

Education at the Polytechnic College Velika Gorica in the Light Of Hazards and Terrorism in Particular

Ivan TOTH, Alen STRANJIK, Željko DOBRANOVIĆ, Polytechnic College Velika Gorica, Accredited College, Velika Gorica, Croatia

Abstract - Primary significance in the preparedness of a community for defence against disasters, accidents, terrorism and other cases of crisis lies on a protection and rescue management system. Competence of people responsible for protection and rescue management is a basic prerequisite for achieving effective and reliable results during all stages of crisis management. Contemporary terrorism with its destructive impacts and threats to civilians has basic characteristics of emergency or disaster respectively. Efficiency in fighting terrorism considerably depends on the knowledge of people involved in organising and performing the activities related to protection, rescue and security, as well as on their preparedness for terrorist attacks and familiarity with the methods and mechanisms used during these attacks. The work outlines the education at the Polytechnic College Velika Gorica at the Studies of Crisis Management and Pyrotechnical Engineering as well as Humanitarian Demining, where highly competent professionals have been trained, who will establish the system and ensure its efficient functioning in a way that will enable the simplest possible action to decision makers, and overcoming crises by use of modern methods and technologies. Due to harmonised actions in overcoming disasters and terrorism that exceed national potentials and require international intervention, focus is laid on the advantages of and need for harmonisation of education and certification at the international level, particularly at the specialist studies.

Introduction

Today, much more than ever before, we live in the age of opposites; on the one hand we aspire to the fulfilment of more complex human rights and freedom under the conditions of ever-increasing security, while on the other hand there is a constant threat to the human community due to the fulfilment of some separate or narrow interests of individual, primarily political groups.

Terrorism as a phenomenon has a long history. However, the threat of terrorism lies not in that what happened but in that what can happen. More specifically, the means used by terrorists in achieving their goals have been changing in line with technological development, so that in addition to classic means, chemical, biological and nuclear means are also made available to them. Since the slogan of terrorist organisations is "the end justifies the means", a great anxiety of the whole world is that such sophisticated means could be used in terrorist actions, causing multiply greater number of deaths, difficulties and troubles than the ones caused by the effects of natural disasters.

In terms of crisis management, terrorism can be considered as a disaster that is intentionally, directly and calculatedly provoked by man. This is substantiated by a great number of deaths, direct and indirect material damage and damage to the environment as a

result of contemporary terrorism. Failure to be well informed, unpreparedness of population and competent protection and rescue services, together with inadequate education and training of persons responsible for crisis management, increases the risk of a terrorist act growing into a disaster with far-reaching consequences. Also, with preparatory or preventive actions timely taken, as well as protection and rescue measures planned to be taken in case of an occurrence, the consequences for population can be significantly decreased.

It must be also stressed that due to inadequate education and inability of decision makers or persons responsible for crisis management, a local community as well as a state in its broadest sense, lose public credibility over a longer period, which is often irreversible.

The occurrence of an increasingly broad range of methods and targets of terrorist actions and use of mass destruction weapons (nuclear, chemical and biological), along with previously used methods and understandings of the people responsible for preparation, prevention, actions and recovery from the consequences of such emergency situations, have imposed the need for inventing new methods of systematic, interdisciplinary and specialised training to act in complex situations at present. Their occurrence can be foreseen with a very high degree of probability, which can be substantiated by current experience throughout the world.

In response to ever-increasing hazards arising from terrorism, the Polytechnic College Velika Gorica has initiated two studies for the training of professionals who will contribute with their knowledge to the mitigation of consequences of terrorism. The Study of Crisis Management established in 2005, and the Study of Pyrotechnical Engineering and Humanitarian Demining or the Mine Action Academy was established in 2003, are unique civil studies in the Republic of Croatia initiated in response to present hazards and terrorism as a threat that assumes catastrophic consequences. Globally, their establishment was based on the needs throughout the world. Considering the fact that over 90 countries are contaminated with mines and that most of them are very poor and devastated by wars, it is obvious that such state also resulted from lack of financial resources for training and the development of demining techniques.

A devastating fact is that in most of these countries, in addition to all enhanced technologies in other industrial branches, manual demining techniques are still used today, e.g. simple prodding sticks, inadequate training, unsystematic management and weak information flow. In addition to all efforts put in prohibiting the use of anti-personnel mines and in demining of mine contaminated areas, the number of professionals in the area of humanitarian demining is not sufficient, and the need for them will certainly extend over 30 years, provided that not a single mine is put into the land.

Interest in this study in Croatia is substantiated by applications from various countries, such as Cameroon, Iran, Iraq, and Bosnia and Herzegovina, which also confirms the need for such profile of experts. The professionals in pyrotechnical engineering are also an indispensable link of a logistic chain in combating terrorism, which is one of today's greatest problems in the world, since it hits innocent civilians. Governments of some states, as well as other powerful and influential organisations that achieve their goals by terrorism, often take part in financing terrorist organisations. With regard to the amount of financial resources that reaches terrorist groups, the level of "successful" terrorist attacks increases, and more sophisticated methods of attack are used, which are at present mainly limited to explosive means and ordnances. Therefore, success in the anti-terrorist struggle largely depends on the knowledge and preparedness for terrorist attacks or methods and mechanisms used in these attacks. In this segment of terrorism as a phenomenon, the field of pyrotechnical engineering plays an important role in the organisation of pyrotechnical

surveys of objects and places of public gathering, destruction and incapacitation of improvised explosive ordnances, expertise of diversions and sabotages, etc., all aimed at the protection and rescue of civilians. Experts anticipate more frequent and current ways of terrorist activities, which inescapably implies the need for a greater number of specialists in the field, who will contribute with their knowledge to the prevention and mitigation of consequences of terrorism.

The Study of Pyrotechnical Engineering and Humanitarian Demining was written about and presented at one of previous international conferences [Krstelj, V., 2003.]¹, and therefore only the Study of Crisis Management will be presented further on.

Undergraduate Study of Crisis Management

Although there is a great need in the Republic of Croatia for professionals specialised in crisis management, by 2005, when at the Polytechnic College Velika Gorica the Undergraduate Study of Crisis Management was established, there was no similar or equivalent civil college or university study for the education of professionals of this profile.

Formerly, these activities were performed by specialists of different educational levels. They were mostly professionals with university qualifications, but of diverse profiles, ranging from the graduates of technical faculties to medical doctors and graduates of social sciences. Relevant knowledge was acquired by subsequent unsystematic and individual training by a work-and-study scheme or from real experience, which often ended in learning from errors. Generally, the protection and rescue system was based on the inventiveness and self-sacrifying work of specialists involved, and not on the acquired knowledge, which is indispensable for an efficient response to diverse current threats, particularly terrorism.

It is hard to imagine that the activities of crisis management can be efficiently performed without a well defined profession and authorities, and particularly without qualified professionals at all existing and required levels of activity.

¹ Krstelj, V.: Education for Humanitarian Demining, 3rd International Conference Emerging Technologies in Non-Destructive Testing, Solun, Grčka, 26-28.5.2003.

The following schematic presentation gives only four basic stages in the process of crisis management (Figure1):

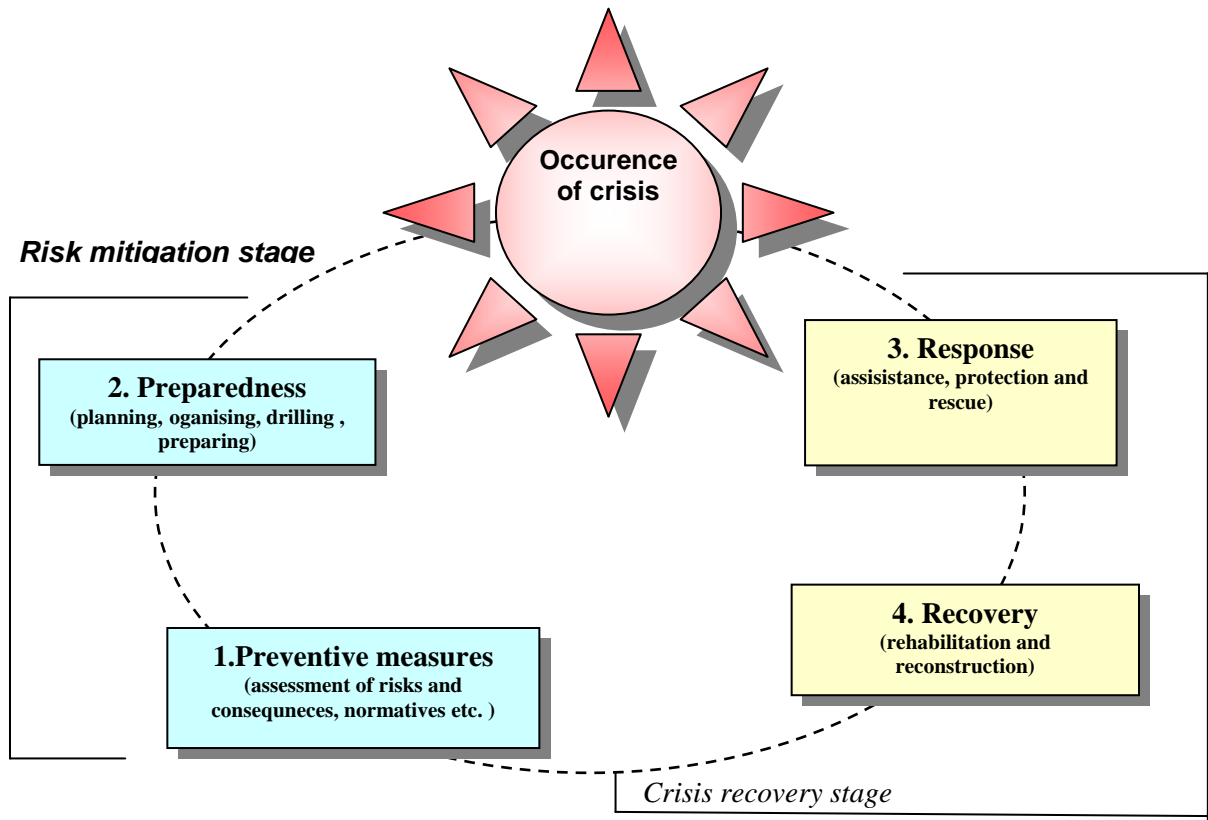


Figure 1: Stages of crisis management

Basic knowledge of this profession that is missing and is identified as a basic shortcoming of the existing system includes: its isolation due to lack of familiarisation with international systems, and lack of procedures for crisis management, planning, preparedness and response management for specific types of crises and disasters, either natural or man-made. Therefore, the Polytechnic College Velika Gorica initiated a new undergraduate study – Crisis Management, which will ensure a required level of expertise in the forthcoming period and competence equivalent to similar studies abroad, and will be adjusted to meet real and anticipated needs in Croatia.

The Study of Crisis Management at the Polytechnic College Velika Gorica is earmarked for the persons responsible for decision-making and/or provision of professional support in corporations, local and government units, particularly in police and military protection and rescue systems.

The Polytechnic College Velika Gorica gathered a number of eminent professionals in this and other marginal fields and worked out a relevant undergraduate study that offers current responses to the needs of the Republic of Croatia in settling the problems of crisis prevention, providing relief and rescue in crises and recovery from the consequences thereof, with an aim of the College's contribution to raising the level of knowledge and understanding in this field not only in Croatia, but in a wider area as well, thus becoming the hub of excellence for crisis management.

The Polytechnic College Velika Gorica initiated this study for the purpose of its application in economy, as well as in local, regional and public authorities, aiming to train highly competent professionals who will establish the system and ensure its functioning in a way

that will enable the simplest possible action to decision makers, and thus prevention and overcoming of crises if they occur. Professionals are beneficial and required in all social segments, and are particularly important to agencies/authorities responsible for protection and rescue, police and military needs.

Respecting all principles and requirements of the Bologna process, the Study of Crisis Management at the Polytechnic College Velika Gorica is conceived in two levels: three (3) + two (2) years.

Level 1 (Figure 2) – undergraduate study that lasts three (3) years, or six (6) semesters, after which students take the title of a bachelor of crisis management with 180 ETCS credits and join the Croatian and European labour market.

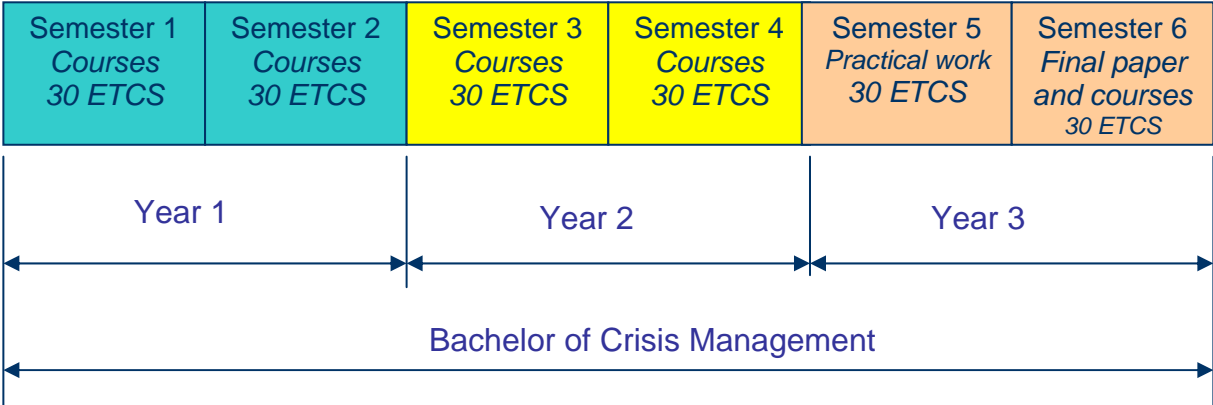


Figure 2: Graphic presentation of the undergraduate study of crisis management

Level 2 (Figure 3) – schedules continued training at a specialist study that lasts for two (1+1) years, or four (2+2) semesters, which provides additional 120 (60+60) ETCS credits and opens the way to master and/or doctoral studies. The curriculum for this specialist study has been under preparation. Its implementation is planned after consent by the competent ministry, specifically as of the next academic year 2006/7, and therefore it will not be further discussed in this paper.

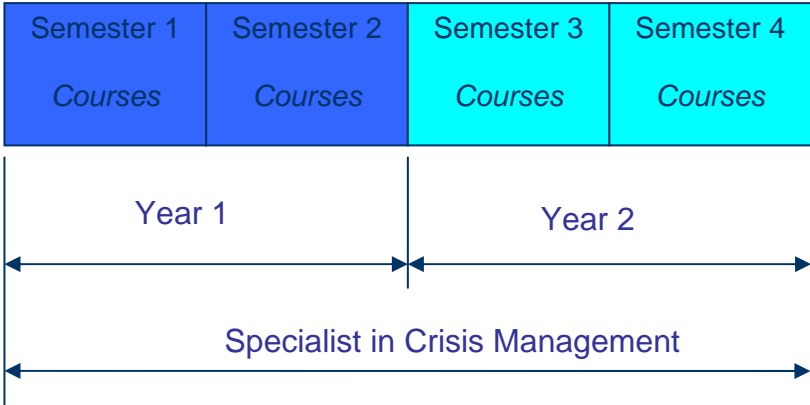


Figure 3: Graphic presentation of the specialist study of crisis management

The curriculum and structure of a program of the three-year undergraduate study are similar to other technical studies. Students of the first year acquire general and technical

knowledge through lectures and exercises of compulsory and elective courses, while during the second year and part of the last semester specific technical courses are scheduled.

Each semester of the undergraduate study of crisis management is given 30 ECTS credits, and lasts for 15 weeks. A weekly student workload is 25 classes.

All courses have associated ECTS credits that enable flexibility of the study and student mobility. Part of elective courses is chosen in agreement with a mentor, while the rest is chosen by students according to their preferences. Part of lectures and exercises is conducted in student and simulation workshops, practicums and in the field.

Having successfully mastered the program of lectures and exercises in Semester 5, the students proceed to practical work in cooperation with relevant public institutions (e.g. National Search and Rescue Authority, ministries, counties, towns and municipalities), in corporations of special interest and significance for protection and rescue (public fire brigades, centres 112, Medical Emergency Service, Croatian Red Cross, Search Service, Maritime Search and Rescue Service, Mountain Rescue Service, etc.), and with other big companies and institutions cooperating with the College.

During the last (sixth) semester, the student attends lectures/elective courses that enable him to successfully master the program of studies and a final paper, and to get a certificate of a bachelor of crisis management (B.Sc.).

During three years of the undergraduate study of crisis management, basic and technical knowledge is acquired that enables practicing the profession and characterises it, together with organisational and managerial capabilities and skills that belong to the educational degree on the level of a bachelor.

Basic knowledge (mathematics, physics, chemistry, foreign language, computer science, safety, etc.) provides understanding and mastering of technical, professional and social knowledge during continued training and improves student communication skills, then enable mastering the program of studies and transfer of acquired knowledge.

Additional technical knowledge and knowledge of social sciences (civil engineering, critical infrastructure, anti-terrorist protection, data security, logistics and safety, protection of people and property, crisis psychology, etc.) encompasses required professional knowledge and skills, and is conducted at the level that trains a student for the title of bachelor, and for a possibility of acquiring additional knowledge at a specialist master study.

Organisational and managerial capabilities (risk assessment, crisis planning and management, public relations, etc.) are particularly relevant, since exactly that part of tasks and responsibilities is associated to a bachelor of crisis management at settling the problems of protection and rescue. The specified tasks include defining, organisation and implementation of measures in crisis prevention, drafting the analysis of hazard sources and documents relevant for protection and rescue (hazard and risk assessment, action plans, master plans of conducting exercises, etc.), managing the activities and interventions of rescue and relief during a crisis, as well as elimination and recovery of consequences.

Competencies of graduated students and quality assurance

While specifying the competencies of undergraduates of the study of crisis management, account was taken of the field of their activity and a degree of qualifications required for successful task performance, which is best illustrated by the following schematic presentation (Figure 4):

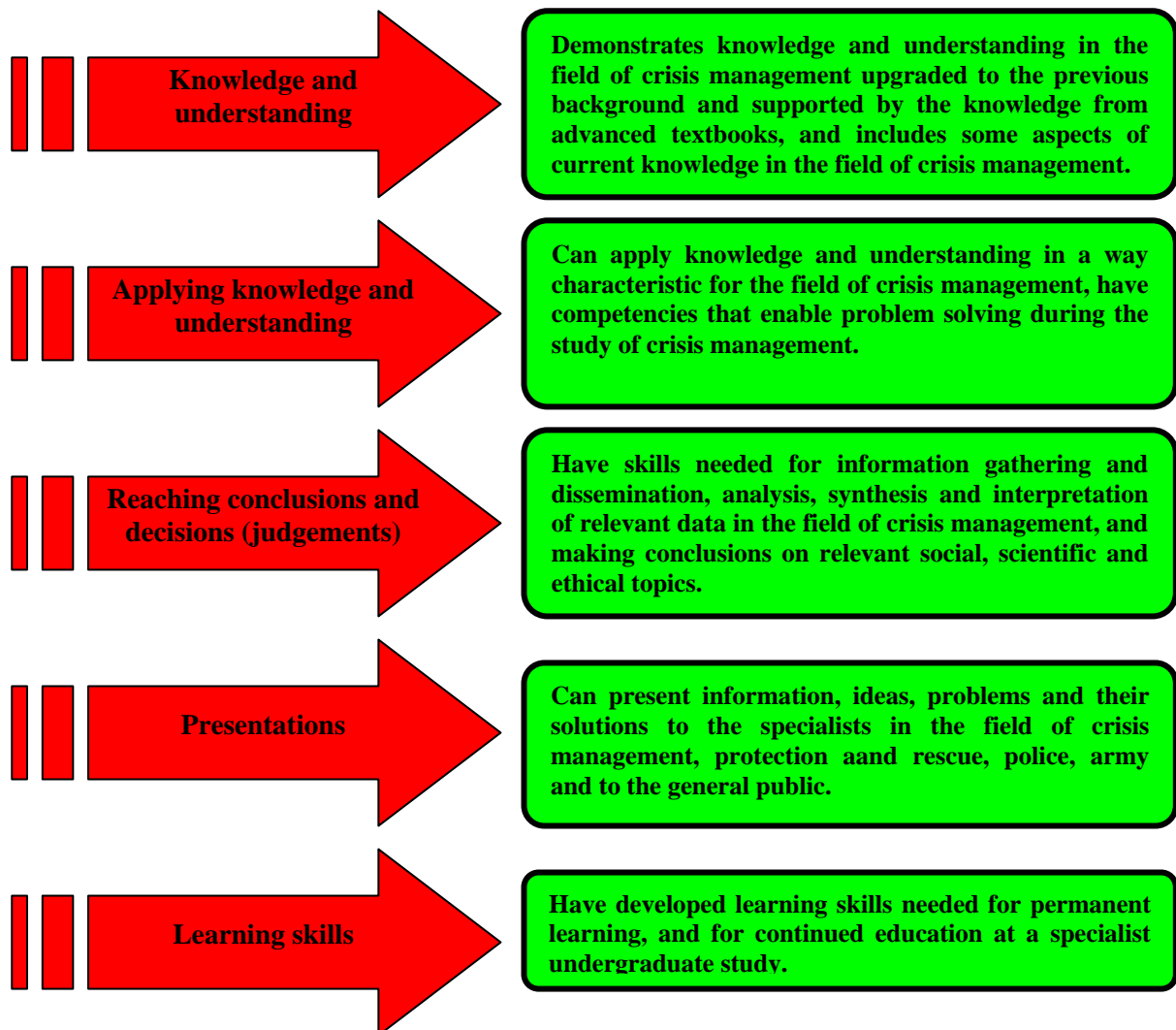


Figure 4: Schematic presentation of general results of learning at the Study of Crisis Management at the Polytechnic College Velika Gorica (Dublin descriptors)

Having completed the Study of Crisis Management, bachelors of crisis management acquire knowledge and skills needed for independent problem solving in managing preventive actions, data collection and processing, in proposing procedures and solutions, conducting management processes and aligning with decision-making by managerial structures of an organisation or authority.

In addition to that, bachelors of this study will be qualified for problem solving in the field of protection and rescue, which includes defining and implementation of preventive measures of protection, then in production, application, storage and transport of explosive, hazardous and toxic substances, in analysing the source of hazards and in elaboration of

documents relating to protection and rescue (hazard and risk assessments, action plans, master plans for conducting exercises etc.) in compliance with applicable EU legislation and relevant directives and norms.

In order to ensure that, after the completion of this study, students will get high-quality education and relevant competences needed for crisis management, along with a good study program, it is also necessary to provide permanent quality control of study performance and continued elimination of possible shortcomings.

Considering the fact that today's training objective should not be the availability of computers and other technical equipment, and it is clear that the use of software packages enables the conducting of simulation exercises, which helps students master the simulated problems that really occur.

To be a specific institution of university education is part of the vision of the Polytechnic College Velika Gorica. To be unique in a field is very demanding today, but aspiring for uniqueness is of great importance. To achieve it at the current market with assured quality followed by a relevant demand for such uniqueness means to achieve a resounding business success.

Awareness of the importance of cooperation with businessmen and other institutions for the transfer of professional knowledge is incorporated not only in the studies of crisis management as well as pyrotechnical engineering and humanitarian demining, but also in all other study programs at the College. Contents of undergraduate studies of crisis management as well as pyrotechnical engineering and humanitarian demining have constantly following the needs of communities, and are adjusted to current demands or threats to them. Having completed these studies, bachelors gain sufficient theoretical and practical knowledge needed for settling practical tasks. Just for that reason, a significant part of practical work has been introduced, through which mentors monitor each student and instruct them in most important fields of a particular profession, thus achieving greater efficiency in mastering knowledge and skills needed for work.

This approach gives the student an opportunity to substantiate his quality to his employer, who can also have insight into his work. This increases the possibility of their employment after the completion of study. The practical work also gives a feedback on the needs in economy, either those related to human resources or to professional knowledge of future specialists. For that reason, dating back to the early days of establishing the College, special attention has been paid to the issue of synergy between the number and type of specialists trained at the College, along with the needs of labour market.

Conclusion

The basic objective of the Polytechnic College Velika Gorica is continued quality assurance of undergraduate studies and their adjustment to the needs of contemporary world. In that way students are offered orderly and efficient acquisition of knowledge and skills needed for performing the activities demanded, which should result in fast employment where they can efficiently perform required tasks, with a minimum additional training. This enables them to achieve the capability of permanent acquisition of new knowledge through life-long education, which is a prerequisite for accepting new technologies. For the Studies of Pyrotechnical Engineering and Humanitarian Demining as well as Crisis Management, in terms of terrorism, it is very substantial; since it is just the venue where new upsets arise, that we should be prepared for.

Governments of some states, as well as other powerful and influential organisations that achieve their goals by terrorism, often take part in financing terrorist organisations. With regard to the amount of financial resources that reaches terrorist groups, the level of "successful" terrorist attacks increases, and more sophisticated methods of attack are used, which are at present mainly limited to explosive means and ordnances. Therefore, success in the anti-terrorist struggle largely depends on the knowledge and preparedness for terrorist attacks or methods and mechanisms used in these attacks. In this segment of terrorism as a phenomenon, the field of pyrotechnical engineering plays an important role in the organisation of pyrotechnical surveys of objects and places of public gathering, destruction and incapacitation of improvised explosive ordnances, expertise of diversions and sabotages, etc., aimed at the protection and rescue of civilians. Experts anticipate more frequent and sophisticated ways of terrorist activities, which inescapably implies the need for a greater number of specialists in the field, who will contribute with their knowledge to the prevention and mitigation of consequences of terrorism.

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