

1st RISEN Workshop on New trends in Crime Scene Investigations

8 October 2021

Classification level: Public

KEYNOTE SPEECH	
Title of the presentation	Crime Scene Investigations and EU security research
Presented by	European Commission (DG Migration and Home Affairs, Belgium)

Title of the presentation	The RISEN Project
Presented by	Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA, Italy)
Abstract	While time is an important factor for the successful outcome of crime investigation, the traditional forensic examinations are usually time consuming. It can be very problematic when investigations are underway and quick results are needed. Traces must be detected on-site as soon as possible before they degrade and lose forensic information important for criminal investigation. The aim of the RISEN project is the development of a set of real-time contactless sensors for the optimization of detection, visualisation, identification and interpretation of the trace on-site, with a consequent reduction of the time and resources in the laboratory. The RISEN project will develop and demonstrate contactless, non-destructive, automated sensors to identify, select and label trace materials. Data will be acquired in-situ and in real-time, processed and sent to a 3D augmented crime scene investigation system to produce an interactive 3D model of the scene with position and labelling of traces and relative results of the on-site analysis, to be available at any time for several purposes in the criminal justice system. The identified traces will be digitally marked and inventoried, and a digitalised chain of custody will be established in real-time implementing mechanisms that assure data integrity over its lifecycle.
Keywords	Contactless sensors, rapid field analysis, augmented reality, data fusion

Title of the presentation	Crime Scene Investigation – mid- and long-term needs for innovation
Presented by	European Network of Forensic Science Institutes, Scene of Crime Workgroup (ENFSI, Germany)
Abstract	The crime scene is the start of the criminal investigation process. It is of utmost importance to collect all relevant traces and gather information at the crime scene. Because of the rapidly advancing analysis possibilities in



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	forensic laboratories, the shift towards activity level evaluations, new technology and the influence of human factors, the crime scene has become increasingly difficult. A number of trends and innovative needs have been identified by the Scene of Crime WG of the ENFSI and will be presented.
Keywords	Trace collection, new technologies, influence of human factors, trends and innovative needs

Title of the presentation	Incident response to the Kenyan and Sri Lankan suicide bombings
Presented by	The International Criminal Police Organization (INTERPOL, France)
Abstract	This presentation will cover the incident response to the Kenyan and Sri Lankan suicide bombings and related basic issues of forensics in a contaminated scene.
Keywords	Suicide bombing, IED

Title of the presentation	Information sharing after a CBRNE incident
Presented by	CBRN & Explosives Team (EUROPOL, The Netherlands)
Abstract	This presentation will show how the information can be shared with EU Member States after a CBRNE incident. What security protocols/tools/databases does Europol use to receive and to share technical and operational information.
Keywords	CBRN, information sharing

Title of the presentation	CSI: Where to from here
Presented by	Ecole des sciences criminelles, University of Lausanne (Switzerland)
Abstract	<p>Since the introduction of digital photography in the 1990s, crime scene investigation has continuously integrated the technological developments made possible by digitalization and the related advances of scientific disciplines. This has resulted in an expansion of new tools and means to support the crime scene investigator, essentially focused on two main tasks: crime scene documentation (photogrammetry, laser scanners, drones, airborne lidar, etc.) and trace detection and analysis (UV, IR detection, lab-on-chip, etc.).</p> <p>But in the same way that digital transformation has brought about profound changes in our lifestyles, technological developments should not be seen solely in terms of new instruments. Digital transformation is redefining the types of traces that can be used, the means of searching for them, and the types of information they can carry. It redefines the fields of application of the forensic disciplines and opens up new opportunities for interaction between forensic science specialists. Finally, it should lead us to rethink and redefine the very notion of scene of crime.</p> <p>Through a selection of concrete examples, this presentation aims to discuss</p>



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	the issues related to the practice of crime scene investigation in the context of the digital transformation. These issues are not only technological, but also systemic and above all fundamental.
Keywords	Digital transformation, traces, forensic disciplines, interaction, challenges

Title of the presentation	Crime Scene R&D and future developments
Presented by	European Network of Forensic Science Institutes, R&D Standing Committee (ENFSI, Germany)
Abstract	<p>The Crime Scene, often the starting point of the criminal investigation and therefore also the basis of forensic investigations, is becoming more and more a focal point of R&D efforts in forensic technology. The traces that are recorded and sampled at this important stage of investigation cannot be substituted by other items that may be detected and recovered later on. Moreover, the crime scene is of a dynamic nature and often exists only during a limited time frame, after which the area is cleared and any potential left-over traces are lost forever. Therefore, there is both a time and a quality pressure imposed on the crime scene specialists to do their work. This is especially the case where hazardous materials (e.g. after a CBRNE attack) or dangerous circumstances (e.g. inside an illicit drugs lab) are involved. The R&D efforts in and around the crime scene can be divided in a number of categories:</p> <ul style="list-style-type: none"> - A maximum of traces (often invisible to the naked eye) need to be detected and sampled; - The spatial situation of the scene needs to be recorded in 3D as quickly as possible; - Analytical capability can in some cases be brought onto or nearby the scene itself; - A maximum amount of data needs to be recorded, stored and transmitted to the forensic lab, whilst assuring the proper Chain of Custody <p>These developments ensure and enable that a number of new and advanced features may be deployed in the forensic process, in particular:</p> <ul style="list-style-type: none"> - They enable the 'virtual visit' of the scene, using Virtual and Augmented Reality techniques, by police and magistrates during the investigation as well as during the court proceedings; - They avoid later examination of traces in the forensic lab, thereby freeing up the crime scene, speeding up the forensic process and minimizing lab backlog; - The results remain available for examination to the experts in their respective forensic domains at any later time; - The results and data are available to foreign experts, who are working together in an international case context <p>In the presentation, a number of the R&D efforts and projects currently</p>



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	running will be highlighted and their relevance shown in the forensic world of the (near) future. Examples will be shown of currently available new products, such as multispectral/hyperspectral imagers and 3D recorders, as well as deliverables of past projects that are currently still undergoing development towards market introduction.
Keywords	R&D efforts, forensic technology, hazardous materials, forensic data, CoC

Title of the presentation	The Role of the UK Forensic Capability Network – delivering, research, validation and new technology
Presented by	Forensic Capability Network (United Kingdom)
Abstract	This presentation aims to provide an overview of the role of the Forensic Capability Network a newly formed organisation to deliver a national networked response to forensics in support of policing and the Criminal Justice System. Highlighting the challenges experienced and identifying new approaches for current and future research development for forensics for the UK.
Keywords	Policing and the Criminal Justice System

Title of the presentation	The future of crime scene recording
Presented by	Dutch National Police (The Netherlands)
Abstract	To make a good recording of a crime scene you need more and more specialised equipment with operators that are trained for that task. We are experimenting with the possibility to record crime scenes from a distance, so that the expert can give his input from somewhere else. So instead of having many experts who are also the operators, you will have many operators and a few experts.
Keywords	Innovation, crime scene recording

Title of the presentation	The ILEAD project
Presented by	International Engagement Home Office Science (United Kingdom)
Abstract	<p>The I-LEAD project is funded by the EU Commission Horizon 2020 (H2020), 2016-2017 Work Programme under the heading of, “Secure societies – protecting freedom and security of Europe and its citizens”. The lead agency coordinator for this project is the Dutch National Police (NPN), with consortium members being made up of 12 different law enforcement agencies and partners, and 7 European research institutions from across the EU.</p> <p>The intention of the I-LEAD project is to form a Pan-European Network of Law Enforcement Practitioners in order to:</p> <ul style="list-style-type: none"> • Establish common requirements to address capability and operational gaps; • Monitor research an innovation within the policing arena;



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Abstract	<ul style="list-style-type: none"> • Identify priorities for policy recommendations, standards and procurement; • Create conditions in which industry, academia and policing can better interact and discuss future 'fit for purpose' research; • Build a platform to improve the exchange of knowledge; • Disseminate results and interact with other relevant networks. <p>The focus of the project is on technical aspects rather than social research and practitioners are invited to become part of a community network which will be made up of a set of five I-LEAD Practitioner Groups (PG's) one of which focusses on the use of forensics in law enforcement.</p> <p>The project has delivered four forensic related workshops covering DNA, Crime Scene Recording, Digital Forensics and Individualisation Techniques which brought together more than sixty five forensic practitioners from across Europe to present and review the operational challenges in these areas. Whilst the focus is on technology, the workshops covered other issues such as training, standards and cross border cooperation. During the workshops, the practitioners prioritised their key challenges that are then disseminated to industry and academia through the various project engagements.</p> <p>This presentation will provide an overview of the forensic workshops and discuss some of the key forensic and crime scene related issues identified by the practitioners.</p>
Keywords	Capability and operational gaps, policy recommendations, standards, innovation

RISEN CONTRIBUTION TO CSI

Title of the presentation	Incident and crime scene activities today
Presented by	Military University of Technology (Poland) The University of Bergamo (Italy)
Abstract	The scene in which it was occurred an incident or a crime is not solely restricted to the location of the event itself (primary scene), but also includes areas where relevant acts which were occurred before or after the incident (secondary scene). When approaching to a scene, information can be limited and security is the priority. On the scene of crime, the security of people (both victims and personnel) is the priority, while rescue of injured people must be timely guaranteed. The possible presence of hazardous materials can pose a threat for the safety of specialists, who need to select PPE and adopt suitable procedures. Among the most dangerous materials that it is possible to find on a scene are biological weapons (BW) and chemical weapons (CW). Then, appropriate public safety/security actions



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Keywords	such as evacuation, closure of facilities to prevent additional exposure, decontamination of potentially exposed individuals can be needed. When forensic scientists arrive on the scene, it is important to quickly evaluate for the presence of threats such as hazardous materials, chemical weapons, biological agents or explosives. Whenever the presence of explosive charges is suspected canine units can be also deployed, being trained dogs the best choice to detect explosives. When the security and safety of the site is guaranteed and after administering lifesaving efforts the process to investigate the scene of crime can slow down and focus to allow collection of all possible information related to the site. The oldest on-site analytical approach for chemical threats is based on presumptive tests. Furthermore, many analytical techniques are used on-site.
Keywords	CSI, security

Title of the presentation	RISEN approach to CSI
Presented by	PARTICLE Summary Lda (Portugal) Technical Research Centre of Finland Ltd (VTT, Finland)
Abstract	<p>The RISEN project aims to facilitate crime scene investigation on-site by allowing the mapping of sensor measurements into a reconstructed 3D model of the crime scene.</p> <p>To this purpose, the RISEN System integrates a set of contactless sensors for trace, detection, visualisation, identification and interpretation on site and uses a 3D Augmented CSI module to deliver 3D scene reconstruction capabilities and support digital evidence management.</p> <p>This presentation will detail RISEN’s expected improvements to the current CSI process.</p> <p>It starts by describing the network-enabled architecture that connects in near real-time multiple sensors to support local and remote operation, enabling gathered information (e.g., traces and 3D models) to be readily accessible to investigators.</p> <p>The RISEN sensors are then introduced, outlining their main capabilities and complementarity to meet the different needs of the investigators. RISEN presents three types of sensor solutions: 1) Sensors to protect investigators on-site from health and safety hazards; 2) non-destructive automated scanning sensors for identifying and labelling traces from a distance between 2-6m; and 3) close-range deeper trace profiling sensors using destructive and non-destructive measurements. RISEN sensors target the detection and identification of traces from the crime scene, including body fluids, drugs, explosives and selected hazardous materials. They are capable to discriminate between liquid and powder residues and to locate relevant chemical evidence (including drugs and explosives) and biological evidence (including stains of body fluids).</p> <p>Afterwards, using RISEN’s 3D scene augmentation tools, it is shown how</p>



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	investigators may easily build 2D and 3D representations and recreate the crime scene, pinpointing the location of detected traces and identified evidence. Taking advantage of the multiple RISEN sensors, the system's data fusion capability further improves the reliability and accuracy of sensor gathered data, providing an immersive environment for investigators to evaluate hypotheses and conduct highly detailed crime scene investigation. Importantly, given the importance to generate data that is admissible in court, RISEN will follow the applicable legal and procedural requirements assuring chain-of-custody across the entire evidence lifecycle.
Keywords	CBRNE, Contactless Sensors, 3D-reconstruction, Augmented Reality, Evidence, Spectroscopy, trace analysis.

Title of the presentation	Legal and ethical challenges in the evolving forensics landscape
Presented by	The Center for Security Studies (KEMEA, Greece)
Abstract	<p>RISEN project challenges the legal and ethical framework through the integration of traditional forensics interweaved with the state of art technologies developed in the digital era (sensor technologies, 3D reconstruction etc). Technological and procedural enablers in the field of the forensics landscape are evaluated for the conformity to the current legal and ethics margins, ensuring public acceptance; it is an important and fundamental set of parameters (legal, ethical, societal) for the deployment and successful implementation of all tools supporting the daily operations of law enforcement agencies.</p> <p>RISEN will engage in novel technologies that will generate plethora of data; it is of paramount importance that the data produced is protected and does not violate the privacy and integrity of any person involved in the investigation, being physical or digital.</p>
Keywords	Legal, ethics, societal, forensics technologies, data protection, privacy.

Title of the presentation	Standardization landscape in the field of CSI
Presented by	German Institute for Standardization (DIN, Germany)
Abstract	This presentation goes through the existing standards in the field of forensic activities related to the RISEN project such as data sharing and analytical techniques. During the presentation it will be presented and summarised the current 'forensic analysis and data exchange' standardisation landscape and will list and briefly assess the standards relevant for the RISEN project.
Keywords	Standardisation, data sharing, analytical techniques

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