

# The Use of Automated Systems in the Investigation of Crimes Aimed at Personal Freedom

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**Abstract** — The authors note that automated systems have spread not only in industry but also in the social sphere; one of them concerns the investigation of a crime. The article analyzes the automated systems used to investigate crimes aimed at personal freedom. The possibilities and prospects of using centralized automated information systems are substantiated: fingerprint processing; search for persons and portraits of participants in the investigation of the case; accounting of vehicles and their owners and others. The prospects for the use of automated systems in the investigation of crimes aimed at personal freedom are determined

**Keywords** — automation; information; telecommunications; database; investigation; crimes; personal freedom.

## I. INTRODUCTION

Currently, information and telecommunication and automated systems are gaining ground in any field of activity, which allow optimizing the work of employees, saving time, quickly processing significant volumes of information and obtaining the necessary results. The purpose of these systems and technologies is to optimize managerial decision-making processes, increase communicative relationships between stakeholders, intensify work with documents, reduce risks and increase the reliability of decisions.

The use of automated systems is used not only in the field of industrial production, but also in the areas of social services for the population, in law enforcement, including the criminal investigation process. This is especially true for investigating crimes aimed at personal freedom, where the delay in establishing the location of the victim can lead to resale, damage of varying severity during the exploitation of the victim or his death [1].

In the text of this article, the authors consider the capabilities of such automated systems as: “the investigator’s workplace”, the Papon fingerprint information system, the Portrait-Search information retrieval system, the Video Stream information retrieval system, and others. The objects of identification in these automated systems are information transformed in the form of fingerprints of suspects’ handprints, personal data of suspects, photo and video images of a person, registration numbers of vehicles and others, which allow

identifying the perpetrators and solving the crimes under investigation.

Combining these systems into a single, integrated information and telecommunication system of law enforcement agencies will allow you to remotely access the information you need and quickly solve the problems facing the investigation.

## II. MATERIALS AND METHODS

The methodological basis of the study is based on the dialectical method of cognition of social legal phenomena, the unity of their social content and legal form, which provides a scientific, comprehensive and organizational-functional approach to the study of crimes aimed at personal freedom and the practice of identifying and investigating them using information and telecommunication technologies .

In the process of the study, the authors used legal, sociological and other methods of scientific knowledge: logical and historical, comparative legal and statistical, system analysis and modeling, as well as expert assessment methods. These methods made it possible to systematically study crimes that infringe on individual freedom and justify the possibility of using information and telecommunication systems and technologies during the organization of their identification and investigation.

The authors relied on the achievements of the science of philosophy, sociology, criminology, criminal procedure, criminal law and others. In the scientific comprehension of the material obtained and the content of the study, the fundamental scientific research work of scientists in this field was used.

The results are based on the authors studying the qualitative features and subsystems of information and telecommunication technologies used by law enforcement agencies in the investigation of crimes aimed at personal freedom. In addition, the authors analyzed the materials of 430 criminal cases of crimes aimed at personal freedom committed in various regions of the Russian Federation. The conclusions and results set forth in the text of the work are also based on the questionnaire data of 320 employees of operational, investigative and expert units of law enforcement agencies involved in their identification and investigation, as well as

judicial officials considering criminal cases under investigation.

Certain aspects of the use of information and telecommunication technologies during the investigation of crimes aimed at personal freedom were analyzed on the basis of a study of the media, scientific papers and other literature, including those published in foreign publications

### III. AUTOMATED SYSTEMS «INVESTIGATIVE COMMITTEE» AND «ELECTRONIC PASSPORT OF A CRIMINAL CASE»

The problems of organizing and using forensic technology during crime investigations are not new, and they developed at the turn of the 19th-20th centuries in the works of domestic and foreign forensic scientists [2, 3, 4]. In connection with the accumulation of empirical material, the expansion of the tool kit of forensic technology, the development of forensic guidelines for the use of forensic tools and methods, more than thirty years ago they began to use combinations of «technical and forensic support» [5], «scientific and technical support» [6], «technical and forensic support for the detection of crimes» [7], «technical and forensic work» [8], etc.

Without entering into polemics with researchers of this problem, we note that information and telecommunication technologies are part of the technical and forensic support for crime investigation and represent a combination of methods, devices and production processes used to collect, store and process information that is significant for detecting and solving a crime [9].

To optimize the time for investigating attacks on personal freedom, streamlining the sequence and number of procedural and investigative actions, they use information and telecommunication technologies that are introduced into the investigative activities of law enforcement agencies investigating these crimes.

The automated system «Investigative Committee» contributes to minimizing the time and physical costs of law enforcement agencies, improving the quality of investigations of attacks on personal freedom and effectively monitoring the timing of the preliminary investigation, the terms of detention of the accused, and the results of the execution of the plan of investigation for these crimes». The system under consideration consists of a number of subsystems: «Investigative Department», «Work with complaints and appeals of citizens», «Summary of incidents», «Organizational and control service» and «Chancellery».

The subsystem «Investigation Department» is designed to assist in the preparation of forms of procedural documents. This subsystem contains a list of expert institutions of the Russian Federation, offers a list of research objects and types of appointed examinations. The base of this subsystem also contains a list of typical questions that can be posed to the expert. The subsystem «Investigation Department» allows law enforcement officials to build their activities on a planned basis by preparing a list of investigative and other procedural actions, depending on the situation in the criminal case.

The subsystem «Organizational and control service» is intended for the organizational and analytical support of the activities of law enforcement officials and contains the necessary information about the investigator or interrogator, as well as about persons held criminally liable (suspected, accused). The materials of this subsystem allow generating brief data on the crime committed, the qualification of the crime committed, the objects to which the criminal assault was directed, as well as the suspects and accused who have been involved in similar criminal cases.

The next subsystem of the automated system «Investigative Committee» is the «Summary of incidents». This subsystem contains information about the date and time of receipt of the crime report to the law enforcement agency and its registration number. In addition, the analyzed subsystem allows you to set information about the timing of the extension of the consideration of the material on the crime and the final decision adopted in accordance with the criminal procedure law of Russia (Art. 145). And also the investigated subsystem contains data on the date and number of the criminal case.

Using the automated system «Investigative Committee», law enforcement officials can analyze the availability of reports of crimes aimed at personal freedom in a particular region, identify their relationships and patterns, combine disparate efforts in the investigation of the investigated attacks and exposing the perpetrators.

Unfortunately, we have to admit that so far the investigative units of the Investigative Committee of the Russian Federation, which are responsible for investigating crimes aimed at personal freedom, have not widely implemented and practically do not use automated investigation systems in everyday activities. At the same time, the automated system «Investigative Committee» has received its distribution in test mode in the South and North Caucasus Federal Districts of the Russian Federation.

An increase in the amount of information in criminal cases, an increase in the volume of investigative and procedural actions performed by law enforcement officials, necessitate the introduction of information and telecommunication systems in their official activities. By order of the Investigative Committee of the Russian Federation, №. 27 / 108r of April 9, 2014, the units began to introduce the information system «Electronic Passport of a Criminal Case». This system allows real-time monitoring of the progress of an investigation of a particular criminal case, monitoring the implementation of instructions in the case, ensuring effective procedural control over the decisions taken, and also allowing you to plan an investigation of the case [10].

The advantage of this system is not only the convenience of electronic compilation of procedural documents, but also the possibility of accessing archived criminal cases that were handled by employees of the Investigative Committee of the Russian Federation, which makes it possible to investigate attacks on personal freedom in less time, based on real practical experience. The disadvantages of the system include the low prevalence in units of the Investigative Committee of the Russian Federation, the lack of methodological materials

in the databases for the investigation of certain categories of cases. The problem point is the lack of connectivity of the data in the system under consideration with the books of records of crimes committed by the territorial investigative departments and the low technical level of the software shell.

The actual absence of an investigator's automated workstation in the system of the Investigative Committee of the Russian Federation, as well as insufficient attention to the dissemination and implementation of information and telecommunication systems in the investigative activities of its units give rise to the need for law enforcement officials to independently acquire unlicensed, unprofessional software products: an automated workstation «Investigation» Workstation «Slidstwo» and others, tries dressing in free access on the Internet resources «Kriminalisty.ru» [11], «Softportal» [12], «VKontakte» [13], etc.

The software products under consideration make it possible to automate the work of the investigator, providing the opportunity to fill out templates of procedural documents, a list of documents of a criminal case, automatically fill in statistical cards, convert testimony of interrogated persons, and also contain methodological materials for appointed examinations and texts of criminal and criminal procedural legislation.

#### IV. SOFTWARE USED TO INVESTIGATE CRIMINAL CASES OF CRIMES AIMED AT PERSONAL FREEDOM

During the investigation of crimes aimed at personal freedom, in addition to automated systems, other software tools are also used, we will dwell on the analysis of some of them.

To optimize the process of investigating crimes aimed at personal freedom and to plan a set of investigative and procedural actions for various versions, the «Forver» software tool developed by Nizhny Novgorod State University named after Lobachevsky and the Investigative Department of the Investigative Committee of the Russian Federation for the Nizhny Novgorod Region allows using standard versions to form a likely portrait of the criminal, to specify the circle of potential suspects, reducing the time spent on working out versions of the crime [14].

The developers of the «Forver» software were planned to be used during the murder investigation, but since the investigated software product is based on the CBR method, which consists not in creating any models or rules, but in analyzing the data available in the program's archive, the program in question can be successfully used for any types or groups of crimes. Thus, law enforcement officials, having created an archive of data on violations of personal freedom in the program, will be able to compile a likely portrait of the offender containing the following data: gender, age, criminal record, acquaintance with the victim, state at the time of the crime and motive [15].

Improving the investigative activities of employees of the Investigative Committee of the Russian Federation contributes to the implementation of the statistical reporting tool «Statistics of the Investigative Committee of the Russian

Federation» [16]. The special software under consideration allows you to quickly enter, process and print generalized tabular data. The structure of the tool for processing statistical reporting «Statistics of the Investigative Committee of the Russian Federation» includes an interactive system that allows you to generate a request and obtain analytical indicators of perfect attacks on personal freedom for a certain period of time. It is possible to reduce the search circle by receiving information about crimes committed in a user-specified region (district), as well as analyze their dynamics and share in the overall crime structure. The data obtained make it possible to evaluate the effectiveness of counteraction to crimes aimed at personal freedom, to clarify the direction of the fight against these crimes, to calculate the load of investigators for a specific group of crimes or their combination.

Do not forget when investigating crimes aimed at personal freedom and the possibilities of the information and telecommunication network «Internet», the resources of which contain a huge array of background information. It is worth paying attention to the content of the Kriminalisty.ru Internet resource, which contains sections devoted to: expert research and their methods; features of various types of examinations; guidelines for the investigation of certain types of crimes; forms of procedural documents; software and hardware located in the service of expert and investigative units of law enforcement agencies. However, it is possible to use the capabilities of this resource only when connected to the Internet, the presence of which is not everywhere in the structural units of the Investigative Committee of the Russian Federation

#### V. CENTRALIZED AUTOMATED INFORMATION SYSTEMS

In the process of investigating attacks on personal freedom, an impressive amount of information is used that makes up the criminal registration system, the automated data banks of which contribute to the information support of the planning and investigation process of the investigated attacks, increase the efficiency of information processing, greatly facilitate its analysis and prepare the final data necessary for disclosing attacks on individual freedom.

The use of the «Papilon» centralized integrated fingerprint information system (CIFIS «Papilon») is called upon to effectively disclose attacks on personal freedom and expose those responsible for the crimes they committed. The considered type of forensic records in conjunction with the bases of fingerprint cards of persons of operational interest, as well as those who have passed state fingerprint registration, is of significant interest for the investigation of crimes aimed at personal freedom.

During the investigation of crimes aimed at personal freedom, CIFIS «Papilon» allows you to remotely access databases and carry out the necessary checks on fingerprint systems. An analysis of the materials of criminal cases on crimes aimed at personal freedom allows us to assess the completeness of fingerprinting of all handprints taken from the scene, determine the circle of persons not related to the crime, obtain the necessary samples for a comparative study from suspects, and check them using the CIFIS «Papilon» system

and put information relevant to the criminal case on the account.

For example, on August 8, 2010, citizen K. saw an unfamiliar boy in the schoolyard, whom he had abducted for ransom and kept in the basement of an apartment building on Gubkin Street in the city of Belgorod until the victim escaped. It was succeeded to establish the kidnapper after 6 years from fingerprints left at the scene of the incident [17].

A significant role in the investigation of crimes aimed at personal freedom can be provided by the «Portrait-Search» automated information retrieval system (AIRS), which allows you to search for persons and portraits of participants in an investigation of a case using formalized and graphical parameters. AIRS «Portrait-Search» is used to create and edit portraits of criminals in the database, anthropological and biometric descriptions of graphic information, sort its output by various parameters and allows you to identify the image when it is partially absent (dark glasses, hair loose, etc.).

Despite the individual perception of the mental image in the minds of the participants in the investigation and not using the modeled portraits as evidence, the information obtained during the use of AIRS «Portrait-Search» will allow officials conducting criminal investigations to organize a complex of investigative and operational-search measures aimed at working out the identified person for involvement in a crime aimed at personal freedom.

A promising direction for the development and use of AIRS «Portrait-Search» for crimes aimed at personal freedom is the integration of its data bank with the automated information retrieval system «Video Stream», intended for video surveillance in crowded places. When the wanted person is in the system's field of view, the latter performs the intellectual processing of video information, biometric identification of the face image, checks the database and, if there is a match, - notifies the officials conducting the investigation.

Given that the capture and movement of victims of crimes aimed at personal freedom is carried out mainly by road, there is a possibility of recording the crime with video surveillance cameras, as well as eyewitnesses to the crime. Significant assistance in establishing the vehicle's registration data and determining whether it belongs to a specific person is provided by the federal traffic police inspection system (FTPIS), operating on the basis of a unified system of information and analytical support for the activities of the Ministry of Internal Affairs of Russia (IASA of the Ministry of Internal Affairs of Russia). FTPIS is a complex multilevel system for distributed storage and automatic processing of data on accounting objects of the Russian traffic police, grouped into the subsystems: «Vehicles», «Administrative Offenses», «Special Products», «Driver's License», etc. [18].

Using the subsystem «Vehicles» of the FTPIS, the officials conducting the investigation, using the available information about the make or number (part number) of the car, can determine its owner. The software product under consideration contains data: on registered vehicles (make, model, year of manufacture, color, body number, state registration mark,

etc.), on vehicle owners (last name, first name, middle name of the owner, date and place of birth, registration address and place of stay, phone number), as well as registration actions with the car [19].

## VI. CONCLUSION

Thus, one of the most important and strategic directions of the development of the modern state is to ensure the security needs of society. The solution to this problem is directly related to the implementation of information and telecommunication systems in the activities of law enforcement agencies. The system of activity of law enforcement bodies that has been established and established over many years requires the modernization and implementation of new technologies that can effectively solve problems of ensuring public order and security in modern conditions. First of all, the introduction of new information and telecommunication systems is required in the crime investigation system, since the scope of criminal law provides for the most severe penalties related to the deprivation of liberty.

Modern telecommunication systems expand the capabilities of law enforcement officials to counter crimes aimed at personal freedom. Undoubtedly, they should be used in the course of planning the investigation and conducting separate investigative and procedural actions for crimes aimed at personal freedom. The subject and scope of our study does not allow us to analyze the entire available to the officials conducting the investigation, the potential of information and telecommunication systems, however, we studied the main ones used in the planning of the investigation and investigation of crimes aimed at personal freedom.

An analysis of the scientific literature and judicial investigative practice indicates that the officials conducting the investigation do not have at their disposal sound scientific and methodological recommendations for investigating cases of the analyzed category, and are also not familiar with the capabilities and features of the use of information and telecommunication systems. These circumstances significantly reduce the effectiveness of the investigation of crimes aimed at personal freedom, lead to unreasonable suspension of the preliminary investigation, and allow criminals to evade punishment.

The possibility of using the information and telecommunication network «Internet» by officials and law enforcement agencies, which is not available to all units of the Investigative Committee of the Russian Federation, remains a problem point. In addition, many existing automated information retrieval systems operate independently, without integration into a single information and telecommunication network, which significantly reduces their capabilities.

The use of information and telecommunication systems significantly expands the capabilities of officials conducting investigations in exposing the criminal activity of the perpetrators; however, poor knowledge of the potential they provide leads to an underestimation of their implementation and application in practice.

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