

# Software methodology for soft target identification based on Methods of identification of soft targets

Marta Blahová

Tomas Bata University in Zlín, Nad Stráněmi 4511, 760 05 Zlín, e-mail: [m6\\_blahova@fai.utb.cz](mailto:m6_blahova@fai.utb.cz)

## Annotation

The paper aims to analyze soft targets. Basic terms are defined, one of the parts is terrorism and the next part describes the definition of soft targets. Risk analysis is described. Terrorism became perceived as the most serious threat. Modern technologies create preconditions for abuse for terrorist purposes. Terrorists often plan and implement attacks on soft targets, which are characterized as places with a high concentration of civilian population. Securing soft targets against a terrorist attack is very difficult. In the paper, the part focuses on selecting a suitable methodology for soft target analysis, making soft target analysis and designing MIST software to better identify soft targets. The soft target identification method implemented in the MIST software will show the highest values reaching the targets with minimal or no action and at a certain time, there are many civilian populations. Considerable attention should be given to them as they are easy targets for terrorists.

**Keywords:** Terrorism, security, soft targets, soft targets identification.

## 1. Introduction

Terrorism is a much-debated topic that we hear from newspapers, television or the Internet. In recent years, terrorists in Europe have attacked several times in Paris, for example, in the editorial office of the satirical magazine *Charlie Hebdo*. This is a global problem that needs to be addressed.

The terrorist attacks on the US on September 11, 2001 are a turning point in the global war on terrorism. Terrorist attacks pointed to the danger of terrorism. Not only do Europe's borders lose importance, technology, information technology, but the infrastructure is also evolving; these developments have an impact on security issues around the world. The development of infrastructure allows terrorists to intervene, for example, by air, rail, and bus. Terrorism has become a means of blackmailing and intimidating the world. The European migration crisis, caused by a large number of immigrants to Europe, has highlighted the possibility of terrorists being present among migrants. Nowadays it is impossible to say exactly where the terrorists will attack next time. Terrorists are constantly looking for new targets to attack. In recent years, they have been seeking soft targets that are an easy and tempting goal for them, which is a major threat to society. The aim is to characterize soft targets and analyze the most vulnerable soft targets.

The first parts of the article define the basic concepts related to soft targets such as threat, risk, terrorism and more. The next chapter deals with terrorism. It focuses on types of terrorism, it also includes terrorist methods such as nuclear weapons, biological and chemical weapons, not just sound weapons. It provides only a basic view of the issue. One of the chapters is devoted to clarifying the concept of soft goals and specifying some soft goals such as shopping centers, universities, cultural events, and others. There is a definition of a soft target and an attack that has been carried out in the past. Subsequently, the article focuses on the risk analysis that is important in preventing risk assessment. In addition to the main risk analysis methods, the CARVER method is developed in more detail, from which a new method for better identification of soft targets has been developed. Finally, the article introduces the methodology of soft target identification, familiarization with the content and evaluation of soft targets. The main objective was to develop a functional methodology that would be able to identify soft targets and also determine their degree of threat. Processing was from the terrorist perspective because it is a type of attack that can be predicted based on certain criteria.

## 2. Terminology

Some terms need to be defined in advance. Each definition is specific to a particular area or discipline, the definitions focus on soft targets. Safety The concept of security is a desirable situation in which threats to the object and its interests are minimized. The object can be a state, an international system, an international organization or a social group (nation, individual). There are many definitions of safety. The Ministry of the Interior of the Czech Republic defines the concept of security: "A state in which the system can resist known and predictable external and internal threats that may negatively affect individual elements (or the whole system) to maintain the system structure, stability,

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reliability, and behavior following the targets. It is, therefore, a measure of the stability of the system and its primary and secondary adaptation. ”[1]

#### **Asset**

The term asset is everything that has value for an organization. The value of an asset may be impaired as a result of the threat. Assets are classified as tangible and intangible. An entity may also be an asset, as a threat can affect its entire existence. [2] From the terrorist perspective, people are the most vulnerable asset.

#### **Threat**

A threat can be defined as a force component, an event, an activity or a person who is behind the occurrence of the named activities or otherwise, contributes to the occurrence of damage. [2] A threat is defined as: “Any phenomenon that has the potential to damage state interests and values. The degree of threat is determined by the magnitude of the potential damage and the distance (usually expressed as probability or risk) of the possible application of the threat. ”[3] A typical example of a threat is a terrorist attack.

#### **Soft targets**

From a security perspective, soft targets are places with a high concentration of people and a low level of security against violent intrusions and attacks. These factors increase the risk of various catastrophic scenarios.

#### **Vulnerability**

Vulnerability determines the degree of imperfection of the analyzed asset, which can directly affect the fulfillment of the threat. The basic characteristic is the level of vulnerability of the asset. It is evaluated according to criticality and sensitivity. Criticality, in this case, is the importance of the asset to the analyzed entity and the sensitivity is meant as the susceptibility of the asset to the threat of the threat. [2]

#### **Terrorism**

There are some definitions of the term terrorism. The Ministry of the Interior of the Czech Republic defines terrorism as: “Terrorism is a planned, coherent and politically motivated violence directed against uninvolved persons to achieve the stated goals.” [4] In 1980 the definition of terrorism has published an evaluation of terrorist acts. “Terrorism is the calculated use of violence or the threat of violence, usually directed against non-partisans, to provoke fear through which political, religious or ideological goals are achieved. Terrorism also includes criminal crimes, which are inherently symbolic and are a way to achieve objectives other than those targeted by the crime. ”[4]

### **3. Importance and methods of terrorism**

The term terrorism is derived from the word terror, which comes from the Latin word "terror", which in its original meaning meant extreme fear or anxiety stemming from a notorious and hardly predictable danger. [5] it includes such activities and methods that give rise to feelings of fear and horror. [6]

The history of using violence to pursue certain goals is as long as the history of mankind. With the development of society and modern technology, forms and methods of violence are changing. Decades ago, a terrorist attack touched only limited areas; today it can cause political or economic shocks on a global scale with uncontrollable developments. [6] Terrorism originated as a defense of the weak, against those who want to dictate to them the politics, social system or way of farming. Everything began to change after the first terrorist attacks, dead and great material damage came. “An important role is played by today's media, information networks and resources, which can deliver information to our homes in a moment about the terrorist act that was committed on the other side of the planet. Reports, accompanied by sensational and unsubstantiated speculation, contribute to the spread of fear and panic in society and often become an effective tool for the propaganda of terrorism, which can be a powerful weapon. ”[6]

It is currently popular in the media to use the word terrorism and to designate various acts of violence, individuals or organizations as such acts of terrorism and terrorism. “Politicians like Yasser Arafat (PLO - Fatah), Menachem Begin (Irgun), Yitzhak Shamir (Lechi), and others are a good example of the spillover between the terrorist and political spheres in the Middle East, and how tricky to talk about someone who is or is not a terrorist. ”[7]

New technologies, the development of science and technology create the conditions for accelerating research and development. In the fields of genetic engineering, biological and gene manipulation, but also in the field of chemistry and the chemical industry, there are assumptions that the results of scientific experiments can be misused for military or terrorist purposes. A completely separate problem area is the control of the use and transport of hazardous substances, including the control of hazardous industrial waste. [8]

Some weapons of mass destruction, or their effective components, can thus become an effective means of coercion in extorting state officials, state institutions or even different population groups, even if they are not used directly. Terrorists are counting on the great fear of using weapons of mass destruction and are convinced that by holding such power will force the state or other adversary to accept their demands. Large nuclear weapons are a technically significant problem. Materially poorly secured atomic scientists could lend themselves to such research and work for terrorists. Nuclear material can be purchased on the black market, it can be stolen from spent waste repositories or missile disposal operations. The theft of ammunition containing depleted uranium is a big risk. Biological terrorism refers to the use of various viruses and microbes of dangerous diseases to affect the civilian population. ”[8]

A biological weapon is cheaper and safer for terrorists and criminals. All you have to do is grow bacteria and disperse them somewhere. By the time they become effective, terrorists have long been safe. Some diseases have a long

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incubation period, are passed on to people and their results can be terrible. The disadvantage for terrorists is that they can get sick by tampering.

#### **4. Soft targets**

Soft targets from a security point of view are places with a high concentration of people and a low level of security (shopping centers, religious and cultural events, schools) against violent intrusion and attacks. Soft targets have different security needs that need to be realized. It is important to address the security of soft targets, as the risks associated with terrorist attacks on soft targets are high. The following are soft targets: shopping centers, international hotels, sporting events, cultural and religious events, schools, transport networks, hospitals. [9]

##### **Shopping centers**

Shopping centers are one of the main soft targets. Many tragic events have occurred in shopping centers in the past, as they are minimally secure. The biggest and worst terrorist attack happened in 2001 on the World Trade Center in New York, where terrorists hijacked a passenger plane with the civilian population on board and crashed into a shopping center. Some 3,000 people, including terrorists, died in the attack. Throughout history, the United States has not been hit by an attack as large as it was in 2001. It is shocking that an organization of several thousand members has been able to strike so severely at a state that spends nearly 40% of global military spending on its defense. Shopping centers have security, they also have physical security, but it is not focused and especially not trained for terrorist attacks, or within the Czech Republic or for active shooter attacks. [9]



**Figure 1. World Trade Center 2001[9]**

##### **International hotels**

International hotels pose a high risk of a terrorist attack for the sake of a significant number of people. In an international conference or other events, the risk of attack increases. Three terrorist attacks on the Sinai Peninsula in Egypt in 2005 claimed about 90 deaths. In one of the attacks in the area of hotels, one of the hotels nearly collapsed. Next, the attack was at a market in the city center, where many people were at that time. [9]

##### **Sports event**

These are the Olympic Games, various World Championships and other sports events. Three suicide bombers detonated in the French capital at the Stade de France. In order to reach the football stadium and kill as many people. At that time there were about 80,000 spectators at the stadium. [9]

##### **Cultural and religious events.**

Cultural events with the participation of prominent personalities pose a risk of attack, not only for a specific person but also for people in the audience. In particular, Jewish religious events have been the target of terrorist attacks in the past. In 2002, Chechen terrorists attacked the Moscow theater, which they took for two days with hostages. About 170 people died in the attack, including all terrorists. In a series of assassinations in November 2015 in France, the worst in the Bataclan concert hall, where a concert was taking place at that time. About 90 people died. The concert building in which the attack took place had long belonged to Jewish owners. [9]

##### **Schools**

All attacks in schools take place due to the presence of children. These attacks are some of the worst because they mentally affect a large group of people. The psychological consequences are worse than other types of attacks due to

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the natural human need to protect children. One of the worst attacks on the school was in southern Russia in Beslan. Terrorists detained about 1,200 parents, teachers, and pupils at school. About 370 people died in this attack. [9]

### **Transport networks**

Attacks on transport networks paralyze infrastructure. Given the situation of a high degree of a terrorist threat, it is necessary to prevent unauthorized persons from entering critical infrastructure facilities. A similar attack occurred in Madrid in 2004. Islamic militants planted 13 explosives on various trains connecting the center of Madrid. The attack killed 191 people and about 2000 were injured. The aim was to kill as many people as possible and cripple the train. [9]

### **Hospital**

Complex of medical facility buildings with a high concentration of people. Attacks on hospitals are common. For example, in Syria, bombers have destroyed several hospitals in recent years. In 2014, they destroyed the hospital in Jassem using a truck loaded with explosives. [9]

To clarify the concept of soft targets and to identify the main soft targets, it is necessary to add that they all have one thing in common, there is a large number of civilians. It is important to know in advance soft targets that could be threatened by a terrorist attack.

## **5. Methodology of soft targets identification**

The methodology is based on the original CARVER method but is complemented by other important factors that serve to assess soft targets. It is essential to develop such a methodology that would be able to objectively divide the soft targets, and based on this, the security forces of the state and the commercial security industry would be able to determine the degree of threat to individual buildings. The methodology for identifying and evaluating soft targets contains important factors that serve to assess the most vulnerable soft targets. Assessment factors: accessibility and security levels, recoverability, vulnerability, impact on people's lives, recognizability, detection, attractiveness, performance and time, frequency, IRS response time. Identification and evaluation of soft targets are possible from two different perspectives. From the perspective of the state and from the perspective of the attacker.

From the attacker's point of view, the rating is far more difficult. The attacker usually chooses a target that emphasizes symbolism. Here we have to ask: What leads him to choose an attack on this target, how to make an attack on that target, which factors affect it. [10]

## **6. Accessibility factor and security level**

The accessibility factor and the security level assess two criteria. The first criterion of each assessment is the complexity of the obstacles in carrying out an attack to overcome a security measure. The second criterion indicates the degree of security.

### **Renewability factor**

The renewability factor indicates how long it will take to recover a target after a terrorist attack.

### **Vulnerability factor**

The factor assesses what deployments terrorists must spend to attack a target, and what the consequences of the attack will be.

### **Influence on people's lives**

This factor indicates how many human lives will require an attack on a given target. Impact on the population is one of the most important factors since terrorists' primary goal is to thwart as many civilian lives as possible.

### **Factor Detect**

This factor gives two evaluation criteria. First, whether someone has the opportunity to spot the attack. Second, where there is no one to spot the attack.

### **Recognition factor**

This factor indicates the level of recognition of a potential target. Recognizability is dependent on the information about the given soft target that the attacker gets with a certain amount of effort.

### **Attractiveness factor (symbolism)**

This factor evaluates whether it has a symbolic meaning for the soft target. For example, if an attack occurs in schools, cultural/social or religious events, it always carries a sign of symbolism.

### **Performance factor and time**

This factor specifies two-time criteria, namely attack planning and how long the target must wait. Performance factor and time is influenced by subfactors that are related to it and affect ranking. It's detailed planning, armaments, and learning.

### **Frequency factor**

Frequency factor indicates how often the soft target is most at risk or in danger. How often do cultural / sports events repeats.

### **Response time factor of Integrated Rescue System**

The response time factor of the integrated emergency services indicates how long it takes for the emergency services to reach the affected place. [10]

### 7. Methods of identification of soft targets

The MIST (Methods of identification of soft targets) calculator is created in MS EXCEL 2007. The calculator contains user-accessible sheets Soft targets, Data, Accessibility and security, Recoverability, Vulnerability, Impact on people's lives, Recognizability, Detect, Attractiveness (Symbolicity), Execution and time, Frequency, IRS reaction time. On the Soft targets sheet, the user fills in the city/town name and soft target names in the cells specified for this purpose. The Datasheet is the resulting sheet, where progressively filled values are displayed. On the sheets Accessibility and Security Level, Recoverability, Vulnerability, Impact on Human Lives, Recognizability, Detect, Attractiveness (Symbolicity), Execution and Time, Frequency, IRS Response Time, you can enter factor values for each soft target. MIST then evaluates the most vulnerable soft targets. The values for each factor are limited according to the tables and the other cells are protected against possible overwriting. Cells The result on the Datasheet will turn red with the highest values in the range of 40-50. The highest sums of values show the most vulnerable soft targets. The MIST calculator is a support tool for the Soft Target Identification Methodology to identify soft targets. MIST has been designed for users to be easy to use, facilitate soft target calculations, and identify the most vulnerable soft targets. [11]

The soft target identification method implemented in the MIST software will show the highest values reaching the targets with minimal or no action and at a certain time, there are many civilian populations. Considerable attention should be given to them as they are easy targets for terrorists. For soft targets, security measures should be increased, restrictions on the entry of unauthorized persons, CCTV systems, physical security, etc. should be introduced. Part of the article is devoted to the introduction of MIST software, which was designed to better identify soft targets. Based on the results of the Soft Target Identification Methodology, we can decide which soft targets are the most vulnerable and should be more secure. [11]

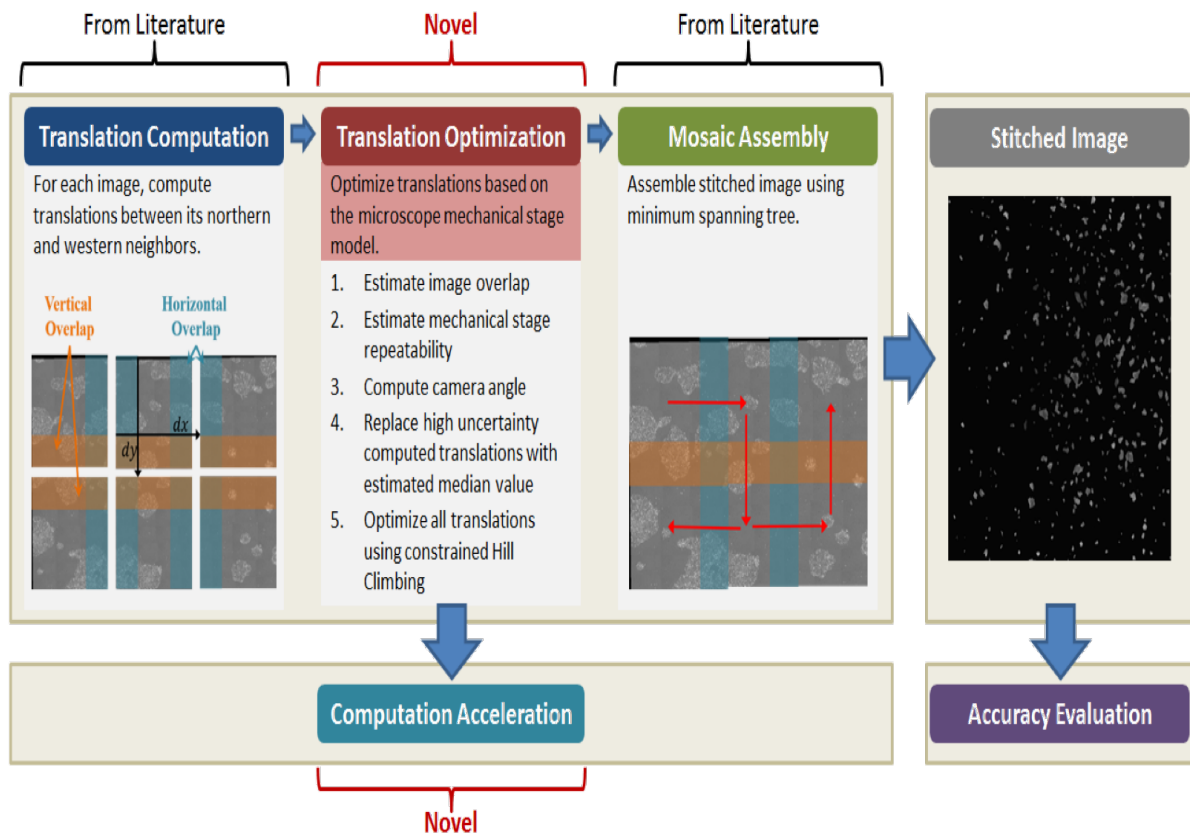


Figure 2. MIST algorithm description and novelties: Method and Scalability[11]

Mass Day Of Week	Location	Mass Time	Intention #	Intention	Celebrant	Language	Blocked
Monday	St Ann	8:00 AM	1		Fr. Frank	English	<input type="checkbox"/>
Monday	St John	7:00 PM	1		Fr. Juan	Spanish	<input type="checkbox"/>
Tuesday	St Ann	8:00 AM	1		Fr. Frank	English	<input type="checkbox"/>
Tuesday	St John	7:00 PM	1		Fr. Juan	Spanish	<input type="checkbox"/>
Wednesday	St Ann	8:00 AM	1		Fr. Juan	Spanish	<input type="checkbox"/>
Wednesday	St John	7:00 PM	1		Fr. Frank	English	<input type="checkbox"/>
Thursday	St Ann	8:00 AM	1		Fr. Frank	English	<input type="checkbox"/>
Thursday	St John	7:00 PM	1		Fr. Juan	Spanish	<input type="checkbox"/>
Friday	St Ann	8:00 AM	1		Fr. Frank	English	<input type="checkbox"/>
Friday	St John	7:00 PM	1	Our Parishioners	Fr. Juan	Spanish	<input checked="" type="checkbox"/>
Saturday	St Ann	5:30 PM	1		Fr. Paul	English	<input type="checkbox"/>
Saturday	St John	4:30 PM	1		Fr. Juan	Spanish	<input type="checkbox"/>
Saturday	St Mary	8:00 AM	1		Fr. Paul	English	<input type="checkbox"/>
Saturday	St Mary	5:00 PM	1		Fr. Paul	English	<input type="checkbox"/>
Sunday	St Ann	8:00 AM	1		Fr. Juan	Spanish	<input type="checkbox"/>
Sunday	St Ann	9:30 AM	1			English	<input type="checkbox"/>
Sunday	St Ann	11:00 AM	1			English	<input type="checkbox"/>
Sunday	St Ann	11:00 AM	2			English	<input type="checkbox"/>
Sunday	St Ann	11:00 AM	3			English	<input type="checkbox"/>
Sunday	St Ann	5:30 PM	1		Fr. Paul	Spanish	<input type="checkbox"/>
Sunday	St John	10:00 AM	1		Fr. Juan	Spanish	<input type="checkbox"/>
Sunday	St John	4:30 PM	1			English	<input type="checkbox"/>
Sunday	St Mary	10:30 AM	1			English	<input type="checkbox"/>
Sunday	St Mary	12:00 PM	1		Fr. Frank	English	<input type="checkbox"/>

Figure 2. The resulting Data Sheet in the MIST Software[11]

## 8. Conclusion

Terrorism did not pose a primary threat to the world at the beginning of the 1990s, as the attacks began to change. The 11 September 2001 attacks in the United States of America became a milestone when these attacks were immediately identified as a terrorist act. Terrorism became perceived as the most serious threat. States, organizations, and individuals who both co-support terrorist organizations or provide a safe haven for them are also a great threat. We are living in a time when modern technologies that constantly engulf us create conditions for abuse for terrorist purposes. Terrorists often plan and implement attacks on soft targets, which are characterized as places with a high concentration of civilian population. There are many soft targets in the Czech Republic that do not have sufficient security measures. Securing soft targets against a terrorist attack or the attack itself is very difficult. Legislation to combat terrorism is based on both measures and prevention of attacks, but the best possible solution is awareness and preparedness. The chapter deals with the general characteristics of terrorism. The concept of soft targets is clarified and the main soft targets such as shopping centers, cultural and sporting events, schools, etc. are identified. Risk analysis, which is very important for risk assessment, is described.

## 9. Acknowledgments

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## 10. References

- [1] Concepts: security. Ministry of the Interior of the Czech Republic [online]. Prague: Ministry of the Czech Republic, 2016 [cit. 2017-05-03]. Available from: <https://www.mvcr.cz/clanek/pojmy-bezpecnost.aspx>
- [2] LUKÁŠ, L., Security Technologies, Systems and Management I. 1st edition Zlín: VeRBuM, 2011. ISBN 978-80-87500-05-7.
- [3] Concepts: Threat. Ministry of the Interior of the Czech Republic [online]. Prague: Ministry of the Czech Republic, 2016 [cit. 2017-05-03]. Available from: <https://www.mvcr.cz/clanek/hrozba.aspx>
- [4] Documents - Terrorism: Definition of the term terrorism. Ministry of the Interior Republic [online]. Prague: Ministry of the Interior of the Czech Republic, 2016 [cit. 2016-10-09]. Available from: <https://www.mvcr.cz/clanek/definice-pojmu-terorismus.aspx>
- [5] BRZYBOHATÝ, M., Terrorism. Vyd. 1. Praha: Police History, 1999. ISBN 80-902670-1-7.
- [6] ČEJKA, M., Encyclopedia of Middle East Terrorism. Vyd. 1. Brno: Barrister & Principal, 2007. ISBN 978-80-87029-19-0.

- [7] DOCUMENTS - TERRORISM: Typology of terrorism. Ministry of the Interior Republic [online]. Prague: Ministry of the Interior of the Czech Republic, 2016 [cit. 2016-05-09]. Available from: <https://www.mvcr.cz/cthh/clanek/terorismus-web-dokumenty-dokumenty.aspx>
  - [8] EICHLER, J., Terrorism and War at the Beginning of the 21st Century. Vyd. 1. In Prague: Karolinum, 2007. ISBN 978-80-246-1317-8.
  - [9] ŠEFČÍK, V., Risk Analysis. Vyd. 1. Zlín: Tomas Bata University in Zlín, 2009. ISBN 978-80-7318-696-8.
  - [10] Menachem Begin Biography. Bio [online]. A & E Television Networks, 2016 [cit. 2017-05-03]. Available from: <https://www.britannica.com/biography/Menachem-Begin>
  - [11] Information security audit: information security. Blog [online]. 2015 [cit. 2017-05-03]. Available from: <https://blog.brichacek.net/audit-informacni-bezpecnosti-informacni-bezpecnost/>
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