



The future for GIS – mobile, interoperable and open

Using an open system for GIS was key for the British Transport Police, who wanted to share data with partners such as Network Rail. Dan Worth examines some of the latest GIS and web mapping developments, as well as benefits in keeping GIS solutions open.

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▶ *Michael Wallace, British Transport Police.*

In the last five years or so the world has gone through a massive change. Since Google launched Google Maps for the first time in history almost the entire planet is mapped and visible from above to anyone with access to the Internet. This is a fairly staggering innovation yet one that has happened so simply we've hardly registered its significance.

The impact of mapping software, geographical information systems (GIS), in the emergency services sector has been huge too, with specific applications developed by a number of companies to provide the emergency services, especially the police, with a suite of mapping tools that provides them with an array of benefits.

"Google Maps has helped enormously in making people

understand the benefits of mapping software," says Michael Wallace from the British Transport Police, "but the specific systems we can use go far beyond that." The British Transport Police have recently signed a contract with Spatial Technology to use ISM Web software to provide an open source GIS on which information can be shared with partners, such as Network Rail. "By linking all our GIS data into one common system we are able to keep our data updated quickly and accurately without having to do it remotely at each location, as previously," Wallace explains. "The importance of having an open system is something that was key to the contract. We didn't consider a proprietary system because we knew we wanted to be able to share information and add applications where necessary.



Opposite page: Vicky White from ESRI says a new dimension of GIS is the gradual increase of mobile mapping software and information, such as including co-ordinates determining where an officer issued a ticket.

Left: Building up of information (such as homicide incidents in Glasgow, pictured) as used by the Violence Reduction Unit in Strathclyde Police, offers many benefits.

Because we cover the entire rail network of the UK it's more important for us to share information than hide it, so the ISM Web software was ideal."

Ian Rudd, the Managing Director of Spatial Technology, agrees this is an important aspect of GIS. "Using an open system that can incorporate other data such as the National Land and Property Gazetteer, is great because it adds extra value to the technology. Something like Google Maps shows people what is available for free so when they come to purchase a technology they know they should be demanding a wide range of tools.

"Working with the BTP provided a unique opportunity as they have officers stationed across the entire country, policing the entire rail transport network. The project started in 2007 and has progressed from there, with gradual updates to systems ensuring everything went smoothly. Due to the central data repository that knows where other data resides we can update systems as information changes, on all manner of things such as incidents, road widths or address information."

Using an open software system for sharing information is important but Wallace explains that for analytical purposes the BTP uses a range of other software that can provide detailed statistical breakdowns of data collected.

The analytical side of GIS technology is something ESRI UK offer to a wide range of forces across the UK and, as Will Lindon, an Analyst Coordinator at the Violence Reduction Unit in Glasgow, with Strathclyde Police explains, is having real benefits to policing. "Building up information on mapping software offers us a huge range of benefits. By

plotting time, date and location information we can build up a far clearer picture of where and when crimes are most committed. Then we can plot other information around this such as transport links or the locations of known offenders, and this gives us far more information to work from than previously."

One area the ESRI software has proved invaluable in helping with policing has been in tackling the gang problem in Glasgow, as Lindon explains. "By being able to plot and see the gang territories we have far more detailed knowledge of their exact locations and how the areas change. This allows us to better deploy resources to where the problem is at its worst and at the right times too. Not only this but we can also use it to help with city centre policing. By being able to see where most troublemakers are from, when picked up in the city, we can see their most likely route to the city from the outskirts on public transport. This allows us to police more proactively by tackling the problem before it begins, getting out on the buses and trains and stopping known offenders from entering the city."

Being able to overlay other information on GIS software is a key benefit for police forces as Vickie White, Account Manager from ESRI (UK) explains: "Using a common operational platform means a vast array of information of everything from crimes to low bridges can be plotted and shared. Because the entire Scottish Police force will use the ESRI software they know they are all looking at a common source of data and information.

"Sharing information is an important part of GIS as maps



ESRI software has been invaluable in helping to tackle the gang problem in Glasgow. It has allowed officers to plot gang territories and therefore create an accurate picture of where to best deploy resources.

are a very well known technology and as people know what they are looking at very quickly. You can add information as and when necessary and tailor your information to make it relevant to various parties, such as councils or utility companies, so they can all work towards the best possible outcome. Some bus companies even use our mapping software to plot the optimum bus route to make their service as fuel efficient, and therefore cost efficient, as possible."

A new dimension of GIS technology is the gradual increase of mobile mapping software and information, as White notes: "Forces have a range of mobile devices that have the potential to use our mobile software giving them the most up to date geographical data at their fingertips. Furthermore, it is possible to include an X and Y coordinate that can determine where an officer issued a ticket, or was at an incident at a certain time, to within a few meters, basing it around the software."

Mobile mapping is something that Gary Randle from Cadcorp believes is the next step. "We're already seeing a move to use mapping software in-vehicle, in some ways it already exists with sat-navs, but by incorporating our software we can add value that delivers benefits to emergency service customers."

Cadcorp recently launched its new Spatial Information System (SIS) 7.0 that allows data to be incorporated from other systems for use within desktop, web and mobile GIS environments. Cadcorp SIS can also be integrated into partner applications, underlining the growing market for adaptable high-end GIS technologies based on open standards.

"There have been a lot of drivers in the GIS market in recent years that have really helped people understand its benefits and push its development," explains Randle. "The legal requirement for police forces to show crime data on maps that the public can access has been a key driver, while the increased use of internet mapping sites has helped people become comfortable using this technology and making it work for them.

"Furthermore, as the technology becomes more widespread it is being used increasingly by all three emergency services. We've seen a number of police forces and fire services utilizing GIS to analyze incidents which provides improvements with resource management and deployment. For example, some fire services and police forces are sharing data to plot incidents of stolen vehicles and where they are found abandoned. Plotting this information helps identify frequently used routes and analysis for other trends. Building a database with spatial information can improve deployment for vehicles on patrol. Ambulance Services also use Cadcorp SIS components to position vehicles near to accident black spots."

The future for GIS is undoubtedly one that will continue to play a major role in the day-to-day work of the emergency services. Ian Rudd from Spatial Technology agrees, saying, "There's no doubt that events such as the 2012 Olympics will benefit massively from the use of GIS and web mapping software for security management. But, the future for GIS lies also in becoming a standard part of the emergency services technology arsenal, allowing them to better manage incidents, analyse crimes and share a raft of data across a common platform.