

Value Focused Metrics for Improved Emergency Management Planning

Part 4: Project and Methodology Assessment

Dr. Daniel T. Maxwell
Professor David Davis
Knowledge and Decision Science (KaDSci)

Scientific Authority
Lynne Genik
DRDC Centre for Security Science

The scientific or technical validity of this Contract Report is entirely the responsibility of the Contractor and the contents do not necessarily have the approval or endorsement of Defence R&D Canada.

Defence R&D Canada – Centre for Security Science

Contractor Report
DRDC CSS CR 2013-023
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IMPORTANT INFORMATIVE STATEMENTS

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Abstract

This report is part four of a four part series describing a set of discovery experiments that explored how a decision analytic modeling approach called Value Focused Metrics (VFM) was applied to experiments for emergency management planning processes in two cities on Vancouver Island using four disaster scenarios. This volume focuses on the assessment of the methodology based on what was learned through the interaction with subject matter experts (SMEs) in the communities, reducing the collected data into computational models, and conducting exemplar analyses using that collected data and models. The assessment is reported from three perspectives. First, is an overall project level assessment concerning lessons learned about conducting research into high stakes contingencies (like emergency management planning). The second are the things the researchers learned about applying VFM to the improvement emergency management operations. The third perspective is the feedback received from the participating subject matter experts on the Value Focused Metrics process and utility of the model results, including recommendations from their perspective on how to improve it. All three of the perspectives provide valuable insights that can be used both as a foundation for future research and, in some cases, applied modeling and analysis in support of emergency management.

Résumé

Le présent rapport est le quatrième et dernier volet d'une série décrivant comment une approche de modélisation analytique décisionnelle intitulée « mesures axées sur les valeurs » (MAV) a été appliquée aux processus de planification de la gestion des urgences dans deux villes, situées sur l'île de Vancouver, à l'aide de quatre scénarios de catastrophe. Ce document porte sur l'évaluation de la méthodologie en fonction des leçons retenues de l'interaction des experts en la matière avec les communautés, en réduisant les données recueillies dans les modèles informatiques et en effectuant des analyses exemplaires à l'aide de ces données et modèles. L'évaluation est présentée selon trois points de vue : 1) évaluation globale à l'échelle des projets concernant les leçons retenues de la recherche sur des éventualités considérables (telle la planification de la gestion des urgences); 2) éléments découverts par les chercheurs concernant l'application de MAV pour améliorer la gestion des urgences; 3) commentaires des experts en la matière concernant le processus de MAV et l'utilité des résultats des modèles, y compris leurs recommandations sur la façon de l'améliorer. Les trois points de vue fournissent de précieux renseignements pouvant être utilisés comme base pour les recherches à venir et, dans certains cas, comme modélisation et analyse appliquées en soutien à la gestion des urgences.

Executive Summary

Value Focused Metrics for Improved Emergency Management Planning: Part 4: Project and Methodology Assessment; Daniel T. Maxwell; David F. Davis; DRDC CSS CR 2013-023, December 2013

Background: This report is part four of a four part report exploring the feasibility and desirability of applying a decision analytic modeling technique called Value Focused Metrics in the support of emergency management planning. The first three parts of the effort focused on the development of VFM models that represented the objectives and tasks subject matter experts identified for four scenarios, followed by an effort on the part of the research team exploring the feasibility of developing an integrated model that could be used either as a template to support planning or a mechanism for conducting analysis across scenarios. This stage of the research focuses on assessing and reporting what was learned over the course of the research project.

Results: The project successfully demonstrated that Value Focused Metrics models can be successfully developed to describe relevant emergency management scenarios and the VFM process does help emergency managers (including first responders) improve the quality of their plans and preparations. The project also demonstrated that the specific scenario models have sufficient commonality that a unified model can be developed and representation of a “generic” disaster scenario using VFM modeling is possible. The models were successfully developed and used to provide some analytic insights to the community planners, demonstrating the potential of a VFM-based approach. That said, two key issues were identified that could limit the desirability of using VFM. First, the amount of time and effort required to build these models on the part of emergency managers, first responders, and other municipal staff was perceived as potentially infeasible given their existing workloads. Second, the larger models stretched the limits of computational feasibility using the software that was available for this project.

Significance: The research team believes that these findings reinforce the belief that Value Focused Metrics modeling techniques have potential for supporting emergency management planning and assessment. That said, the significance of this particular project is that it can be used to help focus future research efforts intended to support emergency management planning. Assertions of utility of the method beyond that are premature.

Key hypotheses that are worthy of additional exploration are:

1. Modular VFM model templates can be used to ease the model development burden on emergency professionals, thereby allowing them to more efficiently and effectively develop and assess disaster related plans.

2. Web-based elicitation and analytic use of VFM models can be successfully accomplished by the set of multi-disciplinary, multi-jurisdictional organizations that are required for effective disaster management planning.
3. A VFM computational infrastructure can be developed and implemented that will support timely and effective development and analysis of models large enough to support disaster planning and assessment.

Future plans: The research team is actively pursuing research and analysis projects that will facilitate the exploration of the hypotheses identified above, as well as opportunities to apply current VFM technology and techniques in support of disaster planning and assessment.

Value Focused Metrics for Improved Emergency Management Planning: Part 4: Project and Methodology Assessment; Daniel T. Maxwell; David F. Davis; DRDC CSS CR 2013-023, Decembre 2013

Contexte : Le présent rapport est le quatrième et dernier volet d'une série examinant la possibilité et le bien-fondé d'une technique de modélisation analytique décisionnelle intitulée « mesures axées sur les valeurs » (MAV) à l'appui de la planification de la préparation en cas d'urgence. Les trois premiers volets des travaux portaient sur l'élaboration de modèles de MAV représentant les objectifs et les tâches identifiées par les experts en la matière (EM) pour chaque scénario, ainsi que sur la possibilité de créer un modèle intégré permettant de soutenir la planification ou d'effectuer une analyse de l'ensemble des scénarios. Cette étape du processus de recherche porte sur l'évaluation des leçons retenues au cours du projet et l'établissement de rapports connexes.

Résultats : Le projet a réussi à démontrer que les modèles de MAV peuvent être élaborés de façon efficace pour décrire des scénarios pertinents de gestion des urgences et que le processus de MAV aide les gestionnaires des mesures d'urgence (y compris les premiers intervenants) à être mieux préparés et à avoir de meilleurs plans. En outre, les modèles de scénarios particuliers ont suffisamment d'éléments communs pour qu'un modèle unifié puisse être élaboré et il est possible de représenter un scénario général de catastrophe à l'aide de la modélisation de MAV. Les modèles ont été élaborés et utilisés avec succès afin d'offrir un aperçu analytique aux planificateurs communautaires, en démontrant le potentiel d'une approche fondée sur les MAV. Cela dit, deux problèmes importants pouvant restreindre l'utilité des MAV ont été relevés. Il a semblé impossible que les gestionnaires des urgences, les premiers intervenants et d'autres employés municipaux puissent consacrer le temps et les efforts nécessaires pour élaborer ces modèles compte tenu de leurs charges de travail actuelles. Aussi, les plus grands modèles ont étiré au maximum la faisabilité informatique à l'aide du logiciel qui était disponible pour ce projet.

Importance : Ces résultats renforcent la croyance qu'une approche de MAV pouvant appuyer la planification et l'évaluation de la préparation en cas d'urgence est possible sur le plan technique et qu'elle pourrait faire progresser la technologie dans le domaine. Cela dit, l'importance de ce projet est qu'il peut aider à concentrer les efforts de recherche éventuels destinés à soutenir la planification de la gestion des urgences. Il serait prématuré d'affirmer l'utilité de la méthode au-delà de cet élément.

Des hypothèses clés méritent d'être examinées davantage :

1. Des matrices des modèles de MAC modulaires peuvent être utilisées pour alléger le fardeau que représente l'élaboration des modèles pour les professionnels en service d'urgence, ce qui leur permet d'établir et d'évaluer plus efficacement des plans liés aux catastrophes.
2. Il est possible d'utiliser avec succès l'analyse et l'éllicitation des modèles de MAV sur le Web grâce à un ensemble d'organisations multidisciplinaires et intergouvernementales nécessaires pour une planification efficace de la gestion des catastrophes.
3. Une infrastructure informatique de MAV peut être élaborée et mise en œuvre à l'appui de l'établissement et de l'analyse rapides et efficaces de modèles en mesure de soutenir la planification et l'évaluation des catastrophes.

Plans futurs : L'équipe de recherche mène des projets d'analyse et de recherche qui faciliteront l'exploration des hypothèses susmentionnées, en plus de chercher des occasions d'appliquer les techniques et la technologie de MAV actuelles en soutien à la planification et à l'évaluation en cas de catastrophe.

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1 Introduction and Overview

This report is part four of a four part report exploring the feasibility and desirability of applying a decision analytic modeling technique called Value Focused Metrics in the support of emergency management planning. The first three parts of the effort focused on the development of VFM models that represented the objectives and tasks subject matter experts identified for four scenarios, followed by an effort on the part of the research team exploring the feasibility of developing an integrated model that could be used either as a template to support planning or a mechanism for conducting analysis across scenarios. These topics are addressed in detail in the preceding volumes [1 - 3].

This stage of the research focuses on assessing and reporting what was learned over the course of the research project. Generally, the assessment will be accomplished from two perspectives, one technical and the other from the participant's point of view. The technical assessment in the following section discusses what was learned about the model development process, the software, and conducting analysis intended to provide decision support for emergency managers. The section that follows discusses feedback the team received from a participants' perspective. The report then concludes with some general observations and recommendations for future research.

2 Technical Assessment

2.1 VFM Model Development and Analysis Process

Overall, the participants demonstrated the ability to execute and understand the VFM process and to interpret the model when they were supported by trained facilitators. In facilitated sessions emergency management subject matter experts were able to successfully develop an understanding of objectives and tasks, structure models, and provide judgments that resulted in models that provide the ability to quantitatively assess the relative contributions individual means objectives and tasks make to improvements in the utility scores over fundamental objectives.

Once the models were complete the sensitivity analysis was accomplished by the research team and communicated back to the SME participants. In this case they also demonstrated the ability to interpret the significance of results that were presented to them, when accompanied by an explanation from a trained analyst and the ability to engage in a question and answer session focused on clarifying questions they had about the specific scores, how they were calculated, and what the significance of some of the differences meant.

When queried participants expressed concern about their ability to successfully execute the VFM process without the aid of professional facilitators. It is our assessment that this was attributable to six reasons:

1. The current research team entered the project part way through the research effort. A good portion of the initial interaction between the team was invested in building a trust relationship with participants and helping them to shift from a military decision making based approach over to a value focused perspective.
2. All of the models needed to be completely developed from scratch during the facilitated sessions, both in person and remotely. Consequently, there was significant effort invested in developing a shared awareness among participants with different backgrounds and interests. In many cases it required the intervention of a facilitator for the SMEs to recognize that they were miscommunicating. For example, in one session two participants from different organizations used the word “communications” — one was referring to information transfer and the other equipment. They did not recognize they were talking past each other until the facilitator intervened.
3. The browser-based elicitation software for structuring the model and scoring tasks (as will be discussed in more detail) was an early beta version of KaDSci developed software. While it worked well when run by trained facilitators who had an understanding of its weaknesses, it caused the SMEs frustration because the software bugs caused irrecoverable data losses.

4. The GeNIe influence diagram software (a free application selected for use to meet project cost constraints and timeline) is designed for use by analysts with some decision analysis training. When the research team described the GeNIe functionality to the emergency management SMEs, they did not believe they could use the tool without assistance.
5. The specialized sensitivity analysis software that the research team used to generate analysis results is a set of custom macros and visual basic software developed for use by the analysts in the team to use in conjunction with GeNIe. No effort was made to train the SMEs on the use of that software. Neither was any effort made to simplify the user experience for non-technical or non-analyst SMEs.
6. The final GeNIe models, particularly before they were binned into phase aligned segments, were complicated and required some interpretation and explanation to the SMEs.

Overall, from a technical perspective, we believe the team met the objectives of the research in that we identified the strengths, weaknesses, and limits of applicability for Value Focused Metrics processes and tools in support of emergency planning, management and, to a limited degree, training.

2.2 VFM Software

The software we used in support of this research project was a collection of freely available modeling packages, KaDSci developed browser-based elicitation tools, and personal analysis tools developed by Professor David F. Davis. This approach allowed the team to keep costs down and to accomplish the core research objectives. Additionally, the research team was attempting to very quickly deploy a software environment that would allow the SMEs to provide their individual input remotely and conveniently, thereby allowing the sessions to focus more completely on communication among SMEs and plan / model refinement. This capability would provide the communities with more immediate benefits for the time they so generously contributed to the research.

In retrospect, it was a mistake to try and push the technology limits on an accelerated time schedule with very limited resources. (The software development was done using KaDSci internal research funds, not DRDC funding.) The following paragraphs assess the successes and failures of the attempted software advances.

Figure 2-1 depicts the impact assessment screen that was developed to record the results of group discussion about the impact a given task has on an objective. It also served as an indicator of what parts of the model were complete by turning completed areas green when a score was recorded. This part of the software worked well. It was operated by the facilitators, which minimized the risk of failure due to unintended actions

on the part of a user. SMEs were able to quickly assign impact scores, modify definitions and descriptions, and have much of their activity recorded in a log for later analysis if desired.

There were a couple of limitations to this interface that should be addressed if and when the VFM approach is further explored by KaDSci. First, a significant manual step was required to move the data from the elicitation environment to the analysis environment. This caused a delay in providing feedback to the SMEs (which was only the length of a coffee break). It also introduced the potential for human error aligning the elicited data with the completed analysis model. Second, when the SMEs broke out into multiple groups, the software did not allow for communication among groups. One action we occasionally saw was a desire to reassign a task to an organization that was not in that group. A few slight modifications to the software would allow for reassignment and eventually collaboration across groups.

Plenary: embc, fortis bc, viha, emergency program, romp, bcas, sar, planning, ess, utilities, embc vancouver island, ministry of environment, fire services, ecc, public works/engineering, canexus, by-law, ecc, nanaimo port authority, moti.

Established Objectives:

- Health Care Plans are created [see definition](#)
- Staffs are prepared [see definition](#)
- Standards and Inventories [see definition](#)
- Subordinate Plans** [see definition](#)
- Victim recovery planning is accomplished [see definition](#)
- Response plans exist [see definition](#)
- Coordinate Regional Support [see definition](#)

Tasks:

- Evacuation Plans Created and Implemented
- Prepare emergency action plan (fire services)
- Prepare evac route working with pub works and transportation planners** (fire services)

Projected Impact:

☐ very high
☐ high
☐ moderate
☐ low
☐ very low

Combinations:

- Exercises and Training are conducted + Conduct Hazard- Risk and Vulnerability Analysis (embc vancouver island) + very high []
- Staffs are prepared + Personal Preparedness and Public Education () + moderate []
- Response plans exist + Evacuation Plans Created and Implemented () + high []
- Subordinate Plans + Prepare evac route working with pub works and transportation planners (fire services) + low []

[<prev](#) [submit](#) [help](#) [submit feedback](#)

Figure 2-1: Value Focused Metrics Impact Scoring

Another possible action that was supported by the software was the ability to both assign existing tasks to new objectives as well as add new tasks that were identified through discussion among the SMEs. Figure 2-2 depicts the screen that facilitators used to record the information provided by the SMEs. Similar to the impact assessment functionality, a manual step on the part of the research team was required to enter this information into the GeNIe influence diagram software and the custom analysis tools. When the participants chose to add multiple tasks, this extended the time required to organize all of the models and data into a form that supported analysis and feedback to the participants.

Submit Task:
[Public Information is available]

☒ Create new:

Find Existing Task By Keyword:

☐ Add Existing Task to Objective:

- 'Advise EOC of possible/potential of situation including potential, hazards, health risks, road condition, etc, as identified/reported by FD personnel in the field.
- 'First Responders organized and assigned to priority tasks/emergencies
- Accept reports of criminal activity
- Activate EOC
- Activate ESS
- Activate ESS receptions centres
- Activate and staff EOC to respond to emergency using city and regional response plans.
- Activate back-up facilities and communication plans as necessary (BCP)

Assign Task to Objective(s):

- ☒ Public Information is available
- ☐ General situational awareness is maintained
- ☐ Immediate Damage Assessment conducted
- ☐ First Responders are activated
- ☐ Transportation and road clearance for responder and logistics movement
- ☐ Provide for Responder Health and Safety

Attach Organization(s):

- ☐ BCAS
- ☐ BY-LAW
- ☐ CANEXUS
- ☐ COMMUNICATIONS

Add New Organization:

[help](#) [submit feedback](#)

Figure 2-2: Value Focused Metrics New Task

After the team completed impact assessment of the first two models with the communities (Interface Fire and Propane Spill), there was a requirement to elicit the tasks for the larger models (Earthquake). Because the travel budget was limited, the opportunity to accomplish this in person was not possible, and the feedback from the participants was that the paper- and meeting-based approach used for the first two models was not ideal. In an attempt to help participants, the research team (again, using KaDSci R&D funding) extended the VFMNet software to support task elicitation over the

internet. The SMEs that were able to use the interface, shown in Figure 2-3, found it to be intuitive and easy to follow. Unfortunately, the system experienced repeated failures, causing data to be lost and SMEs to be locked out of the system. KaDSci's development team was unable to replicate the bug, and the specific cause could not be identified. Consequently, the team reverted to the original approach to elicit the requisite information from the SMEs.

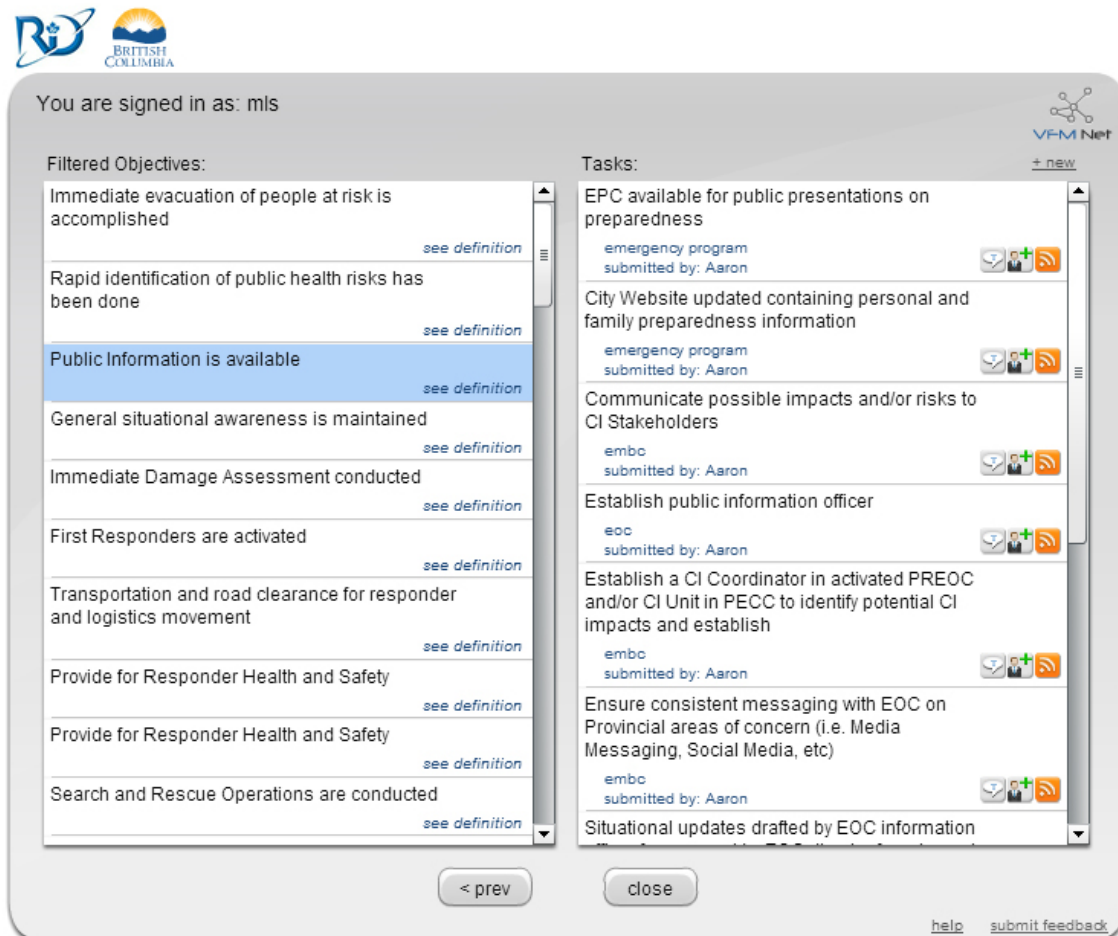


Figure 2-3: Value Focused Metrics Task Elicitation

Subsequent analysis of the software design and implemented code revealed that the limitation was the result of the team's use of the GeNIe data structure as the foundation for storing data. In simple terms, we had pushed past the limits of a very narrowly defined XML-based text file to provide the additional functionality required for the information being elicited and the distributed activity. Future attempts to provide this functionality should redesign the software architecture so that the influence diagram (in this case, GeNIe) is one element of a more robust design. This reorientation will help address other software limitations that are identified in this assessment. (KaDSci intends to continue working this challenge as resources permit.)

2.3 Analysis with VFM

Once the models were fully specified and quantitative analysis was possible, the team provided feedback to the SME participants regarding the model results. As pointed out in other volumes, these models became large enough that the impact of individual tasks on the improvement of the identified fundamental objectives was very limited. To make the analysis more useful to the SMEs, the research team developed a decomposition strategy that organized tasks and objectives by pillar. This accomplished two things. First, it created model segments that were more easily comprehended by SMEs. It also revealed some logical, temporally related inconsistencies in SME provided information where, for example, a response task contributed to a preparedness objective. This is an area that requires future research.

3 User Assessment

3.1 Anecdotal Observations and Feedback from Participants

The team followed the process described in the introduction, addressing one scenario at a time. As noted in previous reports, the research team made two trips to the participating communities and spent approximately a week in day-long sessions with each of the communities to compose and assess models for the two scenarios developed for their community. In addition to the on-site events, the research team interacted with community participants remotely via phone meetings, web-based tools, and e-mail to identify tasks that should be included in the models, as well as refine the structure of the models leading up to the events where models were scored and the analysis was accomplished.

In general, the verbal feedback from the participants was that the VFM process was unclear at first, but was easier to follow and execute after they had iterated through it once completely. One artifact of the experiment that may have added to the participants' challenge was that the team was simultaneously asking them for information relating to different scenarios for different steps in the VFM process. This was necessary to meet the timeline constraints of the project, and to obtain as much information from the community SMEs as possible in the limited time allowed. But it added to the complexity of the effort and the steepness of the learning curve for the SMEs.

Most participants indicated that they would not be comfortable attempting the VFM process without a trained facilitator / analyst involved. There were multiple reasons expressed. Some of the most frequently expressed were:

- The learning curve associated with the GeNIe software, especially for emergency management SMEs that do not possess advanced education in the quantitative sciences or engineering.
- The time and labor required to execute the process completely.
- The improved communication that occurs among stakeholders when a trained facilitator is involved.
- The process was new and had a rather steep learning curve.

On the positive side, most participants indicated that the discussions they had with other stakeholders in the emergency management community were the most valuable part of the effort. In many cases, even in these small communities, these included people with whom they did not regularly communicate, and they may not have known about important details of dependencies that exist between their organizations, especially in relation to disaster response. The discussions were observed to occur in a few different

ways. First, the discussions were stimulated as a result of probative questions by the facilitator, either exploring a relationship that is identified in the model or questions asked by SMEs of other SMEs. Second, based on probative questions presented by the facilitator as a result of something said by a SME or SMEs that wasn't yet in the model, or may have even been independent of the model, but appeared important. Finally (perhaps most importantly), the coffee break chat that was made possible by the co-location and stimulated by the discussion during the formal model elicitation sessions.

3.2 Participant Survey Results

In addition to the anecdotal observations feedback that was collected during the on-site sessions, the research team developed and distributed a survey to the participants in an attempt to collect some more systematic feedback about the VFM process. The survey was distributed to all of the participants for whom the team had e-mail addresses (approximately 30). Unfortunately, even after reminders, there were only four responses to the survey. Consequently, aggregate statistical analysis is of little to no utility. For completeness of reporting, the survey questions and the responses that were received are contained at Annex A.

Overall, the survey responses were consistent with the anecdotal information reported above. One quote from a survey response concisely highlights the potential, as well as the remaining research challenge relating to VFM research:

“Once I understood the process, I liked it. It made me think about things that I had previously not considered. The biggest thing I learned is how important it is to have all (or as many) stakeholders at the table as the outcome is only as good as the input. A broad range of input is required. This is a challenge that has been a hurdle in emergency planning for ever and an issue that is not going to be solved by the model. When the process has good participation, I feel that it will yield excellent plans.”

One other, less positive piece of feedback had to do with the usability of the software:

“Better online tools would have helped — we experienced difficulty entering the tasks and objectives into the model. The visual representation of the model is not user friendly and will preclude effective engagement from the public, private stakeholders, and even some professionals in this field. There needs to be a better visual model — perhaps a linear chart or sequential chart with feedback arrows to show integration across phases — the concept of a visual aid is to enhance understanding and the complex 'messy' web made it more complicated for me.”

These observations are also consistent with the research team's technical observations and experience in interacting with the participants, and attempting to push the free software and beta-level elicitation tools KaDSci developed beyond the limits of their original intended purposes and maturity at the time.

Overall, the feedback from the participants was invaluable in helping to focus future research efforts.

4 Conclusions and Recommendations for Future Research

4.1 Conclusions

Overall, the team's assessment remains that a Value Focused Metrics based approach to emergency management planning and assessment potentially has a place in a future emergency manager's toolkit. The kinds of contributions that this approach can make to improving emergency planning and assessment fill many of the known limitations to current approaches and technology. That said, additional work is required to more closely align the vocabulary and frame of reference with that of emergency management professionals.

4.2 Recommendations for Future Research

The research team believes that these findings reinforce the belief that Value Focused Metrics modeling techniques have potential for supporting emergency management planning and assessment. That said, the significance of this particular project is that it can be used to help focus future research efforts intended to support emergency management planning. Assertions of utility of the method beyond that are premature.

Key hypotheses that are worthy of additional exploration are:

1. Modular VFM model templates can be used to ease the model development burden on emergency professionals, thereby allowing them to more efficiently and effectively develop and assess disaster related plans.
2. Web-based elicitation and analytic use of VFM models can be successfully accomplished by the set of multi-disciplinary, multi-jurisdictional organizations that are required for effective disaster management planning.
3. A VFM computational infrastructure can be developed and implemented that will support timely and effective development and analysis of models large enough to support disaster planning and assessment.

References

- [1] Maxwell, Daniel and David Davis (2013), *Value Focused Metrics for Improved Emergency Management Planning: Part 1: Objectives Measurement Framework*, Contract Report DRDC CSS 2013-020, October 2013
- [2] Maxwell, Daniel and David Davis (2013), *Value Focused Metrics for Improved Emergency Management Planning: Part 2: Identification and Assessment of Mission Tasks*, Contract Report DRDC CSS 2013-021, November 2013
- [3] Maxwell, Daniel and David Davis (2013), *Value Focused Metrics for Improved Emergency Preparedness Planning: Part 3: “Unified” Baseline Value Focused Metrics Model*, Contract Report DRDC CSS 2013-022, November 2013

Annex A Participant Survey Results

Government of Canada / Gouvernement du Canada

Canadian Safety and Security Program

Final Exercise Results –
Survey Responses (Total = 4)

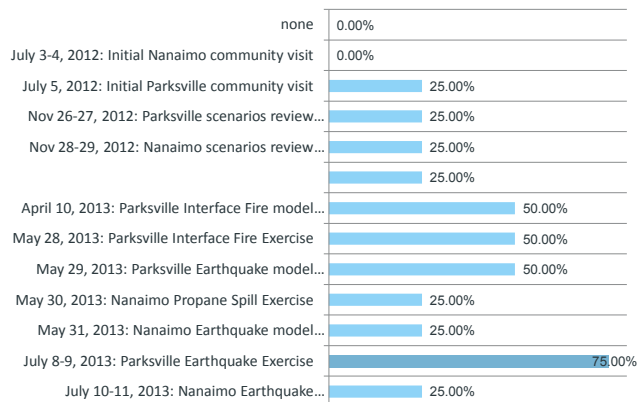
Community-Wide Hazard Risk
Management Planning
Parksville Interface Fire
Nanaimo Propane Spill
Parksville and Nanaimo Earthquakes

Lead by Evidence (LBE) Canada - Centre for Security Science

Canada

Survey Question 1

What Value Focused Modeling and Discussion sessions did you participate?



BRITISH COLUMBIA
The Best Place on Earth

City of Parksville

CITY OF NANAIMO
THE NATURE CITY

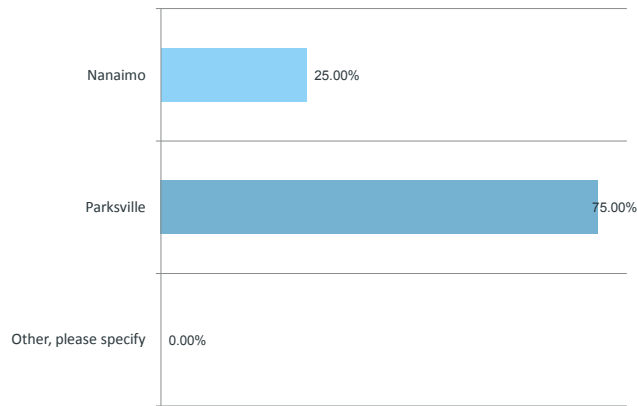
KADSci

Canadian Safety and Security Program

2

Survey Question 2

Where did you attend the exercise scenario?



City of
Parksville

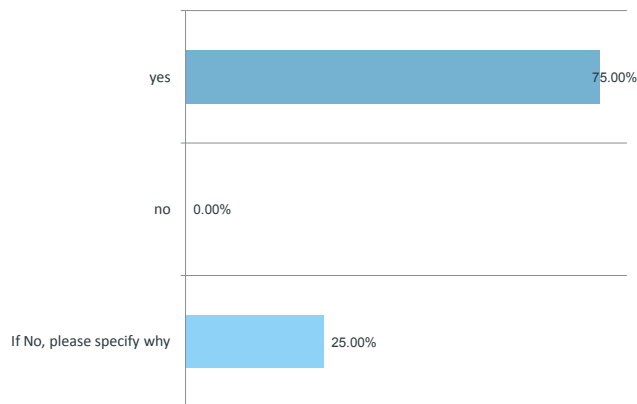


Canadian Safety
and Security Program

3

Survey Question 3

Did you participate in the final briefing conducted by DRDC?



City of
Parksville

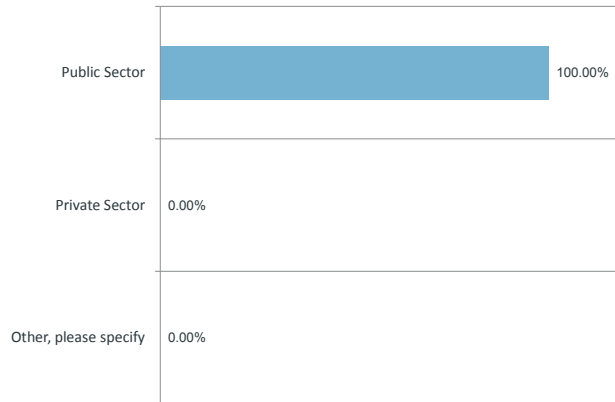


Canadian Safety
and Security Program

4

Survey Question 4

Is your employment in the public or private sector?



City of
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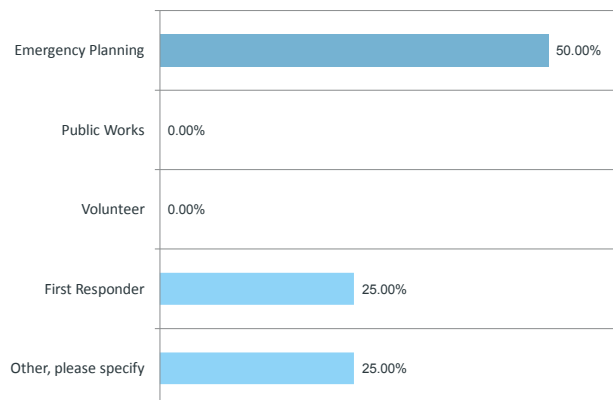


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Survey Question 5

What position best describes your role in the emergency management system?



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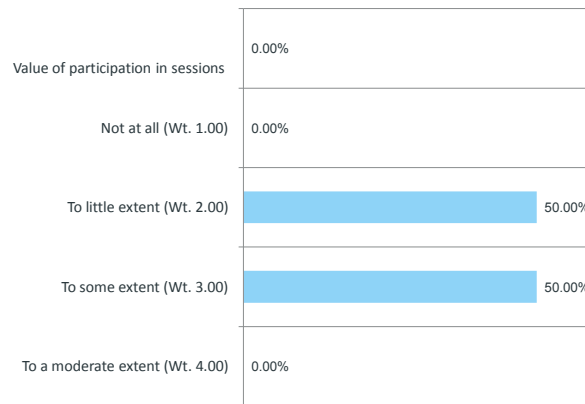


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Survey Question 6

How valuable did you find participation in the Value Focused Model development process?



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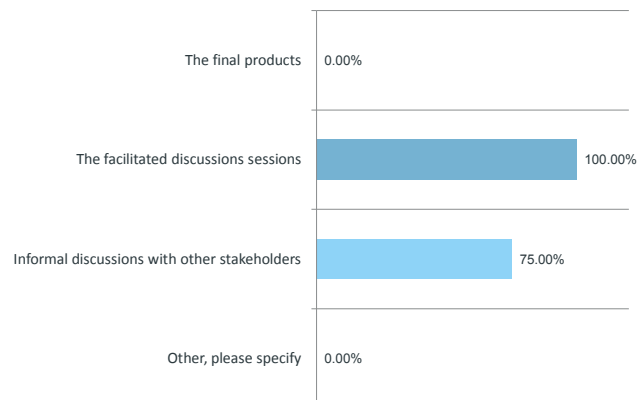


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Survey Question 7

What part of the process did you find most valuable?



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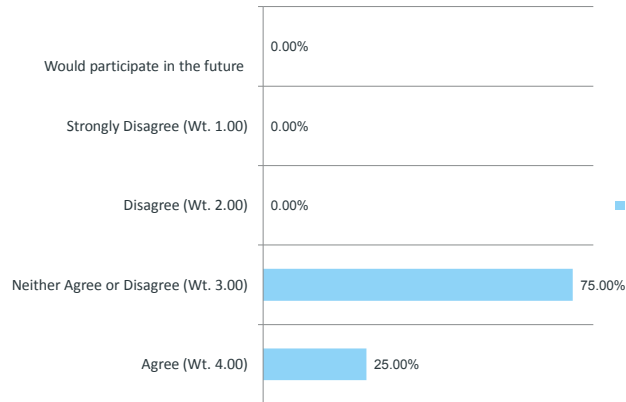


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Survey Question 8

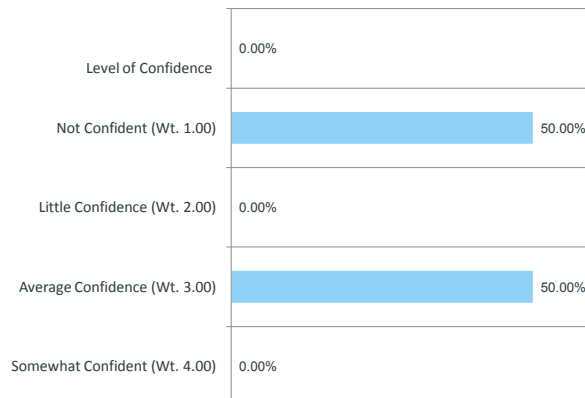
Do you believe that you would want to participate in this process in the future?



9

Survey Question 9

If you were to attempt this process again, how confident would you be doing this without a facilitator?



10

Survey Question 10

Do you have any recommendations on how the process might be improved to make it easier to execute?

- I did not participate in all sessions, but it would have been helpful for me to have more time to review the information in advance of the face-to-face sessions so that I could participate more effectively, and perhaps even seek out input from colleagues before attending the in-person sessions.
- I believe that the process needs to be simplified. I found that the explanations were very helpful, along with doing small portions, i.e., focusing on one objective at a time. Every participant needs to have a basic understanding of the process prior to being involved, perhaps an online training/education piece that explains the process and components. I was thrown in the mix after the initial meeting, and so when I first joined the group, I was confronted with a large chart and table, both of which confused me. After learning the system, I understood both, however, I think that kind of introduction is confusing.
- Facilitating this process with software to guide collection of and interpret data would improve the process to a manageable point we would consider using for the remaining items on our HRVA.
- Continuous reminders/feedback. When we don't do this every day, it is hard to keep up!



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Survey Question 11

Do you have any recommendations on how the process and results might be improved to make it more useful?

- Better online tools would have helped — we experienced difficulty entering the tasks and objectives into the model. The visual representation of the model is not user friendly and will preclude effective engagement from the public, private stakeholders, and even some professionals in this field. There needs to be a better visual model — perhaps a linear chart or sequential chart with feedback arrows to show integration across phases — the concept of a visual aid is to enhance understanding and the complex 'messy' web made it more complicated for me.
- Once I understood the process, I liked it. It made me think about things that I had previously not considered. The biggest thing I learned is how important it is to have all (or as many) stakeholders at the table as the outcome is only as good as the input. A broad range of input is required. This is a challenge that has been a hurdle in emergency planning for ever and an issue that is not going to be solved by the model. When the process has good participation, I feel that it will yield excellent plans.
- The final report was a review of data which most people were already aware of. An additional step is needed to take the data and convert it into a useable response plan.
- None



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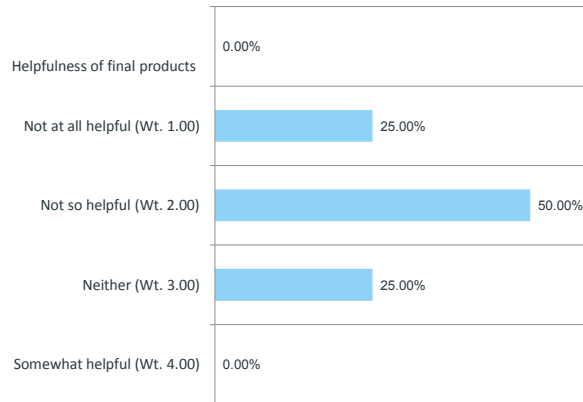


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Survey Question 12

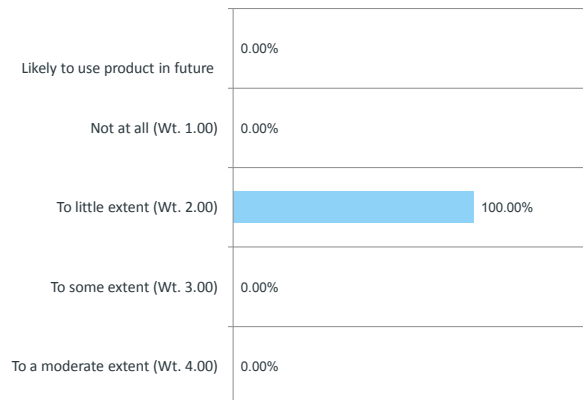
How helpful did you find the final project outputs?



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Survey Question 13

How likely are you to use the final products in the future?



14

DOCUMENT CONTROL DATA (Security classification of title, body of abstract and indexing annotation must be entered when the overall document is classified)		
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<p>12. DOCUMENT ANNOUNCEMENT (Any limitation to the bibliographic announcement of this document. This will normally correspond to the Document Availability (11). However, where further distribution (beyond the audience specified in (11) is possible, a wider announcement audience may be selected.))</p> <p>Unlimited</p>	
<p>13. ABSTRACT (A brief and factual summary of the document. It may also appear elsewhere in the body of the document itself. It is highly desirable that the abstract of classified documents be unclassified. Each paragraph of the abstract shall begin with an indication of the security classification of the information in the paragraph (unless the document itself is unclassified) represented as (S), (C), (R), or (U). It is not necessary to include here abstracts in both official languages unless the text is bilingual.)</p> <p>This report is part four of a four part series describing a set of discovery experiments that explored how a decision analytic modeling approach called Value Focused Metrics (VFM) was applied to experiments for emergency management planning processes in two cities on Vancouver Island using four disaster scenarios. This volume focuses on the assessment of the methodology based on what was learned through the interaction with subject matter experts (SMEs) in the communities, reducing the collected data into computational models, and conducting exemplar analyses using that collected data and models. The assessment is reported from three perspectives. First, is an overall project level assessment concerning lessons learned about conducting research into high stakes contingencies (like emergency management planning). The second are the things the researchers learned about applying VFM to the improvement emergency management operations. The third perspective is the feedback received from the participating subject matter experts on the Value Focused Metrics process and utility of the model results, including recommendations from their perspective on how to improve it. All three of the perspectives provide valuable insights that can be used both as a foundation for future research and, in some cases, applied modeling and analysis in support of emergency management.</p> <p>Le présent rapport est le quatrième et dernier volet d'une série décrivant comment une</p>	

approche de modélisation analytique décisionnelle intitulée « mesures axées sur les valeurs » (MAV) a été appliquée aux processus de planification de la gestion des urgences dans deux villes, situées sur l'île de Vancouver, à l'aide de quatre scénarios de catastrophe. Ce document porte sur l'évaluation de la méthodologie en fonction des leçons retenues de l'interaction des experts en la matière avec les communautés, en réduisant les données recueillies dans les modèles informatiques et en effectuant des analyses exemplaires à l'aide de ces données et modèles. L'évaluation est présentée selon trois points de vue : 1) évaluation globale à l'échelle des projets concernant les leçons retenues de la recherche sur des éventualités considérables (telle la planification de la gestion des urgences); 2) éléments découverts par les chercheurs concernant l'application de MAV pour améliorer la gestion des urgences; 3) commentaires des experts en la matière concernant le processus de MAV et l'utilité des résultats des modèles, y compris leurs recommandations sur la façon de l'améliorer. Les trois points de vue fournissent de précieux renseignements pouvant être utilisés comme base pour les recherches à venir et, dans certains cas, comme modélisation et analyse appliquées en soutien à la gestion des urgences.

14. KEYWORDS, DESCRIPTORS or IDENTIFIERS

Emergency Management; Prevention; Mitigation; Preparedness; Response; Recovery; Emergency Planning; Value Focused Thinking; Value Focused Metrics; Mission to task analysis; Strategy to task analysis; Risk Management; Community planning; Models; Objectives; Tasks; Metrics