

Decision Support – Tool for Customization of Security Measures for Cultural Events

Abstract— This article is focused on the creation of a tool for customization of security measures. The aim is to develop the tool which helps for a decision about the security measures. We build on the results of the project VI20172019073 "Identification and methods of protection of Czech soft targets against violent acts with an elaboration of a warning system". In our research, we use the result from the mentioned project for the decision support for the protection of cultural events. In the first part of this article, we describe the Soft targets, and we define this term. In the other section, we present the results from our database of terrorist and other violent attacks. The statistics show the violent attacks (include terrorist attacks) are a large problem nowadays. The most important section is about our tool for the decision about the implementation of the security measures.

Keywords— *Soft target, decision support, security measures, violent attacks*

I. INTRODUCTION

This article presents our research in the area of Soft targets. Nowadays, the protection of Soft targets is a very important area in security and safety. The attacks, especially the violent attacks, shows, that the danger is all around us and we must prepare for this. Our research takes around four years, and we have already published several articles [1]-[5], chapters of books [6] and book [7]. Our motivation is to explain this area, the basic terms and definition and to present several options of protection.

In the first section of this article, we define the Soft targets, and we give the examples. In the other part, we show statistics, because it is very important to know how big the danger is. The most important section is about our tool for planning of the security measures. We are focused on cultural events, but it is possible to use this tool for other categories of Soft targets.

The terrorist attacks and other violent attacks are a huge problem in Europe from 2014. Before this year, only a few attacks were in Europe. In 2014 the Islamic State has declared the caliphate, and they started to attack in Europe.

II. SOFT TARGETS

Ob. Cit.: "As "Soft Targets" can be referred to those objects, (open) spaces, or events characterized by the accumulation of a large number of people, the absence or low level of security measures against violent assaults and their omission among critical infrastructure and hard target objects." [8]

According to this definition, we have three characteristics of the Soft targets:

- a large number of people
- the absence or low level of the security measures against violent assaults

- their omission among critical infrastructure and hard target objects [8].

According to this definition, among the Soft targets belong to schools, hospitals, social and cultural events, religious places, tourist centre, sports events, transport system, shopping centre etc.

III. STATISTICS AND DEVELOPMENT OF TERRORIST ATTACKS

This section describes the terrorist and other violent attacks in Europe (Fig. 1) on the Soft targets. We create our database of violent attacks in Europe and some part of Russia and Turkey from the year 2014 to the present. This information is very important for us because we need to know details about attacks – place, time, modus operandi, type of Soft target etc. [9] We have 141 attacks in the database today. Our sources are open sources. We create our database on the base of news on Internet and in another social media.

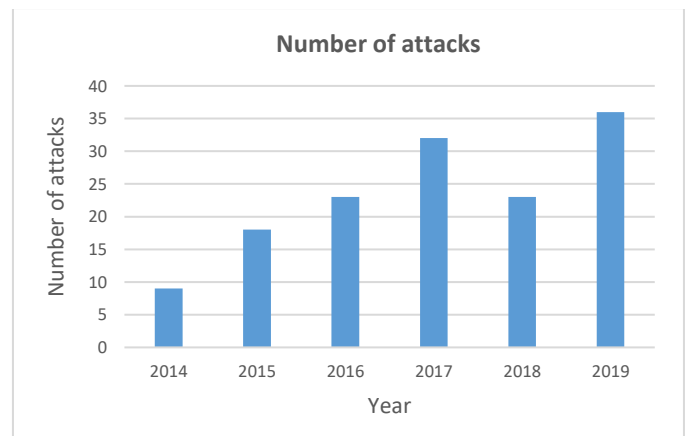


Fig. 1. Number of attacks from 2014 to 2019

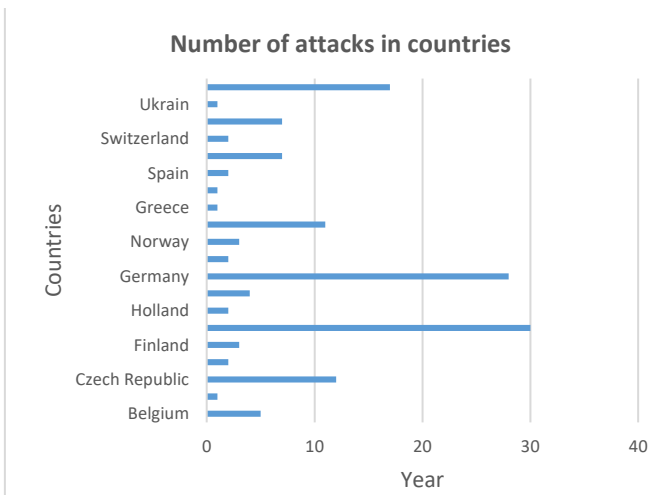


Fig. 2. Number of attacks in countries from 2014 to 2019

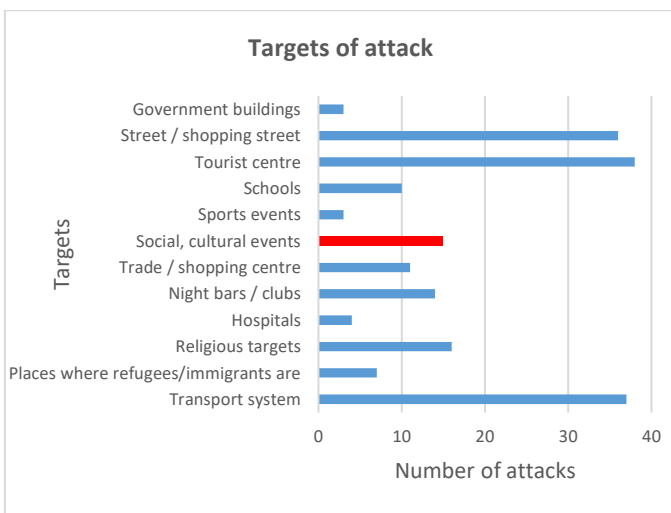


Fig. 3. Targets of attack from 2014 to 2019

In Fig. 3, we can see the targets of attacks. On the first place, the tourist centre is. Then we have street/shopping street, transport system and religious targets. In the previous article [3], we described the transport system. Now we present the research about social, cultural events. The government in the Czech Republic focuses on this type of targets the last years, so we wanted to help to create an effective tool for planning of the security measures.

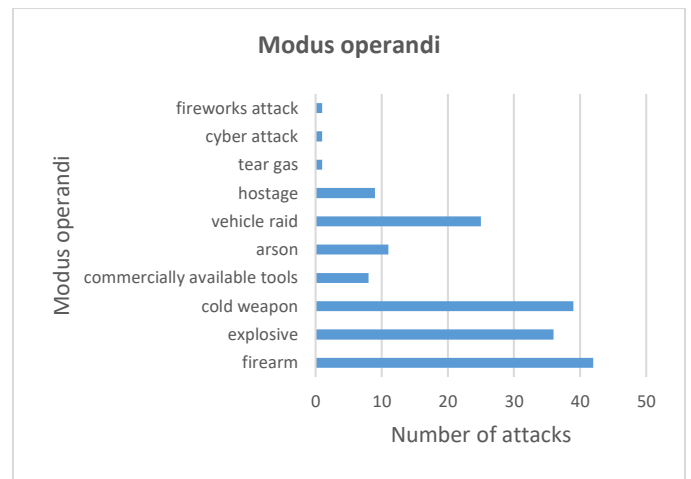


Fig. 4. Modus operandi from 2014 to 2019

In the following part, we present the graphs, which are focused only on social, cultural events. The number of attacks, the countries where the attacks were, and the modus operandi is very interesting.

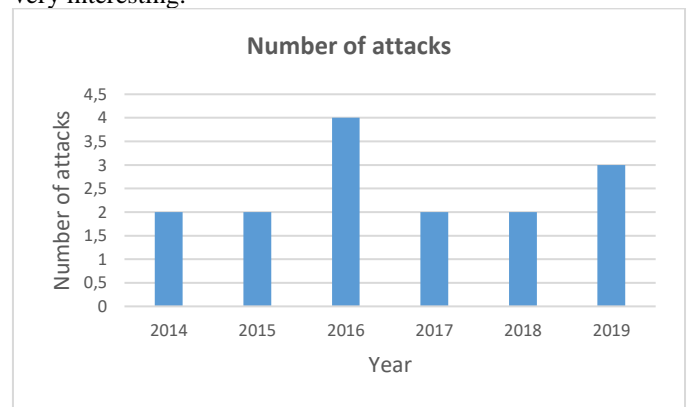


Fig. 5. Number of attacks for social, cultural events

In 2016, the highest number of violent attacks was on social, cultural events. In the second place, the year of 2019 is.

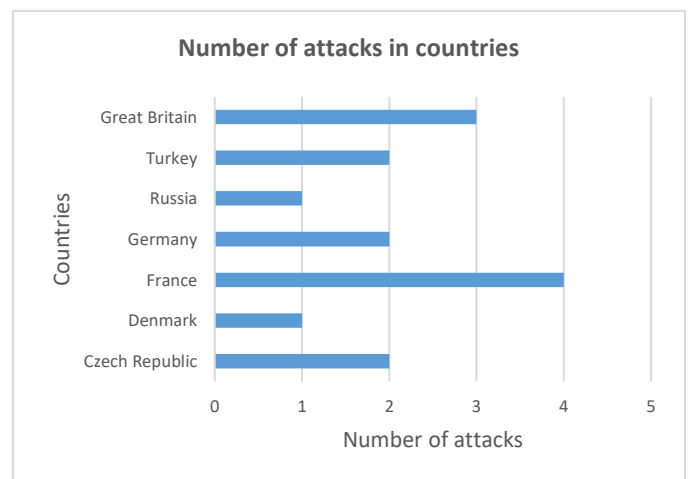


Fig. 6. Number of attacks in countries for social, cultural events

Fig. 6 shows that the highest number of violent attacks are in France. On the second place, Great Britain is. The other places are very interesting – Turkey, Germany and the Czech Republic. This graph is very important for us because it shows that violent attacks are also a problem for us and we must solve it.

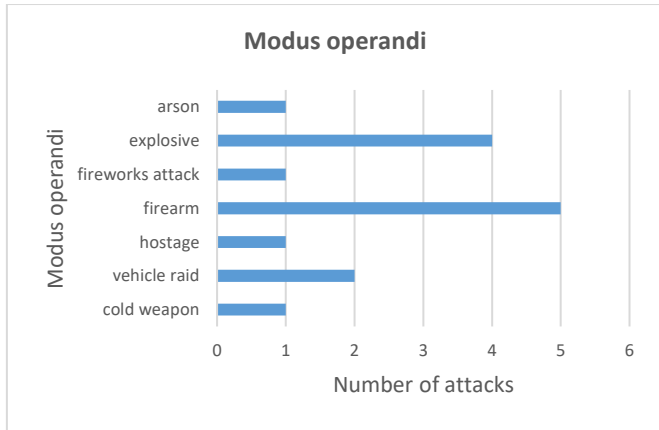


Fig. 7. Modus operandi for social, cultural events

IV. TOOL FOR CUSTOMIZATION OF SECURITY MEASURES

The method, which we present in this article, build on the project realized in the years 2017 – 2019. The project was called "Identification and methods of protection of Czech soft targets against violent acts with an elaboration of a warning system". Our research aims to create the tool for planning of the security measures, especially for the cultural events. The tool is available on: <https://stpi.cz/metodika-momec/>

The protection of the cultural events is a very demanding process, mainly because each event is unique and original (each event is therefore associated with a different range and intensity of risks). To ensure the security and safety of events, it is also necessary to look at other characteristics, in particular the type of cultural event (sports, cultural, social, religious, etc.); the length and venue of the event and, last but not least, its accessibility (limited admission; public or private events).

Cultural events can be characterized based on many criteria. From the safety point of view, however, they are the most important - the venue and its accessibility. Other essential criteria are:

- duration of the event
- number of participants
- the importance of the event or the frequency/periodicity of the event.

Based on the nature of the venue, we divide cultural events into:

- outdoor
- indoor
- combination.

Cultural events are debated issue, as they usually involve a larger number of people, and their security is not usually very

high. Emphasis is currently put on cooperation with the municipality and with the Integrated Rescue System.

The methodology begins with the determination of the initial state of the assessed object or event. This condition is determined based on predetermined factors (Fig. 8).

The combination of these factors helps us to choose the security cards with security measures.

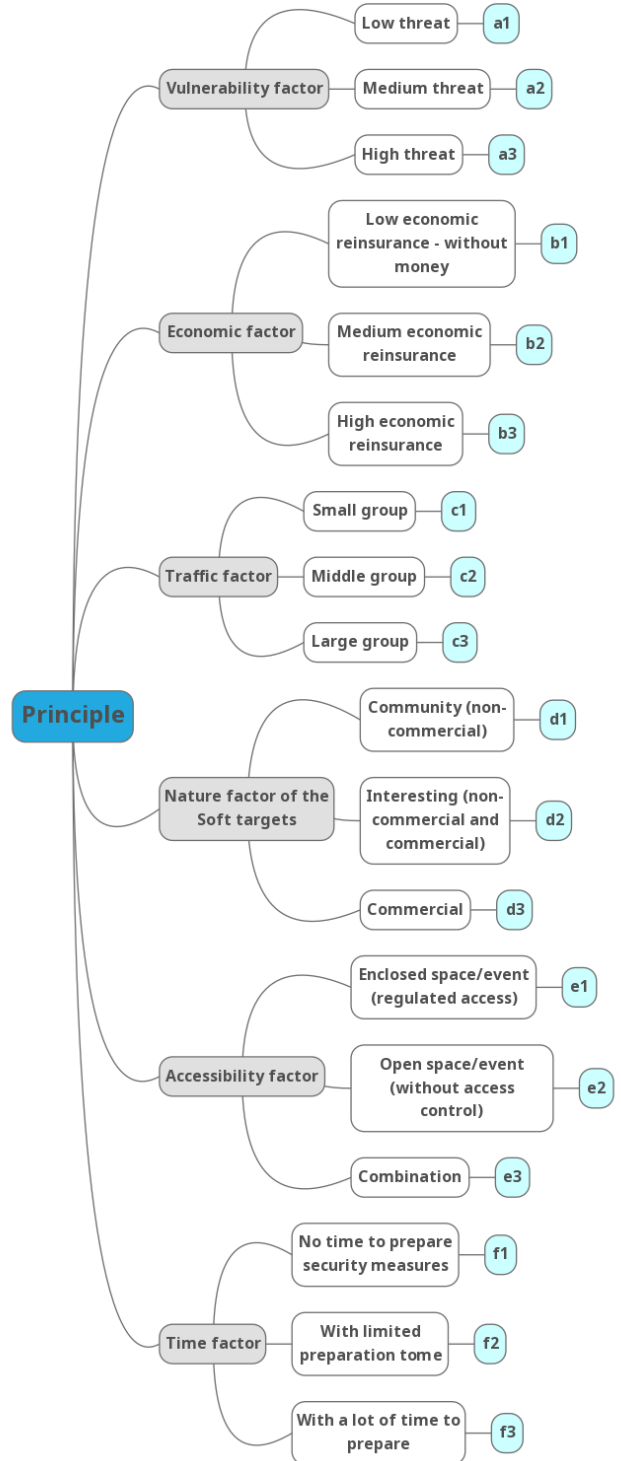


Fig. 8. Principle of tool

Vulnerability factor of the Soft targets: A value based on the methodology called Identification and vulnerability of the Soft targets, which we created in the project "Identification and methods of protection of Czech soft targets against violent acts with an elaboration of a warning system", representing the probability of attacking a managed soft target.

Traffic factor: the category is based on the methodology Identification and vulnerability of the Soft targets about population density, but it is also possible to refer to the subjective assessment of the safety coordinator as to how many people perceive. The unique properties and dynamics of a group can determine a medium group (high mobility, spread over an area not corresponding to the number, etc.) from a small group by its properties.

Nature factor: A category that determines the commercial or non-commercial events.

Accessibility factor: the factor considers the characteristics of the soft target, which are determined by its location: indoors, outdoors and combinations. This fundamentally affects the design of appropriate measures.

Time Factor: The period from the origin of the soft target to the beginning of its security preparation defines a range of possible measures where the time required for their preparation varies.

The factor assumes a soft target in the form of an event limited in time, not an existing soft target with a permanent occurrence, a church with a routine schedule of worship and extraordinary events based on the liturgical calendar. In such a case, it is advisable to take part in all sub-factors and to apply security measures gradually without abandoning the time-available measures that can be applied immediately and over time replaced with more advanced forms of soft target protection. The main emphasis should be on the application of measures that are able to secure the weak points of the soft target and consequently absorb the most likely risks, according to the attack mode. This procedure cannot be applied consistently; the measure must be graded in all relevant places; otherwise, the least secure place will define the level of security of the whole soft target.

In the end, we have this type of result: a1b2c3d1e2f3

The other step is to create the tables with security measures. These tables are divided into three tables according to the key of the financial factor, so orientation in the cards is made easier in the sense that a reader interested only in security measures that do not represent financial costs can limit the spectrum of measures to the first table, etc. On the contrary, a reader who does not exclude large financial investments will find suitable measures in Tables 2 and 1.

In Table 1, we show the example from one of three tables with security measures.

TABLE I. EXAMPLE OF A COMBINATION OF FACTORS AND SECURITY CARD – LOW ECONOMIC REINSURANCE

	Name	Factors
1.	Alert and information cards	a2,3,B,c2,3, D,E,F
2.	Coordination plan	A,B,C,D,E, F
3.	Handheld metal detector	a2,3,B,c1,2,D,e1,3,F
4.	Cooperation with other Soft targets	a2,3,B,C,D,E,f3
5.	Plan of invacuating	A,B,C,D,e1,3,F
6.	Plan of evacuation	A,B,C,D,E,F
7.	Security plan	a2,3,B,C,D,E,F
8.	Crises plan	a2,3,B,C,D,E,F

When an uppercase letter is used, it means that it contains all sub-factors: B = b1, b2, b3.

TABLE II. EXAMPLE OF A COMBINATION OF FACTORS AND SECURITY CARD – MEDIUM ECONOMIC REINSURANCE

	Name	Factors
1.	Magnetic contacts for windows, doors	a2,3,b2,3,C,D,e1,3,f2,3
2.	Glass break	a2,3,b2,3,C,D,e1,3,f2,3
3.	PIR detector (passive infrared sensor)	a2,3,b2,3,C,D,e1,3,f2,3
4.	Access cards / chips	A,b2,3,C,D,e1,3,f2,3
5.	Fence	a2,3,b2,3,C,D,e3,f2,3
6.	Security doors	a2,3,b2,3,C,D,e1,3,f2,3
7.	Security foil	a2,3,b2,3,C,D,e1,3,f2,3

TABLE III. EXAMPLE OF A COMBINATION OF FACTORS AND SECURITY CARD – HIGH ECONOMIC REINSURANCE

	Name	Factors
1.	Safety frames	a ³ ,b ³ ,c ^{2,3} ,D,e ^{1,3} ,f ^{2,3}
2.	Detection of suspicious behavior	a ³ ,b ³ ,C,D,E,F
3.	Turnstiles	a ³ ,b ^{2,3} ,C,D,e ^{1,3} ,f ^{2,3}
4.	Pillars	a ³ ,b ³ ,c ^{2,3} ,D,e ^{1,3} ,f ³
5.	Detectors of explosives	a ³ ,b ³ ,C,D,E,f ³
6.	X-ray	a ^{2,3} ,b ³ ,C,D,e ^{1,3} ,f ³

The last step of our tool is to create security cards with security measures. Each security cards provide a brief description of the proposed security measures. They always consist of a general description, safety characteristics, classification according to DDRM principle (deter – detect – react – mitigate), advantages, disadvantages, suitability.

Cards are divided into three groups according to financial demands:

- security measures without financial means
- security measures - medium cost
- high-cost security measures

Each card contains a basic sketch of the security measure, the description is divided into sections (if any of the above sections were not listed in the security measure card, relevant content was not found and was deleted).

The content of the cards:

- Category: the measure is evaluated according to its suitability for the specified factors, scale yes, no. Yes, it is used if the measure is appropriate for the given factor.
- Diagram: defines the location of measures within the safety measures diagram.
- Description: basic characteristics of the measure, characteristics, a form of what it consists of, what is its purpose and use.
- Safety characteristics: description of measures in the context of safety, essential safety characteristics.
- Benefits: description of the main benefits of the measure about the objective pursued and the purpose of the measure.
- Disadvantages: presentation of problematic aspects of measures, supposed application complications, a necessity.
- Suitability: emphasizing a higher degree of usefulness for a particular type of the Soft target.
- Similarity: enumeration of measures that are similar and partly interchangeable with specific security measures.
- Factors: in this section, the measure is examined through the optics of the added factors in relation to usability and efficiency.
- Summary: a summary of important findings on the security measure.

The process is:

- 1.step: the combination of factors
- 2.step: based on the results of the factors, we find in one of three tables the best option of security measures. The goal is to find the security measure with all of our chosen options of factors.
- 3.step: reading and implementation security measures according to security card

The methodology aims to inform the security targets of the Soft targets that it is always possible to take measures to increase protection, even when financial resources are not available for the purchase of specialized security equipment and external services of specialized teams. A large number of security measures require nothing but the activation of the Soft target as a self-conscious security guard who views the Soft target as an object of possible attack and can use existing means to protect it.

Any measure is better than none, giving up safety because the achievable measures will not have a real effect, because it will be easy to overcome, is unjustified. In the case of an entirely professional and cold-blooded approach, virtually every soft target is vulnerable; if not, its definition would change to a so-called hard target.

An important factor in any measure taken is to deter an attacker from intending to pursue an attack, rather than overcoming obstacles in the form of security measures,

however inconsistent in the complex concept of soft target security. One well visible security officer at the entrance to the soft target can deter the perpetrator of the attack without there being a real likelihood that he will proactively stop him indoors.

V. FUTURE STUDIES

In our future studies, we want to continue the Soft targets and their protection. We continually create our database of terrorist and other violent attacks, and on this basis, we will propose the other possibilities of security and safety.

In our other project ("Built-up and operation development of security systems at mass events"), we are focused on the cultural events. We want to create a tool for planning the whole the cultural event since the beginning, and the necessary part is security and safety.

VI. CONCLUSION

In this article, we present our research focused on Soft targets. We find the possibilities for their protection. This article is focused on the tool for the planning of the security measures according to input factors and according to the economic situation. The whole process is very easy because we wanted to create the tool for all people, not only for experts.

We also create a website for better manageability and usability (<https://stpi.cz/metodika-momec/>).

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