Reachback in Crisis Management: Lessons Learned from the Military Domain

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ABSTRACT

Military and crisis management organizations show many similarities. Within the military domain, a study is being done on the use of reachback concepts for the Royal Netherlands Army (RNLA) brigade staff. This paper shows that the results are applicable to the crisis management domain. However, there are differences between the two domains as well. Therefore, the reachback concepts should be tailored to the crisis management domain. The Interactive Collaborative Information Systems (ICIS) game-based simulation platform offers a suitable environment to develop these concepts and test them.

Keywords

Reachback, crisis management, organization, team work, information support, leadership, Royal Netherlands Army (RNLA).

INTRODUCTION

During crisis management, people often have to work under high time pressure and deal with uncertainty about the situation. The information needed is not always at hand, and specialists are not always reachable for consult. As a consequence, the decision making process is not optimally performed. With today's technology, it should be possible to support crisis managers with reachback facilities. Background support can enhance crisis managers performance, from the firefighter at the scene to the high level crisis management team. However, the success of reachback depends on more than technology alone. Technology should be applied in a way in which it increases the users task performance, instead of creating extra work that slows down the crisis management process. In a project for the Royal Netherlands Army (RNLA), we are exploring reachback facilities for the brigade command post (Rypkema et al., in press). The aim of the project is to develop a command post concept, that fits the needs of future operations. Besides technology, we approach the problem from other perspectives. In this paper, we discuss our experiences from this study and apply the lessons learned to the crisis management domain. Also, we suggest to use a game-based simulation platform to improve and test reachback concepts for the crisis management domain.

REACHBACK WITHIN THE MILITARY DOMAIN

Definition reachback

From a military perspective, Neal (2000) defines reachback as 'the electronic ability to exploit organic and non-organic resources, capabilities and expertise, which by design are not located in theater'. In a broader sense, reachback refers to a situation where resources, capabilities and expertise are at a physical distance from the area of interest, supporting the people in the area to perform their tasks. This distant support is only possible when the necessary facilitating measures are taken. Neal refers to this as 'electronic ability'. Electronic systems are needed for communication and information transfer to and from the people in the area. These kind of systems are developed in different projects around the world, for example, The Command Post Anywhere (CPA) concept (Cheah et al., 2005) and the Command Post of the Future Project by Maya Viz (2003). The projects show promising support tools for distributed command and control. However, we think that electronic ability alone is not enough to make reachback a success. The organization of work, interpersonal issues, and information exchange should be taken into account as well. This will be discussed further on in this paper.

Why reachback?

Reachback facilities have advantages, that can improve the operational performance of a military command post. The most important advantages are the following:

Safety. Less people are inside the operation area, so a smaller number of people is exposed to violence.

Mobility. Fewer people in the operation area are easier to relocate. Thereby, reachback facilities make it more easy for staff members (for example, the commander) to move while keeping informed about the situation.

Flexibility. With reachback facilities more alternative plans can be made, which makes it more adaptable to changes in the situation.

Specialist support. Specialists are often scarce in military operations. They can be at only one place at the same time. By using reachback facilities, the specialist can give support at different locations.

Logistics. Less people and material have to be transported to and within the operation area.

Detection. A smaller command post is less likely to be detected by the opposed force.

Focus areas

In our study, we focus on four areas as described below.

Organization

When using reachback it has to be defined how it is organized. The right people with the right skills have to be at the right place. So, we questioned ourselves which staff members have to be in the operation area, and who can stay outside. Besides that, it is possible that reachback supported operations may demand other people with specific skills, that were not available before.

Team work

In a reachback context, team members are distributed among different locations. This means that people have to work together without being at the same place. Team work must be optimally supported, within and between different locations. Therefore, it should be clear what people have to work together in different situations, what their relation is and how their team work can be supported.

Leadership

In traditional circumstances, commanders and their staff are leading the operation. When they have, for example, reachback facilities in their vehicles, they are able to move to different places (e.g., lower commanders) more easily. As a result, they spend less time with their staff. This has consequences for the way commanders are leading their units and might demand different leadership skills.

Information support

Reachback makes it possible to have access to a large amount of information and support. A risk is that the amount of information explodes and members have to deal with information overload. Members should only get relevant information at the right time. 'Relevant' might be different for one member or team than for others. Therefore, a thorough relevance analysis is needed for every individual and team. Besides the content of information, it is also important in what way it is presented and controlled. In a military context, the working environment might be noisy, shaky, dusty and small. An ordinary PC with mouse, keyboard and monitor does not suffice under these circumstances.

Main elements of the reachback concept

The concept contains three main parts: the command element, near reachback and far reachback. (see Figure 1). Less urgent staff activities, that don't require direct presence in the operational area, are performed in the far reachback. For example, (parts of) future plans can be made outside of the operational area, as long as the right information is available. Other tasks, however, can only be performed properly by being in the operational area. For example, being in direct contact with local authorities might be important, or estimating the situation properly is only possible by being there. Within the operational area, two entities are present: the command element and the near reachback. The command element is a moving platform (e.g. a vehicle). This increases the commanders mobility, enabling him to visit others like lower commanders or local authorities.

In the first phase of the project, we concentrated on the command element and its communication with the near reachback. The other elements will be explored in a later phase.

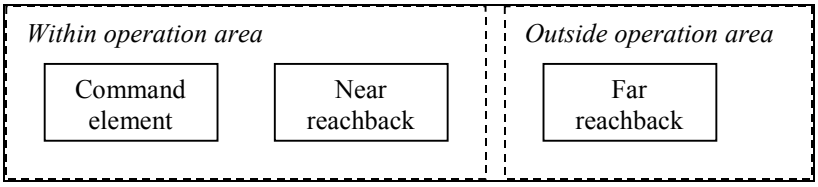

Figure 1. Reachback concept elements

A more detailed view on the command element is found in Figure 2. Two main tasks in command and control are collecting information about the current situation (intelligence) and making plans to achieve the operational goals (planning). Therefore, besides the commander, two assistants are present in the command element: the assessor and planner. The assessor is responsible for making an overview of the current situation (situation awareness) and possible future consequences. Given the situation, the planner is responsible for making plans to achieve the operational goals. The commander, assessor and planner work as a team, that is supported by a *shared workspace*. It shows a common picture of the current situation, threats and plans, which they can discuss. Also, camera shots of the reachback location are available, in order to create a sense of presence.

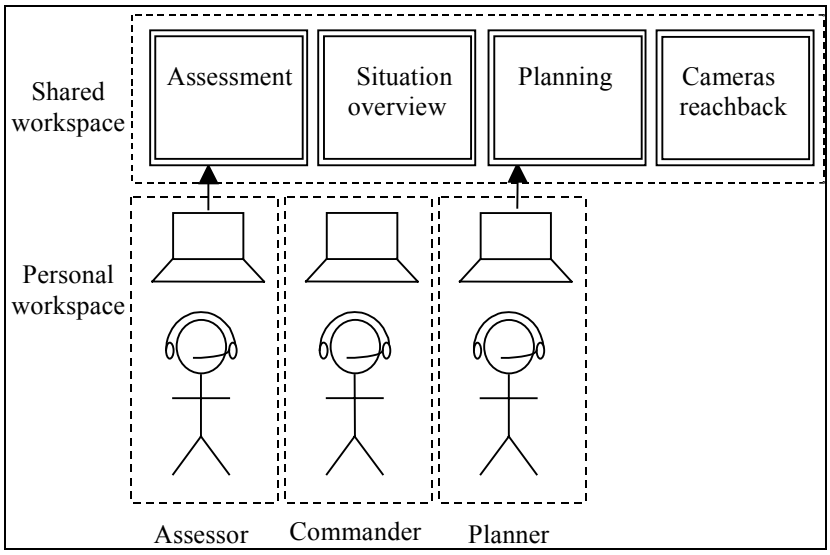

Figure 2. The command element

Individually every member has a *personal workspace*, in which they have access to information and tools they need to perform their individual tasks. Besides that, it gives them access to their counterparts in the reachback. The command element members have a speech and camera connection with their counterparts. Counterparts have the role of sparring partners receiving assignments, that can be performed by other members in the reachback. Besides that, command element members and counterparts use a shared application, which enables them to work simultaneously in shared documents.

Results so far

The concept was evaluated during an exercise of the RNLA 43 Brigade staff. A peace keeping scenario was played for two hours, while the commander and assistants were separated from the rest of the staff. The command element members were able to communicate with their counterparts by using voice, video and MS Onenote 2003. During the exercise, observations were made by the experimenters. Right after the exercise, the staff members filled in a questionnaire. This was followed by a group discussion about the experiences of the staff members. Finally, a personal interview with the commander was performed.

In general, the reachback concept was judged as promising concept for future operations. Besides that, the staff came up with suggestions for improvements.

Organization. The fact that all communication went through the counterparts resulted in an information funnel. It would be more convenient to have direct access to the required person. The idea of having three people in the command element is only suitable for particular situations. The number of command element members should be adjustable, depending on the operation.

Team work. Dividing the staff can lead to differences in team awareness at the two locations. This means that the two groups may have different ideas about the situation and how to act. Team building should take place before the operation in order to prevent this. Group discussions between command element and reachback should be supported.

Leadership. A good leader should be trusted by its team members. It takes some time for a commander to establish leadership and be trusted by the staff. This process must take place during exercises and preparation before a mission. Still, the commander should not leave the staff twenty-four hours a day, but return to the staff when possible.

Information support. The staff should be well trained in using the support systems. It takes some effort to learn to use them and unknown functions are not used. Besides that, the reachback must push the right information at the right time into the command element. This means that the reachback should also function as an information manager.

So far, the study was performed in an explorative way. Our next step is to improve the concept, using a more theoretical approach.

APPLYING THE LESSONS LEARNED TO THE CRISIS MANAGEMENT DOMAIN

Military and crisis management organizations show a lot of similarities. Both have a hierarchical structure with different levels, containing a strategic layer, a tactical layer and an operational layer[1]. Second, both organizations are active during high-demand situations, requiring fast and effective actions. Third, situation awareness and decision making are major issues in both organizations and therefore should be optimally supported. The earlier mentioned advantages of safety, mobility, flexibility and expert support are applicable to the crisis management domain too. Thereby, it is expected that the tasks of crisis management and military organizations will show an increasing overlap in the future. For example, when a terrorist attack takes place, it is most likely that the army will participate in the crisis management process as well. Below lessons learned are summarized that are applicable to the crisis management domain.

Organization. During crises, a crisis management team will gather to manage the situation. The team composition depends on the level or situation. As in the army study, the crisis management team should be scalable. However, people that might be present in this team should be defined beforehand. This is important, because it has to be known with whom this people need to have contact during the crisis. For example, a fire commander must be able to contact other representatives of his department. Besides that, it should be defined what support the team might need. For example, if there is a gas explosion, it may need the advise of an expert on this matter.

Team work. The distributed crisis management team should be able to work together in an optimal way. A shared workspace that supports the team must therefore be in place. Also, the team members at different locations must be able to share and discuss information with distant partners. As shown in the military study, team building before the crisis should improve team performance during the crisis itself.

Leadership. Crisis management leaders should be able to establish their leadership before a crisis takes place in order to gain trust. This might be a problem in crisis management situations, because teams are often composed at hoc. Therefore, crisis management exercises should be held as much as possible.

Information support. Information about the current situation and plans are important at any moment. It should be easy accessible and shown in a comprehensible manner. One of the tasks of reachback members is to deliver useful information at the right time. Therefore, they should have a good understanding of the situation and have an information management function. Of course, all members should be able to control the support systems sufficiently.

A great difference between military and crisis management organization is the amount of training and preparation. A military brigade exercises on a regular base. Besides that, in most cases, it has a certain amount of time to prepare a mission, while a crisis is mostly unexpected. Civil emergency teams have less possibilities

[1] In both domains the same terms are used, but have a different meaning. In most military domains, the level order is strategic-operational-tactical, while in crisis management it is strategic-tactical-operational.

to train and teams are often composed ad hoc. These fact should be taken into account when exploring reachback facilities in crisis management organizations.

IMPROVING AND TESTING CRISIS MANAGEMENT REACHBACK CONCEPTS

The army study was performed during an exercise of the brigade staff. In crisis management, such exercise are scarce. Besides that, they are expensive, hard to control and hardly repeatable. Simulating crisis situations might be a solution for these problems.

Within the Interactive Collaborative Information Systems (ICIS) project, we are exploring the use of adaptive interfaces in crisis management environments (Brake et al., 2006). The goal of adding adaptivity to the user interface is to be able to anticipate informational needs or desires of the user and provide that information without the requirement of an explicit control input by the user (Bennett, Cress, Hettinger, Stautberg and Haas, 2001). From the information support perspective, an adaptive system has an information management function, in which content and presentation of information adapts to the environmental context and user needs. For testing the adaptive user interface concepts the Unreal Tournament gaming environment is used. This environment is adjusted to a crisis management environment, in which firemen have to rescue victims.

We think this environment can also be used to test and develop reachback concepts for crisis management, not only from the information support perspective, but also from the perspective of organization, team work and leadership. The environment gives the opportunity to evaluate different organization, team, leadership en information support concepts under controlled conditions. Within the ICIS project, we intent to develop and evaluate different forms of reachback organization in this test environment.

CONCLUSION

Military and crisis management organizations show many similarities. This makes the results from a reachback study in the military domain for a great deal applicable to crisis management. Reachback creates advantages in the field of safety, mobility, flexibility and expert support. However, there are also differences like training and preparation time. Therefore, reachback concepts should be tailor-made to crisis management situations. The ICIS game-based simulation platform is a suitable tool to develop crisis management reachback concepts and test them in a controlled manner.

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REFERENCES

1. Bennett, K.B., Cress, J.D., Hettinger, L.J., Stautberg, D., and Haas, M.W. (2001). *A Theoretical Analysis and Preliminary Investigation of Dynamically Adaptive Interfaces*. International Journal of Aviation Psychology, 11, 2, 169-195.
2. Brake, G. te, Greef, T. de, Lindenberg, J., Rypkema, J. and Smets, N (2006). *Developing Adaptive User Interfaces Using a Game-based Simulation Environment*. Submission for the 3rd International ISCRAM, Newark, NJ (USA), May 2006.
3. Cheah, M, Chew, L.P., Fong, G., Teh, C.A., Toh, E. (2005). *Command Post Anywhere Experiment - Exploiting the use of TeamSight for Ops Concepts*. 10th International Command and Control Research and Technology Symposium, McLean, Virginia, June 2005.
4. Neal, Major John M (2000). *A Look at Reachback*. Military Review, September-October 2000, 39.
5. Maya Viz (2003) – *Command Post of the Future Project*. Product information flyer. http://www.mayaviz.com
6. Rypkema, J.A., Bemmel, I.E. van, Dongen, K. van, Kleij, R.van der, Kurstjens, S., Lee, M.D.E. van der, Ringelesteijn, A., Weima, I., Wiebes, M.C. (in press). *A Reachback Concept for the Future Command Post*. Submission for the 11th ICCRTS - Coalition Command and Control in the Networked Era, Cambridge, UK; September 26-28.