

## Using Semi-professionals in Emergency Response

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#### **ABSTRACT**

The term semi-professional can be used to denote occupational groups that do not have emergency response as their primary profession but who get additional responsibilities within rescue and response, e.g. by performing a first response or assisting the professional emergency services. In this study, four different groups of possible semi-professional resources are analyzed and compared. Similarities and differences between the four groups are discussed. Factors, important for the successful implementation of a cross-sector collaboration of this kind, are highlighted. The preliminary results show that all four groups have the potential to act as semi-professional resources within emergency response. Interestingly, the basic requirements are the same for all groups, despite different prerequisites.

#### **Keywords**

Cross-sector collaborations, Community stakeholders, Daily emergency response, ICT development

#### **INTRODUCTION**

In the public sector generally, as well as in emergency response and crisis management, shortage and cutbacks in resources due to the world-wide financial crisis have made organizations seek help from other sectors to overcome the shortage, i.e. introduce *cross-sector collaborations* (e.g. O'Leary & Bingham, 2009; Venema et al., 2010). Also in Sweden, there is a current trend in allowing society-funded human resources to take additional responsibilities within rescue and response, even if their primary occupation does not involve any rescue work. Two concrete examples are security guards who respond to fires and other accidents, or home care nurses who assist the fire and rescue services with additional medical competence (Weinholt and Andersson Granberg, 2015). To be able to efficiently utilize these kinds of resources, and to equip them with proper information and communication technology (ICT) support, a large number of questions regarding, e.g. organizational, educational, technical, financial and legal issues have to be addressed (Pilemalm, Stenberg and

Granberg, 2013, Yousefi Mojir and Pilemalm, 2016). In this context, we define ICT support as the use of technology in response operations to facilitate communication between actors, decision-making, positioning of resources, and dissemination of information.

In a project called 'Efficient communal use of municipal resources for increased safety and security (ESKORT)', the aim is to introduce emergency response cross-sector collaboration in the municipality of Norrköping in Sweden. This will be achieved by identifying, involving and educating human resources in rescue and response operations and to provide them with proper equipment and ICT support. Furthermore, the efficiency and effectiveness of the new collaborations will be evaluated. This study reports from the first phase of the project.

## STUDY AIM

The aim of the research described in the study is to analyze four groups of human resources that can potentially be used in future emergency response cross-sector collaborations. The groups are:

1. Fire and rescue service day personnel
2. Home care personnel
3. Facility service personnel
4. Security guards

The analysis focuses on each group's opportunities, problems, and requirements for it to be possible for them to act as resources in rescue and response operations.

## BACKGROUND AND STUDY CONTEXT

New forms of collaboration in emergency management have been discussed both in large-scale catastrophes and in frequent smaller scale emergencies. 'Mega communities', where actors from different societal sectors collaborate in response operations, e.g. by performing first aid, providing transportation, and collecting food supplies have been suggested as a necessity in complex crisis management (Kleiner and Delurey, 2007). To equip non-professional or semi-professional first responders (e.g., bystanders or volunteers) has been suggested as a way to empower emergency management (Jack, 2005). Firefighters as medical first-responders is increasingly used, e.g. in Australia and Sweden (Smith, Rich, Pinol, Hankin, and McNeil, 2001; Sund, Svensson, Rosenqvist, and Hollenberg, 2012).

In Sweden, the term *semi-professional* is used to denote occupational groups that do not have emergency response as their primary profession but who engage in such cross-sector collaborations. For instance, using security guards as a first responders has been shown to be socially beneficial (Weinholt and Andersson Granberg, 2015). Other groups include social care, home care and facility service personnel. Several recent studies have identified the organizational, educational, technical, financial and legal challenges that comes with the cross-sector collaborations and the co-use of emergency response resources, claiming that such issues need to be studied and addressed before implementing such collaborations and designing ICT support for the actors involved (e.g. Pilemalm, Lindgren and Ramsell, 2015; Yousefi Mojir and Pilemalm, 2016). In the ESKORT project, the collaborative work is developed from scratch by 1) identifying groups of semi-professionals that may participate in response operations, 2) educating, training and equipping them, and 3) evaluating their efficiency. The project is set in the municipality of Norrköping, a medium sized (pop. ~ 136 000) town in the southeast part of Sweden.

## METHODOLOGY

The overall method used in the project is Action research, where the researchers and practitioners actively identify problems, find solutions, plan changes and evaluate these together with the concerned actors (Baskerville and Myers, 2004). In order to identify groups to utilize, a literature study together with a survey of similar initiatives in Sweden provided a base for further analysis, and a gross list of possible groups. This base was further refined during a Future Workshop (Kensing and Madsen, 1991) with participants from e.g. the municipality home care, the emergency medical services, and the fire and rescue services. Possible groups of human resources were analyzed and prioritized, and the four previously mentioned groups were finally selected and interviewed by means of focus groups. The main factors that influenced the selection of these groups were their degree of mobility in the municipality and their possibility to partake in response operations. These four groups also have different relations in regards to the municipality, as personnel belonging to group 1 and 2 are

employed by the municipality, while group 3 and 4 work contract based. This gives us the opportunity to analyze possible organizational differences in the relation to the municipality. In total, six focus group interviews were performed – four with operative personnel from each of the groups, and two with management staff. In the latter, staff from group 1 and 2 were interviewed in one focus group, and staff from group 3 and 4 in the other.

A framework developed specifically for analyzing new collaborations in emergency response (described in detail in Yousefi Mojir and Pilemalm, 2016) was used to frame the interview templates and ensure that as many relevant aspects as possible were covered (see Figure 1). It is based on socio-technical system theory and participatory design approaches, incorporating both technical and non-technical factors, placing the actors in the center of analysis process and involving them in the whole process. Traffic accidents, building fires, and heart attacks were considered suitable emergency events to use as base cases in the focus groups. The focus group interviews were also analyzed taking a starting point in the same framework.

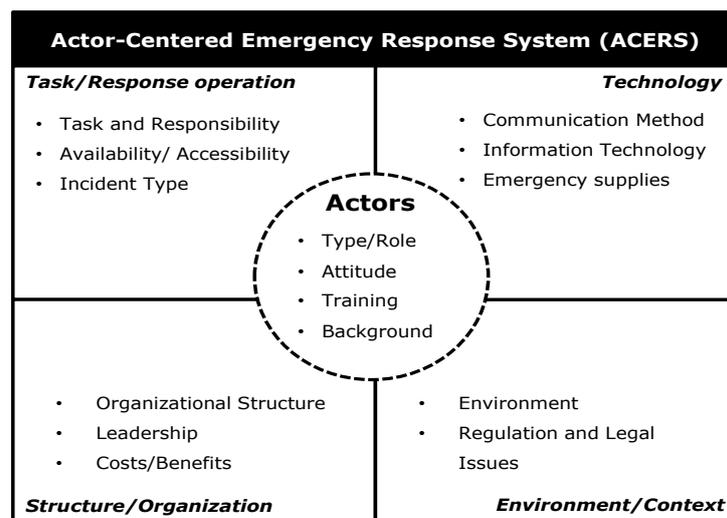


Figure 1. The ACERS framework

## PRELIMINARY RESULTS

The *first group*, fire and rescue service day personnel, are employed by the fire and rescue service, but not part of the response organization. They work daytime and do building inspections, perform educations, procure material, etc., and would have the possibility to interrupt their job most of the time to participate in emergency response. Some have previously worked as a firefighter or a fire engineer, and thus already have relevant education and training and some experience from response operations. While some of the personnel travel a lot as part of their job and therefore might contribute to an increased coverage if used as response resources, others, e.g. administrative personnel, are most often located at a fire station.

The *second group*, home care personnel, are numerous and continuously spread over the municipality, especially during daytime. They are used to receive and respond to alarms from their own users (mainly elderly living in their own homes) and already have technology and routines for managing such alarms. Regular training in CPR (Cardiopulmonary resuscitation) and basic training in firefighting are performed as part of their job. Some of them are trained as assistant nurses and familiar with first aid. However, they usually have tight daily schedules and would not be able to respond to emergencies, unless someone else took care of their planned visits, and they cannot leave all care takers without handing over to some else first. Most of them also lack cars making it difficult to act as first responders.

The *third group*, facility service personnel, are employed by a private company responsible for maintaining municipality facilities, playgrounds etc. They work all over the municipality, have cars, and a few are on call during nighttime. In most cases, they would be able to interrupt their current tasks and act as first responders. Their cars have satellite navigation capability and can be monitored and tracked. All personnel use mobile phones as the main medium for communication and some of them have basic training in firefighting. However, few of them have any experience from medical emergencies, and many might be reluctant to act as first responders for fear of panicking or making things worse.

The *fourth group* consists of security guards who inspect municipal facilities and respond to different kinds of alarms from their clients. The municipality have a contract including one car that operate during nighttime, but in total, the company have about ten cars on patrol nighttime. During daytime, most active personnel are stationary e.g. in shopping malls, at the hospital, and at factories. They have an alarm management system and are familiar with being dispatched to urgent events related to their clients. They have also basic training in first aid and firefighting. Moreover, they use a dual communication method including both mobile phone and PDAs (Personal Digital Assistants).

	<b>Actors</b>	<b>Task/ Response operation</b>	<b>Technology</b>	<b>Structure/ Organization</b>	<b>Environment/ Context</b>
<b>Fire and rescue service day personnel</b>	Some have previous emergency management training.  Positive towards acting as first responders.	Available during daytime, and some are willing to be available as volunteers also during other hours.  They are not very geographically dispersed.		Employed by the municipality, and can be assigned new tasks. Possibly the trade union might object.	
<b>Home care personnel</b>	All have basic CPR and firefighter training.  Positive towards acting as first responders, as long as it does not affect their regular customers.	Available during daytime.  Many resources that are geographically dispersed.  Many do not have access to a car.	They already have a system and routines for receiving and managing alarms.	Employed by the municipality, and can be assigned new tasks. Possibly the trade union might object.	
<b>Facility service personnel</b>	Some have previous firefighting training.  Somewhat skeptical towards acting as first responders to medical emergencies.	Available mainly during daytime.  Many resources that are geographically dispersed.	Their cars can be tracked through a satellite navigation system.	Under contract with the municipality. New tasks should be added as part of a new contract.	
<b>Security guards</b>	All have basic training in firefighting and first aid.  Very positive towards acting as first responders.	Mobile units available during nighttime.  Few resources, mostly concentrated to the city center.	They already have a system and routines for receiving and managing alarms.  Both phones and PDAs are used for communication.	Under contract with the municipality. New tasks should be added as part of a new contract.	
<b>All groups</b>	Additional education and training is very important.	Most often, but not always, it would be possible to interrupt the current work and perform a first response.  It would not be possible to respond to several events each day without adding additional resources.	Mobile phones are the main means of communication, and the preferred technology for receiving alarms.  Necessary equipment should include a first aid kit, a fire extinguisher, and possibly a defibrillator.	All groups (except to some extent, security guards) believe that the new task should be voluntary.  The events, tasks and responsibilities should be pre-defined and clear.	No specific legal or regulatory issued were raised during the interviews. However, the matter of legal responsibility in case something goes wrong is not fully explored.

**Table 1. The preliminary findings from the focus group interviews**

Table 1 shows a summary of the results following the main categories in the ACERS framework. A summative analysis of similarities and common needs among the groups is provided at the bottom of the table.

According to the preliminary results, the actors have some common needs that have to be addressed before they are able to participate in emergency response operations. For example, they want the participation to be voluntary, giving them the ability to choose the time period when they participate. This opinion was however not as dominant among the security guards, where some felt that these new tasks might well be part of the

mandatory work. Likewise, some management staff argued that if their organization accepted this responsibility, the personnel would have to adapt to it.

It is important to all groups that it is made clear which kind of events they might be dispatched to, that they are prepared for these events and will know what to do when responding. Some of the actors would be uncomfortable to find themselves in a situation where they may receive an alarm any time of the day and may not have the right competence to act correctly. Therefore, continuous education and training were stressed as some of the most important factors, e.g. in firefighting, first aid and CPR. Also, they requested joint training and scenario practice with professional emergency response resources.

One interesting difference between the groups was their view on other people's (e.g. victims or bystanders) expectations. Group 1 wear a uniform, clearly identifying them as fire and rescue service personnel, which they believe might cause other people to overestimate their ability to help. Group 3 on the other hand, who use regular workwear, feel that they would need some sort of identification (e.g. a vest or a badge) for people to let them help. Group 4, who also wear a uniform, seems confident in what expectations their appearance might raise.

Most of the personnel have the possibility to leave their current tasks with short notice, with a preparation time (time from receiving the alarm until they can start travelling) between one and five minutes. In some cases, however, they will not be able to respond, e.g. when already dealing with an emergency (security guards or facility service personnel) or when they cannot leave a client (home care). All of the groups would prefer to receive and reply to alarms using their mobile phones. Furthermore, they want information about the event, the location on a map and driving instructions. Other ideas for mobile phone based support included checklists for common events and information about which other resources that had been dispatched, and their expected arrival time. While some wanted a direct link to the professional response personnel, most felt that it was sufficient to call the national emergency number, 112, and get support from the emergency call operator.

## DISCUSSION AND FUTURE WORK

Recent challenges in the contemporary society such as budgetary cutbacks and resource shortage might be difficult handle without cross-collaboration between different societal sectors (O'Leary and Bingham, 2009; Waugh and Streib, 2006). Other challenges such as climate change, the emergence of extremist groups and terrorism threats, epidemics and pandemics, the migration streams and rising public expectation from governments for better service delivery have further boosted the need to re-organize emergency management. Therefore, creating cross-sector collaboration such as involving semi-professionals in emergency response and management cannot only be seen as a general trend in society; it can be argued that it is a future necessity for emergency and crisis management. This study primarily addressed daily emergency response but the results and groups identified may well yield applicability also for large-scale crises, given that much of the personnel, work routines, equipment and ICT support are the same (Quarantelli, 2000). Further, people that are trained for handling daily emergencies and in using the related technological support, will perform better when these emergencies scale up to extraordinary events and crises, especially if the same support is used. This should be true also for the emerging cross-sector collaborations.

The four groups included in the study show good potential to be used as additional resources in emergency response operations. Interestingly, despite their different inherent characteristics and work environments, the groups have more or less the same needs that have to be addressed before launching such collaborations. The identified factors can be incorporated in the future development of these kinds of collaborations to reduce the risk of failures. Moreover, to support the actors with the right equipment, tools and information systems, their needs should be fully identified and met by system developers and the involved organizations. ICT is important to enable semi-professional resources to receive alarms and participate in response operations. It may further enhance such new collaborations by facilitating positioning of resources, optimized dispatching of resources and other types of decision making, reporting of incidents, etc. These issues merit further investigation.

While the focus in this paper, and in the related project (ESKORT), is to single out and analyze specific groups, and their suitability as resources in emergency response operations, other interesting questions and challenges arise when considering multiple different semi-professional actors who might respond to the same events. In this case, the question about education, training, equipment and ICT support becomes more complicated. Even though our initial analysis shows that different groups have similar needs, it may be necessary or desirable to tailor the solutions for a better fit for each group, e.g. it may not be feasible to use the same technology for alarm and communication for all groups. Another highly relevant question concerns how the different groups may interact at the incident site. Finally, just as joint training with professional emergency services is an important

aspect when launching these kinds of collaborations, joint training with other semi-professionals might be equally relevant.

The result is based on the initial analysis of the focus group data. The collected data will in the next step be complemented with survey data from a larger population of operative personnel from the same groups, focusing primarily on attitude and willingness to participate. Thereafter, the four groups will be analyzed in more detail to determine additional opportunities, problems and requirements. Geographical and statistical analyses, cost-benefit analyses and simulation methods will be used to find quantitative measures of the potential efficiency of the new resources. Based on this, one or two groups will be selected for further work within the project, where they will be educated, trained and equipped, making them able to act as emergency response resources. In terms of technology support, smart phone based systems will be developed to facilitate dispatching, navigation and communication. Finally, a controlled, measurable experiment where semi-professional resources are dispatched to a simulated accident will be performed, to evaluate the practical usefulness of the new resources.

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