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## Research Article

# REVIEW THE EFFICIENCY OF USING MODERN TECHNOLOGIES IN IMPROVING THE QUALITY OF INVESTIGATIVE ACTIONS

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## ABSTRACT

The article describes the technical means used in the process of inspection and investigation in Uzbekistan and foreign countries, and the cases that should be paid attention to when using them. In addition, the stages and categories of inspection and investigative action are explained.

## KEYWORDS

Virtual inspection, virtual 3D space, 3D scanner, interactive inspection of the crime scene, artificial lighting equipment, optical equipment, forensic technical tools, drone.

## INTRODUCTION

Examination of the crime scene as the first, most important investigative action should be adapted to the interactive and modern conditions created by the latest criminalistic techniques. At the same time, "which is the real essence of examining the incident area, the location of the traces must remain unchanged to record the incident (fixation) and determine the situation." [1]

It is no secret that in today's investigative practice of inspecting the scene of the incident, actions related to

finding physical evidence, taking copies of them, recording and researching are carried out on the basis of available criminalistic and technical means. The level of efficiency of these technical means has not lost its importance yet.

In order for the investigation to be at a high level, not only the help of qualified specialists is necessary, but also high-precision technical tools should be used to obtain objects and traces important in the criminal case.

In general, the technical means used for the study and analysis of the scene have a unique role in the effective organization of the investigation by law enforcement agencies.

The tools used in the inspection of the scene are divided into the following 4 major categories:

- a) optical equipment;
- b) photographic tools;
- c) lighting devices; detecting micro-objects that are difficult to see with the naked eye, such as luminoscopic or ultraviolet means. d) "audio and video recording devices".[2]

Nowadays, the use of unmanned aerial vehicles to inspect the scene of the accident is one of the most promising ways to photograph the scene. The advantage of this method is to significantly increase the visual information collected about the incident area, to increase the efficiency of inspection and to provide an opportunity to explore areas that are difficult or dangerous for an expert to reach. Modern drones are very reliable, accurate and safe. They are equipped with high-resolution digital cameras, satellite navigation and coordinate data of the local area under study. All of the above-mentioned features allow you to get visual information about the situation at the scene with high accuracy and efficiency.

The use of drones (piloted devices) in expert and expert activities is considered appropriate to establish a system. This situation provides an opportunity to take a clear picture of the crime scene and understand the sequence of the crime. In addition, the drone allows the investigator to understand the beginning and end of the course of the incident.[3]

If the participation of an expert forensics department specialist in terms of photographing and videotaping the scene of the incident is necessary, the role of high-precision technical means in identifying and displaying the images at the scene of the incident is invaluable for conducting high-quality investigative actions. Also, in today's modern conditions, cameras are widely used to capture high-quality pictures and videos, and their level of clarity is also improving year by year. "Capable of capturing 360-degree video and photos, the Samsung Gear 360 camera captures images in 4096 x 2048 inches".[4]

In addition, the virtual system and visual effects are widely used to model the virtual space. "Recently, virtual helmets have appeared, that is, displays (Oculus "Rift", HTC "Vive") or software for smartphones that help broadcast the received image (Samsung "Gear VR", "Homido", "Fibrum") have been developed".[5] The technical tools used in the inspection of the scene of the incident also provide an opportunity to photograph the complex areas of the incident in the form of a spherical panorama. "Study of material objects based on the method of spherical panorama, then it is fully used in cases of murder, house fire and forensic fire examination appointed for it".[6]

In the practice of law enforcement, high-precision technical means are used to identify and display images at the scene of the incident, forming a virtual "photograph" of the situation. "Photography" on the one hand, improves the visibility of objects and tracks at the scene of the incident, and on the other hand, helps to fully learn about the parameters of the studied objects, as well as the distance between them.[7] The results of the "virtual inspection" activity are displayed interactively and used in the next stages of the "virtual investigation activity". Spherical photo and video recordings are considered an innovative solution for

spot detection, perception, and on-the-spot verification of evidence. The combination of images taken in virtual reality with the sound of a helmet provides a "resurrection" in a real situation of the previous inspection of a specific case, especially the previously conducted inspections of newly opened cases.

The main purpose of surveying the incident area using conventional photography and drones is to capture detailed images of objects that are important and significant for the investigation. Using the above method, criminologists and experts are recommended to examine objects that are dangerous or difficult to study. "Photography of the incident area by the above-mentioned methods can cause a complete change of opinion about the situation of this area (implementation of emergency rescue operations, monitoring of traffic, obtaining physical evidence and their examination, etc.)".[8] In turn, a 3D model of the area where the incident occurred can be created with the help of traditional photographic techniques and data obtained by drones.

The creation of 3D models with the ability to see the virtual 3D space, the objects in it and the events taking place in this space is considered as an important, high-tech aspect in the process of crime investigation, and serves as a means of preventing many crimes.

3D models created using modern software tools also provide an opportunity to digitally register and record data obtained as a result of expertise, research and other procedural actions.

Based on the obtained images, a 3D model of the area where the incident occurred and individual objects in this area is created. Anytime, anywhere analysis of this 3D model greatly expands the possibilities of additional and repeated inspection and, in turn, helps to increase

the reliability of procedural actions. Also, it preserves the original state of the scene or any other objects to be viewed despite the passage of time. That is, when there is a doubt about a physical evidence, it is possible to confirm its reliability through a 3D model. "The dimensionality of 3D models created by modern software allows measuring not only the relative position of objects, but also their size and the distance between them." [9] Traffic accidents, construction and technical expertise, the area of subversive activity and man-made disasters can be successfully inspected by the method described above. In turn, 3D modeling of the incident area is very useful in the implementation of situational expertise, the number of which has increased dramatically in recent years.

An alternative method of obtaining a complete picture of the scene or objects to be inspected is laser 3D scanning. The advantage of this method is the high accuracy of the obtained model. However, this method also has a disadvantage, which makes it difficult or impossible to inspect the scene by laser scanning. The main disadvantage of the scanner is its working time, as well as the difficulty of obtaining data from the surface or high layers. In addition, the price of the scanner is very expensive, and most of the information obtained through it is superfluous for solving expert tasks.

Based on the examples given above, we can conclude that it is possible to create a high-performance complex that displays a visual and volumetric view of incident areas or objects of expertise based on a device with an unmanned aerial vehicle, such as a quadcopter, a digital camera and specialized software.

With the help of 3D modelling, it will be possible to restore the image of the crime and solve many tasks assigned to the detectives. At the same time, skillful

use of this type of software makes it much easier to inspect the scene, both real and virtual.

Summarizing the above, the technological solutions aimed at solving the problem of increasing the efficiency of inspection of the incident site, identifying and displaying other indicators will depend proportionally on how and to what extent modern technologies can be used. The integration of such technical tools into the investigation of crimes leads not only to the comprehensive qualitative finding of traces, the correct opening of a criminal case in principle, but also to a significant reduction of subjective factors that may arise as a result of the unpreparedness of the expert participating in the examination of the crime scene.

Therefore, the use of drones, 3D photos, 3D printers, metal detectors and other tools is the demand of the time. In turn, it is important to regulate the process of using these tools through JPK. Article 1404 entitled "Usage of forensic technical means in the examination process" is proposed to be included in the Criminal Code. It is suggested that this norm be expressed as follows:

"During the investigation, the official of the body conducting the investigation, the investigator, the investigator uses a drone, 3D photography, 3D printer and other special criminalistic technical tools. It is necessary that the technical means used in the inspection process do not violate the rights and freedoms of the individual and are used within the framework of the law."

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