

# Community benefits

*Keith Bentley, Chief Superintendent (retired) Greater Manchester Police highlighted at the recent ACPO conference how data analytics could deliver tangible benefits to the community. Keith Bentley speaks exclusively with Jose Maria Sanchez de Muniain.*



**B**etween 2005 and 2006 Greater Manchester Police (GMP) and West Midlands Police trialled data analytics software from US company SPSS. Headed by Chief Superintendent Keith Bentley (GMP) and Rick Adderley (WMP), the idea was to join up data from 3,000 cases of sexual predatory offending that were held in disparate systems and to analyse the data further with sophisticated software supplied by SPSS.

Bentley's experiment involved the usage of PASW Modeler (formerly "Clementine"), a data mining software that operates on sophisticated algorithms called Kohonen association rules (named after inventor Prof. Teuvo Kohonen). Two Kohonen networks were used to cluster similar physical descriptions and MO. The clusters were then compared to see whether groups of similar physical descriptions coincided with groups of similar MO.

Analytical teams then investigated the clusters, using statistical methods to verify the similarities' importance. If clusters indicated the same criminal could be at work, the departments re-opened and investigated the other crimes. If the criminal was unknown but a large cluster indicated the same offender, the leads from these cases were combined and the case re-prioritised. The behaviour of prolific repeat offenders was also investigated, with the goal of identifying crimes that seemed to fit their behavioural pattern. "We were looking for crime linkage association patterns, where relevant data was held by different authorities in different systems," remembers Bentley. "In our trial, data stream for the years 2002-2005 was sifted by an analyst. The result was that 19 particular offender streams were identified, leading to the arrests and convictions of six serial offenders who were

responsible for the offender streams." The 19 "offender streams" refers to 19 distinct patterns relating to (for instance) offender strategies relating to so-called Internet grooming, or exit strategy mechanisms where an offender would repeatedly use a similar method of disassociating himself from a crime.

As far as Bentley is concerned, the experiment was proof of concept that data analytics and data mining as used commonly in commercial environments (eg by supermarkets to gather customer information) – if adopted by all police forces – could deliver real community benefits. Data mining could allow the police to use the information better and also to link it across different databases.

Nobody, says Bentley, wants a repeat of the Kirk Reid scenario that hit headlines in March this year. Reid first attacked in 2001 and was not arrested until 2008, even though he'd become known to Wandsworth's specialist rape and sexual assault specialist team (Sapphire) in 2004. It was not until January 2008, when the Met Police's serious crime team took over, that he was caught in just three days.

Worryingly, Bentley believes that the problems associated with the Kirk Reid scenario have not gone away, "and they will not go away until sophisticated data mining approaches become part of day to day operations during an investigation." In his opinion data mining should be at the vanguard of government strategy for community policing and helping to make people's lives better. "When I gave my presentation to ACPO this year I talked about Emma, a rape victim, and how she was still scarred long after the perpetrator had been given the punishment. This is the type of solution that communities want, policing in an effective way that supports people." He adds that GMP is the only force to have invested further with data analysis.

The benefit of this technology is that it is transferrable, so while GMP and West Midlands were initially looking at the idea of pursuing sex offenders, the same methodology could be used for robbery and burglary offences. "It is basically looking at patterns that don't get picked up."

That such technology is unaffordable doesn't hold water for Bentley. He points out that every single one of England and Wales' 43 police forces already have the basic structure for data mining through existing SPSS software in basic analytics. "This product is basically an enhancement and it links into what forces already have, so each force already has the foundation to build upon analytics."

*Psychiatrist Gene Abel, an internationally recognised expert in the area of sexual misconduct, carried out research in the 1980s which indicated 232 child molesters admitted 55,000 incidents of molestation against 17,000 victims. 561 general sex offenders admitted 291,000 offences against 195,000 victims. Left: routine activity theory, as presented by Keith Bentley during ACPO 2009.*

