

SUCCESSFUL
LAW ENFORCEMENT
USING
ANALYTIC METHODS

IALEIA



Dedicated to Professionalizing Law Enforcement Analysis

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Introduction

Over the past 25 years, intelligence and analysis have become important parts of law enforcement operations. They are used in thousands of agencies in the United States, Canada, Australia, Europe, Asia and the Middle East.

Analysis is deriving meaning from fact. It is taking information collected in the course of an investigation, or from internal or external files, and arriving at something more than was evident before. This could be leads in a case, a more accurate view of a crime problem, a forecast of future crime levels, a hypothesis of who may have committed a crime, or a strategy to prevent crime.

Analysis today is a collection of proven techniques, each of which is applicable to different facts and patterns of potentially criminal activity. A successful analytic product will ideally combine several of these techniques to provide a comprehensive summarization of the data, from which conclusions can be drawn and recommendations for action can be made.

Analysts are professionals often with one or more college degrees. They can be civilian or sworn (in the U.S., most are civilians, in Canada, about half are sworn and in Australia, all are sworn). Ideally, each criminal justice agency of over 100 sworn personnel should have at least one individual dedicated to analytic work.

There are three primary uses for analytic techniques: tactical support, strategy development and prosecutorial support. Tactical analysis calls for immediate action. Strategic analysis looks at longer-term solutions. Evidential analysis helps prepare the proofs needed for a successful prosecution. Obviously, most police agencies need all three levels of analysis.

Analysis can be applied to nearly every type of police investigation from homicides, bank robberies, street crimes, narcotics distribution, environmental crimes to white collar crimes, It is used to support conspiracy charges including those under which entire organizations are prosecuted. It also assists in identifying the assets used in or resulting from a crime and aids in their eventual seizure and forfeiture.

Specific analysis techniques and methodologies include:

<i>Association</i>	<i>Telephone Record</i>
<i>Net Worth</i>	<i>Event Flow</i>
<i>Bank Record</i>	<i>Crime Pattern</i>
<i>Commodity Flow</i>	<i>Visual Investigative</i>
<i>Activity Flow</i>	<i>Time Series</i>
<i>Organizational</i>	<i>Conversation</i>
<i>Statistical</i>	<i>Frequency Distribution</i>
<i>Geographic</i>	<i>Source & Application of Funds</i>
<i>Business Record</i>	<i>Threat</i>
<i>Vulnerability</i>	<i>Warning</i>

Many of these types of analysis can be used toward tactical, strategic or evidential ends. An Association Analysis, for example, could be used to detail the connections among individuals currently under investigation, to assess the future impact of a group in a strategic analysis, or to show the breadth of an organization being prosecuted in a court case. Likewise, a Financial Analysis (Net Worth, Bank Record or Business Record Analysis) of the target's records could be important to any investigation or study being conducted.

This introductory booklet provides an overview of commonly used analytic techniques, examples of specific analytic products and how analysis can be used in every major law enforcement agency. Additionally, some analytic resources are listed at the booklet's end. We hope you enjoy reading it.

Association Analysis

Association Analysis, also called Network or Link Analysis, reviews the relationships or connections among people and organizations involved in a criminal activity. This review depicts these connections and forms the basis for conclusions to be drawn about the network including the organization's hierarchy, who are its key members and who are its most vulnerable members. It can also be used to show the connections among people, locations, organizations and criminal activities.

Association Analysis can be used to uncover new conspirators, to show the geographic breadth of the criminal activity and can provide a basis for criminal organization and asset forfeiture charges. It is one of the most commonly used forms of analysis used in law enforcement. It is used in narcotics network, organized crime, terrorism, fraud and other conspiracy investigations. It can also be used as part of a strategic analysis to provide an overview of the crime group or activity being studied.

The products of an Association Analysis can include a Link Chart and biographical sketches of each person or entity on the chart. It can also include a summary of the chart and its relationship to the facts in the case, conclusions that can be drawn from the analysis, investigative leads arising during the analysis and recommendations for further investigative or prosecutorial action.

Association Analysis is used when there are numerous data gathered that reflect relationships. It can also be constructed from the products of other analyses, including Telephone Record Analysis (showing connections between telephone numbers) and Financial Analysis (showing connections between bank accounts and individuals or entities).

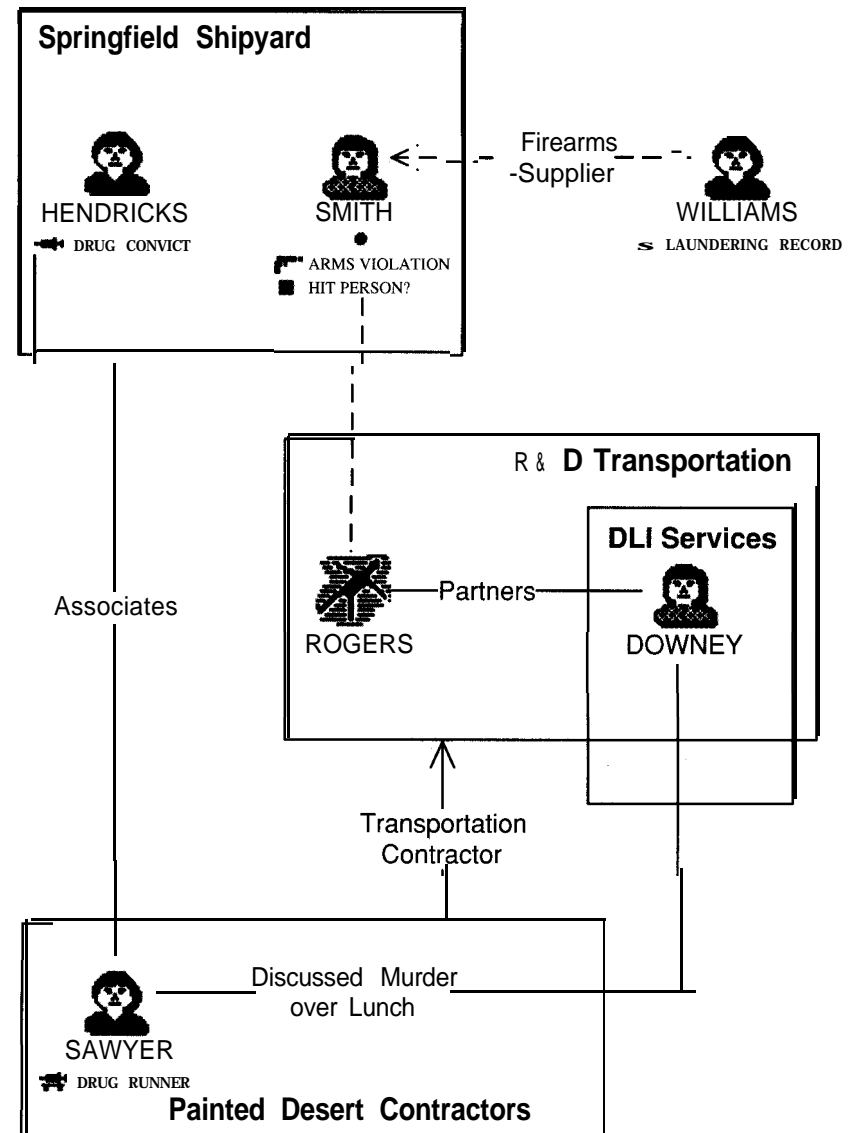
Telephone Record Analysis

Telephone Record Analysis is the review and compilation of information from telephone bills, long-distance service bills, pen register and dialed number recorder data. This information can include the area codes and numbers that were called, the times, dates, locations, directions and duration of the calls. In the case of cellular telephone records, information on incoming calls is also available. In cases of telephones with caller identification on which a pen register or dialed number recorder are used, the identification of incoming callers is also available. All this information is usually collated in a computer database to provide information on the above factors. Some pen registers provide the information on a computer disk for easier data manipulation.

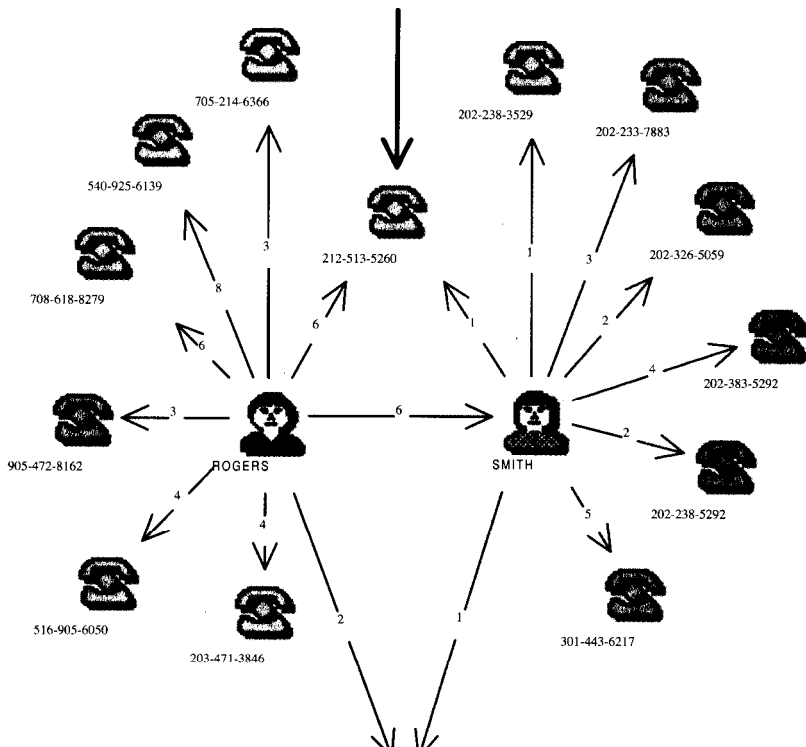
Telephone Record Analysis is an accepted step toward building the probable cause necessary for an electronic surveillance (wiretap) order. Additionally, it can show the geographic range of a conspiracy and can uncover additional participants in the criminal activity. It can be used in narcotics, white collar, violent, street and organized crime investigations.

The products of a Telephone Record Analysis can include a Telephone Record Chart, a listing of primary numbers, a write-up on any unusual calls, calls by date and hour tables, identification of call patterns, conclusions and recommendations. The identification of subscriber names is also completed, but this is generally viewed as an information collection step rather than an analytic step. Telephone Record Analysis should result in a written report which includes conclusions about the telephone activity and makes recommendations based on those conclusions. The types of conclusions and recommendations most often seen identify new conspirators and suggest that their telephone records be subpoenaed for comparison to records of other conspirators already collected.

ASSOCIATION ANALYSIS CHART

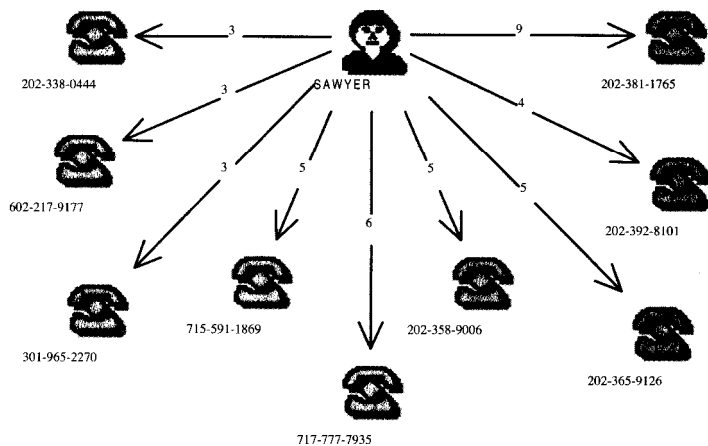


NEW TARGET



NEW TARGET ->
DOWNEY?
202-357-0968

TELEPHONE RECORD CHART



Event Flow and Activity Flow Analysis

Event Flow Analysis focuses on a series of events that lead to a criminal activity and shows them clearly. It can involve several *path* of flow, depicting multiple actors or victims and where their paths converged. It can point to missing information or conflicts in previously provided statements. It can show corroborating information regarding potential suspects.

Events can be portrayed in two different charting formats: an Event Flow Chart or a Time Line. An Event Flow Chart summarizes actions in boxes or other symbols which are arranged in chronological order. Lines connect the boxes with arrows showing the direction of the flow.

A Time Line summarizes each activity along a dated line. The line is sometimes used to separate known and suspected activities or to separate facts from misrepresentations. Time Lines are favored by prosecutors to guide the jury through a complex series of events.

Event Flow Analysis can be **used** in insurance fraud, homicide, serial crime, robbery, terrorism, arson and other event-oriented investigations and prosecutions. It can also be used to show the growth and development of a criminal organization within a strategic analysis.

Activity Flow Analysis views the actions in a more generic sense, looking at the *modus operandi* of the criminal(s). It can help establish the behavioral patterns or criminal patterns of a criminal or crime group and highlight places where those patterns might be interdicted by law enforcement. In an Activity Flow Chart, events are placed into symbols connected by lines and arrows. The events are not specific, however, and give an overview of the activity.

Commodity Flow and Visual Investigative Analysis

Commodity Flow Analysis looks at the flow of goods, currency or services relating to a criminal act, among people, organizations or businesses. It can show the movement of criminal profits (e.g., money laundering), or a trail of stolen goods, or a series of dealings in which contraband (e.g., narcotics or weapons) changes hands. These can include known or suspected sources or destinations of goods, services or currency.

Commodity Flow Charts use arrows to depict the direction of the flow. The goods, monies or services changing hands are noted outside of the symbols, along the lines of the flows.

Commodity Flow Analysis can also result in several products. A Commodity Flow Matrix can show the flows among several sources. A Commodity Flow Chart takes the specific flows and arranges them along lines connecting the person or entity from which it is flowing with the person or entity to which it is flowing.

Visual Investigative Analysis looks at the steps taken in a criminal activity or criminal investigation. A Visual Investigative Chart takes the steps and places them along a line chronologically. They are accompanied by other information about the steps including the results of the steps.

Visual Investigative Analysis is effective in major case or task force management because it allows the manager to view the actions taken by investigators, what equipment or other resources were used during the action, and what the were the results of the action.

Financial Analysis

The motive for most crimes is profit, thus Financial Analysis has become an integral part of many investigations. There are several forms which a Financial Analysis can take including Bank Record Analysis, Corporate Record Analysis, Net Worth Analysis and Source and Application of Funds Analysis.

Bank Record Analysis is the most common form of Financial Analysis. It involves taking copies of bank statements, checks, deposit items, wire transfers and debit/credit memos and collating them to determine if there were any illegal source or destinations of funds as well as if any criminal activity can be seen through the use of the funds. A key product of this analysis is the data uncovered that leads to other bank accounts or assets. Bank Record Analysis is critical to determine who profited from a crime and the amount of those profits.

Corporate Record Analysis looks at business ledgers, sales receipts, tax reports filed, income statements, etc. to corroborate information in bank records, to compare those records for inconsistencies and/or to compare them to an industry standard. It is used to determine if there are illegal activities occurring within a business. The types of activities seen in business records include money laundering, false loans and tax evasion.

Net Worth Analysis and Source and Application of Funds Analysis look at an individual's reported income versus what was spent over a year to determine if there was significantly more spent than earned. A similar analysis of loan or credit card records may also uncover ties to criminal activity.

SMITH
ENDRICKS
SAWYER
DOWNEY
Crime Scene
ROGERS

Stopped for Traffic Violation
SMITH was stopped at Exit 16 of Eastbound I-64 for excessive speed by Trooper Doright.
7:00 State Trooper Doright

Returns Home
SMITH is seen arriving at her home. She is observed throwing something into the storm drain on Dutch Elm Street and then inspecting the front right fender of her Lexus.
9:15 Mary Watch

Smith at the scene of the crime?

Murder Payoff?
Meeting at Rest Stop
SMITH and HENDRICKS are observed in the Rest Stop at Mile Marker 40, I-64 Eastbound. HENDRICKS is observed passing an envelope to SMITH.
14:36 State Trooper Evans

Murder Payoff?
Meeting at Colonial Mall
HENDRICKS is observed meeting SAWYER in the parking garage of the Colonial Mall. He is observed passing a package to HENDRICKS.
13:15 A. Shopiere

Murder Payoff?
Meeting at Adobe Cafe
DOWNEY and SAWYER are seen at the Adobe Cafe having lunch. They are overheard discussing ROGERS and SMITH. DOWNEY is observed handing SAWYER an envelope containing a large amount of cash.
11:00 Jody Stipe

Depart Adobe Cafe
DOWNEY and SAWYER depart the Adobe Cafe.
12:30 Jody Stipe

Body Discovered
ROGERS' body discovered in dumpster on R & D Transportation Loading Dock. ROGERS was shot multiple times in the head and chest.
8:38 Jimmy Jay

Police and Coroner Arrive
Police and the County Coroner arrive at the scene. ROGERS is pronounced dead.
9:24 Detective Smith

ROGERS goes to shipping dock.

Murder
ROGERS body is discovered. Jimmy Jay stated he saw an unknown woman in an apparent state of distress, roam about the parking lot next to the dumpster, then drive off in a White Lexus. As she was exiting the parking lot, she hit a concrete barrier.
8:38 Jimmy Jay

Arrives at R&D
ROGERS arrives at R&D Transportation for the morning shift.
6:28AM 9/23/96 Time Clock

TIME LINE ANALYSIS CHART

Threat Analysis and Vulnerability Analysis

Threat Analysis is reviewing information on a criminal group's propensity for violence or criminality, or the possible occurrence of criminal activity in a certain time or place. To complete a Threat Analysis, data on the possibility of the threat (the chance it will actually occur) is gathered. Then, an assessment is made of the potential degree of threat present. The projected time frame of the threat and the possible target(s) of the threat are also examined. Conclusions about the probability that the threat will materialize into actions that must be made, along with countermeasures or (if prior action is impossible) responses to the threatening action once it occurs.

Threat Analysis is done primarily on criminal, terrorist, or politically motivated groups or individuals which seek to commit crime and/or disrupt a governmental activity. It can also be done on a criminal activity or crime product, such as the advent of a new drug form and its projected impact on the community.

Vulnerability Analysis, on the other hand, is reviewing information on a potential threat victim and identifying areas that might leave the person open to threat. These areas might include penetrable defenses, openness to attack, number and severity of threats made against the victim, location of the victim, etc. Conclusions are drawn about what weaknesses may be present and how they can be minimized.

Vulnerability Analysis is most often done to support Executive Protection and major event (e.g., Olympics) security. In combination, Threat Analysis on potentially disruptive groups and Vulnerability Analysis of potential victims, locations, etc. should be done for all major political events and other significant occurrences in your jurisdiction.

Crime Pattern Analysis and Time Series Analysis

Crime Pattern Analysis is the review of information relating to a series of crimes which can be used to help identify and apprehend a criminal or to prevent further similar criminal actions.

Traditionally, Crime Pattern Analysis techniques are employed against street-level crimes including robberies, burglaries, auto thefts, muggings, bank robberies and other serial crimes. Based on the MO patterns and criminal signatures of past crimes, analysts can tell if they form a series and can predict when and where the next in the series may occur.

The types of patterns reviewed can include victimology, geographic location, time of day, day of the week, property taken, perpetrator description, level of force used, etc.

Crime Pattern Analysis has been used as a successful component of law enforcement pilot programs in urban drug market response programs and in Weed and Seed programs.

Time Series Analysis looks at the incidence of crime over a period of time. This can show fluctuations in crime statistics or in the occurrence of specific activities within a series of criminal actions. In the former, the number of auto thefts, over time, in a jurisdiction can be analyzed to determine trends. In the latter, the number of phone calls between conspirators over time might pinpoint the time of a criminal violation. Time Series Analysis may also be done in conjunction with Geographic Analysis to provide a picture of when and where the crimes occurred.

All-Source Information Gathering

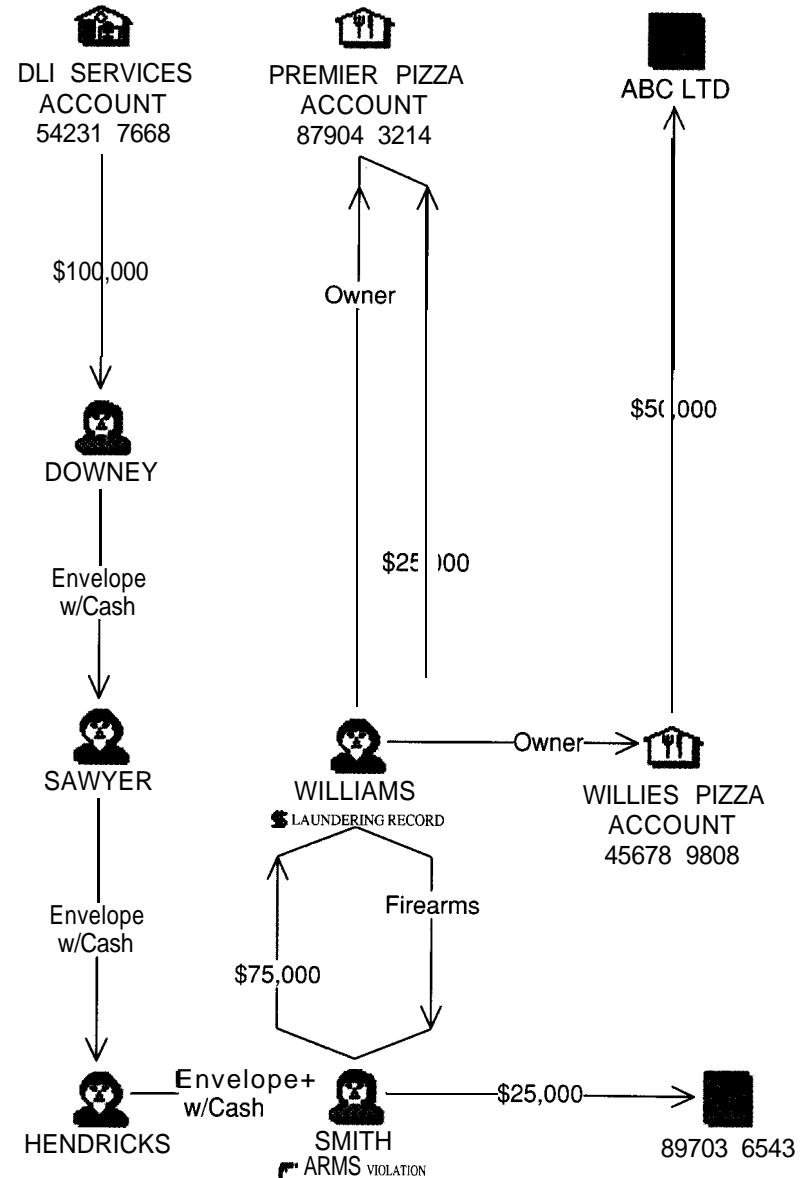
Today's world has a wealth of information available through law enforcement, commercial and public record databases. Computer-literate analysts are well-versed on both sources of information and short cuts to obtain that information. The Police Executive can rely on analysts to cull through the masses of data and extract what is important.

Analysts have long been used as conduits to information. Inquiries made on an agency's files usually go through a data analyst. Analysts have been used to research data for the Chiefs speeches and budget presentations.

Today, *open source* analysts use agency files, motor vehicle files, commercial databases, financial databases, corporation tiles and other sources to develop in-depth profiles of the subjects being searched. These profiles give further leads in an investigation and some indication of who else may be involved in the criminal activity.

Open-source data gathering is a technique in itself and is one which is constantly changing. The emerging resources on the Internet and other commercial databases are evolving rapidly. Specialized classes have been developed to give analysts (and investigators) data retrieval basics. An entire industry of *data mining* tools and techniques is becoming available.

COMMODITY FLOW CHART



Support for Agency Planning and Budgeting

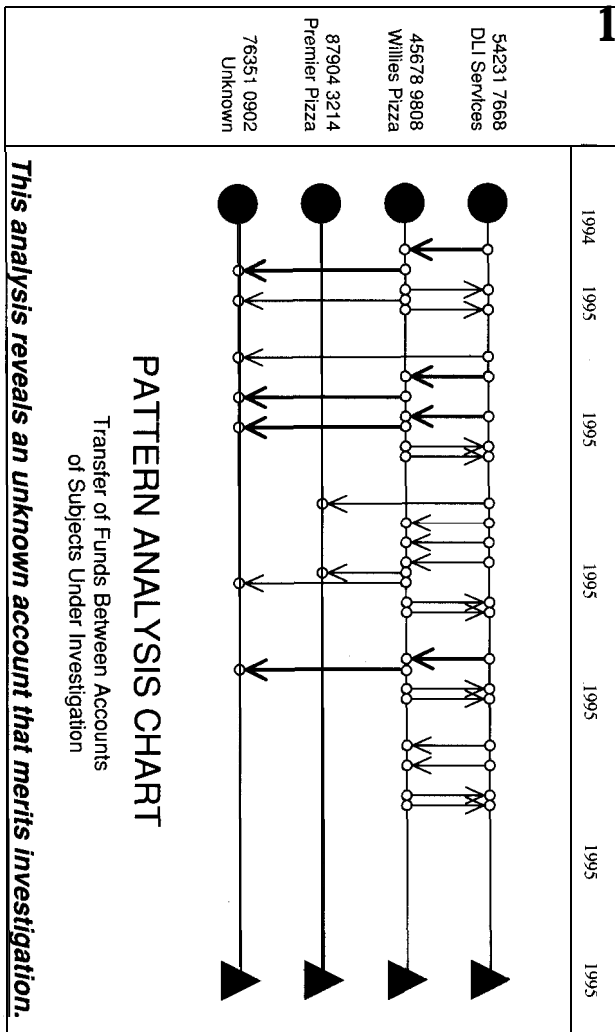
Analysis should be the heart of the planning process. Agency planning usually involves the development of a mission and strategies to achieve that mission. Strategic planning requires an organization to look at what its resources and challenges are now and to project what resources it will require to meet future challenges five, ten or more years into the future. It combines a resource inventory with a needs assessment to develop a strategic assessment. This assessment is an analytic product.

Analytic skills also support the police executive's presentations on budgets and other government resource allocations. Combining statistical methods and Financial Analysis skills, analysts organize the budget materials so that they reflect the agency's mission and priorities.

This organization of data shows the agency's operations in their best light and provides documentation for upcoming needs. The analyst can also prepare graphic representations of the agency's budget, personnel strength and successes for use in management presentations and media briefings.

Also, the analyst can devise a management reporting system which allows the agency to collect, collate and analyze measurements of its success in support of budget requests. These systems can provide needed statistical support to chief executives throughout the year.

Similarly, analysts often write the agencies' applications for governmental funding of law enforcement operations. Once a grant has been received, the analyst may design the system to collect the results of the operation and report them to the grantor.



Analytic Training

Most analysts receive analytic training on the job as few colleges offer courses in applied analytic techniques. A typical intelligence analyst is usually sent to training within the first six months of employment. The training received can last from four or five days to weeks and generally includes:

<i>Inference Development</i>	<i>Association Analysis</i>
<i>Crime Pattern Analysis</i>	<i>Telephone Record Analysis</i>
<i>Statistical Analysis</i>	<i>Flow Analysis</i>
<i>Financial Analysis</i>	<i>Sources of Information</i>
<i>The Intelligence Process</i>	<i>Visual Investigative Analysis</i>

A crime analyst receives training on several statistical methods as well as on Crime Pattern Analysis, Time Series Analysis and predicting crime.

In some areas, advanced analytic courses are also offered which may include in-depth looks at Strategic Analysis, Computerized Analytic Applications, Financial Analysis, Organized Crime Groups, Indicator Analysis and other advanced topics.

This training is offered by both government and private sources. Government sources include the Federal Law Enforcement Training Center, the Canadian Police College and a number of state-level law enforcement agencies. Private sources include Anacapa Sciences of Santa Barbara, CA and the Alpha Center for Crime and Intelligence Analysis in Montclair, CA.

Most analytic classes involve lecture, demonstration and practical exercises. The visual aspects of analysis make it readily adaptable to hands-on training. IALEIA has compiled a list of training resources which expands as more courses become available. Upcoming classes are also advertised in its *INTELScope* magazine.

Analytic Publications

As a profession grows, so does the available documentation on its techniques. A number of books and articles on analysis have been published in the last two decades. Many of these have been published in the *IALEIA JOURNAL* (formerly the *Law Enforcement Intelligence Analysis Digest*), a semi-annual publication which provides a forum for analysts and academic researchers to share their methodologies.

Some of the major works on analysis are listed below.

The Basic Elements of Intelligence - E. Drexel Godfrey and R. Don Harris, 1971, U.S. Government Printing Office

Crime Analysis Charting - Jack Morris, Palmer Press, 1982

Police Intelligence Reports - Charles C. Frost and Jack Morris, Palmer Press, 1983

Criminal Intelligence Analysis - Paul P. Andrews, Jr. and Marilyn B. Peterson, editors, Palmer Press, 1990

Crime Analysis: From First Arrest to Final Report - Steven Gottlieb, Raj Singh and Sheldon Arenberg, Alpha Press, 1995

Applications in Criminal Analysis: A Sourcebook - Marilyn B. Peterson, Greenwood Press, 1994

An in-depth bibliography of books and articles regarding analysis can be obtained from IALEIA.

IALEIA

The International Association of Law Enforcement Intelligence Analysts, Inc. (IALEIA) is a non-profit organization dedicated to the professionalization of the field of analysis.

IALEIA began in 1980 with less than 20 charter members. Today, it has over 800 members in 38 U.S. states and over 20 countries in North America, South America, Europe, Eastern Europe, Australia and the Far East.

A large part of IALEIA's role relates to training and community outreach. Its annual meeting, held in conjunction with that of the International Association of Chiefs of Police, provides its leadership with the opportunity to meet with police executives from around the world. A spring training conference, hosted by one of its chapters, allows analysts to receive more in-depth training in new or advanced analytic methodologies.

IALEIA also works with major law enforcement agencies and organizations to provide speakers for conferences. It publishes overviews and examples of analytic techniques in its semi-annual journal. Shorter items of interest to analysts and officers (training schedules, local chapter meetings, etc.) are found in the *INTELScope* newsletter, published three times yearly.

An annual awards program provides recognition to analysts, authors, teachers and police executives. These awards encourage excellence in law enforcement intelligence analysis.

This past year, an Executive Advisory Board was appointed, comprised of police executives who support IALEIA. Under its tutelage, IALEIA intends to expand its outreach to chief executives.

Membership in IALEIA is open to all law enforcement analysts, supervisors and managers. For more information, write IALEIA, P.O. Box 82-1086, South Florida, Florida 33082-1086 or call IALEIA President Marilyn Peterson at 609/984-1035. In Canada, contact Executive Director Robert Fahlman at 613/998-6094. IALEIA can also be found on the Internet at <http://euphoria.mercy.edu/ialeia/html>.

IALEIA Supporting Member Agencies

Federal Bureau of Investigation
Western States Information Network
New Jersey Division of Criminal Justice
Royal Canadian Mounted Police
Revenue Canada Customs
Florida Department of Law Enforcement
Rocky Mountain Information Network
Mesa Police Department
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The booklet is intended to show varied forms of analysis and their use to law enforcement executives and is not intended as an endorsement, by IALEIA or the committee, of any type of computer or any computer program.

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ART IN LAW ENFORCEMENT
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