

Using a System Dynamics Model for Automatic Detection of terrorist activities based on Data Warehousing and Data Mining Approach

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Development of a system dynamics model to find out people there committed terror attacks as well as to forecast criminal acts to avoid this acts within the framework of preventive measures. There are defining key attributes of delinquents like money transfer, e mails, hand phone calls, purchases, and are describing it with meta data. The problem of data updates and of data quality will be solve with a high quality of meta data description. The using of system dynamics model and data mining approach makes possible to detect new associations in order to change of system dynamics model by means of back-loops. That is the basis for new search scenarios with new success to avoid terrorist activities. The developed system dynamics model is an experiment to combine the data mining approach and the system dynamics method. The Result is a learning system with abilities to forecast.

Keywords:

Simulation, data warehousing, data mining, underground banking

Introduction and fundamentals

The process of combat of terrorist activities can be classified in three main phases with sophisticated goals, matters, and methods:

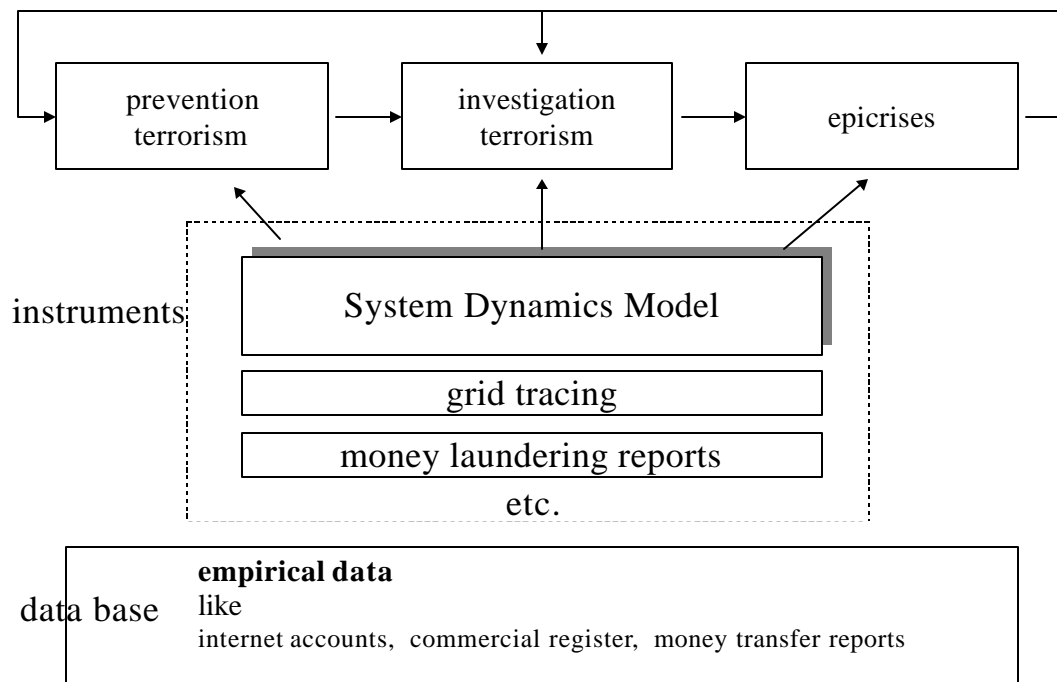
1. Prevention of terrorist activities
2. Investigation of terrorist activities
3. Post-processing (epicrisis) of terrorist activities.

It concerns the following in the case of prevention: the detection of potential offenders and potential victims by means of empiric data that may be levied in the past. In the event of investigation of terrorist activities the offenders and the actions as well as the backgrounds and goals will analyze. The epicrisis allows the analysis of previous cases to find out behavior patterns of the offenders. This can be used by the early detection of terrorist activities.

Any examples are known from the experiences of terrorist activities over the last years:

- preferred neighborhood (not far from the highways and expressways)
- preferred kinds of accommodations (anonymous high-rise buildings)
- preferred methods of payments for electricity bills, hire charges, etc. (cash)
- cash flows etc.

These cognitions are used to catch the preparations of terrorist activities and the preventative of them.



We can assume the risk of acceptance of cognitions without success during the epicrisis due to the fact that the conditions can change very fast. Therefore we must consider cases from the last years with a “new eyeglass”, to transfer available cognitions to the new conditions.

At the present time they are in flux, especially the terrorism and the profile of the offenders. It is to observe the turning away from the longtime preparation of the offenders with traceable tracks – this allowed the so called grid tracing in Germany in the sixties and seventies – to project-oriented just-in-time-activities with hard-to-cognizable tracks or not cognizable tracks. The offenders do not attach importance to do not find. The faith makes up for the reason of the terrorist offense.

There are big intersections between the area of the organized crime, f. e. trafficking in human beings, corruption, document forging and drug and weapons transactions, and the area of terrorism. The financial transactions are another kind of terrorist activities. There are the strong suspicion of using the Arab Hawala-clearing system as a form of the underground banking.

“The Hawala system serves as a clearing system for illegal sources of money and is used above all for money associated with drug and weapons transactions, smuggling, trafficking in human beings, corruption, customs offenses and the financing of terrorist activities. However, it should be noted that not only criminals make use of this money transfer system.

There is also a long tradition of using this system for regular business transactions between Arab and South Asian countries. In addition, foreign workers in Western countries use this system to transfer money to their native countries.

The system is based on a relationship of trust between the participants (due to its meaning, "Hawala" can be translated as "trust") and was created thousands of years ago, long before there was an international banking system. In this system, money flows are routed around the world through private persons (who are often trustees or intermediaries located in London) solely by using a code word.

The money is accepted by agents called "Hawaladars" (who are usually small jewelers, secondhand dealers, or persons who operate snack stands) in return for a relatively small fee. Those who hand their money over to the "Hawaladars" are only given a code or a number. Then the "partner company" in the respective country is informed about the in payment.

This money transfer system is so widespread that in the meantime a large number of Hawala agents offer their services through the Internet and other media as well.

Government institutions in Islamic countries also use this transfer method. “¹

¹ Dolata, Uwe: chef detective, internal report may 2002, p. 1-2

The knowledge about the new terrorism can be summed up as follows at the present time:

→ Terrorism is cheap.

In comparison with organized crime, the attacks of September 11th required only a few hundred thousand dollars, paid out of "petty cash", which has still to be traced.

Unlike organized crime, terrorism is not aimed at netting profits. For terrorism, money is only a means to an end. The mere withdrawal of financial means or the deprivation of certain financial resources cannot ban the actual danger, i.e. further terrorist attacks.

Terrorism seems to be a field where the preventive component - a basis for the concepts of money laundering and/or confiscation of proceeds - do not prove to be efficient.

→ Terrorism is not an isolated phenomenon.

→ A direct correlation with organized crime can always be identified. Persons, premises or bank connections, i.e. underground banking agencies, give an idea of, or even show intersections with, radical or terrorist circles.

→ Funds are provided on winding paths.

→ Sponsors, financiers or institutions make funds available for terrorist activities. Persons who contribute money can, for example, not only be found in the United Arab Emirates but also in a German network of supporters which uses the possibility of underground banking or obviously conceals money transfers.⁷

→ Intersections have to be disclosed.²

It has proved to be an essential demand to collect information by means of new data acquisition systems. These methods of financing will be used in a System Dynamics model (model in process). The goal is the prevention of terrorist attacks.

References:

Dolata, Uwe: Internal report, May 2002.

² vgl. Dolata, Uwe: chef detective, internal report May 2002, p. 8