHS S & T, Federal Emergency Management Agency (FEMA), the Emergency Management Institute, Office of Naval Research, Naval Post-Graduate School, and Obsidian (a key private sector actor in this arena) engaged in very fruitful discussions with Swedish experts from the Civil Contingencies Agency (MSB), the Embassy of Sweden in the United States, and the Swedish National Defense College.

The purpose of these workshops was to gather experts from both countries with the objective to explore ways in which case-based scenario development

and active learning pedagogies can be combined with state of the art technology to improve future crisis management education, training, and exercises for strategic leaders (c.f. Stern, 2013; Salas et al., 2009) Specifically, the January workshop built upon and extended the discussions from Stockholm explored ways for promoting learning and efficiencies by implementing technological solutions.

The key issues addressed at the workshops included comparing and contrasting American and Swedish perspectives regarding:

- Strategic leadership challenges in crisis management and the educational needs in this area

- Challenges associated with educating, training and exercising strategic leaders

- Cased-based scenario development techniques tailored to the needs of strategic leaders

- The potential to use technology to enhance and achieve efficiencies in crisis management education, training and exercises for strategic leaders.

These workshops primarily targeted education and training providers and specialists from DHS, MSB, cognate agencies, and educational institutions.

A third joint Swedish-American workshop was held in Washington D.C. on August 14, 2014, to discuss a preliminary draft of this report. This workshop generated valuable feedback and suggestions regarding concluding observation which have been used to guide subsequent further development and revision of this document.

The Concept of Crisis and the Crisis Leadership Skill Set

Crisis can be conceptualized crisis in terms of three subjective criteria: t*hreat, uncertainty,* and *urgency* (Rosenthal, 't Hart, and Charles, 1989; Stern, 2003; cf. Hermann, 1963) experienced by leaders and other crisis managers. Let us consider these in turn, as they not are only helpful in distinguishing crises from other types of situations but also provide a means for probing and preparing to act in crises. First, crises are associated with *threats* to (and often potential opportunities to promote) core values cherished by decision makers and/or their constituencies. These values include human life, public health and welfare, democracy, civil liberties and rule of law, economic viability, and public confidence in leaders and institutions. Leaders must also be prepared to cope with conflicts among such values (Farnham, 1997). Second, crises exhibit high

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degrees of *uncertainty* regarding the nature of those threats (i.e., the known and unknown unknowns), the contours of an appropriate response, and the possible ramifications of various courses of action. Third, crises are associated with a sense of *urgency*. Events are perceived as moving quickly, and there are fleeting windows of opportunity to influence their course. Additional pressure stems from the relentless pace of the 24-hour news cycle. Decision makers and their organizations must cultivate the capacity to diagnose situations and formulate responses under severe time constraints. Thus, crises force decision makers to make some of the most consequential decisions in public life under extremely trying circumstances.

Confronted with a threatening situation, it is useful to turn the components of this crisis definition into diagnostic questions. *What core values are at stake in this situation?* This question helps crisis managers identify threats and opportunities embedded in the contingency at hand and it encourages them to craft solutions that attend to those threats and opportunities in a consciously balanced and measured way (cf. Keeney, 1992). It also helps them minimize the risk of a so-called type 3 error: the deploying the "right" solution to the wrong problem (Mittroff and Silvers, 2009). *What are the key uncertainties associated with the situation, and how can we reduce them?* This question enables decision makers to identify key variables and parameters and better prioritize "intelligence" and analytical resources. *How much time do we have?* Effective and legitimate crisis decision making and communication processes may look very different indeed depending on whether the time frame is measured in minutes, hours, days, weeks, or months (George, 1980).

Several decades of intensive empirical research shows that leaders face recurring tasks when confronted with crises (Boin et al., 2005): sense making, decision making, meaning making, terminating, and learning. These tasks are as germane to military leaders as they are to their civilian counterparts, and they are central not only to effective crisis leadership in a particular incident but also to the creation of better preconditions for future incidents.

Sense making in crisis refers to the challenging task of developing an adequate interpretation of what are often complex, dynamic, and ambiguous situations (cf. Weick, 1988; Boin et al., 2005). This entails developing not only a picture of what is happening but also an understanding of the implications of the situation both from one's own vantage point and from that of other salient stakeholders. In the words of Alberts and Hayes (2003: 102), "Sensemaking is much more than sharing information and identifying patterns. It goes beyond what is happening and what may happen to what can be done about it." The diagnostic questions submitted above are a useful point of departure for crisis sense making.

Decision making refers to the fact that crises tend to be experienced by leaders (and those who follow them) as a series of "what do we do now" problems triggered by the flow of events. These decision occasions emerge simultaneously or in succession over the course of the crisis (Stern, 1999). Protecting communities tends to require an interdependent series of crucial decisions to be made in a timely fashion under very difficult conditions.

Meaning making refers to the fact that leaders–civilian and military alike—must attend not only to the operational challenges associated with a contingency but also to the ways in which various stakeholders and constituencies perceive and understand it. Because of the emotional charge associated with disruptive events, followers look to leaders to help them to understand the meaning of what has happened and place it a broader perspective. By their words and deeds, leaders can convey images of competence, control, stability, sincerity, decisiveness, and vision—or their opposites. Different forms of protection strategies (such as evacuating or sheltering in place) are associated with different advantages and disadvantages in terms of their communicative dramaturgy.

Terminating refers to the nontrivial task of finding the appropriate timing and means to end the crisis and return to normalcy. If a military facility has been partially or completely evacuated because of a threat, extensive damage, or contamination, at what point is it prudent or safe for personnel to return? Furthermore, attempting to end a crisis prematurely can endanger or alienate constituencies who may still be in harm's way, traumatized, or otherwise emotionally invested in the crisis. Crises may be particularly difficult to terminate if the operational challenges lead to a "crisis after the crisis," in which serious recriminations are launched against those who failed to prevent, respond to, or recover from a negative event.

Effective *learning* requires an active, critical process that recreates, analyzes, and evaluates key procedures, tactics, and techniques in order to enhance performance, safety, capability, etc. The learning process has just begun when a "lessons learned" document has been produced. To bring the learning process to fruition, change management/implementation must occur in a way that leaves the organization with improved prospects for future success (Boin et al., 2005; Stern, 1997; Deverell and Olsson, 2009).

Terminology

A key finding of the January 29 and August 14, 2014, discussions is that there is not as yet (and may never be) a standardized set of terms describing different types of activities, formats, and designs in this domain. Not only are there significant differences of terminology and usage between the Swedish and American sides of this bilateral discussion, but also within countries. For example, it was

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observed that the terminology used by the U.S. Department of Defense differs significantly from that adopted by the U.S. Department of Homeland Security. Swedish observers noted that similar terminological divides persist in across the civilian-military and public-private-non-profit sectors in Sweden as well among the member states and institutions of the EU.

The Swedish National Defense College (CRISMART) approach tends to see education as a very broad concept encompassing both theoretical and practical aspects and thus covering a range of types of activities such as course-work drills, training and exercises. Similarly, the term training tends to be deployed as a broad term encompassing both activities designed to develop skills as well as activities designed to provide opportunities to practice these skills (exercises).[3]

By contrast, several of the U.S. participants emphasized distinctions between education (as more open-ended long term preparation for future endeavors), training (developing new skills to be used in one's current or near future positions), drills (improving and maintaining proficiency in procedures or skills), and exercises (where in principle highly skilled practitioners are given opportunities to practice together).[4] See e.g. the following definitions from a relatively recently compiled Emergency Management Glossary (Blanchard, 2008).[5]

Drill: "A drill is a coordinated, supervised activity usually employed to test a single, specific operation or function within a single entity (e.g., a fire department conducts a decontamination drill)" (FEMA - *About HSEEP,* 2008).

Training: "Planned activities which support and improve individual and organizational performance and effectiveness, such as on-the-job training, career development programs, professional development activities or developmental assignments" (DHS - *Training Lexicon,* December 2007: p. 62).

Training: "Building essential response capabilities nationwide requires a systematic program to train individual teams and organizations – to include governmental, nongovernmental, private- sector, and voluntary organizations – to meet a common baseline of performance and certification standards. Professionalism and experience are the foundation upon which successful response is built. Rigorous, ongoing training is thus imperative. Individuals and teams, whether paid or volunteer, should meet relevant local, tribal, State, Federal, or professional qualifications, certifications, or performance standards. Content and methods of training must comply with applicable standards and produce required skills and measurable proficiency. FEMA and other organizations offer response and incident management training in online and classroom formats" (DHS - *National Response Framework,* 31 January 2008).

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3   See e.g. http://www.fhs.se/en/research/research-centres-and-programmes/crismart/about/

4   See e.g. http://www.fhs.se/en/research/research-centres-and-programmes/crismart/about/

5   The original sources used by Blanchard are presented in parentheticals after the quotes. See Blanchard (2008) for the full citations for these documents/sources.

Training and Education: "...the words 'training' and 'education'... are not the same, there being a significant denotative difference. While training is more concerned with teaching *what* to think and what the *answers* ought to be, education is all about teaching *how* to think and what the *questions* ought to be: 'Training is focused on the development and performance of specific tasks or skills, and education is oriented toward more generalized and abstract knowledge that may or may not be tied to specific tasks or action.'122 Training is most frequently used when the goal is to prepare an individual or an organization to execute specified tasks. It often includes repetition of tasks, not unlike an athletic team learning to execute plays. Finally, it is normally the preferred method of learning when the goal is to perform operations in which success, failure, and completion can be clearly measured. Education has more to do with how to think about problems and how to deal with those things that may not lend themselves to categorical solutions. It becomes a matter of intellect, thought, indirect leadership, advice, and consensus building" (McCausland, 6 February 2008)

Exercise: "An exercise is an instrument to train for, assess, practice, and improve performance in *prevention, protection, response,* and *recovery capabilities* in a risk-free environment. Exercises can be used for: testing and validating policies, plans, procedures, training, equipment, and interagency agreements; clarifying and training personnel in roles and responsibilities; improving interagency coordination and communications; identifying gaps in resources; improving individual performance; and identifying opportunities for improvement. (Note: an exercise is also an excellent way to demonstrate community resolve to prepare for disastrous events)" (FEMA - *HSEEP Glossary,* 2008).

Note that multiple (and more or less varying) definitions of these terms stemming from different foundational documents are listed in the glossary.

The default solution for the purposes of the volume has been to allow the Swedish contributors to use Swedish terminology and the U.S. participants to use U.S. terminology, so readers will need to be alert to these sometimes subtle differences in usage among the chapters and sections of this document. The Swedish contributors have made particular efforts to explain terms and use additional modifiers such as 'broadly defined' as needed.

The chapters to come will discuss the following topics in turn:

- Working with Strategic Leaders: Challenges and Design Questions

- Exercises for Strategic Leaders: Perspectives and Lessons Learned from the U.S. National Exercise Program

- The NPGS CHDS Executive Education Seminar (MET Program)

- Exploring Emerging Technologies for Training and Exercise of Strategic Leaders

- SUMMIT: An In-Depth Case Study of an Emerging Training and Exercise Technology

- Case-based Scenario Development

Following these chapters, conclusions and best practices will be presented.

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Chapter 2
Working with Strategic Leaders: Challenges and Design Questions

Eric Stern

Strategic leaders (those working at the apex of their governments or organizations) are a particularly challenging target group for Crisis Management Training and Exercises. Why is this the case?

Today's leaders face tremendous demands and often keep brutal and grueling schedules. Their time and attention are scarce resources and competition for these is fierce. Time spent preparing for future crises is time not spent on current challenges and other forms of proactive policy-making. Leaders (or those who keep the gates and schedules for them) may feel that they are just too busy to take time to participate in crisis management training and exercises. They may not be aware of, or choose to disregard, the immense cost of being unprepared when crisis comes.

Similarly, leaders or those that help prioritize their time, may be overconfident with regard to the ability of leaders and their staffs to cope with future crises. It is not uncommon in dialogues with senior policy-makers and their staffs to hear that "We manage crises every day". While some functions in some countries/organizations may see major crises on a fairly regular basis, for most this reflects a misunderstanding of the nature of crisis. Even for those, such as the U.S. White House Staff, that see more than their fair share of crises,

frame-breaking and relatively 'novel' events such as the Boston Bombings and September 11 attacks, Hurricanes Katrina and Sandy, the Boxing Day Tsunami and Prime Minister Palme/ Foreign Minister Lindh Murders-- to take examples from modern US and Swedish history-- may take leaders and their staffs well out of their 'comfort zone' and place extraordinary demands on all concerned.

Even if they are not overconfident, some leaders may be loath to participate in simulations/exercises for fear of setting expectations and 'precedents' through choices made or priorities revealed in scenario exercises. Note that this fear is often exaggerated and in fact the alternative-- leaving others in persistent uncertainty about the likely direction of normative leadership from strategic leadership is likely to have far more corrosive consequences for preparedness.

Other leaders may be insecure about their ability to perform under crisis pressure and avoid the 'hot seat' in exercises hoping that things will work out alright if the day of crisis should arrive. Obviously, a better coping strategy would be for leaders to seek to equip themselves better for future challenges through embracing crisis management training and opportunities to practice under 'safe' conditions.

As a result, leaders may choose to opt out of training and exercise programs. This may have very serious consequences as a gap may emerge between the frames of reference and expectations of subordinate actors who may develop a high level of preparedness which can easily be undercut by leaders who unnecessarily and perhaps inadvertently depart from a sound game plan on game day.

When leaders do participate in training and exercises, their exalted position in the hierarchy may cause other difficulties. Other players-- some of whom may not be used to working with strategic leaders on an everyday basis may be inhibited by the fact that the 'boss' and/ or other powerful leaders are present and may be reluctant to express opinions on controversial issues. Various conformity dynamics documented in the literature (e.g. compliance and anticipatory compliance behaviors, 't Hart, 1991; 't Hart et al., 1997) may emerge in exercise environments. While, if detected and brought to the attention of participants, this may pose a learning opportunity, it may also undermine the process and outcome-- reinforcing bad habits and pernicious tendencies towards yea-saying if not addressed.

Not only subordinate players in exercises, but also facilitators and evaluators may need to present criticism to strategic leaders and powerful aides/advisors to them. As in all occasions involving the need to 'speak truth to power', this can be difficult and personally risky. Not all of those tasked with these functions will be inclined to be candid in their assessments. As a result, potentially improvable individual or collective deficiencies in preparedness for crisis management may well go unremarked and uncorrected-- with potentially devastating future consequences for real events.

To some extent, it may be said that leaders are likely to get the advice and feedback they deserve. Leaders vary greatly in terms of their willingness to hear/ absorb/act upon constructive criticism. Those who are intolerant of criticism and dissent-- and surround themselves with 'yes' men and women-- are less likely to get candid feedback in training and exercise sessions as well. Those who encourage and reward candour-- protecting rather than shooting messengers bearing reports of vulnerability and areas with room for improvement-- will get more honest and actionable feedback and tend to have better prospects for future success.

Finally, it is not uncommon for training and exercise efforts to develop in bottom up fashion by starting with operationally challenging events and then involving strategic leaders as well. Furthermore, because operational level emergency/ crisis management training tends to be better established, scenarios and designs may in fact be optimized for the operational leaders as well. In such cases, strategic leaders may not be presented with problems which challenge and engage them-- turning them into spectators more than active partners in integrated strategic/operational crisis management. Such experiences may make leaders disinclined to participate in the future and may lead them to misunderstand and underestimate the roles that they may be called upon to play in future major events.

Design Questions

For some of the reasons mentioned above, strategic leaders (and their staffs) may be a very difficult target group to engage in crisis management training and exercises. As a result, the question of how best to engage with them is highly salient. In fact there is a considerable variety of approaches in play in both the US and Sweden today.

Let us present these alternative educational design choices in the form of questions:

1. Should the training be delivered 'in house' or off-site? In other words, does the trainer go to the locales where the strategic leaders generally work and do the training/exercises in situ, or should the leaders be brought to a new location removed from the everyday environment. Both have potential advantages. Conducting activities in situ tends to enhance realism and provide broader access to the supporting context and infrastructure most likely to be used in crisis (particularly if it occurs when the leader is at home rather than out of town). In addition, it may be helpful that leaders and many other key players are already in place and special travel arrangements (and travel time and expense) will not be necessary for them. However, it may be more difficult to maintain focus on training or exercise if the leader is an environment where he or she can easily be interrupted by subordinates with question related to ongoing matters. Holding the activity offsite in an educational institution or conference facility (especially one with limited cell phone access if feasible) may help organizers get and maintain relatively undivided attention. In some cases it may be advantageous to hold an activity in a place hosting particular training/exercise infrastructure or otherwise convenient for instructors/exercise facilitators (and thus reducing travel costs on their end). Sometimes it may be possible to hold events in places with symbolic significance and or other positive qualities (e.g. natural or architectural beauty, post event recreational potential) which may make it easier to attract and retain participants.

2. How should participants be selected and grouped? Should one work in an intra-organizational fashion and group leaders with advisers, aides, and other subordinates? This has advantages in terms of working with formations likely to engage together in future crisis management. For example, the METS program for Governors and Mayors described below has tended to take this form. On the other hand (and not referring to METS specifically) such groups can be very hierarchical and may be inhibited by conformity or conflicts imported with the participants. Another common approach is to work in homogenous groups of peers across agencies or organizations: e.g. Principals from various departments or press secretaries from all of the ministries. Such groups will tend gather individuals of similar professional backgrounds, formal seniority, and facing similar challenges. These groups are often very good for identifying current problems and identifying/exchan-

ging good practices. They may take place within or help to develop networks and familiarity (personal and organizational) across agencies. In fact, the network building is often a valuable secondary dividend of such training and exercise activities. A third variant may be to work with heterogeneous and diverse groups with individuals drawn from various organizations, functions, etc. Optimizing training and exercises for highly diverse groups is often challenging but there are benefits of bringing eclectic groups (e.g. representing public, private, non-profit, federal, state, local government) together as these represent a cross-section of the whole society and may lead to valuable enhanced awareness of other levels, sectors, etc. The elite, annual, week long, Solbacka courses—which generally includes several strategic leadership scenario exercises-- offered by the Swedish National Defense College on behalf of the Swedish Civil Contingencies Agency and the Swedish Armed Forces is a good example of the latter type of more diverse exercise group composition.

3. Should educational (training and exercise) efforts be short term and ad hoc (e.g. so called one off events) or longer term, programmed, and cumulative? Clearly—as noted above—getting access to strategic leaders is difficult and something in this area is certainly better than nothing. However, there are significant benefits to more sustained efforts in which efforts can be made to both widen and deepen competence when it comes to preparedness for various leadership tasks such as those enumerated in Chapter 1 as well as for coping with various types of contingencies. At the opposite end of the spectrum from single session effort would be a degree-granting program (such as those offered by the Swedish National Defense College and the Naval Post-Graduate School—which enables sustained cumulative interaction. While such programs are generally far too time consuming to be feasible for top level national government leadership, they are able to attract rising mid-level officials and those participating in strategic leadership groups at other levels of government. In between these extremes are options such as multi-day or multi-week courses and other forms of regularly scheduled shorter sessions on a monthly, quarterly, or yearly basis.

4. Should the emphasis be on current or future strategic leaders? The most acute and short term need is, of course, to make sure that those currently bearing the mantle of responsibility for crisis management are as well equipped for the challenge as is practically feasible. No effort should be spared to convince leaders to take the time to prepare and practice for crisis management and to make sure that they are provided with state of the art training and exercise experiences well adapted

to their needs. However, this should be complemented with a broader, longer term strategy which emphasizes reaching not only leaders, but those who support and advise them. Furthermore, efforts should be made to reach not only today's strategic leaders but those who are making good progress in their government (or other relevant sector) careers and may be in strategic leadership positions in the future.

5. What types of teaching and learning strategies are likely to be most effective? This question should be approached in both generic and more specific ways. From a more general perspective, there is a strong case to be made that multiple strategies and tools for training and exercising strategic leaders should be deployed. Traditional briefings, lectures, and 'war stories' by other strategic leaders followed by question and answer sessions can certainly be helpful. However, these should be complemented by various forms of active instructional designs ranging from teaching cases, role playing, low to medium fidelity scenario exercises, to various forms of high fidelity simulations and 'command post'/ strategic leadership exercises. In the field of crisis management—as in most others—there is no substitute for learning by doing.

    It should be kept in mind that the instructional design needs to fit the purpose and skill set to be developed or practiced. More costly and elaborate instructional/exercise designs and formats may be preferable for certain purposes, while simpler and more economical approaches may even be optimal for others.

    In addition, strategic leaders such as U.S. Presidents or Swedish Prime Ministers may vary greatly in their cognitive/learning styles (George and Stern, 1997; Preston, 2001; Daléus, 2012). Efforts to adapt training and exercise formats to those modes which are most effective in reaching and engaging particular leaders are likely to be a good investment.

6. Are traditional (e.g. paper-based) or technology-enhanced training and exercise methodologies preferable with regard to training and exercising strategic leaders? The binary either/or nature of the question is in fact misleading. Once again, the answer is that it depends. Some strategic leaders—and this is in part a generational issue—may be averse to technology and prefer to avoid it or keep it behind the scenes. Others may be technophiles rather than technophobes and feel very comfortable with training or exercises adapted to computer or portable device (tablet or smartphone) platforms. Just as reading a book can for many still provide an intense and dramatic experience, text based training and exercise tools such as teaching cases can be powerful teaching and learning instruments. On the other hand technology can—as we will

see in subsequent chapters—can provide very significant means of improving the realism, flexibility, and cost-effectiveness of training and exercises. Furthermore, technology can provide means of transcending time and distance constraints enabling people in diverse locations and with different schedules to engage in meaningful interactions.

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Chapter 3
Exercises for Strategic Leaders: Perspectives and Lessons Learned from the National Exercise Program

U.S. FEMA

Purpose

This White Paper was drafted in support of a solicitation request from the DHS Science and Technology Directorate (S&T) to "discuss the development and current state of the National Exercise Program (NEP) with regard to exercises for strategic (senior) leaders, detail on exercise design, participation, use of technology, evaluation, and discussion of lessons learned and good practices based on the experience of the program and its trajectory." [*sic*]

Disclaimer: The opinions and recommendations below are solely the author's and do not reflect official positions of the Federal Emergency Management Agency, the Department of Homeland Security, or the U.S. Government.

The National Preparedness Goal

The National Preparedness Goal (Goal) calls for a secure and resilient Nation with core capabilities required across the whole community to prevent, protect against, mitigate, respond to and recover from the threats and hazards that pose the greatest risk. To achieve the Goal, the National Preparedness System includes an integrated set of guidance, programs, and processes that enable the Nation to build, sustain, and deliver the core capabilities within the context of the five mission areas: Prevention, Protection, Mitigation, Response, and Recovery. The National Preparedness System enables a collaborative, whole community approach to national preparedness that engages individuals, families, communities, the private and nonprofit sectors, faith-based organizations, and all levels of government. As a critical component of the National Preparedness System, the National Exercise Program serves to test and validate both the planning and core capabilities necessary to meet capability targets set by communities. Participation in exercises, simulations, or other activities, including real world incidents, helps organizations and communities to validate their capabilities and identify shortfalls.

The NEP and Senior Leaders

The National Exercise Program (NEP) serves as the principal exercise mechanism for examining the preparedness and measuring the readiness of the United States across the entire homeland security enterprise. The Post-Katrina Emergency Management Reform Act of 2006 requires Federal Emergency Management Agency (FEMA) Administrator "in coordination with the heads of appropriate Federal agencies, the National Council on Disability, and the National Advisory Council," to "carry out a national exercise program to test and evaluate the national preparedness goal, National Incident Management System (NIMS), National Response Plan [now National Response Framework (NRF)], and other related plans and strategies."

The role of senior leaders in the NEP has evolved with the program. The NEP traces its origins to the Congressionally-directed "top officials" (TOPOFF) exercises. The first TOPOFF exercise, held in 2000, resulted from the Senate Appropriations Committee's requirement for senior leaders to play in exercises: "The Committee is aware that numerous exercises are conducted each year to practice operations in the event of a terrorist incident. The Committee understands that few of the top officials of agencies have ever fully participated in these exercises" (S.Rpt. 105-235).

With the NEP's first implementation plan in 2007, came desire to limit and structure senior leader participation due to the many demands for their partici-

pation on exercises. The department and agency Deputies were required to participate in a limited set of "Tier I" exercises: an operations-based National Level Exercise (NLE) and four Principals-Level Exercises (PLEs). The general focus of the NLE was to rotate among domestic terrorism, non-terrorism domestic incidents, overseas or defense-related crises, and a multi-themed "transition training program" in the first year of a given Presidential term. Participation was encouraged in up to three designated Tier II exercises, and permitted or unaddressed in Tier III and Tier IV exercises.

Although the original NEP Implementation Plan called for both strategic (multi-year) exercise guidance and annual exercise guidance to document coordinated interagency requirements, the focus was on matching requirements to exercise schedule slots, and only for the few exercises in the top "tiers." The current NEP does not require tiers and addresses Whole Community exercises. The NEP now coordinates "Principals' Objectives" from federal senior leaders to guide alignment of *all* exercises in the NEP to the Principals' strategic intent, whether or not senior leaders or any Federal officials participate. In this way, observations and corrective actions are related to the issues of concern from the department and/or agency heads throughout the NEP, and there is potentially more feedback on their concerns.

National Exercise Program Tier

- Tier I: White House directed, U.S. Government-wide Strategy and Policy Focus
- Tier II: Federal Strategy and Policy Focus
- Tier III: Other Federal Exercises Operational, Tactical or Organizational Focus
- Tier IV: State, Territorial, Local, Tribal or Private Sector Focus

1 NLE
4PLE

3 Tier II

Other Federal Exercises

Non-Federal Exercises
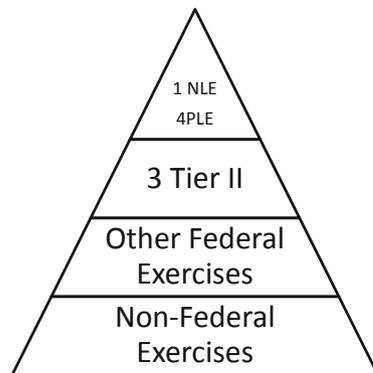
*This figure was originally created by FEMA.

Senior Leader Engagement

All exercises in the current NEP are tied to the Principal's Objectives. In October 2012, the Assistant to the President for Homeland Security and Counterterrorism formally issued the Principals' Objectives for the 2013-2014 NEP Cycle Principals' Objectives represent useful objectives from agency heads that can drive exercise design, conduct, and evaluation. One challenge for the next NEP cycle is to design and implement a staffing process for issues and objectives that results in sharper focus of the Principal's Objectives. The recommendations include Principals' Objectives development for each "mission area" (prevention, protection, mitigation, response, recovery) under the National Preparedness Goal. Additionally, Principals' Objectives, might focus on one of the 31 "core capabilities" found most challenging in the National Preparedness Report and the NEP Rolling Summary Report.

Sustaining senior leader engagement after the issuance of Principals' Objectives is challenging. The NEP Capstone Exercise 2014, focused primarily on the challenges of providing response and recovery assistance to Alaska following a catastrophic earthquake, featured substantial participation from senior officials. This participation included deployment of the FEMA Administrator and the Commander of U.S. Northern Command to Alaska to monitor and oversee the support being provided, as well as active engagement of the Governor of Alaska.

However, participants noted a contrast with the cyber-focused National Level Exercise (NLE) 2012: the President did not participate in any portion of the exercise, nor a convening of the Cabinet to address issues posed by the exercise. Cyber issues were highly topical at the time of NLE 2012 and they touched every agency.

Although the NEP is objectives-driven rather than scenario-driven, the NEP must yield Principals' Objectives (and associated testing conditions in the Capstone exercise concept) that will engage and energize more than a select group of senior officials.[6] One proposal under discussion is to develop and socialize a concept for the Capstone exercise early in the biennial NEP cycle, to give more time for agency heads and their staffs to develop connections between the Principals' Objectives, the proposed exercise concept, and their own internal priorities. This would also help agencies align internal exercise activities to pro-

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6   Originally the Capstone 2014 concept included requirements for a continuity exercise, although this was focused on the National Capital Region through an unrelated scenario thread. Focusing on ensuring continuity of agency operations *in Alaska* could perhaps have engaged other departments and agencies more fully. The problem of interagency coordination to support Alaska's recovery was taken up in the Silver Phoenix component of the Capstone exercise.

gress towards the Capstone, further refining issues that may require interagency policy coordination and possible Presidential attention.

Yet still more critical to sustaining senior leaders' participation is engagement from the very highest levels, represented by the President and senior members of his National Security Staff. This is true during the exercise, where even the possibility of Presidential participation commands senior-level participation. Such engagement represents ultimate accountability, through the White House and back to the people.

Capstone 2014 used excellent simulated media tools: a mock news website with dynamic content, including video updates and interviews, as well as mock social media platforms.

The media simulators made an exceptional effort to point out issues in the exercise response and inconsistencies in statements and actions. However, where agency heads and their staffs can simply "turn off" the media simulations without consequence, the simulations can no longer stimulate. A design challenge for the next NEP cycle Capstone is to work with the National Security Staff to identify ways to keep at least a credible threat of White House involvement hanging over the exercise throughout, regardless of whether formal interagency policy coordination meetings and Cabinet meetings are scheduled.

Improvement Planning

Finally, the NEP can benefit from that high-level engagement in the evaluation and improvement planning phase that follows the exercise. Concerns identified in NLE 2012, for example, helped shape Presidential cyber-related policies that were issued in February 2013. The submission of relevant and timely after action reports and improvement plans assist in informing national policy and strategy development. The rationale for the NEP's using a "Rolling Summary Report" is to ensure that key findings are available for the policy process throughout the NEP cycle. More important is to institutionalize ownership of the interagency after-action process within policy-making bodies managed by the National Security Council Staff, so that there is follow-through on and accountability for commitments to make corrective actions. The National Security Council Staff did conduct a Corrective Actions and Lessons Learned Review (CALLR) in 2011 to review, validate, and reenergize as necessary corrective actions from previous exercises. That effort has not yet been repeated. But that process could be made part of and aligned to the biennial NEP cycle, to inform the development of Principals' Objectives. The NEP provides ample opportunities for senior leader interaction, to include with counterparts in State and local government and the private sector, and with their own operational staffs.

These opportunities allow agency heads and senior leaders to rehearse their incident management roles; maintain awareness of authorities, plans, and capabilities; identify gaps and seams in those authorities, plans and capabilities; and develop policy and resource solutions to address the issues. The flagship event within the NEP, the Capstone exercise, has a proud history of driving change. As noted, NLE 2012 helped cement elements of Presidential policy regarding cybersecurity. TOPOFF 2 identified a need for what became the Interagency Modeling and Atmospheric Assessment Center (IMAAC), to ensure coordination of Federal plume modeling and interpretation for radiological and other incidents. And as the after-action process for the recent Capstone exercise proceeds, we look forward to improved approaches to marshaling and coordinating support for catastrophic incidents.

Yet it is in smaller, more frequent engagements that NEP most helps prepare senior leaders. In coordination with the National Security Council Staff, Principals Level Exercises (PLE) are still held, regularly if not quarterly, and serve a valuable function of bringing agency heads together—both "veterans" and personnel relatively new in their posts—to raise and maintain awareness of policies and plans relating to incident management, continuity of operations, and other concerns. The NEP has also recently supported a series of small tabletop exercises for the relatively new Secretary of Homeland Security and the component heads of his Department, affording opportunities both to review and understand current policy and processes for incident management within the Department, and to provide new direction and guidance. The NEP similarly has a history of supporting Assistant Secretary-level tabletops, flexibly tailored to current concerns whether Government-wide or of a few agencies who need to focus on a given topic. For example, at the moment the NEP is supporting a series of workshops and tabletops regarding climate change, to inform agencies' adaptation planning. The NEP also supports frequent tabletop exercises for the Emergency Support Function Leadership Group (ESFLG), to maintain preparedness of senior civil service staff with day-to-day responsibility for implementing the National Response Framework (NRF) at their agencies and with their agencies' partners.

Although the NEP has access to a range of technological tools for modeling and simulation, the keys to NEP's success in preparing senior leaders have not been technological; most agency heads have their fill of slide presentations, much less simulations. The keys are, have been, and will remain simple: (1) regular engagement, and (2) attention to issues that matter to leadership. NEP's continual improvement will focus on ensuring that engagement, and better identifying and refining issues to support development of Principals' Objectives.

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Chapter 4
NPGS CHDS Executive Education Seminar (Mobile Education Team Program)[7]

Glen Woodbury

Introduction and Current Program Overview

This article describes and discusses the Executive Education Program developed by the Department of Homeland Security (DHS) and the Naval Postgraduate School's Center for Homeland Defense and Security (NPS/CHDS.)

The NPS CHDS Executive Education Seminar program prepares senior-level state, territorial, tribal and local officials to examine, define and meet the challenges homeland security poses for their jurisdiction. These seminars provide opportunities for a jurisdiction's leaders to engage in strategic planning, policy development and organizational design through facilitated discussion.

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[7] This chapter has borrowed material available at http://www.chds.us/?met (accessed July 25/2014) and previously published in Woodbury, Glen (October 2006) "Learning" Homeland Security – How One Executive Education Program Engages State and Local Officials. *Homeland Security Affairs,* Vol. II, No. 3.

Seminars are conducted by the CHDS Mobile Education Team (MET) comprised of nationally recognized experts in various areas related to homeland security. The seminars are designed to enhance leadership development, communication, and knowledge at senior levels of local, state, tribal, territorial and federal governments and agencies. For states and territories, the target audience is the governor and his/her homeland security team, which is expected to consist of the governor's cabinet and the heads of each department and agency that has a role in homeland security. The focus for local government includes mayors, tribal leaders and senior urban area officials and their homeland security leadership.

Time constraints on senior officials require the sessions be brief and efficient. Mobile Education Team leaders conduct pre-seminar visits to each location to identify homeland security challenges and issues specific to that jurisdiction. Information from this visit provides the basis for a customized seminar developed for each participating state or urban area.

Seminar goals and objectives

The purpose of these executive level seminars is to enhance the capabilities of elected officials and their senior appointed leaders to successfully address the homeland security challenges and catastrophic disasters in their jurisdictions. Participants identify the critical homeland security issues facing their jurisdictions and create, consider, and/or improve prevention, protection, mitigation, response and recovery strategies.

Seminar format

Each event is an intensive half-day facilitated policy-level discussion on homeland security designed to help strengthen capability to prevent, deter, and respond to catastrophic events and to build the intergovernmental, interagency, public-private sector and civil-military cooperation that homeland security requires.

Seminars are conducted within the jurisdiction and led by the MET panelists who focus on each jurisdiction's homeland security challenges. Topics for these non-attributive discussions may include:

• Local/state/tribal/territorial/federal responsibilities and coordination

• Information collection and sharing

• Critical infrastructure protection

• Continuity of operations/continuity of government

• Public communications

• Prevention, protection, mitigation, response and recovery policy

Additional resources

After the seminar, participants are granted access to the CHDS Homeland Security Digital Library at no cost and information on other CHDS and FEMA sponsored programs are provided. These resources support and continue the learning process begun at the seminar. In most circumstances, the subject matter panelists can be contacted for content clarification.

> Learn more about CHDs executive education seminars:
> Website: www.chds.us
> Program Information: www.chds.us/?met
> Stan McKinney, Program Director: 803-920-4097 or smckinney@hsemc.com
> Susan Jones-Hard, Managing Director: sgjonesh@nps.edu

Core Questions and Types of Executive Education Seminars

The NPS/CHDS program provides three types of sessions, differing mostly by topic or by audience. The program was first tasked by the Department of Homeland Security to deliver policy and strategic level seminars to governors and their cabinets or homeland security "teams." The original purpose was to prepare state officials to take on the new policy, strategy, and organizational design issues that homeland security presented. These sessions are commonly referred to as "State METs." (MET is an acronym for Mobile Education Team.) As noted in the program overview above, the content of these METs has evolved over time, but their overriding focus continues to be the prevention of terrorist attacks, the policies of homeland security (both federal and state), and the issues that would arise with the response and recovery to catastrophic events.

The second type of session is provided to leaders in major urban areas; thus while similar in content to the sessions held for states, their audience composition and themes for discussion differ. The audience composition in major urban areas varies from jurisdiction to jurisdiction; some include many elected officials and minimal staff, while others may have one or two elected officials and more department heads. An urban area seminar may also take either a "wide" or a "deep" approach. The wide approach is one where the multiple jurisdictions

that make up the greater urban area are represented; the deeper approach is more focused on the agencies and disciplines within the core city or county. Those jurisdictions choosing width in their focus have a greater *intergovernmental* discussion while those selecting depth generally focus more heavily on the details of *interagency* challenges and opportunities.

The third type of executive education session, the topical MET, is provided as a special request in an effort to drill down on a single issue or is delivered to a non-jurisdictional entity such as a national association. These events are designed to explore the policy, strategic, and organizational infrastructures as they might apply to a specific hazard (e.g. cyber terrorism, pandemic flu, etc.), an existing or evolving national policy or strategy (e.g. fusion centers), or a single topic for further exploration and/or resolution (e.g. public and private sector interfaces). These events tend to vary greatly, both in audience composition and intended objectives, compared to the state and major urban area seminars.

The purpose of the MET seminars is to clarify the most important and essential questions and truths confronting elected leaders responsible for homeland security and then figure out how to answer those questions, in accordance with the truths. How are decisions made when the disaster far outstrips the resources to address it? Is intelligence fusion possible? Federal priorities are inherently different from state and local priorities: Who's in charge? How can state and local leaders be provided with assistance for their part in the construction of homeland security? One way is to simply tell them what to do and then fund them to do it. This assumes someone knows how to "do it" and that the activities can be accomplished in an ever-changing, often-decreasing funding environment. But adequate financial resources are only a part of the solution; the rest involves effective policy development, organizational designs, strategic planning, commitment, and – most importantly – leadership. Educational assistance at the senior state and local levels is required. This is not to suggest that state and local officials do not know how to accomplish these *types* of tasks. It is rather that, in the area of *homeland security,* policy, organizational structure, and strategic thinking are often still being developed. Additionally, the concept of "training" or "how to do it" assumes that there is a right way and a wrong way; executive "education" teaches leaders how to think critically, analyze problems and develop their own solutions and options. These seminars are not intended to be a "training" event, nor an "exercise" as those descriptions tend to imply that there are standardized practices or solutions to complex and emerging issues.

The Approach

The basic objective of the MET seminar is *to identify the critical homeland security issues that challenge state, territorial, tribal and local leaders*. The seminar team and elected/appointed leaders collectively define and prioritize these challenges and analyze their specific experiences, limitations, and capabilities. They also discuss the challenges common to jurisdictions throughout the nation, with a view to beginning or advancing strategic initiatives focused upon prevention of, preparedness for, response to, and recovery from a terrorist act. It would be inaccurate to describe a MET as a presentation, evaluation, assessment, tactical training event, table-top exercise, or policy direction handed down from the federal government. Nor does a seminar in and of itself solve the complex issues attendant upon instituting homeland security. Instead, these sessions are designed to be provocative, non-attributive, candid discussions and debates about the homeland security issues facing state and local jurisdictional leaders. The program's objectives, the composition of the audiences, and the curriculum content are all key elements in the overall success of the program.

Objectives

The purpose and objectives of the Executive Education Program are to:

- Assist the jurisdictions' executive leadership to build on their existing successes in Homeland Security preparedness and strengthen capacity to prevent and defeat terrorism and prepare for catastrophic events.

- Identify and examine homeland security concepts, challenges, and opportunities at the policy, strategy, and organizational design level.

- Discuss opportunities, expectations, and challenges of elected officials and other senior leaders in implementing homeland security objectives.

Within these explicit goals are also implicit and more explanatory intentions. The program, through an open, candid, and sometimes provocative discourse, also attempts to achieve these unstated objectives:

- Make senior officials aware of their responsibilities as well as opportunities to participate in the prevention of terrorist attacks and responding to the complex issues in any large disaster.

- Clarify why they should care about homeland security, the local, state and federal homeland security systems, and the expectations of partners when something happens – i.e. who is in charge?

- Enable jurisdictions' senior leaders to talk collaboratively about their roles, responsibilities, and expectations in their pursuit of homeland security success.

- Discover the more controversial, and often neglected, issues inherent in the response and recovery to catastrophic disasters, and share either "smart practices"[8] observed elsewhere or more information on why these issues are so difficult.

- Help the jurisdiction, and thereby the nation, "move the ball downfield" in their homeland security efforts by identifying the priority issues they need to tackle next in their efforts to protect and serve their citizens.

The session results vary and are often unpredictable. In some sessions, the key finding for participants is a better awareness (though the lack of awareness may be unacknowledged by all participants beforehand) of what they already have in place. In other sessions, the outcome is a clear statement of priorities that the jurisdiction must address in near, short, and/or long term efforts. Typically, results include a bit of each of the above, plus the important designation of who in the room has the responsibility for accomplishing the most significant tasks. In some cases, just the fact that the program brought the particular participants together to discuss these issues at length for the first time marks an improvement in capability.

Occasionally, there is the "aha!" or "Kodak© moment"[9] when not only is a challenging issue identified but the participants also outline and commit to the issues' resolution. Successful moments have included the realization and commitment to form state intelligence fusion centers, the agreement to pursue elected official councils on homeland security, and the idea to use unofficial spokespeople to help advance preparedness and response messages.

Audience Composition

Who is "doing" homeland security? While the question depends heavily on how "homeland security" is defined, some believe the people conducting the day-to- day management and administration of homeland security should be those most involved in the executive seminars. However, underlying the

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8 I advocate the term "smart practices" versus "best practices," the latter implying some type of evaluative and comparative analysis. Homeland security is not yet at a point at which what works in some places can be objectively ranked and ordered into what is "best" for everyone.

9 Deputy Chief Clark Kimerer, Seattle Police Department, in comment to author. While he did not originate the phrase, Chief Kimerer deserves credit for applying it effectively to this program.

program is the concept that "management attends to the realism of what is. Leadership looks toward what could be, what should be."[10] Consequently, the program requires that the jurisdiction's executive leadership participate in the MET seminars, whether or not they are intimately familiar with or involved in the execution of homeland security activities. For example, the governor and key members of his or her cabinet are expected to attend state level sessions. In order to fulfill and promote homeland security objectives, the presence and involvement of leadership is essential. While management can keep the initiatives and programs running, only leaders can provide executive commitment, vision, strategic priorities, and resources. The "bosses" must be in the room and party to the discussion, especially the discussion of who is in charge and the potential assignment of responsibility for various aspects of the homeland security endeavor.

The program also attempts to underscore the importance of involving non-traditional partners in achieving homeland security objectives. Homeland security is about much more than just first responders and emergency management. It is also about public health, agriculture, public affairs, economics, tourism, business, tribes, legislators, judges, general services, and much more. The program typically strives for a balanced mix of these areas and an attendance limit of approximately thirty-five participants. The program generally works with a multi-disciplinary group, limited in number to promote an open discourse.

The program utilizes a team of Subject Matter Panelists to achieve its explicit and implicit objectives. The panelists use a variety of engagement methods. They provide expertise, both from their personal areas of experience as well as from their exposure to lessons from other jurisdictions in previous sessions. They are provocateurs, challenging current strategies and concepts at both the national and jurisdictional levels. They coach and constructively criticize, offering insights and advice on how the jurisdiction might solve or think differently about a current challenge but they are not there to provide proven solutions to the problems. For the most part, but not exclusively, the panelists are selected from the ranks of former senior officials or based on their specific technical expertise in order to provide an environment of candid and open dialogue without fear on their part of deviating from or contradicting any institution's current policy positions.

Again, the goal is to have an open exchange of views about homeland security. The size and composition of the audience is intentionally designed to promote discussion. Speeches, prepared presentations, and recitations of tactical plans are discouraged. Debate and questioning are encouraged, not avoided or

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10   Christopher Bellavita, in initial draft of article, "What Should Homeland Security Leaders be Talking About?" Reviewed on July 10, 2006.

stifled. The underlying premise is that we have not yet figured out everything we need to know about homeland security, but through honest and frank conversation among professionals and responsible officials, we can improve the policies and practices.

Curriculum

The curriculum is designed to provide a guideline for discussion that will identify a range of potential inquiries during the executive education seminars. These "interrogatories" are intended to stimulate discussions that will identify and clarify the policy and strategic issues and challenges faced by each client group. The open-ended questions are posed to avoid "yes" or "no" responses or explanations, but rather to promote a lively policy and issue- identification dialogue. Sometimes the facilitator will shift the focus of a particular topic by asking "What is your expectation of...," rather than "how do you...," in order to elicit desired results rather than statements of current status.

The desired interrogatories are inserted into an outline based upon the overall themes and direction that any particular client requires or requests. Simulated video news briefs, "Crossfire"-type commentaries, and expert views in video clips are used to help highlight the issues as well as provide a dynamic context of an event occurring in that jurisdiction for the MET participants.

The topic areas are intended to focus on the policy and organizational issues surrounding the multi-governmental, multi-agency, and multi-disciplinary environment in which jurisdictions are operating in order to accomplish homeland security objectives. Below are examples of the topic areas and questions utilized by the program to stimulate discussion. As each seminar is customized with a unique panel composition questions posed vary in each MET. The intent is to cultivate an agile discussion tailored to the issues, priorities and challenges relevant to the particular jurisdiction.

Examples of MET Outline Questions

Inter-governmental Management and Policy Development

- How are policies and strategies for homeland security developed, vetted, and approved? At what point are chief elected officials involved and what is expected of them?

- What hampers or hinders cross-government agreement on goals, objectives, and directions for homeland security? What has been done to overcome these barriers?

- How are the multiple chief elected officials, elected councils, appointed district executives and inter-jurisdictional disciplines engaged in policy setting?

- How are essential and traditional government objectives balanced with those of this new demand for homeland security? How are they discussed and debated across jurisdictional boundaries?

- How are trade-offs between prevention and response investments discussed and decided? How are homeland security efforts, particularly prevention activities, effectively measured? Is there a way to measure them?

Prevention

Threat Identification

- Who is responsible for threat identification – federal, state, or local governments? The private sector? Who is involved and who is excluded and why?

- Are all existing data bases and systems being utilized for surveillance and monitoring? What are the barriers and is it worth it to overcome them? Are there any legal challenges or policy positions associated with Threat Identification? If so, how are they being addressed?

- What is the mechanism for integrating threat identification efforts across jurisdictional boundaries and among local, state, private, and multiple federal efforts?

Vulnerability Assessment and Critical Infrastructure Protection

- Who identifies what is critical infrastructure? How is this process working? What are the key vital infrastructures and how are their proponents and/or owners included in the assessment process?

- How is protection prioritization accomplished? Where resource decisions are made for additional protection measures? How are the "trade-offs" analyzed and delivered to decision makers? How is this handled in a multi-jurisdictional environment?

Intelligence/Information Analysis and Fusion

- What is the vision for a process to collect, fuse, analyze, and disseminate intelligence and information products? What is the status of intelligence and information fusion efforts?

- Are all disciplines involved? How are public health, agriculture, ports, transportation, and other entities incorporated into the area's intelligence collection, analysis/fusion, dissemination, and feedback process? Who drives or determines the end products of the fusion process?

- What role does the private sector play in intelligence strategies?

- What are the issues regarding legal authority/statutory limitations on gathering and sharing intelligence – e.g. open meeting/disclosure laws, etc.? Is there any legislation and/or ordinance pending? What are the pros and cons? Are legislative remedies needed?

Public Communications for Prevention

- How is the public engaged to help with prevention and to manage uneasiness/fear? How is prevention information communicated to the public?

- How do you deal with special populations in the prevention phase (cultural/language/ethnic, schools, elderly and homebound citizens)?

- How do you talk about your prevention efforts?

Preparedness

- How do your priorities match up with the National Preparedness Priorities? Do you have other priorities? To address prevention as a priority, how would the area's allocation of resources and staffing need to be adjusted *or* is it appropriate?

- How much risk is the jurisdiction willing to accept in preventing/preparing for terrorist attacks? What type of risk calculation is incorporated into the resource allocation decision- making?

- What is your strategy for enlisting the public's support in both preparing for and preventing a terrorist attack?

Catastrophic Response/Recovery

- How would a major and catastrophic incident be managed and coordinated? What role will the various elected officials have in this management?

- Does the city, county, or state have the authority or the need for authority to compel vaccination or treatment? Can the state or local authorities *direct* health care providers to exam, monitor, or treat?

- Who has the authority to seize/use facilities or property? Who has the authority to quarantine a high rise building? Who has enforcement responsibi-

lity and authority? Who has the authority to force closure of facilities? Malls, schools, transportation centers?

- How will state and federal military resources be requested and engaged in a catastrophic, terrorist incident? Is there a policy on the "use of force?"

Continuity of Services

- What are the jurisdictional legal obligations and responsibilities for COOP (Continuity of Operations) and COG (Continuity of Government) planning? How have the essential functions of the governments in the urban area been identified?

- What would the public identify as the essential responsibilities and functions of government in the event of a disaster? Given that many essential services and functions for citizens are handled by diverse

- How many of your agencies have identified their essential functions? Has this information been consolidated into a comprehensive plan and strategy?

- What are some of the unique policy issues that will either help or hinder effective COOP and COG in the area?

Risk Communications

- What information would be released to the public? Who decides? What type of discussion occurs when deciding what to say and who will say it?

- How will the media react? What should governors, mayors, commissioners, etc. expect? What media strategies should officials employ? How should officials communicate with the public to manage fear during an event?

- At what point would federal, state, and local governments confirm to the public that an event is terrorist in nature? How will this message be coordinated?

- What would be the public's expectations for information and guidance? Before, during, and after?

Strategic Planning and Budgeting

- What is the long term (multi-year) strategy for guiding and directing homeland security goals and objectives? Is this an individual jurisdictional strategy or regional?

- How will resource efforts be sustained if federal funding decreases or ends? Where do homeland security efforts and costs rank in the overall budget priority process?

- How should the jurisdiction tie its strategy to other regional, state, and federal plans? Or should it?

- How will the success of the strategic plan and consequent budget allocations be measured?

While this is just a sample of the questions that might appear in a seminar outline, they show the level and flavor of the discussion prompts. The goal is to solicit discussion at the policy and strategy level and to avoid the operational or tactical details. The initial response(s) to any of these prompts helps lead the discussion towards a better clarification of the issues and sometimes towards potential paths for resolution.

Conclusion

The experience of this program emphasizes two key points: (1) learning is needed; and (2) learning is occurring. Education is the key to success for senior officials at this stage of our homeland security evolution. Every administration leaves its mark by advancing the evolution of policies and strategies a bit more. Education helps those involved to define the policies and strategic issues to focus upon and presents options and approaches for further analysis. The Executive Education Program's sessions have demonstrated that the method utilized by the Department of Homeland Security and Naval Postgraduate School's Center for Homeland Defense and Security is one promising approach to satisfying the need to educate senior officials in this new endeavor we call homeland security.

The ball *is* being moved downfield. States, local governments, federal agencies, and the private sector have all been engaged in this effort. The greatest challenge appears to be that the road to homeland security "success" must be built while these public officials are sprinting down the pavement. This is the primary value of the Executive Education Program's sessions: it provides a break point in this journey, allowing these officials to evaluate where they have been and to hopefully plot out their next steps. It also helps to "institutionalize" homeland security efforts and provides a resource for new leaders and administrations.

The MET Program

Number of Executive Education (MET) Seminars held 2003-2014

Totaling 293 seminars. Approximately 35 participants attended each seminar.
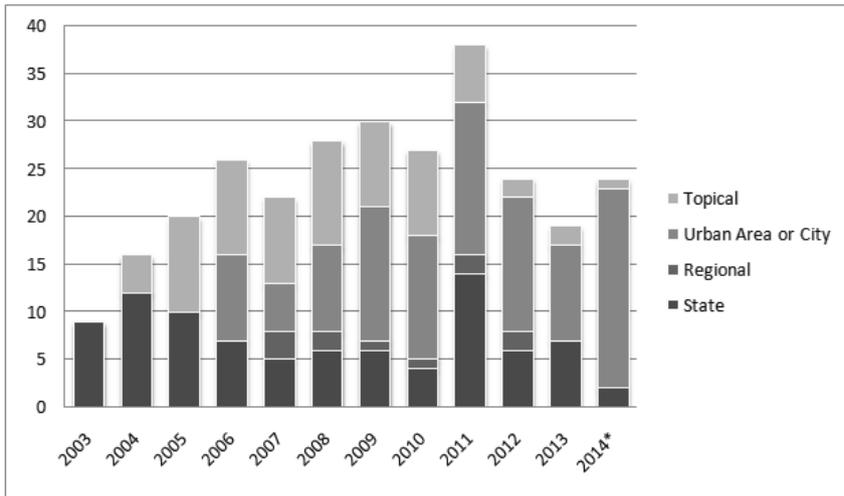
*partial year to October 2014
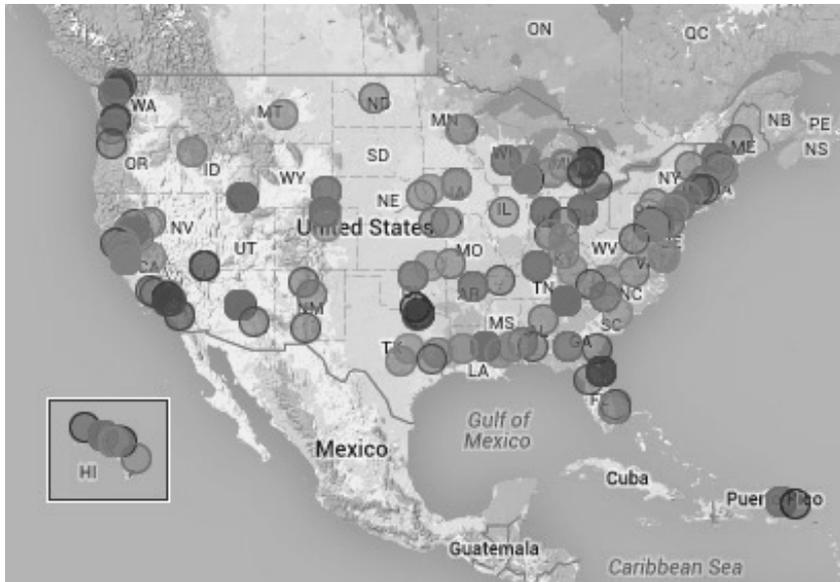
For a full list of MET events, dates and locations see http://www.chds.us/?met

Chapter 5
Exploring Emerging Technologies for Training Strategic Leaders

Arjen Boin, Fredrik Bynander, Garth Jensen, Rebecca Law, Rodrigo Nieto-Gomez, Wendy Walsh, and U.S. EMI

Editor's Introduction

In this and the following chapter, ways in which mature and emerging technologies can help to make crisis management training and exercises more effective, efficient, and better adapted to the needs of strategic leaders will be explored. In addition reflections on the challenging of adapting technology and instructional designs to the special needs preferences of strategic leaders will be provided.

Virtual Games as a Key to Advancing Strategic Leadership Education

Massive Multiplayer Online War-game Leveraging the Internet (MMOWGLI)[11]

> *"One thing a person cannot do, no matter how rigorous his analysis, or heroic his imagination, is to draw up a list of things that would never occur to him"* Thomas Schelling

Educating our leaders is of critical importance. As individuals progress in their careers responsibilities increase and time for education seems to decrease. The evolution of technology has increased our ability receive and share information at such a rate that we have learned to compartmentalize and prioritize, but are we missing something? Do we have the needed information and perspectives to solve the complicated and complex problems we are faced with? Is there a way that we can really activate our information network in an organized way to extract, react and act to solve our most wicked- problems?

> *"It is one of the secrets of the world. We all have the key to one another's locks. But until we start to talk, we don't know it."* Michael Silverblatt

We must leverage technology to facilitate education and understanding in meaningful, engaging and effective ways. To that end, the Naval Postgraduate School (NPS) Modeling of Virtual Environments & Simulation (MOVES) Institute has worked with the Office of Naval Research (ONR) and an innovative private sector partner, Institute for the Future (IFTF) to create Massive Multiplayer Online War-Game Leveraging the Internet (MMOWGLI).

In situations where we struggle to understand the challenges, answers are illusive or seem to transcend our usual ways of knowing, the solutions are to be found in the intellectual capital that is supplied by the broader community or ' the collective.' Yet this collective is in the form of unrealized potential unless we create a space to organize and harvest it. In structuring the problem as a game, and opening it up to a large pool of players, MMOWGLI provides the mechanism by which this unrealized potential can emerge and be converted to insight and ultimately action.

Aspiring to fully leverage multimedia and web 2.0 technology, MMOWGLI constructs an on-line collaborative environment for players to collaborate with one another. Currently, MMOWGLI can be played from any computer with Internet connectivity, allowing for a broad level of participation that can span

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11   This chapter section was prepared by Wendy Walsh and Rebecca Law of the Naval Post-Graduate School and Garth Jensen of the Office of Naval Research.

the world and will be even more accessible in the next few months as mobile MMOWGLI allows for play on personal mobile devices.

MMOWGLI Described

MMOWGLI is essentially a robust messaging game that has proven not only to be an ideal crowd sourcing tool but also a viable means to extend the educational environment beyond the classroom or a static on-line learning management system. MMOWGLI is a narrative white space that is extremely appropriate in adult and senior leadership education as this level of student learns a great deal from peers as well as from the prescribed curriculum.

MMOWGLI games provide a space for meaning for dialogue that promotes diversity, is scalable and allows for anonymity. Each player is only required to provide an email to register for the game; all other information is voluntary self-disclosure. This allow traditional hierarchies to be invisible and allows for conversation inclusivity. We are now facilitating inputs from previously excluded thinkers which can broaden our understanding and begin to allow for progress to surface in ways we could not previously imagine.

Once an individual is registered to play, they are provided with a game 'call to action' (CTO). This is usually in the form of a video introduction to the problem or topic area. The CTO can be a simple talking-head video, a stitching together of images and audio to convey the intent of the game or they can be a high-end production pieced with professional video and actors. MMOWGLI games have proven to be successful with various CTO media. The most important elements of the CTO are that it clearly conveys the issues and/or problems and it inspires players to play.

Multimedia techniques can immerse players into the game, where compelling conditions engage their attention. Online play enables MMOWGLI to massively scale up the size, knowledge, experience level, and diversity of the participant pool, while also reducing the barriers to entry associated with traditional war-gaming. This large participant pool facilitates the emergence of outliers, while the play of the game creates an ideal environment for 'knowledge accidents': *novel interactions and complex interactions of ideas, which would not occur or otherwise be predictable*. Finally, MMOWGLI goes a step deeper, combining insight with simulation to foster confidence that the innovations that emerge are well grounded. Much of this is possible in the anonymity of the players.

MMOWGLI was designed it to maximize the number of people involved in on-line discussions and keep the discussions moving quickly. This is facilitated by the use of a card system to capture the conversation. As with Twitter, each card is limited to 140 characters of text, which enforces conciseness and keeps the conversations evolving at a good pace. MMOWGLI effectively organizes

the game activity so if players rejoin after hours or days, they can quickly track the threads of the conversation that are of interest to them.

The MMOWGLI card system begins in a hierarchical fashion with top-level of cards knows as or 'idea or seed cards.' These cards contain ideas or questions to inspire play. Most games start with game designers creating 'seed cards' to inspire the discussion. There are typically ten top-level seed cards that begin the conversation. These ten are usually divided into two categories. These two categories can focus on the desired future and strengths, weaknesses and challenge, and/or defense and innovate areas. An example of a seed card used in a recent NATO course MMOWGLI was: *Explain how your state/region is better off participating in NATO or would it be more beneficial for your state to "go at it alone?"* Figure 1.
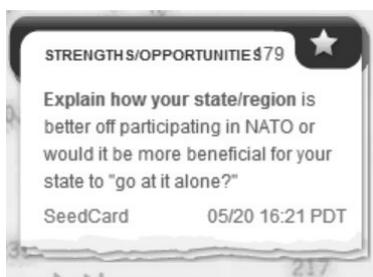
Figure 1: Seed Card

Players can then respond to this card or any card using four types of cards, shown in Figure 2:

• Expand: Builds on existing ideas to flesh them out;

• Counter: Challenge with an idea;

• Adapt: Take an idea in a different direction;

• Explore: Ask questions about an idea.

Figure 2: Different Types of MMOWGLI Cards

Players earn innovation points in an effort to ultimately win the game, yet players don't get points for responding to top-level cards in the game; they only get

points for responding to other players cards and when players responding to their cards. Essentially, they are rewarded for making comments that increase discussion. Players can also rate ideas and be awarded special icon badges for specific achievements such as playing cards in every category or contributing to action plans. The concept is that players will be motivated to participate more with the gamification step of allowing players to compete via a point system. Additionally, game masters can mark cards as being 'Super Interesting' either based upon the user responses the cards generates, to indicate knowledge of the subject and/or that the card's idea is one all players should see.

As the conversation grows, so grows the chain of cards. The length of the chain can be an indicator that players have put a considerable amount of thought into the specific area of a problem and this may signal the game master to invite some players to create 'Action Plans.' The game masters can select interesting card chains and invite one or more of the thought leaders of the chain to propose a course of action to implement the recommendations in the chain. MMOWGLI has several tools to allow the action plan author(s) to collaborate with other players to contribute to the plan including blogs space, mapping tools, video hosting and more. Once the author completes the 'Action Plan,' players can comment on it and continue to invite collaborators to realize the plan. The activity of action plans realizes MMOWGLI's motto "Play the Game, Change the Game!"

A game portal has been developed to supports all MMOWGLI gameplay. This portal is a wiki-style space where players, designer, administrators and game masters can converge and share information. The portal conveys general resources such as a glossary of acronyms, game news, frequently asked questions, and the Game Blog valuable to all gameplay and it also holds game specific resources for each MMOWGLI game. The portal can be found at https:// portal.mmowgli.nps.edu.

MMOWGLI Applied

As a lightweight repurposeable game engine, MMOWGLI is able to explore a variety of themes, to expand engagement in military and non-military strategy development for complex geopolitical problems. The platform is designed to support large numbers of distributed global players working together on idea generation and action planning, with an eye towards surfacing innovative outlier strategies. Table 1 provides the year, topic, number of games or rounds played for each topic, number of players and number of cards for the games played on the MMOWGLI platform.

Year	Topic	Number of Games/Rounds	Number of Players	Number of Cards
2011	Piracy	3- games- 5 rounds	2,100	14,978
2012	Energy	1 game	561	5,121
2012	Piracy	1 game	115	432
2012	DHS- virtual training requirements (EVTP)	1 game	65	263
2012	NPS- Inspector General Report	1 game	70	521
2013	Navy Business Innovation Initiative (BII)	1 game- 2 rounds	230	1,891
2013	US Navy Reserve Capacity, Capabilities & Constraints (CAP2CON)	1 game-2 rounds	467	2874
2013	Electromagnetic Maneuver (EM^2)	3 rounds	576	5,624
2013	National Defense University- Academic game- (Dark Portal)	3 rounds	311	4,110
2013	Unmanned Vehicle Digital Manufacturing	1 game	70	476
2014	Army SciTech Futures	3 rounds	174	3,230
2014	NATO International Maritime Security Course	1 game	24	157

Table 1: MMOWGLI games

MMOWGLI allows us to broaden the aperture of our perception and understanding, allowing us to foresee larger and unimagined possibilities than currently possible. With conventional methods, facilitating and aggregating this level of breadth and depth is prohibitively difficult. Further, the online nature of MMOWGLI allows games to evolve over time, increasing the range of possibilities that can be explored resulting in more effective and more frequent decision cycles. In an educational setting, students can virtually see the 'conversations' of previous courses learn from them and build on them.

MMOWGLI Shared

MMOWGLI has created a robust multimedia environment for collaborative strategic planning by networks of people who may be complete strangers. NPS drew on its broad knowledge of worldwide Naval operations as well as its deep capacity in computer science to develop this new gaming software using a Web-based architecture, building an open-source platform that can test the limits of new online environments. NPS continues to maintain and extend the codebase.

Interested stakeholders are welcome and have been contributing to this effort. We believe that this capability could be ideally housed in an academic institution to support workshops and curriculum. As the MMOWGLI project code is open source, it permits reuse and adaptation without restrictions. This protects government investment over the long term and also encourages outside contributions. It is repeatable we can build on valuable practices and lessons learned, yet open source does require care and sustainment.

NPS has created at MMOWGLI developers group that meets weekly to address code development, improvements and bugs. MMOWGLI has continued to improve creating additional visual analytics for the data, integrating more robust mapping capabilities for action plans and developing a mobile application for playing on personal hand-held devices.

Emergency Management Exercises at a Distance (EMI)

This chapter section outlines the efforts of the U.S. Federal Emergency Management Agency (FEMA) Emergency Management Institute (EMI) in delivering emergency management exercises at a distance.

Program Overview

Since September 2012, EMI has conducted a monthly series of Virtual Table Top Exercises (VTTX) using a video teleconference platform to reach community based training audiences around the country and provide a virtual forum for disaster training. The VTTX process involves key personnel from the emergency management community of practice reviewing a pre-packaged set of exercise materials then convening for a four hour table top exercise discussing a simulated disaster scenario. The event allows the connected sites to assess current plans, policies and procedures while learning from the other connected sites as they provide their perspective and practices facing a similar situation. A standard VTC system is required for participation.

The VTTX program goals include:
1. Prepare participants for a designated hazard or disaster affecting their community;
2. Enable participants to better coordinate their response operations with counterparts from local governments, other State governments, Federal agencies, private sector organizations, and nongovernmental agencies;
3. Allow communities to practice using their VTC technology; and

4. Provide a virtual, experiential education environment to exercise and enhance critical response and recovery tasks.

Training Audience

The VTTX is limited to 10 remote "Participation" sites per event due to time constraints. The program also allows for some "Observation" sites for each event to become familiar with the VTTX process. The VTTX is designed for a community based group of 10 or more representatives from the local Emergency Management Community of Practice.

Requirements to Participate

1. A lead Point of Contract (POC) from the community to serve as the contact for the VTTX Program Manager
2. VTC capability. Validation of connectivity is part of the selection process.
3. A Community based group with representation from the Emergency Management disciplines.
4. A remote site Facilitator to manage the VTTX discussion process from your site.

Exercise Documents

Exercise documents for each event are provided to the lead remote site POC. VTTX documents will include:
1. A power point slide pack that will serve as the "script" for the 4 hour exercise
2. A Situation Manual (SITMAN) that will provide an overview of the scenario, structure and guidelines as well as the 3 phases of the exercise
3. A Local Site Guide – Exercise Coordination and Facilitation Guide, that will provide the designated Facilitator for your respective site detailed instructions on the VTTX process and how to organize and prepare your group for the event

Scope

Participants play locally and participate virtually in the conduct of the VTTX. Players participate in facilitated discussions within their organizations to address the challenges presented by the event, and then share those outcomes with the virtual community of participants. Discussions focus on emergency responder

coordination, critical decision-making, and the integration of resources necessary to prepare for, respond to, and recover from the event. Each organization's preparedness and resilience will be critical to response and restoration efforts in their region.

In addition, players will focus on interdisciplinary and interagency coordination both at the local, state, and/or regional levels. Processes and decision making are more important than minute details. Player feedback will be used to update relevant emergency response and incident management plans and procedures.

VTTX Scenarios:

V0001   Earthquake Scenario
V0002   Winter Storm Scenario
V0003   CBRNE - Explosive Scenario
V0004   Highway Hazmat Scenario
V0005   Tornado Scenario
V0006   Wildland Fire Scenario
V0007   Flood Scenario
V0008   Rail Hazmat Scenario
V0009   Hurricane Scenario
V0010   Mass Casualty Scenario
V0011   Fixed Site Hazmat Scenario
V0012   CBRNE-Biological Scenario
V0013   Continuity of Operations (COOP) Scenario
V0014   Prison Riot Scenario
V0015   Cybersecurity Scenario
V0016   Aircraft Crash Scenario
V0017   Stadium/Arena Scenario
V0018   School Hostage Scenario
V0019   Radiological Dispersion Device (RDD) Scenario
V0020   High-Rise Fire Scenario
V0021   Public Health Winter Storm Scenario
V0022   Public Health Chemical Scenario
V0023   Public Health Pandemic Flu Scenario
V0024   Public Health Radiological Dispersal Device (RDD) Scenario

Best Practices

1. Design of the Exercise: When designing and developing exercise materials the format, execution, evaluation, and feedback requirements should match the technology being utilized to deliver the exercise.
   a. Format: Format of materials should be easily shared among exercise staff and exercise participants. Utilize file formats are useable through easily obtained software (such as PDF) and that are not restricted to expensive, proprietary software, or specific versions of a software application. Additionally, the Situation Manual for the exercise is sent out to each participating group so that each community may adjust the scenario to support their local geography and situation.
   b. Accessibility: Ensure that the collaborative technology used, as well as the exercise materials are fully accessible to individuals with functional needs.
   c. Evaluation: Evaluation checklists should include an evaluation of the collaborative technology used to deliver the exercise, as well as the exercise content and execution.
2. Each site to be connected through the collaborative technology should be checked to ensure that the following suitable conditions are met:
   a. The size of the room is adequate;
   b. The temperature in the room is comfortable;
   c. The audio and video capabilities in the room allow the individuals to actively participate in the exercise.
3. It is essential that connectivity of VTC systems be tested prior to start of the exercise to determine if any technical issues are present.
   a. It is recommended that simulations, videos, or other high-bandwidth media be tested as well with all sites to determine if that are any lags in broadcasting these products.
   b. It is recommended that technical support be provided at each site in order to coordinate resolution of any issues that may arise during the exercise.
4. Exercise materials should be provided to each site facilitator and other exercise staff early enough to ensure that all exercise staff understand the schedule, execution, and evaluation of the exercise. It is recommended that a meeting of exercise staff be held prior to conducting to exercise in order to clarify any questions.

European Platforms for Crisis Management Training: CRIMSON, INDIGO and VASCO[12]

Perhaps the most vexing challenge for crisis managers is the collection, analysis and sharing of critical information. Meeting this challenge is a condition for creating shared situational awareness, which simply means that key decision-makers operate with the same understanding of the situation at hand. The reality is that this challenge is rarely met in large-scale crises and disasters.

Many technological fixes have been proposed and developed, but few of these have made a real impact at the strategic level. The strategic crisis rooms remain remarkably low-tech, apart from the ubiquitous television screens that are routinely muted when critical decisions must be made.

In the past years, the authors have participated in a multi-national consortium, funded by the European Commission's seventh framework program (FP7) for Security Research, that have developed a promising combination of tools and method. These have been developed in three consecutive projects (CRIMSON, INDIGO, and currently VASCO). CRIMSON created a platform for the 3D simulation of urban crises. INDIGO widened the platform, enabling inter-organizational preparation and response in any environment and for all managerial levels. INDIGO helps in the preparation of interorganizational exercises, but it also provides the basis for a real-time information management system that brings together information together along both horizontal and vertical lines. VASCO, which commenced in early 2014, will further enhance this platform by adding the possibility of 3D mapping of individual buildings. This allows for the development and testing of comprehensive security plans in an urban context.

The platforms were built with the primary purpose to train strategic teams, but in the testing phase it turned out that end-users (police and fire service) recognize the potential for real-time use of this platform. The system allows the trainer to store all the operative information and assists the trained in the controlled unfolding of the scenario. But it also has the capacity to help strategic decision-makers organize information and create a common operational picture. One of the more poignant findings in the end-user workshops was that experienced crisis managers use the system to rapidly weed out tactical information. As a system to probe for strategically important information, it also worked well. The managers start working with "point persons" in the network

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12 This contribution was prepared by Arjen Boin (Crisisplan and Leiden University, The Netherlands) and by Fredrik Bynander (National Defense College, Sweden).

(who can be contacted through the system) to get their assessment of the situation.

Indigo was developed to help:

- display an operational representation of a crisis situation that is as complete and as easy to understand as possible;
- graphically display operational information on a 3D map;
- create and deliver evolving scenarios for planning, training, and anticipating future developments;
- analyze events after the crisis;
- involve first responders and field units in simulated exercises.

INDIGO is an IT-system that integrates 3D-mapping, simulation tools and a highly effective method of information display. It enables both the 2D and 3D interactive visualization of available geographic, cartographic, and architectural information about the crisis environment (buildings, infrastructures, roads, maps, terrain, aerial pictures, statistics, documentations, etc.), from a global scale to the local level. This visualization can be updated in real-time with data collected from the field (location and movements of units, situation reports, pictures, alerts, sensor measures, state of incidents, levels of resources, weather data).

The 2D/3D representation of the crisis environment offers a way of sharing and communicating complex information, which, in turn, facilitates coordination between users across organizational boundaries with very different cultural and experiential backgrounds. In addition, the INDIGO consortium has proposed a European reference for 2D/3D emergency symbology (symbols, indicators, colors) on 2D and 3D maps with the support of the European Committee for Standardization. This reference fills an important gap by offering a common visual reference that can be used to facilitate the immediate and general understanding of a crisis situation, thus improving a common understanding for decision making, command and control across organizational boundaries. The proposed reference takes into account its equivalent defined by the US Homeland Security Working Group.

INDIGO makes use of an interactive table, for displaying, editing and sharing the constructed picture of the situation. The table's screen can be projected on the wall, which allows all in the room to see it. The information can, of course, be shared with other centers and with first responders and operational units in the field. It enables the exchange of real-time information (situation reports, pictures) with field units. It allows trainers to develop open-ended scenarios, which can be revisited to make learning easier.

The CRIMSON, INDIGO and VASCO projects are developed in close cooperation with End-User groups in France, The Netherlands, Greece and Sweden. At the outset, these groups mostly consisted of operative leaders and mid-level managers. As the potential of the INDIGO platform grew, managers at the strategic level have become involved. We typically ran one-day scenarios with extended hot washes and debriefings to be able to validate separate functions of the platform. We found that the operative level had a much easier time of engaging with the functionality of the systems. For them it compared to an integrated command system that could be tweaked to do many more things.

Strategic actors found the multitude of information options initially distracting, but they quickly learned to use the information filters to suit their needs. One of the strong points of the platform is its capacity to integrate decision logs, geodata with operative information, media picture, video and audio communications in one interface. The system comes with a method of information management, which helps to speed up the sense-making process while maintaining adaptive.

As the capacity of the system grew, we began to develop scenarios that generate more complex strategic challenges. We presented participants escalating events that had value complexity at its core and that challenged the capacity to multi-task between sense-making, meaning-making and decision-making. As these scenarios were implemented, the coordination and collaboration side of the event became paramount and tested the platform as well as the involved organizations.

The current development of VASCO will further integrate the information sharing between operational and strategic levels. By introducing a method to quickly build a 3D picture of a building and its environment, strategic and operational managers can work together to understand and assess complex situations, which will not just enable shared sense-making but more effective decision-making before and during crisis situations.

STANCE: An asynchronous training and evaluation tool for strategic leadership[13]

STANCE is a virtual environment designed to improve virtual training for strategic leadership in an asynchronous and remote way. Among its multiple uses, it can be used to train and evaluate Military personnel in a wide range of topics, including:

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13   This chapter section was prepared by Rodrigo Nieto-Gomez, Naval Post Graduate School.

- Strategic Planning
- Management
- Decision Making
- Resource allocation and procurement
- Policy Making
- Red teaming approaches
- Public Policy

STANCE operates by creating environments that do not require all participants to intervene at the same time (asynchronous). This design feature allows for individuals with senior responsibilities to participate at their own pace.

It integrates case study methodologies with a virtual interface that allows the user to manage a fictional organization in competitive environments at a high level of fidelity (encouraging learning).

In its current form, this fully implemented serious game prototype about homeland security policy creates multiple teams that are not aware of each other and have competitive needs that have to be reconciled or neutralized. An "office" environment replicates the elements that a decision maker has at his or her disposal to make choices and drive change in their respective organizations.

STANCE narrative is designed to replicate a managerial environment where the decision-making process has been simulated with "selected fidelity." This is one of the multiple unique features of STANCE.

What this means is that the environment replicates and records for future debriefing those elements of decision making that are essential for learning to occur. Most of the affordances of an office manager have been built into the simulation, while attributes that traditionally exist in simulated environments but not in the real life have been omitted. The result is a very unique and innovative training tool for strategic planning and leadership, where users spend from 15 minutes to an hour daily for up to four weeks managing a fictional organization, and where all interactions are recorded for future after action reviews, analysis and evaluation.

Game description

Working for an interface akin to a boardroom or office-like setting, the players interact on a point and click User Interface (UI) to access background info, current and breaking intelligence/media, get a geographic overview of the scenario, facing the struggles of policy, resource allocation and management while players in other groups will be pushing for their own needs.

Figure 1: STANCE office like user interface. All elements are interactive.

After getting an initial state of the world overview, users may discuss options with their group, and make requests for action to specific "advisors" (all played by the instructor or game master). All groups are involved in similar tasks like this, acting only with the information they have available to their specific role-playing group. The Instructor will then has the opportunity to nudge and control the scenario from "behind the scenes" creating media injects, map updates, or pushback from other non gamer actors. Once that "action/turn phase takes place. The "world" is updated and the relevant data is shared with other groups.

CHDS has used STANCE in a border management setting. Teams of senior leaders in the homeland security enterprise assume the roles of key organization in the border environment:

– Border Patrol
– A White House commission for border reform
– Border Trade lobby groups
– Civil liberties and human right groups
– The Mexican Government office in charge of border management
– Drug Trafficking organizations (red team)

Two examples of the introductory videos for this scenario can be found here:

http://www.youtube.com/watch?v=jkDJ7TouWY8

https://www.youtube.com/watch?v=CZzkPT9JOVU

https://www.youtube.com/watch?v=xdK5UygUQIA

Primary STANCE Components

STANCE articulates the learning experience around 2 different scales. A group scale that operates in a bounded rationality environment (Jones, 1999) and a system based scale that emerges as a consequence of the group's decision-making process.

   The STANCE User Interface is modeled after the office of a typical 'executive' decision maker and includes all the essential tools that are traditionally at her disposal including: Advisory System (people you can call for help and support); Web Content (news); Geographic Content (maps); Video content (televised content); Discussion Forum (a means to communication with your community of interest); Voting System (to settle on collective actions); Help desk (for technical assistance).

   A STANCE scenario is composed of multiple interacting Interest Groups (IG). Each player is assigned to a single IG and each IG must agree on any action before it will impact any other IG. Players are anonymous, facilitating full role engagement.

   STANCE provides at the System Level support for monitoring and controlling the scenario evolution. The System Level Interfaces includes: Instructor Interface, Tagging System (supporting thread analysis) and AAR Interaction Diagrams

Data Collection and Processing

STANCE automatically gathers data on the influence of each individual player on the cognitive and behavior evolution of the IG as well as the influence of the IG on the cognitive and behavioral evolution of the multi-IG stakeholder community. This data is collected and output in a form that is readily imported into a variety of statistical and modeling packages for detailed analysis

Research Opportunities.

STANCE 1.0 was designed to be a proof of concept. It was built with limited resources to demonstrate that online asynchronous environments could be used

to improve training, education and evaluation of strategic leadership and management skills.

Combining new off-the-shelf game engines with the lessons learned from the successful deployment of STANCE in NPS courses, STANCE 2.0 should increase the modularity of its design to respond to multiple training and evaluation needs. A new architecture should be used to simplify its adaptive capacities to respond to different scenarios, with different training objectives in mind.

This new design should allow for models to be introduced into the scenario (ex. resource allocation models, risk models, return on investment models wargame models) and to simplify its maintenance and simplicity. The new design for STANCE should be as adaptive as the behaviors of its users.

STANCE provides an opportunity for a multidisciplinary effort towards the development of a more advanced and cost effective tool to simulate managerial environments to achieve better synthetic training and education online environments.

Chapter 6
SUMMIT: An In-depth Case Study of an Emerging Training and Exercise Support Technology

Nerayo Teclemariam and Lynn Yang

Motivation for M&S in emergency preparedness and training

Federal, state, local, and tribal emergency managers and responders must work with strategic leaders to be able to respond to an increasingly broad set of natural and man-made catastrophic incidents. To do this effectively, they must be able to assess the impact of these incidents on today's increasingly complex society and infrastructure, identify, procure, direct and effectively deploy a broad range of response assets, and do so in a highly diverse, dynamic, and multi-jurisdictional environment. Although these events are relatively rare, the incident management community and senior decision makers must rely on pre-event planning and exercises to develop knowledge and understanding of appropriate mitigation and response strategies, and on real-time "what if" tradeoffs during an event. These planning, training/exercise, and operational activities are

increasingly making use of modeling and simulation (M&S) tools, and their underlying data, to provide increased realism and fidelity as well as increase financial efficiency.

However, a clear gap in this domain is an integrated modeling, mapping, and simulation capability which allow the incident management community (writ large) to effectively, economically, and rapidly make use of nations' extensive suite of existing datasets, models, and simulation tools as an integrated system. Currently, when the incident management community uses modeling and simulation data, it is done through sets of disparate tools. This requires manual integration which is time consuming, requires domain expertise, and can be fraught with errors. There is also no standardized process for bringing in new simulation capabilities or data sets.

The focus of the U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T) Standard Unified Modeling and Mapping Integration Toolkit (SUMMIT) software architecture is to provide the DHS operational components, international partners, and strategic leadership staff with a scalable M&S platform to efficiently produce data for multiple scenarios or archive, share, and reuse any data utilized in plan creation for future planning, comparative analysis, strategic leadership training, or during emergency response operation decision support. Employing such an environment will also promote data standards that to make it easier for technology developers to bring in new M&S capabilities and data sets as they become available.

To date, the SUMMIT capability has been applied by trained mid-career staff to support exercises, planning events, and training events designed to educate senior leadership in crisis situations. SUMMIT is particularly well suited for strategic-level exercises and decision support; it allows strategic leaders to exercise and analyze decision-making and consequences in emergency management scenarios that they might not encounter frequently. The results of this improved understanding (i.e., lessons learned) can be incorporated into emergency plans, policy, capability investments and other activities that enhance emergency preparedness. Emphasis in the development of the capability has focused on providing a user-friendly experience with an intuitive interface to allow rapid utilization with minimum training.

Overview of SUMMIT

SUMMIT is an integrated modeling and simulation software environment that allows users—including emergency planners, responders, and strategic leaders—to seamlessly access and visualize integrated suites of modeling tools and data sources for planning, exercise and eventually operational response. Specifically, SUMMIT can be used to easily and rapidly discover, integrate,

configure, execute, view and reuse the results of the nation's modeling and simulation resources and related data. These capabilities can greatly enhance the quality, cost and efficiency of exercises and planning.

For example, utilization of science-based models helps ensure a realistic, science-based grounding for exercises, training, and other emergency management activities. Reuse of models and data (e.g., reusing a model that previously has been vetted in a different locale or another exercise) can greatly reduce the cost and time required for the exercise and planning cycles. In addition, the ability to rerun models enables "what-if" trade-off analyses that are crucial for effective response during an actual event. Figure 1 and Figure 2 show examples of input and output screens from SUMMIT.
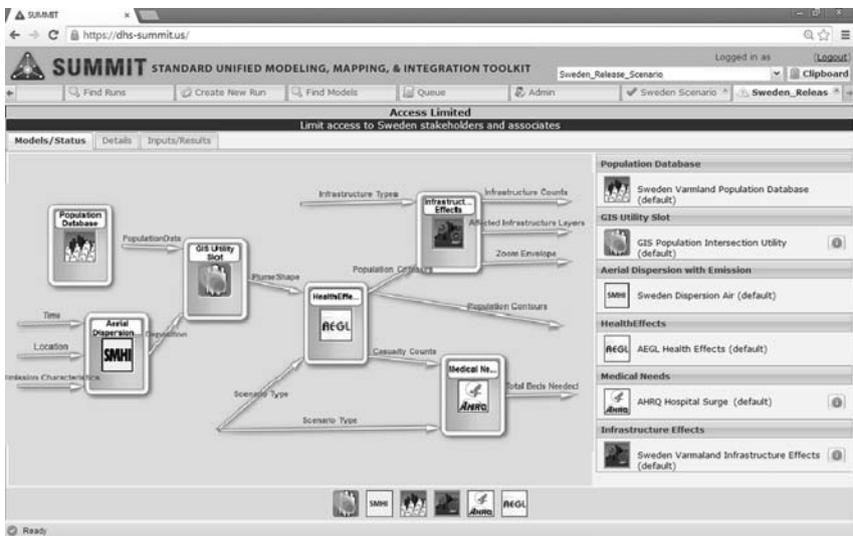

Figure 1: Example of a SUMMIT template, which serves as the capability input.
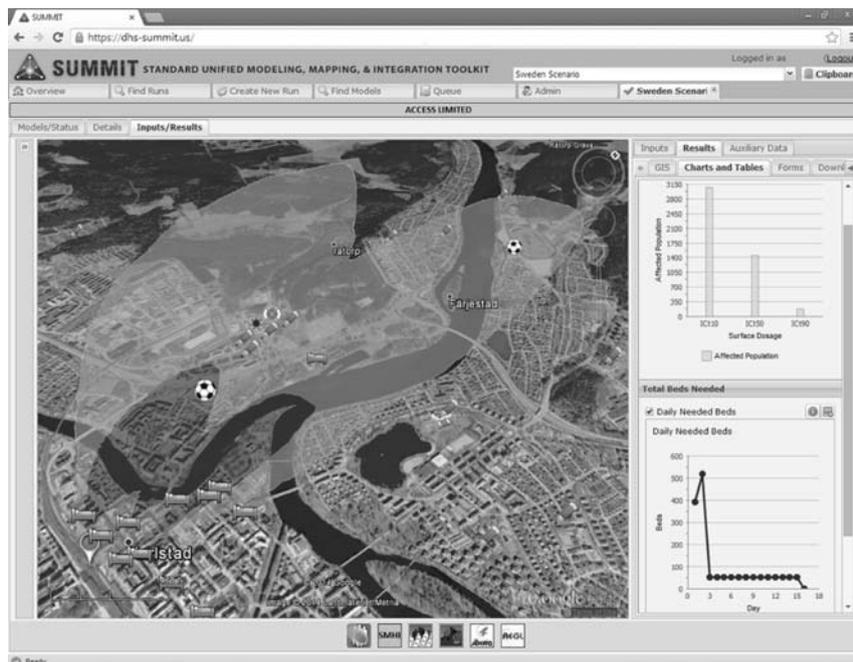
Figure 2: Example SUMMIT Output. Affected population and critical infrastructure at risk following an emergency incident.

The SUMMIT framework is platform-neutral; users can access models from most internet web browsers, and models can execute on a number of hardware platforms. With this type of framework, results can be delivered easily to a collaborating set of users to inform the scenario, and serve as exercise injects or data for decision-makers during exercise play.

Value-added for training/exercise and decision support

SUMMIT-driven exercises are particularly conducive and provide great value to strategic level training and exercise. M&S gives strategic leaders the opportunity to train and exercise in scenarios that are less commonly encountered, such as catastrophic or terrorist incidents. Rarely encountered scenarios are the ones that are more likely to require strategic thinking and the ones that need to be exercised in a "safe" environment because of the lack of real-world experience. This section provides a summary of the value that SUMMIT adds to exercises, broken down first by exercise planning step and then by SUMMIT user category.

Value-added, by exercise planning step

For all levels of exercise, from strategic to tactical, SUMMIT, and M&S broadly, can provide value throughout the exercise planning cycle, as shown in Figure 3. This figure shows the U.S. Homeland Security Exercise and Evaluation Program (HSEEP) cycle specifically, however, the value-added holds for other versions of the exercise planning cycle. The following describe the capabilities provided by the system in terms of the exercise planning phases.
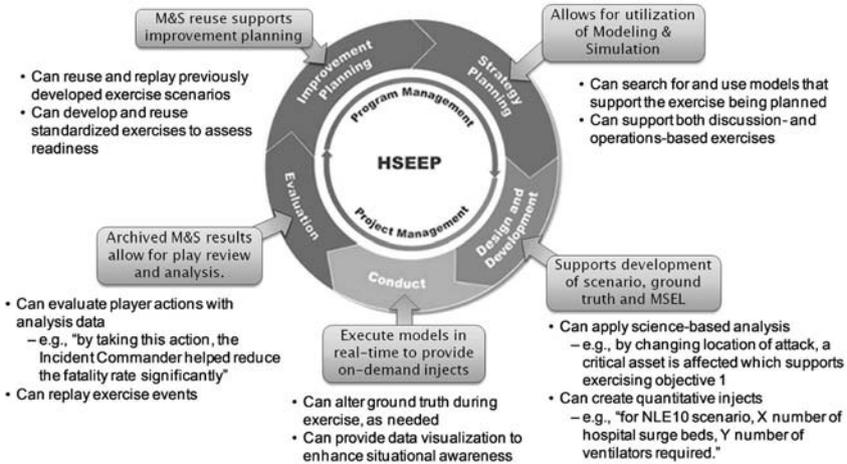
Figure 3: SUMMIT Insertion Points and Value-Added to Exercise Planning Cycle.

Strategy Planning

Modeling and simulation tools allow exercise planners to scope the exercise in size, time, hazard type, and hazard severity, and to model and predict the damage from the hazard. The system supports development of scenario, ground truth and the Master Scenario Event List (MSEL).

During the strategy planning (seen in red in the life cycle in Figure 3), using SUMMIT, exercise planners can search for relevant M&S templates by various search criteria including hazard or incident, exercise objectives, and keywords. During the strategy planning, exercise planners can also review selected results in the results archive from previous exercises. They can reuse and adapt templates and data from previous exercises for their own exercise and objectives.

Design and Development

During design and development (seen in orange in the life cycle in Figure 3) an exercise planning modeler can select models appropriate to the scenario and set inputs. During the design and development, SUMMIT makes it easy to populate templates with models and configure and run templates, and therefore, an exercise planning modeler may populate the same template with different models or rerun the same template with varied inputs in order to develop a detailed scenario, ground truth data, and the MSEL. A planning modeler can create a number of "what if" scenarios by applying science-based analysis (e.g., by changing location of attack, a critical asset is affected which supports exercising specific objectives). The planning modeler can create quantitative injects, based on science-based models. Furthermore, exercise planners can use the system display capabilities (e.g., data visualization, graphical and tabular displays) to refine and vet scenario and ground truth data with other exercise stakeholders. Those exercise planners who are advanced in their use of M&S can manually change system results data in order to better suit exercise objectives and adjudicate the ground truth, and save off the new modified results into the results archive, while also saving off the original run. The reuse of templates and data from previous scenarios will be very beneficial to the exercise planners who are designing and conducting exercise series in multiple regions.

Conduct

SUMMIT can be used in several ways during the exercise conduct (seen in yellow in the life cycle in Figure 3). It can be used to update the MSEL and recalculate injects if exercise events and player decisions alter the scenario. SUMMIT can be used to do some real-time prediction during an exercise and assist the decision makers (i.e., players) during an exercise. Models can be used to provide on-demand injects, answers to player requests for information and alter ground truth during an exercise, as needed. It is important to note, these capabilities are dependent on the use of models that can execute in the time required to provide real-time or near real-time results. SUMMIT-provided data visualization, in some cases in three dimensions, can be provided to the exercise controllers/ evaluators and simulators to give a common operating picture of the exercise scenario and events.

Data visualization of simulation results can be used by exercise players to provide situational awareness, if they are the same as results that players would receive in reality (e.g., reachback center data). It can also be used to show exercise players simulated data, for example, damage to buildings where none actually exists. These simulated data can be distributed to portable devices, such

as an iPad, so that boots-on-the-ground players can see the exercise-simulated world alongside the real-world situation.

Evaluation

SUMMIT can also be used during the exercise evaluation process (seen in green in the life cycle in Figure 3). Evaluators can use M&S to analyze the expected versus actual performance and which best practices could be adopted. Archived results allow evaluators to review player actions with analysis data. As evaluators prepare the After Action Report, they can use SUMMIT to replay exercise events. During the After Action Conference, visualization can be used to illustrate the exercise performance and expected performance.

At the end of an exercise and during the post analysis, SUMMIT can be used to predict longer-term effects, e.g. economic impact, infrastructure issues, etc. This may require discovering different simulation templates and executing different modeling tools than were used during the planning and/or execution of an exercise.

Improvement Planning

Finally, SUMMIT can be used during the exercise improvement planning process (seen in blue in the life cycle in Figure 3). During this stage, the exercise planners and evaluators can reuse and replay previously developed exercise scenarios in order to provide feedback to the longer term exercise planning process. Also, during improvement planning, teams can develop and reuse a set of standardized exercises that stress a response team and allow planners to continually assess readiness over time. By reusing and replaying previous exercises, exercises may gradually become standardized partly or wholly, which would enable assessment of national readiness across standard objectives.

Value-added, by user category

SUMMIT, applied to exercise planning and conduct and planning analysis, provides value in different ways to different users. The value provided by user category is described below.

- *Exercise planners and participants* (includes the strategic leadership, planning team, controllers, evaluators, players and simulators) – SUMMIT enables the exercise planning team to find what M&S capabilities exist that will support scenario and ground truth development; easily run these M&S to create and then refine science-based data and injects; and then display results

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to provide a common operating picture for the rest of the planning team. In addition, SUMMIT maintains a searchable repository of M&S results created in previous exercises or analyses, which allows exercise planners to reuse scenarios and ground truth data. For example, for the U.S. National Level Exercise 2011, M&S were used calculate damage and impacts due to a large earthquake, and the resulting response resource requirements, such as medical capacity and equipment surge requirements. After these data were generated and archived in the system, those with access to SUMMIT and the authorization to view these data, such as a regional exercise planner, could view the data, and rerun the same simulation template to create a similar exercise that is tailored to their own regional exercise.

For exercise controllers, evaluators and simulators, SUMMIT can provide a means for generating real-time data during the conduct of the exercise, provided that the run-time of the selected M&S is sufficiently fast. For instance, following a player's unexpected decision during an exercise, ground truth could be revised by rerunning simulation templates with the unexpected player decision as the new input. If a player requests data that is not included in the ground truth data, M&S may be available in SUMMIT to generate the data with which simulators can respond. Furthermore, the system provides a common operating picture of scenario and ground truth data generated by the planning team and during the exercise.

For exercise players, SUMMIT results should only be displayed if these results, in reality, would be available to view. Reachback center data, such as plume model results, earthquake damage prediction data, is one type of data that emergency responders could see in an actual incident. These data can be displayed using the system. Images generated within the system can be provided to simulated newscasting (e.g., Virtual News Network clips), which reflect ground truth data that were generated within the system.

- *Emergency Response Planners* (includes analysts, M&S users) – Emergency response planners that use M&S to analyze courses of action, technology insertion, and policy decisions can benefit from the system's capabilities. Discovery of relevant models, generation of science-based data, and ability to conduct what-if analyses are important capabilities that enhance emergency planning and response. SUMMIT enables planners to find, reuse and adapt previous modeling efforts and data.

- *M&S Community* (includes model owners, SUMMIT service providers) – Those in the modeling and simulation community derive value from having a central repository of M&S and a standard process for linking to

other models. SUMMIT not only provides a repository from which model owners can offer their M&S to end users, but it also helps identify M&S gaps and requirements. If a scenario designer or other end user creates a simulation template, the lack of models needed to run the template point to the need for developing a modeling capability. The input and output parameters for that slot point to specific model requirements that can guide model developers.

Examples of M&S Use in Strategic Leadership Exercises

The SUMMIT capability to date has provided modeling and simulation support to fifteen U.S. federal, state and regional exercises and operational planning efforts including: National Level Exercises, Threat and Hazard Identification and Risk Assessments, and international exercises. Figure 4 displays graphically the breadth and depth of emergency preparedness activities supported by the capability. The following section details the use of SUMMIT in two specific settings: 2012 Sweden-U.S. SUMMIT pilot and U.S. National Level Exercise 2011.

Figure 4: Map of exercise and planning pilots supported by SUMMIT.

Sweden-U.S. SUMMIT 2012 Pilot

In January 2012, a pilot was arranged by Swedish Civil Contingencies Agency (MSB) and the DHS to evaluate SUMMIT under Swedish conditions. Crisis Management Research and Training (CRISMART) of the Swedish National Defense College also played an active role in the preparation of the exercise scenario. The participants were selected from all levels (local, regional and national) levels in the Swedish crisis management system.

The exercise scenario was a serious incident with a freight train where a railway car with chlorine leaks during morning peak traffic in a mid-sized Swedish town. A large number of casualties and a massive over load of hospital capacity was the result of the release. The exercise was played out in front of the conference participants who were able to evaluate the situation and collectively discuss how best to solve the crisis. The ability to rapidly create complex, low frequency scenarios is key characteristic of SUMMIT and an important tool for strategic leaders to use to sharpen their crisis management skills, test plans and procedures, and engage in critical decision making scenarios.

After the actual exercise, SUMMIT was presented to the participants for evaluation. Feedback from participants was very favorable and suggestions were made that MSB should start implementing SUMMIT in Sweden. Valuable feedback regarding model validation, security and ownership were also raised and are being worked in the next phase of the partnership. In addition to exercises, participants also found that there is a demand for using SUMMIT for operational planning as well as risk and vulnerability analysis in general.

Specific feedback included the benefit of SUMMIT enabling exercises to unfold dynamically. This was appreciated since it enabled a new way of running exercises in Sweden with parallel teams that may end up with different end results, which can be compared for increased learning. Moreover, participants valued the fact that SUMMIT increases the realism in exercises, both because it creates more interest from decision makers and because realism is a pre-requisite gaining participant credible.

U.S. National Level Exercise 2011

In May 2011, the U.S. conducted a National Level Exercise (NLE11) to examine and test the ability of the nation to respond to a catastrophic earthquake scenario that affected eight states and millions of people. SUMMIT support for the NLE focused on three objectives which included: i) Provide model-based scenario data to exercise planners in scenario development process, ii) Provide a capability to view integrated modeling and simulation results to enhance situational awareness and the common operating picture in the Master Control

Cell during exercise conduct, and iii) Inform system requirements of future modeling and simulation capabilities for exercise support.

Review of lessons learned from the exercise confirmed many strengths of the SUMMIT capability to support strategic leadership training including: 1) streamlining the creation of scenario data for the large number of states and counties, 2) providing science-based data for decision making and exercise play, 3) and enhancing the realism of the exercise scenario with granular data. Potential opportunities for improvement were also noted and included a need for organizations hosting SUMMIT to better understand the acquisition, storage, and accessibility of data needed to configure M&S. Moreover, the need for extensive education and training of the emergency management community regarding the role of modeling and simulation in preparedness was discovered to support a shift in workplace culture in the community.

Adaption and Interpretation Challenges Regard M&S Use with Strategic Leaders

It is important to note that there are caveats with using modeling and simulation for decision making, which include the need for decision makers (or their advisers) to clearly understand the quality of the models, applicability of assumptions, and the data produced. Modeling and simulation data can be a powerful tool to aid exercise planning and conduct, but for response applications it should be treated as one of many pieces of information used by strategic leaders to make decisions.

Lessons-learned and Good Practices

While M&S can add tremendous value to training with substantial cost savings, the use of technology in preparedness activities requires special considerations given its fairly nascent use within the training community. With this context in mind, it has been found valuable by organizers of senior leader training to include the consideration and full involvement of M&S experts early and often in the training planning timeline. This allows ample time for participants to learn about the technologies and understand how they can be injected into the training of senior leaders to enhance the effectiveness and efficiency of the effort.

Moreover, the engagement allows products produced by M&S tools to be tailored for individual senior leaders' training needs, which may entail the incorporation of information in standard formats leaders are familiar with (e.g., memos/documents) or novel visuals on mobile devices (e.g., iPads, Blackberry,..).

This point was especially prominent in the National Level Exercise 2011, where SUMMIT M&S products for governors, mayors, and other senior leaders were presented in multiple, diverse formats including the "enhanced" virtual reality injects on iPads.

Finally, it is important for training organizers and planners to understand the limitations and applicably of models to ensure that appropriate actions can be informed and inferences drawn. Lessons learned from multiple training efforts have found that written caveats, assumptions, and limitations help to mitigate model misuse by clearly presenting factors to participants, but active and continued discussions with M&S experts during the senior leader training planning and conduct has been found the most successful method to ensure success.

Chapter 7
Case-based Scenario Development

Eric Stern

Introduction

Developing high quality scenarios for planning, educational, training and exercise purposes is a demanding task. Common practice varies widely and there are many different approaches that can be used. For example, scenarios can be developed on the basis of expert risk or vulnerability analyses of contingencies which may not yet have happened. Scenarios can be developed on the basis of the exercise of creativity by individuals or by design teams brainstorming without the benefit of research based knowledge. Scenarios can be developed by committees representing various agency or organizational interests, each seeking to insert challenges or complications into the scenario that will (depending on the orientation of the delegates) highlight either strengths or vulnerabilities (to be addressed) of the organization in question. Though these approaches have different advantages and disadvantages, they tend to generate scenarios that are highly vulnerable to challenge by the target groups for which they are intended. The former two approaches are vulnerable to the criticism that these are scenarios which have not yet (and may never) occur. And to the extent that scenarios push participants in training and exercise beyond their personal or organizational comfort zones, defensive reactions and challenges to the realism/quality

of the scenario are very likely. The scenario by committee approach tends to generate scenarios that are overloaded and display highly complex causal chains based on multiple, simultaneous but not necessarily causally related events. This type of 'very bad day' scenario has the disadvantage that even if the various component events are not improbable when viewed in isolation, aggregating them creates an overall impression that may not be conducive to participant perceptions of realism/plausibility. This may lead participants to distance themselves from the hypothetical world proposed by the event organizers-- as opposed to immersing themselves in it. It should be noted that other considerations such as making sure that all participants are presented with problems relevant to their areas of responsibility and making efficient use of precious training and exercise opportunities may press for adding complications to scenarios and may in some cases outweigh scenario 'quality' in the sense emphasized here.

An additional common difficulty is that scenario developers with more operational backgrounds may lack insight into the perspectives and concerns of strategic leaders. Scenarios that might well-designed, prepared, and suited for operational training and exercise use may be completely inappropriate for use with strategic level leaders whose concerns, challenges, resources, and constraints may be radically different than for those working at other levels of government, corporate or non-governmental organizations.

In this chapter, the CRISMART approach to scenario design and development for strategic leadership training and exercises for crisis management will be explicated. This approach emphasizes a) fit with target group and purpose, b) use of documented historical experience and subject matter expertise as a scenario development resources and heuristics, and c) tailoring scenario content to the concerns of strategic level decision makers, advisers, and communicators.

Methodological Roots of the CRISMART Approach to Scenario Development

Since the mid 1990s, CRISMART researchers have been developing methods to capture crisis experiences in Sweden and comparable countries around the world. The logic behind this effort is simple. In order to improve crisis management capacity and skills, it is necessary to have a detailed understanding of how past and current crisis events unfold and are experienced by strategic (and operational) leaders. To this end, a four step method for crisis contextualization, reconstruction, dissection and (thematic comparison) was developed (Stern, Sundelius, and Bynander, 1997; Stern and Sundelius, 2002; Stern, 1999; Stern et al., 2014). Each step will be discussed below.

The *first step* is to put the crisis into its proper historical, institutional/organizational and political context. No crisis takes place in a vacuum. How a crisis occurs, is understood, managed and remembered, depends in large measure upon these key factors (Turner, 1976; Stern, 1999; Ullberg, 2013). Does the crisis center on a novel and relatively unexpected issue or is there a previous history of and legacy from previous similar (or other paradigm shifting) contingencies? What are the key features of the pre-crisis institutional/organizational/political environments? For example, to properly understand the U.S. Hurricane Katrina experience of 2005, it is necessary to understand (among other key factors) the legacy of previous Gulf Coast hurricanes, the negative impact of 9/11 on natural disaster preparedness, the legal and disaster planning arrangements under the Stafford Act and the National Response Plan, as well as partisan political tensions between the Bush administration and state/local governments (Parker et al., 2009).

The *second step* is to reconstruct the course of events. What is it that triggers the crisis and motivates key decision makers to act at various junctures? Many (but not all) crises begin with a dramatic, unexpected event. Some crises get a relatively quick closure while others tend to be drawn out, and may gradually turn into an enduring legitimacy crisis affecting the self-esteem and political maneuverability of government agencies and the publics' trust in those agencies (Boin et al., 2005). Swedish examples of to this day contested and "unfinished" crises of this kind include the murder of Prime Minister Olof Palme (1986) and the MS Estonia ferry catastrophe (1994) while the enduring controversy surrounding the JFK assassination of 1963 stands out as a good example from the American context.

Whatever the trajectory, the key events are initially described chronologically, using available empirical material, such as government documents and press releases, official evaluations, Congressional or Parliamentary testimony, Reports from Commissions of Inquiry, traditional and social media sources, interviews, political biographies/autobiographies/memoirs etc. Various sources are combined and weighed against each other via source criticism, in order to produce a synthetic narrative (Bates et al., 1998; Stern 1999).

The *third step* is to break the crisis down into occasions for decision. An occasion for decision is a development in the ongoing course of events, which demands answer to the question, "What do we do now?" Three different criteria are relevant when identifying decision occasions. *Prominence in the crisis decision-making process*: which problems were regarded as the most important ones for the decision-makers to deal with? *Post hoc importance*: These are issues that might not have been seen as especially important during the crisis, but in retrospect—for example drawing on points emphasized in the crisis accountability process-- seem to have had a dramatic impact on the course of the events

(c.f. Boin et al., 2008; Smith, 2006). *Pedagogical value* looks for potential examples of good or poor practices. These are the decisions that could serve as a good example for future crisis decision-making, or alternatively, those which had (or could have had under slightly different circumstances) negative impacts on the crisis management.

Decision occasions are generated as reactions to an *impetus*, a stimulus of some kind which generates a problem (or problems) for crisis managers. During the Cuba missile crisis—a classic of the crisis management literature-- the discovery of Soviet missiles in Cuba was the initial impetus which then sparked a series of challenges for the Kennedy administration (Allison, 1971). The impetus, which activates decision makers, might come from inside or outside the government apparatus. It could be a result of a dramatic event, changes in systematic indicators or signals received through formal or informal feedback. When there is information that "something has happened", a decision unit forms to deal with a particular problem or set of problems (Hermann, Hermann, and Hagen, 1987). It's important to observe that such a decision unit might diverge dramatically from those described in organizational charts or mandated in constitutional arrangements. The *effective decision units* are formed in the interaction between codified requirements of governing, informal institutional rules and practices and contextual factors (Stern and Sundelius, 2002). Especially early on in a crisis, time pressure or overload higher up in hierarchies may lead to key decisions being made by decision units composed of decentralized, informal and operational decision makers rather than formally mandated strategic crisis management teams. ('t Hart et al., 1993).

Having identified a decision unit, the next step is to examine problem framing, decisionmaking and implementation (Stern, 1999; c.f. Klein, 2001). The focus on the this broader trajectory is motivated by the belief that experience, organizational culture and other contextual factors (see above) shape problem perception and behavioral propensities well before critical choices are made. It should be noted analyzing problem framing and decision-making is empirically demanding and resource intensive. The written record often emphasizes what was done and it is often necessary to use interviewing or other oral history techniques to complement the documentary record.

The result of a given decision occasion—not least when unintended consequences or reactions ensue-- tends to set the stage for the next one….

The *fourth step* in the model is comparative thematic analysis. A number of themes have emerged from former research, themes designed among other things to facilitate comparison (benchmarking) among different cases and identification of best (and lesser) practices (Sundelius, Stern and Bynander, 1997; Stern, 1999; Stern and Sundelius, 2002; Boin et al., 2005).

Note that a key focus of this method is the notion of the 'decision occasion'—the 'what do we do now' situation that arises repeatedly over the course of a crisis.

Exploiting the Case Bank as a Training and Exercise Resource

From the beginning, the idea was to compile comparable crisis cases in a case bank which could be used for both research and (applied) educational purposes (Stern and Sundelius, 2002). Hundreds of detailed case studies (generally ranging from 30 to 200 pages in length) have been undertaken by a network of researchers and policy analysts from more than a dozen European, Asian, and North American countries. In addition to the CRISMART case bank, a partnership was forged with the Maxwell School of Public Policy at Syracuse University and hundreds of additional case studies from around the world were undertaken using a lightly modified and more easily quantifiable version of the CRISMART methodology (Hermann and Dayton, 2009; Svedin 2009).[14]

These case banks (and other parallel scientific/journalistic contributions to the crisis studies literature) are an excellent point of departure for developing exercise scenarios. Rather than taking the 'arm chair' imagination approach noted above, scenario developers can use real cases from around the world as a point of departure for scenario development. Many of these case studies have been undertaken from the perspectives of strategic leadership or multi-level governance dynamics including strategic perspectives.

Furthermore, the fact that these case studies have been conceptualized in terms of decision occasions is very helpful. Researchers have sought to capture real world challenges as experienced by peers of the strategic leaders to be trained or exercised. As such, each case study contains multiple decision problems of the kind which test the mettle of strategic leaders and their organizations.

And in fact, a useful way to conceptualize what training and exercise designers are doing is presenting event participants with hypothetical (or simulated) occasions for decision/communication. So called scenario injects correspond to the impetus in the conceptualization above. They are signals of changes in the internal or external environment that potentially require action in the form of sense-making, decision-making, or meaning-making (crisis communication) activities.

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14   See also http://www.maxwell.syr.edu/moynihan/tss/Crisis_Management for a description of the Transboundary Crisis Project Case Bank.

Developing Scenario Narratives for Crisis Management

An advantage of these case banks is that they not only contain studies of widely known major crises from countries like the US and the UK, but also many lesser known challenges faced by other small, medium, and large countries around the world. This relative unfamiliarity is helpful as it is often possible to take a scenario that has already occurred elsewhere in the world, and then transfer it to the context of the crisis management training/exercise event in question. In other words, rather than inventing a skyjacking incident for use in a Swedish strategic crisis management exercise, it is possible to develop the scenario drawing upon one or more real cases from a neighboring country such as Estonia (e.g. Tross, 1999) or others further afield. Once the scenario has been 'masked' and adapted to local institutional and physical conditions, it can be presented as a 'new' and 'fresh' challenge to the strategic leaders being exercised. An advantage of this approach is that the behavior of the exercise participants can subsequently be compared to the real world behavior.

In some circumstances, it is advisable to transfer a more or less intact narrative structure from a single well documented and evocative case. Other times, the scenario developer may draw elements (decision occasions and other complications) from several parallel examples of the kind of contingency to be explored. For example, if one were planning a strategic leadership exercise based on an earthquake/tsunami scenario, one could draw not only upon the Boxing Day Tsunami of 2004-5 but also the Great Tohuko Earthquake/Tsunami of 2011 and other previous documented events. The advantage of both of these strategies is that scenario features can be directly traced to the real world events which inspired them. This kind of 'footnoting' potential is very helpful in dealing with the kinds of defensive reactions and attacks on the scenario noted above.

A good example of case-based scenario generation along the lines described above is the CRISMART *Poison Mountain* scenario exercise (a version of which is submitted as an appendix to this publication). Poison Mountain started as a low fidelity scenario written by Eric Stern for use in an EU Crisis Communication course delivered in Germany. It was later further elaborated and updated by Eric Stern and Edward Deverell for use in high level government trainings in Japan (for the Ministry of Health Education and Welfare) and Estonia (Cabinet Office). This somewhat higher fidelity version has also been used several times in courses for senior Swedish government managers in Sweden and in pan-European course offered by the Swedish National Defense College. The scenario which unfolds in the case was directly inspired by experiences of toxic dam breaks and ensuing decision dilemmas, disruptions of international trade, diplomatic incidents, and risk communications challenges documented in the

CRISMART and Maxwell School (Syracuse University) Case banks. The primary inspiration was the Boliden Dam Rupture in Andalusia, Spain in 1998 studied by Susann Ullberg (2002). A secondary inspiration was the parallel Baie Mare Dam Rupture which occurred in Romania in 2000 (a depiction of which can be found in the Maxwell Case Bank) leading to pollution of the Danube River—impacting several neighboring countries. Other complications in the scenario were directly inspired by impact on trade in foodstuffs associated with cases such as the Chernobyl Fallout Crisis of 1986 (Stern, 1999) and the Mad Cow Crisis (Grönvall, 2000) among others.

Still another approach to case-based scenario development is the mosaic. Mosaics are scenarios that are developed using 'lego' pieces from a large number of diverse cases/contingencies. While this approach too has the advantage that every inject has its real world historical or contemporary counterpart, it is important that the scenario designer also develop an overall narrative structure that is sound, logical, and plausible.

Generally speaking, scenarios are more compelling and plausible when they display a simple and clean causal structure and complex, cascading societal consequences. As observed above, too many causally unrelated parallel negative events tend to decrease scenario plausibility. In fact, a simple causal event such as a cyber attack shutting down a power grid will cause dramatic impacts across societal sectors, functions, and jurisdictions.

An additional good practice is to design scenarios in ways that facilitate evaluation. It is possible to build in various forms of tests—related to key purposes or goals of the exercise-- to see to what extent participants are able to identify, share, and act upon crucial pieces of information. For example, are they able to act in a proactive fashion to avoid pitfalls or do they make the same choices that may have gotten decisionmakers in the real world cases underlying the scenario into difficulties?

Summing Up

Case based scenario generation has a number of key virtues. It tends to produce scenarios that are highly credible and well suited to the concerns of strategic leaders—at reasonable cost. As such, case-based scenario development stands out as a useful complement to other good practices such as using risk/vulnerability analysis or state of the art modeling and simulation technology (such as that described in the chapter on the DHS SUMMIT project above) as points of departure.

If the underlying case studies focus on real world challenges of strategic leadership in crisis, scenario based upon these case studies are likely to provide strategic level leaders participating in training/exercises with stimulating and

highly relevant challenges enabling them to further develop and practice crisis management skills. Plausibility and impact of scenarios is enhanced through awareness of narrative structure and keeping causal chains simple, while exploring complex and cascading political and societal effects.

All other things being equal, well-researched, well-thought out, well-designed and well-crafted scenarios informed by relevant subject matter expertise tend to provide more effective and compelling and learning experiences for strategic level and other participants in crisis management training and exercise.

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Chapter 8
Concluding Observations[15]

Eric Stern

On the basis of the chapters presented above and the good dialogue and exchange of ideas and experiences at the various project workshops, it is possible to make a number of observations and draw some conclusions regarding *designing crisis management training and exercises for strategic leaders*. Though there were healthy differences in point of departure, perspective, experience, professional background, and methodology among the participants in the effort, there was considerable agreement regarding the challenges, good practices, and directions for further development.

Difficulty of the Crisis Management Task

First of all, it is essential to keep the difficulty of the task of strategic crisis management under contemporary political, organizational, and societal conditions in mind. Though strategic leaders as a rule bring great ability, talent, skills, and experience (of one kind or another) to the table, crisis management may be likened to an extreme sport and one played in a highly competitive league. Performing well under crisis conditions and stress is facilitated by the cultivation of crisis leadership skills — such as those identified in the introduction

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to this volume — and regular practice in real and/or simulated events (Boin et al., 2005). Just as elite athletes can benefit from coaching, feedback, and reflection upon their performance in practice and competition, so too can even the best of crisis decisionmakers and communicators further hone their skills through regular practice and critical reflection (Russo and Shoemaker, 1990; Stern, 2013; c.f. Baubion, 2013).

The Need for a Contingency Approach

As noted above, success in this area will require a rich set of 'tools' and design templates. When it comes to crisis management training and exercise for strategic leaders, one size most definitely does not fit all! Training and exercises in this area and aimed for this challenging target group should be consciously and explicitly designed and adapted to the specific *purpose* and *target* of the effort.

Exercises may be designed primarily to explore a theme and familiarize leaders with parameters, actors and stakeholders, distributions of responsibilities and capabilities associated with a particular issue or threat. They may also be designed to test a particular crisis plan with an eye to identifying gaps, faulty assumptions, and areas for further development. Alternatively, they may be used to help develop skills and/or fluency with particular processes, protocols, or systems. These different purposes are will tend to be best served by different exercise designs and formats.

Furthermore, training and exercise designs should be adapted to the leader or group's experience and skill levels. Approaches which might be perfectly appropriate for a relatively new leader with little past or on the job crisis management experience might not work as well for a veteran leader with a wealth of experience and a well-developed crisis management skill set. The Naval Post Graduate School MET format is a good example of discussion-based design which has reportedly been well received by many newly elected Mayors and Governors, their staffs, and other collaborating officials over the life of the program.

Another consideration impacting on training and exercise design is availability of leaders in terms of time and geography. Shorter windows of leader/senior official availability often suggest using simpler, 'lower fidelity' designs. Bigger windows of time tend to enable use of more elaborate 'medium or high fidelity' designs more realistically simulating intra-and inter-organizational processes and involving greater numbers of supporting functions. Similarly, if it is difficult to gather leaders in one place or in one time, introduction of technology for at-a-distance participation and/or asynchronous game design (more on this below) may be indicated.

Cultures — societal, organizational, training and exercise-specific — impact on training and exercise design choices as well. For example, organizations vary

in terms of the extent to which senior officials are (willing and) expected to be subjected to evaluation and criticism. For some organizations, exercises aimed at 'testing' preparedness or capability may be anathema. Some organizations (e.g. the military in many countries) train regularly and see it as an integral part of readiness for Generals and foot-soldiers alike. For some militaries and particularly in periods of relative peace — real 'action' may be rare and exercise settings a key source of leadership experience. By contrast, blue light organizations may see smaller scale 'action' on a daily basis and train/exercise far less often — though it is important to keep in mind that major, 'novel' crises fully challenging the coping capacity of strategic leaders tend to come far less frequently even in such organizations. So called high reliability organizational cultures (LaPorte and Consolini, 1991) tend to value rigorous training and exercise very highly, evaluate performance at all levels (including that of strategic level leaders), and take prompt, proactive remedial action on the basis of training and exercise results.

Training and exercise designs for strategic leaders should also take into account *leader personality, learning and management styles*. The literature on Presidents and Prime Ministers (e.g. Daléus, 2012; Preston, 2001; George and Stern, 1998) demonstrates that leaders — like other mortals- may have very different cognitive, learning and policymaking styles. Choices regarding how best to provide and how much information to include in crisis management exercises may depend in part upon these factors. Some leaders may respond best to written information while others may prefer oral briefings or videos. Strategic leaders may vary in terms of their comfort level regarding technology — some may enjoy technology and want to see and use it themselves; others may be better served by hiding the technology 'back stage'.

Feedback and follow up

Well-designed and implemented training and exercise events can generate valuable information regarding preparedness gaps and vulnerabilities. Such information should be documented, analyzed, and used as the basis for remedial measures and/or organizational reforms. It was recognized in our discussions that there are significant legal and political obstacles and disincentives for strategic leaders to avail themselves of such possibilities; though they run serious risks of future failures in real crises if identifiable issues are not addressed. Further exploration of measures for assuring confidentiality and legal protection of such information, while still allowing such information to circulate to those with a legitimate 'need to know' is needed. Ideally, lessons identified in crisis training and exercise sessions should be addressed and turned into lesson truly learned and implemented in a fashion leading to enhanced individual and collective

preparedness. Efforts are underway in both countries to improve learning from both real and simulated events, but as noted above, crisis management exercises for strategic leaders are particularly challenging in this regard.

As noted in chapter two, providing feedback to strategic leaders is a sensitive, difficult, and potentially risky task. Cultivating organizational cultures in which strategic leaders are expected to participate and get used to receiving feedback is helpful. Ultimately, of course, leaders who do not want honest feedback (and who punish those giving it) are not likely to get it. A good practice is often to start with self-critique. In other words, facilitators can ask participants questions like:

- What went well today and what went less well?

- What was most challenging?

- What was most surprising to you?

- What would you do differently next time?

- Which tasks associated with the exercise do you feel most comfortable with and which were most challenging?

Such questions can open the way for critical discussion of performance, general preparedness and preparedness gaps, or areas where additional practice and skill-building might be appropriate.

When feasible and appropriate, feedback from the participants themselves can be complemented with feedback by peers and/or expert evaluators. Finding peers of strategic level leaders (particularly top national leaders) is likely to be difficult (though not necessarily impossible) and may be precluded by a variety of political or organizational rivalries and sensitivities. In some cases, recently retired officials or others with insight into the office in question may be appropriate sources of peer feedback.

For strategic leaders willing to receive such feedback, it is important to choose timing, venue, and mix of positive and negative feedback carefully. In some cases, it may be best to provide certain kinds of feedback in a 'hot wash up" immediately following an exercise. If it is unlikely that it will be possible to get leaders' attention at a later date, immediate feedback might be the only opportunity and it may be best to strike while the proverbial iron is hot. However, if the exercise has been dramatic and emotionally or physically draining (which is sometimes the case) it may be that more sensitive or critical feedback is better given later, after participants have had time to process their experience a bit and 'recover' on their own. In addition, in more complex exercises, it may be necessary for exercise organizers and observers to take some time analyze the processes, outputs, and outcomes of the exercise before providing more detailed

and authoritative feedback. Regarding venue, when possible, it may be advisable to present critical feedback privately or with just a few trusted advisors present to strategic leaders if access for this purpose is forthcoming. Another option may be to present feedback in writing, though sensitivities and the need for secrecy may at times preclude that possibility. Finally, as in other kinds of pedagogical situations, it is important to try to balance positive and negative feedback carefully. A litany of negative criticism is likely to provoke defensive reactions, while a balanced treatment which gives due credit for things that went well tends to help participants to absorb feedback about areas in which there may be room for improvement. This may entail prioritizing and focusing on the most important areas; other less significant critical observations may have to wait for another opportunity.

Technology

As noted in chapters one and two, strategic leaders are a particularly challenging target group for training and exercise. Significant obstacles must be overcome if training and exercise at this level is to take place at all and if it is to be a meaningful and constructive experience for leaders, their advisers and their organizations writ large. It is clear that making use of current and emerging technology has great promise in help to overcome many of these obstacles.

- *Gathering leaders and scheduling exercises*: Getting firm commitments from a single leader to participate in exercises is often difficult. Getting an entire leadership team in one place may be particularly challenging. A virtue of several of the technology enhanced training and exercise techniques explored in the preceding chapters is that they enable participation by individuals who may be geographically dispersed. For example, U.S. FEMA's Emergency Management Institute has successfully deployed communications technology to enable at a distance participation in table top exercises as described in chapter five. The STANCE concept developed at the Center for Homeland Defense and Security, Naval Post Graduate School takes this a step further. Not only can participants 'play' from diverse geographic locations, but they can participate in policy simulation exercises at times of their own convenience. This possibility is a function of STANCE's *asynchronic* design and one which could be incorporated into to other forms of training and exercise as well. Note that this also potentially enables participation in exercise which can take then take place over extended periods (not just hours or days, but actually weeks or months should that be advantageous), which would generally not be feasible for strategic leaders and others with very heavy time constraints.

- *Overcoming hierarchy and constraints on candid communication and integrating feedback*: It has been noted above (e.g. in chapter two), that a key challenge is overcoming reluctance to speak freely about sensitive issues, take positions in exercises that challenge the conventional wisdom or the perceived policy preferences of superiors. Similarly, subordinates may—for understandable reasons—be reluctant to provide honest feedback to their leaders regarding the quality of their performance in training or exercises. Speaking truth to power may also be challenging for those tasked with 'debriefing' an exercise or evaluating the results more formally afterwards. Technology can provide a means of facilitating open, candid conversation. For example, the MMOWGLI platform developed by the Office of Naval Research and Naval Post Graduate School (see chapter five) enables broad based participation in policy 'games' and the possibility of anonymous participation enables players to freely express opinions without fear of sanctions. This approach would be well suited for use in larger exercises and a good means of accomplishing '360 degree' evaluation of leadership as exercised at multiple levels and directions in the organization, including at the strategic level (c.f. Maxwell, 2006; c.f. Marcus, Dorn and Henderson, 2006). MMOWGLI also has the benefit of including functionality for aggregating, weighing, and integrating the perspectives expressed by a substantial number of players and/or observers of exercises.

- *Improving scenario quality, impact and development efficiency*: Modelling and simulation technologies such as those demonstrated in the SUMMIT Project (see chapter 6) provide opportunities to develop scenarios (and predict certain types of behavioral responses) in a more rigorous and plausible fashion. Drawing upon state of the art hazard models (hurricanes, floods, earthquakes etc.) provides an excellent point of departure for scenario development and is a good complement to the case based approaches discussed below. This is a good way to bring 'science' into the exercise development process and one which can greatly enhance the credibility of scenarios for operational and strategic leaders alike. Furthermore, use of geo-spatial visualization technology such as that used in both the above mentioned SUMMIT platform and the INDIGO platform discussed in chapter five can help to accurately convey complex situational information in a visually compelling fashion. It should be noted, however, that the information needs of strategic leaders tend to be quite different from those of operational decision-makers and care should be taken to deploy these technologies in ways that will facilitate strategic crisis management and not tempt strategic leaders to stray in counterproductive ways into operational or technical expert territory. Finally, integrated modelling and simulation technology

such as the SUMMIT portal and model 'bank' can help to bring down costs and reduce (but not eliminate !) the need for specific hazard subject matter expertise in scenario development and exercise control.

• *Providing feedback regarding alternative threat/ hazard development and response/recovery trajectories (the what if questions)*: Real-time modelling integration and simulation technology such as that developed in the SUMMIT project described in Chapter 6 helps to provide scenario flexibility and interactivity in exercise preparation and delivery. For example, it becomes possible to model hazards at various levels of severity (e.g. hurricanes of different wind speed categories) and geographic trajectories (and thus alternative storm surge patterns). Furthermore, it also becomes possible to vividly demonstrate the consequences of proactive versus reactive strategies with regard to interventions. For example, in a public health emergency event, it possible to show the consequences of different timing and scope (e.g. narrow definition of risk groups, broad definition of risk groups, whole population) of vaccination strategies or other medical countermeasures (e.g. social distancing). This can be a powerful pedagogical tool in crisis management training and exercises for strategic leaders.

Case-Based Scenario Development

It was noted at many points in the workshops in Sweden and United States that a very common problem on both sides of the Atlantic Ocean is that participants in training and exercise events often 'fight' the scenario and question the realism and relevance of the hypothetical events and problems presented for them to work on. While this phenomenon is in part due to various enduring psychological, organizational or political defense mechanism or to imperfect understanding of the methodologies used in and purposes of the training event/ exercise in question, it may also derive from use of sub-optimal scenario development techniques. As noted above, certain types of 'attacks' on scenarios can be prevented or countered by using modeling and simulation to help formulate the contingencies presented to participants, demonstrating that the scenario rests on a systematic, state of the art scientific foundation. While modelling and simulation have clear advantages over 'shooting from the hip' and can greatly contribute to improving training, exercise and decision-support tools, it may still be open to challenge in terms of the plausibility of the assumptions underlying the models and their applicability to various real world contexts.

A complementary strategy for improving scenario quality was outlined in chapter 7 of this publication. Using historical and contemporary cases reconstructed using state of the art qualitative case research methodologies such as

process tracing and structured, focused comparison has the potential to further improve scenario quality and relevance.

"Quality": Using hazard/threat development trajectories and impacts real historical or contemporary cases has the advantage of relatively high external validity. In other words, the point of departure (or in some circumstances complementary source of inspiration) for developing the scenario is an event which has occurred at a real place at a particular point of time and for which credible documentation exists. As a result, when 'players' become defensive and question the plausibility of the depiction in the scenario, there is a good answer: this problem is not only realistic, but based on real, historical/contemporary events. This type of answer, like referring to credible risk/vulnerability analyses, tends to be extremely effective in countering attacks on the scenario, tends to increase the engagement of participants and enable quick return of focus to the main purposes of the training/exercise in question.

Relevance: As noted above in chapters 2 and 7, a common problem in training and exercising strategic leaders is developing scenarios that strategic leaders will find fresh, interesting, challenging, and relevant to their roles and needs. One reason for this is that many exercise scenarios are developed by people with operational backgrounds and orientations. Such individuals may have limited insights into the worldviews, frames of reference and concerns of strategic leaders. Similarly, scenarios may be developed with dual use (at strategic and operational levels) in mind. However, even extremely challenging operational scenarios can be of modest interest and value to strategic decision-makers if the obvious course of action is straightforward delegation to the operational level).

By contrast, the research strategy deployed at the Swedish National Center for Crisis Management Research and Training (CRISMART) has explicitly focused on strategic crisis management (and the interplay between strategic and operational levels) in a variety international, national, regional, and local contexts. The research effort, which includes extensive interviewing, observation and 'debriefing' of leaders and advisors in crisis situations/simulations is geared toward identifying and reconstructing decision problems faced by leaders in actual crises. As such, the case bank (and parallel work in the crisis studies literature) provides a gold mine of real world problems and challenges which have faced strategic level crisis managers in the past. Furthermore, the focus of the effort has been to capture experience not only from high profile events (e.g. 911, Katrina, 7/7 etc.) from the US and UK, but also from many lesser known cases taking place in smaller countries from across Europe, Asia, Australia, and New Zealand, and the Americas. As a result, many of these cases—though characterized by considerable problem complexity, diversity, and drama—may be relatively unfamiliar to participants in training and exercise events and thus easily 'masked'. At appropriate junctures, it then becomes possible to compare

the strategies, solutions adopted by players (and the anticipated consequences/ outcomes) to those revealed in the underlying real world cases. Use of this scenario development strategy has an excellent track record of producing scenarios easily accepted and much appreciated by strategic level leaders.

Cost: A further advantage of case-based scenario generation is that it too facilitates the rapid development of high quality scenarios at relatively low cost. This is particularly true when ongoing research efforts can be harvested for a variety of research and (applied) educational purposes including the development of training and exercise tools. It is important to keep in mind that while older (and relatively forgotten) cases can be very useful in scenario development, it is essential to continue documenting experience in contemporary socio-technical and political contexts. While much many challenges of crisis management derive from enduring aspects of the human condition, others are driven by evolving threats and vulnerabilities as well as changing governmental, societal, community and other socio-technical contexts. It is critical for researchers as well as designers /developers of crisis management to keep up and incorporate such developments and contextual changes into their work.

Synergies and the Way Ahead

The conversations in preparation for and contributions to this volume have identified a rich assortment of design alternatives, methodologies and pedagogies, as well as several very promising applications of existing and emerging technologies. Though the task of improving the quality and efficiency of crisis management training and exercises for strategic leaders is beset with challenges, the potential for progress in this area is great.

The diverse set of participants in this project have all brought useful perspectives to the conversation and added to the growing collection of 'tools' in the strategic leadership exercise tool box. Many of these individual approaches can benefit from incremental revision based upon incorporation of good ideas and practices explicated in this broad-based bilateral dialogue.

One natural next step would be to work together in a more 'hands on' collaborative effort to explore ways of combining some of these strategies and tools in a common pilot exercise or series of exercises. Ideally such efforts could take place with groups of current/recent former strategic leaders/advisors from Sweden and the United States.

Another possible next step could be to widen the conversation to include other peer countries. For example the OECD High Level Risk Forum recently (June of 2014) co-sponsored a workshop with the Swiss Federal Chancellery

with a similar focus on Strategic Crisis Management Exercises.[16] This workshop was designed to facilitate multilateral exchange of experience among the most developed countries and could provide a useful point of departure for broadening this effort. Both Sweden (MSB and SNDC) and the United States (DHS) participated in this workshop and the prospects for constructively linking these initiatives are good.

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16   For more information see e.g. http://www.slideshare.net/OECD-GOV/2014-strategic-crisis-management-workshop-1213-june-geneva. Accessed November 22, 2014.

Appendix A
U.S. FEMA Fact Sheet on
the Thunderbolt[17] Program

Overview

FEMA's no-notice exercise program consists of exercises known as "Thunderbolts." Thunderbolts are intended to validate and strengthen core competencies and enhance operational readiness while evaluating FEMA's ability to execute its mission. The program was created per direction from FEMA Administrator Craig Fugate in 2009. FEMA leadership – the Administrator, Associate Administrator for Response and Recovery, and Assistant Administrator for Response – determines the priorities for Thunderbolt exercises, to include individual events and annual exercise series.

Thunderbolts range greatly in complexity:

• <u>Simple</u> examples include general recall, mobilization, and communications readiness drills, and may also include discussion-based exercises, such as seminars and tabletops.

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17   No notice exercises/drills

- <u>Increasing complexity</u> examples include activation and mobilization of resources to participate in an operations-based exercise and validate plans, policies, and procedures.

- <u>Most complex</u> examples include activation and deployment of field teams into an operations-based exercise simulating a catastrophic disaster environment.

Types of Thunderbolts:

- <u>Topic-specific Thunderbolts</u> provide an opportunity to rapidly assess or address capability gaps, as identified. For instance, these exercises may look at team deployment and employment and communications procedures.

- <u>Preparatory Thunderbolts</u> can function as "building block" events, providing an opportunity to focus on key issues in anticipation of upcoming activities, such as for large interagency exercises, special events, and hurricane season.

Advantages

- The no-notice approach to exercises enables more true-to-real-world actions than a planned exercise as Players are not afforded time to focus on increasing familiarity with specific plans and procedures or prepare their intended response to a particular scenario. The scope of the exercise may also be a "surprise," lending to enhanced evaluation of core capabilities, key competencies, and performance metrics.

- As in a real-world situation, exercised entities are responsible for fulfilling requirements regardless of availability of primary or secondary staff. This helps to ensure operational readiness regardless of the involvement of specific individuals, focusing instead on needed skills and abilities to perform the tasks at hand.

Disadvantages

- Real-world responses and active disaster operations take priority and may limit the availability of Headquarters personnel and field teams to be exercised.

- A high degree of coordination and pre-approvals are necessary to facilitate the availability of staff for a no-notice event.

- The no-notice nature of the exercise will result in disruption to planned work, meetings, travel, and time off for those being exercised.

Key Lessons Learned/Good Practices

- Exercise teams, to include Evaluators, must be flexible and agile to meet leadership intent and logistical considerations.

- Senior leadership understanding and support the program is instrumental in ensuring participation following a Thunderbolt notification.

- Exercise planners must carefully consider the selection of trusted agents to ensure no disclosure of the event to the Players. This includes members of leadership, exercise staff, and even venue personnel.

Suitability for Use with Strategic Leaders

- Thunderbolts are just as applicable for strategic leaders as for their staffs as they provide the opportunity to exercise decision making in a no-notice situation, mimicking real-world scenarios with little-to-no time for preparation.

- Robust exercise development, to include of specific products or materials, would be necessary to provide strategic leaders with all the information they would typically have or request from their staffs.

- Strategic leaders must be supportive of the nature of Thunderbolts due to the inherent disruptions they cause; constant delegation of their leadership roles during an exercise to prevent this disruption violates the intent of the no-notice exercise program.

Appendix B – Strategic Crisis Management Scenario Exercise: "Poison Mountain"

Eric Stern and Edward Deverell

Purpose

The aim of the scenario exercise is to provide point of departure for discussion of different aspects of crisis management. The exercise will focus on themes: problem analysis, information and intelligence, crisis communication, and policymaking under difficult conditions in a politically complex environment.

Format, roles and assignment

The participants will be divided into groups of roughly five persons. Each group will act as a high level interagency crisis group in an Asian country called Ourland. The Committee has been asked to support the Prime Minister and the Cabinet with advice. Your group has been asked to follow the emerging situation and provide analysis and recommendations. As is typical during the early hours of a crisis, information is scarce. In fact, an important part of your assignment is to help the government find ways to clarify the current situation, anticipate potential complications, and assess the potential costs and benefits of alternative courses of action.

All groups will receive the same information. Incoming information will be shown on the screen. After a number of situation reports or messages, each group will be asked to prepare advice to the Prime Minister based on the questions that will appear on the screen. Roughly 20-30 minutes will be available for each such group discussions. After each of the four rounds, a group will be asked to make a brief (roughly five minute) presentation of its advice. The presentation will be made by one member on behalf of the group. Each group should therefore appoint a spokesperson and rapporteur to document the results of your discussions. After the presentation, other groups will have an opportunity to elaborate and provide contrasting views.

Keep in mind that as members of this crisis committee, you are expected to maintain a national strategic perspective when examining the scenario. Furthermore, you are acting in an advisory, not an operative decision making, capacity.

Good luck!

Context

The scenario takes place in a fictional country in Asia called Ourland: Ourland is a small, prosperous country. It has been quite effective in managing its relations with neighboring countries, although it is not part of any formal economic association. Ourland is run by a center-right, coalition government. The Prime Minister, who will face elections late next year, belongs to the Liberal Democratic Party and first made his name in politics in the 1980s as a young conservationist crusading against Acid Rain. Over the years, he developed close relations with law enforcement and came to power two years ago on a 'law and order' platform. He comes from the mountainous southeast of the country (which shares borders and the High River with the neighboring downstream ASEAN country of Sunland) and has been promoting the region as a destination for hiking and adventure tourism. The region is also important for foodstuff production. The river is essential for the fishing industry, mountain streams are the source for the nation's (and this part of the world's) most popular beer, and the hills are used for grain farming and cattle pastures. In fact, a popular-- if somewhat tacky-- advertisement shows the Prime Minister seated at a dinner table eating the region's trademark tender beef next to a splendid High River cow. For some time now, the Prime Minister has been lobbying UNESCO and rumor has it that the High River Valley region will be declared a World Heritage site next spring. His coalition partners (including the Ministers of Industry and Agriculture) are more interested in promoting economic growth and welfare reform. Ourland has taken part in various international operations in the

Middle East and has been an ally of the US and UK in the 'War on Terror'. However, the people of Ourland have been skeptical towards these missions, which have become increasingly unpopular as casualties mount.

You are members of a high-level interagency crisis group supporting the Cabinet of Ourland. The group has been asked to provide the Prime Minister and his Cabinet with advice. You have been asked to follow the emerging situation and provide analysis and recommendations using the questions that will be presented during the exercise as a point of departure.

Every group should select a spokesperson prepared to periodically summarize the group's findings.

Exercise Injects

| 1 |

09:00

Dam breaks at Bodelia Mine

Today's top story: Early this morning a mining accident occurred at the Australian owned Bodelia Copper Mine, located in the heavily forested and mountainous High River Valley in the South East of the country. A so-called tailings dam, holding back an artificial pond containing mining byproducts, on a plateau overlooking the High River valley collapsed.

The copper mine has been in operation for over two hundred years and has been the subject of some controversy as an eyesore and potential environmental and safety hazard. It remains a major employer and cultural foundation for the nearby village of Barnville (population 12,000). |
|---|---|
| 2 |

A so-called tailings dam on a plateau overlooking the High River valley in Ourland collapsed early this morning. The dam contains byproducts from extraction and purification processes which are being released in an uncontrolled fashion. |

3	**RadioTower.com**
	Live update
	The main road into the Bodelia Mining facility is covered with a brown sludge which is gradually spreading down the mountainside.
	A disgusted Scoutmaster, who was leading a group trek in the vicinity says, "I have never seen anything like this. The stuff is everywhere. My group is covered in stinking mud. I just hope it is not dangerous".
4	**herald sun.com**
	First response units arrive at the scene of mining accident
	First responders are now on the scene and attempting to contain the damage in the High River Valley. There was initially a shortage of sand bags and other key equipment on the scene (an apparent deviation from the approved facility safety plan), but key resources are now being brought in by helicopter and truck.
5	DIVISION OF EMERGENCY SERVICES
	Report from Division of Emergency Services
	The spokesperson from the local Division of Emergency Services reports that the sludge has overflowed the limits of the plateau and has formed a brown waterfall that has now reached the banks of the High River.
6	*Advisory Occasion I (Day 1, 11:00 am)*
	Problem analysis
	1. What are the crucial values and interests at stake in this situation?
	2. What are the critical uncertainties surrounding this problem?
	3. How urgent is this problem?

7	**Barnville Mayor's Office** **1:00 pm** *Statement from the Mayor of Barnville* Crisis centers have been set up at the local and regional levels. The mayor of Barnville expresses his confidence in the ability of the local rescue services and Bodelia Mining Corp. to cope with the incident.
8	**Bodelia Mining Corporation** *Communiqué:* "Bodelia Mining is cooperating with local authorities to manage the incident at the High River Valley Dam. The public can rest assured that the environment will not be exposed to hazardous levels of toxic substances."
9	FIE *Forum of Independent Environmentalists* *Environmental experts skeptical to assurances from mining company* Independent experts and environmentalists at FIE are skeptical of reports from the Bodelia Mining Corp. and local agencies that the situation at the Bodelia Mine is under control. We call for massive national intervention to prevent what could be the worst environmental disaster in our nation's history."

10	**Thee Green Party Information Office**
	Eileen Wright, spokeswoman for the Green Party:
	"These mines are among ticking environmental time-bombs. There are at least three more mines that are unsafe. We therefore call for the immediate closing of the Bodelia Mine and other similarly deficient mining facilities, pending rigorous safety reviews."
11	**Fire and Rescue Services** "People Who Care About You"
	Thousands of tourists in the affected area
	Reports from the Mountain Rescue Service mission indicate that, in addition to the local population, there may be as many as 35,000 day hikers, back-packers, white water enthusiasts and other tourists in the area. Another problem is that cell phone coverage is poor in the affected region.
12	**herald sun.com**
	Food products reportedly stopped at Sunland border
	Trucks carrying beef from the High River Valley were reportedly stopped at the Sunland border today due to concerns over the potential contamination after the tailings dam rupture earlier today. Government sources indicate there is a risk that other countries will follow suit.
13	*Mountain Brewery*
	Press Release: Beer production halted
	"Mountain Brewery, brewer of Ourland's favorite beer, has voluntarily suspended all production of its most popular product, "High River Draft."
	Production will start again when we have guarantees that the water in the High River Valley is safe."

14	*Advisory occasion II (Day 1, 5:00 pm)*
	Options and information gathering
	1. In light of what is now known about the problem, what measures can be taken to protect the public health and confidence in food and water supplies? What are the likely costs and benefits of these alternative courses of action?
	2. What types of additional information would be helpful in order to develop a policy response to this problem? How can such information be gathered?
	3. What can be done by the government to minimize the negative effects of the crisis and protect other core values at stake?
15	**Ourland Cabinet Office Briefing**
	6:00pm
	Medical specialists at the University Hospital claim that the accident is likely to expose people, animals and the environment to toxic heavy metals. Such substances are extremely dangerous – especially when ingested – and can cause heightened risk of cancer, kidney and/or lung failure, and a range of other physiological and psychological symptoms.
16	*National News Network*
	Crowds assembled outside the Ourland embassy tonight protesting against Ourland's exploitation of the High River Valley and the poisoning of the High River. Many of the protesters were local Sunland fishermen who demanded compensation for expected loss of income due to the poisoning of the High River fish and waters. The demonstrators showed their dissatisfaction by pouring out beer produced in Ourland

17	**THE ARMED FORCES HQ**
	CONFIDENTIAL
	The Supreme Commander has offered, upon official request, to contribute resources in the form of military personnel and vehicles for the relief effort. This would reinforce emergency resources.
18	**Ourland Cabinet Office Briefing**
	The situation in the High River Valley has continued to escalate. The cabinet has decided to use its prerogative to transfer management of the accident to the national level. Military and rescue services teams have been mobilized, as have the local reservists and other volunteers.
19	The National Observer
	9 pm
	Reports that Ourlandian trucks were stopped at the Sunland border have been exposed as media sensationalism. The website of Sunland's biggest newspaper published the hoax earlier today. It has now been removed it from the website. The anonymous source that tipped off the newspaper had probably seen a truck that was called back to Ourland due to problems with the cooling system.
20	**The Institute of Medical Sciences Department of Toxicology**
	Researchers at the Department of Toxicology have taken samples of the sludge and floodwater. Preliminary testing points to the presence of high concentrations of toxic metals. However, additional testing is required to identify the exact chemical composition of the sludge and water.

21	*Advisory occasion III (Day 2, 10:30 pm)*
	Communication with the media and the public
	1. Should the Government inform the public and media about the risk to public health and agriculture at this point, or should they wait until more information is available and verified?
	2. Should the Government disclose all information without reservation when informing the public and media? If not, what kinds of information should be emphasized and what should be held confidential?
	3. Who should inform the public, and how should the information be conveyed to key target groups?
22	**National Coordinating Officer, National Response Team (Day 2, 7:00 am)**
	We have two possible options:
	1) Reestablish complete containment through sandbagging and construction of micro-levees. It will take days before the outpouring of contaminants could be effectively contained.
	2) Divert the flow of toxic water and sludge away from the river. This would protect the High River water shed (and Sunland), but heighten the local consequences. The only feasible diversion would entail contamination of the pastures used by the local beef and dairy industries.
23	
	Press release, Day 11, 8:00 am
	The multinational restaurant and fast food company Burger Queen Inc. takes pride in serving the highest quality beef. After yesterday's disaster in the High River Valley, the company will no longer buy beef or cheese from the area. High River Valley beef and cheese will be replaced by imported substitutes.

24	**Bodelia Mining Corporation** *Communiqué* Contrary to sensational media reports being circulated, the Bodelia mine has state of the art safety procedures. The last safety inspection gave us a clean bill of health. The incident may have been the result of sabotage, as there has been a number of extortion attempts against the facility in recent months. These were reported to the local police who, unfortunately, did not take the threats seriously.
25	 Reports that the failure of the tailings dam were caused by sabotage reached a new peak today as engineers from the Federal Mining Inspectorate said that there is no other obvious explanation for the catastrophic failure of the tailings dam.
26	 *Statement from Sunland's Minister of the Environment* "As citizens of Sunland, we are highly disappointed with our upstream neighbor. The fact that the government of Ourland allows such dangerous activities to take place in such a sensitive environment and so close to the border is an outrage. In addition, the Sunland government is not pleased about the delay in official notification of the accident, which was brought to my attention by media reports."
27	*Association of Southeast Asian Nations* While opening a conference on regional security in Brunei, the ASEAN Secretary General commented on the High Valley Mining disaster. He demanded that a thorough, multi-national investigation into the cause and effects of the tailings dam rupture be launched.

28	SoundFood Ourland's biggest grocery store company, Soundfood, will suspend sales of all products from the High River Valley. The president of Soundfood, says that the products currently on the shelf are safe, but the company always puts consumer confidence and peace of mind first.
29	**The Institute of Medical Sciences** **Department of Toxicology** The samples of the sludge and floodwater analyzed at the Department of Toxicology show high concentrations of toxic heavy metals. The levels of Cadmium, Copper, Lead, Zinc and Arsenic are at least ten times as high as the recommended health limits.
30	Advisory occasion IV (Day 2, 1:00 pm) *General Policy Advice* The Prime Minister is very troubled by these events and turns to your group for advice on what to say and do.

About the Contributors

Ajmal Aziz provides contract support to the Resilient Systems Division, Homeland Security Advanced Research Projects Agency, Science and Technology Directorate at the Department of Homeland Security. His experience has allowed him to collaborate extensively with federal partners, state and local entities, first responder community, national laboratories and academia to facilitate a number of successful programmatic and technical project implementations. He has developed a comprehensive knowledge of homeland security policies and programs, and has advised on key issues important to the homeland security mission.

Arjen Boin is a professor at the Department of Political Science, Leiden University and an adjunct professor at the Public Administration Institute, Louisiana State University. He has published widely on topics of crisis and disaster management, leadership, and institutional design. His books include The Politics of Crisis Management (Cambridge University Press, winner of APSA's Herbert A. Simon book award), Governing after Crisis (Cambridge University Press, 2008), Designing Resilience (Pittsburgh University Press, 2010), Mega Crises (Charles C Thomas, 2012) and The EU as Crisis Manager: Patterns and Prospects (Cambridge University Press, 2013). He is the Editor for Public Administration and a managing partner of Crisisplan BV, an international consultancy.

Annika Brändström holds a Master's degree in Political Science from Stockholm University. From 2005 to 2008 she was Deputy Director of the Department of Administrative Affairs and since then has served as the Head of the Coordination Unit at the Secretariat for Crisis Management at the Government Offices. In addition, she is currently engaged in Ph. D studies at Utrecht University. Her research interests include the development and consequences of politicization processes in crises.

Fredrik Bynander is an Associate Professor of Political Science at the Swedish National Defense College and Scientific Leader at CRISMART. He is chairman of the Program Council for the Center for Natural Disaster Science which has been designated a Swedish government strategic research environment. In 2009-2012 he was a Special Adviser and the Head of Strategic Planning at the Prime Minister's Office Secretariat for Crisis Coordination. His current research interests include crisis management studies, collaborative crisis management, leadership succession and foreign policy analysis.

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Edward Deverell received his PhD from Utrecht University's School of Governance in 2010. His thesis, "Crisis-induced Learning in Public Sector Organizations," addresses the issue of how public organizations learn from their crisis experiences. His research concerns topics of organizational learning from crisis, crisis management at the organizational level, and decision making under stress. Currently, he is working on the research project "What makes some better than others at handling crises? Exploring state of the art public sector crisis management" funded by the Swedish Civil Contingencies Agency.

Lorraine Dodd directs research and lectures in Systems Thinking for Complex Operations in the Decision Support Group, Centre for Information Systems, Department of Informatics and Systems Engineering, Cranfield University at the UK Defense Academy. Her main interests are sense-making, decision-making and the study of information, organizations, society, people and governance under conditions of complexity. Her most recent studies include an application of a multi-perspective approach to Complex Planning problems in Afghanistan and development of decision assessment agents for military training and synthetic environments. She has strong links and collaborations with specialists across UK Government and Defense, also in Australia via DSTO and academics worldwide working in complex adaptive decision systems, organizational agility and information systems resilience studies.

Lars Hedström is the Director General at the Institute for National Defense and Security Policy Studies (IHT) at the Swedish National Defense College. He helped establish the Crisis Management Coordination Secretariat at the Prime Minister's Office while serving as the Deputy Director. Lars was previously with the Swedish Emergency Management Agency (SEMA) as Deputy Director General. Before that he held the position as Deputy Director General of the Swedish Rescue Services Agency. In 2000 he was seconded to NATO Headquarters, Civil Emergency Planning Directorate. He is a former Chief Fire Officer.

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Per Åke Mårtensson is a former Swedish Police Superintendent and previously has served as Police Commander at the Stockholm County Police and Dalarna County Police. He has several years of experience in SWAT and counterterrorism at the Counter Terrorist Unit of Sweden. In addition, he has lectured in tactical and operational education and training at the Swedish Police Academy. In his positions as the Head of Preparedness at the Swedish Emergency Management Agency (SEMA) and the Head of Global Monitoring and Analysis at the Swedish Civil Contingencies Agency (MSB), he has worked with strategic and operational management and staff issues. Today, he is a Senior Advisor at the Institute for National Defense and Security Policy Studies (IHT) at the Swedish National Defense College.

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