



Scientists focus on future of forensics

Hi-tech crime fighting is on the agenda at a major meeting in Nottingham this week.

The British Geological Survey (BGS) is hosting a gathering of the GIMI (Geoforensics and Information Management for crime Investigations) network, which is aiming to find cutting-edge technologies that will help in future forensic investigations.

Discussions between some of the world's leading representatives from the forensic science, law enforcement and academic communities will take place this Friday (24 November) in The Country Cottage Hotel in Ruddington. This is only the group's second meeting and the first in England since they were founded in April this year.

Network members will see a demonstration of a new state-of-the-art mobile crime lab that will allow investigators to analyse soil, water and gas at crime scenes rather than having to send samples back to a traditional crime lab. The mobile lab, the first of its kind in the UK, means evidence could be quickly examined on-site and may help provide clues to police that would have otherwise been lost.

Dr Barry Rawlins, a forensic geoscientist at the British Geological Survey explained: "The mobile laboratory allows on-site forensic investigation on soils and vegetation. The combination of hi-tech instruments and direct access to datasets, including aerial photographs, soils and rock types, means we can rapidly place scientific data from a site in a local context, helping scientists at The British Geological Survey to answer questions raised by the police."

The international network, run from Aberdeen's Macaulay Institute, aims to find ways in which new technologies can help in the forensic investigations of crime, such as locating the graves of murder victims, uncovering buried items of evidence and helping to narrow down areas of search for the police, says the Macaulay's Professor David Miller, who coordinates the network.

He said: "Traditionally police searches for murder victims' graves or buried evidence rely on recognising the obvious visual signs of ground disturbance and discarded items.

"Large-scale ground search operations can be very costly in terms of manpower and time, and are often unproductive. The methods currently available may even result in the loss or damage of very small or fragile pieces of evidence.

The group is hoping to find evidence gathering methods which won't damage potentially vital clues. New technologies under consideration for such focused,

‘non-invasive’ searching include ground based radar linked to national digital-map databases.

Network organiser, the world renowned Macaulay Institute, has provided expertise in soil for over 70 years, and one of the main thrusts of this new initiative is how more can be made of soil evidence.

Dr Lorna Dawson, who leads the soil forensic research team at the Macaulay Institute said: ‘Soil has tremendous potential for providing forensic intelligence to police investigations, due to the complex nature of its composition. Despite having a long history, soil evidence in criminal cases has been largely under-used, primarily due to difficulties in analysis.□

The network aims to change that by integrating state-of-the-art soil fingerprinting methods and national soil databases with GIS - a form of ‘smart map□ that allows users to match soil forensic samples to their likely geographical origin.

‘Soon we will be able to pinpoint the exact area of the UK that a sample of soil evidence has come from. This will be tremendously useful for police investigations,’ said Dr Dawson.

The geoforensics team encompasses a large multi-disciplinary group of experts from across UK academic and law enforcement organisations. It is anticipated that the principal beneficiaries of the GIMI network activities will be Police Forces, National Centre for Policing Excellence (NCPE), forensic laboratories (such as the Forensic Science Service and police laboratories), and legal institutions, as well as private companies offering forensic analysis.

The project is funded through the Engineering and Physical Sciences Research Council (EPSRC) Crime Initiative.

Ends

Notes to editors

The GIMI network draws together the expertise of over 40 scientists and forensic professionals from five countries, who will review and evaluate the potential for using non-invasive methods in forensic investigations. Their assessments will lead the way for interdisciplinary research and development work which will provide innovative solutions to the challenges in this field.

New means of representing and communicating data will be evaluated, focusing upon virtual reality media and visualisation tools. The aim will be to explore the potential for shared 'environments' for interpretation of ground measurement imagery, geographic data, and methods for communicating results to a range of different disciplines.

The network will be divided into four sub-groups: forensics, analytical, instrumentation and communication.

Research discussed will include methods to localise the search and investigation efforts required to identify the origin of a sample of soil, vegetation or organic matter in the landscape as part of crime prevention and forensic application, thereby saving time and resources.

The SoilFit project aims to integrate state-of-the-art soil fingerprinting methods, national soils databases, GIS, and appropriate statistics, to match soil forensic samples to likely geographical origin.

Today, there is general recognition that trace evidence (fibres/fluids/particles) found at a scene of crime can be instrumental in providing criminal intelligence to police investigations.

Soil particles readily adhere to, and transfer from, clothing/shoes/vehicles/tools, and can therefore be treated as trace evidence, potentially linking or eliminating suspects to/from a crime scene.

The concept of soil as evidence was first introduced by the fictional character 'Sherlock Holmes' over a century ago.

In 1904 soil evidence was formally presented in Germany by the forensic scientist Georg Popp. Particulate material (mineral grains and coal) from a murder crime scene was matched to material under the fingernails of a suspect, and resulted in a confession.

The use of soil in criminal investigations has generally remained limited to visual comparison of broadscale soil composition. More-over, there is still a general lack of awareness among the legal profession and police forces as to the true potential of soil forensic science.

The SoilFit team encompasses a large multi-disciplinary group of experts from across UK academic and law enforcement organisations. The project is complimented by the above GIMI network (Geoforensics and Information Management for crime Investigation) also lead by the Macaulay Institute.

The Macaulay Institute is the premier land use research institute in the UK. Two hundred and seventy staff are based at the Macaulay Institute at Craigiebuckler in Aberdeen. The Macaulay Institute aims to be an international leader in research on the use of rural land resources for the benefit of people and the environment and is involved in research across the globe; from Scotland to Chile and China. More about the Macaulay Institute can be found at www.macaulay.ac.uk.

The British Geological Survey (BGS) is the world's oldest geological survey, formed in 1835. It is the nation's principal supplier of geoscience expertise and custodian of much of the country's geoscientific information. BGS provides objective, impartial and up-to-date geoscientific information, advice and services which meet the needs of customers in the commercial, governmental, and scientific communities of Great Britain and overseas,

thereby contributing to the economic competitiveness of the country, the effectiveness of public services and policy, and quality of life.