

The RPE – The Security Analytical Tool

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Abstract—This article will discuss the issue of primary of an analytical method for security analysis. The method define the purpose of analytical tool for evaluating the security in objects, which we know as soft targets and others object, where the risk management is not implied in process. The document describes the primary architecture for analytical tool, which will be used for next analytical processes. It is development of analytical tool, which will be using for early detection of risks.

Keywords—Risk, analytical tool, soft targets, evaluation.

I. INTRODUCTION

In this article we define special principles of the new analytical method, which we want to use for next security analysis. This tool can improve making decision in next crises situation. It is oriented for soft targets and objects, which are in state ownership and there are not special security actions. This article writes about primary principles, which we can develop for next better and better tools and we want to apply it in analytical processes and we will develop it during analyses. The RPE is developed for a wide range of applications. The RPE could be permanently applied for objects as soft targets, but other objects too. This document is a template for *Word (doc)* versions. If you are reading a paper version of this document, so you can use it to prepare your manuscript.

II. THE ANALYTICAL FUNCTION SCHEME

The analytical function scheme describes the primary principles of using for objects. The using we can define as application for objects, which we know as soft targets. We can determine this, as place, or building, where is a lot of people on one place, and this place or building has not been applied some special detection tools or security options before the attacks.

A. The Calculation of RPE (Risk, Probability, Effect)

The calculation of RPE based on similar foundations as calculation in systems of quality and it is called RPN. RPE is about Risk, Probability and Effect. These three indicators have values in interval from 1 to 10. Risk represents kind of event, or security threat. The Probability represents how many percent is probably that the event can happen in the object. The Effect describes how damaged for object and visitors, or for society is. The RPE is non-dimensional quantity [6].

The proposal of the calculation is in the next formula.

$$RPE = R * P * E \quad (1)$$

This method we define for using to two processes. In the first it is in analyses in first step for the assessments of objects. And in second time, it is used after the process proposal security systems, and it is as control analyses.

The resulting values can be determined for interval:

$$RPE < 125.$$

$$RPE > 125.$$

Special conditions – will be specified after observation.

Special conditions mean that we must be careful in analytical process. We must prepare all conditions and we must rate it. After analytical conclusion we can specify it. It will be refilling during analytical processes. After more application it can be changed and equation can be evolution for long time.

TABLE I
THE DESCRIPTION OF RPE

| RPE - Risk Probability and Effect | | | | |
|-----------------------------------|----------|--|---|---|
| | Interval | The Explanation | The definition | The advantage |
| Risk | 1 - 10 | What kind of negatives event is threatened? | The description of negatives events. It depends on the kind of event. It is precisely identified by the same distinguishing features. We will define this identify project from characteristics. | It can be applied in some others specifics object by the purpose. |
| Probability | 1 - 10 | How much percent is probably that this event can happen? | For this analytical part we must prepare analytical tools from analytical methods, which will be prepared assessment of the probability, based on past incidents and other contexts. | We can use some others analyses from others specialists. It will be compatible. |
| Effect | 1 - 10 | What happens it after the event? | We can identify some other risk after the first security incident. We anticipate response from others stakeholders and we must prepare scenarios. Precautions will must be least financing costs as corrective actions or repair. | We must make the linking with other analytical tools and we make it compatible. |
| | | How is damage? | | |
| | | How is hard to repair it? | | |

B. Processes of RPE Modelation

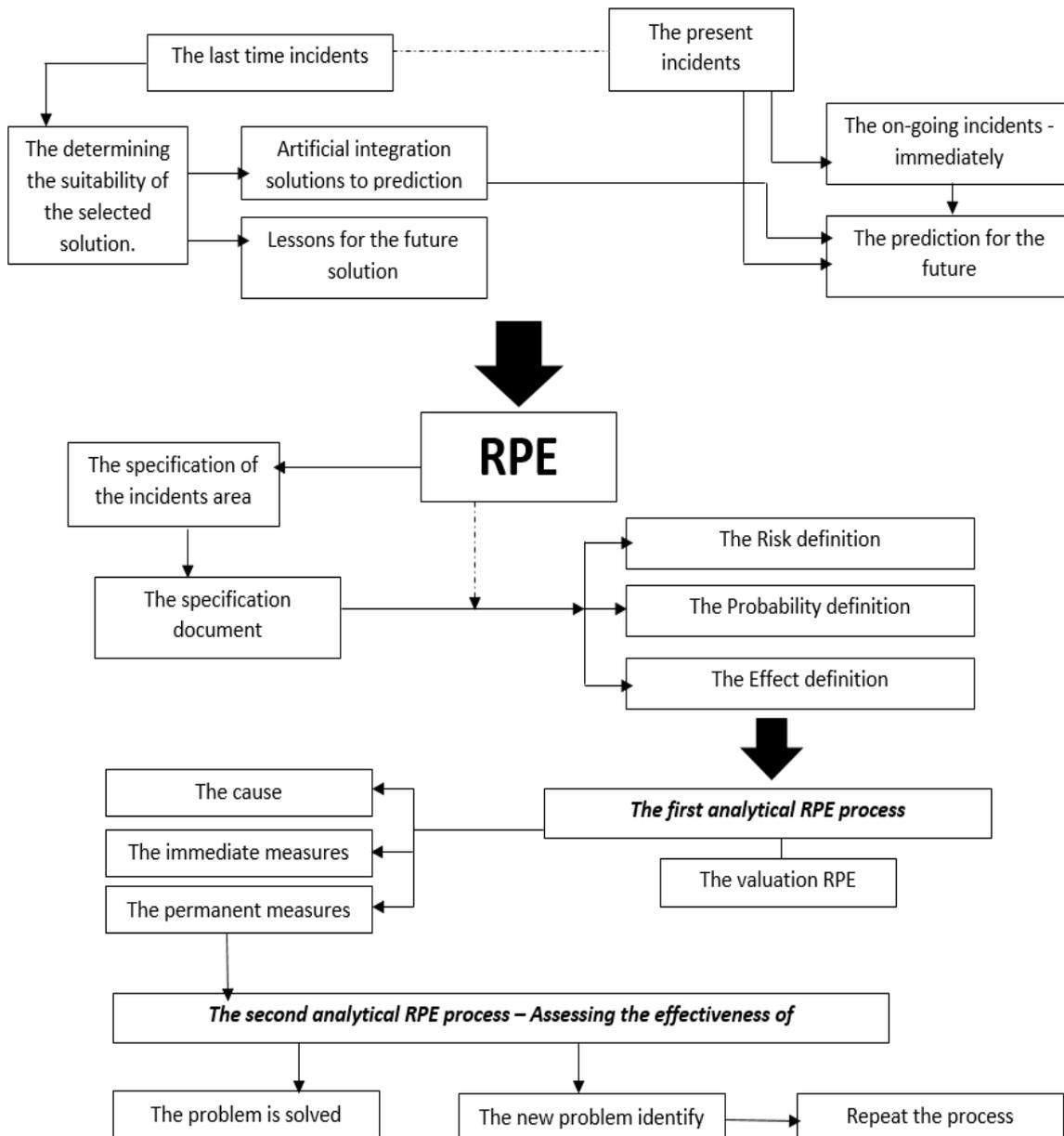
Processes of RPE were modelled function links and relations between each other analytical part of security analysis. In the next time, we can this relations and terms implicate to software for the automated process of analyses.

On the top of the Fig. 1, we can see inputs. Inputs are from the past or we can define inputs in the present. We call this inputs as sustainable input variables, which are permanently valid for the problem. After the valuation we can change conditions which were linking with invariably input variables. We can define the main asset in the studies. The studies will define the causes and measures of problems. It can be helpful for quickly and efficiently decisions in critical situations. We can see in the figure link between the present and the last incidents. This method for analyses is about studding last events and after we can apply results for next events in the future.

The next, RPE analyses starts with filling inputs and makes analytical process and validation. This process consist from two step of validation. The first validation is analysing inputs and in final, it makes decision. The second validation is controlling the effectiveness of measures. The last, we make final decision and it solved or it didn't solve problem. After we must define new problem and analysis is repeated again with new definition of problem [9].

Aims of analyses:

- Inputs – it was validation.
- Outputs – it was validation for two steps.
- Studies of causes, permanent measures and immediately measures.
- The risk, probability and effect definition.



• Fig. 1 Links between processes in RPE

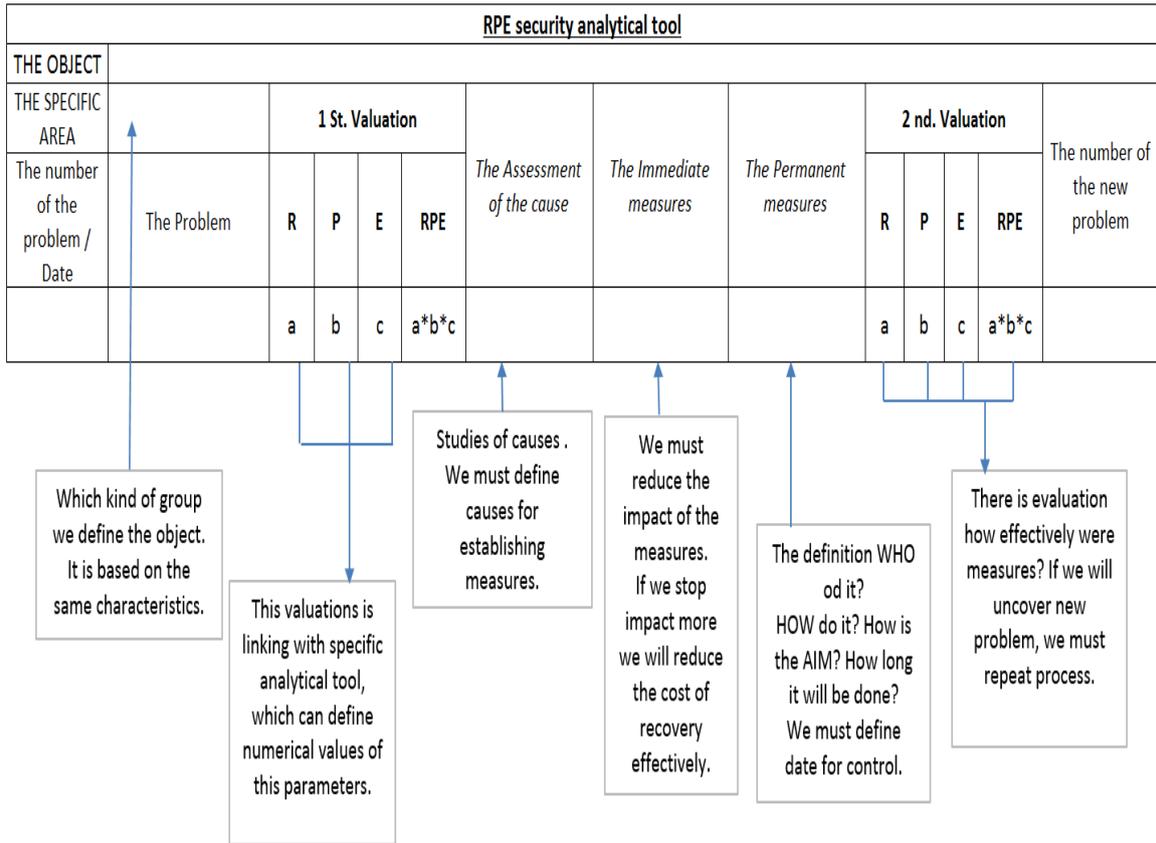
III. THE SECURITY ANALYTICAL TOOL RPE

We can define the security analytical tool by the following figure. The RPE is realized by automated calculation. It will be connected with other analytical part of analyses. We determine others analyses as inputs and outputs. Inputs analysis were calculated in other tool, which done with other compatible processes. We can define the object, the specific area, where is problem and we must define the point of the problem. After this processes, we can rate RPE parameters [9].

After the first valuation we must define causes of the problem. We can study causes and after we can define the permanent measures. Permanent measures focus causes and eliminate conditions of causes. The second valuation is controlled for accordingly measures. After controlling we can define new problem, it is when one problem consists from other smaller problems, but this problems are important for solving security too [9].

After this analyses we will make some special studies of causes. When we make some special tool for solving the similar problems, after we can support making decisions in the next time.

TABLE II
THE SECURITY ANALYTICAL TOOL RPE



When we define permanent measures, we must define next points:

- The responsible person.
- The time interval for solving it.
- The aim of solution.
- Control dates and terms.

The immediate measure reduce the impact of the measure, which made problem, it improves causes and conditions of causes. This studies can improve the automatic decision-making in similar situations.

IV. INPUTS FOR RPE ANALYSIS

Inputs for RPE analysis are oriented for the primary identification of the problem and surrounding, where is problem. This problem has causes and causes have special conditions where causes make problem.

A. The Specification Document

The specification document defines how object is and where object is. It is suggested with numerical value and numerical value will be counted by equation, which we will determine by examining in the future research.

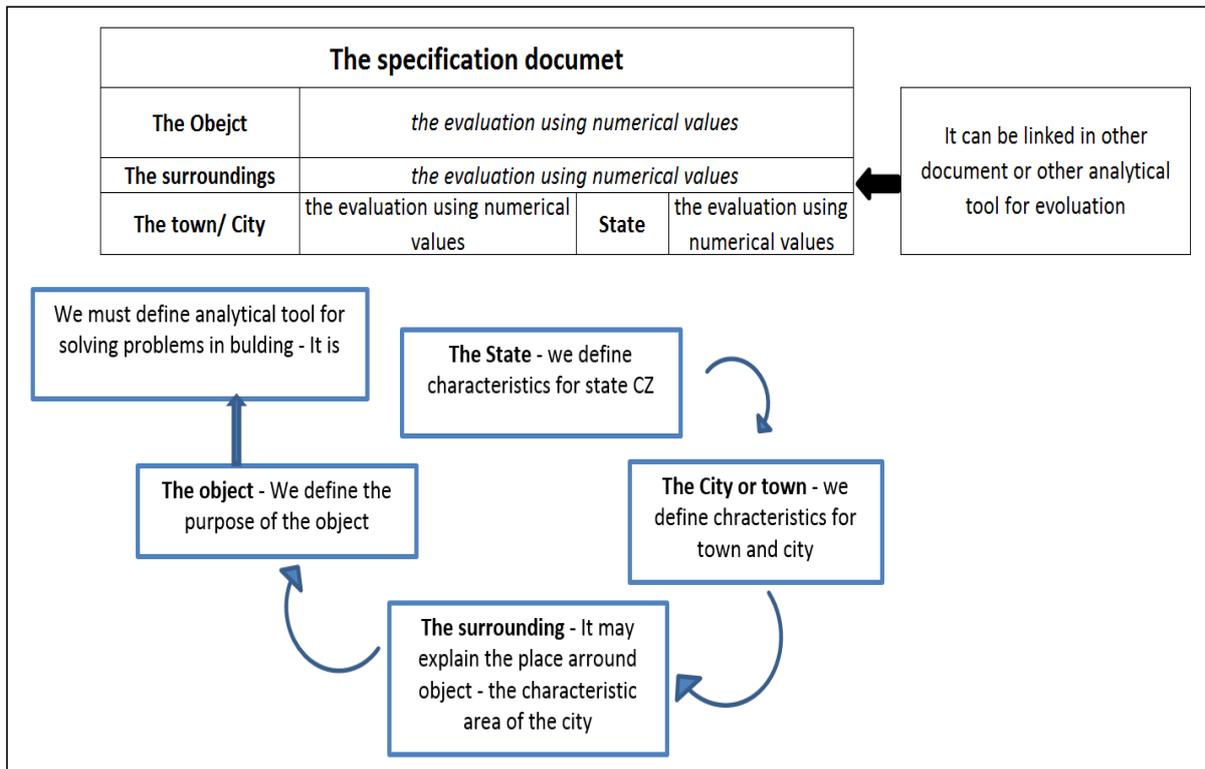


Fig. 2 The specification document

In the process valuation we must follow the rule of compatibility in other tools. It must be compatible for the achievement single system as analytical tool.

TABLE III
THE SPECIFICATION OF THE OBJECT, SURROUNDING, TOWN AND STATE [7]

| The object of analyses | Specification | Coefficient |
|------------------------|--|---|
| State | CZ | <i>It must be specify for the future</i> |
| | SK | |
| The town / City | Prag | <i>It must be specify for the population and attractiveness for attackers</i> |
| | The large city | |
| | The medially city / town | |
| | The small town | |
| The surroundings | The village | <i>It must be define analytical process for special location in town</i> |
| | With the presence of a potential offender | |
| | With the possibility of a potential offender | |
| | It is clean surround | |
| The object | It is surround with security option | <i>It is individual</i> |
| | The specification | |

The specification and coefficient are linked in analyses. We use numerical value for better valuation in next processes and we could make this processes more practice as before.

B. The Problem

The problem is one of inputs. The problems can be situations, techniques and setting processes or it can be in human resources. It could be situation, which makes some special conditions, where risk has a higher degree of efficiency for the emergence of the problem. This description of the problem can be expressed by numerical values for better analyses.

V. OUTPUTS FOR RPE ANALYSIS

Outputs from RPE analysis studies consist from causes, immediate measures, and permanent measures. After studies we can set links in prevent measures, we can support decisions in next event.

VI. THE RISK, PROBABILITY AND EFFECT DEFINITION

The risk, probability and effect definition must consist from analyses of processes. It will be developed for next research. It will be linked with numerical values in the main analysis RPE.

A. The Risk Definition

The risk will be developed for a long time, because we must answer a lot of specification of problem. We can define parameters:

- Interval and time for continuance.
- The threat.
- The point of problem.
- The degree of deterioration.
- The reference to past incidents.
- The range of threat.
- The anticipates level.
- And others (fill in after next research).

[7]

B. The Probability Definition

It will be consisted from linking in values the percentages given a numerical expression for the next evaluation. The probability is identified by last events, or it could be identified by others analyses. The aim of this definition is finding one and together valuation for RPE analysis.

C. The Effect Definition

The effect is the most important from this three definition. We can see here for some special links and others terms. The valuation is linking with the probability and the risk too. We must know, how range for risk is, and how this situation is serious, and how is her speed for extension.

The risk, probability and effect are the basic parameters for the evaluation. It is the base for the valuation in the first step of analysis. We will develop special conditions for this definition, that we need exactly values for this type of analyses.

VII. CONCLUSION

The aim this paper is define new analytical tool for the assessment. Author define primary principles, but not special specific causes. This method will be using in specific causes, but it is the second step in research.

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