

# **VIOLENCE RESEMBLING TERRORISM: ADAPTIVE CHALLENGES AND TECHNICAL PROBLEMS IN FIRST RESPONDER COLLABORATION**

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## **ABSTRACT**

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In situations that involve violence resembling terrorism (VRT), flexible management and collaboration between authorities are the keys to successful operations. As previous researches have stated, poor communication and poor procedures are the main challenges. All challenges should be divided into adaptive challenges and technical problems, in order to gradually help the first responders to conquer them. If their differences are not recognised, first responders tend to try and solve adaptive challenges wrongly by using technical measures. In this paper, the selected incidents are examined through a multiple-case study. The findings are tied to Heifetz, Grashow, and Linsky's model of adaptive challenges and technical problems. It is concluded that without adequate training and guidelines, first responders tend to maintain old practices, which can compromise the efficiency and safety of rescue operations.

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**INTRODUCTION**

This paper focuses on the challenges of collaboration between first responders (FR) in situations where a serious threat of violence complicates cooperation. First responders, like the police, the fire service and emergency medical technicians (EMT), are used to respond to traffic accidents, domestic violence and various medical emergencies. These conventional rescue and emergency operations can be considered as the basics of FR work. However, in extreme situations, like during terrorist attacks and school shootings, successful FR collaboration is much more complicated than under conventional circumstances.<sup>1</sup> The multiple-site terrorist attacks in Paris in 2015 resulted in 129 people being killed and more than 300 people being injured. Most of the wounds were caused by bullets and explosives, and the number of victims and the circumstances in general were highly unconventional. This challenged first responders in an unparalleled way. Emergency medical technicians worked to save lives, alongside with the police and the rescue workers.<sup>2</sup> Several other active shooter and terrorism incidents have occurred since the attacks in Paris. In Belgium in 2016 the perpetrators used explosives on two different sites, and in Nice and Berlin the trucks were used as a weapon by driving them into a crowd on purpose. These new kinds of methods of violence cause new threats to FR safety and create new challenges concerning the pre-hospital care of the victims. Instead of one incident site, simultaneous victims may be scattered around a wider area, like in Nice. In these cases, the traditional on-site management and inflexible collaboration between authorities is not necessarily enough: “The traditional linear »stovepiped« single-agency response is not only

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<sup>1</sup> W. L. Waugh, G. Streib, “Collaboration and Leadership for Effective Emergency Management”, *Public Administration Review*, no. 66, 2006, pp. 131–140.

<sup>2</sup> M. Hirsch et al., “The Medical Response to Multisite Terrorist Attacks in Paris”, *The Lancet*, vol. 386, issue 10012, 2015, pp. 2535–2536.

ineffective, it may even be dangerous in these unpredictable, chaotic, and fluid events”.<sup>3</sup>

Preparation, training, clear definition of roles, and precise knowledge of available resources are the key elements when trauma facilities respond to mass casualty incidents.<sup>4</sup> To cover as many types of man-made incidents as possible, this paper uses the term *violence resembling terrorism* (VRT). As defined in a previous content analysis, “VRT refers to incidents that call for interprofessional collaboration under such circumstances where intentional violence is carried out by using terroristic methods, and where the violence, or the threat of it, causes an exceptionally high risk for first responder safety, and thus complicates the pre-hospital care of the numerous victims”.<sup>5</sup>

This paper begins with a comparison between adaptive challenges and technical problems. It then proceeds to discussing the challenges from the point of view of previous research. In the analysis chapter, four cases are used as examples to demonstrate the circumstances under which first responders operate. By using this multiple-case method, the following questions are studied: *What are the adaptive challenges and technical problems of collaboration in VRT incidents? What hinders collaborative practices in VRT incidents?* In the findings chapter, the challenges are divided into adaptive challenges and technical problems to point out their differences in terms of management.

Management and leadership issues in VRT incidents require more research in general, both from an academic and from a practical perspective. The challenge faced by researchers is how to collect data<sup>6</sup> and to observe leadership in real-life situations. It is fair to say that carrying out research in actual operational environments is nearly impossible.<sup>7</sup> Instead of working separately, interprofessional collaboration is necessary when the authorities

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<sup>3</sup> Interagency Security Committee, *Integrating Law Enforcement, Fire, and Emergency Medical Services during Active Shooter/Hybrid Targeted Violence Incidents*, 2015, <https://www.hsdl.org/?view&did=787202>, (accessed: April 14, 2020).

<sup>4</sup> J. Kuckelman et al., “MASCAL Management from Baghdad to Boston: Top Ten Lessons Learned from Modern Military and Civilian MASCAL Events”, *Current Trauma Reports*, no. 4, 2018, p. 139.

<sup>5</sup> T. Ihatsu, S. Paananen, T. Sederholm, “Violence Resembling Terrorism – From the First Responder Viewpoint”, *Journal of Applied Security Research*, 2021, pp.18–19.

<sup>6</sup> N. Bharosa, J. Lee, M. Janssen, “Challenges and Obstacles in Sharing and Coordinating Information during Multi-Agency Disaster Response: Propositions from Field Exercises”, *Information Systems Frontiers*, no. 12, 2010, pp. 49–65.

<sup>7</sup> D. J. Campbell, S. T. Hannah, M. D. Matthews, “Leadership in Military and Other Dangerous Contexts: Introduction to the Special Topic Issue”, *Military Psychology*, vol. 22, issue 1, 2010, pp. 1–14.

are dealing with complex situations like violence resembling terrorism.<sup>8</sup> But, namely due to this complex nature of the incidents, studying their management is difficult and this is the main reason for the lack of research into the subject. There is, however, some research into the decision-making process of emergency management,<sup>9</sup> and FR work during terrorist attacks has been studied through simulations.<sup>10</sup>

In this paper, four VRT incidents were used as the source of a multiple-case study, and all of the analysed cases occurred in Finland. Thus, the data does not cover all types of incidents faced by first responders since 9/11. It should also be remembered that the structures of emergency management vary depending on the country and region and their different laws, regulations and guidelines. These shortcomings are recognized, and this is why previous research and examples from other countries have been used to support the Finnish data. The analysis aims at introducing challenges and various reasons causing them. Although VRT incidents are chaotic and extremely stressful situations for first responders, the impact of human factors is not considered here. The division into technical problems and adaptive challenges does not take into account the individual technical skills or know-how of first responders.

## LITERATURE REVIEW

### TECHNICAL PROBLEMS AND ADAPTIVE CHALLENGES

In this paper, Heifetz and Linsky's model is used to make a distinction between technical problems and adaptive challenges. The first-mentioned has been defined as follows: "[...] people have problems for which they do, in fact, have the necessary know-how and procedures. We call these

<sup>8</sup> R. Hood, *A Critical Realist Model of Complexity for Interprofessional Working*, "Journal of Interprofessional Care", 2012, vol. 26, issue 1, p. 6.

<sup>9</sup> See e.g.: C. Heuvel, L. Alison, J. Crego, *How Uncertainty and Accountability Can Derail Strategic "Save Life" Decisions in Counter-Terrorism Simulations: A Descriptive Model of Choice Deferral and Omission Bias*, "Journal of Behavioral Decision Making", 2012, no. 25, pp. 165–87; N. Kapucu, T. Arslan, F. Demiroz, *Collaborative Emergency Management and National Emergency Management Network*, "Disaster Prevention and Management: An International Journal", 2010, vol. 19, issue 4, pp. 452–68.

<sup>10</sup> N. Power, L. Alison, *Offence or Defence? Approach and Avoid Goals in the Multi-Agency Emergency Response to a Simulated Terrorism Attack*, "Journal of Occupational and Organizational Psychology", 2017, vol. 90, issue 1, pp. 51–76.

technical problems”.<sup>11</sup> Or to elaborate: “What makes a problem technical is not that it is trivial; but simply that its solution already lies within the organization’s repertoire”.<sup>12</sup> Incidents including violence resembling terrorism are rarely this simple. Organizations like the police, the emergency service and the fire and rescue service are (or should be) prepared for VRT incidents, but their routine work is everything else but responding to intentional violent attacks that cause multiple victims. Terrorists attacks, school shootings and other VRT incidents are dynamic situations that, from the perspective of first responders, demand new competencies and unconventional ways of thinking.

Problems that cannot be defined as technical, i.e. problems that cannot be solved by conventional ways of thinking or by following existing standard operational procedures (SOPs), are called adaptive challenges. Heifetz and Linsky state that “We call these adaptive challenges because they require experiments, new discoveries, and adjustment [...]”.<sup>13</sup> Dividing the managerial challenges of VRT incidents only into either technical problems or adaptive challenges is not necessary or even practical. The challenges can also be seen as a combination of these two. Heifetz and Linsky state that recognising the nature of the challenge is important to be able to “[...] decide which to tackle first and with what strategy”.<sup>14</sup> In the findings chapter of this article, this three-part distinction is used to describe the nature of the challenges.

TABLE 1. TECHNICAL PROBLEMS AND ADAPTIVE CHALLENGES

Kind of challenge	Problem definition	Solution	Locus of work
Technical	Clear	Clear	Authority
Technical and adaptive	Clear	Requires learning	Authority and stakeholders
Adaptive	Requires learning	Requires learning	Stakeholders

Source: R. A. Heifetz, A. Grashow, M. Linsky, *The Practice of Adaptive Leadership: Tools and Tactics for Changing Your Organization and the World*, Harvard Business Press, Massachusetts 2009, p. 20.

<sup>11</sup> R. A. Heifetz, M. Linsky, *Leadership on the Line: Staying Alive through the Dangers of Change*, Massachusetts, Harvard Business Review Press, 2017, p. 13.

<sup>12</sup> Heifetz, Linsky, ‘Leadership on the Line’, p. 20.

<sup>13</sup> Heifetz, Linsky, ‘Leadership on the Line’, p. 13.

<sup>14</sup> Heifetz, Linsky, ‘Leadership on the Line’, p. 58.

Interagency collaboration is essential in VRT incidents. From this point of view, Heifetz, Grashow and Linsky's model needs elaborating: It could be said that technical problems are problems that the authorities, or one expert, can solve by themselves as first responders. Solving adaptive challenges, however, requires interagency collaboration. Adaptive challenges cannot be solved by one expert or by using one solution only. Next, these different challenges are discussed from the point of view of previous research.

#### CHALLENGES OF INTERPROFESSIONAL FR COLLABORATION

An emergency can be described as a situation into which different organizations send their teams with different organizational goals. These teams with different working cultures act together to minimize the effects of the emergency.<sup>15</sup> Managerial challenges of interprofessional collaboration between first responders during VRT incidents or emergencies is not by any means a well-researched topic. According to Bharosa, Lee and Janssen, it is challenging to collect empirical data during an ongoing real-life incident.<sup>16</sup> Campbell, Hannah and Matthews sum up the same problem more firmly by stating that "Leadership research in actual dangerous contexts is nearly impossible".<sup>17</sup>

Collaboration between agencies is crucial in demanding situations. However, the existence of several different actors and their different operational procedures, knowledge and skills make interprofessional collaboration difficult.<sup>18</sup> In dynamic situations, solving these kinds of non-practical problems is a secondary challenge. The primary challenge is the success of the rescue operation. Findings from an emergency responder workshop in Norway show three main challenges: 1) communication between first responders, 2) establishing and maintaining shared situational awareness, and 3) interprofessional understanding.<sup>19</sup> Even professional values can create obstacles in collaboration, if the values are unspoken and unknown to the professionals

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<sup>15</sup> A. M. Schaafstal, J. H. Johnston, R. L. Oser, "Training Teams for Emergency Management", *Computers in Human Behavior*, 2001, vol. 17, issue 5, p. 615.

<sup>16</sup> Bharosa, Lee, Janssen, 'Challenges and Obstacles', p. 52.

<sup>17</sup> Campbell, Hannah, Matthews, 'Leadership in Military', p. 2.

<sup>18</sup> A. W. Eide et al., *Key Challenges in Multi-Agency Collaboration during Large-Scale Emergency Management* [the paper is a report on a workshop studying the challenges of collaboration during emergency response in Norway], SINTEF ICT, Oslo, 2014, p. 1.

<sup>19</sup> Eide et al., 'Key Challenges'.

involved.<sup>20</sup> In their paper, Berlin and Carlström study the reasons as to why collaboration between the fire service, EMTs and the police on accident sites is challenging (minimal). They state that only limited forms of FR collaboration are implemented, and that collaboration is more of a rhetorical idea than something that first responders carry out in their normal practice.<sup>21</sup>

According to Eide et al., establishing shared situational awareness between key actors was difficult. This caused problems in overviewing resources, as well as managerial challenges. Lack of radio capability and technical problems caused difficulties in communication. First responders felt information overload, and at the same time, crucial information was missed because of communicational problems. The participants of the workshop felt that first responders sometimes had misunderstandings about the responsibilities and tactics of other agencies, as well as of their own.<sup>22</sup> Norri-Sederholm, Huhtinen and Pakkonen state that “delivering a real-time situation picture in a school shooting case is extremely difficult, and even impossible”.<sup>23</sup> They also argue that in school shooting cases there did not exist a mutual operational picture between various authorities.<sup>24</sup> In their study, Reddy et al. identified major challenges in coordination between medical teams. These major challenges were “[...] ineffectiveness of current information and communication technologies, lack of common ground, and breakdowns in information flow”.<sup>25</sup> Norsen, Obladen and Quinn identified six essential skills of effective teamwork, and one of those skills was communication.<sup>26</sup> Even though Norsen, Obladen and Quinn did

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<sup>20</sup> P. Hall, “Interprofessional Teamwork: professional cultures as barriers”, *Journal of Interprofessional Care*, vol. 19, issue 1, 2005, p. 191.

<sup>21</sup> J. M. Berlin, “Why Is Collaboration Minimised at the Accident Scene? A Critical Study of a Hidden Phenomenon”, E. D. Carlström (ed.), *Disaster Prevention and Management: An International Journal*, vol. 20, issue 2, 2011, p. 159.

<sup>22</sup> Eide et al., ‘Key Challenges’, p. 5.

<sup>23</sup> T. Norri-Sederholm, A.-M. Huhtinen, H. Paakkonen, “Ensuring Public Safety Organisations’ Information Flow and Situation Picture in Hybrid Environments”, *International Journal of Cyber Warfare and Terrorism*, no. 8, 2018, p. 16.

<sup>24</sup> *Ibidem*, p. 17.

<sup>25</sup> M. C. Reddy et al., “Challenges to effective crisis management: Using information and communication technologies to coordinate emergency medical services and emergency department teams”, *International Journal of Medical Informatics*, vol. 78, issue 4, 2009, p. 259.

<sup>26</sup> L. Norsen, J. Obladen, J. Quinn, “Practice Model: Collaborative Practice”, *Critical Care Nursing Clinics*, vol. 7, issue 1, 1995, pp. 43–52.

their research in the field of health care, their study also emphasized the importance of communication.

Coordination between first responders is crucial to a successful response: events like 9/11 and Katrina have proven that coordination between different professional groups does not happen by itself. According to Reddy et al., coordination “must be managed and supported by information and communication technologies”.<sup>27</sup> It depends somewhat on the point of view, but it can be stated that collaborational challenges are connected to bigger problems, like asymmetry and lack of interprofessional understanding. Previous research has highlighted that communication, information sharing, and shared situational awareness are the main challenges.<sup>28</sup>

**TABLE 2. STUDIES AND THE COLLABORATIONAL CHALLENGES ADDRESSED IN THEM**

Author(s)	Field of Study/Report	Addressed Challenges
Hall, 2005	Interprofessional team-work	Unspoken professional values
Strom & Eyerman, 2008	London train bombings case-study	Communication Leadership Cultural differences Structural differences
Reddy et al., 2009	Effective crisis management	Ineffectiveness of current information and communication technologies Breakdown of information flow
Berlin & Calström, 2011	Collaboration at the accident site	Collaboration is rhetorical rather than normal practice

<sup>27</sup> Reddy et al., ‘Challenges’, p. 267.

<sup>28</sup> Kristiansen E., Johansen F. H., Carlström E., “When It Matters Most: Collaboration between First Responders in Incidents and Exercises”, *Journal of Contingencies and Crisis Management*, vol. 27, issue 1, 2019, pp. 72–78; M. C. McDaniel, C. Ellis, “The Beslan Hostage Crisis: A Case Study for Emergency Responders”, *Journal of Applied Security Research*, no. 4, 2009, p. 32; Eide et al., ‘Key Challenges’.

Author(s)	Field of Study/Report	Addressed Challenges
Eide et al., 2014	Emergency worker workshop	Communication Shared situational awareness Lack of interprofessional understanding
Norri-Sederholm, Huhtinen & Paakkonen, 2018	School shooting case-study	Lack of mutual operational picture
Deeming, 2018	Manchester Arena attack	Poor communication Poor procedures

Source: Own elaboration.

Reports and studies from real-life events in different countries point out some of the challenges. Poor communication and poor procedures caused problems e.g. after the Arena attack in Manchester in 2016. The fire service did not arrive at the explosion site in nearly two hours.<sup>29</sup> In their case study on the London bombings, Strom and Eyerman found four barriers of interagency coordination. According to them, the barriers were communication, leadership, cultural differences, and legal and structural differences.<sup>30</sup> Successful collaboration and efficient interprofessional teamwork calls for the solving of these challenges. The importance of communication as a requirement for successful FR collaboration is pointed out both in studies<sup>31</sup> and in practical guidelines<sup>32</sup>. Familiarity between members of the authorities and with each other's working cultures have also been brought up as key factors of efficient cooperation on incident sites.<sup>33</sup> On a practical level,

<sup>29</sup> H. Deeming, *The Kerslake Report: An Independent Review into the Preparedness for, and Emergency Response to, the Manchester Arena Attack on 22<sup>nd</sup> May 2017*, 2018, p. 8.

<sup>30</sup> K. Strom, J. Eyerman, "Multiagency Coordination and Response: Case Study of the July 2005 London Bombings1", *International Journal of Comparative and Applied Criminal Justice*, vol. 32, issue 1, 2008, 89–109.

<sup>31</sup> Kristiansen, Johansen, Carlström, 'When It Matters Most', pp. 72–78; McDaniel, Ellis, 'The Beslan Hostage', p. 32.

<sup>32</sup> *Saving Lives*, "JESIP – Working Together", <https://www.jesip.org.uk/five-principles>, (accessed 10 December 2019).

<sup>33</sup> Kristiansen, Johansen, E. Carlström, 'When It Matters Most', p. 74.; Hall, 'Interprofessional Teamwork', p. 193.

this means e.g. common training, active learning about different working cultures, and standard operational procedures.<sup>34</sup>

Efficient communication, clear guidelines and standard operational procedures are crucial factors when large-scale incidents take place in public places. But even if these factors were being properly dealt with during incidents, interprofessional collaboration under extreme conditions always involves challenges. The most fruitful way to point out these real-life challenges and the reasons behind them is to examine actual VRT incidents. The next chapter will open up the framework of this particular case-study and introduce the method which lead to narrowing down the challenges into different categories: communication challenges, lack of mutual guidelines, the tendency to turn technical problems into adaptive challenges, and the tendency to resort to old practices.

#### ANALYTICAL FRAMEWORK

This paper uses the method of a multiple-case study to improve the understanding of real-life FR challenges. The aim is to explore how first responders as key stakeholders reacted in the different cases and under different circumstances, and what the consequences of their actions were. Based on personal experience of the daily routine work of first responders, it can be said that collaboration between agencies is usually smooth and flexible. Personal experience combined with research data is used here to find out what makes collaboration during VRT incidents more challenging. This study was carried out by following Yin's multiple-case study procedure, according to which the research is first planned, the data is then selected and analysed case by case, and in the results chapter, each case is dealt with in its own paragraph.<sup>35</sup> The challenges of the individual cases are compared, and in the findings section, the problems are divided into two categories: technical problems and adaptive challenges. By addressing these categories separately, the aim is to introduce a new approach for first responders to perceive different problems.

In the first case selected, a young man caused an explosion at a shopping mall in Vantaa in 2002. The second and third cases are both school shootings carried out by students; one took place in Jokela in 2007 and the other in

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<sup>34</sup> McDaniel, Ellis, 'The Beslan Hostage', pp. 31–32.

<sup>35</sup> R. K. Yin, *Case Study Research Design and Methods*, 6<sup>th</sup> edition, vol. 2018, SAGE Publications, USA, 2018, p. 58.

Kauhajoki in 2008. The fourth case, classified as a terroristic act, is a knife attack in the Turku city centre in 2017. These cases were selected because they were suitable from the point of view of the research question but also because a) they were investigated by both the police and the Investigation Commission, b) the incidents occurred in a public place and caused several victims, c) all key stakeholders (the police, the fire service and EMTs) were present, and d) the incidents exceeded daily collaboration. One more reason for using the selected material was that, even though the events were uncommon, these cases are typical examples of incidents where interprofessional FR collaboration exists under extreme conditions. In this study, one document (pre-trial record or IC report) is defined as one source, even though it includes hearings of several people.<sup>36</sup>

The analysed material included 449 pages of IC reports and 3042 pages of pre-trial reports, excluding annexes. The Finnish version of the material was used. In the footnotes and in the references, the documents are organized by their English names, translations by the author. The analysis was started by reading the research material several times from the point of view of first responders. Relevant and irrelevant information were separated by the author during the first reading. The material considered as irrelevant consisted of hearings of people who were not present on the incident site or did not belong to the FR organisations. The author's experience about pre-trial documents was helpful in selecting the relevant data. After the relevant data was separated, the challenges of interprofessional collaboration were taken as the unit of analysis. After the reading and preliminary research phases, each of the four cases was analysed separately. The analysis was carried out from the point of view of the research questions by using inductive content analysis. The process began with open coding, and after the coding, sheets and groups were formed. Finally, the data was abstracted and categorized.<sup>37</sup> The two main categories formed were communication challenges and lack of guidelines/regulations. The meaning of these categories for FR responding and the success of rescue operations is estimated in the analysis and findings chapters.

In the analysis chapter, four cases are summarized in a table. In the text part, each case has its own section, and the cases are examined from the

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<sup>36</sup> Yin, 'Case Study Research Design and Methods', p. 114.

<sup>37</sup> S. Elo, H. Kyngäs, "The Qualitative Content Analysis Process", *Journal of Advanced Nursing*, vol. 62, no. 1, 2008, pp. 109–111.

point of view of the research questions. These sections combine the police pre-trial records and the reports of the Investigation Commission. Two terms are used: situational awareness and operational picture, realizing some defining problems with these concepts. The term *operational picture* is used to highlight the operational perspective of the cases, and the real-life challenges of first responders. The term *situational awareness* is used to refer to the managerial challenges of the same cases.

#### ANALYSIS OF CASES

In the next table (Table 3.), the four analysed VRT incidents are summarized. The first column describes the incidents, and the second column specifies the reasons for the challenges in management. The last column states the concrete consequences of the challenges. The outlining is based on the information in the Investigation Commission (IC) reports and in the pre-trial records.

In Myyrmanni in 2002 (Case 1.) the operation was led by the fire and rescue service. First aid was given and other rescue measures were carried out on the explosion site, and the possibility of secondary explosions was not considered. The first fire sergeant, police patrol and leading crime investigator to arrive on site all assumed that the explosion was caused by a bomb. This information did not, however, spread to reach all authorities involved. Based on the findings stated in the report, the IC recommended that FR training should focus more on the capability of first responders to work on explosion sites.<sup>38</sup> It also pointed out measures that would have been helpful from the point of view of management: right location of overall leading, direct contact to the field leader of the fire and rescue service, organization of resources, and setting up a common communication call group (radio channel).<sup>39</sup> During the first minutes, the police did not know who was in charge, so they acted independently. All of the three authorities on site gave orders to the private security workers who were requested to evacuate the area and to ensure that there were no more victims.<sup>40</sup>

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<sup>38</sup> Ministry of the Interior, *Sisäasiainministeriön Julkaisu 12/2003: Räjähdyks Kauppakeskus Myyrmannissa. Sisäasiainministeriön Asettaman Tutkijaryhmän Raportti* [Investigation Commission's Report: Explosion in Myyrmanni Shopping Centre, 2003], pp. 45–49.

<sup>39</sup> Ministry of the Interior, *Explosion in...*, *op. cit.*, p. 41.

<sup>40</sup> National Bureau of Investigation, Finland (NBI – Keskusrikospoliisi), *Myyrmannin Pommiräjähdyksen Esitutkintapöytäkirja 2400/R/501/02*, [Pre-Trial Investigation Record of the Bomb Explosion, 2003], pp. 811, 819, 850.

In Jokela in 2007 (Case 2.) a student opened handgun fire inside his school. The emergency call from the school was made by another student, who at that point assumed that a fellow student had fallen. Very soon after this wrong assumption, the correct information about the shooting was passed on to the emergency response centre. During the attack, the perpetrator tried to set the school on fire with gasoline and matches. According to the IC report, the situation would have been much more demanding if the perpetrator had succeeded in starting the fire.<sup>41</sup> He, however, failed to do so, and this failure eased the workload of the first responders. Even though the police was in charge, the other first responders acted independently. The fire service and the EMTs started receiving the evacuated persons, and the fire service organized a temporary operational command centre to support the actions of the authorities.<sup>42</sup> After the investigation, the IC gave its recommendations. From the point of view of the fire service and the EMTs, the cooperation could have been more efficient. There were problems with the use of the mutual communication call group and challenges in information sharing. Some of the actors on site also felt that all resources were not taken advantage of. The communication problems between the police and other actors culminated in a situation where some of the EMTs went into the building and worked there without permission from the police, while the rest of the EMTs stayed and waited for permission for intervention.<sup>43</sup>

A year later in Kauhajoki (Case 3.) a student opened handgun fire during class. The perpetrator started several fires inside the school, which made the rescue operations very demanding. The police was forced to use the fire department's breathing apparatus during intervention. Finally, the building fire was extinguished by joint efforts of the police and the fire service. In order to improve the cooperation between the police and the fire service, one of the police officers was reposted to the fire department. There was no common on-site command centre. The authorities agreed upon cooperation

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<sup>41</sup> National Bureau of Investigation, Finland (NBI – Keskusrikospoliisi), *Jokelan Koulusurmien Esitutkintapöytäkirja 2400/R/488/07*, [Pre-Trial Investigation Record of the School Shooting in Jokela], p. 105.

<sup>42</sup> Investigation Commission of the Jokela School Shooting, *Jokela School Shooting on 7 November 2007: Report of the Investigation Commission*, Ministry of Justice, Helsinki, 2009, pp. 27, 29.

<sup>43</sup> Investigation Commission of the Jokela School Shooting, 'Jokela School Shooting on 7 November 2007', pp. 105, 125; National Bureau of Investigation, Finland (NBI – Keskusrikospoliisi), 'Jokelan', p. 413.

while the attack was taking place in real time. The IC report states that “As a result, command relations [...] are agreed upon as each situation develops, which cannot be considered a satisfactory solution”.<sup>44</sup> The IC points out that mutual training for interagency tasks had been insufficient. They also state that there was no shared situational picture between the authorities in situations with several different actors, and that there was a particular need for leadership. Even though the police is not the leading authority by law, in VRT situations that is the common line of action. The IC report concludes that the solution for these challenges is to create cooperation plans for this kinds of incidents.<sup>45</sup> In both of the school shooting incidents, the perpetrators used or attempted to use fire as a weapon. In the future the possibility of fire as a weapon should be considered in all VRT incidents. Fire affects the work of first responders remarkably, and it can change the course of events dramatically.

In Turku in 2017 (Case 4.) the perpetrator armed with two knives started his attack on the marketplace square. After he had stabbed the first victim, he moved almost 500 meters away before the police stopped him by shooting. During the attack, he killed two and wounded eight persons.<sup>46</sup> In court, unlike the previous incidents, this attack was considered to have been made with a terroristic motive. The field supervisor of the EMTs determined a meeting point for the EMT units and ordered all EMTs to use the multi-authority communication call group. The police who was in charge of the overall leading did not use the call group, which caused challenges in information sharing. Some of the EMTs were uncertain about who was in charge on the site and what was the number of perpetrators. The EMT field supervisor set up his own field command post, but the post was not shared with the police. According to the IC, situational awareness is needed to support leadership. The IC stated that this incident, as well as the previous ones, showed that not all authorities see the events the same way. There is also lack of information sharing concerning the actions and needs of other authorities involved.<sup>47</sup>

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<sup>44</sup> Investigation Commission of the Kauhajoki School Shooting, *Kauhajoki School Shooting on 23 September 2008: Report of the Investigation Commission*, Ministry of Justice, Helsinki 2009, p. 137.

<sup>45</sup> Investigation Commission of the Kauhajoki School Shooting, ‘Kauhajoki’, pp. 154–155.

<sup>46</sup> Investigation Commission of the stabbings in Turku, Onnettomuustutkintakeskus, *Pre-Trial Investigation Record of the Stabbing Attack*, 2018.

<sup>47</sup> Investigation Commission of the stabbings in Turku, Onnettomuustutkintakeskus, ‘Pre-Trial Investigation Record of the Stabbing Attack’, pp. 8, 9, 50, 69, 78.

**Table 3. Incident, challenges and consequences of challenges (leading authority in brackets)**

<b>Case</b>	<b>Reason for challenge</b>	<b>Consequence of challenge</b>
<b>Case 1.</b> Myyrmanni 2002, bomb explosion (Fire and rescue)	Lack of mutual situational awareness Difficulty in recognizing the character of the situation	Uncertainty about who was in charge Wrong operational picture Uncoordinated actions Information about the bomb did not spread
<b>Case 2.</b> Jokela 2007, school shooting (Police)	Lack of mutual situational awareness Communication challenges	EMTs worked in the dangerous area Lack of fire and rescue service resources Uncertain operational picture
<b>Case 3.</b> Kauhajoki 2008, school shooting (Police)	Cross-professional tasks Lack of both information sharing and mutual situational awareness	EMTs and the fire service worked in the dangerous area Management and cooperation were agreed upon in the practical phase Uncertain operational picture
<b>Case 4.</b> Turku 2017, stabbing attack (Police)	Communication challenges Lack of mutual situational awareness	Lack of fire and rescue resources in the initial phase Uncertain operational picture Uncertainty about the location of the victims EMT intervention was based on emergency centre information Management and cooperation were agreed upon in the practical phase

Source: Own elaboration.

The Investigation Commission argues that multi-authority situations require close cooperation and that communication between authorities has to work. Some authorities have had a stronger tension to wait for overall leading, so there is a need for uniformed leading and communication guidelines.<sup>48</sup> Situations like sniper-style shootings and stabbing attacks are demanding from the perspective of multi-authority leadership, because they are high-speed situations where the primary goal of the police is to prevent more damages. It seems that the nature of the situations affects the overall leading capability of the authorities at the beginning of the incidents, because the focus is on stopping the attacker.

#### FINDINGS: WHAT MAKES COLLABORATION CHALLENGING?

##### SUMMARY OF CHALLENGES

In the table below (Table 4.), different challenges have been divided into adaptive challenges and technical problems. The suggested solutions are based on IC reports, previous studies and the author's own analysis.

**TABLE 4.** SOURCE: OWN ELABORATION.

<b>Challenge</b>	<b>Adaptive challenge or technical problem</b>	<b>Suggested solution(s)</b>
Lack of guidelines and SOPs	Technical problem	New or updated guidelines made by a multi-agency team
Implementation of guidelines and SOPs	Adaptive challenge	Planned implementation for all FRs, with enough financial and resource support
Separate field command posts	Technical problem	Implementation of guidelines and mutual SOPs, following SOPs
Different perceptions about the ways and principles of leading	Adaptive challenge/ technical problem	Knowing the other authorities better, mutual guidelines and clear management

<sup>48</sup> Investigation Commission of the stabbings in Turku, Onnettomuustutkintakeskus, 'Pre-Trial Investigation Record of the Stabbing Attack', p. 78.

Challenge	Adaptive challenge or technical problem	Suggested solution(s)
Communication challenges, e.g. lack of information sharing, no mutual call groups	Technical problem/ Adaptive challenge	Clear management structure, common field command post, improved technical skills, mutual SOPs

Source: Own elaboration.

### MANAGEMENT WITHOUT MUTUAL GUIDELINES

Fast and well-timed management is a crucial element of collaboration and coordination between different authorities. Coordination should not exist only between members of a specific team, but also between members of different teams.<sup>49</sup> According to the analysed cases, in Finland the lack of regulations and guidelines is evident, which affects management during crises. If mutual guidelines existed, the initial actions of an operation would be more effective. Even though the police is often leading the situation, guidelines should be created for interagency purposes. The guidelines should not vary depending on the location or the person in charge. Clear guidelines made from the perspective of interagency needs are required, and the key issue is their implementation.<sup>50</sup> The analysed cases show that without mutual guidelines there are real challenges in information sharing and in forming a shared operational picture. In addition, small technical problems, like the lack of call groups or common operational leading posts, cause difficulties in terms of leadership and management. The lack of mutual guidelines can be seen as a technical problem, but the implementation of new or updated regulations is an adaptive challenge.

IC reports of school shooting incidents emphasize the fact that adaptable common co-operation plans are needed. According to the reports, “The Ministry of the Interior and the Ministry of Social Affairs and Health should take steps to provide the police, Rescue Services, and Emergency Medical Services with jointly approved co-operation plans that are adaptable to a variety of situations and sudden changes in operation circumstances. Sufficient training and drilling must be provided to ensure that the plans

<sup>49</sup> Reddy et al., ‘Challenges’, p. 260.

<sup>50</sup> McDaniel, Ellis, ‘The Beslan Hostage’, p. 32.

work in practice”.<sup>51</sup> The IC also states that “From the Rescue Services’ and Emergency Medical Services’ perspective, cooperation with the police was not seamless. The available call groups were not utilised, and there were communication problems. Media liaison work also suffered from a lack of coordination. The authorities did not have joint plans for a situation like this, and co-operation training was insufficient”.<sup>52</sup> The United Kingdom JESIP guidelines might be a good starting point for creating national concepts by utilising international lessons learnt.

The last IC report states that “The Ministry of the Interior and the Ministry of Social Affairs and Health should harmonise the management and communications methods of multi-authority situations so that the necessary authorities can join in and are actively included in all suddenly arising major incidents”.<sup>53</sup> A comparison between the first case analysed and the last one reveals that, regardless of the differences in the IC reports, first responders always face the same challenges. The lack of guidelines and laws causes uncertainty about who is or should be leading the overall situation. It can be argued with reason that the lack of national guidelines and training also endangers the safety of individual first responders in situations where technical problems lead to challenges in information sharing. Separate field leading posts lead to incoherent situational awareness and to an unclear operational picture. The purpose of the guidelines or SOPs is not to make management inflexible or to tell professionals how to do their job. Their aim should be seen more as creating common rules for different authorities and as making agreements about the ways of getting the job done. The emergency plans and guidelines should be general enough “[...] but they must contain specific sections with very practical and specific measures depending on type of disaster [...]”.<sup>54</sup>

#### COMMUNICATION CHALLENGES

The analysed cases and previous research emphasize the significance of communication between first responders. In their article, Bs and Hubenko state that “a primary challenge in responding to both natural and man-

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<sup>51</sup> Investigation Commission of the Kauhajoki School Shooting, ‘Kauhajoki’, p. 166.

<sup>52</sup> Investigation Commission of the Jokela School Shooting, ‘Jokela’, pp. 117–118.

<sup>53</sup> Investigation Commission of the stabbings in Turku, ‘Onnettomuustutkintakeskus’, p. 83.

<sup>54</sup> The Belgian House of Representatives, *Investigation Committee Terrorist Attack 22 March 2016. Summary of the activities and Recommendations*, Belgium, 2017, p. 17.

made disasters is communication.”<sup>55</sup> Without an efficient communication system, situational awareness is lost. In all of the analysed cases, the mutual operational picture was unclear. This causes managerial problems, since leaders are not able to lead their teams if they do not know what the overall situation is. Setting up a common operational command post on site is one way to clarify the operational picture and to improve information sharing. This is crucial in fast-paced dynamic situations, like school shootings or other VRT incidents. The analysis showed that even though the authorities might have the suitable communication equipment for setting up a common call group, this possibility is not necessarily used. However, no certainty was gained about the reason for this; whether it was the lack of personal know-how, lack of guidelines and standard operational procedures, human factors, or a combination of them all.

Not using a common call group caused challenges e.g. in Turku when the EMT’s had to decide on intervention with insufficient information about the situation. The emergency response centre informed them that the perpetrator had been stopped, and based on that information, they proceeded. However, this kind of information should have been transmitted through the overall leading authority. Using common call groups could be a solution for this challenge.<sup>56</sup> According to some of the EMT’s, they were ordered to proceed without knowing the number of perpetrators or the exact method of violence.<sup>57</sup> Any communication challenge, regardless of the reasons for it, causes insufficient information sharing and leaves the shared operational picture unclear. An unclear operational picture puts pressure on first responders to act independently or to take unnecessary or unintentional risks. These together could paralyze the whole management of the situation. In incidents where different authorities work side by side, information should not be shared only individually inside each authority but between all of the actors on site.

In incidents like mass shootings, terrorist attacks or school shootings, the need for information during the initial phase is massive. On-site leaders need specific information to make the right decisions, and technical problems, like the lack of call groups or common field command posts,

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<sup>55</sup> B. S. Manoj, A. Hubenko, “Communication Challenges in Emergency Response”, *Communications of the ACM*, no. 50, 2007, p. 51.

<sup>56</sup> McDaniel, Ellis, ‘The Beslan Hostage’, p. 32.

<sup>57</sup> National Bureau of Investigation, Finland (NBI – Keskusrikospoliisi), ‘Myrmanin’, p. 814.

delay information sharing, which then leaves the shared operational picture unclear. Paradoxically, during the first minutes, when it is most needed, the information seems to be the most fragmentary and incoherent. During these crucial minutes, a decision made by an individual first responder can affect the success of the whole operation. Decisions about the use of the above mentioned technical procedures are essential for securing efficient management during the later stages of the operation. In the big picture, interprofessional collaboration, and how the leaders manage it on site, is the determinant.

One concrete way to try and resolve the challenges of communication is to set up a common operational leading post as early as possible. By doing so, the authorities can share information and resources. Setting up a shared command post during the initial phase of the operation enables first responders to form and maintain a common operational picture (COP), defined by JESIP as “a common overview of an incident that is created by assessing and fusing information from multiple sources, and is shared between appropriate command, control and co-ordinating groups to support joint decision-making”.<sup>58</sup> New technological tools, solutions and devices should be used to support coordination. The introduction of new technologies, like multi-authority software, drones and personal location devices, calls for mutual training and common understanding of how and why emergency leaders should use the new tools. It is also a question of resources: new tools designed to help management require more people to handle them and to analyse the received information. Thus, regardless of the many opportunities offered by new technologies, it is justifiable to argue that emergency management between on-site leaders is still mostly face-to-face based coordination that can, however, be supported by new technology.

#### **TECHNICAL PROBLEMS TURN INTO ADAPTIVE CHALLENGES**

The analysed cases show that some of the challenges are in fact technical problems, i.e. many of them can be solved by using existing know-how. Not using a common call group is a technical problem that can be solved by standard operational procedures and guidelines. In the cases where a multi-authority calling group was not used, there were problems with

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<sup>58</sup> JESIP – Working Together, *Saving Lives*, <https://www.jesip.org.uk/common-operating-picture> (accessed 10 December 2019).

information sharing. The problems could have been less crucial if the authorities had used a common operational leading post, but that did not happen. A common operational leading post would also have guaranteed that information sharing could have been done face-to-face in situations where the communication channels were overloaded. It can easily be argued that common call groups and common operational leading posts are well-known procedures among first responders. So why were they not used in the analysed cases? Human factors seem to be a part of the problem: under stress and pressure, agreed practices are not necessarily followed. It also seems that if setting up a common call group or a common operational leading post is ignored in the beginning, it is difficult to change the chosen operational methods of first responders in the middle of intense and complex situations. Thus, it can be stated that the lack of guidelines and regulations is a technical problem, but that developing new SOPs or guidelines is not the solution: it is the starting point of the adaptive challenges. The real challenge is how to implement the guidelines and especially new patterns of behaviour into the work of first responders. In other words, the aim should not be that the guidelines exist, but the goal should be the full implementation of the guidelines, not only among first responders but among all possible stakeholders. Preparing for VRT incidents is an adaptive challenge; it includes implementing guidelines, building trust between stakeholders, and prioritizing resources and training. Responding to VRT incidents is an overall adaptive challenge filled with technical problems and smaller adaptive challenges.

#### **OLD PRACTICES DIE HARD**

The analysed cases highlight the fact that the same challenges have followed first responders since 2002 until 2017. The research shows that the challenges are very similar to those described in previous studies and that they are not dependent on the management structures of different countries. If the challenges are the same worldwide, the starting point for improving collaboration could be that also the good practices are the same everywhere. *This paper claims that the reason for the recurrence of the same challenges – that have been repeatedly addressed by academics and investigation commissions – is the fact that first responders have tried to solve adaptive challenges as technical problems. A practical example of this would be the attempt to improve information sharing by creating technical solutions, like common call groups. In*

Turku (Case 4.), the problem remained when the existing call groups were not taken advantage of properly.

Unconventional incidents require more dynamic and adaptive management. When the situation is extremely challenging, the easiest way to try and handle it is to rely on old practices and familiar ways of working. Thus, the police, the fire service and EMTs tend to lead their own sectors independently, and there can be a common overall leader only on an ad hoc basis. The focus of the management lies more in solving many consecutive technical problems than in solving the large adaptive challenge. Recurring technical problems can be solved by experts or by the authorities, but what is important is that all rescue workers are trained to face them. By doing that, *some of the technical problems of FR collaboration can be solved by common guidelines and training before they turn into adaptive challenges in real-life situations*. Training the commander level only is the answer to solving technical problems on that level, but not inside burning buildings or under gunfire. Learning new ways of working is a big challenge that requires collaboration already during the preparation phase.

VRT incidents are always demanding, and the use of unconventional weapons challenges first responders even more. In Kauhajoki, the police used breathing apparatus during intervention. According to Waugh and Streib, flexible leadership is a necessity during an emergency.<sup>59</sup> Different authorities should view “[...] themselves as a part of the unified command, whose members are equally important and necessary to the operation”.<sup>60</sup> The analysed cases show that flexible thinking is also needed. Complex situations call for dynamic outside-the-box thinking, and the authorities need to combine their skills into an effective mix. Police officers can help put down fires or give first aid. On the other hand, especially in the United States, there is a debate going on about whether special EMTs should carry weapons. In some cases, narrow traditional thinking and inflexible procedures can cost lives or have other negative effects on the outcome of the operation. The common operational leading post should be seen as a toolbox, with the help of which all of the resources are coordinated. The overall leader, with the help of other authorities, coordinates the whole and

<sup>59</sup> Waugh, Streib, ‘Collaboration’, p. 136.

<sup>60</sup> J. W. Pfeifer, ‘Understanding How Organizational Bias Influenced First Responders at the World Trade Center’, in B. Bongar et al. (eds.), *Psychology of Terrorism*, New York, 2015, p. 212.

decides which unit is the most effective one for which task. The different units can and should be put together cross-professionally if the situation requires diverse expertise and manpower.

### CONCLUSIONS

The aim of this study has been to address collaborational challenges between key stakeholders in incidents involving violence resembling terrorism. The challenges were divided into technical problems and adaptive challenges to help first responders develop their practices concerning demanding circumstances where it is important to carefully evaluate which challenge to deal with first and by what measures.

Most studies refer separately to communication challenges and to their immediate consequences, i.e. unclear operational pictures and lack of situational awareness. Here the category of *communication challenges* was introduced as an umbrella term, since without efficient communication and information sharing between different authorities and organizations the common operational picture and situational awareness always remain insufficient. Better communication and better sharing of necessary information can be developed through common training and exercises. Unconventional VRT incidents are never standard cases, but in general the cooperation and trust between different authorities can be improved already during the preparation and planning stages.

*Lack of guidelines and appropriate laws* causes technical problems for first responders. In real-life situations, however, no guidelines without proper implementation, updating and continuous joint training guarantee the success of rescue operations. Guidelines are a practical way to improve the capability of the authorities to manage VRT incidents. It should be remembered that common guidelines or regulations are not synonyms for a mutual understanding of the situation or for a shared operational picture. Common guidelines are a prerequisite for enabling collaboration in the first place. It is namely the implementation of the guidelines and laws into the practices of all branches, and their maintenance, that is a massive adaptive challenge that needs to be solved to ensure flexible and effective collaboration. Guidelines or SOPs rule out human factors altogether; first responders are human beings who sometimes make mistakes. The aim of effective management is to support first responders and help them avoid these mistakes.

The challenges of management in VRT incidents are often combinations of adaptive challenges and technical problems. What often complicates situations is that a small practical misjudgement, which has been here called *a technical problem, can suddenly turn into an adaptive challenge*. Clear guidelines and SOPs, combined with the capability of individuals to make the right choices under extreme pressure, improve the chances of first responders to succeed in rescue operations. Successful collaboration and rescue operations are the result of shared guidelines and procedures, as well as of practical preparations, like common exercises.<sup>61</sup> In addition, behind all good cooperation there is also something deeper; there are familiarity and understanding about each other's professions.<sup>62</sup> The evaluation of common practical exercises is possible, but any reliable measuring of the attitudes and values of first responders, and their effects on cooperation in VRT incidents, is impossible.

Before the implementation and internalization of new ways of thinking and of new practices, the easiest choice for first responders during demanding real-life situations is to *resort to old practices*. During real-life situations, leaders and first responders are always forced to think fast, but nevertheless, the implementation of new procedures should be carried out through well planned common training and exercises. Following old practices in new situations can have an immediate effect on the safety of first responders.

When responding to VRT incidents, management should not be a competition between different authorities. The most rational option would be that the authority who has the best know-how concerning the specific incident and *the necessary requirements to manage the coordination* between all authorities takes over the position of the leading authority. In this context, coordination refers to all the actions needed to make all available resources useful in the most effective way. Even though this study has been made from the point of view of first responders, there are many more stakeholders needed to solve VRT challenges. The focus should be not only on how the authorities themselves can prepare for incidents, but also on how to get the private security sector, public transportation, the military and other possible partners to commit to improving their capability to respond. Overall leading should be seen more as coordination than as managing. This does not change the fact that the responsibility for the success of rescue operations

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<sup>61</sup> McDaniel, Ellis, 'The Beslan Hostage', pp. 31–32.

<sup>62</sup> Kristiansen, Johansen, Carlström, 'When It Matters Most', p. 74.

lies with the authorities. The more stakeholders there are in a situation, the more demanding the cooperation becomes. For first responders to be able to develop common practices to solve the challenges, it is important to recognise the challenges first. Through mutual planning that involves all authorities, through SOPs, and through continuous common training both technical problems and adaptive challenges can be addressed effectively. In order to do this, all authorities need adequate resources and financing, which can, however, turn the challenges into political issues and make them impossible for first responders to solve by themselves. Meanwhile first responders should improve their capabilities and collaboration skills by any appropriate means and by the resources and funding available.

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