

# THE SOFTWARE FOR THE SECURITY MANAGEMENT IN THE SOFT TARGETS

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## ABSTRACT

The soft targets and crowded places are defined as the objects or the places without the integration of the special security measures, which are oriented in opposed to the threats of the violent criminal attacks. These objects have the similar characteristics, which can be identified according to the features of the soft targets. One of the main features is that these objects have a lot of the uncontrolled visitors per day. The purpose of these objects is to provide the function or the services to the whole range of the visitors without monitoring access to these objects. The current system doesn't require the special security options for the soft targets. The recent security state of the objects is caused by different security and safety requirements to the objects. For example: need to buy a ticket to the football match, installed cameras for the monitoring stealing. This paper proposes the software which can evaluate the objects, calculate the current state of the object and defined preventive actions, which have to do with the object. The proposed software can also have the dynamic part, which can use the planned data and simulate the state of the objects.

Keywords: workstation design, work measurement, ergonomics, decision support system

## 1. INTRODUCTION

The soft targets or crowded places are the objects (buildings, areas, complex, free spaces and others), in which are concentrated a lot of people in the same place. These objects have not integrated the special security measures, which can secure the people before the violent criminal attacks. The violent criminal attacks can be defined as criminal attacks, which are oriented to human life and can cause the fatal consequences on population. The attack for these objects can cause the fatal consequences for the visitors but not only for them. The losses can be caused in the closed area of these objects too. The measures can increase the ability to secure the object or can increase the ability to react to the attack faster.

According to the **Marquise (2015)** are defined indicators of the attacks to the soft targets as:

- Airport terminals – vulnerable to insider threats, multiple locations to place explosives, open accessibility (outside security), large number of

people in a small area, numerous targets and adjacent structures, size and remote location of some facilities.

- Shopping Malls – unrestricted public access, large number of access point, unrestricted access to adjacent buildings, access to suppliers, vendors and maintains workers, limited employee background checks, and limited security force.
- Stadiums/ Arenas – large number of people entering with varying levels of inspection, limited control of vehicles entering area, limited or no inspection of items carried in by event participants, vendors, contractors, limited facility security between events, large number of people at scheduled and publicly announced events.
- Convention Centres – open access, large urban locations, limited background checks on employees vendors, little or no screening of patrons, little standoff for parking areas, infrequent use of intrusion detection systems, deliveries are unmonitored.
- Hotels – unrestricted public access, unrestricted access to areas adjacent to buildings, limited employee background checks, limited security force, unprotected HVAC systems, and building designs are not security- oriented, multiple locations to place explosives or hazardous agents.

In the document Basics of Soft Targets Protection – Guidelines **Kalvach (2016)** defined the soft targets as:

- Schools, educational facilities, colleges, dining rooms, libraries.
- Church memorials and places dedicated to worship.
- Shopping centres and complexes.
- Cinemas, theatres, concerts halls, entertainment centres.
- Meetings, processions and demonstrations.
- Bars, clubs, discos, restaurants and hotels.
- Parks and squares, tourist sights and attractions, museums and galleries.
- Sports halls and stadiums.
- Major transport hubs, train and bus stations, airport terminal.

- Hospitals, polyclinics and other medical facilities
- Cultural and social events.
- Community centres.

According to these specifications, we can define a lot of kinds of criteria for the security analysis. However, if we want to develop the system, which can evaluate the degree of security of the object, then we need to know the threats. If we don't know what threat is, we can't know how the level of security is. We need to identify and understand the threats and according to them, we can define criteria. And according to the criteria, we can calculate the security level.

This paper is organized as follows. The second part describes the current global situation in security of private citizens. The next part is focused on the methodology of the proposed assessment of the soft targets. The concrete description of the specific and general analysis is in Section 4. Section 5 describes the proposed dynamical software support. And the last section of the paper explains the current results of the research and suggests the next development of the research.

## 2. THE GLOBAL SITUATION

According to the Global Terrorist Index, the private citizens and property is the group facing the highest number of deaths from terrorist attacks, although deaths from attacks on civilians and other non-governmental targets declined in 2015. We can see this progress in Figure 1.

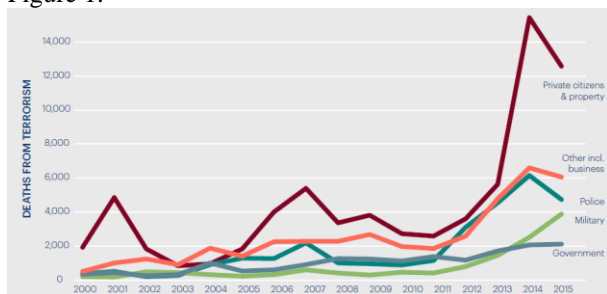


Figure 1: Sample Figure Caption

The majority of the attacks were against private citizens and property, accounting for 43 per cent of all deaths in 2015 according to the Global Terrorist Index 2016. According to these facts, we can constate that the risk of attack on human life is high. However, not only terrorism can endanger us and our life. The same characteristics of terrorism are very complicated defined. We can say, that Czech republic didn't have terrorist attack yet. However, in the last 3 years, we registered 2 violent attacks, which are described in Table 1. On the other hand, Virginia Fusion Center in document **Educational Facilities Threat Assessment (2008)** mentioned, that the schools and educational facilities were targeted in 285 terrorist attacks in 2008, representing 3% of the targets attacked. But according to **Crockett (2005)** other types of attacks were not classified as terrorist but as violent and criminal attacks. We can suppose, that number of the violent and terrorist attacks is higher than the only number of the

terrorist attacks. As a result of these facts, we need to develop the system, which can analyze the object features according to the closely specified threats.

Table 1: The numbers of the attacks in Czech Republic

Type of object	Town	Year	Number of death / number of injured	Method
School	Žďár nad Sazavou	2014	1 / 0	Attack by knife
Restaurant	Uherský Brod	2015	8 / 0	Shooting

According to the global situation, but according to the situation in Czech republic too, we need to develop the methodology or system, which can have the significant impact on the security situation in these objects. This methodology and system are based on the definition of the potential attackers and threats. The potential attacker can be defined as the attacker, who want to attack to human life. The system will be developed for the assessment the current situation in the object in relation to violent criminal or terrorist attack. The assessment has some differences in evaluated parameters according to the chosen threats.

## 3. THE METHODOLOGY OF THE ASSESSMENT

The next part of the paper describes the basics of proposed methodology on which software is based. In the proposed phase of the research, we build on the authors **Chunlin (2012)** and **Raspotnig (2013)**. The first part of the paper is aimed to the primary process, which is applied to the decision making process.

### 3.1. The Assessment of the State of the Security

The whole process of the assessment is based on the simple process, which is described in Figure 2. The process of the assessment is divided into 5 steps.

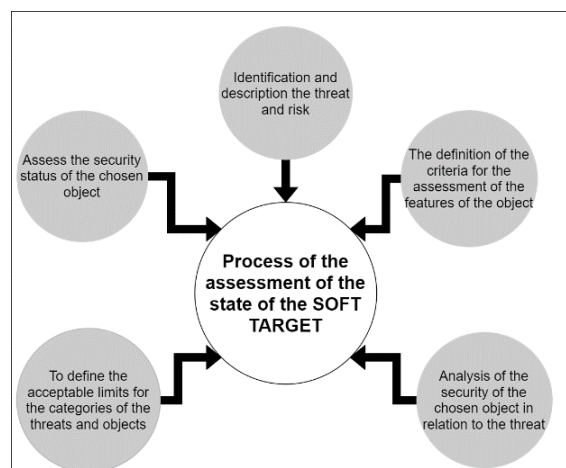


Figure 2: The Process of the Soft Target Assessment

The assessment of the state of the soft targets should be defined according to the assessment of the security in relation to the threat. The first step of the process in Figure 2 is the identification and the description of the threat and the risks. The methodology can examine the

state of the objects according to the identified threat and risk. The examination of the state of the object is realized according to the second step of the process and it is the definition of the criteria for the assessment. If the system knows how the features of the target are then the system can evaluate current state. The aim of the whole process is step number 3. The third step is analysis. The whole process of the analysis is described in the next section of the paper. The next step needs to know acceptable limits for the decision making process. The system can make the decision according to the limits for each of these analyzed data. The last step is to define the final assessment. If the current security state is ok, then the system can propose the recommended actions. On the other hand, if the current state is not ok, then the system defined immediate corrective actions and permanent corrective actions.

The identification and description of the threats and risks can be seen in Figure 3. Each of these threats can be described according to the scenarios. The next step is based on the evaluation and the calculation the risk of these defined scenarios.

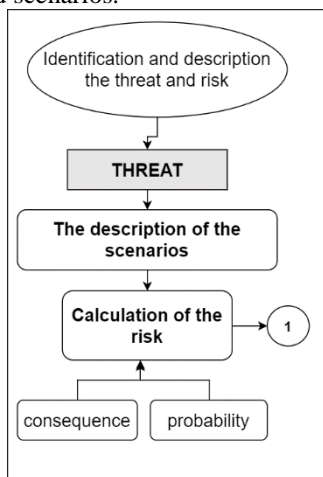


Figure 3: The Description of the Threat

The process continues into the step of the definition the criteria, which can be seen in Figure 4. The criteria examine the significant features of the object. The significant features are chosen according to the previous step – according to the chosen the threat.

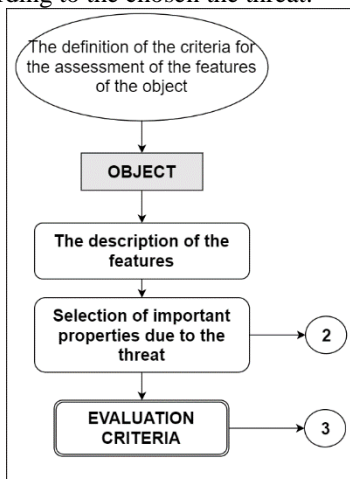


Figure 4: The Definition of the Criteria

The next step of the process is the analysis. The analysis is based on the chosen threat (previous step) and defined criteria, which examine the features of the building. The basics of this step are described in Figure 5.

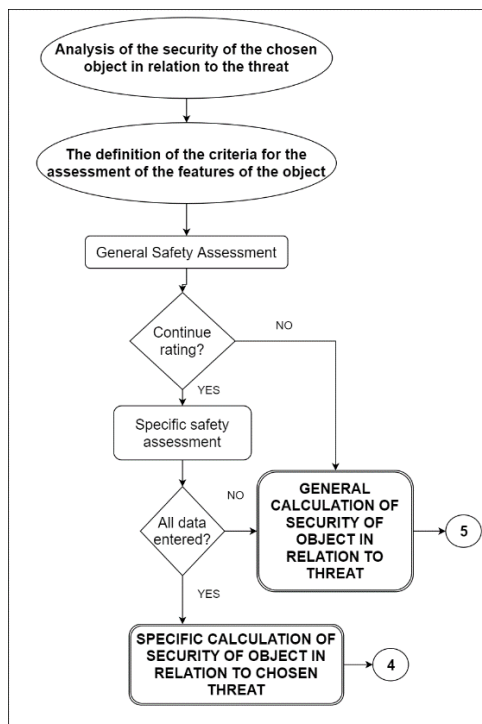


Figure 5: The Analysis of the Object Security

The system analyses the features of the object according to the threat, but the system doesn't know if the result is ok or not. The definition of the result is based on the next step, which is described in Figure 6.

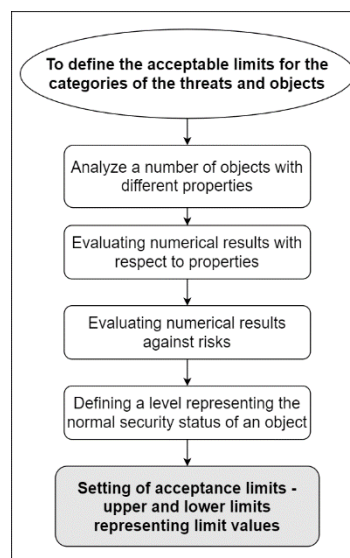


Figure 6: The Definition of the Acceptable Limits

The system can assess the result of the analysis according to the limits. We called these limits acceptable limits. If the system compares evaluated value with the required value or acceptable value, then the system can make the

final decision. The process of the final decision is described in Figure 7.

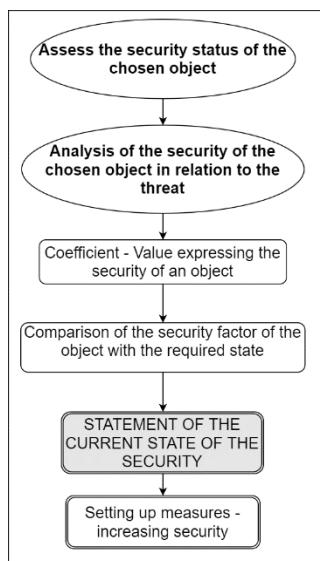


Figure 7: The Final Assessment of the Security

The last step of the proposed methodology is to define the final result about the security situation in the evaluated object according to the chosen threat. The important step of the process is to define the acceptable limits for each of these threats. The system can make a decision according to these limits, however, we need to examine a lot of objects if we want to know these limits for each of these threats.

#### 4. THE GENERAL AND SPECIFIC ANALYSIS

The concrete assessment is based on the general and the specific analysis. The general analysis is faster than specific but not as exact as the specific analysis. The process of the general analysis can be seen in Figure 8. In Figure 8 can be seen also the process of the assessment. This assessment is based on the calculation of the risk (chosen threat), the selection of the important properties and features according to the threat, and the next is the definition of the evaluation criteria. The last step is to set the weights of criteria according to the threat. The aim of this process is the calculation of the general security coefficient.

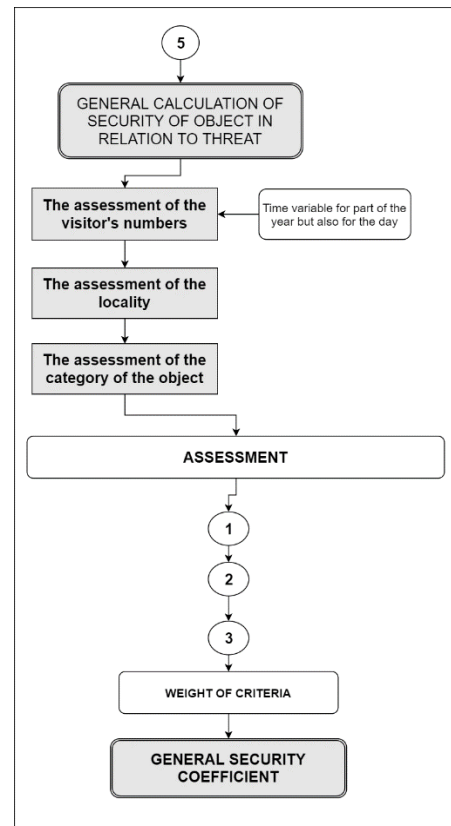


Figure 8: The General Assessment

The process of the calculation of the general security coefficient is based on three types of general coefficients, which must be defined in each type of the analyzed object. In Figure 9 can be seen the process of the calculation the visitor's number factor. This process is based on the general information about locality and at the attractiveness of the city and place, where the object is situated. However, we can use the better methods for more exact monitoring the number of visitors in the object. In the software is proposed to use the monitoring of sim cards (mobile telephone sim cards). This monitoring can provide for the software very exact and actual data about the number of visitors in the object. The data from this method of monitoring are not to the public access, and that is the problem, why we don't use this type of data in the proposed meteorological standard. However, in the dynamical software tool must be used this type of data.

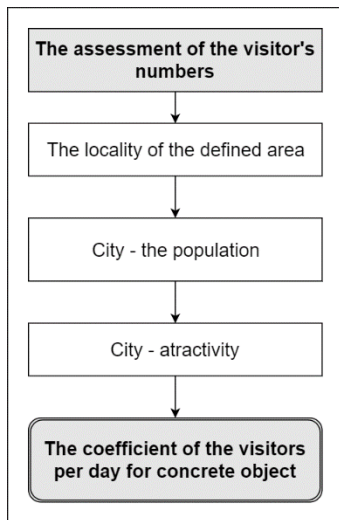


Figure 9: The Assessment of the Visitors

In Figure 10 can be seen the process of the assessment of the locality. The first step is to select the locality and identifies the interested objects. The next step is to identify the coefficients of these interesting objects. This coefficient expresses the impact on the security on the other objects in the same locality. For example, the localization of the synagogue, localization of the ministries, or other objects, which are attractive for a potential attacker can have the significant impact on the security of the object.

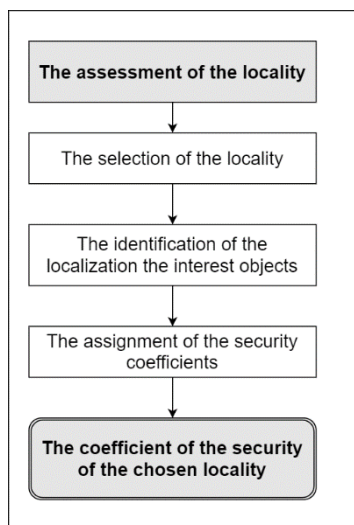


Figure 10: The Assessment of the Locality

In Figure 11 can be seen the process of the assessment of the category of the object. This process is the important part of the general security assessment. According to the other similar objects, we can predict the results of the specific concrete assessments.

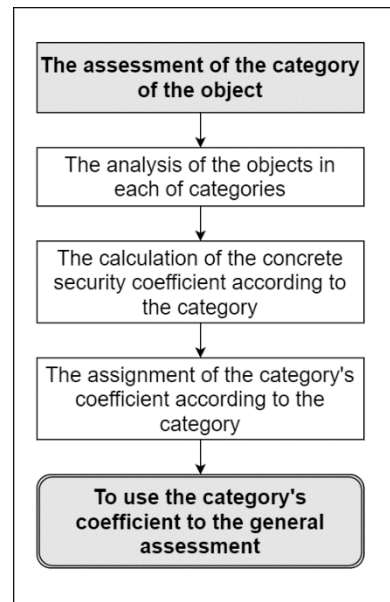


Figure 11: The Assessment of the Category

The next process of the identification of the chosen threats is described in Figure 12. This process describes the assessment of the threats and evaluates the impact on the evaluation criteria. The system can evaluate the state of the object according to the threat. The system has to know, which the features are important for the decision making and evaluation process.

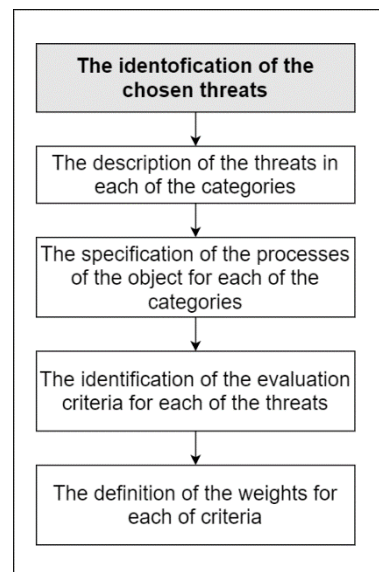


Figure 12: The Identification of the Chosen Threats

The main exact assessment is described in Figure 13. This assessment is based on the exterior, interior and processes analysis. In each of these categories are chosen the criteria according to the chosen threats.

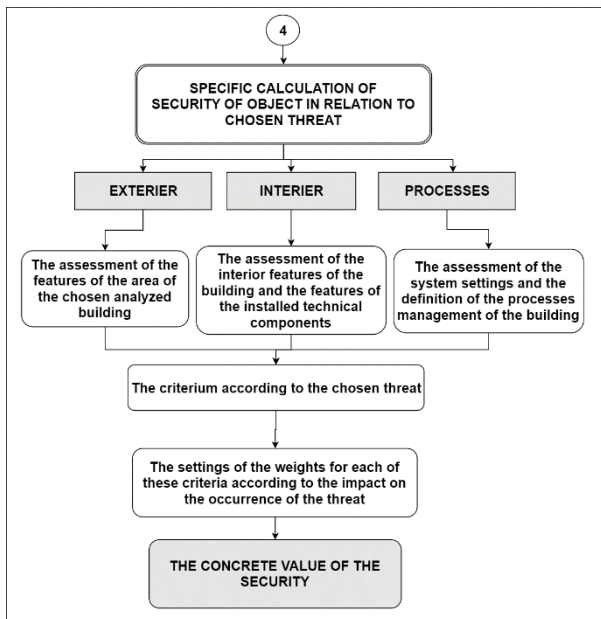


Figure 13: The Specific Assessment

The whole process of the assessment can be seen in Figure 14. We need to observe, that the proposed software solution is oriented only to the buildings and centers of the buildings. Although, we suppose the assessment of the events will be developed in the future.

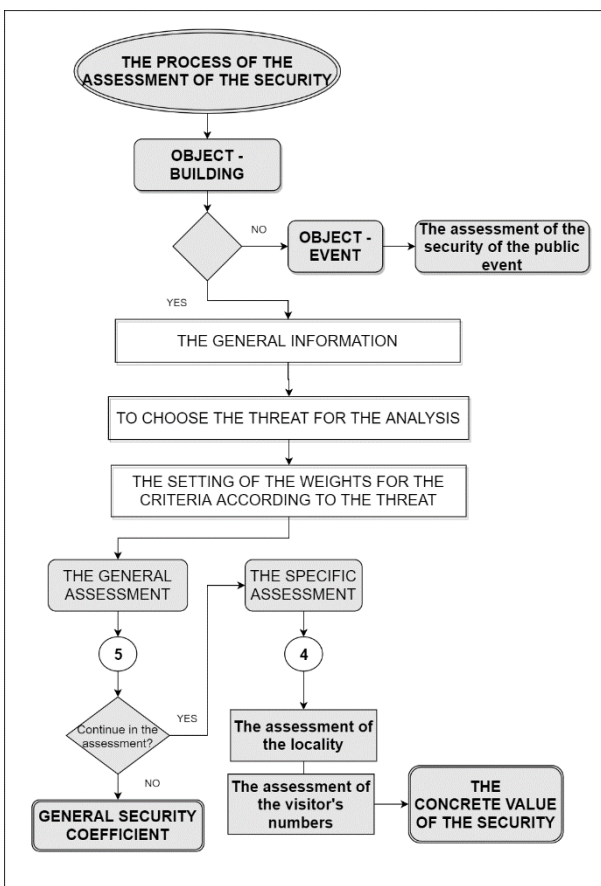


Figure 14: The Final Assessment of the Security

The whole methodological standard was developed and verified in this part of the research. However, in this

phase of the research, we need to verify and confirm the proposed methodological standards on the different kinds of objects and different kinds of threats too. The first results influenced proposed software, but we suppose that the system can be also changed in the next verified phase of the research.

### 5. THE DYNAMICAL ASSESSMENT OF THE STATE OF THE SECURITY

In this research, we cooperate with Ministry of interior and Integrated Rescue System of Czech republic too. These institutes sense need to develop this proposed software as a dynamic software tool, which can help our society with the prediction of the risks and also with the proposal the effective immediate and permanent corrective actions. The process of the function of the dynamical assessment can be seen in Figure 15.

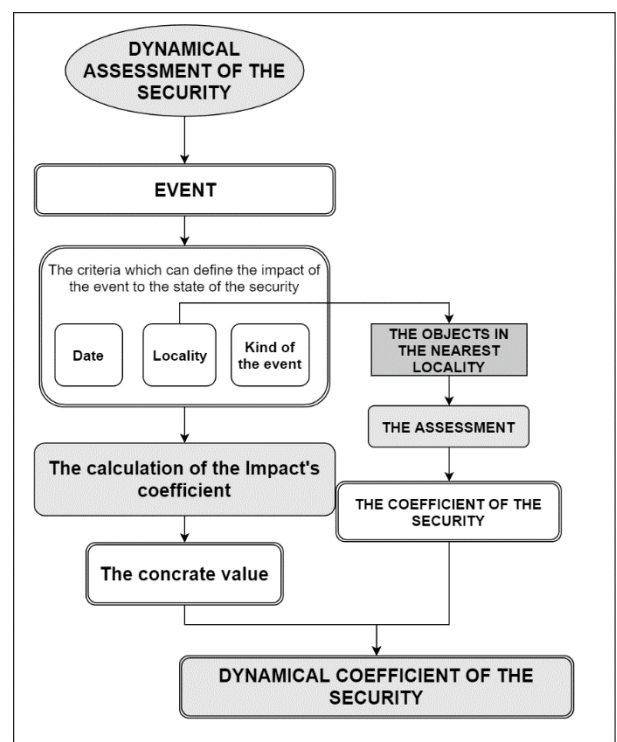


Figure 15: The Proposed Dynamical Assessment

The system needs to know the information about the planned event. This information can yield the data about the impact of the event on the other objects security in the same area. Between this information belong date, locality of the event and closed area of the event, and kind of the event. Kind of the event is closely related to the risk value of the threats. The kind of the events can have the impact on the probability of the security incidents.

### 6. RESULTS OF THE CURRENT RESEARCH

The current state of the research is to repair weaknesses of the programmed software, which can automatically analyze the soft targets according to the proposed methodological standard. Although, this current software has not programmed analyzes according to the chosen threats. This software is done for the verifying the proposed methodological standard and to analyze the

objects according to this mathematical operations. Each of these proposed criteria evaluates the state of the features of the analyzed object. The evaluation process is aimed at the correct methods for the transformation the features to numerical values.

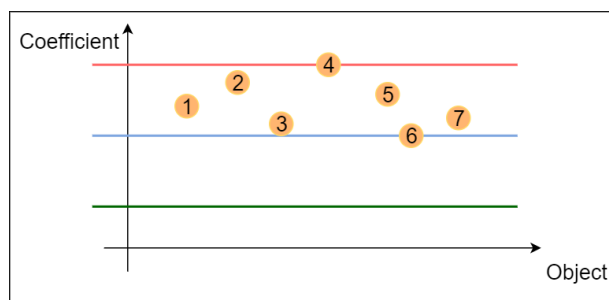


Figure 16: The Proposed Dynamical Assessment

In Figure 16, we can see the results of the static security analyses. This type of the analysis is the general. That means, this analyzes is not realized according to the chosen threat, but only according to the chosen criteria. In Figure 16, we can see three types of the lines. The green line marks the optimal security coefficient, the blue line marks the normal security coefficient and the red line marks limited security coefficient. The objects belong to the same category of the objects. We suppose, that we need to know these free types of the limits (lines) for each of defined threats. As a result, we can consider, that dynamical software can provide us more specific data. The system of the dynamical software can examine the progress in the time and the decisions can be more exact as in the static part.

## 7. CONCLUSION

This research is aimed to the assessment the security of soft targets. The current research was aimed to the building the system and methodological standard to the automatic software analyzes. The first phase of the verification optimized the criteria and mathematical processes for the relevant results. The next part of the research will be aimed at the verification whole range of categories of the objects. However, we need to define the threats and according to the threats, we need to select the relevant criteria. One of the last challenges for the research is to develop the dynamical part of the software and to develop the system, which can automatically propose the corrective actions to the soft targets.

## ACKNOWLEDGMENTS

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