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**WHAT IMPACT WILL EMERGING SURVEILLANCE
TECHNOLOGY HAVE ON THE INVESTIGATIVE
FUNCTION BY THE YEAR 1998?**

Technical Report

**BY
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**CALIFORNIA COMMISSION ON PEACE OFFICER STANDARDS AND TRAINING
(POST)**

SACRAMENTO, CALIFORNIA

COMMAND COLLEGE

CLASS 18

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This Command College Independent Study Project is a FUTURES study of a particular emerging issue in law enforcement. Its purpose is NOT to predict the future, but rather to project a number of possible scenarios for strategic planning consideration.

Defining the future differs from analyzing the past because the future has not yet happened. In this project, useful alternatives have been formulated systematically so that the planner can respond to a range of possible future environments.

Managing the future means influencing the future--creating it, constraining it, adapting to it. A futures study points the way.

The views and conclusions expressed in the Command College project are those of the author and are not necessarily those of the Commission on Peace Officer Standards and Training (POST).

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Abstract

Future surveillance technology, and the impact it will have on law enforcement is examined in an effort to insure successful development and implementation. The study covers the legal and training issues for operation of future equipment through the year 1998. A strategic plan is presented to ensure law enforcement will benefit from advances in surveillance technology. The plan will also encourage technology providers to develop surveillance technology. This addresses findings that user interface is the major obstacle to use of emerging technology. Important trends forecasted indicate an explosion in technology and reduced market with military down-scaling. Trends indicate a transfer of technology from defense contractors to law enforcement. Events forecasted with trends provide basis for potential futures presented as scenarios. Analysis of one California agency provides a transition management plan for implementation of the strategic plan. Included are trend and event analysis, graphs, data-tables, and bibliography.

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Will They Build it, If We Come?

A look into the relation between technology providers and law enforcement.

Buttons-a-plenty, lights galore. Some patrol officers have been privileged enough to see what only narcotics investigators are allowed to touch. You know what it is. It sits in the corner, by the filing cabinet. How does it work? Well, you know. You hook it up, turn it on, and presto, it's neat. It's James Bond-like. It's the incredible (or dreaded) new surveillance technology.

A recent transfer to commander of the narcotics unit led the author to tour his new work station. There in the bottom drawer it sat. Brand new, still in the box. Knobs, switches, and small wire antennas attached. I asked the seasoned (eight-year veteran) Sergeant, "what might this be"? The response; "I don't know". The usual cop-like questions of who, what, where, why, when, all answered in similar fashion. Being a good investigator, (but even a better baby-boomer techno-brat) I wasn't going to settle for; "I don't know." A little research indicated this (never used) tool cost about \$8,000 - fifteen years ago. An old catalog revealed that it was an early tracking unit. Put the small box on a suspect's car, and home-in on the signal. It is now worthless, as the transmitter operates in the cordless telephone band.

This incident, and an interest in technology prompted a futures study by the author addressing the following question:

What impact will emerging surveillance technology have on the investigative function by the year 1998?

In examining this question, the author also considered key underlying issues on

this topic. These included; What technologies will be available for surveillance applications by the year 1998? What are the legal issues in the use of emerging surveillance technology? And, what training will be required for the successful operation of future surveillance technology?

The importance of emerging surveillance technology and the role it will play in the future of law enforcement can be better understood by first examining trends in each area. Drugs, gangs, and public insurrection have fueled an increase in crime and exhausted law enforcement's current resources. Funding is being reduced at a time when police departments need financial transfusions for survival. In an effort to conserve dwindling public monies, it is imperative that managers strive to maximize efficiency. One method to increase efficiency is the proper application of technology.

As most California police officers could report, crime has intensified in the Western United States. The Justice Department's National Crime Victimization Survey showed that 29% of Western households were crime victims in 1991.¹ The Justice Department Bureau of Justice Statistics (BJS) Clearinghouse reports a national increase in murder, robbery, aggravated assault, burglary, and auto-theft from 1991 to 1992. In addition the BJS reported that between 1986 and 1990, the number of people convicted of trafficking in illegal drugs had more than doubled.² And if the youth of today reflect society of tomorrow, the 2000 homicides committed by juveniles in 1992³ shows a disturbing trend. The illegal use of drugs is recognized as one of the key causal factors in many crimes including; burglary, fraud, and murder.⁴ One of the primary methods currently utilized to investigate narcotic cases is surveillance.⁵

In recognition of the importance of technology, President Clinton's Technology Policy shows support for industrial high-tech research to stimulate economic growth.⁶ The concept of utilizing technology to improve operations and increase efficiency is not new. In 1990, Jerry Cameron, Chief of the Fernandina Police Department in Florida wrote the following in reference to information management; "*Police executives in agencies of all sizes must keep abreast of this technology if they are to continue to deliver the sophisticated services demanded today.*"⁷ If law enforcement does not keep pace with cutting edge technology, they may find themselves as they did in the 80's, the technical "outgunned" equivalent of using revolvers against the criminals' sophisticated automatic weapons.

Many law enforcement tasks readily lend themselves to the application of new technology. One of the areas technology will have the greatest impact is investigations. Traditionally investigations are labor-intensive undertakings, requiring large personnel commitments, the most costly component of police work. The proper application of emerging technology can significantly reduce the time required to investigate most crimes. In 1993 the FBI acknowledged the importance of new technology by budgeting \$26 million for the acquisition of updated surveillance equipment.⁸

A Reoccurring Theme:

One of the dominate findings of this study was the relationship between two of the sub-issues examined. A direct correlation was found between what emerging technologies are being developed for surveillance applications, and the amount of

training necessary for that technology's successful use. Surveillance equipment manufacturers are in business to sell their particular product. The more "user-friendly" the product is, the more likely its use by officers. Overly-complex equipment, no matter how great its potential for collecting evidence will probably not be used, therefore it should not be purchased. If manufacturers feel certain that emerging technologies will take too much training to function as a surveillance tool, it may not be developed as such. Some devices requiring specialized training may be used, however, they will not be used as often as the more simple to operate units. Although most surveillance technology companies are highly motivated to bring law enforcement the best and latest technology, the weak-link is the user interface.

A golden opportunity now exists for law enforcement. Defense technology companies, with the current down-sizing of the military, are looking for a new customers. With violence so prevalent in daily life, it should not take a marketing genius to see the potential in adapting defense technology for civilian law enforcement applications.

Additionally, law enforcement needs to encourage the development of this market. This will also give law enforcement an opportunity for input into the development and design of the interface for equipment, making it more user-friendly and therefore more adaptable to law enforcement use.

The defense technology giant *Westinghouse* recently increased their awareness of the human interface component in the development and marketing of surveillance technology. *Westinghouse*, with its recently formed Law Enforcement

Division, has acquired Audio Intelligence Devices (AID). AID, now known as Westinghouse AID, is a well known manufacturer of high-tech surveillance products for federal, state and local law enforcement agencies. In 1992 Westinghouse announced the development of their Mapping and Personnel Detection (MPD) Radar. This hand-held unit can see through walls, identify floor plans, and detect the slightest movement, down to a heartbeat.⁹ The potential of this device for law enforcement is endless. Hostage situations, locating burglary suspects in a building and bomb threats are just a few of the possible life saving applications. Where is the device now? Still waiting for a more user friendly interface.

The transition of technology from military to civilian use has become so important, it precipitated the inclusion of law enforcement in a Research and Development Symposium, formerly only open to military and Federal investigators. Westinghouse hosted the symposium October of 1993 in Baltimore, Maryland. The overriding theme was the conversion and adaptation of high-tech core technology for civilian law enforcement. During the symposium Mr. L. Michael Langley, President of Westinghouse AID, talked of the needs of law enforcement, and the transitioning of technologies.¹⁰ Langley projected future surveillance equipment would be "technology transparent", referring to simple user interface for ease of operation. Langley predicted that the proliferation of technology would result in more criminals using high-tech equipment, necessitating the development of more undetectable surveillance equipment.

Some surveillance companies may not be as willing to research emerging

technology for possible surveillance applications due to this user interface problem. This potential problem was recognized by the author while attempting to discuss ideas for emerging technology with research engineers.¹¹ There was a reluctance to discuss emerging technology that did not have a simple user interface. Some of this could be attributed to marketing strategies. It would not be good business to discuss a better product being developed while trying to sell the old model. It also would not be beneficial to let the competition know what projects the company is working on.

If law enforcement is not ready and willing to move forward, law enforcement will fall behind in many respects. First, criminals, unencumbered by the lengthy purchasing process of government have the money to buy and the time to learn new technology. The technology will be developed, and introduced into public markets. Just as the emerging digital communications network threatens to lock-out law enforcement from listening in on, or "wire-tapping"¹² the criminals, emerging future technology could retard the investigative capabilities of tomorrow's police. This is another example of why law enforcement must keep abreast of and participate in the advancement of technology.

If investigators are not well trained in the proper use of future technology they are taking great risk. Evidence may be missed, or worse, it may be excluded if improperly obtained. The latter could be compounded by the loss of public support should the equipment be used for activities considered to be too intrusive for public standards. Training needs must be assessed not only for the functional operation of future equipment, but also the legal aspects in its use.

With many rapid developments in technology law enforcement now has the opportunity to ride in the fast lane of the information highway. To illustrate more graphically the benefits from the proper adaptation of emerging surveillance technology, one potential future scenario can be examined.

January 1998 finds California law enforcement on the rebound. Emerging surveillance technology has proved it's usefulness again by thwarting a plot to blow up the United Nations. The cellular threat analysis monitor alerted officials that certain key phrases had been detected during random cellular phone radio spectrum sweeps indicating a bombing may take place. Upon review and cross reference of satellite data of the vehicle correlated to the cellular phone transmission, the Artificial Intelligence Crime System (AICS) determined the suspects' pattern of activity was more consistent with criminal than innocent behavior. AICS directed officers to detain the suspects and sent an electronic mail (E-Mail) search warrant to a Judge's terminal for approval. The Judge approved the search warrant and officers proceeded with the investigation resulting in the successful prosecution of the suspects for this heinous plot.

Much of this technology is possible due to partnerships in technology development between law enforcement and technology companies. These relationships were developed at the request of law enforcement in the early 1990's.

With the quantum leaps occurring in technology today, this scene for tomorrow is not far from reality. To insure the positive impact of emerging surveillance technology the author has developed a strategic plan to move an agency toward that

desired future. Although the plan summarized here was designed to facilitate the identification and implementation of emerging surveillance technology, part of the plan called for increased communications between technology providers, and law enforcement.

The Plan

Goals were set to help provide direction to the plan. In addressing the theme involving the relation between the development of new technology with more user friendly interfaces, the goals will be to increase communication with technology providers, provide the necessary training, and increasing communication within the agency. If increased training is necessary for future technology, then training issues should be considered. Finally, to help move the process forward, there should be some way of communicating the plan to the agency to help generate interest and support.

The subject agency used to illustrate the plan is a mid-sized Sheriff's Department in rural central California. As such, the primary focus over the last twenty years has not been technology. With about 300 sworn personnel, this is the largest agency in the County. The plan used called for the formation of an Investigative Technology Committee, consisting of investigators who will actually use the future technology, an administrator, the Department Automated Systems Sergeant, and the Training Officer. This committee in turn would form a County Wide Investigative Technology Association. The Association would invite technology providers to attend meetings to discuss new technology. Selected members would make site visits and

report back to the Association.

This mechanism for increasing communications with technology providers would give law enforcement more input into the design and functionality of emerging surveillance technology. Each person on the committee could provide insight into the design. The training officer would address the learning curve, and how much time is available for in-service training. The investigator would assess the functionality of the device. The increased communication with different providers may also increase competition between technology companies, which often benefits the consumer.

In formulating the plan, the members of the Department most impacted by the new technology were considered, and given representation on the committee. The Sheriff would approve of the plan as having the proper equipment not only increases productivity, but also morale. The administrators would be satisfied due to the amount of research that would precede any purchase of surveillance equipment. And the investigators would be supportive, as they would have participated in improving the department. The findings of the Association, and the committee would be fed back to all employees of the agency by means of a newsletter. This would keep them informed, and allow them to feel like they are also a part of the process.

Conclusions and Recommendations

One important finding of the study was that the lack of a good user interface for future technology may retard the development of future surveillance technology. This issue deserves the immediate attention of law enforcement. It is the responsibility of police managers to look to the future in all aspects of their agency. If the potential

future is ignored, law enforcement risks lagging further behind. In addition, criminals may utilize this new technology, and commit crimes that may go undetected due to law enforcement's lack of knowledge.

Police managers of tomorrow need to encourage their staff to explore new ideas in technology, all types of technology. Much of the technology that is used for surveillance was designed for other purposes. One example is the Westinghouse MPD radar. The hand-held device was designed for field military use to detect vehicles and aircraft. While in the research lab, an engineer discovered he could detect people in the other room, through the wall. Innovation and imaginative approaches to improving investigative tactics should be encouraged.

Training managers need to be aware of the technical trends impacting law enforcement. The potential increased training needs of an agency are an important consideration when budget time rolls around. More personnel to teach, or funds for class tuition may be necessary to meet the training needs of future technology. In addition, if technology manufacturers feel law enforcement is willing to increase training for surveillance equipment, it might stimulate enhanced future technology.

Agencies should encourage the formation of technical committees to research emerging surveillance technology, both inside and outside their agencies. The relationships formed with technology companies will benefit both entities. Law enforcement gets the new technology, in a usable format, and the manufacture has a marketable product. In addition, some companies may lend or give prototypes to assisting agencies, saving agency funds for other needs.

County-wide associations will help bring agencies within the area together. It will encourage the sharing of both technical, and other investigative information. Once again, all involved benefit.

If law enforcement wants to move the future towards the development of enhanced surveillance equipment, that takes advantage of emerging surveillance technology, then law enforcement must have a plan. Next, law enforcement must move forward with the plan, researching technological advancements, increasing communications with other law enforcement agencies, and building partnerships with technology providers. *For if we come, they will build it.*

Endnotes

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2. "Justice Department Reports Drug Crimes Growing as Share of State Convictions," Drug Enforcement Report, 23 March 1993, p. 4.
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5. *Ibid.*, p. 149
6. Marc Levinson, "Cutting Edge?" Newsweek, 8 March 1993, p. 42.
7. Jerry Cameron, "Artificial Intelligence, Expert Systems, Microcomputers and Law Enforcement," The Police Chief, March 1990, p. 36.
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10. From an interview with the author in October 1993. L. Michael Langley is the President of Audio Intelligence Devices Inc., Westinghouse Law Enforcement Division in Fort Lauderdale, Florida.
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12. Jim Warren, "Feds Open Door to Secret Data," Government Technology, April 1994, p. 1.

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INTRODUCTION

One management philosophy defines problems as "opportunities". With the challenges of today's increasingly violent society, law enforcement managers of tomorrow will have many opportunities. Drugs, gangs, and public insurrection have fueled an increase in crime and exhausted law enforcement's current resources. Funding is being reduced at a time when police departments need financial transfusions for survival. In an effort to conserve dwindling public monies, it is imperative that managers strive to maximize efficiency. One method to increase efficiency is the proper application of technology. Specifically, the scope of this study will encompass the use of new technology in one of the most labor intensive law enforcement functions: *covert surveillance*.

As most California police officers could report, crime has intensified in the Western United States. The Justice Department's National Crime Victimization Survey showed that 29% of Western households were crime victims in 1991.¹ The Justice Department Bureau of Justice Statistics (BJS) Clearinghouse reports a national increase in murder, robbery, aggravated assault, burglary, and auto-theft in 1992 from 1991. In addition the BJS reported that between 1986 and 1990, the number of people convicted of trafficking in illegal drugs had more than doubled.² And if the youth of today reflect society of tomorrow, the 2000 homicides committed by juveniles in 1992³ shows a disturbing trend. The illegal use of drugs is recognized as one of the key causal factors in many crimes including; burglary, fraud, and murder.⁴ One of the primary methods currently utilized to investigate narcotic cases is surveillance.⁵

In recognition of the importance of technology, President Clinton's Technology Policy shows support for industrial high-tech research to stimulate economic growth.⁶ The concept of utilizing technology to improve operations and increase efficiency is not new. In 1990, Jerry Cameron, Chief of the Fernandina Police Department in Florida wrote the following in reference to information management; *"Police executives in agencies of all sizes must keep abreast of this technology if they are to continue to deliver the sophisticated services demanded today."*⁷ If law enforcement does not keep pace with cutting edge technology, they may find themselves as they did in the 80's, the technical (outgunned) equivalent of using revolvers against the criminals' sophisticated automatic weapons.

Many law enforcement tasks readily lend themselves to the application of new technology. One of the areas technology will have the greatest impact on is investigations. Traditionally investigations are labor-intensive undertakings, requiring large personnel commitments, the most costly component of police work. The proper application of emerging technology can significantly reduce the time required to investigate most crimes. In 1993 the FBI acknowledged the importance of new technology by budgeting \$26 million for the acquisition of updated surveillance equipment.⁸

The implementation of high-technology into law enforcement will be analyzed by asking the following question:

What impact will emerging surveillance technology have on the investigative function by the year 1998?

One of the trends in support of this emerging technology is the increased adaptation of military products for civilian markets. Defense contractors formerly specializing in military products must utilize new technologies for products catering to the civilian population in order to survive economically. This is evidenced by a commitment from the Defense Advanced Research Project Agency, which spends \$1.5 billion a year to promote cutting-edge technology for military use, to give higher priority to projects that can serve civilian needs.⁹ As military cuts continue, there will be more emphasis on the civil adaptation of military products.

The transition of this technology from military to civilian use has become so important, it precipitated the inclusion of law enforcement in a Research and Development Symposium, formerly only open to military and Federal investigators. Westinghouse hosted the symposium October of 1993 in Baltimore, Maryland. The overriding theme was the conversion and adaptation of high-tech core technology for civilian law enforcement. During the symposium Mr. L. Michael Langley, President of Westinghouse Audio Intelligence Devices (AID), talked of the needs of law enforcement, and the transitioning of technologies.¹⁰ Langley projected future surveillance equipment would be "technology transparent", referring to simple user interface for ease of operation. Langley predicted that the proliferation of technology would result in more criminals using high-tech equipment, necessitating the development of more undetectable surveillance equipment for law enforcement.

Langley indicated that some of these needs may be met by utilizing emerging

spread-spectrum and digital signal processing technologies. Spread-spectrum is just as it sounds, it spreads the radio signal over a frequency range up to eight megahertz wide. Conventional radio signals take only about 15 kilohertz of bandwidth and can be intercepted with any scanner. Digital Signal Processing involves the conversion of the voice to digital format, a series of ones and zeros, for transmission. Without knowing what key the encoding process is using, the information can not be intercepted.

The importance of surveillance technology was echoed by former FBI Director, William S. Sessions, in his June 1992 address during the Armed Forces Communications and Electronics Association Convention in Washington, D.C. According to Sessions, *"The FBI has been making use of image technology in one form or another for many years - understandably, as this technology improved, so did our investigative capability."*¹¹ Director Sessions also cites electronic surveillance as one of law enforcement's most productive investigative techniques. As law enforcement surveillance technology in general advances, so will investigative capabilities.

The Federal Government's increased reliance on surveillance technology has resulted in the formation of a new "Central Imagery Office." This office will control U.S. Intelligence Satellite Operations for the CIA and the military.¹² Satellite imaging technology has gained additional exposure since Operation Desert Storm. In fact, a media release in the January 1993 issue of Government Technology indicated a new book entitled Satellite Surveillance has just been released.¹³ The book not only details the capabilities of satellites, but also provides information on how to avoid detection by them.

The exploration of technological advancements in surveillance equipment leads to the first sub-issue:

What technologies will be available for surveillance applications by the year 1998?

Currently most surveillance methods are limited to very basic equipment. Most include an audio monitoring system consisting of a concealable transmitter and a receiver with a tape recorder. These are used to record the conversations between an undercover operative and a criminal suspect. Larger agencies may have night viewing devices that amplify available light for monitoring criminal conduct in low-light situations. In addition, small pin-hole video cameras are becoming popular, allowing investigators to surreptitiously video tape in-progress crimes.

Although these devices have seen large reductions in size and improved quality in the last ten years, nothing can compare with the revolutionary advances in miniaturization of electronics in the last three years. In fact, technology is increasing at such an exponential rate that it would not be practical for the purposes of this study to cover more than the next five years without compromising its accuracy.

Advances in computer technology, expert systems, voice recognition, image processing, and digital communications have recently yielded products that would more likely be associated with "Star Trek", not law enforcement. In fact, a (police) captain could now order one of his officers to "scan that building for life forms" and have the information instantaneously. With the Mapping and Personnel Detection (MPD) Radar, police can literally see through walls, determine floor plans, and detect the slightest

movement, down to a heartbeat.¹⁴ This device, developed by the Westinghouse Law Enforcement Systems Department, is an example of the adaptation of military technology for civilian use. The implications of this device alone could be the subject of a lengthy study.

Another example of emerging technology deals with an age old problem for law enforcement: the ability to see in the dark. This can be overcome with flashlights, however if one wants to avoid detection, this presents a problem. The use of night-scopes, as previously discussed, has distinct drawbacks. Any bright light source, such as headlights, within the viewing area can render these devices ineffective. The British Ministry of Defense recently patented a device that overcomes this particular problem. This device uses an array of infra-red light emitting diodes (LEDs) that are pulsed in synchronization with a video camera. Due to the short duration of the pulses, the result is a 95% reduction in unwanted light, enabling clear covert night-vision.¹⁵ The U.S. Military could have used this technology when they were blinded by CNN's video lights during the beach landing for Operation Desert Storm.

An advertisement in the March-April 1993 edition of the Law Enforcement Product News offers satellite and aerial surveillance images to law enforcement.¹⁶ The PSYTEP Corporation of Corpus Christi Texas will conduct a search of sixty databases for photographs of a specified crime scene. Any request must include the date, time, and location of the crime scene. The company indicated they will send an enhanced image with a resolution of two meters. This could enable investigators to identify vehicles or other evidence at the crime scene when the crime occurred. This would be like having

a new eye-witness step forward to help solve a crime.

Another technological trend that affects surveillance is the proliferation of cellular phones. As criminals make use of new technology to evade detection and arrest, surveillance companies have responded with equipment for police to match the criminals inventory. Tech Support Systems of Santa Clara, California, now offers the "Cellmate", a cellular telephone monitoring system.¹⁷ This system captures the suspect's cellular phone number, the number that has been dialed, and records the conversation. The operator can also input the suspect's number and monitor any future calls made.

The ability of police to look through walls, watch from satellites far above, see in the night, and listen to cellular phone calls raises the second sub-issue in this study;

What are the legal issues in the use of emerging surveillance technology?

What legal requirements will have to be met to implement new technology? What probable cause will officers need to look through walls? What justification will be needed to bounce an infra-red light beam off a window enabling the monitoring of a private conversation? How much probable-cause will be required to view satellite images or monitor cellular phone conversations?

The relevance of these and other questions related to privacy is demonstrated by an increasing concern of the public as to how much information is being compiled not only by government, but by private companies as well. While the proliferation of surveillance technology will certainly prove beneficial to law enforcement, it is imperative that such technological expansion be managed carefully. This country is becoming

increasingly sensitized to the quantum growth of information services and associated legal issues. So great is this concern that it was the subject of a recent conference in Sacramento. The "Privacy in the Information Age" Conference, held November 16, 1992, examined accessibility of information, the selling of information by government, and other privacy issues.¹⁸

With these concerns in the forefront, it is essential that policies and procedures be adopted that would insure the prevention of potential abuses. Nothing can cause the removal of police resources faster than the inappropriate use of available technologies. In addition to policy regulating the use of such equipment, the operators must also keep abreast of current legislation and case law related to surveillance.

The need to convey this information to investigators introduces the third sub-issue;

What training will be required for the successful operation of new surveillance technologies?

How much training will be required for each specialized device? How much in-service training will be required to maintain proficiency? Will the operation of new technology be so complex that it will require a specialized assignment for a number of years? Will it cause the administration to hire civilian "Surveillance Technicians" to operate the equipment? How will this impact the morale and functionality of the investigator?

The successful use of most sophisticated equipment usually requires a basic understanding of how the device functions. Just as extra training time is needed for the use of the intoxilizer, traffic radar, and radio equipment, a transition period of training may

be needed prior to implementation of the new technology. In an attempt to minimize the complexity of operation, it would be beneficial for law enforcement to take an active role in establishing partnerships with industry, to provide input on the design and functionality of new surveillance technologies. In addition, agencies working with industry in the development of surveillance technology may obtain prototype equipment at a reduced, or no cost for acting as a beta-test site.

The relevance of this topic to law enforcement, and government as a whole, was determined by scanning professional journals, newspapers, and magazines. The importance of the issue of surveillance technology is more evident as it becomes the subject of more symposiums and conferences. The University of Illinois at Chicago's Office of International Criminal Justice (OICJ) conducted their Seventh Annual Futures Conference on Technology and Crime in March of 1993.¹⁹ The President's Office of National Drug Control Policy, with other organizations, sponsored a "Tactical Technologies and Wide Area Surveillance International Symposium in November of 1993."²⁰

This issue of technology is of personal interest to the author as well. The sub-issues were identified by use of a Futures Wheel, (Figure 1, Page 10) and round table discussions with professionals with varied surveillance experience. Participants included three investigators, a lieutenant and captain from a sheriff's department. The issues were further investigated by a literature search conducted with the Infotrack information system located in Fresno State University's Henry Madden Library.

Law enforcement managers must be cautious not to become overwhelmed with

the endless problems facing society today. To do so, as former presidential Budget Director Richard Darman warned, would be a "now-nowism", which he defines as "our collective short-sightedness, our obsession with the here and now, our reluctance to adequately address the future."²¹ This study will provide the reader with information to help prepare for the impact of *future* surveillance technology on the investigative function in the next five years.

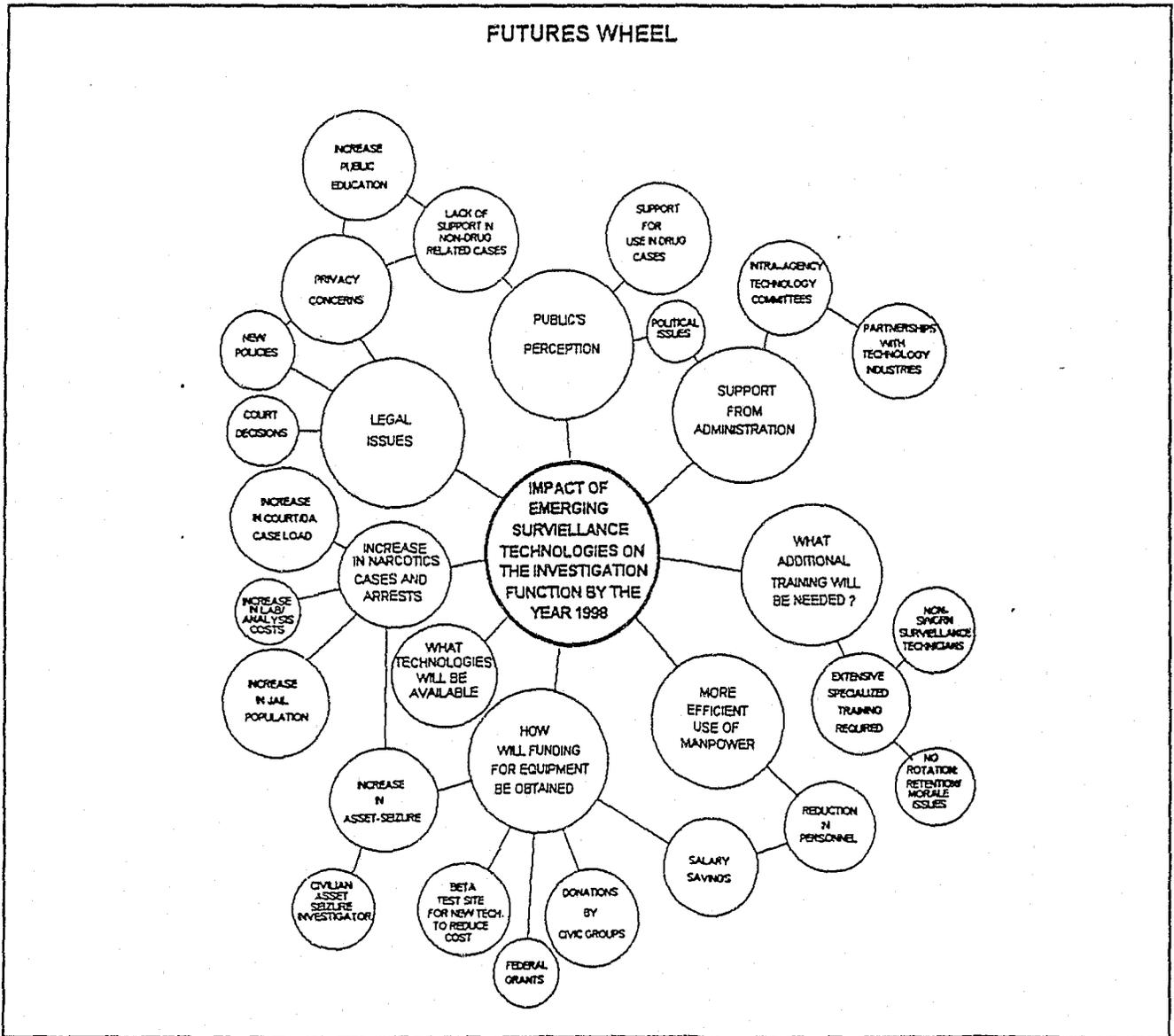


Illustration 1

FUTURES STUDY

This segment of the project will combine several methods of futures research and analysis. Trends and events important to the future of the issue, "*How will emerging surveillance technology impact the investigative function by the year 1998?*", and sub-issues of this study will be identified. The process used to extract these trends and events is a "structured brainstorming" method known as the Nominal Group Technique, or NGT. The nominal group consists of professionals from disciplines that are associated with the issue and underlying issues.

The data generated by the NGT panel will be used to assess the probability of different futures. This will be accomplished with the aid of two computer programs, SIGMA and X-MPACT. X-MPACT adjusts the probability of occurrence rating for each event by taking into consideration how each event impacts the other. SIGMA will use the resultant probability scores for each event to generate sets of occurring events, in chronological order as potential future scenarios. Non-occurring events are identified by inference.

The potential scenarios will be reviewed and placed into groups. From these groups three scenarios will be selected. One scenario will cover the future that may occur if no action is taken to alter the future. This is the nominal Scenario. The next future will be the most likely, or the normative. The third scenario will be the hypothetical, a worst case scenario of what could happen.

From these scenarios potential policy can be developed and tested using the SIGMA program to assess the policy impact. This segment will close with a discussion

of what was learned by using this process.

Nominal Group Technique Panel

As discussed earlier, the NGT is a structured brainstorming process designed to yield the maximum amount of information, without some of the problems common to small group dynamics. Panel members are introduced to the topic and sub-issues by the facilitator. Care is taken not to influence the ideas generated by the members. Members are instructed to write all ideas down individually, then the information is collected quickly, one idea per member at a time. The data is recorded on a flip chart. Clarifications can be made after all thoughts have been collected, and input is requested from the group as a whole to minimize finger-pointing that can stifle the creative thought process.

Once all items are written down, the group will rank the list and, in this case reduce the list to the ten most important trends and events. The voting is done on 3X5 cards to insure anonymity. The panel will then forecast the probability of the events occurring, and the level of the trends identified. The process of collecting the individual assessments is a "Delphi" method, if a second iteration is used.

The participants in the NGT for this study will be identified by their general occupational description. This was done to insure the anonymity of all participants, allowing them to speak freely within the group. The participants were as follows:

- Captain from a mid-sized police department assigned to Investigations
- Commander from mid-sized police Department, Investigations
- Sergeant from a mid-sized police department, assigned to narcotics
- Consultant from Westinghouse Law Enforcement Division

- Assistant County Public Defender
- Commander from a mid-sized police department, Investigations/Patrol

While all participants were sought due to their expertise in fields related to the topic and/or related sub-issues, there are other reasons they were selected. The Captain was contacted due to his experience in commanding the Investigations Division. The Captain also offered some additional insight as he is an amateur law enforcement historian, and a graduate of Command College. With his understanding of the NGT process, and grasp of historical trends and events, it was felt he would be helpful in keeping the group focused and moving forward.

The Investigations Commander from one of the local police departments was selected due to his interest in technology, as well as his experience in investigations. The Commander, who handles both patrol and investigations, was picked for his experience in the practical application of surveillance equipment and his administrative experience in the procurement of new equipment. The Sergeant from the mid-sized police department was selected for similar reasons. The Sergeant has participated in many investigations utilizing sophisticated video surveillance equipment. He has also tested and purchased some of the newest equipment available.

The consultant from Westinghouse was selected due to his knowledge of surveillance equipment as well as his experience as a former DEA Agent. The consultant, with an undergraduate degree in physics, gave additional insight to the shift by technology companies from military to civilian use. Westinghouse recently created the Law Enforcement Division for this very reason, then acquired Audio Intelligence Devices,

Inc. Audio Intelligence Devices provides a wide range of surveillance equipment to many Federal, state, and local agencies.

The Assistant Public Defender was selected for some insight into the legal aspects in the application of new surveillance technology. In addition, he is interested in computers, and served as a deputy district attorney for a number of years. It was also felt he would help balance the dynamic of the group considering all the law enforcement personnel participating.

The panel members were first contacted by phone and provided with an overview of the Command College, and its philosophy regarding the preparation for potential futures facing law enforcement. The Topic and three main sub-issues of this study were explained to each member, along with why they were selected and what needed to be accomplished. A follow-up letter was sent to each member confirming the date, time, and location. A copy of the letter of invitation is included as attachment "A".

On Wednesday July 7, 1993 the panel members assembled in the County Board of Supervisor's conference room to participate in the NGT. After an introduction of the participants, a flip-chart page with the topic and three identified sub-issues was posted and was read aloud. Small posters with the definition of a trend; "a series of events that are related by which change can be measured over time", and event; "a discrete, one time occurrence", were also posted after the definition was explained. The group was also provided with a copy of the futures wheel to help stimulate their thinking in relation to trends and events that could be important to the topic or related issues.

The panel was then asked to individually write down as many trends as they could

think of, related to the topic. An example was given as the *miniaturization of electronic components*. Specifically, the size of hidden voice transmitters, commonly called a "wire", has been reduced significantly in the last ten years. Ten years ago the wire was the size of a pack of cigarettes, today it is the size of a bic lighter, in five years it will be the size of a postage stamp, and in ten years it will be smaller than a pin.

After the trends were collected and listed on a flip-chart, the panel identified the top ten and ranked them in order of their importance to the topic. A total of 28 trends were identified (Appendix A, Table 1). The panel then individually forecasted the level of each of the ten trends. The levels were expressed numerically for; five years ago, two years from now, and five years from now. To establish a baseline or point of reference, "Today" was given a level of 100. As an example, if a trend doubled in five years, it would have a value of 200. If the trend level was reduced by half in five years, it would be assigned a value of 50. A period of five years was selected due to the exponential rate at which technology is advancing. A longer period of time would compromise the validity of this study.

This process was then repeated with the group to compile a list of 20 forecasted events (Appendix A, Table 2). Once the top ten events were identified, the panel forecasted the percent of probability that the each event would occur in the next five years. The scale used was; 100% indicating it would occur, 0% indicates it will not happen, and 50% shows it is just as probable that it won't, as it will happen. The group then estimated the probability of occurrence at two years, and the number of years until the probability first exceeds zero.

Finally, the panel was asked to estimate the impact of each event on the topic. This was expressed on a scale from 1 to 10, and whether the impact is positive, negative, or both. Summaries of the median results for the trends and events are listed in Tables 3 and 4, respectively.

TRENDS

- 1 **Level of Technology Transfer; Military to Civilian**
- 2 **Level of Miniaturization of Electronic Components**
- 3 **Level of Traditional Law Enforcement Funding**
- 4 **Level of Public Intolerance for Violent Crime**
- 5 **Level of Privatization of Surveillance Services**
- 6 **Level of Database Connectivity/Relational Searches**
- 7 **Level of Crime as a Political Issue**
- 8 **Use of Databases on Public Purchasing/Lifestyle**
- 9 **Availability of Radio Frequencies for Law Enforcement**
- 10 **Level of Alternate Funding Sources Identified**

Topping the list of trends is the *shift of technology companies from military to civilian markets*. The most readily adaptable consumer of this military technology is law enforcement. The group felt that with the continued downsizing of the military, defense contractors will continue to look to the law enforcement markets. One panel member indicated that Westinghouse was already marketing a hand held radar, designed for the military, that can see through walls. As depicted in Figure 1, the panel median level indicate that the technology available may double in the next five years.

TABLE 1

TREND PROBABILITY ANALYSIS
NGT Panel Medians, N=6

TREND #	Trend Statement	Level 5 Years Ago	Level Today	Level In 2 Years	Level In 5 Years
1	Technology Transfer; From Military to Civilian	30	100	160	245
2	Level of Electronics Miniturization	40	100	250	400
3	Level of Decrease in L.E. Revenue Sources	40	100	150	200
4	Level of Public Intolerance for Violent Crime	70	100	150	200
5	Privitization of Surveillance Services	50	100	180	300
6	Level of Public Data—Base Connectivity	50	100	150	250
7	Level of Crime as Political/Campaign Issue	80	100	135	165
8	Level of Purchasing/Lifestyle Data—Base use	50	100	175	200
9	Level of Radio Frequencies Available to Law Enforc.	50	100	120	150
10	Level of Alternate Funding Sources for Law Enforc.	50	100	180	240

The graph also indicates a majority of the panel felt that this sharing or conversion of technology would continue to increase over the same period.

This is reflective of the panel's belief that the Clinton Administration will continue with its military downsizing. This will force technology companies to find alternate

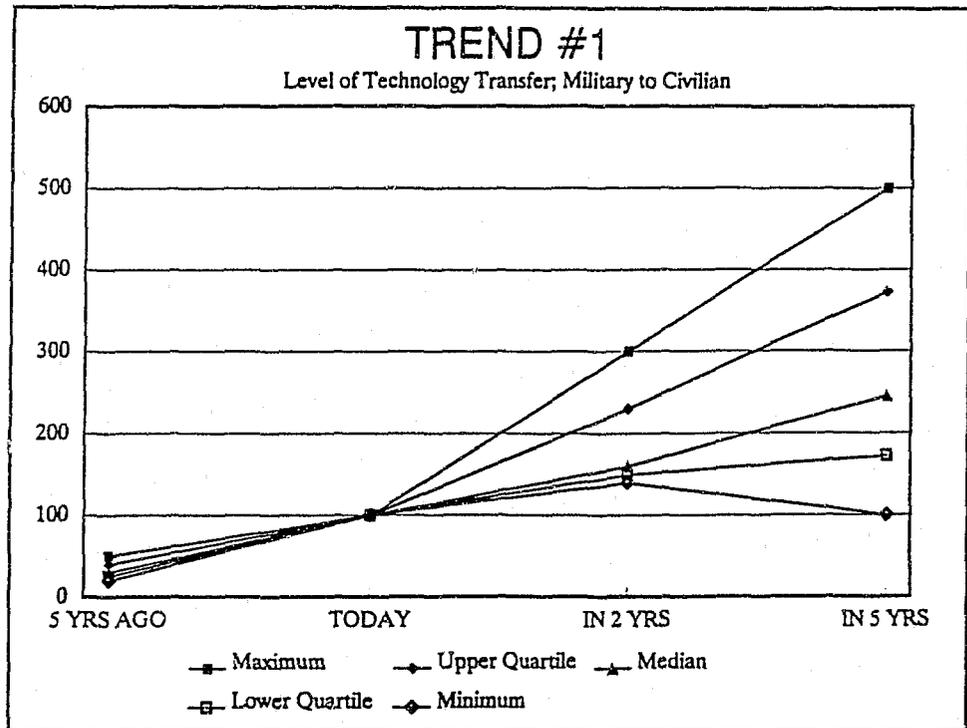


Figure 1

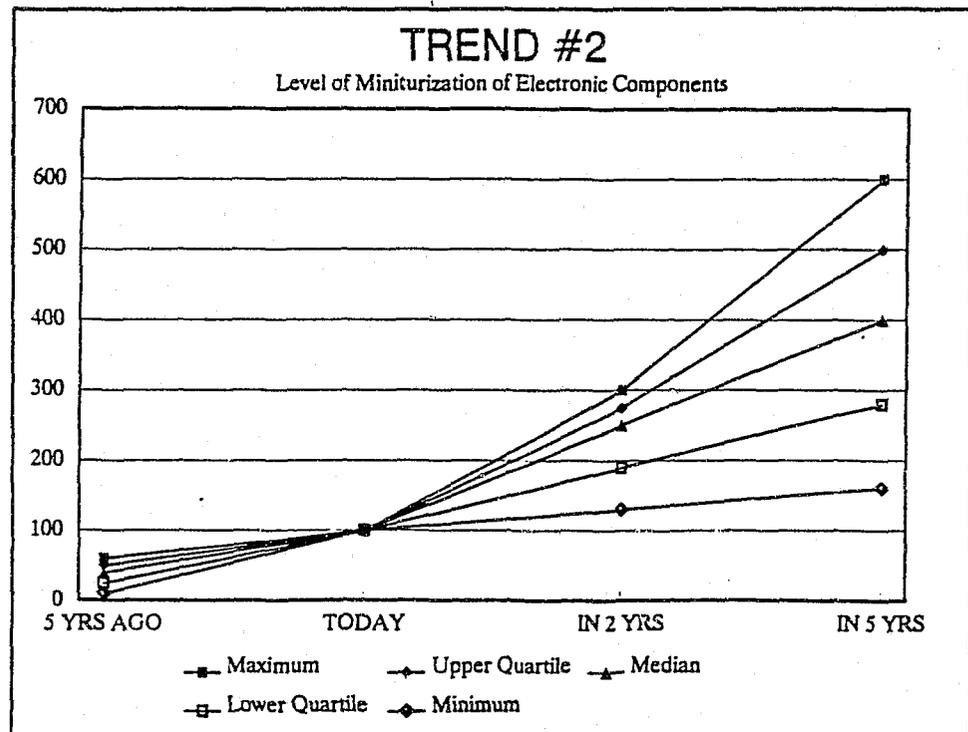


Figure 2

markets, or change products.

An objective trend forecasting the *Level of Miniaturization of Electronic Components* was chosen as the next in importance to the topic. The data used to support this trend was based on the expertise of the panel members and scanning of law enforcement magazines. As depicted in Figure 2, the panel felt there would be almost a four-fold reduction in the size of electronic components. There was some discussion by the group that with miniaturization comes more powerful products with increased capabilities. The group felt that this was crucial to improving surveillance equipment. Again, as Figure 2 shows, all participants felt there would be some reduction in the size of these devices in the next five years.

T r e n d

number three, the *Decrease of Traditional Law Enforcement Funding*, deals with an objective trend that all panel members are familiar with. All participants have suffered

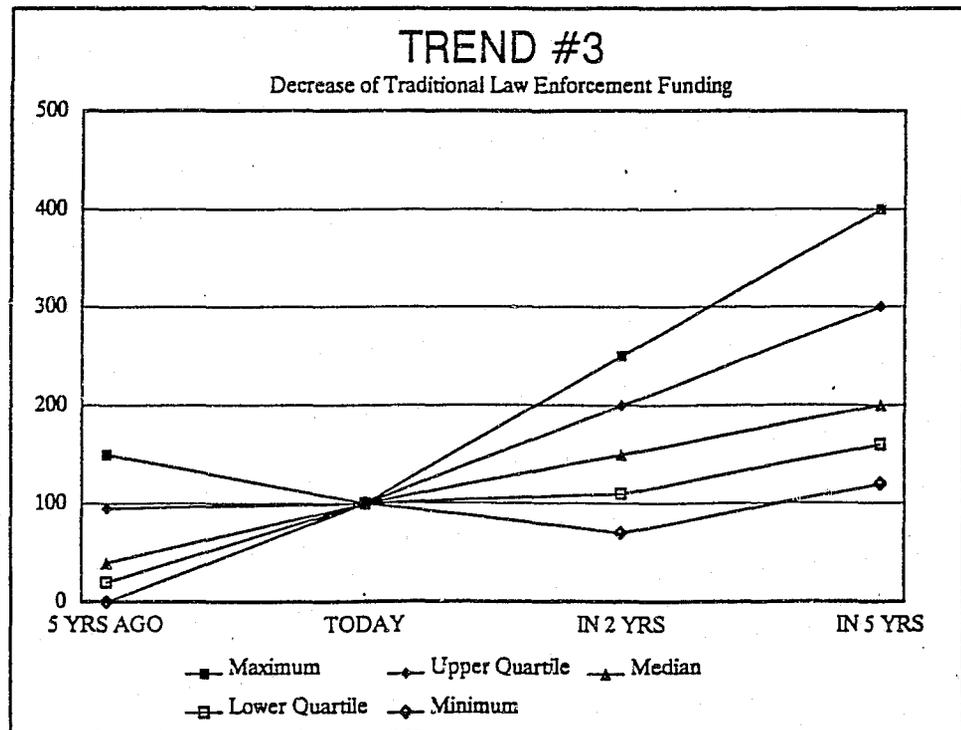


Figure 3

reductions in traditional funding for their organizations in the last five years. Most members agreed that this trend will continue, cutting funding further. It was felt this will inhibit to some extent the acquisition and possibly the development of new surveillance technologies. The median forecast in figure three shows the panel forecasted reduction in funds of 200% over the next five years. The graph also indicates that some members felt that, although the reduction in funding may slow over the next two years, law enforcement will continue to experience reductions over the next five years.

The fourth trend reflects the panels' feeling that the public has had enough violence, and will soon start taking action of some type if it does not stop. Trend number four, the *Level of Public Intolerance for Violent Crime*, has been fueled by recent events such as the 1992 Los

Angeles riots. There was a general consensus that the public, fed up with this blatant disregard for life, will increase support for law enforcement. This would

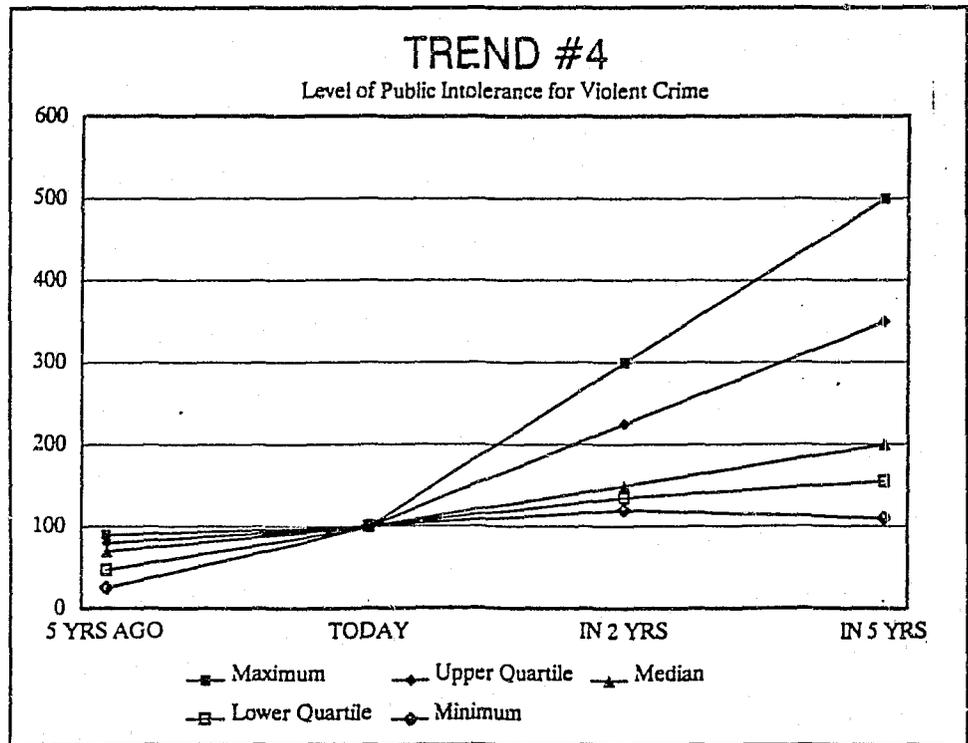


Figure 4

Increase the potential funding for, and use of, emerging surveillance technologies.

Trend number five, the **Level of Privatization of Surveillance**

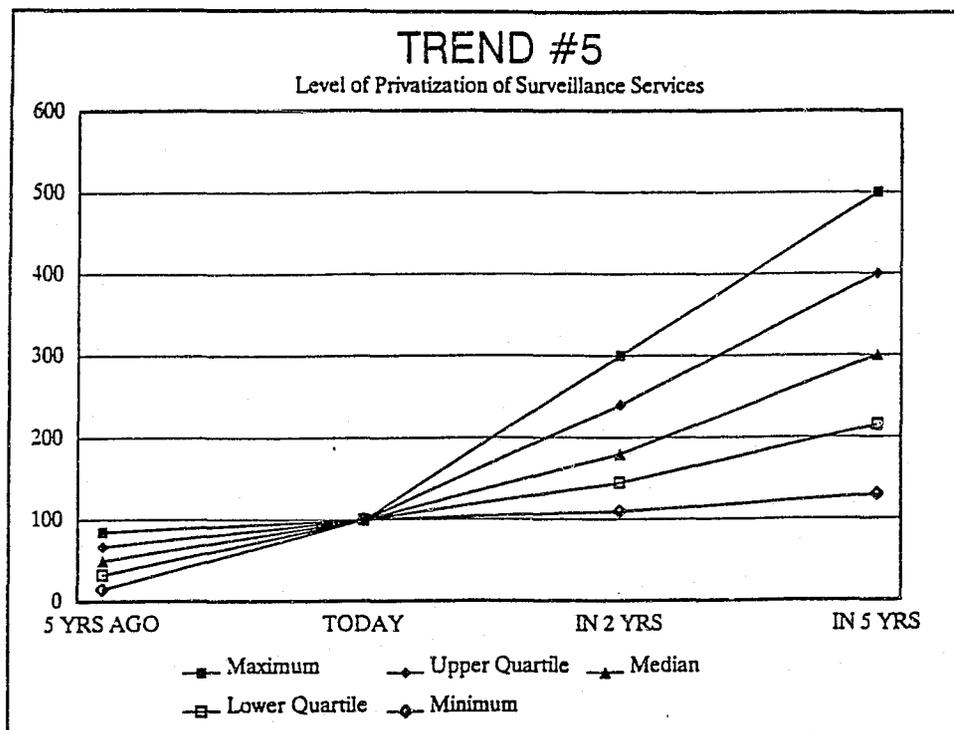


Figure 5

Services, addresses both the cost of new equipment, and the investment in training. As Figure 5 shows, the group felt that there would be almost a 200% increase in private providers of surveillance services that will contract with law enforcement. Some discussion indicated that by specializing, the operators of this equipment would deliver better results. There would also be considerable cost savings by not having to purchase the equipment. This may be one way departments of the future deal with (sub-issue three) the training requirements for future surveillance technology.

Trend number six deals with the increase in the linking of computer information systems in the criminal justice system throughout the United States. The panel felt that this **Level of Database Connectivity** and associated **Relational Searches** would continue to increase. This has been demonstrated recently with Department of Justice

linking the California Identification System (Cal-ID) Automated Fingerprint Information System (AFIS) with the Western Identification Network (WIN). This allows access to fingerprint databases in seven Western states. Law enforcement can now search these databases for a suspect from latent fingerprints from crime scenes.

Another project that underscores Trend six is the proposed linking of several computerized mug-shot systems in California.

Officer Wally Breifs from the Sunnyvale Department of Public Safety in organizing several agencies who utilize TFP™ (Technology for Productivity) based mug-shot systems. The system, which Santa Clara, Santa Barbara, Sacramento, and Tulare Counties have interest in, will allow these agencies to share digitized photographs electronically on standard phone lines. This is important as it demonstrates these agencies reluctance to wait for the State to get their State-run (CAL-Photo) imaging concept moving again.

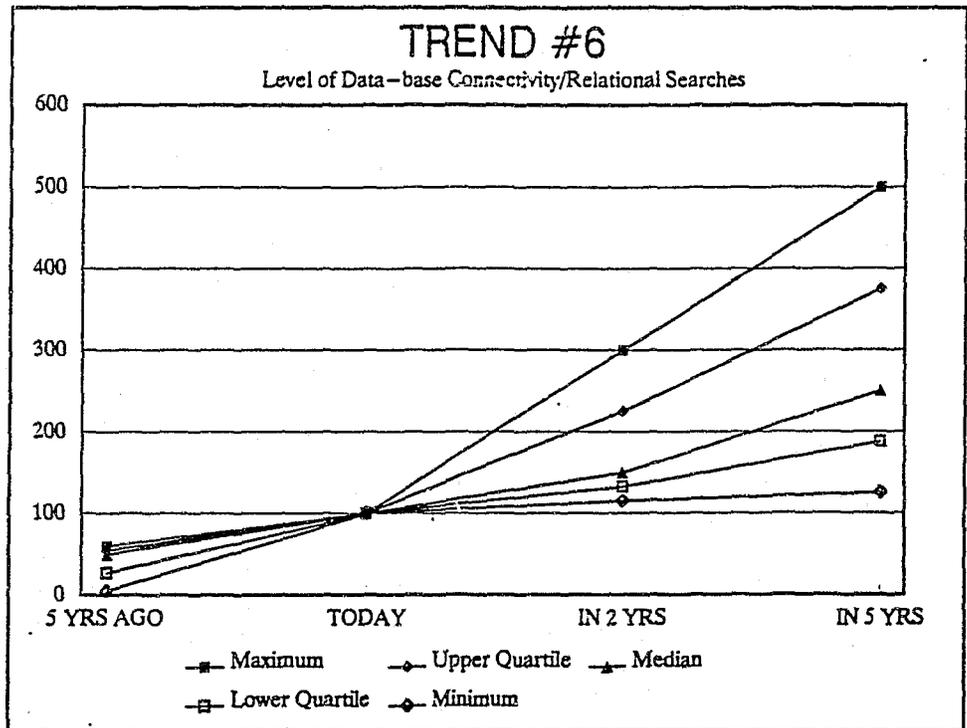


Figure 6

Relational searches, the ability to search specific fields in a number of databases for some pattern or commonality, will continue to expand. The group indicated that this would be important to the topic in two ways. With current public concern growing over access to information, the courts may restrict such searches. Conversely, the courts may view this as a means of eliminating the need to contact or detain innocent people, and encourage it's use.

The next trend reflects the groups concern over the *Level of Crime* becoming more of a *Political Issue*, than a law enforcement issue. The panel felt that as crime increases, the

perception of how elected officials are responding will become more important than the crime itself. It was felt that this could impact the topic by prompting politicians to find additional funding

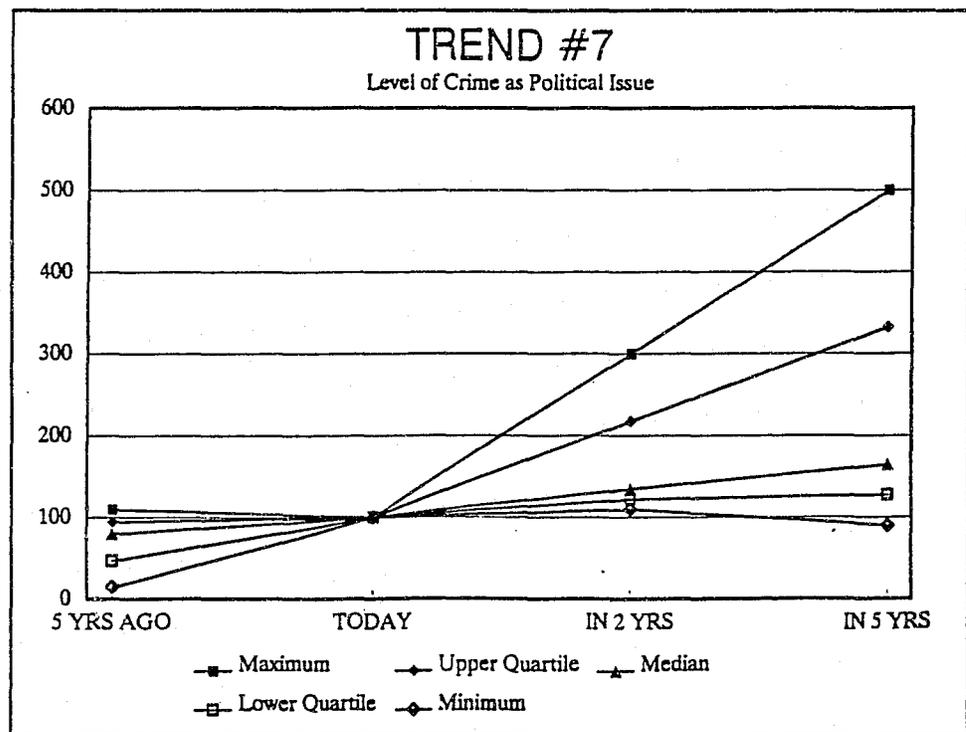


Figure 7

for law enforcement, and scampering to take credit for innovative, high-tech methods to solve the problem.

With most retail businesses utilizing product scanners at the cash register and for

inventory, it was a natural step for someone to start compiling and analyzing this information. The next step will be to see who is buying what. This is already being done for marketing

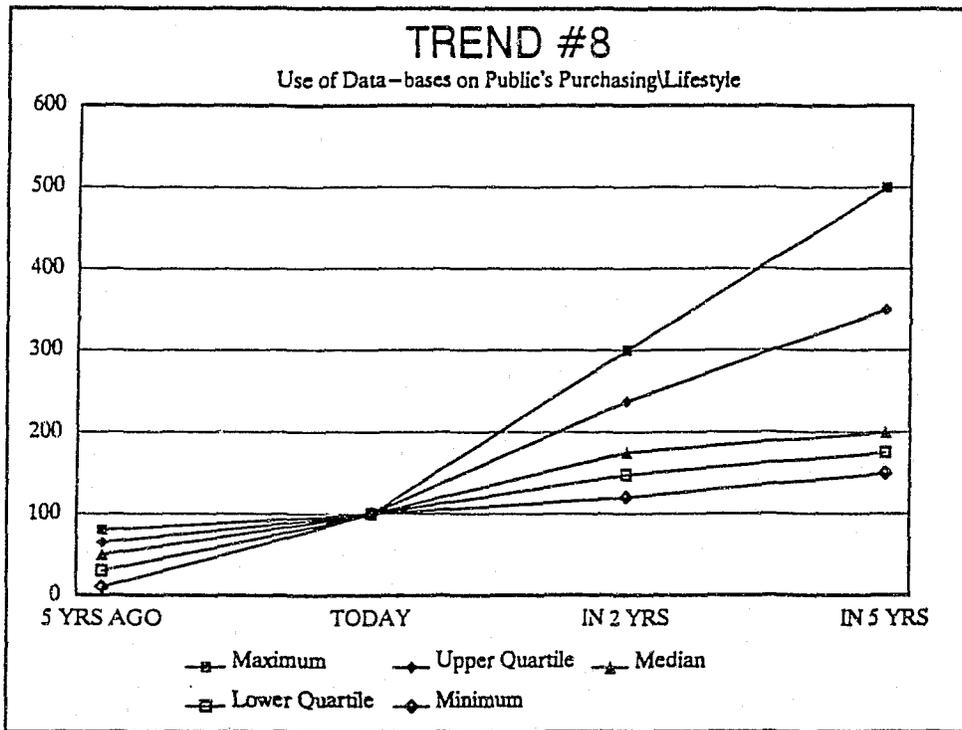


Figure 8

research by companies such as Shoppers Hot-line. With the increase use of the debit card, the computer now knows who is buying what. Panel members felt that the use of this information will double in the next five years (Figure 8). As with Trend six, the public may mandate limits on access to this information, or, with the attitude of there is too much crime, the public make allow law enforcement access to this information.

One area of surveillance that has always limited investigators is the availability of sufficient radio spectrum for surveillance equipment. As emerging technology is taken from the drawing board and put in the field, having a clear frequency to operate on is still a problem. With the new trunked radio systems being put into use by more agencies,

and advances in digital communications, the panel felt that the *Availability of Radio Frequencies for Law enforcement* would increase by 75% in the next five years. This is shown in the panel median response in Figure 9. This forecast is supported by a recent announcement by the FCC (Federal Communications Commission) of their plan to double

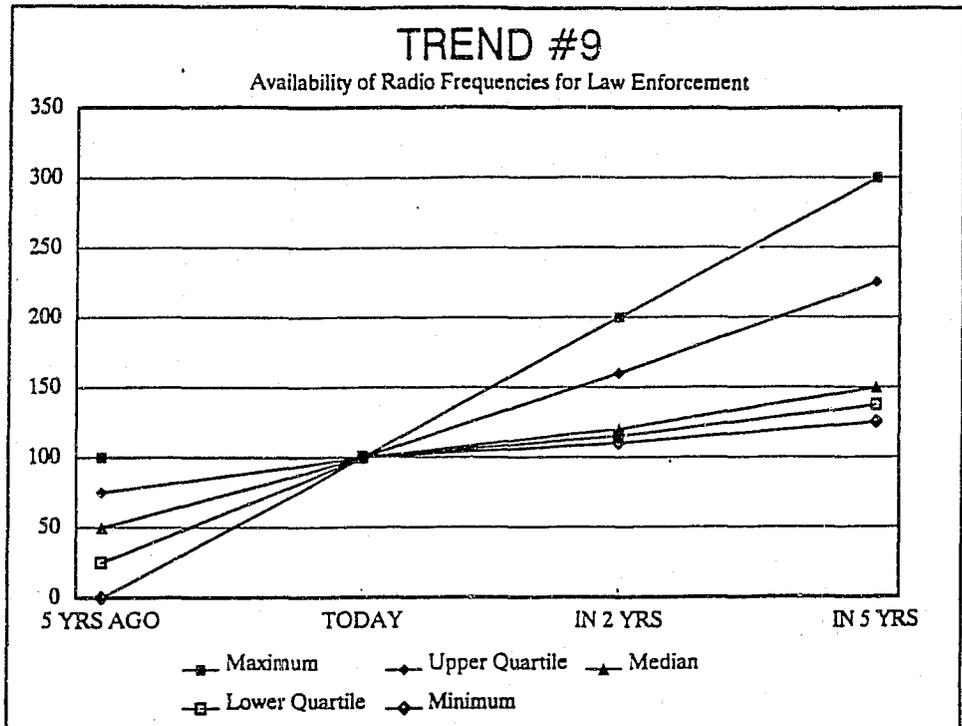


Figure 9

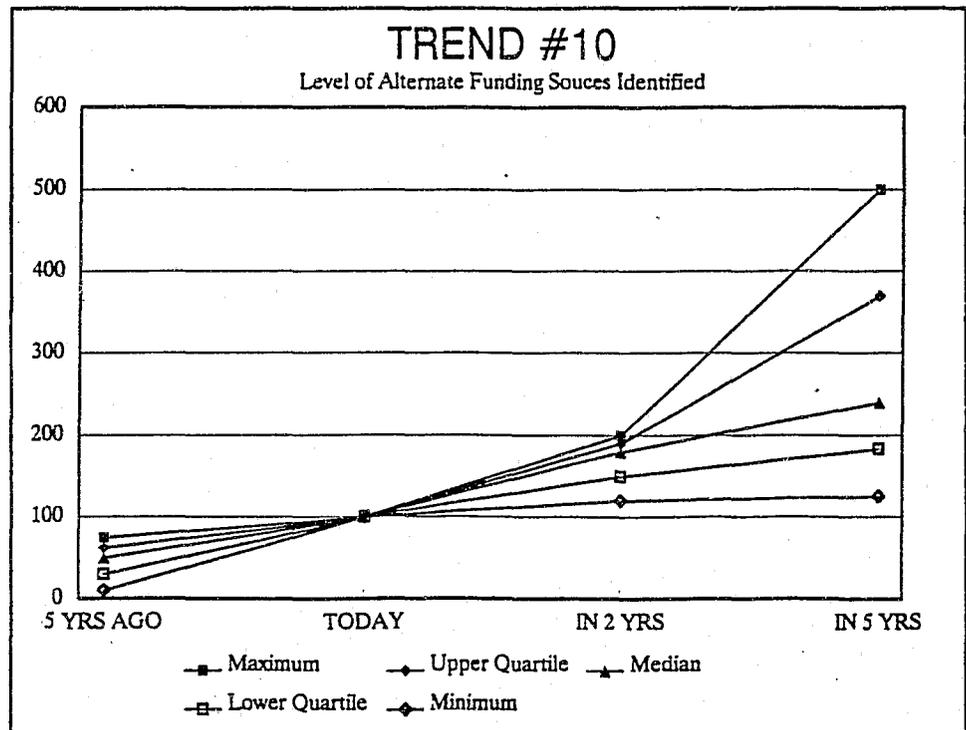


Figure 10

the number of available radio channels in the public safety frequency bands.²²

The last trend pertains to the panels belief that the ***Level of Alternate Funding Sources Identified*** for law enforcement will grow by 150% over the next five years. As Figure 10 illustrates, the panel felt that with the reduction in traditional funding combined with the publics demands for less crime, alternate funding would have to be located. It was projected that agencies would continue with assessment districts, traffic enforcement, as user fees. In June of 1993 U.S. Department of Justice Bureau of Justice Assistance (BJA) released a monograph addressing alternate funding for anti-drug programs.²³ This seems to reinforce this trend.

Events

- 1 Willie Brown Elected Governor of California
- 2 Terrorists Blow-up the United Nations Building
- 3 All Narcotics Legalized
- 4 Warrantless Wire-taps Legalized for Law Enforcement
- 5 Three Supreme Court Justices Appointed by President Clinton
- 6 Supreme Court Justice Shot by Drug Lord
- 7 Discovery of Major Criminal Cartel Operating in the United States
- 8 Pope Assassinated While Visiting the United States
- 9 Discovery of Inexpensive Superconductor
- 10 Earthquake of 8.0 or Greater Hit Japan

Event number one (E1) forecasted the probability of ***Willie Brown Being Elected Governor of California***. As shown in Figure 11, the panel's forecasted median

TABLE 2
EVENT PROBABILITY/IMPACT ANALYSIS
NGT Panel Medians, N=6

Event #	Event Statement	Years Until Probability Exceeds "0"	Probability; 0-100%		Impact on Issue If Event Occured	
			In 2 Years	In 5 Years	+	-
1	Willie Brown is Elected Governor of California	2	10	25	0	8
2	Terrorists Blow-up the UN Building	2	50	70	1	3
3	All Narcotics Legalized	5	0	10	0	8
4	Wire Taps Legal for Law Enforcement	4	0	25	8	0
5	3 Supreme Court Justices Appointed by Clinton	2	20	30	0	10
6	Supreme Court Justice Shot by Drug Lord	2	5	30	0	8
7	Discovery of Major Criminal Cartel Operating in the US	2	5	40	2	3
8	Pope Assassinated While Visiting US	3	0	10	0	3
9	Discovery of Inexpensive Superconductor	2	10	35	10	0
10	Earthquake of 8.0 or Greater Hits Japan	0	10	50	0	5

probability was 25%. Probability did not exceed zero until 1995 due to the election date, at which time the group felt there was only a ten percent probability. Given Brown's opposition to asset-seizure laws, the panel felt his election would negatively impact the topic.

The next event, (Event 2) indicated that **Terrorists Blow-up the United Nations Building** sometime after 1994. The

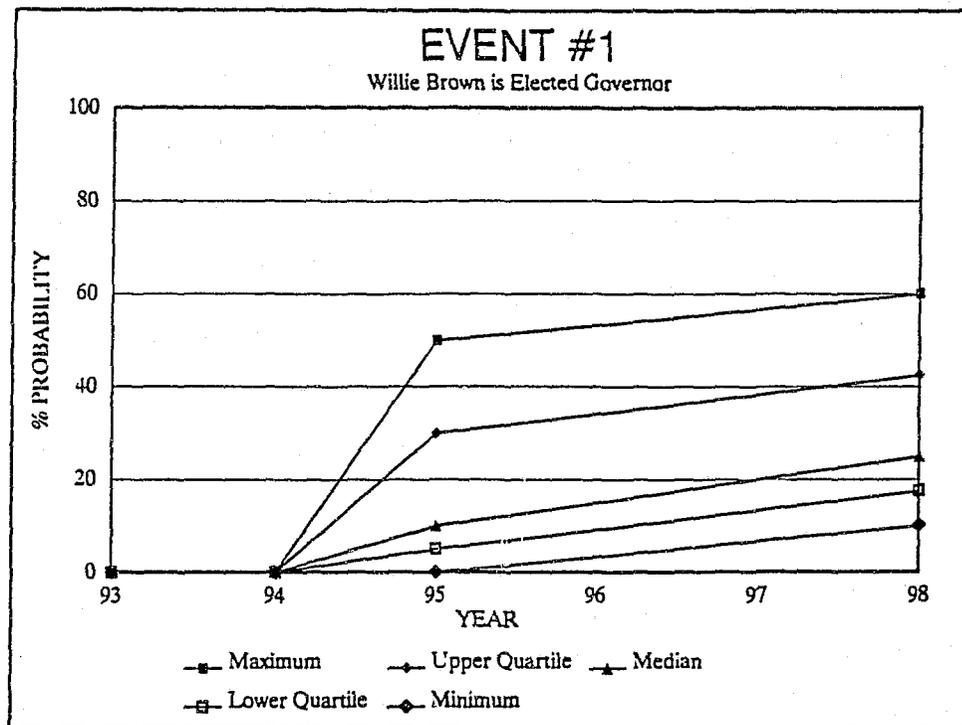


Figure 11

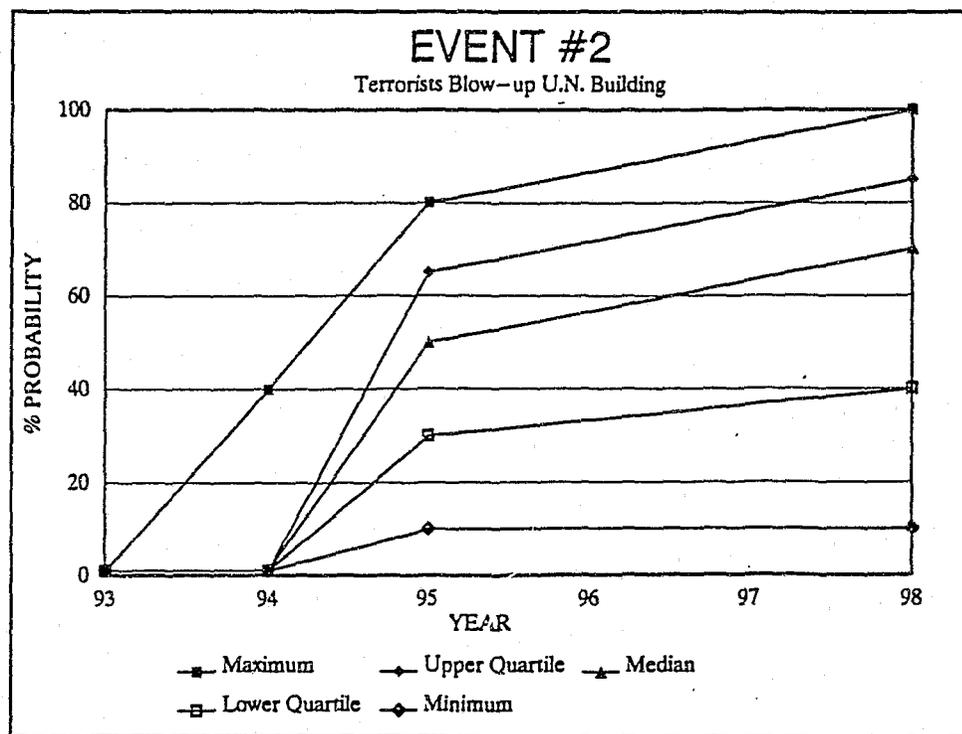


Figure 12

probability climbs to 50% in two years to 70% in five years. The group felt the with the World Trade Center bombing this year, that the UN was a likely target in the next few years.

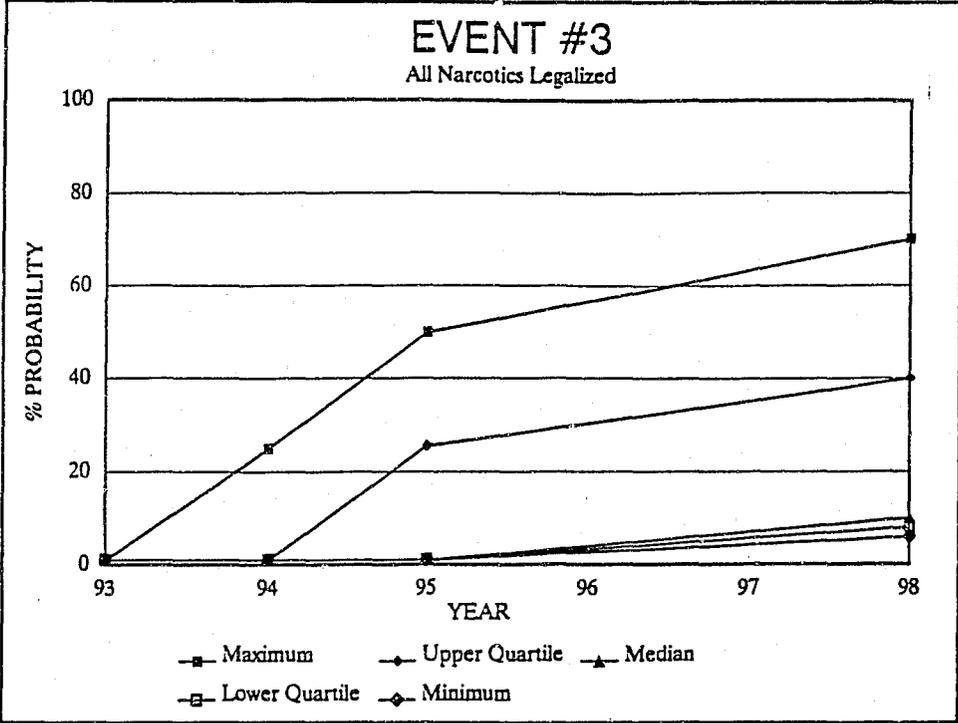


Figure 13

As depicted in Figure 13, the panel forecast that there was no possibility **All Narcotics are Legalized** (Event 3), until 1998. At that time there was only a ten percent chance of legalization. Some

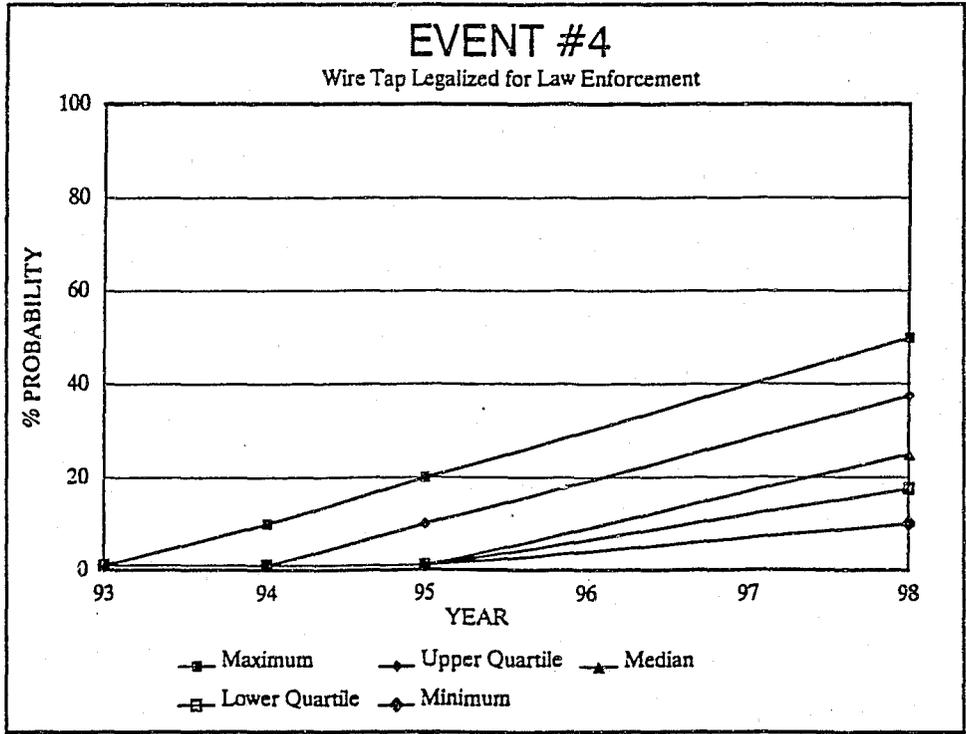


Figure 14

comments were the growing crime rate could lead to this action so that all law enforcement resources could be committed to the prevention and investigation of violent crimes.

Event number four (E4) made *Wire Taps Legal for Law Enforcement*, without a court order. Members felt there a 25% probability of this happening by 1998. Consensus was fairly close on this event, as shown in Figure 14. Again, the growing concern by the public that law enforcement is too restricted to deal with the escalating violence. People will be more willing to sacrifice some privacy to improve law enforcement's ability to protect them in the future.

President Clinton moves closer to the 100% mark of Event five with his nomination of a second appointee to the Supreme Court in 1993. Event Five (E5) states *Three Supreme Court*

Justices (will be) Appointed by Clinton. The median probability expressed by the panel indicated 30% by 1998. The high probability was 80% and the low only nine percent. This may be reflective of

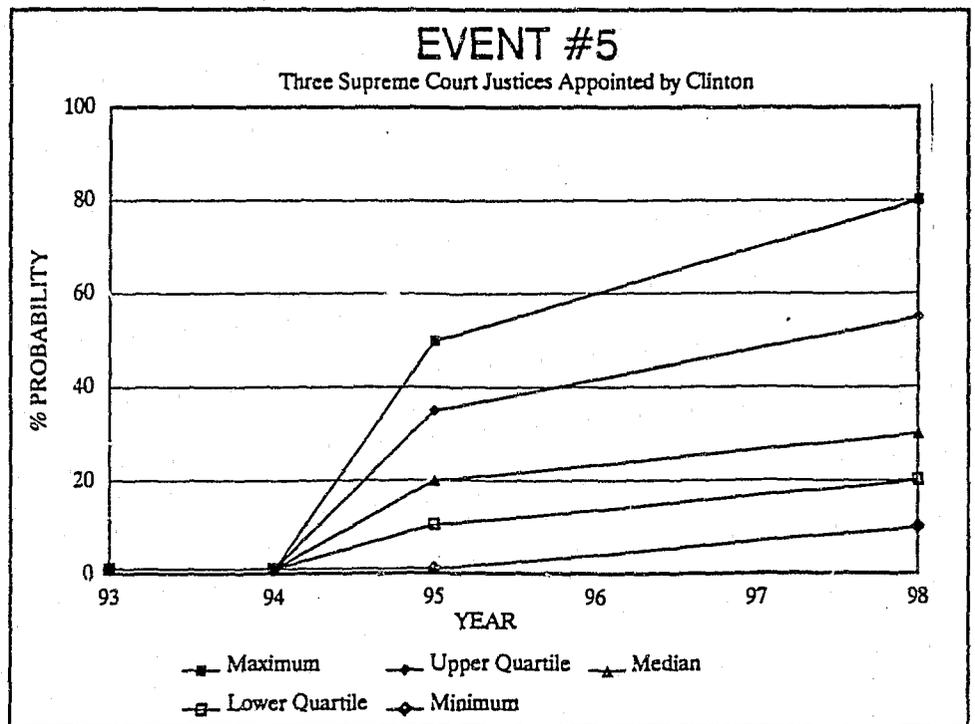


Figure 15

the groups uncertainty as to whether any more justices will retire during Clinton's tenure.

The diversity in forecasts for Event six (E6) was very similar

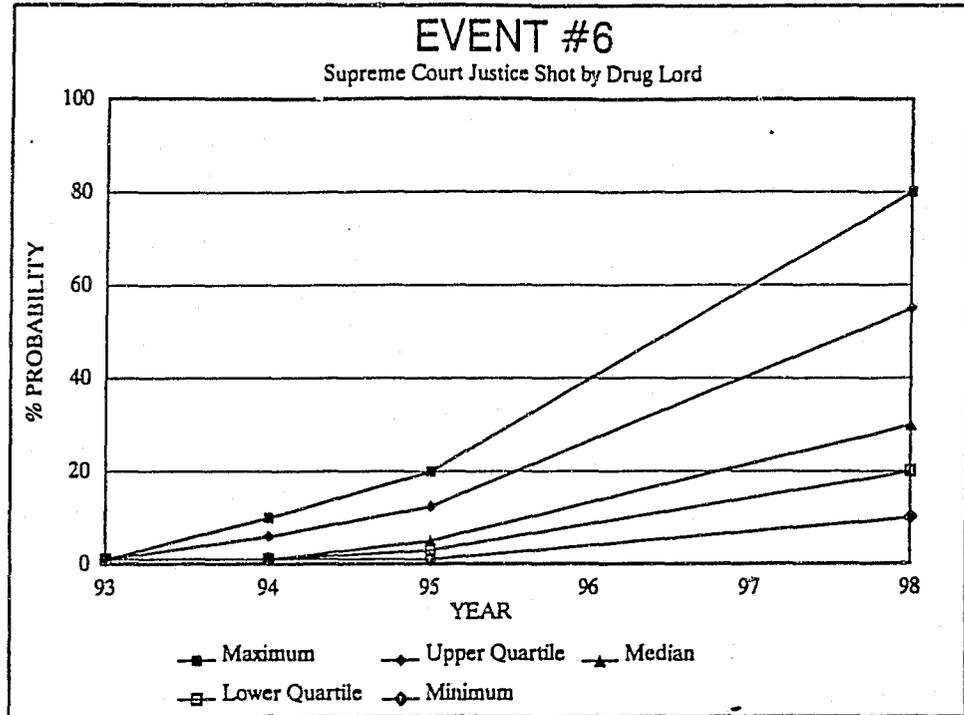


Figure 16

to E5. Event six forecasted a *Supreme Court Justice Would be Shot by a Drug Lord.*

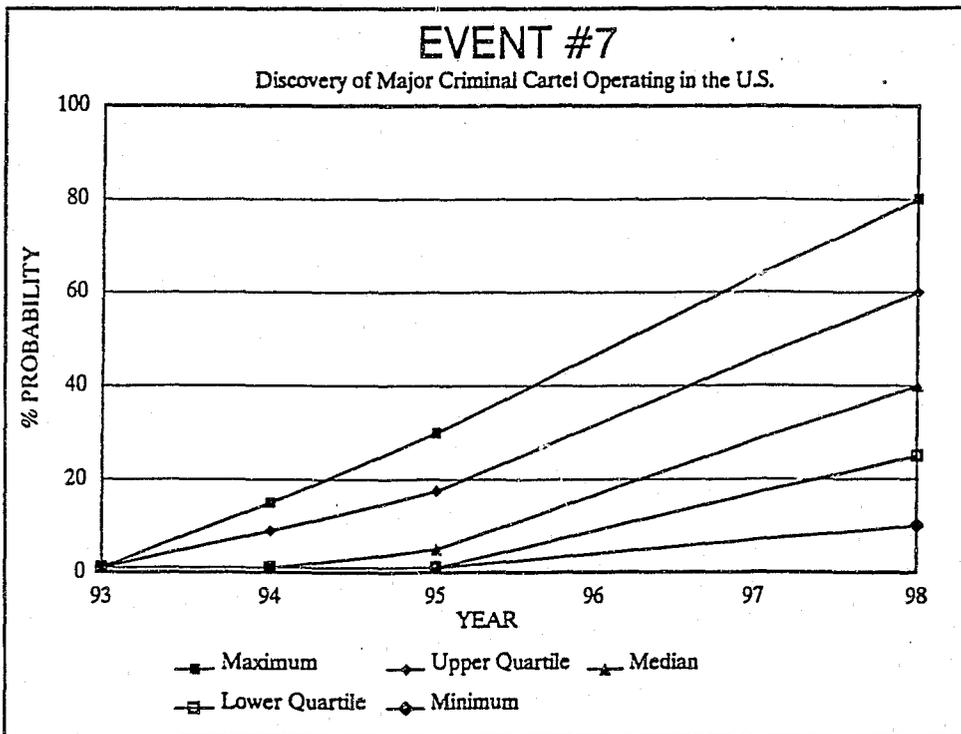


Figure 17

Again the median probability was low at 30% by 1998. Some panel members felt that with the shooting at the CIA Building earlier this year, and the World Trade Center

Incident, security for federal building would be increased, reducing the possibility of a shooting.

Event seven (E7) deals with the **Discovery of a Major Criminal Cartel Operating in the United States**. The groups assessment of this event were fairly scattered with a high probability of 80% and a low of ten percent. Some members felt that if such a large Cartel existed, there would have been evidence by now. Other members felt that the current rise in crime might indicate the existence of more organizations. All participants felt that such a discovery would lead to an increase in surveillance activity, and would positively impact the issue.

With the obvious rise in political terrorism, both in the US and overseas, the group felt there was a possibility that the **Pope could be Assassinated While Visiting the United States, (Event 8)**. The low probability was only 2% and the High was 75% reflecting the

diversity of the group on this event. Some members felt that advancements in Surveillance technology would reduce the possibility of an

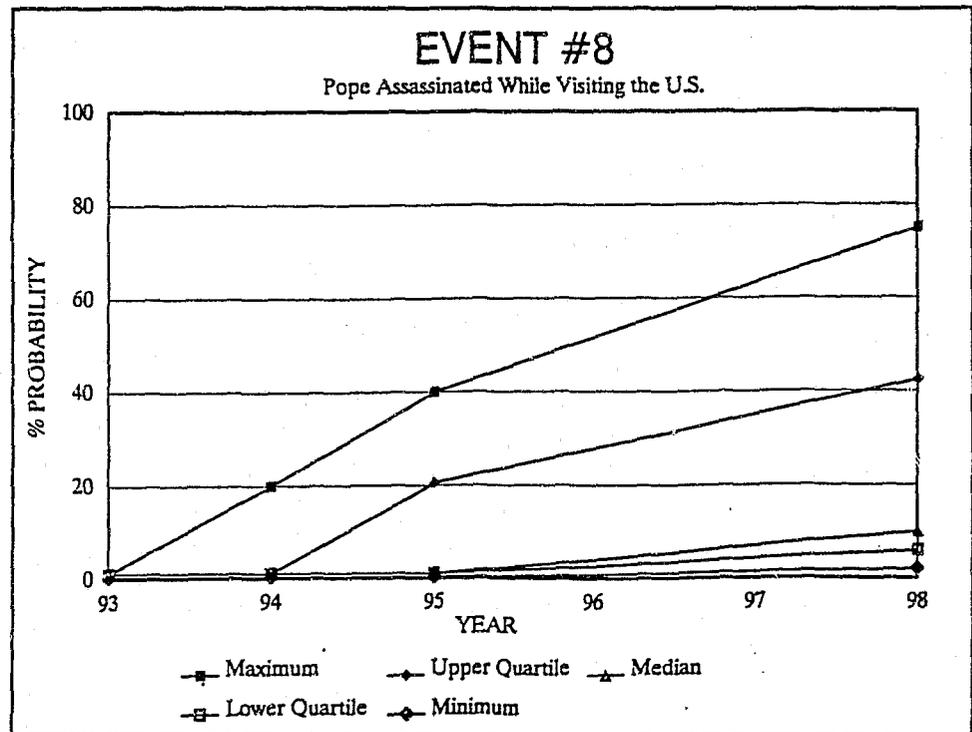


Figure 18 .

assassination while other felt that the Pope is always close to crowds and might be a likely target for political-religious extremists. The median response indicated the event would not

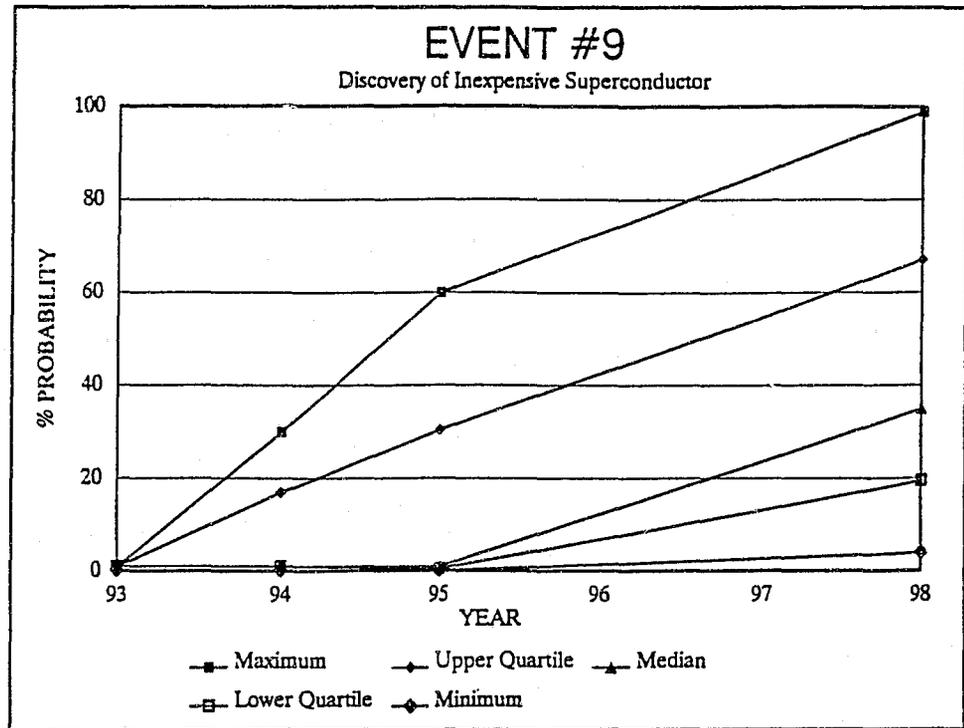


Figure 19

occur before 1996, and the probability by 1998 was only ten percent.

Event nine (E9) is the *Discovery of an Inexpensive Superconductor*. Such a discovery would result in a cascade of technological advancements and quantum leaps in computer processing speeds and capabilities. Again group opinion was wide on this event. The high was 99% probability and the low four percent with a median of 35% by 1998. Some participants felt that improvements would be made slowly to semiconductors, as has been the case with the progression from the 8088 processor to the 486-40DX chip over the last ten years. Others felt that chip technology was overdue for a breakthrough

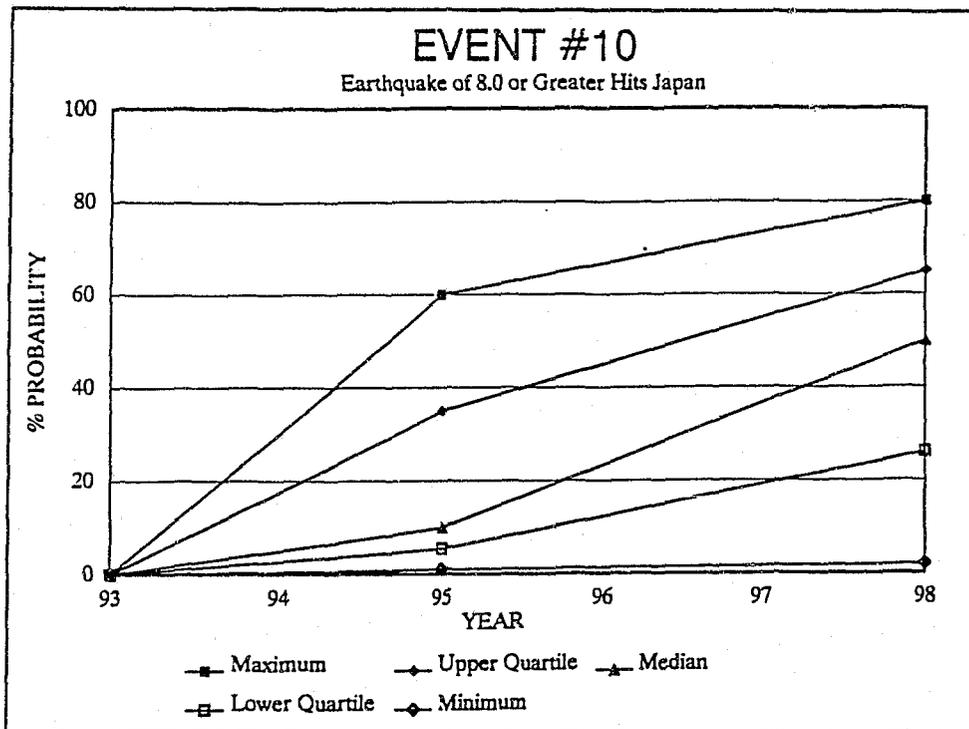


Figure 20

The last event was of particular interest to the group. The political and economic affect resulting from an *Earthquake of 8.0 or Greater Hitting Japan*, (Event 10) was

discussed at length. Most felt that, although technological research may suffer initially, that California's economy would benefit from increased exports. About a week after the NGT Japan experienced an earthquake of 7.8 magnitude. The graph (Figure 20) depicts the probability starting in 1993.

Cross-Impact Analysis

Cross-impact analysis is a method of adjusting an event's probability based on the impact that other events will have on it. Although somewhat subjective, it serves to stimulate the researcher and others as to the social, environment, economic, political and technological impact that each event may have on the other. By listing the events in vertical and horizontal, graph like fashion, a matrix is formed. Starting from left to right, the researcher asks, if event two (E2) happened, how would it impact the probability of

event one (E1) occurring? If the initial probability for E1 is 30, and the impact of E2 would reduce that to 10, then the value -20 is placed in space below E2 and right of row E1. If E2 has a 65% probability of occurring, then 65% of -20 ($.65 \times -20$), or 13, is subtracted from the initial probability of E1, or $30 - 13$, leaving an impacted probability of 17.

A spreadsheet template called X-MPACT was used to simplify this process by doing the calculations automatically when the estimated impact values are entered. In assessing the event impacts, the author met with a recent graduate from Fresno State University with an undergraduate degree in history with an emphasis in political science. This was done to reduce the potential law enforcement bias in assessing some of the political impacts. The Event Cross-Impact Matrix can be seen on the following page. The results were graphed to better illustrate the change, as seen in figure 21.

Some discussion took place where larger impacts were assessed. This included the impact of event two on event one, the impact that terrorist blowing up the UN building would have on Willie Brown being elected Governor. It was felt that liberals tend to take office when people feel secure and things are generally going well. The public would be more likely to elect a conservative if acts of terrorism are occurring.

Regarding event four increasing the probability of Brown's election by 25%, it was theorized that the conservatives must have been in control for a long time for wire taps to be legal without a warrant (E4). This would increase the feeling by the public that a liberal may help balance-out the conservative trend.

Another large impact was event three reducing the probability of event six by 34%.

TABLE 3

Cross Impact of Panel Forecasted Event Median Probabilities
10 X 10 Cross Impact Matrix

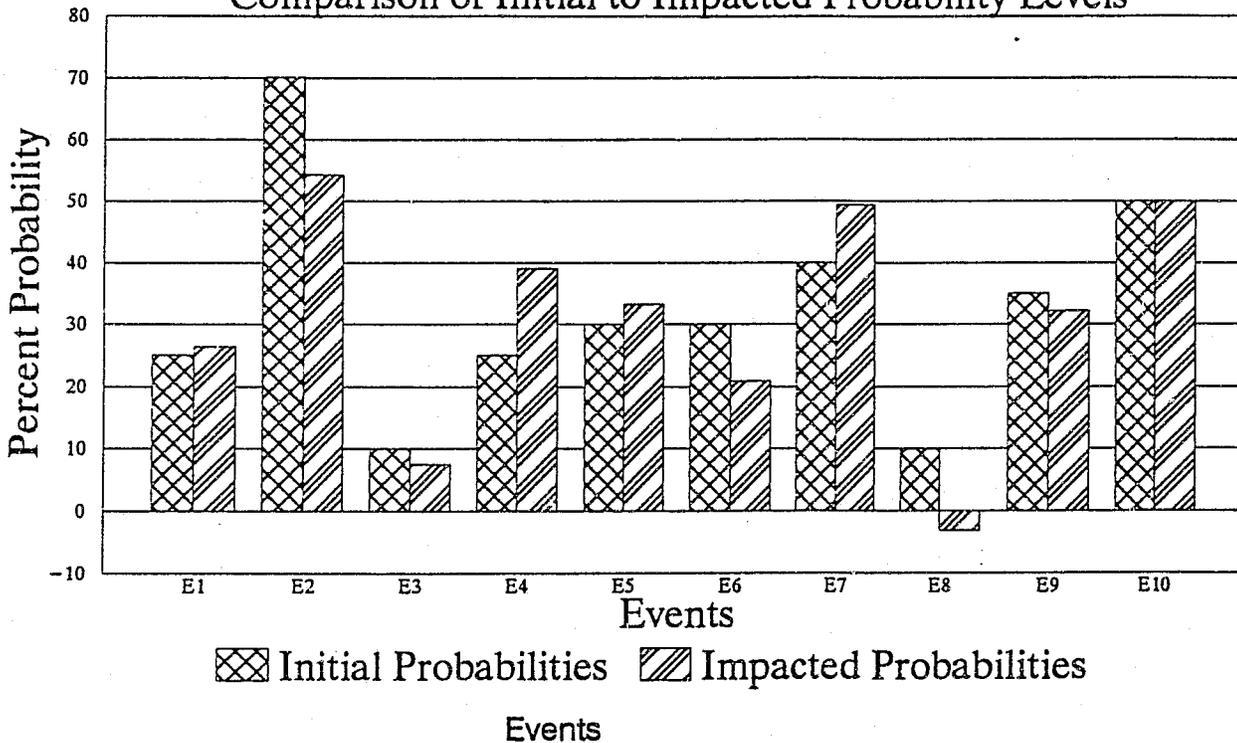
Initial Prob V	E 1	E 2	E 3	E 4	E 5	E 6	E 7	E 8	E 9	E 10	Final Probabilities
E1	30	X -20	2	25	5	-15	-20	-25	10	10	E1 28
E2	65	0	X 0	-40	0	-10	0	-10	-5	0	E2 46
E3	22	10	2	X -5	2	-10	-10	-5	5	0	E3 19
E4	27	-15	15	-2	X -10	15	5	5	10	0	E4 40
E5	45	0	0	0	1	X 10	0	0	0	0	E5 49
E6	34	0	-5	-34	-10	-2	X 5	-4	-2	0	E6 20
E7	39	0	5	-15	25	-3	5	X 2	1	0	E7 47
E8	25	0	-10	5	-10	2	-10	0	X -5	0	E8 12
E9	40	-2	0	2	0	0	0	0	0	X -5	E9 38
E10	38	0	0	0	0	0	0	0	0	X	E10 38

Events

- E1 Willie Brown Elected Governor of California
- E2 Terrorists Blow-up the UN Building
- E3 All Narcotics Are Legalized
- E4 Warrantless Wire-Taps Legalized for Law Enforcement
- E5 Three Supreme Court Justices Appointed by President Clinton
- E6 Supreme Court Justice Shot by Drug Lord
- E7 Discovery of Major Criminal Cartel Operating in the US
- E8 Pope Assassinated While Visiting the US
- E9 Discovery of Inexpensive Superconductor
- E10 Earthquake of 8.0 or Greater hits Japan

Event Cross Impacts

Comparison of Initial to Impacted Probability Levels



- E1 Willie Brown Elected Governor of California
- E2 Terrorists Blow-up the UN Building
- E3 All Narcotics Are Legalized
- E4 Warrantless Wire-Taps Legalized for Law Enforcement
- E5 Three Supreme Court Justices Appointed by President Clinton
- E6 Supreme Court Justice Shot by Drug Lord
- E7 Discovery of Major Criminal Cartel Operating in the US
- E8 Pope Assassinated While Visiting the US
- E9 Discovery of Inexpensive Superconductor
- E10 Earthquake of 8.0 or Greater hits Japan

Figure 21

Here there would be less motivation for a drug lord to kill a Supreme Court justice (E6) if all narcotics were legal (E3). A pattern that emerged was the impact of an act of

terrorism on other major crimes. These events always reduced the probability of others occurring by heightened awareness, and the resulting increased security. This is demonstrated in the impact of event two (terrorists blow-up U.N. Building) on event six and event ten (earthquake of 8.0+ hit Japan).

The largest change in probability was in Event two (terrorists blow-up U.N. Building), which dropped from 70% to 54%. This was due to the forecasted impact legalized wire tap would have in identifying such plots, as well as the impacts of event six and event eight previously discussed. (See Figure 21). Another surprise was the increase in event four, wire tap. This was due largely to the impacts of violent acts in event two, event six, and event eight. Another factor was the impact of event nine, the discovery of a cheap superconductor. It was felt that such a discovery would provide the technology for less intrusive, non-human, computer speech analysis on wire taps. It is believed that this scanning for key words, phrases, and patterns would be more acceptable, and have a greater chance of acceptance.

Scenario Development

The next step involves the selection of possible events for use in the three potential future scenarios; the *nominal*, *normative*, and *hypothetical*. If no action is taken to alter the events relevant to the issue, the *Nominal Scenario* will result. If action is taken to manage the issue, moving toward the desired future, the result is the *Normative Scenario*. The *Hypothetical Scenario* will be a "what if" future utilizing events and trends that could result in a worst-case scenario.

To aid in the selection of the events a computer program known as SIGMA was

used. SIGMA takes the ten events and impacted probabilities from the Event to Event Cross-Impact Matrix, and generates sets of potential future events. A different chronological set of events is generated each time based on a random seven digit number selected by the researcher. Each scenario has some events occurring and some not happening. Using the same seven digit (seed) number twice, will result in the same events occurring.

SIGMA can also be used to test the impact of potential policy change. By assessing the impact of a new policy on certain events, the probability of those events can be reduced, and the scenario run again with the same seed number to test the results.

After entering the impacted probabilities a total of 34 scenarios were generated with SIGMA. The results were entered into a database program and the events were sorted by their frequency of occurrence. It was interesting to note that event five, (three Supreme Court justices appointed by President Clinton), was the most common event, occurring in 17 of the 34 scenarios. Event five had a 33% X-MPACT probability, which is less than the 50% rate of occurrence in the scenarios. Event three, (all narcotics legalized), had only an eight percent probability, yet it was present in 16 of the scenarios.

The largest, most frequent independent family of scenarios contained; terrorists blowing up the U.N. Building (E-2), all narcotics legalized (E-3), a Supreme Court Justice is shot by a drug lord, (E-6) and the discovery of a new major criminal cartel operating in the U.S. (E-7). This pattern occurred three times. This set of events was selected as the Hypothetical Scenario.

The next family of scenarios occurred three times. This group had Willie Brown elected governor of California (E-1), Terrorists blowing up the U.N. Building (E-2), wire taps legalized for law enforcement (E-4), the discovery of an inexpensive superconductor (E-9) and an earthquake of 8.0 or greater hits Japan (E-10). In two of these three scenarios an additional event was present. Event five, Clinton appointing three Supreme Court judges and Event seven, the discovery of a new major criminal cartel operating in the U.S., which are also in the hypothetical scenario were in these scenarios. These scenarios were chosen as the most likely, or nominal scenario.

The events for the normative scenario were selected from three different SIGMA scenarios based on the desired outcome. Events four, five, seven, and nine were selected for this scenario. All three scenarios also contain trends and events from the candidate list generated during the NGT process.

Nominal Scenario

September of 1993 found most law enforcement agencies in California stretching resources in an attempt to adopt an operating budget that started in July. With the State taking more local revenues, agencies continue to look for alternate funding sources. Some local governments are successful in passing utility taxes, while some anti-tax factions use this to feed the civil unrest that is still simmering since the Los Angeles riots in 1992.

Personnel assigned to investigations tend to fare the budget struggle better, even with less overtime since they still have access to asset-forfeiture monies. This means new equipment with enhanced capabilities. With the continued down-sizing of the

military, technology companies are scrambling to capture the law enforcement market as a consumer for existing and emerging surveillance technology. In fact some major companies have invited investigators to participate in research and development symposiums.

New technology has posed a problem for the investigative managers who have purchased new equipment. One case involves a vehicle tracking system bought by a mid-sized police department. The supervisor could not find any investigator who could, or who wanted to operate the unit. It seems officers would rather use five investigators, in five cars and do it the old way. When the supervisor checked with the Personnel and Training supervisor, he found that the aptitude and skill level of new recruits was declining. This was attributed to a reduction in the general population of the age group typical of entry level officers. Those with higher skill levels are being hired by the private sector where the pay is much better.

In January of 1995 Governor Willie Brown took office and further cuts to local revenues were announced. These monies are to be diverted to education and homeless programs. Brown announced that the Department of Corrections would have their budget cut by \$150 million so that the State could balance the budget. Brown proposed that a newly-constructed 10,000 bed prison in Modesto be utilized to house the homeless.

The U.S. Supreme Court ruled that asset seizure is unconstitutional as it is; "cruel and unusual punishment", to take property from a criminal, regardless of how it was obtained or used. The July 1995 decision was lauded by Governor Brown who indicated that law enforcement has been stealing from the criminals for too long. Now many

narcotics units that had been funded by asset seizure monies will be disbanded. With a reduction in narcotics enforcement associated property and violent crime explodes. This further taxes the limited patrol resources available, and forces agencies to change the criteria for responding to crimes.

In August of 1995 terrorists blow-up the United Nations Building. With the escalation in the Middle-East conflict, it is suspected that one of the extremist factions is responsible. The President issued a statement indicating that emergency funding was to be provided to hire 500 additional FBI agents to insure such an event does not occur again. In addition, a Technology Committee was formed from agencies throughout the U.S. to identify methods of utilizing technology in counter terrorist measures.

In February of 1996, a breakthrough in semiconductor technology was made when researchers at TRW discovered an inexpensive, room-temperature superconductor. Industry sources indicate that within six months the first 4086 processor chip should be available for marketing. For law enforcement, Dick Tracy wrist radios/computers will soon be a reality. Computers will now teach you how to operate them with voice recognition.

Much of the planned improvements in technology suffered a temporary set-back when an earthquake measuring 8.1 on the Richter-scale hit Japan on July 4, 1996. Many California businesses realized a temporary increase in both domestic and export sales in a market now void of Japanese influence. This gain was short lived due to Japan relocating the majority of their production facilities in recently acquired property in Mexico. In the September 1997 Fortune 1000 magazine, experts are forecasting a 60% increase in profits for Sony-MCA, largely due to the benefits of the US-Mexico Free Trade

Agreement of 1994.

Bowing to pressure from politicians and the publics growing intolerance for acts of violent crime and terrorism, The U.S. Supreme Court upheld a recent conviction that will have far reaching effects. The court ruled in favor of the FBI who prevented an assassination of the Pope by conducting a wire-tap, in good faith, based on a reasonable suspicion that the defendant was plotting the murder. This widening of police powers is the first step toward stemming the tsunami of crime that threatens to blanket the US.

Normative Scenario

In the spring of 1994 California Law Enforcement is on a financial rebound. When the ballot measure mandating funding levels for criminal justice agencies was passed in November, the message was clear in Sacramento. Politicians were quick to jump on the bandwagon, introducing legislation to expand asset seizure law. This resulted in continued funding of narcotics enforcement throughout the state, significantly reducing the availability of drugs.

With the continued down-sizing of the military, defense technology companies are now courting the law enforcement market. This alliance with civilian law enforcement produced a new generation of enhanced, user friendly surveillance devices. It was one of these devices that resulted in a landmark Supreme Court decision. In October of 1994 the Cellular Threat Analysis Monitor alerted officials that certain key phrases had been detected indicating that a bombing may take place. Upon review of the recorded data, and interception of further calls from the same cellular phone, officials thwarted a plot to blow-up the Capital Records Building in Los Angeles.

Increased judicial support of law enforcement was apparent when a similar decision authorized the interception of alpha-numeric pager information. This was based on a case involving a plot by a drug lord to kill a US Supreme Court Justice. This was the first case heard by the Supreme Court since Clinton's third Justice was confirmed in April of 1995. Public video monitoring proved its value when data captured by surveillance satellites and video cameras led to the discovery of a plot to kill the Pope in May of 1996. The Threat Analysis Computer recognized a pattern of three vehicles driving the same route the Pope was to take, at the same time of day, over a two week period. Wire tap evidence resulted in the arrest of the Mid-East Terrorists a week before the Pope entered the country.

As a result of the increased application of technology in investigations, POST, (the California Commission on Peace Officer Standards and Training) announced that computer and communications equipment operations will now be a mandated portion on the basic academy for new police officers in 1997. In addition, POST will now conduct a Technology Institute program for Managers who have completed POST's Command College executive training course. This was good planning on the part of POST, as Hughes Aircraft announced in September of 1997 they had discovered a room-temperature superconductor. This led to a series of breakthroughs in miniaturization of surveillance devices, including video systems and hand held voice, speech, and language analysis computers. This new program has helped managers better understand and utilize this emerging technology.

This increased technology led to a 50% increase in efficiency for law enforcement,

and the additional asset seizure funds in 1998 provided sufficient revenue to fund both law enforcement, and a new alternatives to incarceration program. This led to an overall reduction in crime of more than 20% by the end of 1998.

Hypothetical Scenario

In the Fall of 1993 California law enforcement agencies were struggling to find enough money to operate for the next year. Most must cut their staffing by 10% to make up for revenues taken by the State. With the anti-law enforcement sentiment still present from the Rodney King Incident, there is no public support for any public safety tax. Agencies are left with the remaining asset seizure law for additional funding. And if the legislators have their way, that will soon be gone.

President Clinton's appointment of a third Justice to the Supreme Court in July of 1994 started a series of decisions that exasperated law enforcement throughout the US. The first decision rendered in September of 1994, virtually repealed all asset seizure laws, both state and Federal. This was based on what the court perceived as a continued abuse of police powers.

In August of 1995 the Supreme Court ruled it was illegal to use miniature video cameras for public surveillance. The Court ordered the removal of such cameras, resulting in the elimination of video systems from the front of the United Nations building. In January of 1996 a Middle-East terrorist group bombed the U.N. building, killing 40 people. Security Officials were criticized for not finding alternate methods for security once the cameras were removed.

In response to reduced services by law enforcement, and the escalating crime rate,

legislation was passed in February 1996 repealing the Controlled Substance Act, legalizing all narcotics. While property crime dropped initially, violent crime increased by 25% by persons under the influence of drugs. Property crime then edged up due to the drug companies doubling the price of popular recreational drugs. Health costs soared in response to the increase in drug related accidents, addiction treatment, overdoses, and AIDS cases. This resulted in further cuts to law enforcement as the State struggled to find money to balance the budget.

In October of 1997 a major criminal cartel was discovered operating in the U.S. The conviction of the members was overturned by the Supreme Court when it ruled that secondary use of public database information, and relational searches between these databases, was an invasion of privacy. This became another stumbling block for law enforcement's efforts to reduce costs by using more surveillance technology. The increased capabilities of new surveillance would have allowed investigators to get more done with less personnel.

In January of 1997 two major defense contractors indicated they were near bankruptcy due to the downsizing of the military. The law enforcement market which once held promise for this faltering industry, was now soft from the enormous budget cuts suffered throughout California. Those technologies that had been developed for law enforcement, to help improve efficiency and reduce costs, could not be purchased due to lack of funds.

Conclusions

Surveillance Technology, like any tools utilized by law enforcement, must be controlled carefully. California law enforcement knows only too well what can happen if the public perceives an abuse of power by government. If law enforcement is to realize the many benefits of technology, policy must be in place to demonstrate an agencies commitment to it's proper use. The public's current sensitivity to the wealth of information being retained in both public and private databases should be heeded as a warning. Law enforcement needs to educate the public so they buy-in to the use of this information, and other technology.

Futures research is one of the basic components to managing any successful operation. By gathering as much data as possible on surveillance technology, a clear picture of the potential futures can be outlined. By adding scanning results and consideration of the STEEP implications, colors are added to the future picture. Digesting this information, with input from other experts, as in the NGT, starts to add a third dimension to the landscape. By refining this information using the trend and event forecasting, the cross-impact matrix, and the scenarios, the resolution increases and the future becomes vivid. Policy development becomes easier to understand and anticipate.

Policy Considerations

To insure that future technology is utilized by this agency, personnel that will operate, or are otherwise impacted by it's use will be requested to participate in the evaluation and selection of the equipment. Line personnel, supervisors, and management

will maintain their training as to the legalities in the use of future surveillance equipment. These employees will participate in the drafting of operational guidelines for the equipment.

Successful operations utilizing future equipment will be communicated to the agency, and, as much as possible, to the community. This will help maintain the support of the department and the community.

STRATEGIC PLAN

In the Futures Study, potential futures involving the research topic; *The impact of emerging surveillance technology on the investigative function by 1998*, were developed. The issue addresses organizational awareness of factors leading to the proper identification, integration, and use of emerging surveillance technology in investigations. To help understand the potential impact of such technology, trends and events important to the issue were forecasted and analyzed. This data was used to develop three potential futures relevant to the issue, to better understand the effect trends and/or events could have on the future.

Supplement: Normative Scenario

To better understand the potential future-state of the agency subject to study in preceding segments of this project, an additional scenario will be developed. This scenario supplement will depict that agency in the year 1998, based on the events and trends present in the Normative Scenario. This will assist in the analysis of the agency relative to policy development for moving from where the agency is now, to that desired potential future-state.

The Sheriff's Department continues to improve the quality of service it provides to the citizens of the County as the year 2000 nears. Legislative mandates for increased funding for law enforcement, which started with Proposition 172 in 1993, has enabled continued growth in this agency.²⁴ Increased personnel allocations for Patrol and investigations resulted from alternative incarceration programs. These programs are now administered by the County Corrections Department, separate from law enforcement.

The Sheriff's re-election in 1994 insured continued support for the narcotics unit, due to his strong commitment in this area. Productivity in narcotics investigations has tripled in the last five years. This is due to the increased personnel, as well as the new surveillance technology available. Additionally, the courts have relaxed their guidelines for the use of this new equipment, resulting in the detection of more crime. Investigators routinely access the live satellite image database on investigations. Officers utilize a gaschromatograph card for their Personal Digital Assistants to detect clandestine methamphetamine labs, and immediate analysis of suspected narcotics.

Employees participate actively in moving the department into the future. With the crime rate in the County edging downward, officers feel they have the right tools for the job, and are having an impact on crime. This increases the motivation of the employees and positively impacts community support.

The futures research yielded a better understanding of the potential impact of each trend and event on the issue, as well as on each other. By anticipating these impacts, a manager can develop policy to minimize the impact of trends and events that may negatively impact the issue, and reinforce those with a positive impact. This will increase the likelihood of success with the issue. This information will now be used in conjunction with an organizational analysis to develop a **strategic plan** for the successful implementation of emerging surveillance technology in investigations division of the target agency; the Tulare County Sheriff's Department.

The Tulare County Sheriff's Department is located in the center of California's rural San Joaquin Valley. The 360 sworn deputies serve a population of about 330,000

in this largely agricultural based area. Over half the county falls within the Sierra-Nevada Mountains, with the remaining land dedicated to Dairy, Citrus, and other farming endeavors. Of the nine incorporated cities in the county, the largest is Visalia, the County-seat, with a population approaching 80,000.

In the development of the strategic plan a mission statement will be drafted to communicate the plan objectives and guide the organization. Next, an in-depth analysis of the internal and external organizational environment will help anticipate obstacles and support for the plan. After plan alternatives are examined, an implementation plan selected will be constructed.

Mission Statement

The Investigative Division is committed to providing the communities it serves with the best investigative service possible to insure the detection, apprehension and conviction of criminals within this jurisdiction. Investigators will utilize the latest technology available to accomplish these goals, thereby increasing efficiency, reducing cost, and minimizing risk to both investigator and community. Investigations will be carried out by properly trained personnel, with consideration for the rights and expectations of the communities they serve.

Environmental Analysis

In an effort to identify environmental threats and opportunities critical to the success of the mission, trends and events discussed in the futures study were reviewed. These trends and events were evaluated for their degree of impact on the issue, then categorized by the *STEEP* (Social, Technological, Economic, Environmental, and

Political) model. The following is an analysis of those key threats and opportunities.

Social Environment

Threats:

The decrease in skills and aptitude of entry-level personnel (T25) will lessen the likelihood new investigators will want to use technical devices. This will hinder the implementation and success of new technology, and could lower morale if supervisors attempt to force the use of this equipment.

The increase in civil unrest (T12) will change the focus of managers and the community from investigations to patrol. The community will feel that placing more officers on the street will reduce the possibility of riots and demonstrations. To staff these positions, personnel and funds will be taken from investigations. This will impede the acquisition and implementation of emerging technology.

Opportunities:

Growing public intolerance for violent crime (T3) will increase public support for innovation, and funding for the implementation of innovative technology in law enforcement. The community will feel that such support may enable police to reduce or prevent the increase in crime.

The socio-economic composition of this jurisdiction are such that the threat

of increased substance abuse is constant. High unemployment, large migrant and minority populations, and exploding welfare roles are some of the contributing factors. This large population segment predisposed to narcotic use provides an opportunity in that drug related crimes will continue to require large manpower commitment. These investigations readily lend themselves to the use of new technology. If used properly, this new technology can reduce the reduction labor required for such undertakings.

Technical Environment

Threats:

The cost of new technology may prohibit its use by law enforcement. Expensive equipment is often thought of as a luxury by the department heads or the governing board of the agency. Such a position would inhibit an agency's ability to buy new surveillance technology.

Currently no agencies in the area are utilizing new technology for investigations. Agencies that consider such a move to the future may think it too risky. They may perceive that failure could lead to criticism for wasting time and money. This could stifle technical advancement in many agencies.

Opportunities:

The greatest opportunity now is the current technology transfer from the military to civilian applications (T1). Many of these technologies readily lend themselves to law enforcement use. With the continued downsizing of the military, manufactures will be motivated to expand and adapt their products for law enforcement.

As the level of database connectivity increases (T6) agencies will realize increased investigative capabilities. This will result in more solved cases, increased asset seizures, and better job satisfaction for the investigators. Such productivity will be recognized by other agencies, resulting in the proliferation of technology.

Environmental

Opportunities:

This Agency is located in California's San Joaquin Valley. More than half the jurisdiction falls within the Sierra-Nevada Mountain ranges. This provides many areas perfect for marijuana cultivation. Such gardens are difficult to detect using conventional methods. Enhanced satellite technology and emerging imaging technology would be of great benefit in these labor-intensive investigations.

The flat geography of the valley floor provides a large natural airport. As a

result there are many small, often remote airstrips in this jurisdiction. Narcotics can easily be flown into these airports for distribution. New technology could be utilized to detect and track suspicious aircraft activity. When arrests are made these cases often result in wide media coverage. This exposure will result in the spread of such technology to other agencies.

State Highway 99 traverses this County. Due to the many communities Highway 99 passes through, narcotics dealers prefer to use this route, and distribute their product along the way. This presents another opportunity to utilize technology to impede narcotics trafficking and other related crimes.

Economic Environment

Threats: The continued reduction in traditional funding sources for law enforcement (T8) threatens the ability to purchase emerging technology. As the State shifts funding to areas important to them (such as education), less will be available for local law enforcement. Monies will be used to provide mandated programs first, and to handle called-for services. Little will be left for investigative services.

As politicians continue to chip away at asset seizure laws, the potential for the loss of asset seizures increases (E14). This would further limit an agency's ability to acquire the latest technology. Additionally, if the technology industry is aware of this trend, they may stop research and

production in anticipation of a dying market.

Opportunities:

The loss of traditional funding sources necessitates the identification of alternate funding (T10). As these sources increase, more funds will be available for the acquisition of new technology. Additionally, if asset seizure laws can be retained, funding will be available for this new technology, and for the cost of the necessary training.

Political Environmental

Threats:

The perception by other County departments and the Board of Supervisors that law enforcement gets preferential budgetary treatment, could have a negative impact on the acquisition of cutting-edge technology. These entities may feel that such equipment is unnecessary and an expensive frill. Even if asset seizure monies are used, the Board of Supervisors may not approve the purchase if they feel it is wasteful.

Opportunities:

With the reduction in defense spending, strong defense contractor lobbies will be interested in seeing that their next market has adequate funding for the purchase of their products. These technology corporations will be pressuring both Federal and state governments to make funding available to law enforcement. This will increase the ability of law enforcement to put such equipment into service. The politics involved in moving those funds

may also serve to garner public support for the use of these tools.

Organization Analysis

This segment will address this organization's capability to attain the objectives set fourth in the mission statement related to the issue. The key attributes of the organization which constitute its strengths and weaknesses, relevant to the issue, will be identified and analyzed. This will allow the strategic plan to maximize the strengths and compensate for the weaknesses in the organization.

Strengths

The Sheriff is in the third year of his first four-year term. The Sheriff has taken an aggressive stance on narcotics enforcement. As such, there is also support for the acquisition and use of new surveillance technology for the investigation and prosecution of such cases. In addition, there is continued support from the Sheriff for a Federally funded narcotics task-force, now in its sixth year of operation.

The current narcotics division commander is technically oriented and has a reputation for utilizing technology to improve efficiency, when possible. The majority of the 21 employees assigned to narcotics suppression activities are younger officers. Many of these investigators are looking for new technology, and exploring how to obtain these devices to improve efficiency. Most of the investigators are proficient with personal computers. These employees readily accept, and even expect, new technology for investigations.

With annual reductions in funding becoming more common, this agency has been forced to find more efficient ways to operate. This necessitates the examination of all

department functions, including labor-intensive investigations. Recently, new video equipment was purchased to help make stronger cases, and reduce the time spent in court. As new technology becomes available, the department will continue to evaluate and to determine the cost to savings ratio, or efficiency rating of the device.

Another strength of this agency is its technical training resources. There are a number of computer experts including the person in charge of the department computer system. This agency also has a number of amateur radio operators, and pilots with much technical expertise to call on. These employees are ready made instructors for the use of technical devices of tomorrow.

Weaknesses

There is a perception by many in this organization that new technology adds work. This is largely due to problems encountered with this department's first attempt to automate basic record keeping functions. Although some applications have met with success, other operations are now more cumbersome. The problems with this core system has slowed efforts to add integrating technology and expand system capabilities. This perpetuates an attitude in many of, "if it ain't broke, don't fix it".

Another weakness is the organization's lack of technically oriented personnel. This is primarily caused by the lack of younger entry-level employees. This was a result of the Department's plan to civilianize jail functions in 1991. The Department can not hire deputy sheriffs until all of the deputies assigned to correctional duties have rotated out of the jails. This stagnation will retard organizational ability to hire younger employees that have had more exposure to technology.

This Department has only one full-time employee assigned to facilitate training. Budget cuts and increased job related injuries have changed the focus from proactive to mandatory training. Training is often viewed as a burden due primarily to heavy caseloads for investigators. The acquisition of emerging technology may meet with resistance due to the additional training that may be required for it's use.

Budget cuts will also hamper the acquisition of new technology. Even with asset seizure funds available, administrators may be apprehensive in approaching the Board of Supervisors for such purchases. The Board may not approve purchases at a time when other County departments are laying off personnel. There may be some conflict due to the Sheriff demanding his budget not be cut, then asking to buy expensive equipment.

Stakeholder Analysis

The next step in the planning process is the identification of the *stakeholders* in the issue. The stakeholders are persons, groups, or organizations that impact, are impacted by, or have an interest in the successful implementation of emerging surveillance technology. The critical assumptions made by the stakeholders will be forecasted and plotted on an assumption map. This map estimates the relative importance of each stakeholder by plotting the certainty against the assessed importance of the assumption.

Stakeholders

Assumptions

- | | | | |
|----|--------------------------|----|---|
| A) | Sheriff | 1) | Will support acquisition and implementation plan if cost effective. |
| | | 2) | Would be less supportive if the possibility of negative political fallout. |
| | | 3) | Less supportive if it jeopardizes funding of projects more important to him. |
| | | 4) | As largest agency, may feel responsible to introduce new technology into the County. |
| | | | |
| B) | Sheriff's Administrators | 1) | Will oppose if it requires more work in other units. |
| | | 2) | Will support if it frees-up personnel for their divisions. |
| | | | |
| C) | Board of Supervisors | 1) | Will approve if no impact on general fund. |
| | | 2) | Will approve if politically correct (<i>war on drugs</i>). |
| | | 3) | May disapprove if they feel these are expensive "toys". |
| | | 4) | May feel compelled to deny due to rejected requests from other (non-law enforcement) departments. |

- D) Investigators
- 1) Will approve if functional and user-friendly. Will reject if complex and requires extra work to use.
 - 2) Will want the latest and best equipment.
- E) Public
- 1) Will support if used properly.
 - 2) Will demand sanctions if abused.
 - 3) Will build confidence if demonstrated that it helps reduce cost and increases safety.
- F) ACLU
- 1) Will oppose if potential of abuse is perceived as high.
 - 2) Will support if the technology results in less innocent persons being detained or investigated.
- G) POST
- 1) Will support due to additional training needed for new equipment, if funding is available.
 - 2) Will be less supportive if Basic Academy curriculum is added to.
- H) County Executive
- 1) Will support if cost effective and no impact on the general fund.
 - 2) May expect a reduction in labor cost associated

with increased efficiency.

- I) State Legislature
 - 1) Will enact laws to regulate the use of new surveillance devices.
 - 2) May mandate training and include legal sanctions for misuse.
 - 3) May create watchdog subcommittee to monitor/approve technology before law enforcement use.

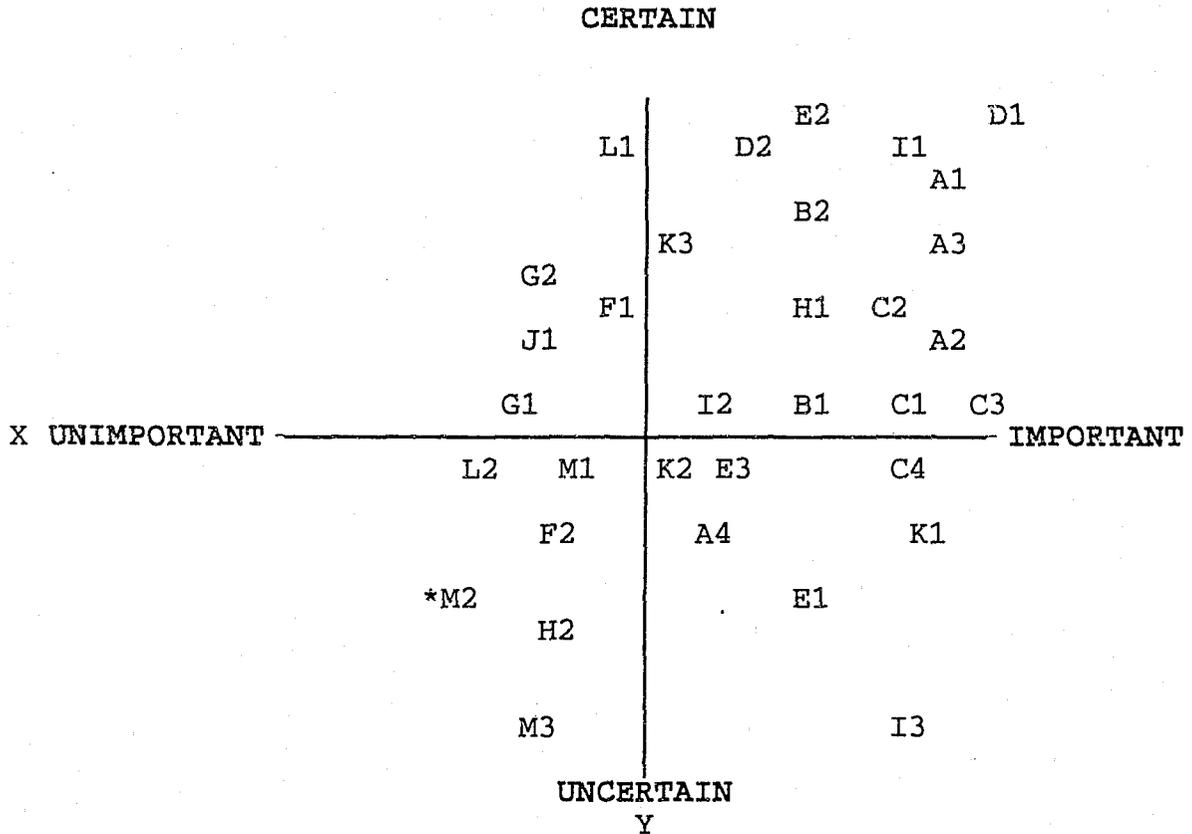
- J) Data Processing
 - 1) May want to be involved in purchase for systems utilizing PC platform. Governance Committee may not approve purchase as Public Defender is a member.

- K) Deputy's Association
 - 1) May object due to job becoming too technical.
 - 2) May also fear technology may be used by internal affairs.
 - 3) Will support if job made easier, cost effective, due to more funds for salary/benefits.

- L) Local Police Chiefs
- 1) Will support to see how successful the technology is, so they can borrow if unaffordable or buy if useful.
 - 2) May be viewed as unnecessary by agencies that can not afford to buy.
- M) Radio Maintenance Shop
- 1) Will support if they can be responsible for maintenance and repair of new equipment and thereby broaden their power-base.
 - 2) They may want to be involved in the acquisition and may attempt to sabotage project if ignored.
 - 3) Could use technical expertise to claim they are better qualified to address this topic. May be snaildarter.*

* Snaildarter - The stakeholder that, on the surface, seems to have little impact on the issue, but upon closer analysis, could significantly impact plan success.

ASSUMPTION MAP



Legend:

X axis: Relative importance of stakeholder assumption to issue.

Y axis: Degree of certainty of stakeholder assumption.

Letter : Denotes Stakeholder

Number: Assumption Number for Stakeholder Listed on Previous Pages

STAKEHOLDERS

- A) SHERIFF
- B) SHERIFF'S ADMINISTRATORS
- C) BOARD OF SUPERVISORS
- D) INVESTIGATORS
- E) PUBLIC
- F) ACLU
- G) POST
- H) COUNTY EXECUTIVE
- I) STATE LEGISLATURE
- J) DATA PROCESSING
- K) DEPUTY'S ASSOCIATION
- L) LOCAL POLICE CHIEFS
- M) RADIO MAINTENANCE SHOP *(Snaildarter)

Alternative Strategies

In this segment, the information developed in the Environmental, Organizational, and Stakeholder Analysis will be used to develop **alternative strategies** to accomplish the goals set in the mission statement. A Modified Policy Delphi group consisting of seven officers from the Target agency was used to develop six strategies. The group then assessed the potential effectiveness of each strategy based on six factors. Those areas were, how quickly the strategy could be implemented, the feasibility, cost, long-term effectiveness, stakeholder support, and how well the elements of the mission statement were addressed.

The six strategies developed are:

- 1) Formation of Investigative Technology Committee within the Department.
- 2) Form a County-wide Technology Advisory Board with a Surveillance Subcommittee.
- 3) Change job classification for investigators to technical position, filled by promotion.
- 4) Form a County Technology Association, as part of a larger State-wide organization, for all law enforcement agencies.
- 5) Create a non-sworn Surveillance Technicians Unit, separating the duties from sworn investigators.
- 6) Revise the job description for deputy sheriff to include knowledge, skills, and abilities necessary to operate technical equipment.

Alternative Strategy #1

Strategy number four, the formation of a County Technology Association, received the highest rating, primarily due to the perceived strong stakeholder support, and mission statement fulfillment. This plan includes participation by experts from many departments, police academies, and technology providers. Local chapters could be formed to meet on a regular basis, with presentations from technology providers. Local agencies could report on their experience with equipment. Manufactures may provide member agencies with products to test.

This tact would help compensate for the stagnation of personnel within this agency by utilizing experienced officers from other agencies. From a cost standpoint, this agency would invest less employee hours in this association than one consisting of this agency only. As an association public meeting laws would not apply, allowing participants to speak with greater comfort. In addition, technology committees already exist in associations such as the California Peace Officers' Association, making integration of a smaller group easy.

Some drawbacks to plan four include travel time to the meetings, commitment of members, and the number of members from each agency. It may be difficult for some agencies in a region to attend due to the time involved in traveling. With the other association and group meetings necessary already, one more may meet with resistance. Some members may miss meetings due to other commitments, or a busy work schedule. It also may be difficult for more than one or two members from each agency to attend, due to staffing problems.

It was felt that this strategy would have strong support from the critical stakeholders. The Sheriff and his administration would support the plan due to the broad base it's drawing from, as well as it's inclusion of the other agencies within the County. This would also please the Chiefs as they would feel that they have the same input as larger agencies. The County Executive would support the in-depth analysis that would precede any purchase request as a result of this association, adding confidence to his approval. The investigators and the association would feel somewhat empowered as a participant in the selection and evaluation of technology, and therefore would be more apt to accept its use.

Alternative Strategy #2

The next most popular solution was the formation of an Investigative Technology Committee within this department. The committee would be comprised of investigators, an administrator, the Sergeant from Automated Services, and the Training Officer. Members of the Committee would meet on a regular basis and discuss the application of emerging technology in the department. Some of the participants would attend conferences and symposiums related to technology, and bring this information back to the agency.

This method would be easy to implement and would tend to satisfy the mission statement as all members would direct their research in that direction. It could have good long-term success as personnel with strong technical orientation could be appointed to participate. Meetings would be easy to attend as they would be in-house.

There may be some loss of objectivity by having people from the same

organization in the group. The presence of a superior officer could also inhibit the opinions of some members. Some members may want to acquire technology that will benefit their area of operation, and may show that bias. In addition, if an idea comes from a subordinate, or if no other agency close is using the same equipment, it may be dismissed as unnecessary.

This strategy was viewed as moderately supported by the stakeholders. The Sheriff and his administration would be supportive as they maintain control of the group and its output. The investigators and the Deputy's Association will feel like they are participating in the process, and will be supportive. The public and the County Executive may feel the group is self-serving and not objective. Data processing may feel left out of the loop, as may Radio Maintenance. The local Police Chiefs may feel that the Sheriff is trying to "one-up" them by keeping the committee in-house, and not sharing the information.

Alternative Strategy #3; Diversity of Opinion

Strategy number five received the widest diversity of opinion as a potential solution. This strategy would create a Surveillance Technical Unit comprised of non-sworn technicians. The technicians would be responsible for the collection of intelligence at the direction of the sworn investigator. The investigators would handle the traditional law enforcement tasks of interview and arrest. The job specifications would call for a technically oriented employee, and would require specialized training.

This approach would allow the technicians to become more proficient with the new technology, and allow them to concentrate on identifying and developing skills with

emerging technology. This also frees the investigator to handle tasks more in line with the investigator's job description. This less hazardous duty for the technicians would not require safety retirement, or as much pay as an investigator, and should result in some cost saving. This could provide more funding for the purchase of new technology.

Some potential problem areas would be employee safety, investigative continuity, and duplication of work. A technician confronted by a suspect in the field may not have the training or resources to respond appropriately. Due to the technicians limited knowledge of the case, some important activities may be overlooked. The investigator would be in a better position to identify relevant information, and take immediate action if necessary. Additionally, this method results in the investigator spending time reviewing the intelligence gathered. If the investigator collected the information, he would not have to review it.

The stakeholders generally would not be as supportive of this plan. The Sheriff and his administrators generally don't support civilization of traditional law enforcement roles, such as investigations. The Deputy Sheriff's Association would not be in favor of losing sworn positions, unless they could represent the new employees. The investigators would feel threatened by the new position, due to the possible loss of jobs. The County Executive would likely support this plan as a cost saving measure. Data Processing would view this as a step toward civilianization of technical functions in the Sheriff's Department. This would bring data processing closer to taking control of the Sheriff's automated systems, as well as other functions. As an opportunity to expand their domain, Data Processing would be in favor of this plan.

Strategy Selection

The strategy selected combines the desirable elements of strategy one, formation of a Department Technology Committee and four, a County Technology Association. This plan would form a Departmental Technology Committee, whose members would also participate in a County-wide Law Enforcement Technology Association. This would allow interaction with other agencies to reduce the singular mind-set that can occur within an agency. It would take advantage of ideas from younger officers from other agencies. Such a group would increase communications and cooperation among participating agencies. The Technical Committee members would report back to the administrative members who may elect not to attend Association meetings. This strategy would be easy and inexpensive to implement.

This plan would appeal to a majority of the stakeholders. The stakeholders associated with the County would all benefit from this plan. By including the Training Officer in the Committee, POST, and training issues are considered as technology is evaluated. During discussions of applications for new technology, possible legal issues can be anticipated. ACLU concerns can be addressed with the member from the District Attorney's Office. A representative from Radio Maintenance would be invited as a periodic speaker to address technical questions. This would satisfy these employees, thereby disarming the snaildarter.

Implementation Plan

Now that the strategy has been selected, a plan to implement this strategy will be developed. The implementation plan will take advantage of organizational strengths, and identify obstacles to avoid. The plan will focus on the role of key stakeholders and the chronology of their participation. Included will be a feedback system to validate the plan.

The first step is selling the plan to an administrator who has the authority and power needed for implementation. This person should be an approachable stakeholder who will benefit from attainment of the mission statement. The Investigations Division Captain would meet this criteria, and has an interest in technology. He also has the ability to gain approval of other administrators for the plan. The Captain could also appoint interested personnel to the Technology Committee.

The next step would be to solicit for personnel interested in serving on the committee. This would ensure that members have an interest in technology. The applicants would be screened by the Captain to insure qualified personnel were selected.

Once the committee is formed, a committee mission statement, consistent with the issue mission statement, would be drafted by the members. This document would serve as a guide to the members, communicating the goals and objectives to the members, and the organization. Communicating committee goals, and subsequent findings with other members of the department, will reduce any potential for defensive posturing or sabotage by persons not selected to participate.

The Captain would present a summary of the committee minutes and subsequent accomplishments at the next County Law Enforcement Managers meeting. A committee

member would give a presentation on some examples of emerging investigative technology to foster an interest by the local chiefs. These critical stakeholders would relate this information to their subordinates. The larger agencies would form similar committees in their own agencies.

Next, investigators would conduct a meeting for investigators from all agencies in the County. At this meeting, department committee members would give a report on the Committee and its function. A presentation on emerging surveillance technology would then be presented to the group to stimulate interest. The group would then be polled for interest in the formation of a County-wide Investigative Technology Association. At the next meeting, officers would be elected. The officers should be from different agencies to widen support. A different agency would be responsible for a presentation at each monthly meeting. Bylaws and a mission statement should be drafted to provide structure for the association.

A synopsis of Committee and Association minutes would be provided to the Sheriff and all investigators for review and input. Members would seek input from investigators relative to committee output, as well as ideas for research or new products. The committee should have a mechanism in place to insure that investigators get feedback from their ideas. In addition, some recommendations of the committee should be acted on in a timely manner so participants feel empowered as committee members.

Summary

After identifying the characteristics of this organization critical to attaining mission statement goals and selecting a strategy and implementation plan, this department is ready to move forward with the issue. The goals set in the issue mission statement promise to provide the best investigative service, maximizing efficiency, and minimizing risk through the use of emerging technology. The Strategic Plan selected to accomplish this will establish a Departmental Technology Committee. Additionally, the Committee will become a part of a county-wide investigative technology association. Participants may represent this association as members of existing state-wide technology committees.

In reexamining the scenario supplement, the potential impact of the strategic plan can be assessed. Participation in the Surveillance Technology Committee, both department and county-wide, will result in the formation of partnerships with technology providers. This will led to easy to use equipment, and increased productivity for narcotics investigations for the target agency. Additionally, these partnerships can resulted in lobbying by the technology companies which may relax some laws regarding law enforcement's use of new technology.

TRANSITION MANAGEMENT

In the **Futures Study**, potential futures were developed involving the research topic; *The impact of emerging surveillance technology on the investigative function by 1998*. Next, a **Strategic Plan** to attain the goals set in the issue mission statement was developed. The strategy was selected after a thorough analysis of the Sheriff's Department. Next an **Implementation Plan** for the selected strategy was drafted. This plan also addressed the findings of the organizational analysis to increase the potential of successful implementation.

To effectively manage the change to be brought about by this plan, the transitional elements of change must be considered. In this section a **Transition Management Plan** will be developed based on the strategic plan. This will include an in-depth analysis by the author of stakeholders critical to successful implementation, transitional management structure, and the methods required to support implementation.

Critical Mass

In this section of the project, while considering the transitional impact, those groups critical to plan implementation will be identified. Next, those persons and/or groups whose support is needed, will be analyzed in an effort to identify the minimum number of people required to gain the support of each person or group. Those people are the critical mass for successful plan implementation.

Each member of the critical mass will be assessed for their position, both current and desired, relevant to successful plan implementation. This level of commitment will be depicted graphically in a Critical Mass Table, (Table A). This will allow better

understanding of the amount of effort required to move each member of the critical mass to the proper position of support to ensure successful implementation.

The first Stakeholder whose support is needed for the successful implementation of the plan is the investigator. This Stakeholder will be the end-user of new technology, and will want to be involved in all aspects of acquisition. The person that can deliver the support of the investigator is Sgt. Jim Jones. Sgt. Jones is currently the supervisor in charge of the multi-agency narcotics task-force. Jones has over eight years of narcotics investigative experience. In addition, Jones is the Deputy's Association President, which would also help garner rank and file support.

Sgt. Jones is accepting of technology and change, as long as it doesn't happen too fast. Jones will tend to stay in the "let it happen" category, unless there is some motivation for him to change categories. In an effort to overcome an investigators natural resistance to change, and to motivate participation on the Technology Committee, Sgt. Jones would have to move from the "let change happen" to the "help change happen" category.

Shifting Sgt. Jones to the help change position could be accomplished by assigning him the responsibility of the annual budget for narcotics equipment. The pressure from subordinates to plan for the proper technology, as well as his motivation to satisfy his supervisor would insure his support.

Critical Mass Table

NAME	BLOCK CHANGE	LET CHANGE HAPPEN	HELP CHANGE HAPPEN	MAKE CHANGE HAPPEN
Sgt. Jim Jones		X —————>	—————>O	
Lt. D. Williams				X
Lt. D. Smith		O< —————	—————>O	X
Chief Davis		X —————>	—————>O	
Sheriff		X		

X = Current Position on Change O = Desired Position on Change

Table A

The next group important to plan success is the Department administration. If the managers of committee participants are not supportive, that attitude will be reflected by their subordinates. Lt. David Williams has managed several projects requiring the support of different divisions, and would be able to gain the support of the other administrators. As the Narcotics Unit Commander, Lt. Williams would also be the change manager for this plan. The prior commander had been in narcotics for eight years, with little change occurring. After one year, Lt. Williams has made many changes, including improving technology. Lt. Williams is in the "make change happen" category, and as the change agent for this plan, will remain in that position.

As members of the proposed committee, the support of both the Training Officer, and the Automated Systems Sergeant would be required. The person who could deliver their support is Lt. Don Smith. Lt. Smith is the Administrative Manager responsible for both these functions. His support would be necessary for the participation of these two people.

Lt. Smith usually places himself in the "make it happen" category when it comes to change. Lt. Smith has a good working knowledge of computers, and encourages his personnel to automate where possible. Since his transfer to Administrative Services, Smith has converted many record keeping functions to PC based programs.

In this case, Lt. Smith would need to move to the "let change happen" category. Otherwise, due to his autocratic management style, his subordinates may not want to participate. Moving Lt. Smith to the "let change happen" position could be accomplished by having his participating subordinates report directly to the investigative Captain on Technology Committee matters. This would remove him from the information loop to a position where he would not feel obligated to become actively involved, yet not so far that it could cause ego damage.

In the formulation of the County-wide association, the support of the local police chiefs would be necessary. Without their support, few of their investigators would attend the meetings. Bruce Davis, the Chief of the local Police Department, could deliver that support. Davis is well respected by the other chiefs in the county. In addition he is pro-technology, evidenced by his chairing the governing board of the county automated fingerprint system. Davis would normally let this type of change happen, due to his current involvement in many projects. To gain the other chiefs' support, he would need to move to the "help change happen" category.

Chief Davis could be moved into this change position with the help of Lt. Williams. Lt. Williams is also the project manager for the county Cal-ID (California Identification) automated fingerprint system. As such, Lt. Williams has regular contact with Chief Davis.

Lt. Williams could gain Davis's support by explaining the plan, and the benefits of the County-wide association to all agencies involved.

Finally, the support of the Sheriff would be needed for the Department to take a leadership role in increasing the technology base for the County. The Sheriff would be placed in the "let change happen" category. He would be supportive of the plan as his political platform played heavily on increased narcotics enforcement. This support has been shown by his approval of the purchase of new surveillance equipment with asset seizure funds this year. Any program which might benefit narcotics enforcement would be encouraged.

Management Structure

When constructing the *Management Structure* for the transition period of plan implementation, several factors must be considered. The management structure selected should contain personnel respected by managers and employees alike. The structure should be communication oriented, to mitigate the uncertainty often caused by change. In addition, the structure should include someone with the authority to carry the plan forward, free of bureaucratic blockage. To meet these requirements a synthesized management structure combining the "Representatives of Constituencies", "Diagonal Slice", and "Project Manager" structures will be used.

The "Representatives of Constituencies" structure is would be easy to implement, as the regular duties of most team members are directly related to the plan. Lt. Williams, as the change-manager, is currently assigned as the Narcotics Division Commander. In this position, he would be responsible for the acquisition of surveillance technology.

Investigators on the team would be the end users of this technology. The training officer would identify and facilitate the training needed to operate the technology. The Automated Systems Supervisor may be called on to integrate the technology with existing systems.

Since not all members would be *formal* representatives, attributes of the "Diagonal Slice" structure would also be utilized. Traditional formal representatives in law enforcement would be supervisors or line personnel assigned specifically to represent the interests of their unit. By selecting a diagonal slice of informal representatives, the focus would remain on the project, rather than on what is best for each participating segment. This would free the participants to have input on any aspect of the project, not just areas applicable to their regular assignment.

This management structure would consist of a transition team utilizing the members of the proposed Department Technology Committee. Members would include the narcotics lieutenant, the training officer, the automated services supervisor, and two investigators. Prior to assembling this team, administrative approval of the project would be secured. This would be done by the change manager, Lt. Williams, through the Investigations Division captain. Next, members would be selected by the captain with input from Lt. Williams. After announcing the formation of the team in the Sheriff's Monthly Newsletter, the group would hold an organizational meeting to communicate the goals and objectives of the plans, both transitional and final.

Implementation Technologies

Although most organizations implement change to improve systems, change can be perceived as negative by some people. Rosabeth Moss Kanter, in an article from Management Review, comments on the effect of change.²⁵ In her article, Kanter discusses the potential negative effects, including the "uncertainty" and "differences" created by change. Specific technologies, or "methods" of implementation will be selected in an effort to minimize these obstacles.

The first implementation technology used will be team-building. The transition team members will meet with the project manager acting as the facilitator. The team will work together to form a mission statement for the committee. This statement should communicate the goals and objectives to the group and the organization. This should be expressed in such a way as to create a unified vision for the organization relative to the committee, and the issue. This interaction will also serve to better communication between the group members. By defining the objectives of the group, each member will have a clear understanding of their task, thereby reducing the uncertainty and resultant anxiety.

At the next meeting the transition team will conduct a responsibility charting exercise. This process involves each member assessing both their, and other members role relative to plan actions or decisions. To organize the information, a matrix format is used, as shown in Table B. The tasks and decisions are listed down the left column. The members are listed along the top. Each member will fill out a chart based on their ideas as to who should be responsible for each transition tasks and decisions. These

opinions are places in the boxes where the members box intersects with the task (or decision) box. Each person is rated by the following abbreviations:

- R** Denotes the person is responsible to see that the task is carried out
- A** Indicated that this members approval is required, or they can veto
- S** Indicated that persons support or resources are necessary
- I** Must be informed on decision or task status

After each member fills out the form, the votes should be tallied, discussed and finalized. There should only be one **R** for each task or decision. The result is a clear list of what steps need to be taken during the transition period, and what each members role is in the plan. This visual clarification helps each member see how they contribute to the project, and keeps the group focused. It will also reduce the uncertainty of change, by anticipating the impact of each task. This improved communication should also increase the confidence level of the participants. This confidence will manifest itself as positive output from the team when team members discuss the project with coworkers in the organization. This will also tend to lessen the potential negative impact associated with the difference created by change.

Another tool that will be used is the Department Newsletter. Output from the transition team in the form of progress updates will be included in the monthly newsletters. Additionally, input will be solicited from other members of the organization by formal or informal communication with transition team members. By keeping the organization informed, the anxiety associated with change will be reduced.

Responsibility Chart

TASK OR DECISION	Lt. Williams	Sgt:Auto. Systems	Training Officer	Detective Narcotics	Detective Burglary
1. Mission Statement	R	S	S	S	S
2. Newsletter Article	A	R	S	S	S
3. Presentation/LEM	R	S	S	S	S
4. Tech. Scanning	S	S	S	R	S
5. Contact State Assn.	S	S	R	S	S
6.					

Table B

Transition Plan Time-line

In this segment of the project the different elements of the transition and strategic plans will be outlined in chronological order. This is done to show the proper sequencing of each task leading to successful plan implementation.

Month 1

Week 1: Informal Plan Proposal to Investigative Captain

Week 2: Formal Plan Proposal to Investigative Captain

Week 3: Plan approval; Plan announcement memo distributed

Month 2

- Week 1: Approval of Committee members
- Week 2: Committee meeting: Team Building; Mission Statement

Month 3

- Week 1: Newsletter out with Committee members, Goals & Objectives
- Week 2: Committee meeting: Responsibility Charting
- Week 4: Committee presentation at Investigators' staff meeting: Input

Month 4

- Week 1: Committee presentation at County L.E. Managers' Association
- Week 2: Committee Presentation at Central Valley Investigators' Association; Propose County Wide Technology Association Concept
- Week 3: Department Committee Meeting; Assess impact, submit newsletter article
- Week 4: Feedback from Committee representative at Investigators' Staff meeting. Technology Update from scanning.

Month 5

- Week 1: Present County-wide technology association concept to County Law Enforcement Managers' Association.
- Week 2: Second presentation, technology demonstration, Central Valley Investigators' Association; Set organizational meeting for County-wide Technology Association.
- Week 3: Department Committee meeting; impact assessment, newsletter

Month 6

- Week 2: First Meeting County-wide Investigative Technology Association Election, Mission Statement Development, Technology Presentation
- Week 3: Department Committee Meeting; reexamine mission statement; assessment; Newsletter article on County-wide Investigation Technology Association (CITA) formation

Month 6

- Week 2: Second meeting CITA, set mechanism to communicate association goals, objectives, and findings to participating agencies. Propose Affiliation with a State Technology Association
- Week 3: Department Committee meeting

Summary and Conclusions:

The topic of *Emerging Surveillance Technology* was selected by the author as a result of scanning professional journals, conversations with other law enforcement professionals, and a personal interest in the topic. In an effort to keep the issue narrow enough to be covered in this paper, the issue was focused to the *Impact* of this future technology *on the investigative function in the next five years*. Next sub-issues relative to the issue were developed. This was done by additional scanning, research, and the use of a futures wheel (Illustration 1, Page 10).

During the development of the topic and sub-issues, several findings were made. Among these findings were statistics showing the rise of violent crime, and the relation of violent crimes to illegal narcotics. With surveillance being the primary method used by law enforcement to investigate narcotics cases, the importance of new surveillance technology is increased. Additionally, with shrinking law enforcement budgets, enhanced technology will be needed to increase efficiency.

With the Issue and sub-issues defined, a Futures Study was conducted. In this segment, trends and events important to the future of surveillance technology were identified and forecasted. This was done in a group setting, using the Nominal Group Technique (NGT). It is interesting to note that many of the NGT forecasts have occurred. Trend seven, The Level of Crime as a Political Issue, is now preoccupying most California politicians with the plethora of three-strikes-your-out sentencing bills being introduced. This is no doubt fueled by Trend four, *The Public's Intolerance for Violent Crime*. Event ten came close to reality with the 7.6 earthquake in Japan in 1993. And President

Clinton is coming closer to making Event five happen as he readies his second appointment to the Supreme Court in May of 1994.

The event information was then plugged into a matrix to assess how each event might impact the others. This is called a cross-impact matrix. This section of the study showed how, if one event happened, it would impact the probability of the other events occurring. Some events had a probability reduction over nine percent. That was the case with Event two, ***Terrorists Blow-up the United Nations Building***, Event six, ***Supreme Court Justice shot by Drug Lord***, and Event eight, ***Pope Assassinated While Visiting the U.S.***

This information was used as a basis for constructing three potential futures in the form of scenarios. In this study, the Normative, or *desired* future scenario was then selected as a basis for the development of a strategic plan. To help better understand where the agency subject to this study wanted to be in five years, a second scenario was developed. This is called the scenario supplement.

In the Strategic Plan, a mission statement was developed to help guide the agency toward insuring that future surveillance technology will positively impact investigators. Next, a thorough analysis of the agency and the community help identify areas to avoid, and resources to help, relative to attaining mission goals. Many of these findings were related to the forecasted trends and events. One example opportunity identified is the increase in public support for improving law enforcement. This was based on Trend three, the publics growing Intolerance for violent crime.

Next, strengths and weaknesses in the agency were identified, relative to

achieving the mission statement. Some weaknesses included the perception by some that technology makes the job more complex, and is more work. Strengths included the current sheriff's strong support for narcotics enforcement, and younger, more technically receptive, officers being assigned to investigations.

The Stakeholder analysis in the next section helped identify those persons or organizations who have an interest in the agency's successful implementation of future surveillance technology. After plotting the stakeholders, and the author's assumptions relative to their position on the issue, it is easier to see who the more important stakeholders are. The investigators are high on the chart as is the Sheriff. Armed with this information, strategies are developed.

The strategy selected calls for the formation of a **Department Technology Committee**. Additionally, the committee would form a County-wide Technology Association. This plan would facilitate the awareness and assessment of emerging surveillance technology. The plan also best satisfies the mission goal, and the stakeholders' interests in the project.

Next an implementation plan to move the plan forward was developed. From the organizational analysis it was discovered the critical stakeholders support should be obtained first. The plan should be introduced to a key stakeholder with the authority to move the plan forward. Preferably, this should be someone with an interest in seeing the goal achieved. For this agency the Captain in charge of investigations was selected. The Captain reports to the Sheriff and can secure his support.

The last phase in this study is Transition Management. Here, an in-depth analysis

of the stakeholders allows the identification of those persons or groups whose support is necessary for successful plan implementation. These persons are also known as the **Critical Mass**. Here it was found that the support of the narcotics sergeant, who is also the deputy's association president, would be necessary to help this change occur. Other members of the critical mass were identified. Next a strategy for moving those people from their current position relative to the plan to a position that would allow the plan to move forward was developed.

In the transition management portion of the study it was found that there are certain situations that occur during the transition, that are not products of the plan, or characteristics of the agency prior to the plan. These products of change are a result of the transitional period only. One transitional phenomena is the human emotional response of uncertainty. To help mitigate such problems implementation technologies, or structured methods of management will be used. One of these technologies is team-building. Another is responsibility charting. This helps clarify each persons role in the transition, and allows them feedback into the change system.

This process-driven technical study has developed insight into the management of future surveillance technology in the next five years. In first reexamining the sub-issues, certain aspects of the issue question will be addressed. The issue question will then be compared to the finding of the study.

Sub-issue one: **What technologies will be available for surveillance applications by the year 1998?**

The first sub-issue was addressed by researching what technology currently exists.

Next, trends in technology advancement were forecasted by the NGT panel in the Futures Study segment of the project. These forecasts, combined with scanning of technical journals, provided a basis for technology projections made in the three scenarios. Satellites that can identify a specific vehicle and analyze the actions of that vehicle, combining artificial intelligence to draw conclusions as to possible criminal conduct, is one example of potential future technologies discussed.

Trend one, the transitioning of technology from the military, or defense contractors, to civilian law enforcement was found to be increasing as forecasted. This will move the development of new surveillance products forward much faster in the next few years.

Sub-issue two: **What are the legal issues in the use of emerging surveillance technology?**

The second sub-issue, although important, did not yield as much discussion in the study. The strategic plan did call for a deputy district attorney to participate in the County-wide Technology Association. This was to ensure that the legal issues in evaluating emerging surveillance technology were addressed. Additionally, some trends and events forecasted in the Futures Study predicted a relaxation of some privacy laws related to wire-tap and information access. The study also recognized the importance of public perception as to the proper use and control of such technology. The Strategic Plan calls for developing policy for control, and keeping the public informed of cases involving successful use of future technology.

Sub-issue three **What training will be required for the successful operation of emerging surveillance technology?**

The third sub-issue could be the subject of a complete study itself. The study identified that surveillance equipment of today is complex and difficult to operate properly. It is possible that with the technology related trends and events forecasted, that computer interfaces for these devices will make them easier to operate. This integration of technologies may help reduce this problem in the future. The ability of investigators to understand and operate complex surveillance equipment is a problem today. This was made clear when engineers from a surveillance technology company avoided discussing emerging technology unless a user-friendly interface was already in place for that technology.

Issue Statement: ***What Impact will emerging surveillance technology Have on the investigative function by the year 1998?***

As depicted in the scenario selected for the Strategic Plan, properly managed future technology can positively impact the investigative function. Enhanced surveillance equipment will improve productivity, and reduce risk to officers by increasing intelligence available on suspects before arrests are made. The increased productivity could increase asset forfeitures, providing more funds for additional equipment and personnel. The current uncertainty regarding California's asset forfeiture law may require law enforcement to target upper level offenders for larger seizures. Federal forfeiture, the only law left, have higher threshold limits for narcotic quantity and asset value. The enhanced equipment will allow larger cases to be worked, resulting in larger seizures. More successful cases, and better equipment will result in a more satisfied employee and better morale.

By implementing the plan developed in this study, an agency will insure that new technology is properly integrated into the department. The plan will also encourage technology providers to develop more user-friendly equipment, as a result of technology industry partnerships with law enforcement. This will result in enhanced surveillance capabilities for investigators, making the investigator more efficient, effective, and productive.

Recommendations:

The focus of this study was the impact of surveillance technology on the investigator. As a result, issues arose in several related areas that are worth consideration for future study. One topic would be a more in-depth study into how much new technology law enforcement is currently using. Another area might be the potential impact of law enforcement partnerships with technology providers. It may also be worthwhile to study the potential impact of the criminal use of future technology. Law enforcement has less to spend than large criminal organizations who can buy without a cumbersome process that often leaves the police with obsolete equipment by the time it is delivered.

Another area worthy of study is the issue of training for future technology. As mentioned previously, some technology companies are reluctant to discuss emerging technology unless they have a viable user interface in place. This would seem to inhibit the use of existing and future technology by law enforcement. An in-depth study of agencies that are currently using the latest technology, and how the training issue is addressed would be beneficial.

Attachment



County of Tulare

OFFICE OF
Butch Coley, Sheriff-Coroner

County Civic Center, Visalia, California 93291
Telephone (209) 733-6218



August 4, 1993

Director Gary Kuncel
Tulare-Kings Police Academy
915 south Mooney Blvd
Visalia, CA 93277

Re: Emerging Surveillance Technology Workshop

Dear Director Kuncel,

Thank you for agreeing to participate in this workshop. As I mentioned in our telephone conversation, the purpose of this meeting is to, as a group, identify trends and events which may impact the topic and associated issues. The topic and sub-issues we will be discussing are:

"How will emerging surveillance technology impact the investigative function by the year 1998?"

What surveillance technology will be available by the year 1998?

What will be the training requirements for the successful operation of new surveillance technologies?

What are the legal issues in the use of emerging surveillance technology?

Your participation in this process is very important to our success as each participant was selected based on their expertise and background as it relates to the issues. We will be utilizing the "structured brainstorming" method known as the Nominal Group Technique (NGT) to facilitate the efficient collection of information. I would estimate that this process will take about three hours to complete. Refreshments will be provided.

Location: County Supervisors' Conference Room A
Date : Wednesday, July 7, 1993
Time : 1:30 PM

Thank you in advance for your time. If you would like a copy of the completed research paper, please let me know and I will send one.

Cordially,

Butch Coley
SHERIFF-CORONER

.....
Lt. David Williams
Narcotics Investigation

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ATTACHMENT "A"

Appendix

Tables 4 & 5

TABLE 4

Trend Candidate List

1. Level of Technology Transfer; Military to Civilian
2. Level of Database Use on Purchasing and Lifestyle
3. Level of Public Intolerance for Violent Crime
4. Level of Privatization of Surveillance Services
5. Level of Law Enforcement Automation for Cost Savings
6. Level of Use of Live Video for Surveillance
7. Level of Multi-Lingual Investigators
8. Level of Traditional Law Enforcement Funding
9. Level of Radio Frequencies Available for Law Enforcement
10. Development of Alternatives to Lethal Force
11. Level of Alternate Funding Sources Identified
12. Level of Civil Unrest
13. Level of use of Artificial Intelligence for Crime Analysis
14. Level of Crime as a Political Issue
15. Level of Use of Non-Intrusive Drug Testing Methods
16. Level of Implementation of Alternatives to Long Term Incarceration
17. Level of Public Database Connectivity
18. Level of Airborne and Satellite Surveillance
19. Level of Cellular Phone Monitoring
20. Level of Law Enforcement Concern for Fatal Infectious Disease
21. Level of Surveillance Equipment Available from State Agencies
22. Level of Laser Technology for Evidence Identification
23. Level of Money Transaction Tracking
24. Level of Miniaturization of Electronic Components
25. Level of Skills and Aptitude of Entry-Level Officers
26. Level of Miniaturization of Batteries
27. Level of Voice Recognition Computer Technology
28. Level of Relational Database Search Capabilities

TABLE 5

Event Candidate List

1. Nationwide Epidemic
2. Willie Brown Elected Governor of California
3. Terrorists Blow-up UN Building
4. All Narcotics Legalized
5. Wire Taps Legal for Law Enforcement (without Court Order)
6. Three Justices Appointed to Supreme Court by Clinton
7. Financial Collapse of the US Government
8. Supreme Court Justice Shot by Drug Lord
9. Pager Information Interception Legal for Law Enforcement
10. Pope Assassinated While Visiting the US
11. Discovery of Major Criminal Cartel Operating in the US
12. Consolidation of All Agencies Into State Police
13. Pagers Found to Cause Cancer
14. Supreme Court Rules Asset Seizure Unconstitutional
15. Computer Course Mandated by POST in Basic Academy
16. Mexico Declares Bankruptcy
17. Discovery of Inexpensive Superconductor.
18. Mid-East Terrorists Blow-up Capital Records in LA
19. Earthquake of 8.0 or Greater Hits Japan
20. Exclusionary Rule Repealed

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6. Marc Levinson, "Cutting Edge?" Newsweek, 8 March 1993, p. 42.
7. Jerry Cameron, "Artificial Intelligence, Expert Systems, Microcomputers and Law Enforcement," The Police Chief, March 1990, p. 36.
8. Richard D. Morrison, "Star Wars Wireless Technology," Law Enforcement Technology, November 1992, p. 27.
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10. From an Interview with the author in October 1993. L. Michael Langley is the President of Audio Intelligence Devices Inc., Westinghouse Law Enforcement Division in Fort Lauderdale, Florida.
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12. Washington Roundup, "New Image," Aviation Week & Space Technology, 8 June 1992 p. 19.
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23. "Asset Forfeiture Through Illegal Drug Trafficking Taxes," Dedicated Funding for State and Local Anti-Drug Programs, June 1993, p. 19.
24. William L. Seymour, "Tulare to Put New Deputies on Patrol," The Fresno Bee, 30 December 1993, p.SV1.
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