

Research on Standardization and Scientization of Video Investigation

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ABSTRACT. *The collection and extraction of video data are the basic work of video investigation. When the video investigation is carried out, great emphasis should be put on the collection and extraction of video data to ensure the legitimacy and effectiveness of the whole video investigation. However, at present, the collection and extraction of video data in video investigation are not standardized and scientized, and lack of authoritative theoretical guidance. Although some books and papers on video investigation have been published, there is still a lack of systematic and precise elaboration on the collection and extraction of video data. In view of the current research situation, the standardization and scientization of video data collection and extraction are studied in this paper. It may further guide the video investigation work.*

KEYWORDS: *Video investigation, Evidence, Standardization, Scientization*

1. Introduction

Video data, which are also called video monitoring data, video materials, or audio-visual materials, are important evidence to prove the true circumstances of a case. The objective facts that things move, develop and change are exactly recorded as video data by applying the principles of photoelectric effect and electromagnetic transfer. Then the video data are played to show the original images. Video monitoring data are usually included in audio-visual materials evidence from the angle of evidence theory. The audio-visual materials are also paralleled with electronic data in Criminal Procedure Law of the People's Republic of China which was amended in 2012. But with the information technology and the video technology highly integrated, we still think that the audio-visual materials are recognized as video data and the video data are recognized as one kind of the electronic data.

At present, video data investigation becomes a very common investigation measure^[1]. However, because of a great variety of video monitoring equipments and video data, lack of authoritative theoretical guidance on video investigation, and the fragmented investigation activities of different districts, the video investigation work is extremely non-standard, especially for the collection and extraction of video data. Who has the right to collect and extract the video data? How to collect and extract

the video data? And how to analyze the video images? Many fundamental problems have no definite standard to follow.

The collection and extraction of video data are the foundation work of the video investigation. The accurate and effective video investigation activities rely on the legitimate and reliable video data, and the legitimate and reliable video data rely on the standard and scientific collection and extraction. Therefore, the standardization and scientization of the video data collection and extraction are very important to current video investigation.

2. The Standardization of the Video Data Collection and Extraction

The standardization of the video data collection and extraction mainly includes the following three specific aspects. Firstly, the collection and extraction of video data should be included in some specific measures of evidence collection. Secondly, the collection and extraction activities should be focused on the capacity of evidence and weight of evidence of the video data. Thirdly, the integrity of the video data which are used as evidence should be ensured.

The collection and extraction of video data can be included in two specific measures of evidence collection. One is the crime scene investigation and examination, and the other is the obtention of evidence. During the stage of crime scene investigation, investigators should collect and extract video data at and near the scene or along the way of perpetrator according to his activity. The collection and extraction of video data become a component of the crime scene investigation at this stage. And the investigation of video data can be regarded as one of the contents of the crime scene investigation. The video data are investigated and examined according to the procedures, methods and rules of the crime scene investigation. Due to the characteristics of video data themselves, the specific methods and techniques should be adopted to collect and extract the video data. At other stages of investigation, the collection and extraction of video data are presented as the obtention of evidence. The implementation of the obtention should be according to the relevant provisions of “Provisions on Procedures for Handling Criminal Cases by Public Security Organs” in China.

The important purpose of the standardization is to ensure the capacity of evidence and weight of evidence of video data, for which the video data should be collected and extracted from the perspective of review and judgment.

In accordance with the Article 92 of the Interpretation of the Supreme People's Court on the Application of the “Criminal Procedure Law of People's Republic of China”, the audio-visual materials shall be emphatically reviewed for the following contents:

- (1) whether there is a description of the extraction process and whether the source is legal;
- (2) whether they are original, whether they are copied and how many copies are there; if they are copies, whether the reasons for the failure to obtain the original

copies, the making process of the copies and the location of the original copies are attached;

(3) whether there are situations in which the laws or relevant regulations are violated such as the threat or inducement to the parties in the making process;

(4) whether the identity of the maker, holder, time, place, conditions and methods of making are specified;

(5) whether the contents and making process are true, and whether there are editing, adding, deleting, modifying, and so on;

(6) whether the contents are related to the facts of the case; if there is any doubt, the audio-visual materials shall be appraised.

Special attention should be paid to the above contents for reviewing when video data are collected and extracted. The collection and extraction should be legal and the video data collected and extracted should be objective. The relationship of the video data and the case also should be confirmed.

The integrity of video data used as evidence is also an important part of the standardization of the video data collection and extraction^[2]. As mentioned above, video data are collected mainly through two measures, which are slightly different in presentation. Whether the video data are collected by crime scene investigating and examining, or by obtaining evidence, the following contents should be presented as many as possible:

(1) obtention of evidence notice or criminal scene investigation certificate;

(2) a map showing the distribution of monitoring points related to the crime and evidence collection;

(3) a record of crime scene investigation and examination or obtention of evidence;

(4) monitoring equipments of collection points, photos and instructions of the storage media;

(5) statement of the video monitoring system manager, the contents of which include the source, model, state, time, place, method, storage, extraction and storage of the materials;

(6) list and signature of the video image materials extracted;

(7) video monitoring materials extracted and instructions;

(8) list and instructions of the video screenshots;

(9) table of viewing the video materials which have been extracted;

(10) schedule of the suspects and cars appearance;

(11) analysis report of the video images;

(12) expertise report or inspection report of the video images;

(13) video investigation report which mainly includes case information, collection and extraction process, analysis method and process, investigation process, video screenshots identification and record, video investigation experiment and record, legal procedures, conclusions, and so on.

In order to ensure that video data can be used as evidence, the above contents should be presented as completely as possible in video investigation.

3. The Scientization of the Video Data Collection and Extraction

At present, the non-scientization phenomenon of video data collection and extraction can be found everywhere. It is mainly reflected in the blindness and randomness of collection and extraction, the backwardness of video image analysis methods and the separation of video resource utilization. The scientization of the video data collection and extraction is mainly ensured by the following three aspects. Firstly, video data should be collected and extracted by advanced and reasonable measures. Secondly, the collection, extraction, review and judgment of video data should be implemented according to the related technical specifications. Thirdly, the concept of benefit should be introduced into the collection, extraction and utilization of video data, during which the cost-benefit ratio may be evaluated.

(1) Video data should be collected and extracted by advanced and reasonable measures.

Video monitoring categories are various, and video data resources are diverse. Video data collection measures should be distinct in different environments and states. Some video data can be extracted in kind, some can only be copied, some can be downloaded through software, some can be collected by video capture card, some can be acquired by screen capture, and some can be collected and analyzed by “one-step” method and tools. There are various methods to collect video images, and the specific method should be determined according to the specific situation of the object. The so-called reasonableness mainly depends on whether the video data collected and extracted are legal, reliable and related to crime. If the data are wrong, the program is illegal, or too many video data have little or even nothing to do with the crime, the method is unreasonable. The so-called advancedness is also relative, which is evaluated only for the specific moment, local, and situation. The measure is advanced if the most advanced technology is used there and then for a certain situation. Of course, to realize the true advancedness, the fundamental construction should be carried out at ordinary times.

(2) The collection, extraction, review and judgment of video data should be implemented according to the related technical specifications.

In December 2006, the Ministry of Public Security of the People's Republic of China officially issued the country's first voluntary national industry standard “General specification of city area monitoring and alarming network system” (GA/T 669-2006). Two years later, the standard GA/T 669 was revised. Then other technical standards, management standards and conformity assessment standards of

the urban monitoring and alarm network system were issued successively. In December 2012, the national standard “Technical specification of surveillance video and audio coding” (GB/T 25724-2010) was officially issued by the Standardization Administration of China. In order to further standardize the effectiveness of the system networking, the Standardization Administration of China officially issued the national standard “Security and protection video monitoring network system technical specification for information transport, switch and control” (GB/T 28181-2011) which was drafted by the First Research Institute of the Ministry of Public Security of PRC and implement on June 1, 2012. Since then, the series standards GA/T 669, the standard GB/T 25724 and the standard GB/T 28181 have become important standards for the construction of “safe city”. In order to carry out the video image information fusion and sharing work scientifically and systematically, the Standardization Administration of China issued the requirements for the Ministry of Public Security of the People's Republic of China to develop two mandatory national standards including “Technology requirement of video surveillance image information collection in the important place of social security” and “Technical requirements for information security of video surveillance network system for public security”. The two standards, which extend the application of GB/T 28181 and GB/T 25724, focus on solving the problems of video information security measures and key technologies from the perspective of information security and constitute the national video safety standard system together. Furthermore, in October 2012, for deep application of video networking, the technology and information bureau of the Ministry of Public Security of the People's Republic of China approved the establishment of the public security video image information networking and the application standard system development group who developed the “Diagram of standard system for video information networking and application in public security” (GA/Z 1164-2014). On October 15, 2014, the development group held a kick-off meeting of developing work in Beijing. The development of the standard system provides an important basis for the analysis and application, and plays an important role in promoting the deep application of video information in the future. Of course, these technical specifications are also important bases for video data collection, extraction, review and judgment.

(3) The concept of benefit should be introduced into the collection, extraction and utilization of video data, during which the cost-benefit ratio may be evaluated.

The purpose of the benefit concept introduction and the cost-effectiveness ratio evaluation is to consider inputs and outputs during the collection, extraction and utilization of video data. The collection and extraction should not be carried out blindly and without restraint. For video data of investigation, more is not always better. The usefulness or uselessness of the data collected depends on whether the data can be used as evidence for investigation. The better idea of collection and extraction is to spend less time and energy to get real and valuable data that can be used as evidence for investigation. The blind collection will only result in lack of focus, time and energy wasting, and high cost-benefit ratio. The neglect of inputs and outputs is a concrete manifestation of non-scientization.

4. Conclusion

Video monitoring technology is developing in the direction of high definition, automation and integration. The problem of image data structure is being solved and automatic early-warning, fast retrieval, face recognition, retrieval application based on human body and gait recognition technology of video monitoring system are being studied. Video technology is gradually combined with big data, cloud computing and Internet of Things. Video technology will usher in a real intelligent era in the near future when it will play a greater role in investigation. However, in any case, the collection and extraction of video data are the basic work of video investigation.

References

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