Information Systems for Disaster Management Training: Investigating User Needs with a Design Science Research Approach

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ABSTRACT

Societal threats such as global warming and terror attacks make crisis preparedness and crisis training a major priority in governments worldwide. Unfortunately, training is limited, partly due to complex and resource-demanding planning of traditional exercises. Several crisis training software have been developed as a complement. However, reports in research on their usage are rare, which indicates that the diffusion is limited. A potential explanation is that the systems fail to meet important needs in the organizations and/or sound information systems (IS) design principles. This paper describes the first phase of a design science research (DSR) project aiming at developing information systems for disaster management (ISDM) training, and accompanying training methods in local and regional governments. The purpose of this paper is to investigate perceived problems in current crisis training and identify opportunities for ISDM training in the application domain. Another purpose is to outline expected artifacts in the project.

Keywords

Crisis management training, information systems for disaster management, user need analysis, design science research.

INTRODUCTION

Natural disasters such as floods and storms are causing loss of human lives and severe damages worldwide. Only in 2016 approximately 8 250 persons were killed in natural disasters and the global economic losses were estimated at 210 billion USD, stemming from 315 separate events (Aon Benfield, 2017). Due to global warming, there is a risk that natural disasters will become even more frequent in the future. In addition, man-made crises such as terrorism and riots are threating our society. A vital part of a sound preparedness for crises and disasters is crisis training. Steinberger (2016:70), for example, argues: ”Training provides skills, informs those involved about every actor’s roles and responsibilities, builds informal networks and serves as a stress test for disaster response plans”. In this paper crisis *training* is used an “umbrella concept” that includes everything from individuals’ training for their role in a crisis to cross-functional and multi-agency exercises. Furthermore, while the concepts emergency, crisis and disaster represent a sliding scale of increased severity (Boin & McConell, 2007) we will use the concept *crisis* training to cover training for all of these, starting from Steinberger’s (2016:61, sic) defining of disasters as “unplanned natural or man-made events with a sudden and severe negative impact on human live, the functioning of society and/or the physical environment”.

Traditional crisis exercises require the trainees to meet at a fixed time for table top discussions, crisis simulation with counter-acting or live field exercises. Planning and coordinating these events are complex and resource-demanding which result in a long planning time (e.g. Field et al. 2012). A crisis scenario needs to be developed, different organizations/roles coordinated, a suitable date for the exercise set, resources made available, etc. With a long planning time there will also be a long time between exercises in many organizations. In recent years, several computer-based training applications have been developed to complement traditional training methods, potentially enabling resource-efficient, flexible and frequent training (c.f. Lukosch et al., 2012). However, although numerous applications exist and have been tested in crises training (e.g. Ahmad et al. 2012; Cesta, 2014; Lukosch et al. 2012), their diffusion seems to be limited as reports in research on ongoing usage are rare (Magnusson & Öberg, 2015). This is puzzling considering the fast digitalization and the importance of crisis preparedness in all of society. Furthermore, Cesta et al. (2014) claim that most of the state-of-the-art training support systems are aimed at the operational or tactic level. This is unfortunate as the strategic level in particular needs more training opportunities. As crises are rare, strategic level actors seldom get to practice crisis handling in their daily operations and building up their skills is thus difficult (Sniezek et al., 2002).

Several theories have been applied in the IS research field to explain the up-take or adoption of different innovations. In the technology acceptance model (TAM), for example, perceived usefulness and perceived ease-of-use of an IT system have been found to have a direct positive effect on the intentions to use information technology (IT) (Venkatesh & Davis, 2000). For new IT products to be adopted and used the developers thus need to have a well-grounded understanding of the features that are useful for the target groups. This is in line with design science research methodology (DSRM) where identification of problems and opportunities in the user context is a recommended early activity of the development process (e.g. Drechsler & Hevner, 2016; Peffers et al. 2007). So far, there are a few examples of studies using a DSR approach in the development of ISDM training software.

We have only identified a few earlier studies of what Drechsler & Hevner (2016) call the external and internal environment of crisis management training. This comprises the people or target audience for ISDM training, the societal and organizational systems involved, the technical systems in use today, and last but not least, the problems encountered in current crisis training and the opportunities perceived with ISDM training (Drechsler & Hevner, 2016). The study of problems and opportunities in its organizational context as a separate step beforehand, or as a first step in systems development, is sometimes called need analysis, need elicitation, or change analysis. We have found few such studies in the area of crisis management training. It is important to increase knowledge about user needs for ISDM based training in government agencies in order to facilitate adoption and design software that creates value. The purpose of this study is therefore *to investigate perceived problems in current crisis training and identify opportunities for ISDM training in local and regional government agencies.*

This will be done by gathering empirical data from a Swedish-Norwegian R&D project outlined later in this paper. The project strives to follow a DSRM approach. A second purpose of this research-in-progress paper is thus to outline expected design artifacts and suggest research fields for their scientific grounding.

LITERATURE REVIEW

CRISIS MANAGEMENT TRAINING

Emergency preparedness is defined by Perry and Lindell (2003, p. 338) as "the readiness of a political jurisdiction to react constructively to threats from the environment in a way that minimizes the negative consequences of impact for the health and safety of individuals and the integrity and functioning of physical structures and systems." Local authorities in Norway are obliged to regularly make a risk and vulnerability analysis and to have an emergency plan (Meum & Munkvold, 2013). Also, disaster exercises are mandated in regulation in most industrialized countries (Perry 2004 referring to Selvarajah, 1993[1]). Exercises serve several functions, one of which is to test the plan (Perry, 2004). Frequent and efficient training is often regarded as crucial for organizations to be prepared for crises. McConnell and Drennan (2006, p. 67), for example, argue that "the usefulness of simulated and full-scale exercises is almost universally lauded". However, they continue by stating that it is impossible to for every organization to exercise every possible scenario. Although it may be impossible to know or cover the exact training needs, Sniezek et al. (2002, p. 150) claim that "it is likely that domain knowledge and procedural knowledge as well as general problem solving strategies are crucial to crisis management". Sniezek et al. (2002, p. 153) also list a number of problems with crisis management training.

[1] Selvarajah, C.T. (1993) Training System Effectiveness in Australia, *Human Systems Management*, 13, 3, 295–302.

Among these are the time required for training, its costs and assessing the effectiveness of training, in addition to the problem of finding and recruiting experts, defining a training content and performing team training. Other problems are connected to the interaction with the trainer, giving feedback to trainees, the realism in training, and the transfer of training/ learning to future crisis (Sniezek et al., 2002).

Many of the problems mentioned in Sniezek et al. (2002) can be referred to the role of the planner/trainer. While the political leadership technically has the responsibility for safety and security in a municipality, the coordination of local work is delegated to emergency coordinators (Meum & Munkvold, 2013). In smaller municipalities a sole employee may have to cover the tasks, sometimes in a part-time position, having many assignments besides crisis training (e.g. Meum & Munkvold, 2013).

Traditional exercise methods mean that a number of actors are gathered simultaneously, with complex planning as a result. The need to involve different organizations is however vital, as Bharosa et al. (2010:50) point out: "The need for coordination in disaster management is undisputed, with lack of coordination leading to a number of possible failures, for instance inappropriate allocations of first responder resources, counter-productive ordering of sequential relief processes, and delayed evacuations, which often result in crisis escalation and even higher numbers of causalities."

Preparing not only the operative and tactic levels but also the strategic level of government agencies is crucial. During stressful conditions the strategic managers are expected to identify key issues and prioritize required actions, i.e. decide the strategy for resolving a crisis and communicate it to lower levels (Cesta et al. 2014). Decision-making at this level is mainly unstructured due to the nature of the problems and the creativity that is necessary to identify and construct courses of action in response. Cesta et al. (2014) claim that training play a fundamental role for training decision-makers to focus on the potential consequences of their actions and the need to work in collaboration with other organizations.

INFORMATION SYSTEMS FOR DISASTER MANAGEMENT TRAINING

Computer-based training may be divided into individual or collaborative training (e.g. Arafa et al. 2011). The latter is often referred to as exercise. Furthermore, the training setting can be distributed or co-located (e.g. McKinnon & Bacon, 2012). A review of research concerning information systems to support crisis training or response reveals that a number of terms are used such as *disaster management information systems* (Lee et al. 2011), *emergency response systems* (Turoff et al. 2004), *exercise support systems* (Pottebaum et al. 2014), *simulation training game* (Lukosch et al. 2012) and *training systems* (Rankin et al. 2011). Some systems support both the training and actual response. Two such systems are the national systems WIS, offered by the Swedish Civil Contingencies Agency MSB, and its equivalent CIM in Norway.

We have not been able to find any studies of how common ISDM training systems are in practice. Meum and Munkvold (2013) mention that approximately 40 % of the Norwegian municipalities had adopted CIM and a fact sheet from 2013 claims that more than 80 % of the Swedish municipalities and all county administrative boards and county councils had adopted WIS.[2] It is not clear from these sources if the adoption includes the exercise/training module of the systems and if so, to what extent it is used. Meum and Munkvold (2013:86) claim that the uptake of CIM has been slow so far and their informants "point to the challenge of getting the intended users engaged in a new system that is not in daily use". Overall, there are few studies of ongoing usage of ISDM for crisis training (Magnusson & Öberg, 2015). In the wake of the ongoing digitalization of society, it is reasonable to assume that IT will have a more prominent role in crisis training in the future. McKinnon and Bacon (2012) predict that virtual technologies for training will have greater acceptance as the 'digital native' move into senior positions. This remains to be seen as Aedo et al.'s (2010) study, although based on a small empirical material, suggests that it is not necessarily technology resistance as such that is hindering the adoption of new IT applications.

Bharosa et al. (2009, pp. 1) claim that "In order to design successful information systems for disaster management, a context related understanding of the organizational and technical measures for achieving these requirements is necessary". Thus, without a detailed understanding of the needs and prerequisites in government agencies, ICT applications may not offer enough advantages to seem worth the cost and effort to adopt them. While there are some examples of participatory approaches in ISDM development (e.g. Lukosch et al. 2012) reports of systematic user need analysis are rare in earlier research. Ahmad et al. (2012, p. 3), for example, argue that it is painfully clear that software engineers do not communicate with crisis scholars which "leads to IT

[2] https://www.msb.se/Upload/Produkter_tjanster/wis/Faktablad_wis.pdf

products that crisis managers do not need".

RESEARCH METHOD

This study presents the first step of a design science research (DSR) project. Next, DSR is introduced followed by a presentation of the studied project. Also the collection and analysis of empirical data are discussed.

Design science research (DSR)

Design Science Research (DSR) has become a growing part of IS research since the 1990s (Peffers et al. 2007). However, in the ISDM field DSR seems still to be in its infancy. The search string TITLE-ABS-KEY (*"design science"* AND *"crisis management"* OR *"disaster management"* OR *"emergency management"* AND *"information system*"* OR *"information technology"* OR *software*) resulted in fewer than twenty papers in Scopus (January 2018). Equivalent searches in Google Scholar and Web of Science support the impression that design science research is still not particularly common in the field.

> *The design-science paradigm seeks to extend the boundaries of human and organizational capabilities by creating new and innovative artifacts.*
>
> Hevner et al. (2004, p. 75)

Hevner et al. (2004) proposed a framework and guiding principles for design science in information systems research. Later Hevner (2007) extended the framework with three inherent research cycles. The cycles stress the need of iterative interaction between designing, building and evaluating artifacts, and establishing relevance for the user context/environment while also ensuring rigor by theoretical grounding in existing knowledge. To this a fourth, change and impact, cycle was added in Drechsler and Hevner (2016), see Figure 1, including both the external and the internal environment. The idea of considering not only the immediate application domain but also the external context to better understand the needs, opportunities and limitations for new IS as well as their wider impact is in line with earlier research on IS development and implementation (c.f. Alter, 2006).

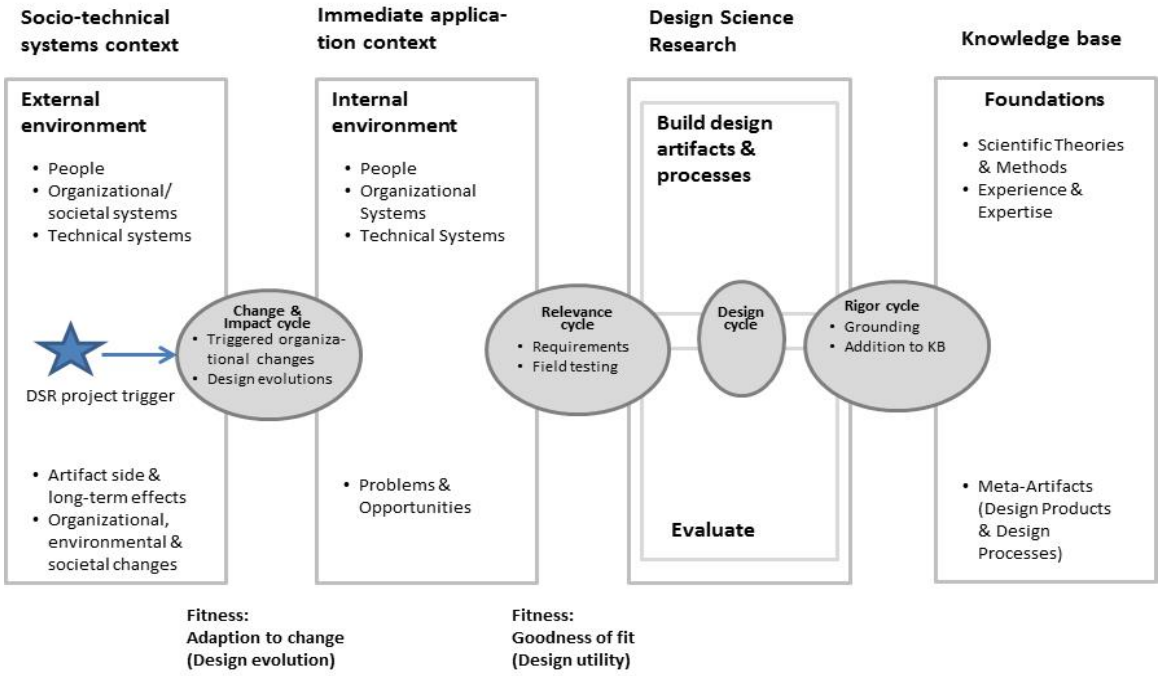

Figure 1. A four-cycle view of design science research. (Drechsler & Hevner, 2016, p. 5).

In this paper we focus on the change and impact cycle in Drechsler and Henver (2016). Using empirical data from an ongoing R&D project we analyze the internal and external environment in order to identify and understand problems and opportunities for ISDM training. This is also in line with steps 1-2 of the Design Science Research Method (DSRM) Process Model in Peffers et al. (2007). Next we describe the project of

study, including the planned design artifacts.

The CriseIT project

The presented case is the Swedish-Norwegian R&D project CriseIT – Preparing for Future Crisis Management. The project is financed by EU/Interreg and run by a multidisciplinary team of researchers from two universities in the border region of Norway and Sweden. The partnership is of quadruple helix model, including fourteen other partners from both countries. The project runs between Jan. 2016 to Dec. 2018 and the main target groups are regional and local government. The overall goal is to reduce cross-border barriers to crisis preparedness through developing collaborative networks, knowledge, methods and ICT tools for crisis management training and exercises. The border regions share common threats, e.g. flooded rivers, dam failures, and landslides.

In this project a DSR approach in line with Drechsler and Hevner (2016) is utilized, see Figure 1. A number of design artifacts are planned where one or several *ISDM training tools* are the most important ones. These should be generic enough to be useful in many organizations. Also, earlier studies show that it is vital to accompany the implementation of new IT with changes in the user context such as re-designed business processes (e.g. Alter, 2006). Other design artifacts to be produced in the project are therefore *business process models* – both for the as-is and the proposed to-be situation – and a *user method* with guidelines for planning and performing crisis training in ISDM. The latter is important since ISDM training will differ from traditional training practices.

In this first step we focus on establishing relevance by gaining knowledge about problems and opportunities experienced in the internal and external environment (c.f. Drechsler & Hevner, 2016). To ensure rigor in this phase two methods are applied, one for change analysis (the SIMMethod presented in Goldkuhl & Röstlinger, 2003) and one for analysis and design of work systems (The Work System Method by Alter, 2006). Design artifacts from this step will, for example, be an extended "snapshot" (Alter, 2006) summarizing important characteristics in the external and internal environment ("the work system"), and a problem diagram (c.f. Goldkuhl & Röstlinger, 2003) highlighting chains of causes and effects in the detected problems. Planned design artifacts from the next phase are *design principles* (c.f. Turoff et al., 2004) for ISDM training systems.

Among the scientific fields to be used for theoretical grounding of the artifacts are, except for crisis management and information systems development, also change management, e-learning, computer support for collaborative learning (CSCL), and serious gaming.

Data collection and analysis

Empirical data on problems and opportunities were collected through nineteen semi-structured in-depth interviews in the spring of 2016. The respondents represented 16 organizations: eight in Norway and eight in Sweden. The data collection aimed at creating an understanding of what Drechsler & Hevner (2016, p. 5) denote as the external and internal environment for the ISDM training tools and method to be designed. Therefore, the majority of the respondents belonged to organizations that are partners in the project, and also target groups of the planned artifacts. Also a few actors in the external environment were interviewed. The participants represented two national agencies, three county administrative boards, six municipalities, two NGOs and one SME delivering crisis training. In addition, representatives of the highest national authority in civil emergency management in each country were interviewed.

The respondents were active in planning, arranging and leading exercises. The interviews were semi-structured and included areas such as current training and exercise practices (incl. actors, business processes, problems, goals and strengths), IT infrastructure, and attitudes toward ISDM training. Seven interviews were held by telephone or videoconference, and the rest face-to-face. All but one interview was recorded. In two of the interviews 2-3 participants in the same organization and roles were interviewed simultaneously as requested by the respondents. The interviews lasted between 45 minutes and 2 hours. Each interview was summarized in an interview protocol, and analyzed in an iterative coding process (c.f. Miles and Huberman, 1994).

RESULTS AND ANALYSIS

In this section we present preliminary results and analysis.

The external environment

The national systems for crisis preparedness are organized at three levels of government in both Norway and Sweden; the national, regional and local levels. The civil emergency planning is coordinated at the national level by the Norwegian Directorate for Civil Protection (DSB) and the Swedish Civil Contingencies Agency (MSB)

respectively. National fundamental principles guiding crisis management are similar, as are national guidelines for planning and executing exercises. Also, the regional levels have comparable roles in supervising and coordinating local government agencies, arranging regional collaborative exercises etc. Furthermore, in both countries the municipalities have the primary responsibility of preparing for, and handling crisis. There are also some differences to be aware of, for example, in terminology and organization at an incident site.

There is a strong local autonomy in both countries, allowing the municipalities, for example, to decide what information technology to use. In both countries there have been national, custom-made web based ISDM applications offered for free to all municipalities for several years: CIM (Norway) and WIS (Sweden). The systems have functionality both for crisis response and crisis exercises. Their functionality for crisis exercises is, however, perceived as limited by some of the respondents, and CIM and WIS are not integrated with each other. Sharing information must therefore take place via other media such as telephone, e-mail or radio-communication. The two national radio-communication systems Nødnett (Norway) and RAKEL (Sweden) have recently been successfully connected and can thus be used in joint exercises. However, these systems primarily support spoken communication. Other types of information such as maps, photos, videos etc. are difficult to share. Our study indicates that Nødnett and Rakel are widely spread among rescue workers such as the police, firefighters and ambulance but not as common at the strategic level.

A cross-border civil protection counsel also exists in the studied region. The counsel arranges regular meetings between different crisis actors and a cross-border exercise approximately every fourth year. Their work is appreciated but does not reach out far enough into the municipalities according to the respondents.

Internal environment

People/Roles

The "People" element in Drechsler and Hevner (2016) was, in this study, interpreted as the concerned audience for ISDM training. These were found to be mainly twofold by the respondents: the crisis management team (as "trainees") and the security coordinators responsible for planning exercises (as "trainers"). The municipalities have security coordinators that plan the organizations' crisis training and often also lead the exercises. This can be a desolate role in smaller organizations where a single security coordinator might be solely responsible for planning and carrying out crisis training activities. Security coordinators in this study felt that they did not have time to plan and arrange enough exercises. Also, they thought they lacked the creativity and knowledge to design realistic, yet varied exercises. These problems are in line with the ones mentioned in Sniezek et al. (2002).

A common opinion among the respondents was that ISDM training is mostly relevant for the strategic level. The argument for this was, as Sniezek et al. (2002) point out, that there are few opportunities to get experience on the strategic level as both crises and exercises luckily are rare.

Organizational systems

In general, there is a strong engagement and interest in crisis exercises in the studied organizations. The organizations use different types of exercises such as single function exercises (e.g. the communication function), cross-functional exercises with the entire crisis management team, and collaborative exercises with several organizations. The exercise methods are table-top discussions, simulations with counter-acting and occasionally, full-scale field exercises. Individual training activities are rare but educational activities before exercises take place. Although time-consuming, the planning of exercises is often regarded as well-functioning today, as are the executions of exercises. More problematic is to learn from exercises. Most organizations said they lack systematic methods for improvements.

Some respondents from the local level wanted exercises to be as close to a real situation as possible while other respondents on higher levels, like Sniezek et al. (2002), stressed the need for learning generic problem solving skills and organizing rather than specific crisis scenarios. Also, some respondents expressed a desire to involve more (unfamiliar) actors, such as private companies, thus supporting the need to train collaboration (c.f. Bharosa et al., 2009). At the same time, several expressed that they wanted shorter exercises but more often. A combination of a few larger and many smaller exercises was seen as the best approach. A common opinion was that especially collaboration and communication (external and internal) need more training.

Technical systems

Almost all of the respondents use (desktop) PCs with Windows. Smartphones are also widespread. Tablets are used frequently in some organizations, and not at all in others. Usually the IT environment is controlled by the IT-department who decides if new software can be installed. CIM and WIS are used in most of the studied organizations but to a varying extent. The systems are more often used during a crisis than for preparedness/training. CIM seems to be comparably more used than WIS, perhaps due to directives on the regional level. It is not mandatory to use CIM, but more and more are expected to, according to a respondent at the local level. Representatives from the local level in Sweden claimed that there are directives that WIS should be used in real events although it was only sparingly used (even) in the great Swedish forest fire in 2014. When CIM and WIS are used, it is mainly for registration and logging of crisis events. An opinion expressed by several respondents is that the same technical systems should be used in exercises as in real events.

As in the study of Meum and Munkvold (2013) our respondents claimed that many (potential) users do not have the habit of using CIM/WIS as the municipalities cannot see the utility of them in their daily operations; "[we] do not know what we should use it for". One respondent thought that CIM is a good system but needs frequent usage. Also Nødnett/Rakel is used in several of the organizations. Except for CIM/WIS and Nødnett/Rakel there are occasional examples in the studied organizations of applications for sending out alerts, making digital maps, voice broadcast etc. As for planning and executing exercises some of the Swedish respondents mentioned using dedicated software for scenario planning, and MSB's "training web" with simulations of media and social media communication. However, office software such as MS Word, PowerPoint and Excel are the standard tools for exercise planning in most of the organizations.

Problems with current training practices

The most prevalent problems with current training practices mentioned were the lack of time and resources. Exercises are highly time-consuming to plan and execute for the trainers and also for the trainees, e.g. due to geographical distances and lengthy training sessions. As a consequence, almost all respondents believed that their organization did not train enough for crisis. There are nuances in this perceived shortage such as a lack of particular exercises or too little practice for specific parts of the organization.

Opportunities and risks with ISDM training

Overall the attitudes towards ISDM training are positive. ISDM training was thought to enable more frequent training/exercises, in shorter sessions. Also, the opportunities for trainees to participate in distributed exercises (c.f. MacKinnon & Bacon, 2012), perhaps even at different points of time (asynchronous), were regarded as important, as well as to get easy access to low-cost training tools, for example, via web applications. The ability to use smartphones or tablets for training was another opportunity mentioned. Other potential advantaged were to be able to get more data and a better overview of an exercise (in planning as well as during execution) as a trainer.

Another identified opportunity with ISDM training was to expand multi-agency collaboration, not only in exercises but also in planning and constructing exercises/training, as well as to include multimedia and tailor-make the content to individual roles to make training more fun and efficient. Both collaborative exercises and individual training for one's role were regarded as interesting. The latter was seen as particularly useful for preparing new employees. In addition, some mentioned the opportunity to practice individual decision-making and crisis events that are extended in time. All in all, increasing knowledge, competences, and risk awareness were the most frequently mentioned opportunities along with better support for exercise planning for security coordinators.

The respondents also saw potential disadvantages with ISDM training such as technical problems, or training collaboration with external actors. Some claimed that the IS need to be free of charge or low-cost to be adopted. Finally, several stressed that this type of training should complement, not replace, traditional training.

CONCLUSIONS AND DISCUSSION

The purpose of this study is to investigate perceived problems in current crisis training and identify opportunities for ISDM training in local and government agencies. The most important problems are connected to a lack of time – for both trainer and trainees. A majority of the organizations want more exercise but in less time-consuming and more flexible ways. ICT-based training is seen as bringing interesting opportunities such as more frequent, asynchronous and distributed training, organized in smaller modules/shorter sessions.

Our study indicates that especially two groups could benefit from ICT training tools. These are the crises

management team in local and regional government, and the security coordinators, i.e. the persons planning crisis training in the same organizations. It is reasonable to think that training is especially vital for actors on the strategic level, as these, in contrast to the operative level, seldom get to handle crisis in practice and therefore may have little or no experience. Moreover, the difficulty of scheduling traditional time-and place-dependent exercises may be especially prevalent on the strategic level as the team members often are managers and politicians with busy agendas. Crisis training planners/trainers in local and regional government often lack resources such as time and efficient ICT tools for planning at present. Planning tools exist on the market but may not match the needs or the budgets of smaller municipalities. Furthermore, several have expressed that they want to be able to collaborate and reuse exercises from other organizations. Training needs are often alike in different municipalities and constructing exercise scenarios is time-consuming.

All in all, no major differences between the countries were found regarding perceived problems and opportunities.

Implications for theory and practice

The organizations in our study give a coherent picture of needs and attitudes toward ICT tools. The user needs identified in this study could therefore form a basis for further testing/validation. Also, the design of the DSR project as a whole, to be further developed in forthcoming papers, could serve as inspirations for future studies.

We suggest that a systematic needs analysis should be performed in all ISDM development projects. Overall, our study indicates that there is an obvious need for improved ICT tools to complement traditional crisis training, both at the individual and the organizational level. Such tools should, if possible, allow crisis training planners in different organizations to collaborate and reuse exercises or parts thereof, thus removing the need to "invent the wheel" every time. The tools should also facilitate crisis training regardless of time and place to decrease limitations in the form of geographical distances and busy agendas. In addition, exercises should be divided into smaller modules, less time-consuming to execute. As cost is an issue in many public organizations, software vendors need to come up with cost-efficient solutions for the tools to be adopted. Preferably, these tools will facilitate also the ongoing operations in the organizations. Finally, it is important to consider "digital training" as a complement to, not a replacement of, traditional training.

Limitations

A limitation of the study is the relatively small empirical material and the fact that only a few members of the crisis management teams, one of the identified target groups for ISDM training, were interviewed. Another limitation, affecting mainly the generalizability of the results, is that most of the respondents were partners in the project and thus, from the start had a positive attitude towards ISDM.

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