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Determining prerogative by factors of significance, logical or programming controller

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Abstract – **Advances in information technology design computer systems and networks helped to deepen the study of the processes that can lead to loss of integrity, confidentiality or availability of information or even its destruction. Information technology protect the confidentiality of information in computer systems and networks for the present time by following directions - SDN (software-defined networking) and ACI (Application Centric Infrastructure). Given the trends of information technology and approaches to problem-solving information security important task is to determine the appropriate direction through the use of a decision support system to further improve the selected information technology. Using decision support system conducted experimental verification of analytical model that allows you to answer about the merits of one or another system chosen key measurements and metrics, identify the strengths and weaknesses of the systems that will allow for further development and open up new opportunities.**

Keywords: information technology, information security, controller, infrastructure, decision support system.

I. INTRODUCTION

The evolution of mankind is proportional to the development of technologies used for human development. Society has allocated a priority of human qualities such as communicability, mobility, ability to learning. All of these qualities depend of the ability to exchange information.

The procedure for data transfer protocol transport layer, acquires many sets of solutions for information security against unauthorized use. Required complexity of software and hardware components it leads to an increase in cost, power consumption, size, complexity management, and sometimes incompatible.

The choice of information technology options that provide protection of confidential data while refuted an integral component of information security regarding quantity, quality and price parameters, set the direction for scientific research on improving the organization of information security without creating new data processing tools.

Using decision support systems the process of analyzing the submitted data which requires determining their impact systematically, but available at this time, the possibility of specific software and existing computing power not abolished following a scientific approach and preserve critical thinking. Understanding the processing of mechanics and transmitting information, above implementations, trends and approaches, historical experience and the development of information technology, permitting ask relevant queries and give them a correct assessment creating the correct numerical approximate calculation. Stabilizing factor influencing the development and competitiveness defined set of technologies considered certain set of priorities. Using decision support systems conducted experimental verification of analytical model allows to evaluate the advantages and disadvantages existing technologies to protect data confidentiality protocols in the transport layer on key performance factors and depending from demand, Also identify the strengths and weaknesses of these technologies, will justify the need for further development and modernization of the prerogative.

II. DEVELOPMENT MODEL DATA

Stabilizing factor influencing the development and competitiveness defined processing technologies and information security is considered a set of specific sets of priorities are reflected in a general model of figure 1.

Logically highlight the system's ability to function without changing its own structure, and stay in balance, the need to rationalize the industry in which information technology is fully functioning and inseparable from it released a set of essential features, characteristics and properties that distinguish a functioning information technology from others and give it the certainty of information technology-related factors as a whole. As a definition based on measurements of the move process conditions for the physical implementation of information technology introduced the concept of measuring the time interval.
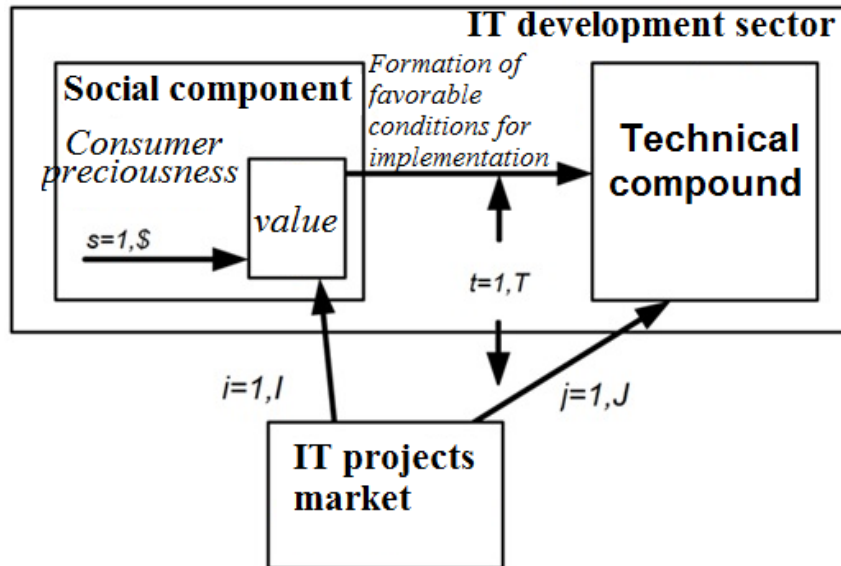
Figure 1. Analytical model

The internal stabilizing factors - physical, property product, its ability to meet specific needs, determined by the degree of usefulness of the product and the level of expenditure required to obtain.

Based on data published by a consortium ISTF (Internet Security Task Force) [1], and the Computer Security Institute (San Francisco, CA, USA) [2], that the information security issues highlighted the most important factors impressions systems to protect information from existing threats:

- social (human);
- technical (physical).

Dedicated components of the problems that need further research to determine the value of the prerogatives of development, modernization and implementation to further placing on the market of IT products need to study relevance towards the development of information technology to protect information transmitted on the low Internet protocols.

Identifying factors and indicators dependencies covering the need for rationalization of the industry in which information technology is fully functioning and inseparable from it released a set of essential features, characteristics and properties that distinguish a functioning information technology from others and give it the certainty of information technology-related factors as a whole. Considering dependency and compatibility events, implementation of information technology is presented as:

$$P = \sum_{j \to 1}^{j}(j) + \sum_{i \to 1}^{i}(i) + \sum_{s \to 1}^{s}(s) \qquad (1)$$

Modern automated information protection system implemented as multi-level system of distributed computing resources for switching common network connection interfaces basic element of which is the programmable logic controller, Its function is the current processing of real-time data and support for a set of common interfaces. The cost of such programmable logic controllers sometimes appreciated is too high, but when using SDN (software-defined networking) role of physical switches and routers is not so important. Information technology protect the confidentiality of information in computer systems and networks for the present time by following directions - SDN (software-defined networking) [3], [4] and ACI (Application Centric Infrastructure) [5], [6].

Using decision support system "Choice" [7], which provides a quantitative characteristic presented for the study of alternative technologies to protect information transmitted, determined the most significant benefits of a given performance for a reasonable solution.

The calculations regarding the criteria for determining priorities established the importance of information technology benefits that will be selected for further advancement in the market of IT services as the most current product.

Setting priorities is the fundamental basis for development implemented in the form of projects for the creation, development and dissemination of technology. Determining, advantages of information technology that provides confidential data in the existing technologies to protect data confidentiality protocols in the transport layer concerning quantity and quality of information security, showing on figure 2.

The criteria can be applied to the entire spectrum of computer systems, according to established performance

113

criteria evaluated prioritize the importance of information technology that is compared to determine the factors of comparative advantages in scale to assess the reliability of mechanisms and processes of information security in computer systems, information security evaluation in computer systems and their suitability for processing information that needs protection.
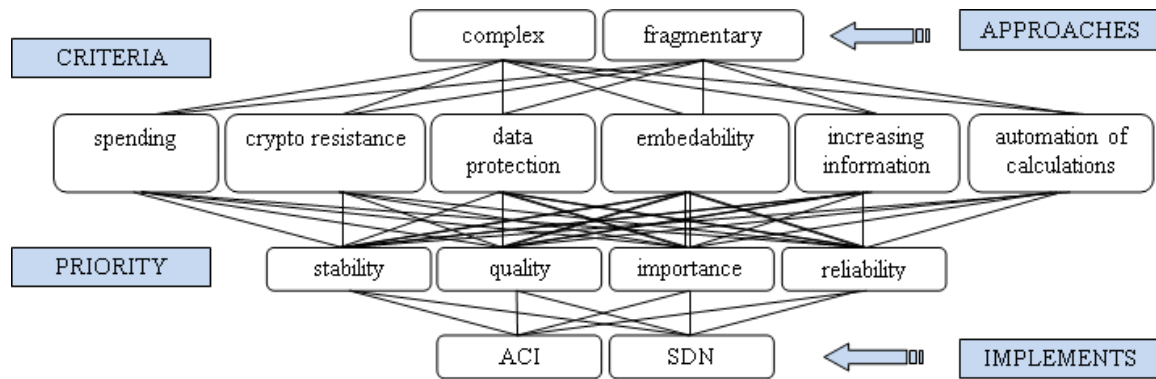

Figure 2. Model calculations

For comparative diagrams figure 3-4, the obvious benefits of information technologies protect information transmitted on specified priorities. Determining, the benefits of base (guidelines) to develop computer systems that must be implemented information security function.

Given the trends of information technology and approaches to problem-solving information security important task is to determine the appropriate direction.
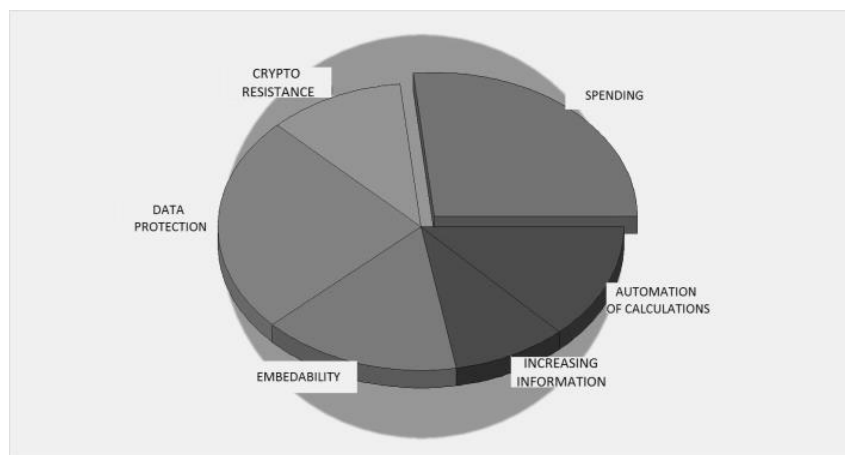

Figure 3. Comparative schedule defining the criteria of logic controller

The basic element of automated information protection system is the programmable logic controller, its function is to present data processing in real time and support a set of common interfaces. Overall programmable logic controller sold by industrial computers. The cost of these, programmable logic controller is too high.

One promising, avenue automation of information security is the implementation of programmable logic controllers based on microcontrollers, whose value is constantly decreasing simultaneously with the expansion of their functionality.

However, inexpensive microcontrollers limited computing power and support the lower set of interfaces.

Therefore, in practice, implement the required interface software or hardware, which significantly affects the efficiency of information technology management.

The result of the experiment was the present of the justification for determining the importance of the prerogative, based on the separation of the comparison factors from the point of view of the importance for the further development of information technologies.

Have been investigated the determination where examined factors, which the definition in the current evaluation version information technologies low Internet protocol information transfer that protect confidential data on the evaluation version information technology providing protection of confidential data in Internet

protocols as proposed general model of prioritization of information technology that will protect the transmission of information in automated systems relative to market demand.
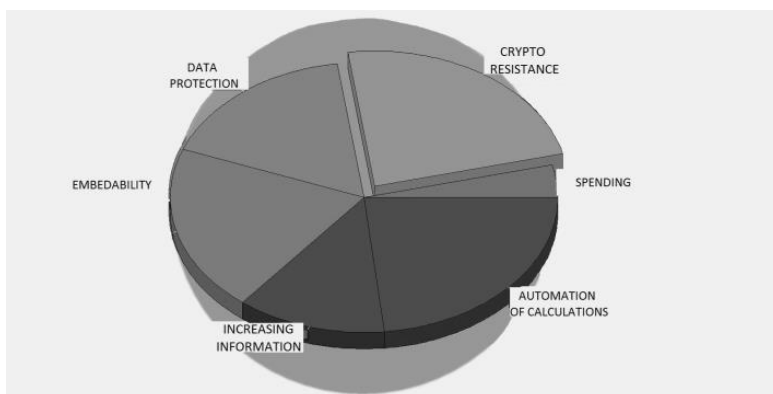

Figure 4. Comparative schedule defining the criteria of programming controller

The determination in the evaluation version information technology providing protection of confidential data in Internet protocols set by the values regarding high quality and quantity, and price performance. Priority of information technology that will protect the transmission of information in automated systems displayed in the chart figure 5.
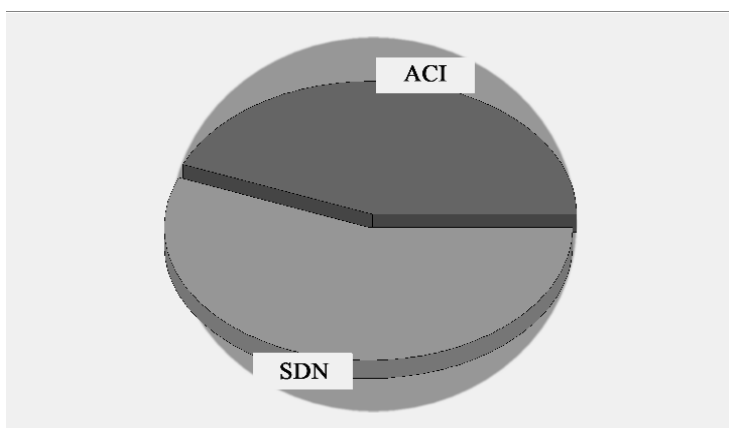

Figure 5. Selected information technology further improvement

III. CONCLUSIONS

In this scientific work the existing advanced areas of information technology network infrastructure and proposed a general model for the determination of the criteria for information technology data protection Internet protocols, low level in view of stabilizing factors and combination of certain sets priorities influence on the development and competitiveness defined processing technologies and information protection .

The result of the scientific experiment are theoretical generalization of existing approaches to ensure the development of information technology information processing data at the network level, and identified the benefits of information technology providing optimum protection of data in the Internet Protocols low.

REFERENCES:

[7] National Cyber Security Centre, Cyber Security Assessment Netherlands csan 2016. NCSC, 2016.

[8] Analytical center InfoWatch, Global investigation of leaksconfidential information in 2016. Moscow, InfoWatch, 2017.

[9] Open Networking Foundation, «Software-Defined Networking (SDN),» *opennetworking.org,* 2017. [Online]. Available: https://www.opennetworking.org/sdn-resources/sdn-definition

[10] L. Barash, «SDN: Theory and practice,» *KO IT for business,* May 23, 2015. [Online]. Available: http://ko.com.ua/sdn_teoriya_i_praktika_110584 [Accessed May 23, 2015].

[11] Cisco, «Cisco open SDN controller,» *Cisco.com* [Online]. Available: http://www.cisco.com/c/en/us/products/cloud-systems-management/open-sdn-controller/index.html

[12] S.L Blyumin and I.A. Shuykova, Models and methods adoption of solutions in terms uncertainty. Lipetsk: LEGI, 2001.

[13] S.L. Blyumin, I.A. Shuykova Models and methods adoption of solutions in terms uncertainty. - Lipetsk: LЭHY, 2001. - 138 p.