



# EXPOSITION OF EU LAW ENFORCEMENT AND TRANSNATIONAL SERIAL CRIME

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## Abstract

With diverse investigative information streams between European Union (EU) states, the author of this article comments on the absence of a unified statistical based system across member states to analyse undetected linked violent crimes and unidentified transient serial offenders. With the free movement of persons being a guaranteed fundamental right granted to EU citizens by the Treaties, it brings into consideration the movement of serial offenders across member states, the continuation of their offending behaviour and investigative strategy.

The article takes a general overview of pan-European law enforcement and investigative strategy towards serial crime investigation, focusing on the software used by a number of EU members and the issues encountered with such systems from a judicial and academic standpoint. Critical reviews have effectively called for data mining principles to be incorporated into linkage process; this is discussed further.

## BACKGROUND

Data mining emerged from within the terminology of data analysis in 1990<sup>1</sup> and is the ability to search large volumes of data, making discoveries from within the data and identifying relationships that exist in the real world. It creates a process that allows for knowledge driven decisions or conclusions to be made. The concepts comprise of the ability to measure similarity and dissimilarity between data and the elimination of result's bias through data quality assurances, thus forming results that can be presented in a confident and quantifiable manner. These concepts are viewed as important qualities when presenting such findings in a forensic setting. It is in the main, a commercial tool but the principles and foundations of data mining can be applied to the evidential analysis of live and historic crime data, looking for relationships and links between individual cases.

## DISCUSSION

Comparable to developments in data analysis have been those in law enforcement circles with the conception of the modern day policing technique, *crime linkage*, a process that examines individual crime scene data to discover and identify links between crimes. The Federal Bureau of Investigation (FBI) and the Royal Canadian Mounted Police respectively devised systems called Violent Criminal Apprehension Program (ViCAP) in 1985 and Violent Crime Linkage Analysis System (ViCLAS) in 1991, with both systems remaining active in their respective jurisdictions. The ViCAP system operates through the identification of similarities between individual cases, analysing offender behaviour and crime scene characteristics through subgroups of modus operandi, victimology, offender description and behaviour exhibited at all stages

(<sup>1</sup>) Hand, D., Mannila, H., & Smyth, P. (2001), *Principles of data mining*. London: MIT Press; Han, J., Kamber, M., & Pei, J. (2012), *Data mining: Concepts and techniques*. Waltham, MA: Morgan Kaufmann.



of the offence.<sup>2</sup> The ViCLAS system also identifies similarities between individual offences utilising behavioural principles utilised offender profiling / criminal investigative analysis.<sup>3</sup> Both systems deconstruct criminal offences into a list of crime scene behaviours with the aim of identifying and recognising similarities and dissimilarities across individual offences. The aim of the process is the identification of links between individual offences that have been committed by the same offender but have not been linked to that offender.

Integral to both systems is the respective questionnaire booklets that are based on the variables that form part of the analytical process and have been standardised to collate crime scene variables to identify similarities in offender behaviour. Both ViCAP and ViCLAS booklets have been described as an investigator's guide, measuring the completeness of an investigation if all questions have been answered.<sup>4</sup> The questionnaire's format focuses on the collection of data pertinent to the analysis of serial violent crime. Evidence gathered during investigations not considered under the context of serial crime would ordinarily consist of information used to establish the points to prove for the offence and motive to assist establish the offender's intent. Such data would be for a separate purpose to data mining *per se* and considered secondary data. The concentrated data gathering of the system questionnaires exceeds the limits of ordinary investigative parameters, with the supplementary information considered primary data, collected for the prime purpose of analysis and suited to the concepts of data mining.

A comparability analysis of the questionnaire booklets (excluding administrative questions) compared the booklets against each other for

similarities. The ViCAP booklet (FD 676. Rev 7-23-04) contained 116 questions over 13 sections and ViCLAS booklet (Version 4.0), 141 questions over six sections. Each booklet differed in terms of variable structure for offence and crime scene behaviours, but contained similarities in the collection of victim and offender descriptive data. There was exact replication in the structure of specific questions capturing data on sexual acts, restraints and speech. Against the ViCAP sections, there was agreement ranging from 60%-100%, with an overall agreement of 93.74%. The ViCLAS sections showed agreement ranging from 76.32%-100%, with an overall agreement of 86.98%. The agreement values indicated a high level of similarity between the booklets. The history of the ViCLAS system showed it to have evolved from ViCAP, with the similarities and plagiarism of specific questions evident between the booklets, highlighting the influence and evolution from the earlier system.

Since the creation of ViCAP, its integration into the law enforcement framework has extended to 3,800 federal, state and local law enforcement agencies across the United States. The ViCLAS program has comparable law enforcement integration across Canada and on a broader international scale to include EU countries. Whilst the current 27 EU member states represent nearly 500 million citizens,<sup>5</sup> only 12 states (*Austria, Belgium, Czech Republic, Denmark, France, Germany, Ireland, Netherlands, Poland, Portugal, Sweden and United Kingdom*)<sup>6</sup> utilise the ViCLAS program to record and analyse serious crimes. Despite this widespread union with law enforcement, academic reviews of such systems have drawn divergent comments as to the structure, reliability and ultimately, impact upon live investigations and subsequent court hearings.

- (<sup>2</sup>) Federal Bureau of Investigation. (2004), *Violent crime apprehension program: Crime analysis report*. Quantico, VA: Federal Bureau of Investigation; Savino, J. O., & Turvey, B. E. (2004), *Rape investigation handbook*. London: Academic Press.
- (<sup>3</sup>) Collins, P. I., Johnson, G. F., Choy, A., Davidson, K. T., & MacKay, R. E. (1998), "Advances in violent crime analysis and law enforcement: The Canadian violent crime linkage analysis system", *Journal of Government Information*, 25, 277-284; McCabe, M. P., & Wauchope, M. (2005), "Behavioural characteristics of rapists", *Journal of Sexual Aggression*, 11, 235-247.
- (<sup>4</sup>) Royal Canadian Mounted Police. (2012), *Violent crime linkage analysis system (ViCLAS)*. Retrieved February 1, 2012, from <http://www.rcmp-grc.gc.ca/tops-opst/bs-sc/viclas-salvac-eng.htm>; Bennell, C., Snook, B., Macdonald, S., House, J.C., & Taylor, P.J. (2012), "Computerized crime linkage systems: A critical review and research agenda", *Criminal Justice and Behavior*, 39, 620-634.
- (<sup>5</sup>) European Union. (2012), *European Union: Countries*. Retrieved February 1, 2012, from [http://europa.eu/about-eu/countries/index\\_en.htm](http://europa.eu/about-eu/countries/index_en.htm).
- (<sup>6</sup>) Royal Canadian Mounted Police, *supra nota* 4; Snook, B., Luther, K., House, J. C., Bennell, C., & Taylor, P. J. (2012), "The violent crime linkage analysis system: A test of interrater reliability", *Criminal Justice and Behavior*, 39, 607-619; Newton, M., & French, J. L. (2008), *The Encyclopaedia of Crime Scene Investigation*. New York: Facts on File.





The ViCAP system does not form part of any UK prosecution so judicial opinion cannot be considered, however the presentation of ViCAP analytics within the United States legal system has led to adversarial opinion presented, undermining the value of such analysis. The United States Supreme Court ruled in the case of *New Jersey v Steven Fortin* (A-112-2005), the linkage analysis process was not reliable enough to be used as part of a capital murder case. Further comments from retired Supervisory Special Agent (FBI) Roy Hazelwood on the process inferred investigative experience was used to identify such behavioural elements, rather than any statistical analysis of the crime data, stating "... the linking of crimes is based on training, education, and experience, not any quantified set of rules". The ViCAP system process has been criticised by the judiciary and academia regarding FBI methodology. Yet ViCLAS operates on a similar basis, but has been labelled as the 'gold standard' and defined as the best crime linkage system.<sup>7</sup> It operates through a ViCLAS specialist, a law enforcement officer with specific experience who utilises their own knowledge and expertise to examine elements of the offence for indications of links between examined cases.<sup>8</sup> Academics however, have concluded there is little research in support of trained ViCLAS analysts accurately making crime linkage decisions.<sup>9</sup>

In both crime linkage systems, it is apparent that the system operator defines and selects the approach. Hazelwood's comments in respect of *New Jersey v Stephen Fortin* reflect the opinion of Jiawei Han and colleagues,<sup>10</sup> in that important decisions are often made on the decision maker's intuition, simply because they do not have the tools to extract the knowledge embedded within the data. Dr Kim Rossmo<sup>11</sup> questioned the role of the analyst in such determinations stating that most computer-based case linkage systems were only designed to manage and search through large volumes of information, with the analyst forming the case linkage determination. He opined that as database volumes increase, the need for "expert system support becomes more

crucial". Such comments support Dr Maurice Godwin's<sup>12</sup> assertions in *New Jersey v Steven Fortin*, that if ViCAP was a statistical linking system, it would result in less biased conclusions.

## CONCLUSION

Critical reviews of both linkage systems by judiciary and academia call for such crime linkage systems to effectively embrace the principles of data mining; law enforcement agencies have not done so. Such a framework would be necessary to manage and analyse a vast database of EU interpersonal crimes that could be in excess of 60,000 offences per annum. Exploring large volumes of data is data mining's *raison d'être*, to identify relationships between data in records and highlight links that exist in the real world.

Data mining analysis processes the distinct, differential variables into a result that is non-biased, tangible, quantifiable and scientific. For the linkage process to gain any future credibility within academia and judiciary, a shift is required to show the process is based on an established scientific and forensic approach moving forward from the intuition of experience investigators. Evidential data mining is the exact requirement of a crime linkage system, a process producing tangible and quantifiable results from an inductive perspective with discoveries made from within the data. This is not to dismiss the role of experienced investigators but to develop the process and subsequent results in a quantifiable format. A pan-European law enforcement approach to the analysis of transnational serial crime will require a unified strategy with a high degree of collaboration and information exchange. The effect would be investigative harmonization and cohesion towards serial crime, and the apprehension and prosecution of transient serial offenders. The alternative, an uncoordinated strategy could result in linkage blindness issues, delays in any joint investigative approach or a failure to apprehend such dangerous offenders.

(7) Collins, *et al*, *supra* nota 3.

(8) Royal Canadian Mounted Police, *supra* nota 4; Snook, *et al*, *supra* nota 6.

(9) Bennel, *et al*, *supra* nota 4.

(10) Han, Kamber & Pei, *supra* nota 1.

(11) Rossmo, D. K. (2009), "Geographic profiling in serial rape investigations", in R. R. Hazelwood & A. W. Burgess (Eds.), *Practical aspects of rape investigation: A multidisciplinary approach* (pp. 139-169). Boca Raton, FL: CRC Press.

(12) Godwin, M. (2010), *Assessment of the FBI's Violent Crime Apprehension Program (ViCAP)*. Retrieved September 26, 2012, from <http://www.investigativepsych.com/Fortin%20Report%20-%20Dr.%20Godwin%20ViCAP.pdf>.