

HOW WILL SATELLITE TECHNOLOGY IMPACT PATROL
OPERATIONS IN A LARGE URBAN/RURAL COUNTY
BY THE YEAR 2010?

A project presented
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Peace Officer Standards and Training

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

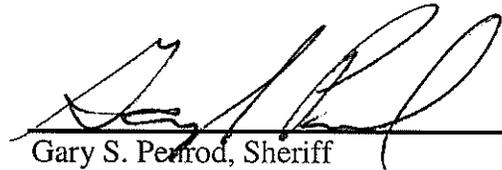
This project, written with the guidance and support of the student's agency, mentor, and advisor, has been presented to and accepted by the Commission on Peace Officer Standards and Training, State of California, in partial fulfillment of the requirements of Command College Class Thirty-Four.



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CHAPTER ONE

ISSUE DEVELOPMENT

Introduction

“But what ... is it good for?” -- *Engineer at the Advanced Computing Systems Division of IBM, 1968, commenting on the microchip.*

Since the city of Los Angeles Rodney King riots in 1992, and the terrorist attacks of September 11, 2001, no one can dispute that law enforcement needs a more effective communication system based on advanced satellite technology, as well as a more comprehensive and coordinated approach to achieving their objectives. In an information age, where private sector businesses can set their profit lines on their ability to collect and analyze information, collecting it, applying it and accessing it have perplexed law enforcement.

Corporate efforts to comprehensively collect, search and analyze the massive amounts of information that have been compiled on citizens are called “commodification of information”¹ and results in the profiling of customers and the sale of information to other businesses. Over the course of the last several years, law enforcement has seen rapidly advancing technology become more accessible to law enforcement, as well as more affordable. These factors, coupled with grant funds being made available for high technology and homeland defense, make it only a matter of time before law enforcement will be able to access this cache of information.

Being a good street cop is only one component of being a good manager. Having the foresight to look to the future to determine where law enforcement needs to go and how they are going to get there is essential and being able to influence those factors is critical. Law

¹ Jay Stanley and Barry Steinhardt, ACLU “Bigger Monster, Weaker, Chains: The Growth of an American Surveillance Society,” (January 2003); [research paper].

enforcement is immersed in the age of information and can no longer consider only the local impacts of what they do; they must realize the national and sometimes global implications.

There is no doubt that, as little as a decade ago, most veteran officers would have questioned the value of a computer in the patrol car. Nevertheless, as the economy grew and defense contractors looked for ways to find new markets for their wares, officers found value in the old adage that “a luxury, once tasted, becomes a necessity.

It wasn't long before high technology and the systems that integrate computing, communication, and even transportation found their way into police work, routinely dominating discussions among newer, computer-savvy cops, as well as attuned police planners. At the top of the list is the potentials desired of satellite technology: the panacea, perhaps, for future policing. The one that would let law enforcement know more about who was really a crook and where they always were; what law enforcement was getting into when someone called for help; and, allowed them to stop those pesky pursuits—absent the Hellfire missile!

With the realities of September 11, 2001 fresh in the minds of law enforcement, it is not hard to imagine utilizing many of the known applications of satellite technology for law enforcement purposes. Identifying this potential and overcoming some of the obstacles to eventual usage provides for interesting, relevant discussion. Translating it into potential impacts on a patrol officer in a large, urban/rural area cannot be addressed until law enforcement understands what it's good for and how its use is influenced by the economy, public perceptions, and those unforeseen—but predictable—events that influence public policy.

History and Evolution of Technology in the Information Age

To understand the development of technology and its effect on societies around the world, one first must understand how the development of technology in everyday lives influenced the

development of communications, and of transportation. Technology, even in its most basic forms, has guided civilizations, some of which have chosen to embrace technology and its benefits; others have chosen not to. For those who embraced its benefits, it has resulted in huge advances in society. Others, for reasons of fundamentalist beliefs, religion, or poverty have chosen not to encourage the development or application of technologies, which has resulted in stunted development.

The application and development of technologies can be used for the industrialization of nations, peace, war, prevention of starvation, cures for disease, and gene therapy. As man's development and application of technology grows, so does his desire for more, better, faster and easier methods. Technology in its most fundamental form comes from the need for better and more efficient ways to get a job done. People innovate to better feed themselves, to defend themselves from attack, to become more effective aggressors, or to gain some other competitive advantage. They build higher, faster, wider, cheaper, and more beautifully than the last person and what they have built fulfills a need and may increase their wealth.² Increases in food production efficiency have been closely associated with great societal transformations in the past. The transition from hunter-gatherer to an agricultural society depends entirely upon the recognition that food can be obtained more efficiently through effective management of limited land areas (farms). Further, rapid improvements in food production must take place simultaneously with a nation's

² Rick Sutcliffe, *The Fourth Civilization: Chapter 2.4, The Relationship Between Science and Technology* [text on-line] (Arjay Books Division of Arjay Enterprises, 1988-2002, accessed 30 September 2003); available from <http://www.arjay.ca/EthTech/Text/Ch2/Ch2.4.html>; Internet.

³ Rick Sutcliffe, *The Fourth Civilization: Chapter 1.3, Technology and Food* [text on-line] (Arjay Books Division of Arjay Enterprises, 1988-2002, accessed 30 September 2003); available from <http://www.arjay.ca/EthTech/Text/Ch1/Ch1.3.html>; Internet.

industrial revolution, for while one group of machines lures workers to the city, another must make it possible for the land to allow them to go.³

Communications

The evolution of telecommunications began in the United States in 1844 with the first public demonstration of Morse's electric telegraph and in 1876 when Alexander Graham Bell spoke the first complete sentence transmitted by a variable resistance transmitter. As early as 1878, the commercial aspect of telecommunications started to take shape with the opening of the first commercial telephone exchange in New Haven, Connecticut. By 1948, 30 million American households had telephones (a period of approximately 62 years from the first private line). In 1977, cellular trials were authorized, and by 1987, there were over one million cellular subscribers. By 1995, the number had risen to over 25 million (a period of only 8 years). As the availability of technology in the areas of communication and transportation increased in the United States, the economy transitioned to the global economy of today.

Transportation

Until the 1800s, transportation was a slow and laborious process with the same means of transportation available as in the Neolithic Age⁴ when horses and sailboats were not only the standard, but also the fastest modes of transportation. With the development of the steam engine, followed by the development of the internal combustion engine, the speed, efficiency, safety and comfort of travel improved tenfold. The first mass-production of vehicles occurred in the United

⁴ *Webster's Ninth New Collegiate Dictionary, s.v. "Neolithic Age."*

States in 1901. In addition, as the twentieth century progressed, infrastructure capable of facilitating the automobile was established. The federal highway system was completed in 1980.

Air flight actually began in the 18th century with the first launch of a hot air balloon. Balloons were briefly used to gather intelligence during the Civil War, until it became apparent that they were not immune to gunfire.⁵ Although the first heavier-than-air flight is generally attributed to the Wright brothers in 1903,⁶ the first significant inroads into modern day flight were made during WWI, with advances continuing at rapid intervals. Periods of war have traditionally hastened the advancement of transportation and communications.

Computing

Larger machines will also continue to grow and change, as will organizations depending on them. Moreover, computers of the future will be as different from those of today as these are from ones of the late 1940s. They will be smaller (down to pocket size), faster, and with greater storage capacity. They will be integrated with video and communications technology to give immediate access to worldwide databases. They will undoubtedly become easy to use, and at some point the need to offer university, level courses or their operation will cease, for they will have become common technical appliances.⁷

The first calculator contained over 18,000 vacuum tubes, was developed by J. P. Eckert and J. W. Mauchly at the University of Pennsylvania, and was used primarily to compute the trajectory of military shells. These early computers filled several rooms and cost up to millions

⁵ "History of Satellites: From Steep Hills to Satellites; Balloons to Biplanes," in National Geographic.com: Eye in the Sky [data base on-line]; available from http://www.nationalgeographic.com/eye/sat/satel_2html; Internet; accessed 24 September 2003.

⁶ Dr. Robert Scott Seitz, III, "A Brief History of Transportation," [article on-line]; available from http://www.megafoundation.org/UltraHIQ/HIQNews/BannerNews/Brief_History.htm; Internet; accessed 24 September 2003.

⁷ Rick Sutcliffe, The Fourth Civilization: Chapter 1.4, A Brief History of Computing [text on-line] (Arjay Books Division of Arjay Enterprises, 1988-2002, accessed 30 September 2003); available from <http://www.arjay.ca/EthTech/Text/Ch1/Ch1.4.html>; Internet.

of dollars.⁸ The transistor replaced vacuum tubes and in 1947 “resulted in miniaturization of many electronic devices.”⁹ Invention of the integrated circuit resulted in a computer that was the size of a small box (introduced in 1964) and resulted in the creation of the first pocket calculators¹⁰ of the 1970s. In 1981, the desktop computer was introduced and by 1995, 30 million people worldwide were on the Web. In comparison, what took over 60 years to achieve with traditional phone service, took less than 15 years to accomplish with the advent of the computer. Never before have technological advances in the telecommunications industry occurred so rapidly; never before has law enforcement so readily adapted to changing technology.

Technology continues its monumental advances and has created what law enforcement now refers to as the “information highway,” an imaginary road over which information travels.

What are Satellites?

Satellites are a small body, either natural or artificial that revolves around a larger astronomical object. In our discussion, we are referring to artificial satellites; those that are man made and placed into orbit around the Earth to gather data. The Earth data gathered from these satellites helps promote an awareness of the environment, the world and the universe.¹¹

The key to satellites is the ability of remote-sensing devices to ‘see’ energy in wavelengths not visible to the human eye, for example infrared bands. Different bands are arbitrarily assigned colors to produce “false-color” images- and new looks at an old world.¹²

⁸ Ibid 7

⁹ Ibid 7

¹⁰ Ibid 7

¹¹ Tara M., “Development of Satellites,” 19 May 1997 [paper on-line] ; available from <http://www.smgaeis.org/physics/97/TMCDONOU.HTM>; Internet; accessed 24 September 2003.

¹² “History of Satellites: Super Sight,” in National Geographic.com: Eye in the Sky [data base on-line]; available from <http://www.nationalgeographic.com/eye/satellites.html>; Internet; accessed 24 September 2003.

The Development of Satellites

"A picture is worth a thousand words...." Author unknown

Throughout the 19th century and the early part of the 20th century, technological advances continued to develop the underlying foundation for the current telecommunications systems throughout the industrialized world. Satellite technology has progressed at an exponential rate. On October 4, 1957, Russia launched the Earth's first artificial satellite "Sputnik 1", a basketball-sized bundle of technology,¹³ which shocked the United States. Four months later, on January 31, 1958, Explorer 1, the first U.S. satellite, followed Sputnik into space. It was (the) Explorer 1 that discovered magnetic radiation belts around Earth.

In response to the increased threat caused by the successful launch of Sputnik, President Eisenhower approved the Corona Project:

Corona combined the ability of Americans to overcome the technological and sometimes bureaucratic barriers to gaining the 'higher ground' of space. Despite many early failures, Project Corona left an extensive trail of significant accomplishments. With 145 launches from 1959 until the project's end in 1972, Corona missions were successful in debunking the concern over suspected numerical advantages of Soviet bombers and missiles (the famous 'gaps') in the 1960's, providing key understanding of the level of effort the Soviets eventually did put into these programs. The missions also gave the United States a clear edge over any other nation in 'strategic' intelligence. In addition to military intelligence, Corona missions provided the West with news of the dramatic failure of the USSR's moon project. But as Peebles points out, Corona's greatest legacy stems from the lessons it taught US national leadership about groundbreaking and often costly programs and the fact that they often must be pursued despite what accountants might say. In the long run, our nation is respected around the world because we dare to try.¹⁴

President Eisenhower's early support of an aggressive spy satellite program ensured the United State's military superiority for much of the Cold War era, and alleviated false concerns

¹³ "History of Satellites: High Fliers," in National Geographic.com: Eye in the Sky [data base on-line]; available from <http://www.nationalgeographic.com/eye/satellites.html>; Internet; accessed 24 September 2003.

¹⁴ Lt. Col. William T. Eliason, USAF, review of "The Corona Project: America's First Spy Satellites," by Curtis Peebles (1997); [book report on-line]; available from <http://www.airpower.maxwell.af.mil/airchronicles/bookrev/peebles.html>; Internet accessed 25 September 2003.

over the status of the Soviet military.¹⁵ President Lyndon B. Johnson supported the early space program for the benefit of the spy satellites alone.¹⁶

After President Kennedy came into office, he continued the support of the space program and in 1961, during a Special Joint Session of Congress, said:

I believe this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth. No single space project in this period will be more impressive to mankind or more important in the long-range exploration of space; and none will be so difficult or expensive to accomplish.¹⁷

President Kennedy's challenge was to accomplish this goal by the end of the decade; in response, on July 20, 1969, the United States accomplished its most monumental technological achievement when the first manned spacecraft, Apollo 11, landed on the moon. President Kennedy also promised a major effort toward achieving a satellite communications system. On July 23, 1962, Telestar became the first satellite to pick up a spoken voice, amplify it and return it to Earth. On this same day, satellites carried the first live-television transmission between the United States and Europe.

Until the end of the Cold War, only two world powers had spy satellite capability, the United States and the Soviet Union. By the end of the 20th century, more than 2200 satellites were circling the planet.¹⁸

Today the number of satellites orbiting the planet approaches 2500. In addition, any country's ability to own and operate a satellite is limited only by their technological and financial

¹⁵ Cold War Years: 1945 to 1991

¹⁶ David J. Whalen, "Communications Satellites: Making the Global Village Possible," [paper on-line]; available from <http://www.hq.nasa.gov/office/pao/History/satcomhistory.html>; Internet; accessed 24 September 2003.

¹⁷ John F. Kennedy, Special Joint Session of Congress, May 25, 1961

¹⁸ Ibid 13

ability to achieve such. For countries that do not own satellites, “satellite time” or imagery, is available for purchase from other countries (except from those considered political hot spots).

Satellite Applications

The uses for satellites have just begun to be realized and are limited only by additional technology coupled with unlimited creativity. Many satellite applications developed for the military will also have relevance in the civilian realm, particularly law enforcement.

Satellites, combined with state-of-the-art imaging techniques, offer ordinary humans something heretofore found only among comic-book superheroes: the gift of super sight.¹⁹

Military

Satellites and technology are considered essential in modern day warfare. With appropriate applications of technology, fewer military personnel can be deployed and those that are can be utilized more effectively with fewer friendly casualties. Satellites are used for: mapping; reconnaissance; surveillance; target acquisition; monitoring borders; tracking personnel and equipment;²⁰ gathering intelligence; identifying and targeting enemy troops and assets; planning air, ground and naval missions; deployment of resources and assessment of battle damage;²¹ treaty monitoring; and, as a communications platform.

In times of warfare and threat to the United States, many advances are made by the military that can later be applied for use in civilian law enforcement. This is generally due to the amount of money being given to the military during these times. This was also seen with the

¹⁹ Ibid 12

²⁰ Thomas J. Cowper & Michael E. Buerger, “Improving Our View of the World: Police and Augmented Reality Technology,” [research paper].

²¹ “Applications: National Security,” in Orbimage Global Imaging Information [data base on-line]; available from <http://www.orbimage.com/appl/national.html>; Internet; accessed 17 September 2003.

significant downsizing of the United States Military in the early 1980s. Civilian contractors attempting to find innovative ways in which to apply declassified military technology modified the deployments for law enforcement objectives.

Civilian Uses

The use of information from satellites has become integrated into the everyday lives of civilians and has generally gone without notice. The media uses satellites to report on critical events and natural disasters. The environment is monitored by satellites, as are compliance issues related to treaties. Satellites provide entertainment; early warning systems; mapping; research, and communication platforms.

Someday, it is anticipated that law enforcement will use access to satellites for enhanced communication systems and to find new and innovative methods for combating crime and terrorism. SWAT operations will have increased situational awareness using real-time, video streaming. Patrol officers will have access to real-time intelligence information concerning crime and parolees, probationers and registrants; thermal imaging will be instantly accessible, as will the ability to analyze large amounts of data almost instantaneously.

Supervisors will have the ability to monitor individual officer performance and activities, real-time; and can provide immediate support to personnel in the field. Scalable, three-dimensional mapping will improve situational awareness.

Cost Issues

The cost of satellite technology, like other technology, had been reduced as the availability of and access to satellites has increased and as they become more commercial. For example, the cost to commercial carriers per circuit has gone from almost \$100,000 in 1965 to just a few

thousand dollars today. Cost to consumers has gone from over \$10.00 per minute to less than \$1.00 per minute.²² Satellites themselves have transitioned from 100-foot dish reflectors with cryogenically cooled master amplifiers that cost as much as \$10 million (1960 dollars) to build, to antennas for normal satellite services which are typically 15-foot dish reflectors costing \$30,000 (1990 dollars). In the future, direct-broadcast antennas will be only a foot in diameter and cost a few hundred dollars.²³

Raymond Kurzweil defined in his book the “Law of Accelerating Returns.” Kurzweil said that the rate of time it takes for technological advancements to take hold in society is compressing and the technological changes are coming quicker and will be adopted by society quicker.²⁴

The Big Brother View of Technology

As advances in technology continue at this exponential rate, civil libertarian watchdogs’ fight to protect the freedoms provided to individuals by the Fourth Amendment to the Constitution becomes an even bigger concern.

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.²⁵

Subtler and more far-reaching means of invading privacy have become available to the United States Government. Discovery and invention have made it possible for the government, by means far more effective than stretching upon the rack, to obtain disclosure in court of what is whispered in the closet.²⁶

²² Ibid 16

²³ Ibid 16

²⁴ *The Age of Spiritual Machines: When computers Exceed Human Intelligence*, Raymond Kurzweil

²⁵ Fourth Amendment to the United States Constitution

²⁶ United States Supreme Court Justice Louis Brandeis, 1928

Some, particularly civil libertarian groups, view technology as a way for Big Brother (government) to take freedoms from its citizens, while at the same time controlling their activities. These groups would argue that since September 11, 2001 they have seen a significant increase in the government's efforts to collect information concerning every American's activities in an effort to catch potential terrorists.²⁷ In their report, "*Bigger Monster, Weaker Chains*,"²⁸ the American Civil Liberties Union (ACLU) describes this collection of information as data surveillance for use in the creation of a "giant dragnet capable of sifting through the personal lives of Americans."²⁹ The ACLU is certainly not the only group that sees this gathering of information as a plot to unlawfully invade the private lives of citizens.

Rapid technological advances, in conjunction with the end of the Cold War and the demand for greater bureaucratic efficiency, are promoting a seamless web of surveillance from cradle to grave, from bankbook to bedroom. New technologies developed by the defense industry are spreading into law enforcement, civilian agencies and private companies.³⁰

Barry Steinhardt, an American Civil Liberties Union director said, "The reasonable expectation of privacy has been dramatically reduced" in response to a report entitled, "*Bigger Monster, Weaker Chains: The Growth of an American Surveillance Society*."³¹ The report describes the potential for the government to amass huge amounts of information on every person in the United States and then use that information to spy on them. The report alleges a sinister plan to use September 11th as an excuse to weaken individual privacy rights.

²⁷ "US Eyes Big Brother Plan: Technology," in BBC News, [data base on-line]; available from <http://www.nnews.bbc.co.uk/1/hi/technology/2563249.stm>; Internet; accessed 30 September 2003.

²⁸ Jay Stanley and Barry Steinhardt, ACLU "Bigger Monster, Weaker, Chains: The Growth of an American Surveillance Society," (January 2003); [research paper].

²⁹ Ibid 28

³⁰ David Banisar, "Big Brother Goes High-Tech," in Covert Action Quarterly [article on-line]; available from <http://mediafilter.org/caq/CAQ56brother.html>; Internet; accessed 30 September 2003.

³¹ Ibid 28

Recently, the government unveiled a project known as “Total Information Awareness,” or TIA, this program strives to give officials unified access to every possible government and commercial database in the world.³² Mark Rotenberg, who monitors what he terms as government attempts at surveillance, said, “This is a technology-intensive approach that assumes if you have enough clear data you can produce clear conclusions.”³³ The ACLU declares the project “seeks to tie together every facet of our private lives in one big surveillance scheme.” The general population does not realize the magnitude of the threat from the government and private sector’s desire to tie together every facet of information of their private lives.³⁴

The report details ways in which the surveillance monster will use advanced technologies to invade citizens’ privacy and violate their rights. Surveillance cameras used by businesses and government to provide security can be networked, data digitally stored and accessed; facial recognition systems are already being installed in airports and at national monuments, which have not yet achieved an acceptable level of accuracy. Video surveillance may also be conducted by using unmanned drones. DNA could be posted on the Internet and police could scan citizens’ vehicles as they pass by a detector. All the while, movements are being tracked and the information stored for later access. “*Bigger Monster, Weaker Chains*” also suggests that the possible solution to this government web of surveillance is stricter laws regulating government access to, and use of, the information.

³² John Markoff, “Pentagon Plans a Computer System That Would Peek at Personal Data of Americans,” in New York Times, 9 November 2002 [article on-line]; available from <http://cryptome.org/tia-queeg.htm>; Internet; accessed 7 October 2003.

³³ Ibid 20

³⁴ Ibid 28

Law Enforcement Meets Technology

Technology is not new to law enforcement in the United States. For well over a decade many agencies have had access to computers in their units. However, law enforcement across the United States has traditionally taken a fragmented approach to dealing with crime. Responses are generally based on jurisdictional boundaries (either by geographic areas or types of crime), consequently allowing criminals to wander freely from jurisdiction to jurisdiction--virtually undetected.

In an attempt to influence crime trends, millions and millions of general funds, as well as grant dollars, have been poured into law enforcement in an effort to move law enforcement into the age of technology and to provide the high technology necessary to effectively fight crime and serve the public. All over the United States, but particularly in California, law enforcement chases the newest high tech gadgets and systems. Unfortunately, all too often, what is purchased is outdated, ineffective or not compatible with an agency's own internal software/systems, let alone compatible with neighboring agencies' systems. Even in California, where law enforcement prides itself on being state-of-the-art, many of the data systems do not communicate and operate independent of neighboring agencies.

Today, in California alone (excluding Special Districts, Port Police, et cetera) there are 396 traditional law enforcement agencies, including 58 sheriff's departments with 37,879 deputies and 338 police departments with 26,705 officers.³⁵ Multi-agency task forces are the norm in California to deal with specific crime issues, but they do little to combat the effects of a fragmented approach to law enforcement and technology. Congress has enacted laws, which mandate coordination by implementing national standards of behavior. An example is "Megan's Law," which was enacted

³⁵ Peace Officer Standards and Training

after 12-year-old Polly Klaas was abducted and killed, in part due to law enforcement's inability to share information.

Admittedly, the law enforcement structure is, at all levels, entrenched in layers upon layers of governmental bureaucracy which, by its very nature, inhibits growth, innovation and necessary change. The quality, quantity and content of training law enforcement personnel receive, although often regulated by states, vary greatly, even within neighboring jurisdictions.

With the economy teetering on the edge of a major recession, and with huge state and federal deficits threatening local funding, the spillover of these economic woes will cause a serious impairment in law enforcement's ability to provide for the general welfare of the communities they serve.

Historically, the national trend has been that law enforcement funding in support of training and staffing are always the first to suffer during periods of limited financial resources. Law enforcement has learned that most crime trends are probably related more to the economy and such other factors as unemployment. Likewise, throwing staffing and resources at policing problems does not, in and of itself, genuinely result in reductions in crime trends. In terms of economic costs, failure to adequately train police personnel results in some of the costliest lawsuits.

Issues that make each agency unique also make a holistic approach to regulating law enforcement difficult—but certainly not impossible. Law enforcement agencies are notoriously behind the curve when it comes to identifying and applying innovations in technology, and notoriously negligent in working together to develop systems that communicate and efficiently achieve stated objectives.

In the long history of policing, it is only recently that progressive agencies throughout the country identified the benefits of a comprehensive approach to addressing crime issues. Now law enforcement goals should focus on cutting through bureaucracy, eliminating redundancy, and

encouraging creativity and innovation with the broader goal of more effectively serving the communities.

Technology is providing opportunities for law enforcement to provide this comprehensive approach on a regional/national basis, as they have never been able to do in the past. The across-the-board application of technologies on systems that can communicate would go a long way toward making law enforcement effective.

The Effect of September 11th

September 11th, 2001, more than any other single incident in modern history, exposed the inadequacies of modern law enforcement at all levels. In addition to providing a pointed lesson in the fact that it can and did happen on United States soil, it pointed out the inadequacies in the current system and clarified law enforcement's vulnerability. Existing law enforcement agencies and systems were unable to sort through the massive amounts of available information to identify possible terrorist activities. The heroics that followed the hijacking of four commercial airliners unified Americans and brought renewed support for public safety officers.

New Technologies; New Crimes; New Laws

The term high tech as applied to law enforcement, generally identifies a new type of crime related to computers. It does not necessarily define the methods of dealing with and identifying ways to effectively fight crime created by the ever-increasing boom of technology and its accessibility to the general public. In other words, "cyber-crime." The advent of technology has created entirely new classifications of crime in areas that, as of yet, are very unregulated. One recent example of the confusion that advanced technology creates is the recent ruling that exclusively computer-generated pornography is not a violation of existing law.

Daily, local law enforcement personnel are perplexed and overwhelmed by the creativity and innovations of those who seek financial gain or who are attempting to further their own extremist views through the manipulation of virtually unregulated technology. Few agencies are lucky to have the technological support and expertise that allows them to be on the cutting edge.

An oft-neglected area would be that of law enforcement communications and agency interoperability at all levels, or more appropriately, a lack thereof. Law enforcement, especially at the local level, is overwhelmed by the vast array of technology choices. Unfortunately, inexperienced or naive personnel often choose systems at great costs that are incompatible with existing technology or that are already antiquated.

Legal Considerations

As satellite access around the world continues to expand with the addition of new international operators and new encryption methods, the manner in which law enforcement deals with issues related to its use has yet to be defined. What used to be a clear and understood process has now been complicated by the inclusion of technology and complicated geographical issues. No longer are regulatory issues a matter of local control. Now these issues have to be regulated by international regulators of law or tribunals charged with this task. Currently, restrictions vary from country to country with United States law enforcement haggling over guarantees that key infrastructure would be subject to U.S. jurisdiction when accessing U.S. controlled satellites.

The Privacy Act of 1974 banned government from maintaining information on citizens who are not targets of investigations. The FBI can now circumvent that law by purchasing much the same information that has been collected by the private sector.³⁶ The USA Patriot Act, passed

³⁶ Ibid 28

just weeks after September 11th, greatly expanded the government's ability to spy on its citizens while diminishing the oversight. This act also allows the government great freedom to access individual or business records without showing even a suspicion of criminal activity.

In other countries, similar battles are being fought in an attempt to keep the laws ahead of or at least on par with technology. In October of 2000, the United Kingdom enacted the Regulation of Investigatory Powers Act (RIPA), which granted significant access to e-mail and other encrypted Internet communication. The Netherlands broadened police investigative powers in advance of an international treaty on cyber-crime³⁷ in an attempt to avoid possible restrictions.

In a pre-9/11 case, *Kyllo vs. U.S.*,³⁸ the United States Supreme Court held that the reasonable expectation of privacy could not be determined by the power of new technologies...and that without a warrant the police could not use a new thermal imaging device that searches for heat sources to conduct what was the functional equivalent of a warrantless search for marijuana in Kyllo's home.³⁹ Although this case provides a benchmark for limits on intrusive technology, it does not deal with the issue of similar technology becoming commonplace or falling into the hands of those with unfavorable intents, criminals.⁴⁰

³⁷ Rick Perera, "German officials warn of Net Big Brother," in CNN.com, (12/8/2000); available from <http://www.cnn.com>; Internet 30 September 2003.

³⁸ 190 F.3d 1041, 2001.

³⁹ Ibid 28

⁴⁰ Ibid 20

The Future of Satellite Technology

"Everything that can be invented has been invented." -- Charles H. Duell, Commissioner, U.S. Office of Patents, 1899⁴¹

ComTrak, a private company is leasing Defense Department (DoD) satellite time and testing the tracking capabilities of a system aimed at cost effectively monitoring jail releasees. Initially, the test program included over 100 parolees and probationers residing in nine (9) states. The system individually identifies zones of travel based on each parolee or probationer's conditions of release and individual restrictions. ComTrak can establish exclusionary zones, which, for example, may include schools for sexual predators, bars for drunk drivers, or an abuse victim's work place.

The tracking system notifies authorities if the releasee has removed the bracelet, is more than 50 feet from the tracking unit, or has entered an exclusionary zone. Placing the unit into the charger downloads all of the releasee's daily movements. The cost to monitor is \$12.50 per day, per individual, compared to the cost of incarceration, which is typically \$40.00 per day.⁴²

"Black boxes" are now routinely installed in all new vehicles. These boxes, much like their airline counterparts, record vital information about a vehicle's operation and movement. Information from the boxes can be collected and used against the drivers by car rental companies, the police, or insurance companies, just to name a few.

Implantable GPS chips are just miniaturized GPS systems, which can be more easily hidden in clothing, a purse or implanted under the skin. The intended target can be tracked remotely without their knowledge or consent. These, as well as RFID chips, could allow police to scan a citizen's identity or monitor their activities without their knowledge or permission.

⁴¹ Charles H. Duell, Commissioner, U.S. Office of Patents, 1899

⁴² Gary Fields, "Satellite 'Big Brother' Eyes Parolees," in USA Today, 11 April 1999 [article on-line]; available from http://www.cincinnati.com/technology/041199_bigbrother.html; Internet; accessed 30 September 2003.

Law enforcement is struggling to effectively apply technological advances as they head into a future where the application of these technologies is limited only by the imagination! The effective and consistent application of satellite technology in the law enforcement area in the year 2010 will be at the center of successful policing. The following chapter will assist in the identification of trends and events that may affect the utilization of satellite technology in law enforcement.

CHAPTER II

FUTURES STUDY

“Any sufficiently advanced technology is indistinguishable from magic.” (1984)~Arthur C. Clarke⁴³

Introduction

At no time in the history of mankind has the world been subjected to change so significant and that is coming so quickly. This change can only be described as exponential. Technology and its potential for future applications present law enforcement with unique opportunities: opportunities for more efficient deployment of personnel and more effective utilization of resources; opportunities for more efficient collection of information; and opportunities for more efficient access to that information.

Law enforcement organizations that want to remain state-of-the-art must have the desire to adapt to the technologies and must have appropriate guidance as to what technologies are applicable to accomplish their goals. Law enforcement must evolve from a localized mindset to that of a nationalized, and ultimately a globalized mindset. Agencies that are unable to make the transition will be ineffective in their ability to fight crime. Inter-connectedness and inter-operability are the keys to the future of law enforcement and its effectiveness.

In order to assist in the construction of a model strategic plan, as well as identify and measure possible trends and events for the issue of satellite technologies impact on law enforcement patrol operations, the Nominal Group Technique was used to forecast trends and events.

⁴³ Profiles of the Future: An Inquiry into the Limits of the Possible, Author C. Clarke (1984)

Nominal Group Technique (NGT)

A Nominal Group Technique (NGT) is a structured workshop, meeting and/or process, which is usually facilitated by a third party, who identifies the major problems or issues under consideration by the group. It is also used for managing participation in such processes as planning, performance improvement and measurement. The method is effective at gaining consensus with all types and levels of participants in a wide range of settings.

The facilitator presents the issue and the participants identify trends and events that could affect the issue. The trends and events are then ranked by order of importance. The group may then discuss solutions to resolve the issue. By generating a prioritized consensual list of measures and improvement interventions, the issues are addressed and a strategic plan is developed through teamwork.

In December 2002, a group of panelists was selected to assist with the nominal group technique (NGT). The panelists consisted of persons who have some knowledge or expertise in the subject of satellite technology, law enforcement or the law. The panel consisted of (refer to Appendix A):

- The head of the Aviation Division for San Bernardino County Sheriff's Department
- A partner in a law firm specializing in defense of peace officers
- An expert in the law enforcement use of force continuum
- A contract city patrol sergeant
- A financial manager for a large public sector corporation
- An Assistant Chief of Police for the City of Victorville
- A sheriff's captain for an unincorporated station
- A sheriff's captain overseeing a state contract for law enforcement services
- An technical manager for a large information technology corporation

Before the event, a letter was sent to each panelist describing the NGT process, the issue statement that would be discussed, and defining trends and events. This was also an opportunity to ensure that each panelist had a clear idea of the issue statement.

Trends

Trends are a series of incidents or events taking place, which seem to indicate a direction in which a particular issue may be heading. It is based on the past, present and future. For purposes of this exercise, panel members were asked to identify trends that would have an impact, either positive or negative, on the future of satellite technology for use by police. The panel identified thirty-five trends from which they selected and ranked the top nine trends, in order of priority (based on the greater number of votes) and importance to the issue statement.

The panel was asked to provide additional information in order to chart an analysis of the information they provided. Assuming a value of 100 for the present year, 2002, the panelists were asked to individually estimate the level of the trend in relationship to the level five years ago, in 1997; five years into the future, 2007; and ten years into the future, 2012.

The panel concluded that the level of all nine (9) of the trends had increased in the last five years, although some more significantly than others. Based on the results, all of the trends will continue to increase through the next ten years. Trend 8, Military use of Satellite Technology for War, would increase the most ten years into the future.

Trend # 1: Level of access to satellite technology by law enforcement.

The panel defined this trend as either satellites being made available exclusively for law enforcement use, or giving law enforcement proprietary access to existing satellites.

The majority of the panel believed access to satellite technology was essential if the application of satellite technology were to have a significant impact on the issue statement. The majority of the panelists also believed that, although law enforcement would advance in this area over the next five years, the drop in the national economy would impact the speed of progress negatively. In other words, unless there is a significant upswing in the economy of the United States and specifically California, law enforcement will not see many financial resources directed toward advancing satellite technology and its applications to law enforcement.

The panel believed that the level of this trend had made some progress in the last five years, simply because the number of available satellites continues to rise.

Trend # 2: Laws enacted allowing law enforcement to track targeted offenders with technology.

The panel described this trend as laws that would allow for satellite tracking by use of a Global Positioning System (GPS) of all offenders who fell into specified categories, which include parolees, probationers, and all categories of registrants.

The panel noted that the level of the trend was slightly less five years ago than today, but projected it would nearly double in five years and triple in ten. This trend also had the highest level of concern for the panel because they felt it would signal the beginning of a more comprehensive approach to dealing with crime and offenders, significantly increasing our effectiveness.

Trend # 3: Number of options in lieu of police pursuits.

The panel described this trend as alternate methods being developed to stop fleeing vehicles using satellite technology. The panel believed that some progress had been made in the previous five years, but projected it would more than double in the next five years and quadruple

in ten. This trend had a significant level of concern (although slightly less than the previous trend), generally due to the negative publicity associated with the tragic outcomes of some police pursuits when innocent civilians are killed or seriously injured. The panel believed that for continued public support of any pursuits, significant progress had to be made in the area of pursuit alternatives.

Trend # 4: Use of satellite imagery by law enforcement.

The panel described this trend as the satellite imagery available to law enforcement being so clear with “live-feed” capabilities that it was useful for law enforcement application, such as search warrants. There were several discussions relating to the development of technology in this area that would allow law enforcement to use streaming video and three-dimensional technology to project an image of a sniper suspect on a rooftop to the field units. The panel thought this technology would be invaluable to law enforcement.

The panel in this instance noted the level of the trend was half five years ago, but projected that it could more than double in five years and more than triple in ten. This trend had a high level of concern, due to the significant increases in officer safety concerns associated with it.

Trend # 5: Level of domestic terrorism.

This trend was described as terrorism on United States soil becoming more commonplace because of perceived increases and resulting in fewer restrictions on law enforcement personnel. There were several discussions regarding the likelihood that domestic terrorism would increase, as we have already begun to see.

The panel in this instance noted the level of the trend was significantly less five years ago, but projected it would double in five years and that although law enforcement would continue to

see an increase in ten years, the development of technology would allow law enforcement to more effectively deal with domestic terrorism. The panels' level of concern related to this trend was only moderate and did not feel it would significantly impact the issue due to the specialized applications of satellite technology in law enforcement.

Trend # 6: Level of reliability of the satellite communications systems.

This trend was described as the effectiveness of the satellite communications system made it a reliable communications platform. The majority of the panel believed that some progress had been made toward achieving this goal, but noted concerns related to vulnerability. The panel noted that the level of the trend was half five years ago, and projected continued improvement just short of doubling in five years, and well more than triple in ten. The panel's level of concern related to this trend was moderate due to law enforcement's historically slow application of available technology, which in this situation, would allow for the development of better safeguards.

Trend # 7: Public reliance on electronic media.

This trend was described as the public's total reliance on the electronic media for all of their information. The panel noted the level of the trend was slightly less five years ago than today, but that in five years the trend would double and then more than triple in ten years. The panel's level of concern related to this trend was only moderate, and they felt that a broader reliance on electronic media would result in a more educated public.

Trend # 8: Military use of satellite technology for war.

This trend was described as military use and development of satellite technology for warfare and its possible civilian applications. The panel understood that great advancements in technology are achieved during times of conflict without regard for their development costs. The belief was that with the government and/or private sector paying for the development, the cost to transition the applications would be much less and the applications may be available sooner and on a broader scale.

The panel noted the level of the trend five years ago was less than half of what it is today, but projected that in five years it would double and in ten years more than quadruple. This trend tied for the highest level of concern for the panel primarily due to the costs associated with the development of satellite technology.

Trend # 9: Level of latitude allowed by courts (i.e. fighting terrorism).

The panel described this trend as courts, at all levels, allowing greater intrusions on individual constitutional rights. One of the examples cited by the panelists was the virtual disappearance of pending legislation regarding the regulation of racial profiling, while at the same time lifting restrictions on wiretapping after September 11, 2001.

One panelist did not feel there was any significant change in the level of constitutionally protected individual rights over the last five years and that any change toward greater loss of individual personal freedoms would occur gradually, as the result of inherent fears surrounding a police state or big brother. Most of the panel felt the trend began September 11, 2001, and would continue if there were another terrorist attack involving a large loss of American lives or if a credible attack was thwarted.

Additionally, as one panel member pointed out, "Less emphasis on individual rights and more emphasis on security simplify the picture for us. We have greater empowerment to act."

The panel noted this trend was less five years ago than today and projected that in ten years the trend would not quite double. The level of concern for this trend was not high.

The results shown on the following page reflect the median of the scores tabulated.

Table 2.1

Trends Affecting How Satellite Technology will Impact Law Enforcement

	-5 Years 1997	Today 2002	+ 5 Years 2007	+ 10 Years 2012	Concern 1-10*
Trend # 1 (Level of Access to Satellite Technology)	65	100	162	310	7
Trent # 2 (Offender Track)	80	100	165	300	8
Trend # 3 (Pursuits)	60	100	230	400	7
Trend # 4 (Imagery)	50	100	245	310	6
Trend # 5 (Level of Domestic Terrorism)	31	100	200	240	5
Trend # 6 (Effective Satellite System)	50	100	180	365	7
Trend # 7 (Electronic Media)	85	100	200	387	6
Trend # 8 (Satellites for War)	43	100	197	465	8
Trend # 9 (Latitude)	70	100	171	192	4

* One Indicates a score of *least* concern, while 10 indicates a score of *most* concern.

Event Analysis

The NGT panel was asked to identify several events that have occurred or could occur, positive or negative and that could have a significant impact on the future use, or implementation of technology. Events are different from trends in that events are singular occurrences, and events occur at a particular time and date. The panel members were asked to identify events that have occurred or could occur, positive or negative, and that could have a significant impact on the future of satellite technology on law enforcement. Each of the events was discussed as to their relative impact upon the issue statement. Of the thirty-one events identified, the panel selected the top nine (9) most significant events, which if they occurred would have the greatest impact on the issue statement.

In addition to identifying these events, the panel was also asked to identify additional information, which was included in a chart (Reference Table 2.1). The first column is the first year the event could occur. The second column is the probability (expressed as a percentage) the event could occur by the year 2007. The third column is the probability of the event occurring by 2012. The fourth column indicates whether the event will have a positive or negative impact on the issue and the last column indicates the amount of impact, 1 being the least and 10 the greatest.

After ranking the events, the NGT panel determined that Event 7 had the least probability of occurring within even the 10 year time frame and Events 1, 2, 3 and 8 were much more likely to occur (over a span of several years), but all before the year 2007. Events 1, 2, 3, 6, 8, and 9 all were likely to occur within the first five years, while Event 4 had a significant likelihood of occurring by 2012.

Each of the events was discussed in detail by the panel. What follows are summaries of those discussions:

Event # 1: Another major terrorist attack on United States soil.

This event was described as another terrorist attack occurring on United States soil, as significant or worse than those that occurred on September 11th, 2001. Eight of the nine panelists believed this event would have a positive impact on the issue statement, primarily due to the fear factor another terrorist attack would cause within the general population. The same panelists believed that, as the time since September 11th increases without another attack occurring, the level of fear diminishes. Consequently, as the public's perceived threat is reduced, so is their willingness to continue to fund preparatory or preventative programs, or allow additional laws that may be perceived as infringing on their constitutionally protected rights.

September 11th clearly demonstrated several things to the general public: law enforcement, at all levels, was unable to identify and stop the attacks even though they had information available to them which, if acted upon may have allowed law enforcement to prevent them.

Event # 2: Counter surveillance technology developed, which prevents satellite tracking.

This event was described as the development of a method to prevent satellite tracking, or sabotage by unfriendly government or groups. The panel believed that this would occur with almost a 100 percent probability by 2007.

Event # 3: Major sabotage of satellite communications system.

This event was described as a total failure of the satellite communications system effecting all government. The panel felt this could be a reality within three years and by 2007, the probability of the event occurring would be 100 percent. The panel also thought an incident such as this would have a fairly significant negative impact on the issue statement and, if the failure were complete, alternate communications systems would have to be developed. One of the panelists noted that our enemies would relish our embarrassment over such a failure.

Event # 4: All vehicle manufacturers install GPS in cars in response to legal requirement.

This event was described as legislation requiring all vehicles to be equipped with a satellite Global Positioning System (GPS). The panel felt this event could first occur within six years and had a 60 percent probability of occurring by 2007 and 100 percent probability of occurring by 2012. The panel also believed this event would have a significant, positive impact on the issue statement and would on a unilateral basis allow us to track stolen vehicles, locate lost elderly drivers, and track criminals. Several panelist expressed their belief that this would be met with great resistance by civil libertarians attempting to curtail what they perceive as an invasion of Fourth Amendment rights.

Event # 5: Virus attacks GPS resulting in false or inaccurate information.

The panel described this event as a virus, which attacks law enforcement's satellite(s) and affects the reliability of information provided to law enforcement. The panel felt this event could first occur within four years and would have a significant negative effect on the issue statement. One panel member felt that an incident such as this would lend credibility to individuals or groups who would try to restrict law enforcement's access to information citing unreliability.

Event # 6: Magnitude 8.0 earthquake hits Southern California.

The panel described this event as an 8.0 earthquake hitting Southern California and inflicting significant damage to infrastructure, with a total disruption of law enforcement's ability to deliver services. Most of the panelists believed this is an eventuality.

Event # 7: Constitutional amendment enacted barring public surveillance.

This event was described by the panel as, at minimum, a Federal, 9th Circuit Court ruling barring public surveillance involving the use of satellites without a search warrant. The panel

felt there was virtually no chance of this occurring for many years. The panel also believed it would have a fairly significant negative impact on the issue statement if it were to occur.

Event # 8: Police pursuit kills high profile person.

The event was described by the panel as a high-speed pursuit in Southern California, which resulted in the death of a high profile person. The panel felt this event had a high probability of occurring within three years, and a 100 percent probability of occurring within five years. The panel felt it might have a positive impact on the issue statement because it may prompt the development of a high tech alternative to traditional pursuits.

Event # 9: National simultaneous civil disturbances (multiple sites across the United States).

This event was described as multiple simultaneous civil disturbances or riots occurring around the United States. The panel believed this event only had a minimal probability of occurring within five years and only a slight probability of occurring by 2012. The panel believed if this event did occur, it would have a significant positive impact on the issue statement because it would demonstrate how fragmented our approach to law enforcement is, as well as amplify the need for law enforcement interoperability. Of the nine panelists, only two felt the impact of this event on the issue would be negative. Both believed that local control of law enforcement would cease to exist and law enforcement would, at least temporarily, be nationalized (National Guard.)

Table 2.2

Events Effecting How Satellite Technology Will Impact Law Enforcement

Events: ↓	1 st yr. Event could occur	Probability of event occurring by 2007	Probability of event occurring by 2012	Positive or negative impact?	Amount of impact 1-10?
#1 Another terrorist attack US soil	2	100	100	+	7
#2 No tracking of satellites	3	99	100	-	5
#3 Sabotage of satellite comm. systems	3	100	100	-	6
#4 GPS in all private cars	6	0	100	+	9
#5 Virus attacks GPS	4	100	100	-	6
#6 8.0 earthquake in So. CA	5	82	100	-	3
#7 Constitutional barring of surveillance	33	0	0	-	6
#8 Pursuit kills high profile person	3	100	100	+	3
#9 National civil disturbances	5	45	62	+	6

Cross Impact Analysis

Since trends and events normally do not occur independent of each other, and because they could have definite impacts on each other, it is necessary to do a Cross Impact Analysis.

Therefore, a panel consisting of the author and four colleagues conducted a cross impact analysis. A chart was developed using a scale of -5 to +5, with -5 having the most negative impact on the issue statement, +5 having the most positive impact and 0 having a neutral effect.

After the impact on each trend had been determined, a strategic plan would be developed that would attempt to influence the occurrence of events that would have a positive effect on the majority of the trends. For example, it would be beneficial to attempt to cause Event # 1 “Access to satellite technology becomes affordable for law enforcement use” to occur. However, if the impact were to be negative on the majority of the trends, attempts should be made to prevent the event from happening. In this situation, an example of a trend that should be prevented from happening is Event # 7, “A constitutional amendment enacted barring public surveillance.”

Analysis of Cross Impact Table

The Cross Impact Analysis was presented to the second panel in the following fashion, “If an event were to occur, what effect would it have on the trend?” Event # 1, “Major terrorist attack on United States soil,” although negative, would have an overall positive effect on most trends (positive 3 or greater). Such an attack would demonstrate the need for the technology to be applied, as was the case with Trend’s 1, 2, 4, 5, 6, and 8. In these cases, the panel believed the event would cause critical players, (for example stakeholders) to take a more active role in ensuring that law enforcement had access to adequate resources to function and protect the public during such an event.

Event # 5 (Virus attacks satellite GPS resulting in false or inaccurate information,) would have a significant negative impact (negative 3 or greater) on several trends. It would particularly affect the access to satellite technology by law enforcement (Trend 1), laws being enacted to track targeted offenders (Trend 2), the number of options in-lieu of police pursuits (Trend 3), the level of restrictions on law enforcement (Trend 5), the level of satellite communications (Trend 7), and military use of satellite technology for war (Trend 8). The panel believed this negative impact was due to the event causing the accuracy and reliability of the satellite system to come into question, coupled with the public's willingness to allow police more latitude while depending on a seemingly vulnerable or unreliable system.

Event # 6, Magnitude 8.0 earthquake hits Southern California resulting in major damage to infrastructure, although negative and potentially devastating, would not affect most trends because the event cannot be controlled or prevented. The panel also felt that, when a large earthquake does occur, it will be so devastating the public will only be concerned about daily survival. The panel did discuss potential satellite applications during such a natural disaster and the fact that the imagery could be used to identify the extent of devastation and types of resources needed to provide humanitarian assistance to the area.

Overall, the panel believed most of the events could occur within the next six years (with the exception of Event 7) and some events would have a greater impact on the issue statement, as well as expedite the time frame during which satellite technology became accessible to law enforcement. The table below indicates the impact each event could have on each trend.

Table 2.3

Impact Analysis Chart

Trend ⇒ Event ↓	T# 1	T# 2	T# 3	T# 4	T# 5	T# 6	T# 7	T# 8	T# 9
E# 1	+5	+5	0	+3	-3	+5	+3	+3	+2
E# 2	+5	+1	+1	+1	+4	+5	+2	+5	+5
E# 3	-5	-5	-3	-3	0	-3	-3	-5	0
E# 4	+4	+4	+4	0	+2	+3	0	+1	+2
E# 5	-4	-3	-3	-2	-5	-3	0	-5	-2
E# 6	+2	-1	0	0	0	+2	-2	0	0
E# 7	-4	-4	0	-3	-5	-1	-1	-4	-5
E# 8	+2	0	+5	0	0	0	0	0	-2
E# 9	+4	-1	0	+2	+4	+2	0	+1	+4

Events

1. Major terrorist attack on United States Soil.
2. Counter surveillance technology developed, which prevents satellite tracking.
3. Major sabotage of satellite communications systems.
4. All vehicle manufactures install GPS in cars in response to legal requirement.
5. Virus attacks GPS resulting in false or inaccurate information.
6. Magnitude 8.0 earthquake his Southern California.
7. Constitutional Amendment enacted barring public surveillance.
8. Police pursuit kills high profile person.
9. National civil disturbances (multiple sites across the United States.

Trends

1. Level of access to satellite technology by law enforcement.
2. Laws enacted allowing law enforcement to track targeted offenders.
3. Number of options in lieu of police pursuits.
4. The use of satellite imagery by law enforcement.
5. Level of domestic terrorism.
6. Level of satellite communications.
7. Public reliance on electronic media.
8. Military use of satellite technology for war.
9. Level of latitude allowed by courts.

Alternate Scenarios

Based on the totality of what has been learned thus far, including an analysis of trends and events identified by the NGT, environmental scanning, and interviews, the following three scenarios were developed forecasting probable futures involving the impact satellite technology will have on law enforcement patrol operations in a large urban/rural county by 2010. The first scenario depicts a negative future or a worst-case scenario, and is based on the prediction of the negative impacts of certain trends and events on the issue. This scenario predicts a future that should be prevented. The second scenario depicts a positive future and is based on the prediction of positive impacts of certain trends and events on the issue. This scenario predicts a future that should be encouraged. The third scenario depicts a surprise-free future that would essentially see no changes while law enforcement continues to occasionally receive the benefits of advances in satellite technology.

Scenario # 1: Negative

It's January 31, 2010. John was lucky he was hired by Dornep County Sheriff's Department just before they changed the minimum age requirement to 26. In two days, he will be 25 years old. John had always wanted to be a cop. He was fortunate; it was getting harder and harder to be hired by a law enforcement agency. He spent more than three years in school, just to learn the necessary computer skills and to gain the security clearance level he needed to operate all the applicable systems. Tonight is John's first night operating a beat car alone. It seemed a little strange, for the last three months he had been partnered up with Lisa Lange, a senior patrol officer with more than twelve years of experience. John knew she had a lot of organizational history to offer and she had seen a lot of change. Deputy Lange had told John how much things had changed

since Hillary Clinton had become President. Things were just different for cops now. She told John that what used to be an honorable job, “us against them,” meaning the bad guys, just was not the same. The first thing President Clinton did was sign a law allowing civilian watchdog groups to use technology to monitor law enforcement while on duty.

John’s first call of the shift was a suspicious vehicle in an area of the city where kids usually go to drink beer on the weekends. Things have not changed much in the days since he hung out in the neighborhood; not a big deal, he thought. The vehicle description sounded familiar, and as John left the station in his laser-powered vehicle, he entered the information into his in car computer to see if he could be cleared for a license warrant. Since the ACLU got the Feds to institute a PCP (Probable Cause Program) for license information last year, it made everything more difficult.

As John drove toward the area known as Lookout Landing, he passed his parents’ house in one of the nicer sections of the city. John’s mind was also wandering, with his thoughts turning to his upcoming marriage to Lynn Burhans and how lucky he was that his life was coming together. He met Lynn while in high school and, although his mom did not particularly want him to get married just yet, she liked Lynn and did not object to the union.

John was within a few minutes of the location of the suspect vehicle when he checked his satellite-assisted MDCQS (Mobile Data Communication & Query System) and saw that once again, the system was slow. He was still waiting for the License Privacy Advocate (LPA) to review his request for registration information. The LPA was comprised of representatives from watchdog groups and had been in place for just over three years. John asked dispatch to recontact the reporting party on the call and get any additional information. John was advised that all systems were down, including the phones. John was frustrated at the lack of information, but was getting used to system failures even though he had been on the department only a short time.

As John pulled up to Lookout Landing, he spotted the suspect vehicle and instantly remembered where he had heard the vehicle description; it was in briefing. The vehicle had been carjacked earlier from a neighboring city and the owner had been killed in the process. The vehicle was occupied, times three. John was committed, he was too close to withdraw and could not even get out over his satellite MDCQS. He immediately began taking rounds and knew he was hit. He activated his emergency alert and hoped it would work, trying to return fire at the same time. Within seconds, John heard the sounds of sirens and, by the time he woke, he was in the hospital recovering from a gunshot wound to his hip.

John has recovered, but his dream has changed; he can no longer be a police officer!

Scenario # 2: Positive

The war dragged on for eight long years. It is 2010 and the country is still gearing down after a long hard fight in the Middle East and Korea. All are at peace now and the country is making great strides toward recovery from the economic losses of the last eight years. As is typical during any war, great technological advances were made for military applications. New communication systems were created which allow for total interagency-operability merely by programming the commands or through voice activation. New weapon systems, boasting incredible accuracy, were developed with great potential for law enforcement application; some are non-lethal.... all of them are very intriguing! The officers are carrying the first generation of the non-lethals in their chest shield now. They call it a disruptor. In theory, it disrupts the electrical system of the intended target, causing them to be momentarily incapacitated. It can also monitor his vital signs, advise monitoring staff when he is in distress, and administer some life-saving medications. We have not had a chance to deploy it yet, but the national trainers tell us its good stuff.

Since the war's end, Congress has implemented the National Standard of Law Enforcement Services, based on a military model developed by President Colin Powell. It requires all law enforcement officials to have compatible training in all areas of the basic law enforcement academy and begins the process of merging our current system of law enforcement into a more cohesive, national system of enforcement. If nothing else, it make agency inter-operability much easier and, the civil immunities that come with the implementation of the national standards are a big relief. No more being sued all the time. No longer are agencies allowed to develop their own training standards, use whatever weapons or equipment they want, or even choose how they want to respond to an armed robbery. It's all mandated.

One year ago, Congress passed laws requiring GPS tracking systems in all new vehicles; older model cars have two additional years to have their GPS systems installed. Satellites continuously track the GPS vehicles and ultimately can (when the new system is fully operational) disable any vehicle remotely. The GPS system also notifies us when monitored parolees and probationers have left their areas or have entered an exclusionary zone. It can even tell us where they are and what vehicle they are driving; usually, all we have to do is tell them to stop and they do, since they know the satellite can also deactivate their car. What is really great is our ability to communicate to the occupants of any vehicle just by activating their tracking device.

Our new communications system is modeled after the superior satellite systems created during the war and an Act of Congress has made all of the technology available to all law enforcement at no cost. It is amazing; we no longer have difficulties sharing information with other jurisdictions and with DNA tracking information, the name and criminal history of any person you contact is instantly either provided to you audibly or projected onto your retina by a special sensory attachment all cops wear.

Supervisors have the ability to monitor employee performance and, when appropriate, record the officer's conduct, respond to citizen complaints and offer guidance to field personnel instantaneously and without having to drive to the officer's location. The satellite communications platform allows the supervisor to be "video transported" to whatever location is necessary and projected into a real-time, three-dimensional holographic image. Police agencies' information is now being merged into a unilateral records maintenance system with crime analysis being performed as the evidence is recovered and scenes are processed.

A new satellite system has just come online that provides "real-time video streaming" of any image requested. To date, we have used the system for an armed robbery suspect who escaped (or so he thought) to the roof of a commercial building. The helicopter could not get airborne, so the satellite's holograph projecting imagery system captured the image of the suspect on the roof and projected it to the units in the field in three-dimensional form. It was incredible; we could tell where he was hiding and even what kind of gun he had.

The sheriff tells us within a year the satellite system will be able to deploy swarms of miniature satellites that weigh less than half an ounce each. They will be deployed to calls for service where there is a possible "biochem" contaminate. They should even be able to test for anthrax and small pox!

Scenario # 3: Normative

Another busy night in the County of Dornep! You have already had a drive-by shooting and two armed robberies; things have changed much in the last ten years. You would have thought that by 2010 things would be different, but they are not. You are chasing the last robbery suspect and he hopped right on the freeway just as you expected he would. Although you asked dispatch to contact the California Highway Patrol to see if they could head the suspect off,

over half of them have been laid off as a result of the state's inability to manage money. Once dispatch told you California Highway Patrol could not respond, you asked your dispatch to try the local neighboring police department. Unfortunately, by the time your dispatch called their dispatch, and their dispatch aired the incident, you know the story: it was too late. Once again, the bad guys won!

Only three officers on shift tonight. Call to call and then some. Computer Aided Dispatch (CAD) is down, and we are back to dispatching manually. After staff meeting today, the sheriff talked about another delay in the purchase of the new computer system. The video streaming, photo line-up and fingerprint technology is on hold again.

The chief keeps talking about a radio communication system that will provide interoperability with the neighboring agencies, but we have yet to see it. We've never gotten along with our neighboring agencies, "we're right, they're right," "our ego, their ego"...it isn't getting any better, but I guess it's not getting any worse either.

Scenario Selection

The three scenarios depict very different possible futures. The probability of any one future becoming reality depends on many factors, including which of the trends and events occur. A primary reason for selecting a scenario as the basis for the development of a strategic plan is to assist in identifying trends and events that can be influenced in order to achieve the desired future.

The strategic plan clarifies objectives and desired outcomes and identifies the steps necessary to achieve future goals. In this case, the strategic plan will suggest specific strategies for using satellite technology to enhance patrol services by 2010 and identify a plan for its implementation. The following chapter will provide a sample strategic plan.

CHAPTER III
STRATEGIC PLAN

Introduction

“When computers (people) are networked, their power multiplies geometrically. Not only can people share all that information inside their machines, but also they can reach out and instantly tap the power of other machines (people), essentially making the entire network their computer.”⁴³ Scott McNeely

The purpose of this chapter is to develop a strategic plan for the implementation of satellite technology for patrol operations in a large urban/rural county by the year 2010. A strategic organization is one that has the ability to anticipate the need to change, to adapt, to challenge, to react, to learn and to act. Strategic planning is a structured approach to bringing anticipations of the future to bear on today’s decisions.⁴⁴ It is intended to change the direction of the organization, to assist in identifying priorities and resources to support them; to provide a framework for budgets and operations; to enhance internal coordination; to establish accountability and to take control of the direction the organization is going. This strategic plan is a road map through which objectives are developed and clearly articulated to assist an organization in effectively achieving necessary change today, in order to achieve tomorrow’s future. In this situation, the strategy should assist law enforcement in its attempt to move toward the goal of utilizing satellite technology in patrol operations. Ultimately, the strategic plan should identify methods to evaluate and measure the results.

Strategic planning is not a substitute for effective leadership. There is no substitute for effective leadership when it comes to planning. Instead, strategic planning is simply a set of concepts, procedures, and tools designed to help leaders, managers, and others think and act strategically on behalf of their organizations’ stakeholders. At its best, strategic planning helps leaders pursue virtuous and desirable ways so that the common

⁴³ Scott McNeely, WorldofQuotes.com, October 2002

⁴⁴ Tom Esensten, The Strategic Organization (Ojai: Organizational Effectiveness Consulting)

good is advanced. At its worst, strategic planning drives out strategic thought and action, makes it more difficult for leaders to do their job, and keeps organizations from meeting their mandates and fulfilling their missions. Whether strategic planning helps or hurts depends on how leaders use it – or misuse it.⁴⁵

Model Agency

The law enforcement agency serving as a model is a large Sheriff's Department for Dornep County. Dornep, located in Southern California, covers an area over 20,000 square miles. Geographically, the area encompasses large deserts and mountainous terrains, as well as rural and urban environments. It consists of 2,200 sworn personnel and nearly 1,100 general employees divided into geographic regions, and support and specialty divisions. The agency provides law enforcement services for unincorporated areas, as well as contract law enforcement for thirteen cities with populations ranging from 40,000 to 180,000. The population is ethnically diverse, with a significant portion of the population receiving government subsistence. The area is designated as one of the fastest growing in California, but unemployment continues to be high.

The purpose of this chapter will be to develop a strategic plan for the implementation of satellite technology in patrol operations in a large urban/rural county. This chapter will examine the effect that different influences may have on the issue statement and a discussion will follow on how to best mitigate those issues that would prevent a positive future, and encourage those issues that would promote planning for a positive future.

The external and internal influences relative to the issue are discussed. This includes an examination of identifiable strengths and weaknesses, opportunities and threats as they relate to the issue. In addition, relevant stakeholders and obstacles will be identified, defined, and examined.

⁴⁵ John M. Bryson, *Strategic Planning for Public and Nonprofit Organizations* (San Francisco: Jossey-Bass Publishers, 1995), 211.

A critical part of any strategic plan is a mission statement. A mission statement simply describes the business and sets some basic goals for the organization. The following is the mission statement for Dornep County Sheriff's Department:

We provide prevention, protection, and public safety services in conjunction with our partners to diverse communities in the nation's largest county. The cornerstones of our service are commitment, innovation and pride.

A vision statement is intended to identify what the agency's leadership wants the agency to become. The following is the agency's vision statement:

Vision Statement

- We believe in being a high performance, inclusive department with high professional standards of integrity, ethics and behavior-guided by the letter and spirit of the law, and the law enforcement code of ethics. We will relentlessly investigate criminal acts and arrest those guilty of violating the law, while building positive relationships with those we serve. This requires each of us to demonstrate fairness and compassion;
- Identify areas where technology can be applied to enhance our law enforcement services;
- Create a work environment that encourages innovation, input, and participation, and values each member's diversity;
- Treat all people with respect; work in partnership with each other and the community to reach an environment accountable and responsible to one another; seek feedback from the communities we serve;
- Take an active interest in the future of the organization and encourage change to occur where appropriate.

- Identify areas where law enforcement would benefit from a unified approach to providing services and enhanced interoperability.

Organizational values are principles that guide attitudes, decisions and actions. The following values have been identified for the model organization.

Values

- We believe in strong, effective law enforcement services including incorporating the latest technological advances in support of the operation.
- We believe in high professional standards of integrity, ethics and behavior guided by the letter and spirit of the law, and the Law Enforcement Code of Ethics.
- We believe in a balance between personal and professional life.
- We believe we should treat all people with respect, fairness, and compassion.
- We believe in recognition of and valuing each individual's contribution to the department and the community regardless of position, assignment, or role.
- We believe in open and honest communications, both internal and external.
- We believe in all members working together to achieve department goals through partnerships with each other and the community.
- We believe in an equitable system that provides cost-effective law enforcement services to all of our communities regardless of economic status.
- We believe in providing our personnel with state of the art training in all systems related to the delivery of law enforcement services.

External Situational Analysis

In developing a strategic plan, it is important to examine the external environment to analyze potential opportunities that would assist the organization in moving toward its desired future, as well as to identify potential threats that could impede progress. The model organization must also be analyzed for its strengths and weaknesses, including its capacity, both present and future, to implement needed changes to achieve the desired future.

External Environmental Analysis

In planning for how law enforcement will use satellite technology by 2010, the following external opportunities and threats should be considered:

Opportunities:

- The department enjoys continued strong public support for law enforcement due to terrorist incidents.
- The current state of technology is advancing rapidly resulting in reduced cost to law enforcement and applications that are more efficient.
- National standards for law enforcement technology training are being developed (similar to California POST.)
- Interoperability during natural disasters and other critical incidents allows public safety agencies enhanced communications and improved cooperation.
- Individuals are increasing looking to satellite technology for innovations in communications.

Threats:

- Poor tax base within the surrounding communities; large segment of the population receives various types of governmental subsistence.

- Local, state and federal governments may be opposed to spending money to pay for the development of satellite technology for law enforcement, especially at the national level. Each level of government may also object to the loss of local control.
- The community may be opposed to spending additional tax dollars on developing the use of satellite technology for law enforcement applications.
- Despite generally positive relations with the community, there is still some distrust of the police.
- Special interest groups may object to the available uses of technology for law enforcement without adequate input into regulations regulating its use. (For example, tracking targeted offenders such as parolees, probationers and registrants.)
- Civil libertarian groups, such as the American Civil Liberties Union (ACLU) will oppose law enforcement's access to information based on fear of a surveillance society. These groups wield enormous political power and could influence courts and politicians.
- Political officials will use law enforcement's access to satellite technology as hostage to obtain other political favors.
- Obstacles could force the development and implementation of satellite technology at the local level, which would cause a continued fragmented approach.

Internal Organizational Analysis

An important part of a strategic plan is to identify the internal strengths and weaknesses of the organization implementing the plan. The following are organizational strengths and

weaknesses that could affect how the model agency will use satellite technology for patrol operations by 2010.

Strengths:

- The agency established minimum peace officer staffing levels based on crime and population statistics.
- The organization prides itself as being on the leading edge of law enforcement training and technology.
- The organization is exceptionally supportive of its employees and believes in a balance between personal and professional lives.
- The employees are exceptionally loyal to, and supportive of, the organization.
- The agency's leadership is eager to implement new technology for more effective utilization of existing resources.
- Management staff is very involved in California POST and other influential law enforcement organizations, and members serve on several state and national committees.
- The agency has an effective legislative liaison officer who understands and is effective in the legislative process.
- Staff is very involved in existing community groups and with community leaders.

Weaknesses:

- The agency management is facing potential high turnover due to implementation of 3% @ 50 retirement benefit.
- Information Technology (IT) staff is relatively inexperienced and lacks a strong understanding of law enforcement objectives.

- Identifying legislation to be enacted that would support law enforcement's use of available databanks in a comprehensive manner.
- There is a high turnover of safety personnel due to pay and benefit issues. The agency is having a difficult time replacing line officers with qualified personnel.
- The median age of the line-patrol force is relatively young and inexperienced due to high turnover rates.
- Law enforcement personnel are typically resistant to change.

Stakeholder Analysis

In addition to analyzing the external environment for threats and opportunities, and the internal organization for strengths and weaknesses, a strategic plan should identify stakeholders who have some connection with the issue. Stakeholders are defined as those individuals or groups who play a significant role in the success or failure of an issue. They either can be influential to the issue or be impacted by the issue. These individuals or groups must be involved in the planning and implementation of the change if it is to be successful.

This includes a category of stakeholders known as "snail darters." A snail darter is a stakeholder, event or process that has yet to be defined, but could become an unexpected obstacle to the issue⁴⁶. The following is a list of example stakeholders who impact, or are impacted by, Dornep County Sheriff's Department's use of satellite technology for patrol operations, as well as the potential concerns and issues for each stakeholder:

⁴⁶ Tom Esensten, class lecture, August 2002

Local Government Officials

- Providing enhanced patrol services through the use of satellite technology will require political and fiscal support from the county.
- Many law enforcement services closely relate to other government services, such as traffic enforcement, planning, code enforcement, neighborhood associations.
- Local officials want to ensure that given the high cost of technology, the benefits outweigh the costs.

Police Managers and Executives

- Most are not versed in satellite technology and its possible applications for law enforcement patrol operations.
- They are interested in new and innovative applications of satellite technology to reduce crime, improve community relations and increase officer safety.
- They are responsible for allocating resources based on need. As a result of a lack of information, they may not see satellite technology as an appropriate investment of funding.

Police Supervisors and Line Officers

- Many line personnel are resistant to change because of a lack of training.
- Younger employees are often better versed in the use of technology and embrace change involving technology more quickly.

Information Technology (IT) Employees

- IT employees who specialize in satellite technology applications will be a critical resource in implementing new programs.

- IT employees can train sworn and general employees to help the department implement new satellite technology programs.
- Additional training and staff to support maintenance.

External Stakeholders

Organized Community and Neighborhood Groups

- Neighborhood associations and other community groups (West Dornep Homeowner's Pride Association, East Dornep Ranch Association, and the Dornep Information Exchange Committee, ACLU) will be key stakeholders since they will form the foundation of the police and the community relationship.
- Some community members and groups distrust the police and will be concerned about possible abuses of satellite technology and available information.
- Computer and Internet Service Providers are interested in pursuing public-private partnerships in conjunction with public safety agencies.

Community Leaders

- Community leaders, both formal and informal can assist in bringing the police together with the community to build the necessary trust to allow for expanded access to satellite technology.

Civil Rights Activists

- Some activists or watchdog groups may be concerned about possible abuses of enhanced access to information using satellite technology.
- This group has the potential to be a snail darter and should be involved early to develop appropriate policies regulating access to information gained through satellite technology and to mitigate possible negative impact.

Media

- The media is the primary source of information for the community and would be an appropriate source of publicizing the potential of satellite technology in patrol applications.

Objectives

In order to implement a strategic plan and use it for the basis for allocating resources, the objectives of the plan must be clear and should answer the following question: What does the agency want to achieve relative to the issue being examined? The objectives of this strategic plan can be divided into two categories: Technological and sociological. Technological objectives include goals relative to providing satellite access to law enforcement for enhanced services to communities. Sociological objectives deal with building trust between the police and community members and police and civil libertarians. The following is a list of objectives for each category:

Technological Objectives

- Secure funding to obtain satellite access for law enforcement within the agency.
- Secure funding to hire IT personnel and to conduct training for employees.
- Develop public/private partnerships to provide satellite access and secure communications platforms to the agency.
- Develop a consortium of public/private to fund the development and launching of satellite series specifically for law enforcement.
- Use Internet to enhance interoperability between all law enforcement agencies.
- Install a satellite station in all Dornep County patrol stations and provide one-button access to all databases, local, state, federal and Interpol.

Proposed Strategies

Based on the internal and external assessments of the organization and environment, and on the analysis of potential stakeholders, several strategies could be used to achieve the desired objectives. Some strategies have benefits over others and differ as to the degree the objectives are achieved within the given timeline (by 2010). This section describes three alternative strategies and briefly outlines the advantages and disadvantages of each.

Strategy One: Minimalist Approach

The first strategy the agency could choose is to do only the minimal steps necessary to incorporate satellite technology into patrol operations. The agency would take a substantially more reactive and non-aggressive approach by letting the private sector drive the available satellite services and technology and by relying only on specialized funding, such as technology grants. The agency could utilize existing satellite access for basic communications platforms.

Advantages of Strategy One

- Implementation of this strategy would not require additional IT specialists within the organization and would only use technology that was developed and implemented by the private sector.
- The costs would be minimal and would not compete for general fund funds directed toward traditional law enforcement services.
- This strategy would minimize resistance from stakeholders who distrust law enforcement.

Disadvantages of Strategy One

- Funding for this strategy would be unstable because it would be dependent on grant or specialized funding, which is the first eliminated during tight fiscal times.
- This strategy would not enhance public or officer safety or reduce crime.

Strategy Two: Aggressive Approach

The other extreme from the Minimalist Approach is the Aggressive Approach, which is to aggressively implement the use of satellite technology for law enforcement for all communities within the agency's jurisdiction. This would require the dedication of significant resources, including personnel to develop the concept, to develop and maintain the technology and to foster the necessary public and private sector partnerships. The agency would be proactive in the application of satellite technology and development of interdepartmental consensus. The strategy would position the agency to encourage technological developments that enhance satellite applications for law enforcement.

Advantages of Strategy Two

- If participation in this strategy is widespread, this strategy has the greatest potential of building significant consensus amongst other agencies.
- The partnerships created as a result of this strategy could have significant long-term benefits in reducing crime and increasing community and officer safety.

Disadvantages of Strategy Two

- The resources necessary for the aggressive implementation would be substantial and long-term. They would require stable funding sources and would compete for funding with traditional services.
- Aggressive implementation by law enforcement may create additional suspicion or distrust from stakeholders and community members.

Strategy Three: Phased Implementation

The third strategic approach is to phase in implementation by selecting one community or agency as a pilot program. The Dornep County Sheriff's Department would work with stakeholders and residents of the pilot community to design and implement satellite technology for

patrol operations programs and measure the response and results. The methodology could be modified and perfected before expanding the services to other agencies or levels of government.

Advantages of Strategy Three

- The phased approach would allow for short-term success within the pilot agency, while paving the way for unlimited expansion if the program proves to be successful.
- Developing the concept and methodology in a pilot agency would allow time to build the necessary trust between the community and the police and would allow issues to be identified and solved before more extensive implementation.
- The use of a pilot program would require a moderate investment of resources both in terms of personnel and funding.

Disadvantages of Strategy Three

- Development and implementation would be limited to the pilot agency, limiting its effectiveness and the goal of interoperability.
- Other agencies may opt to purchase other technologies not compatible with the model agency's satellite based platform causing additional disconnect.
- Limited project scope less likely to attract media attention.

Recommendations

After analyzing the potential advantages and disadvantages of all three proposed strategies, the phased approach (stage three) is recommended for implementation. This strategy increases the chances for long-term success by creating opportunities for short-term wins while limiting or mitigating problems. This approach also provides the most realistic funding opportunity while at the same time provides the opportunity to build the trust of skeptics and the consensus of the community.

Having a strategic plan is not enough; there must be foresight to identify potential problems before they arise and implement strategies to mitigate negative influences. In the following chapter, a transition management plan was developed to serve as the road map to direct and influence the preferred future. The goal is to achieve a future which most effectively utilizes satellite technology to enhance patrol operations and which allows law enforcement to cast a comprehensive net utilizing all of the information contained in databases. To this end, a Transition Management Plan was developed to implement a pilot project to use satellite technology to enhance patrol operations in Dornep County Sheriff's Department.

With the strategic plan completed, the transition management phase will consider critical mass in the development of the selected future scenario.

CHAPTER IV

TRANSITION MANAGEMENT PLAN

Introduction

“In a few hundred years, when the history of our time will be written from a long-term perspective, it is likely that the most important event historians will see is not technology, not the Internet, not e-commerce. It is an unprecedented change in the human condition. For the first time - literally - substantial and rapidly growing numbers of people have choices. For the first time, they will have to manage themselves. And society is totally unprepared for it.”⁴⁷

While developing a strategic plan is critical to achieving success with any new initiative, implementing the plan is just as critical. It is clear that for effective change to occur, an agency must be able to: effectively analyze itself; separate from past ways of doing business; be prepared to create a sense of urgency within the organization to demonstrate the importance of the change; line up support both internally and externally; establish a plan detailing the implementation of the change; and communicate the plan and expectations clearly.

Desired changes do not occur merely by the adoption of strategies and plans. Without effective transition and leadership, important issues will not be adequately addressed and the plan will not be effectively implemented. Successful transition requires that changes be introduced quickly and efficiently to overcome the traditional causes of transition failure. It may involve either a supported or a staged transition. Supported transition works best when the time is right and the need is clear to a strong coalition of supporters and implementers, adequate funding and resources are available and there is a clear vision to guide the changes. Staged transition is advisable when policy makers, leaders, and managers are faced with less than a majority of supporters, or face political difficulties. Staged transition involves organizing a series of small victories. Because the implementation of satellite technology is new to some agencies, and because even those that are familiar with or utilize some satellite functions are still at dissimilar

⁴⁷ Peter Drucker, WorldofQuotes.com, October 2002

levels, it would fall under the staged transition process. If one additional significant negative catalyst event were to occur, a supported transition may be most effective, if not absolutely necessary.

While the existence of a strategic and transition management plan certainly does not guarantee the transition to the comprehensive use of satellite technology without controversy, it does provide for an organized and efficient transition devoid of disorganization or a fragmented approach. Additionally, there will always be those who will feel threatened by law enforcement's increased access to personal information with relatively few checks and balances. However, by following the plan, most will understand the unequivocal benefit to a free society. This process, which is critical to the ultimate implementation of satellite technology for law enforcement, must also be approached with a sense of urgency to create the necessary atmosphere for change.

Leadership, in this situation, must be challenged to implement change.

In addition to identifying the critical mass of people necessary to influence change in an organization, it is also crucial to identify the key change makers within the organization whose support is necessary to achieve the change.

Achieving the objectives associated with using satellite technology to enhance patrol operations will necessitate change from both within and outside the organization. Transitioning the organization and stakeholders through this change requires an analysis of the commitment of key stakeholders, a plan for implementation, and an evaluation method.

Commitment Planning

Commitment planning is used to identify those key individuals or groups whose support of the change is essential and who create a critical mass that causes others to accept the change (Harris & Beckhard, 1987, as cited in Simon, C. workshop, 2002). Once identified the critical mass provides the momentum that encourages others to accept and to help the change occur. One

method for identifying the individuals or groups and developing strategies for gaining commitment is called commitment charting. Commitment planning also involves the development of a plan for getting that commitment and assessing progress.

A commitment chart works on the assumption that for those identified as a part of the critical mass, it is important to get some level of commitment, or the desired change will not occur. Three ratings categorize the individuals or groups that make up critical mass: (1) let it happen (2) help it happen (3) make it happen (Refer to Table 4.1, Commitment Chart):

In this exercise, critical individuals and groups (or key players) are identified, as well as the minimum level of commitment necessary for each group to make the change happen. O indicates the minimum degree of commitment necessary for the change to occur, and X indicates their current level of commitment to the change. If both the X and the O are in the same box, it means their current level of commitment is adequate. The further X and O are away from each other indicates the current level of commitment is not adequate and additional work must be done. The following is a sample commitment chart for the implementing this proposal as a pilot agency.

Table 4.1

Commitment Chart

Key Players	No Commitment	Let it Happen	Help it Happen	Make it Happen
1. Local sheriff		X →		→ O
2. Co. board of Supervisors	X →		→ O	
3. Local chiefs of police		X →	→ O	
4. CA P.O.S.T.	X →		→ O	
5. Deputies and police managers	X →		→ O	
6. Local special interest groups	X →		→ O	
7. Elected officials	X →		→ O	
8. Community leaders	X →			→ O
9. Citizens/community groups	X →		→ O	
10. Private sector technology companies			X →	→ O

- X indicates the current level of commitment
- O indicates the minimum commitment necessary for the change to occur
- Arrow indicates the change necessary to gain the commitment

The County Board of Supervisors must be committed to the project and be willing to commit financial resources to help the project happen. The board members are also critical in building consensus and gaining resources from other government officials.

The sheriff must take an active role in making the project happen and should communicate the vision to the entire department and to all stakeholders. The sheriff is also responsible for

gaining support and building consensus of other elected officials within local government, such as city managers and key community leaders.

The deputy sheriffs and law enforcement managers are critical in making the transition occur. They will be the ones most affected on a daily basis by the application of satellite technology and interacting with other critical stakeholders. Their interactions with members of the community and other personnel are essential to the project success.

The support of community leaders is also essential to the project success. They can influence advocacy groups, citizen advisory groups, and other community leaders, in addition to minimizing distrust of law enforcement.

When analyzing this chart, it is clear that essential subsystems, or critical mass, vital to the change do not have the minimum degree of commitment necessary for the change to be implemented. Significant power of persuasion and intervention strategies are necessary to create the conditions for commitment. If an adequate degree of commitment is not present, one must assume there is resistance and employ intervention strategy to unfreeze the organization or to create an environment that is neutral (for short periods) so that the key player(s) can hear the perspective.

Overcoming Resistance

As the chart indicates, many of the key stakeholders have not committed to the project to the necessary level of commitment or they may be resistant. Where resistance is present, intervention strategies may be necessary. The following intervention strategies may be used to overcome resistance:

- Educational intervention: Educating the individual or group on the state of satellite technology, the benefits of its implementation and regulatory controls that would provide parameters for its use.

- Clarifying the meaning of the problem or issue.
- Forced collaboration: Ensure that participation in the application of satellite technology is encouraged using grant funding or other mandates.
- Changing rewards system: Identify a new system to reward behavior that is in support of the desired change.
- Problem finding: Problem finding allows players to identify and clarify the reason for resistance and to change their minds.

The following are examples of stakeholder resistance that may be expected or anticipated during implementation and suggested strategies for overcoming the resistance.

Board of Supervisors

- Resistance: May be reluctant to commit county resources to a new project; may be concerned about the response from the community and watchdog groups.
- Strategies: Arrange a meeting between the board members, the sheriff and community leaders to clarify roles in the project and establish parameters; illustrate positive long-term benefits.

Line personnel

- Resistance: Limited experience and knowledge relating to satellite technology applications and comfort with traditional approach to policing.
- Strategies: Demonstrate technology, emphasizing benefits to officers and community; develop training for all personnel.

Implementation Planning

Once the critical mass of key committed stakeholders has been identified, a plan must be developed to identify specific action steps required to implement the strategic plan. The plan outlines the tasks, timelines, and responsibilities of everyone involved in the implementation. The plan should be flexible so modifications can be made as appropriate, and should contain realistic goals and timelines. Short-term wins are essential so that those involved in the change process can see progress as they move toward long-term goals. Change implementers are the ones who make it happen, but all individuals affected by the plan, both internal and external stakeholders, should have input.

Communicating the Plan

Honest, open and effective communication is essential from the start. Leaders should involve people from throughout the organization and give employees a personal stake in the outcome of a transformation (Tod D. Jick, handout, 2002.) When detailing a constructive change announcement, several criteria should be considered to: minimize adverse reaction to the change, increase understanding and commitment and prepare personnel for the effects of change. The Sheriff of Dornep should communicate the plan and the vision of the desired results to the entire organization. The sheriff's message must include: (1) the current state of the organization, including where he wants it to go and how the transition will occur; (2) identification of change implementers and who will be affected; (3) timelines for the implementation; (4) some possible negative issues that could be encountered; (5) how information will be communicated and; (6) evaluation criteria.

The manner of the initial communication is as important as the contents itself. Communication involves a dialogue between the actors. Listening, responding to concerns, provides feedback at all levels and gain a broad understanding of what the change means to

different parts of the organization and its impact on them. An effective constructive change announcement will increase the commitment to change, reduce anxiety and prepare employees for the effects of change.

Key Components

An implementation plan should provide a comprehensive outline of tasks that need to be accomplished to achieve the desired result. The following is an example of the key components that should be included in a plan used by the Dornep County Sheriff's Department to implement (a project to) use of satellite technology to enhance patrol operations in the agency:

Objectives: The project objectives identified in the strategic plan should be individually articulated. The following are objectives for this project:

- Secure funding to support the use of satellite technology for enhanced communication platforms, including IT personnel and training for existing personnel.
- Acquire individual satellite stations for each patrol station and units with one-button access to all databases, local, state, federal and Interpol.
- Establish public/private partnerships to develop satellite technology applications for patrol operations.
- Acquire appropriate technology to deliver an enhanced level of law enforcement services, reduce crime and increase officer safety.
- Develop a consortium of public/private organizations and fund the development and launching of a series of satellites specifically designated for public safety.

Tasks: A list of tasks associated with each objective should be identified to specify the steps needed to achieve the objective. The following are some of the tasks for this project.

- Research existing and future satellite technology that will have law enforcement applications.
- Survey existing personnel within the organization and determine technological literacy.

Timelines: Timelines should be realistic, but flexible, with deadlines to ensure that objectives are achieved. Timelines should be charted and communicated openly with everyone in the project.

Communications: The methods and frequency of communications should be identified. The following are some of the communication strategies that should be used:

- Key project staff should meet weekly to update the progress and to address any issues or concerns.
- All department personnel, as well as external stakeholders should receive minutes of weekly meetings.
- Monthly progress reports should be provided to the sheriff, key change implementers and stakeholders
- Every six months, the sheriff should present a project update to the Board of Supervisors and other influential groups identified in the Responsibility Chart.

Resources: The implementation plan should include a list of resources already available to the agency that can be used in the project, as well as resources that will need to be acquired.

Assignments: The plan should outline the responsibility for approval and completion of each task. This can be accomplished by the development of a responsibility chart.

Responsibility Charting

Responsibility charting clarifies behavior that is required to implement key change tasks, actions, or decisions. It clarifies responsibility for various roles with regard to a particular action

or decision; and reduces ambiguity, wasted energy and adverse emotional reactions between individuals or groups whose interrelationship is affected by change.⁴⁸ The tasks are listed along the vertical axis of the chart. The key people or groups (actors) whose roles interrelate and who are involved in actions or decisions that affect their relationship involved in the project are listed along the horizontal axis⁴⁹. A letter symbolizing the role of each actor for each task or decision is placed in the appropriate box. The following Responsibility Chart is an example of what would be used by the model organization.

- R Has responsibility for a particular action, but not necessarily authority.
- A Must approve, has power to veto the action.
- S Must support, has to provide resources for the action (but not necessarily agree with it).
- I Must be informed or consulted before action, but cannot veto.
- Irrelevant to the particular action.

Responsibility for a particular action does not equate to having the authority to approve the task. The person who is responsible may have to obtain permission prior to completing a task. Those whose approval is needed also have the authority to veto an action. Other individuals or groups are necessary to support the task by providing necessary resources. Supporters do not necessarily agree with the decision or the action, but they must support it regardless of their feelings. There will also be stakeholders who should be informed or consulted prior to the action, but whose active support or approval is not necessary. These stakeholders do not have decision-making authority or veto power. Lastly, some actions or decisions do not affect certain individuals or groups, and their participation in the action is not relevant.

When assigning the roles, only one actor should be assigned as being responsible for each task and each actor should be assigned only one primary role. The chart should be developed with

⁴⁸ Simon, Cary A., Dr., Transition Management in a Strategic Organization, October 9, 2002 (handout)

⁴⁹ Harris & Beckhard, 1987, as cited in Simon, C. workshop, 2002

representatives from each actor group present in order to ensure there is understanding about each task and agreement about role assignments.

- The following is the recommended responsibility chart for the proposed use of satellite technology to enhance law enforcement operations.

Table 4.2

Responsibility Chart

A C T O R S  Decisions/ Acts 	Project Manager	Special Interest Group Liaison	Board of Supervisors	Special Interest Groups	Sheriff's Deputies Union	California P.O.S.T.	Local Sheriff	Local Chiefs of Police	State Sheriff's Association	Elected State and National Officials
Develop budgets	R	—	A	—	—	—	A	—	—	—
Allocating resources	R	—	A	—	—	—	A	—	—	—
Approving projects	S	—	S	—	I	S	R	—	—	—
Developing standards for satellite technology	R	I	S	—	I	S	A	—	—	—
Applying for state and federal grants	R	—	A	—	—	—	A	—	—	—
Establishing group to research concept potential	R	—	—	—	—	—	A	—	—	—

The value of responsibility charting lies with the understanding and appreciation of others' roles that are gained through the charting process.

Evaluation

An important part of any new program is evaluating its effectiveness and determining if it is doing what it was intended to. The purpose of an evaluation is to identify what is working and what needs to be modified so that the original results can be achieved.

Evaluation is a process that should be ongoing and updated as necessary. The entire evaluation process involves monitoring progress during the planning and implementation stages of

the project; developing performance measures to evaluate the outcomes; and ensuring accountability.

Monitoring Progress

The progress of the project must be tracked along the way to ensure timeliness and that budget timelines are met, problems are being addressed and the project is being modified as necessary.

Progress Measures

Progress measures should track the completion of specific tasks at identified points during the project implementation. The following are examples of progress measures for this proposed satellite technology project:

- Meeting project development deadlines.
- Meeting staff hiring and training deadlines.
- Identifying the number and frequency of weekly and monthly update meetings.
- Number of and timelines for meeting with community and watchdog groups.

Outcome Measures

Outcome measures are intended to measure the effectiveness and efficiency of the project after it is implemented and to determine if the project does what it was intended. They should include quantitative measures (number of community members served, number of suspects arrested), and qualitative measures (level of employee satisfaction, level of citizen satisfaction). The following are suggested outcome measures for this proposed project to enhance patrol operations through the use of satellite technology in the model agency:

- Percentage of warrants served compared to pre-project statistics.
- Average response times compared to pre-project response times.

- Percentage of safety and general employee sick leave usage compared to pre-project statistics.
- Percentage of general and safety employee turnover compared to pre-project statistics.
- Percentage of Part I and Part II crimes solved by arrest as compared to pre-project statistics.

Ensuring the quality of the evaluation process is just as important to the successful implementation of the project as tracking timelines and responsibilities. After detailing methods to implement the strategic plan to implement the use of satellite technology for patrol operations in our model pilot agency, it is important to summarize the research and findings to this point. The following chapter recaps this information and presents final recommendations and conclusions for this project.

CHAPTER V

RECOMMENDATIONS AND CONCLUSIONS

“The world is very different now. For man holds in his mortal hands the power to abolish all forms of human poverty, and all forms of human life.”⁵⁰

The term “satellite technology” is a broad description encompassing multiple technologies, many of which would be beneficial for law enforcement applications. Satellite technology of the future may revolutionize law enforcement’s response to traditional crime problems, while at the same time defining new methods for the criminal element to exploit.

After evaluating all of the information from literature searches, the NGT panel and discussions with experts in the field, it is clear that incorporating satellite technology most effectively into patrol operations will require extensive legislation and federal oversight.

The future of satellite technology for law enforcement application remains uncertain. Although many agencies have made some transition to satellite communication platforms, they have not realized the full breadth of its potential. Much has been written about specific technologies with possible law enforcement implications, but little has been written about a total approach to technology. Unfortunately, the historically parochial method of accessing and using such advancements leaves law enforcement with fragmented, if not disjointed, results.

California has a local state regulatory agency overseeing some functions of law enforcement (POST), most agencies continue to use the “feather in our cap” approach when it comes to the ongoing research, development and implementation of potentially progressive

⁵⁰ John F. Kennedy

programs. The opportunity to provide comprehensive guidance for satellite technology on a national level is readily apparent, as is the age-old need for greater uniformity in peacekeeping endeavors.

CONCLUSIONS

The vision that emerged during the development of this issue is one in which law enforcement has to take a comprehensive approach to the application of satellite technology to gain the greatest benefit. There are significant challenges to this issue, including the need for greater police/community trust and the collective accessing of information. Identifying funding to the purchase of essential equipment, along with necessary support and training for existing personnel presents a tremendous challenge, especially during financially trying times.

To start down this road, preparations must begin today if law enforcement is to ensure a positive impact of satellite technology in law enforcement patrol operations. New laws must be developed for legislative liaisons to take to Sacramento to begin the process of consensus building. Local legislators need to gain the support of national legislators, coupled with federal oversight of law enforcement satellite systems. If privacy issues can be discussed ahead of time, the concerns of civil libertarians could, perhaps, be identified and mitigated through much needed partnerships.

There is no doubt that significantly advanced satellite technology will be available to law enforcement by the year 2010, but the extent to which it will be available to the average patrol officer remains uncertain. To be sure, access to that information may be dependent upon at least one (negative) catalyst event that breaks down the barriers created by public perceptions, economic reality and the climate of local politics.

Should some of the barriers be overcome, the patrol officer of 2010 would enjoy ready access to personal data never before seen, on a scale never before imagined. Global positioning and imagery systems will allow more effective coordination of search and rescue exercises, natural

disasters, tactical operations and the tracking of suspects and their vehicles. Officers may be able to review real-time streaming video of an event that may take him or her up to an hour to respond to, giving critical officer safety and resource deployment information. The affidavit reviewed by a judge in support of a search warrant may contain information that was downloaded just moments before from a global link that allowed the average patrol officer to communicate with law enforcement officials investigating a similar crime in another county. In addition, the continuing educational training received from his department would be available by video in the patrol car, interactive, perhaps, as well. Moreover, of course, supervisors would be able to better track personnel and equipment.

RECOMMENDATIONS

When considering the implications of satellite technology on law enforcement patrol operations in a large urban/rural county, there was little information on an analysis of the benefits of regionalized technology efforts. Quite the contrary, most agencies choose to fend for themselves with individual technology vendors (some reputable, some not) and IT Division managers (some knowledgeable, some not). Absent a catalyst event, law enforcement leaders will be required to collectively partner with local politicians—and key community stakeholders—to begin the dialogue necessary for influencing change in state and federal governments. Without such support, law enforcement is destined to remain in a traditionally reactionary role.

One approach that could mitigate some of these challenges is to design a pilot project for implementation in a model agency. This would create opportunities to test the program and to modify it according to user feedback without committing the significant financial and personnel resources necessary for a large-scale program. It would also allow the necessary trust-building relationships to be established for trust to develop while demonstrating the potential benefits of the

project to other interested stakeholders. If the project were successful, then additional funding, resources, support, and participation would be more easily obtained.

In order to develop a pilot project using satellite technology to enhance patrol operations, the following initial steps are recommended:

- Develop a mission statement for the proposed use of satellite technology to enhance patrol operations.
- Convene initial meeting between stakeholders from within the organization and external to the organization to obtain support for the project.
- Select a project team comprised of appropriate individuals from law enforcement, IT department, impacted agencies, and finance.
- Develop a strategic plan for the pilot project, including objectives such as the following:
 - Secure funding to acquire technology, support satellite technology and equipment and expand services (personnel).
 - Develop partnerships with public/private businesses to provide the technical expertise to support the project.
 - Establish an Information Exchange Committee to provide a forum for the exchange of ideas.
- Identify private and community partners who could provide financial support to the project.
- Develop an implementation plan for the project.
- Communicate the progress of the project to all stakeholders on a regular basis.

Needless to say, local budgets may not be able to absorb many of the costs associated with such high-technology endeavors, save access fees for outsourced information and the like. As a

result, grant projects that involve multiple agencies or uniquely designed task forces may be the only way to pool sufficient resources for satellite access in an economy that may be predictably slow, and working with a budget that must compete against increased spending on social services. How satellite technology impacts patrol operations in a large urban/rural county by the year 2010 may be directly dependant on our ability to identify and obtain adequate funding.

APPENDIX A

Nominal Group Technique Panel (NGT) Members

1. Rodney Hoops, Commander, Manager Bureau of Administration
2. William Cates, Commander, Aviation Bureau, San Bernardino County Sheriff's Department.
3. Michael Massetti, Lieutenant, City of Yucaipa, Subject Matter Expert: SWAT
4. Scott Grossberg, Attorney, Specializing in the Defense of Peace Officers
5. Robert Fonzi, Captain, Subject Matter Expert: Use of Force Continuum
6. Hector O'Campo, Contract City Field Supervisor
7. Dennis Casey, Captain, Court Services Bureau
8. Joseph Cusimano, Lieutenant, Asst/Chief, City of Victorville
9. Technical Services Manager

APPENDIX B

Potential Trends Identified by the NGT Panel

1. Economic condition of high-tech field due to funding issues (less development).
2. The use of smaller, faster, more efficient technologies.
3. Increase in availability of data to general public.
4. **Satellite technology becomes more affordable.**
5. Unpredictability of technology advances.
6. The ability to pinpoint a spot becomes more exact (not limited to merely tracking.)
7. **Level of access to satellite imaging by law enforcement.**
8. Cooperative agreements between military and law enforcement: sharing of information with Department of Homeland Security.
9. More efficient use of existing resources.
10. Use of pole mounted surveillance systems for efficiency of operations.
11. Aging baby boomers voting more conservatively.
12. **Demand for technological solutions to police pursuits.**
13. Public unwilling to lose American soldiers in conflict (unlike Gulf War).
14. **Concern of domestic terrorism will result in change in civil liberties.**
15. Financial instability of local governments.
16. Cooperation between democratic nations of the world and sharing of data (global alliances).
17. GPS guided directions for law enforcement responses.
18. Precision weapons result in efficiency, less collateral damage (non-soldiers).
19. Satellite communications systems make current systems (hardware, landlines) obsolete.

20. Changes in personal communications (lifetime phone numbers).
21. Real-time event control oversight.
22. The Dorsey-Bradford effect.
- 23. Reliance by public on electric media.**
24. Instant information-higher expectations.
25. Security concerns and safeguarding of information (hacking concerns).
26. Public's expectation of public safety utilizing satellite information and technology.
27. High-tech mapping (GIS)-graphic information systems.
28. High-tech crimes.
29. Private sector utilizing technology for profit.
30. Public interest in privacy laws peaks.
31. Information overload, cannot sort through to identify important material.
32. Satellite technology matures to the point that all information (video) is captured and can be stored and replayed.
33. Religious groups and special interests can now spread their message worldwide cost effectively.
34. Public perception that government is spying.
35. People willing to monitor known suspects through technical innovations.

APPENDIX C

Potential Events Identified by the NGT Panel

1. **Major terrorist attack on United States soil.**
2. **Virus effects GPS system, resulting in false and unreliable information.**
3. Satellites cause significant health risks.
4. **Magnitude 8.0 earthquake hits Southern California.**
5. NASA sends successful manned flight to Mars.
6. Law enforcement satellite falls from orbit into the sea, loss of access.
7. High profile police abuse case.
8. Satellite dependence threatened by rogue nation launching a satellite.
9. **Constitutional amendment barring public surveillance.**
10. **Counter surveillance technology developed which prevents satellite tracking.**
11. Space (solar flares) interferes with satellite operation.
12. United Nations prohibits U.S. surveillance of other countries.
13. Police lose track of terrorist when using conventional surveillance methods; he commits an act of terrorism.
14. Rationalization of law enforcement.
15. High profile child abduction and murder involving a 290 registrant.
16. War.
17. **Sabotage of satellite communications system.**
18. United States-Mexican border abolished.
19. Small pox virus released on eastern seaboard.
20. **Police pursuit kills high profile politician or family.**

21. Audio/video monitoring order by court of all law enforcement.
22. "Space junk" overcrowding gets to critical mass, threatens active satellites.
23. **Identification chips placed into targeted groups.**
24. Law passed to deport all foreign nationals from U.S. soils that do not become citizens.
25. **All vehicle manufacturers install GPS as standard equipment.**
26. Manned space station with satellites.
27. Efficiency of satellite technology decreases the need for personnel.
28. UFO intervention.
29. Cure for cancer found.
30. One satellite fails causing multiple failures.
31. Hijacking of uplink signal to take over network.

BIBLIOGRAPHY

- Banisar, David, "*Big Brother Goes High-Tech*," in *Covert Action Quarterly* [article on-line]; available from <http://mediafilter.org/caq/CAQ56brother.html>; Internet; accessed 30 September 2003.
- BBC News "*US Eyes Big Brother Plan: Technology*," [data base on-line]; available from <http://www.nnews.bbc.co.uk/1/hi/technology/2563249.stm>; Internet; accessed 30 September 2003.
- Brandeis, Louis, United States Supreme Court Justice, 1928.
- Buerger, Michael E., & Thomas J. Cowper, "*Improving Our View of the World: Police and Augmented Reality Technology*," [research paper].
- Clarke, Author C., *Profiles of the Future: An Inquiry into the Limits of the Possible*, (1984).
- Duell, Charles H., Commissioner, U.S. Office of Patents, 1899.
- Eliason, William T., Lt. Col., USAF, by Curtis Pebbles (1997); review of "*The Corona Project: America's First Spy Satellites*," [book report on-line]; available <http://www.airpower.maxwell.af.mil/airchronicles/bookrev/peebles.html>; Internet accessed 25 September 2003.
- Fields, Gary, "*Satellite 'Big Brother' Eyes Parolees*," in *USA Today*, 11 April 1999 [article on-line]; available from http://www.cincinnati.com/technology/041199_bigbrother.html; Internet; accessed 30 September 2003.
- Kennedy, John F., Special Joint Session of Congress, May 25, 1961.
- Kurzweil, Raymond, *The Age of Spiritual Machines: When computers Exceed Human Intelligence*.
- M., Tara, "*Development of Satellites*," 19 May 1997 [paper on-line] ; available from <http://www.smgaeles.org/physics/97/TMCDONOU.HTM>; Internet; accessed 24 September 2003.
- Markoff, John, "*Pentagon Plans a Computer System That Would Peek at Personal Data of Americans*," in *New York Times*, 9 November 2002 [article on-line]; available from <http://cryptome.org/tia-queeg.htm>; Internet; accessed 7 October 2003.
- National Geographic.com*: "*History of Satellites: From Steep Hills to Satellites; Balloons to Biplanes*," *Eye in The Sky* [data base on-line]; available from http://www.nationalgeographic.com/eye/sat/satel_2html; Internet; accessed 24 September 2003.

- National Geographic.com*, "History of Satellites: Super Sight," Eye in the Sky [data base on-line]; available from <http://www.nationalgeographic.com/eye/satellites.html>; Internet; accessed 24 September 2003.
- Orbimage Global Imaging Information* "Applications: National Security," [data base on-line]; available from <http://www.orbimage.com/appl/national.html>; Internet; accessed 17 September 2003.
- Perera, Rick, "*German officials warn of Net Big Brother*," in *CNN.com*, (12/8/2000); available from <http://www.cnn.com>; Internet 30 September 2003.
- Seitz, Dr. Robert Scott, III, "*A Brief History of Transportation*," [article on-line]; available from http://www.megafoundation.org/UltraHIQ/HIQNews/BannerNews/Brief_History.htm; Internet; accessed 24 September 2003.
- Stanley, Jay and Barry Steinhardt, ACLU "*Bigger Monster, Weaker Chains: The Growth of an American Surveillance Society*," (January 2003); [research paper].
- Sutcliffe, Rick, *The Fourth Civilization: Chapter 2.4, The Relationship Between Science and Technology* [text on-line] (Arjay Books Division of Arjay Enterprises, 1988-2002, accessed 30 September 2003); available from <http://www.arjay.ca/EthTech/Text/Ch2/Ch2.4.html>; Internet.
- Sutcliffe, Rick, *The Fourth Civilization: Chapter 1.3, Technology and Food* [text on-line] (Arjay Books Division of Arjay Enterprises, 1988-2002, accessed 30 September 2003); available from <http://www.arjay.ca/EthTech/Text/Ch1/Ch1.3.html>; Internet.
- Whalen, David J., "*Communications Satellites: Making the Global Village Possible*," [paper on-line]; available from <http://www.hq.nasa.gov/office/pao/History/satcomhistory.html>; Internet; accessed 24 September 2003.
- Webster's Ninth New Collegiate Dictionary*, s.v. "Neolithic Age."