Світлана ХОМ'ЯЧЕНКО

ЗНАЧЕННЯ ІНСТИТУТУ СІМ'Ї У ПРОЦЕСІ СОЦІАЛІЗАЦІЇ ТА ЗАПОБІГАННІ ДЕВІАНТНІЙ ПОВЕДІНЦІ ДИТИНИ

Анотація. У статті представлено авторське бачення ролі та значення інституту сім'ї у формуванні прийнятної соціалізації дитини та запобіганні девіантній поведінці. Дослідження ролі інституту сім'ї у формуванні прийнятної соціалізації дитини та запобігання девіантній поведінці залишається актуальним і вимагає системного підходу до пізнання вказаних проблем. Мета цієї статті – є теоретична характеристика проблеми соціалізації дитини та профілактики девіантних відхилень у її поведінці крізь призму функціонування інституту сім'ї. У статті аналізується девіація негативної спрямованості, соціально неприйнятна діяльність дитини та роль інституту сім'ї в корекції цієї поведінки. Окреслено основні чинники та причини девіантної поведінки неповнолітніх, розкрито роль сім'ї в профілактиці девіантних, суспільно небезпечних відхилень. Наголошуючи на детермінованості девіації неповнолітніх соціальними, економічними, духовно-моральними факторами, автор обґрунтовує методологічні засади вирішення проблеми шляхом комплексного поєднання зусиль державних та громадських організацій. Висновки й рекомендації, викладені в статті, можуть бути використані для подальшого дослідження проблем ювенальної кримінології.

Ключові слова: *деструктивний вплив, неповнолітні, виховання, освіта, злочинність, покарання, причини, профілактика.*

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PECULIARITIES OF USING VISUAL MEANS OF INFORMATION AND ANALYTICAL ACTIVITY IN LEGAL AND LAW ENFORCEMENT SPHERE

Abstract. The article considers the peculiarities of the use of modern information-analytical programs with visualization capabilities, which allow law enforcement officers to provide the most relevant information for the analysis of relations between people, organizations and information flows between criminals and organized criminal organizations. The use of modern information systems and software is necessary for the investigation of murders, money

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laundering, theft of property, cyber fraud and other crimes. The specifics of the analysis using the possibilities of modern methods practiced by law enforcement and special bodies of the leading countries of the world are given. Problems of visual display of information-analytical processes at the analysis of various procedures of legal character are considered.

Approaches to visualization of the analysis of the course and control of investigations of various character in law enforcement and other spheres are considered. There is a description of different options for the use of visualization of information and analytical actions, such tools as: intelligence maps (Mind Maps), graphs "event-time", process flowcharts, diagrams "Perth" and other tools. The use in information and analytical work of visualization tools implemented with the help of information technology is relevant for use in law enforcement and the legal field. In the legal field, the development of service software and analytical software with visualization differs in that software packages are less complex and cover only certain types of work, which does not reduce their practical significance and viability. Developed software can be used in the field of artificial intelligence (expert systems), methods of pattern recognition theory and other research using information technology and mathematical methods. To work with such new technologies it is necessary to involve qualified specialists with relevant knowledge of the application of modern software in professional activities.

Keywords: *investigation, visualization, law enforcement activity, software, information-analytical activity.*

Introduction. The current stage of development of society is characterized by the rapid development of information technology, increasing the amount of information and knowledge that requires professionals to structure their information and analytical activities. Systematization and structuring of information are the most important psychological mechanisms through which effective analysis and processing of large amounts of information. Information processing and perception works best with systematized and visualized information. Visualization is a property of human consciousness that makes it possible to work with real events and circumstances. Data visualization is one of the tools for presenting analytical, economic, statistical and other information. One of the main reasons for the use of visualization technology is the ability to display a large amount of information in verbal and graphical form in order to optimize it for effective perception and further use in professional activities.

The role of the analytical component in information processing is constantly growing. Issues that occur in law enforcement, jurisprudence and other structures related to security exist due to the inability and unwillingness to analyze available information, predict threats, protection options and more. These tasks in law enforcement and legal spheres should be solved with the help of modern technologies for visualization of information and analytical activities. One of the effective ways to display information is visual and graphical diagrams.

Graphical display of information in its processing contributes to the speed and accuracy of its perception, memorization, analysis and prediction for a long period.

Analysis of recent research and publications. Scientists and practitioners in the field of law enforcement have developed a large number of methods and techniques that are designed to effectively and enhance the detection of crimes and optimize the investigation process, including organized crime. The application of new methods of work in the law enforcement sphere will increase the level of detection and prevention of organized crime in the country. Today, organized criminal groups are traditionally transformed into criminal business structures. In this regard, there is a need to study the structural

formations of organized crime, persons operating in these structures, the total number and composition, the location of organized criminal groups and communities, leaders who lead criminal units and the relationship between them.

Crimes occurring in many spheres of activity cause significant damage to the economy of Ukraine (Rybalchenko & Kosychenko, 2019; Rybalchenko & Ryzhkov, 2019; Rybalchenko & Kosychenko, 2021). The application of modern methods to combat fraud and detect economic crimes (Rybalchenko, Ryzhkov & Ohrimenco, 2021; Rybalchenko, Kosychenko & Klinytskyi, 2022) will lead to the growth of domestic economic potential and the creation of a reliable economically developed state.

There are new legal mechanisms, information opportunities for the prevention and prevention of corruption and financial crimes, money laundering, etc. Various software information-analytical complexes are being introduced, which by analyzing information from information sources model schemes of possible crimes, which allows to detect corruption and economic frauds that are being prepared or are to take place.

These measures are as follows:

1) Division of available data sets into separate information fragments, relevant to the problem to be solved, by working with information sources;

2) Selection, comparison and restructuring of relevant information elements;

3) Understanding, identifying and selecting appropriate analytical methods to work with different types and sets of investigative data;

4) The formation of reasonable and stable points of view that provide the necessary understanding to clarify the problem that is solved by working with information.

The purpose of the article is is to consider the current state of use of visual tools of information and analytical activities in the legal and law enforcement spheres, research of domestic and international experience in this field, as well as to develop proposals for improving the use of visualization tools.

Formulation of the main material. In law enforcement, visualization software is effective for investigating organized crime, terrorism, drug trafficking, theft of property, network fraud, cyberattacks, etc. For example, in the investigation of a contract killing, it is necessary to establish links between the victim, the suspect, the crime scene and physical evidence, which are important elements in the structure of evidence in the investigation and successful trial. Without studying the analysis of such connections and their verification, it is difficult to build an evidence base for suspects.

Such programs allow:

– establish connections between persons, places, objects, dates and times;

– form a correct statement about the event that took place;

– identify gaps in information on the collection of information and indicators that characterize the situation before the crime, during the crime and after its commission;

– prepare clear information references.

The analysis of connections shows the corresponding technique which is intended for establishment of communication or a link of communication between two or several elements of criminologically significant information. This technique is used in combination with investigative and operational

analysis. The analysis allows you to select relevant information and use it to reduce the degree of uncertainty and predict the probability with which an event may occur. There are the following analytical methods: analysis of relationships, analysis of the distribution of funds, financial analysis, communication analysis, criminological mapping, analysis of competing hypotheses.

These analytical techniques are generally accepted and are widely used in most investigations and in the analysis of information obtained. The analysis of organized crime can be differentiated by the following main stages:
– collection of information;
– data processing;
– analysis of the obtained data and their evaluation.

Software products must be flexible enough and adapted to the content of the information already collected. They can also be adapted to additional information that will come in the future. In the course of investigation and analysis, new sections and subsections may be introduced into the information system. In the process of analysis it may be necessary to enter confirmed and even unconfirmed data. The information system must be adapted to the perception of any changes without processing software and processing large amounts of information, which are constantly updated and supplemented.

The information-analytical system must be provided with security means to restrict access to operational and investigative information. In addition, it should periodically back up files to protect the investigation and analysis from information loss due to unforeseen technical or man-made situations. For such purposes, the use of modern cloud technologies is very promising, taking into account all the features of restricting access and protection of information (Hrebeniuk, Rybalchenko & Prokopov, 2022).

Obtaining information is the basis for the next stages of the process of working with evidence. The information gathered, along with previously available reports, defines the conceptual model of the investigation and helps to establish investigative and operational information. Collecting information from several sources increases the likelihood of obtaining key evidence and provides the ability to confirm and verify the reliability of the information.

The data obtained with the help of these software products are determined on the basis of the investigation plan drawn up by the employee of the relevant unit. The information received through various channels helps law enforcement officers to make the appropriate decision. Thus, the introduction of information and analytical programs in the activities of law enforcement agencies proves its effectiveness. The use of visualization methods in information and analytical activities in both legal and law enforcement activities is given attention to the use of new multimedia and visual means of display, transmission of information and its effective implementation in practice (Husak, 2017).

With the advent of modern communication equipment and information technology, the provision of information in text form can no longer fully meet the needs of modern society. The new visual or "multi-sensory" form of expression of law is effective compared to the usual and has significant potential for crime detection activities. The level of development and efficiency of law enforcement and legal activity, as well as political and legal and technical and legal perfection of normative and individual legal acts depend on the quality of

legal thinking. Visualization of thinking based on the use of intelligence maps (mental maps, Mind Maps) both in the training of highly qualified specialists and in specific practical activities has a promising direction.

Forensic visualization allows you to display invisible or faintly visible processes and objects, record the characteristics of objects, systematize them in an interactive scheme, the question of presenting the results of forensic imaging is relevant not only in computer form but also with real models and via 3D printers. Data on forensic imaging give a general idea and require further development for the use of technical means in criminal proceedings.

The use of Mind Maps technology is the most common visualization of analytical work around the world for many industries. You can use intelligence maps to prepare presentations, organize and conduct various events, lecture notes, storage of large amounts of information, workday planning and more (Kosychenko & Yuzheka, 2018; Kosychenko & Diskovsky, 2018).

Mindmapping technology (mindmapping – the use of mental maps) is used as a radial information structure, which prefers not logical-hierarchical, but associative connections. The main advantage of mental maps is the ability to cover the entire process that takes place. Features of the use of mental maps are a free way to build the visualization of thoughts through color drawings, diagrams and graphs. Ordinary tables and diagrams are no longer used here. The information is presented in the image of logical connections between events in time. Mental maps are convenient to use in education, business, management and other areas of life (Kosychenko & Yuzheka, 2018).

It should be noted that intelligence cards are rarely used in the teaching of legal disciplines in law and law enforcement higher education institutions of Ukraine. In English-speaking countries, the use of intelligence cards in the legal field is given considerable attention (Kosychenko & Diskovsky, 2018).

The use of intelligence card technology can be very effectively used in the visualization of the investigation of crimes, to identify and analyze the links between the participants of criminal groups, etc. There are two main ways to create smart cards: the first way is to create manually using paper of the appropriate format and a set of markers, and the second way is to use specially designed programs (based on Windows, Ios and Android operating systems).

When creating computer smart cards, there are several options: programs for local use and programs on the Internet online. In the latter case, it is very promising to jointly create and further supplement a group of smart cards for information support of operational activities using cloud technologies that can be used in law enforcement, judicial, expert work and other areas (Kosychenko & Yuzheka, 2018).

When using conventional means of visualization of processes, as the compilation of block diagrams of algorithms should be used state standard (DSTU), which is practically an international standard. Construction of such schemes according to the standards will improve the perception of information and will allow to analyze it qualitatively for further application in practice.

The use of time analysis tools contains a large number of different tools, which can include event-time charts, process flow diagrams and methods that allow analysts to implement them as promising visualization tools taking into account the time factor .

Applications such as Microsoft Visio, Google Docs, Smart draw and

others are used to create flowcharts. To build a flowchart of any process, you need to choose the right graphic symbols that serve as carriers of important information. It is advisable to use the image of banknotes in the block diagram of money laundering to display cash flow.

Modern technologies of project evaluation and analysis, as well as data visualization are Microsoft Project, Software Management, Project Manager and others, which allow analysts to qualitatively process documents in the investigation of financial and other crimes.

The structure of information-analytical activity includes information support, information-analytical work, creation of databases, which includes information search, analysis of goals, motives, methods and techniques of their implementation.

Article 25 "Powers of the Police in the Sphere of Information and Analytical Support" of the Law of Ukraine "On the National Police" stipulates that the police within the framework of information and analytical activities: forms databases (banks) included in the unified information system of the Ministry of Internal Affairs of Ukraine; carries out information retrieval and information-analytical work; uses databases (banks) of the Ministry of Internal Affairs of Ukraine and other public authorities (https://zakon.rada.gov.ua/laws).

The analytical component of information-analytical activity includes methods that contain documents of analysis of existing concepts, proposals and theories using the tools of mathematical modeling, using static and dynamic models to describe the results of territorial bodies of the National Police.

The development of information-analytical activities has led to the emergence of information-analytical units in almost all areas of activities related to information processes, in particular, the processing of information flows in order to make optimal management decisions. Of all the existing software tools for the analysis of operational and operational information, adopted by law enforcement agencies in most developed countries, the most commonly used software products are "IBM i2 Analyst's Notebook" and "Anacapa". Such software solutions for visual data analysis and knowledge acquisition are intended for investigators, whose activities are associated with the need for analytical processing of information flows and data presented in various formats.

The IBM i2 Analyst's Notebook system is a software package created on the platform of the relational database management system "MS SQL server", designed to summarize, analyze, detect probabilistic relationships, as well as visualize in real time the facts of information exchange between objects. This software package is a system of compatible different software modules that perform the appropriate specific functions at all stages of the investigation and detection of crimes (https://www.ibm.com/support).

Anacapa Sciences Inc. software (https://www.anacapasciences.com) presents advanced methods of crime investigation and analysis of operational information (developed by Anacapa Sciences Inc (USA), which was founded in 1969. The company's field of activity – commercial business, marketing, public opinion and other economic research. Today, most Western law enforcement officials are known.Anacapa Sciences Inc. was the basis for the development of special analytical techniques for the security sector and in 1971 began conducting training courses for analysts.

Of particular interest is the development of the international company

Bitfury Group (https://bitfury.com/) which is a leading company in the field of new technologies, in 2018 launched Bitfury Crystal software for law enforcement and financial institutions, which helps investigate fraud using bitcoin and other cryptocurrencies. Crystal provides full access to the bitcoin blockchain and uses advanced visual analytics to search for and display suspicious transactions and related objects. The innovative tool also offers a patented "risk assessment" system that helps detect and track suspicious activity. Crystal allows organizations that receive bitcoins to determine the origin of funds and their relationship to the illegal activity of cybercriminals to assess risks. The Crystal platform is used in Asia, the United States, Europe and the CIS by both financial institutions and law enforcement agencies.

It should be noted an interesting international project VIS (Visual Investigative Scenarios – Visualization of Investigative Scenarios) (https://vis.occrp.org/). It is an online data visualization platform that aims to help journalists, activists and other users for whom it is important to properly display information in the form of networks and connection diagrams. This service first of all aims to help investigators and understand the causes of corruption and other criminal acts, translating complex facts into a universal visual language. The VIS online service is a platform that uses HTML5 hypertext markup language for dynamic data visualization, which allows you to create complex connection diagrams. The created visualization can be exported for later use both online and for other purposes. The VIS project was created by the OCCRP (Organized Crime and Corruption Reporting Project) to understand and investigate international crime by the general public.

Special technologies of visual data analysis and knowledge (Visual Data Mining) of the International Association of Law Enforcement Intelligence Analysts (https://www.ialeia.org/) provide analysts with unique opportunities to study information and identify hidden patterns in large arrays of disparate data. Visual Data Mining software is designed for visualization of information and analysis using modern information technologies, tools for searching and working with data, e-mail servers and more.

Innovations in legal activity significantly accelerate all processes. In May, 2019, the PravoSud project (https://pravosud.com.ua/) was officially launched in Ukraine – a system for searching, analyzing and visualizing legal information for use in preparation for court proceedings. The search is based on modern information technology, so it works more efficiently and conveniently than the USSR (Unified Register of Court Decisions). The analysis of practice usually takes a lawyer from a couple of hours to several days of constant searching in the register.

The results of the search and subsequent analysis are provided to users in a simple and visual form – graphs, tables. This is another advantage of the analytical system – the visualization of legal data. This approach was first used in such a solution, which allows you to quickly perceive large amounts of information. The service is convenient because it is the only platform that provides the entire process of a lawyer. Users do not need to open multiple browser tabs, download individual documents and applications at the same time. All data is in one service, which saves a lot of time. The program also provides tools to check legal entities or individuals for risks that affect the judicial strategy. With the help of the service functions, constant monitoring of new

information from the registers is set up. Pravosud service will be useful for professionals in various fields – lawyers, law enforcement officers, civil servants, media workers and citizens who are interested in this topic.

Conclusions. Thus, the use in information and analytical work of visualization tools implemented with the help of information technology is relevant for use in law enforcement and the legal field. The use of Mind Meps technology for visualization and analysis is used worldwide and in almost all industries. In the legal field, intelligence cards are used in countries such as the United States, Canada, Great Britain, Europe, Japan, China and others. The use of information-analytical software packages with the importance of visualization most often occurs on the Internet in such areas as economic security, finance and law enforcement. In the legal field, the development of service software and analytical software with visualization differs in that software packages are less complex and cover only certain types of work, which does not reduce their practical significance and viability.

Developed software can be used in the field of artificial intelligence (expert systems), methods of pattern recognition theory and other research using information technology and mathematical methods. To work with such new technologies it is necessary to involve qualified specialists with relevant knowledge of the application of modern software in professional activities.

Conflict of Interest and other Ethics Statements
The authors declare no conflict of interest.

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Олександр КОСИЧЕНКО, Людмила РИБАЛЬЧЕНКО
ОСОБЛИВОСТІ ВИКОРИСТАННЯ ВІЗУАЛЬНИХ ЗАСОБІВ ІНФОРМАЦІЙНО-АНАЛІТИЧНОЇ ДІЯЛЬНОСТІ В ЮРИДИЧНІЙ І ПРАВООХОРОНІЙ СФЕРАХ

Анотація. У статті розглянуто особливості використання сучасних інформаційно-аналітичних програм із можливістю візуалізації, що дає можливість представникам правоохоронної сфери діяльності отримувати актуальну інформацію для аналізу відносин між людьми, організаціями та інформаційними потоками між злочинцями та організованими кримінальними організаціями.

Доведено важливість застосування таких програм для розслідування вбивств, відмивання грошей, крадіжки чужого майна, розслідування кіберзлочинів та інших злочинів. У роботі представлено специфіку проведення аналізу з використанням можливостей сучасних методик, які практикують правоохоронні та спеціальні установи провідних країн світу. Розглянуто проблеми візуального відображення інформаційно-аналітичних процесів під час аналізу різних процедур правового характеру. Проаналізовано підходи до візуалізації аналізу ходу та контролю розслідувань різного характеру у правоохоронній сфері. Наведено опис різних варіантів використання засобів візуалізації інформаційно-аналітичних дій таких інструментів як: інтелект карти (Mind Maps), графіків "подія-час", блок-схем процесів, діаграм "Перт" та інших засобів.

Ключові слова: розслідування, візуалізація, правоохоронна діяльність, програмне забезпечення, інформаційно-аналітична діяльність.