E23   Introducing a Methodology to Process Digital Images for Investigation, Intelligence, and Evaluation Purposes: Combining Forensic and Managerial Perspectives

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After attending this presentation, attendees will have increased their competence and performance in processing digital images for various policing, crime intelligence, and justice purposes. Attendees will learn how to efficiently and effectively manage and process flows of digital images coming from various sources. Attendees will also learn about an approach and a dedicated toolbox that are in line with forensic science principles and forensic best practices. They will be made aware of use case scenarios which may directly inspire their forensic practice and research.

This presentation will impact the forensic science community by making the argument that digital images gathered from various sources should be duly considered as forensic data, and that forensic science should take more leadership, if not ownership, in processing digital images for investigation, intelligence, and evaluation purposes. This presentation provides an original and economical approach that may inspire different organizations facing the issue of managing complex flows of images. This presentation also showcases that collaboration of forensic scientists with other stakeholders is a key success factor.

Digital images, both photographs and videos, available in the framework of criminal investigations come from an ever-broader range of sources, such as witnesses, offenders themselves, Closed-Circuit Television (CCTV), smart phones, the internet, police body cameras, drones, mug shots, covert police operations, traffic enforcement cameras, etc. All these images can be viewed as forensic remnants of crime events and obviously represent an opportunity for forensic science, policing, and justice; however, they raise an acute methodological and management challenge as they represent a novel, rich, evolving, and complex source and flow of data.

Currently, most policing organizations exploit these images both as they occur and on the job without a defined strategy that incorporates forensic science principles and forensic best practices. Even if successful in some cases, this current practice would certainly benefit from a scientific and more structured approach. The collection, storage, processing, comparison, and evaluation of digital images fall more often than not outside the supervision of forensic scientists, a situation that has to come into question.

This presentation advocates that digital images should be duly considered as forensic data and that forensic science should take leadership, if not ownership, of the process and management of digital images. This presentation exposes a methodology developed and implemented in a police service to handle digital images effectively, efficiently, and in respect to forensic science principles (such as Analysis, Comparison, Evaluation-Verification (ACE-V), for instance). That methodology is intended to serve investigation and intelligence, as well as evaluation purposes. The bottom-up development of the methodology and its operation implies a collaborative approach, bringing together forensic scientists (both researchers and practitioners), uniformed police, the criminal investigation division, and crime intelligence analysts.

This presentation details forensic and managerial solutions that were designed to structure the collection and storage of images coming from a wide range of sources and to handle a growing qualitative and quantitative flow of images. This presentation presents the database, the original analysis, and the search-and-comparison toolbox

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that supports the process. That toolbox was developed in-house and does not require costly technological solutions. Evaluation of the strength of evidence in regard to digital images is raised as a key issue where empiric solutions currently prevail and further research is obviously needed.

The methodology contribution is illustrated through case scenarios related to a large scope of crime types, from serious crimes to burglaries or card frauds. This presentation finally expands on computer-vision-based techniques that may be of interest for forensic science applications.

Digital Images, Methodology, Management

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