

### Concept and Essence of Information Security

*Jurayev Vohid Tojimamatovich,*

*Associate Professor of Fergana State University*

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#### ABSTRACT

*The article analyzes the features of information security. The concept and components of information security, types of protection within the framework of the key characteristics of the essence of information security and the directions in which information security of an individual is carried out are considered. Identifies signs of information weapons, principles, features and key software and hardware tools for ensuring information security.*

Against the background of the ongoing transition of society from industrial to informational, the importance of the ability to navigate in an ever-increasing flow of information, effectively working with it, is increasing. The possibilities of the global network, which are actively used in all spheres of public life, are based on information resources, which are a collection of data that are organized in information systems to obtain reliable information in various fields of knowledge and practice. However, along with the increase in the role of information, the importance of its protection, which is ensured through information security tools, also increases.

The aim of the work is to study the features of information security. To achieve it, methods of analysis and synthesis of scientific publications and literary sources on the topic under consideration were used.

Information security is the impossibility of harming the properties of the security object, which are determined by information and information infrastructure. Information security includes:

- the state of security of the information space, thanks to which its formation and development is ensured in the interests of the state, citizens and organizations;
- the state of information, excluding or significantly complicating the violation of its

properties such as integrity, confidentiality and availability;

- the state of the infrastructure, allowing the use of information strictly for its intended purpose and without negative impact on the system;

- economic component, containing telecommunication and information systems and management structures, such as systems for collecting, cumulating and processing data, general economic analysis and forecasting of economic development, management, coordination and decision-making;

- financial component, covering information networks and databases, systems of financial settlements and exchange.

The key characteristic of the entity information security is the property of security, which includes the following two types of protection:

**Active.** Protection is aimed at preventing unauthorized access to information. Her priorities are:

- protection of personal data, i.e. social values and other confidential information;
- operation of means Information security;
- operation and protection of critical infrastructure facilities;
- international interests.

**Passive.** Protection extends to conditions for social and economic development. Its priority areas are:

- freedom of circulation of information;
- development of culture;
- development of online democracy;
- economic development;
- development of the IT sector;
- international cooperation.

An important aspect of integrated information security is the information security of the individual, which is relevant both for spontaneous information interaction on the Internet and for a long-term presence in the professional virtual world. Personal information security includes the following areas:

- protection from external aggressive information;
- protection from unethical data that offends moral values and feelings;
- protection against low-quality pedagogical products implemented on the basis of communication and information technologies that do not meet pedagogy-ergonomic requirements;
- protection against borrowing of the results of intellectual property presented in electronic form;
- protection of mental and physical health from the possible negative impact exerted in the process of using communication and information technologies.

**Features of ensuring information security.** Ensuring information security allows you to effectively counter information crime that has an information impact on the information space and its individual elements for illegal purposes. In particular, the tools and methods of information security are aimed at countering information weapons, through which:

- illegal access, modification, destruction, copying, blocking, distribution, provision and other illegal actions in relation to data are carried out;
- the order of access to information is violated and there is a general adverse effect on the data;
- influence on means of information processing is realized.

Information protection includes a set of measures to ensure the confidentiality and integrity of information, provided that it remains available to users who have the appropriate rights. Integrity is understood as the preservation of the quality and properties of information, confidentiality is the provision of data privacy and access to certain information to individual users, accessibility is the quality of data that determines their prompt and accurate location by a specific user.

Ensuring information security is based on the following principles:

1) The principle of consistency. According to him, protective measures should be aimed at preventing information attacks from external and internal sources, as well as take into account the applied protection tools and closed access channels. The means of protection should be used adequately to the likely types of threats and function as an integrated protection system, technically complementing each other.

2) The principle of strength. Establishes that information security rules should cover all security zones, have equal protection reliability and allow identifying likely threats.

3) The principle of multilevel protection. It is focused on the creation of information system protection boundaries, consisting of sequentially located security zones, the key of which is located inside the entire system.

4) The principle of continuity. In accordance with it, the functioning of the information security system must be continuous and uninterrupted.

5) The principle of prudence. It is expressed in the reasonableness of applying protective measures with the required degree of safety. This principle is based on the expediency of high material costs and the rationality of their further use. Thus, the cost of protective measures should not exceed the amount of probable damage, the cost of maintenance and the performance of the protective system.

As the main measure of information protection, access control is used, designed to exclude the possibility of unauthorized access to information. The key software and hardware tools for information security include identification and authentication, the combination of which makes it possible to carry out the authorization procedure by establishing the user's identity. The following types of information can be used for authentication:

- data known to the user;
- an item belonging to a specific user;
- biometric data that allows automated recognition of the user by unique psychological, biochemical (DNA) and/or physiological features that are unique to a particular individual.

After successful identification and authentication of the user, the authorization stage follows, which consists in determining the information resources allowed for access and possible actions to perform, such as launching, viewing, creating, deleting or changing individual data.

Authorization of access to information and other computing services is based on administrative procedures and policies that prescribe the possibility and conditions of access to information.

In addition to improving information security systems, an important component of data protection is the audit of information systems. It consists in obtaining objective and systematic data on the current state of the applied information technologies and allows timely identification and elimination of their vulnerabilities.

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