

Forensic geology – improving public services

State-of-the-art geological mapping and 3D visualisation techniques are improving public services by giving crime investigators the edge. Scientists can now travel below ground and into past landscapes, to direct the police towards the likely location of evidence and witnesses.

Partners: Virtualis, police service, British Geological Survey (BGS)

The collaboration

In 2009 a man went missing on the Orkney island of Sanday. Local police suspected murder and made an arrest, but after several weeks no body had been found and sand on the suspect's vehicle was the only evidence.

A senior police officer who was also a professor of geo-forensics turned to BGS for help. The geologists first identified the origin of the sand from the vehicle then produced a geological map of the island, overlaid with sand and soil types, roads and urban areas. They then produced a RAG map (red/amber/green), colour-coded to indicate the most likely places a body could be buried on the island; green representing the hardest, least accessible soils and red showing the most obvious areas to search.

Once the search had focused on the red areas, a police dog very quickly found the victim's body buried in a shallow grave.

Building on 175-years of mapping expertise, BGS worked with virtual-reality specialists Virtualis to develop GeoVisionary mapping software, an incredibly powerful virtual reconnaissance tool which enables the viewer to fly through landscapes and dive underground to find concealed caverns or deep-water lakes.

Geochemical maps, road networks and other information is overlaid over aerial photographs covering the whole of the UK and can be viewed in



a 'visualisation suite' where 3D images are projected from floor to ceiling. The software is being sold to geological and other organisations around the world. GeoVisionary maps can test for 'line of sight' visibility on the surface, so they can look for potential witnesses to crime and confirm what they might have seen, depending on their position. They can also find deep lakes or reclaimed quarries and, by overlaying the maps with accessibility or slope-analysis tests, they can work out if they are deep enough to conceal evidence.

This opens up possibilities for solving much older crimes, where new evidence comes to light but the local landscape has changed. GeoVisionary maps can point investigators to likely areas for recovery of a body or other evidence that might otherwise lie undiscovered.

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