Applicability of Link Analysis Software in Intelligence Criminal

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ABSTRACT: The accelerated evolution of technology during all this time has meant for forensic science a bridge from the classic methods of solving cases to modern methods of expertise. Numerous modern forensic identification devices have stormed the field of science in question. The novelty element that represented the beginning of the evolution of technology was the computer, and at the time of its appearance, for forensic specialists, it was a challenge that was determined to be a real success. With the development of the technological field, there is a significant increase in computerized crimes, which could not be controlled and stopped at the same time with the new device, software or program. If yesterday we were working with documents that became archives, where despite the high crime rate, it was equivalent to the rate of solving them. Cybercrime has become a real problem for the authorities, given that documents are stored on servers and they belong to national security, mentioning here about: the personal data of each citizen, financial statistics, military statistics, etc. Disclosing such secrets poses a major risk to national security, and these criminals are called hackers. Against hackers, intelligence forensics have had to find solutions to stop cybercrime in such a short time. One of the modern programs in the software industry is Link Analysis. This program is used for the purpose of discovering valuable knowledge, such as data analysis from the computer systems of the state institutions concerned, namely links to web platforms or civil society. Link Analysis will allow determining their relationship and also will allow the optimization of all search engines (Google, Yahoo, etc.) in the field of medical, forensic or security. Regarding the networking network, the software makes the connection between determining the integrity of the internet connection in each network node and the physical and virtual connections after analyzing the specific data. With the help of this software, forensic specialists will be able to find all the digital blockages, improving the internet network and thus avoiding cyber-attacks.

KEYWORDS: internet, software, forensics, cybernetics, data analysis

Link Analysis. Technical - computer characteristics

Link Analysis is a software for link diagrams, and its field of activity is merging objects, saving, sharing and retrieving link diagrams, issuing alarms, using the integrated map, canceling or redoing the analysis steps and generating thermal maps.

Link Analysis is easy to manage, being a software that has included a series of capabilities that allow us to build our own connections or to quickly implement a series of own analyzes in our own spreadsheets, such as Excel/CSV resulting in automatic formatting and normalization of telephone records.

This is more than we think, it is a developed Enterprise type network that combines our analysis data with a Big Data (a very large database) such as - dashboards or entity extraction. Each brings an important role that demonstrates that Link Analysis is not just a start-up software, but has implemented the end-to-end structure for accessing analytical data.

Link Analysis. A better way to solve investigations

There is a major problem worldwide, in the legal field, namely the problem of data storage, where we all know that as technology evolves, so do analytical data: personal information,

national security, forensic, legal, etc. are above the average of the storage blocks, and this resulted in a mental and physical fatigue of the investigators from all departments.

By evaluating the relationships and connections between people, organizations, etc. link analysis has a strong impact on identification, drastically reducing the time required to expose data on fraud, money laundering and a range of criminal activities. Specifically, forensic investigators will make a small effort to identify the elements, which means that results will be commensurate, I say this because the rule of time applies in this area of activity.

So, with the help of this software, investigators will have access to related data on identifying the actions of suspects. From a data set, data networks include:

- Data networks on telephone calls, so investigators will see who the call participants are;

- Data networks that show who the intermediate characters in the action of the suspects are;

- Data networks that make connections between criminal groups, here investigators will have access to data such as: conflicts of interest, threats, etc.

Therefore, if investigators are able to make connections from the data provided by the software, they can draw conclusions much more easily about the criminal activity of a person or a criminal group. If we are wondering how this activity is carried out by investigators, well, with the help of analysis tools provided by the software, in order to store as much information as possible. This aspect leads to the acceleration of the discovery of criminal activities and at the same time to the arrest of the perpetrator or of the group in question.

Today's criminal network is carefully tracked and analyzed through so-called nodes discovered with the help of software and of course it does not refer strictly to people, we include here vehicles, weapons, bank accounts, etc. If the analytical capacity is not reached by the investigators, they will have to keep only the web network that comes bundled with a complexity of connections, thus making the mission of identifying and arresting the person or persons responsible, much more difficult, for example: reaching data analysis in spreadsheets.

To understand exactly what the source data provided by link analysis is, let's remember the following:

- Detailed telephone records, where we can also include those of the victims;

- Data on the application of laws, the legal ones more precisely;

- Internal data of the police and here we can refer to personal data of criminals, victims, data on arrests, history of employers, etc.

Concluding this statement, I say that: the analysis of investigators with the help of link analysis, can combat such crimes or can detect suspicions and not only, keep data with increased security.

In order to quickly understand the links and associations, their value is actually the quick and easy way to develop the multitude of relationships, because when they are associated correctly, investigators can better understand the depth of information. Usually, the connection data is displayed as a graph, with those nodes that signify the interests and relationships of different transactions, and the access links offer the possibility to capitalize on some relationships or transactions, as I said above, but in this case with certainty.

Another important element that we can talk about is the problem of investigators in the case of conglomeration of data and analysis charts, which can be a challenge for them, so the software tools come to the rescue. These tools automatically establish the variety of data, predefining them concretely, so that the work of specialists becomes clear and understood, their name can also be found in the form of automatic models.

Every time there are new cases, for investigators, everything becomes a real challenge, due to the large volume of data that makes it difficult to make their connection. One tool in the software analyzed in the paper is the method of exploring associations, the investigators associating the multitude of different objects to finally draw conclusions about the complexity of the objects collected.

Use of Link Analysis in Forensic Accounting

One thing known to forensic specialists is the analysis of several registers that contain thousands of entities in order to detect potential problems, which means that it is a task that involves maximum responsibility.

A case study conducted by Andrew Marane (2008), a specialist in forensic analysis, demonstrated the functionality of the Link Analysis software on an accounting database extracted from a forensic audit register. The specialist's analysis consists in: the combination of green spaces and red receiving entities will obtain a package of black entities, where with their help the identification of errors in entry accounts, and here we mention debit or credit entries, which are wrong in the register, is easier to achieve. Basically, this aspect leads to advantages in the successful conduct of the investigation for the investigators of judicial accounts or in the fraud department. These benefits are realized through an examination of potential problems and accounts. So, there are two simultaneous and interactive views, according to the study, namely: a dynamic relationship chart that shows the flow of debit and credit entries of debt accounts belonging to the suspects, so in conclusion the investigator from forensic accounting or fraud department, can easily examine, analysis data highlighted by software.

In the dynamic relationship, through Link Analysis, it is shown that debit and credit transactions overlap, hence the appearance of those black packages. So, according to the study, it is understood that by hovering the mouse over the packages of interest you get an interactive perspective on the time transaction, resulting in highlighting the underlying data of the examination of the event. The most important aspect of this "action" is the company's result in external debt, amounts being significant, most being over 100 thousand dollars. By drilling down, we find that in the second set of new structured transactions, these are recurring payments, all around the same amount.

The next block of sequentially structured data in the Link Analysis software shows the contrast with the previous block, and the money, being from the clients of the economic suspects. From the specialist's point of view, he considers that the existence of direct transactions between customers' accounts without the involvement of those from GLA, more precisely, could be the possibility for these customers to pay each other in the register. So, there are three blocks that belong to the last data set in the Link Analysis software, the outline being: a block of random transactions, then a subset of structured transactions followed by another block of transactions (Marane 2008).

Finally, we note that the visual analysis offered by Link Analysis software in forensic accounting can provide a great resource to those directly involved in internal audit, forensic accounting and fraud examinations. It is understandable that the steps involved in such audits are not eliminated, as they provide the investigator (forensic accounting or fruit department) with areas to focus on and holistic concepts of the flow of transactions within that registry.

Conclusions

We need to recognize the importance of information technology in investigators' criminal investigations because cybercrime has reached the top of the most dangerous forms of crime. I specified this aspect because the age of technology is gaining ground in the face of classical methods and overcrowded bureaucracy, and all data related to national security must be protected, but what happens when this database is entered illegally? Thus, the investment in information technology is increasing and the police stations around the world have increased their teams with staff who are basically engineers.

Speaking of cybercrime, a trigger in the emergence of a wide range of preventive software, an increasing number of Internet users end up committing crimes through various methods.

That's why we considered the study on cybercrime important, because according to official data published by the FBI, 45% of the American population was the target of a cyber-attack, whether we are talking about broken passwords (Facebook, e-mail, bank accounts), espionage through cameras video attached to computers or devices (phones, tablets, smartwatches). Another statistic from the University of Maryland shows that in the 21st century there is a very high crime rate, with a personal character manifested worldwide.

The importance of such software significantly reduces the number of cybercrimes, but an important aspect that cannot be neglected is that we cannot deny the existence of cases where the authorities failed in computer investigations, but at the level of national security, solutions were found to these issues that reduce their level of credibility in front of the public.

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