

HOW WILL THE IMPLEMENTATION OF WIRELESS VIDEO TECHNOLOGY IMPACT
SMALL LAW ENFORCEMENT AGENCIES BY 2007?

A Project Presented to
California Commission on
Peace Officer Standards and Training

by

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Sacramento, California

JUNE 2002

POST STATEMENT

This Command College Project is a FUTURES study of a specific 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).

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ACKNOWLEDGEMENTS

I would like to thank the Command Staff at the Pacific Grove Police Department and Chief of Police Scott K. Miller for their support and encouragement, which allowed me to complete Command College. I would also like to thank the POST Commission and our POST advisor Alicia Powers for investing the time and resources necessary to make Command College a success. A special thanks to Captain William J. Kennedy and Retired Captain Edward Harriger of the Pacific Grove Police Department, whose assistance made completion of this project possible. I wish to acknowledge the Command College Course Manager, Mr. Thomas Esensten, for his humor, his patience and guidance. His presence made our journey enjoyable. From a technical aspect, I would also like to thank Mr. Ken Rolle, partner with TracNet Corporation and a Reserve Police Officer with the City of Pacific Grove Police Department, for introducing me to the endless possibilities of wireless video technology.

A special thanks to my mentor, Captain Robert J. Lowry, Santa Barbara Police Department for his enthusiasm, patience and time. I also thank Dr. Sandy Boyd whose familiarity with the needs and concepts of the project were helpful during the process. I also would like to acknowledge my fellow students in Command College Class 32 for their friendship and their professionalism towards our chosen profession of public service through law enforcement.

Finally, I thank my family, my wife Diana and my two sons Alexander and Marc. Without their unconditional support and understanding, this project could not have been completed.

CHAPTER I

ISSUE DEVELOPMENT AND LITERATURE SEARCH

Issue Definition

This project focuses on the following question: How will the implementation of wireless video technology impact small law enforcement agencies by 2007? Wireless video technology refers to the transmission of real-time video images and or sound over a wireless network allowing officers in the field to monitor remote locations, or the ability for dispatchers and supervisors to monitor officers in the field.

The State of California Commission on Peace Officer Standards and Training (POST) defines a small-size California law enforcement agency as a law enforcement organization of 49 or fewer sworn personnel. A mid-size agency is 50 to 499 sworn officers and a large agency is over 500 sworn officers.¹ Although the focus of this project emphasizes a small-size law enforcement agency's implementation of wireless video technology, the strategies have implications for agencies of all sizes.

Introduction

The peace officer of the near future will be totally connected. They will monitor high crime areas on their patrol car's computer or palm-size portable monitors from fixed-site cameras that they can control the pan, tilt and zoom functions.² They will access the Internet, check booking photos or police records from their vehicles or hand held devices. They will have the capability to record the real time digitized images on computers instead of cumbersome tapes.³ They will be able to transmit video from their patrol car cameras to dispatchers or supervisors who will know immediately if they need

help or if a vehicle pursuit is too dangerous and should be called off. They will have small cameras on their uniforms, which will record their actions or transmit the real time images in the event of an emergency.⁴ Unmanned aerial vehicles will patrol the skies at a fraction of the cost of current helicopters, beaming down their wireless images and doing a better job of locating suspects or victims and aiding ground officers.⁵

All of these cameras will dissect the night with infrared thermal imaging or light intensifying technology. Facial recognition software will be used to check the identity of people the police contact or could be used to scan a crowd to search for wanted persons.⁶ We are at the threshold of this new world of law enforcement connectivity whose impact will be nothing less than the impact of two way radios in police cars when first installed in 1933, but the certainty of wireless video technology is not guaranteed.

When examining the issue of wireless video technology and comparing it to a STEEP model (Social, Technological, Economic, Environmental and Political implications) two main obstacles emerge that work against implementation; first, the social and political opposition to government video surveillance; and second, the technological and economic restraint of the current state of this emerging technology. Although there may be environmental issues associated with the placement of cameras or the effects of microwave transmissions on people and the environment, this project does not examine those issues. The STEEP model is examined further in Situational Analysis, in Chapter III.

The United States is in the midst of a tremendous cultural and technological change since the tragic events of September 11, 2001. Terrorists used our commercial airliners as weapons of mass destruction against the World Trade Center in New York

City and the Pentagon. It is doubtful our lives will ever be the same again. This epiphany has changed the way many of us view our lives, our sense of security and our tolerance for inconvenience and decreased privacy. There is a newfound sense of urgency and demand that government must do more than it has done before to ensure our safety.⁷ Aspects of everyday life in the future are being debated and decided at this point in time.

At the center of many of these discussions is the increased use of video surveillance. Repugnant to many just a few months before the tragedy, now it seems more acceptable, although some still refer to the use of this technology as Orwellian and Big Brother, a reference to the classic fiction novel, Nineteen Eighty-Four, written in 1949 in post-war England. In his novel, George Orwell describes an abusive, tyrannical government in London, in the fictional country of Oceania, and its invasion on citizens' privacy:

In the far distance a helicopter skimmed down between the roofs, hovered for an instance like a bluebottle, and darted away again with a curving flight. It was the Police Patrol, snooping into people's windows. The patrols did not matter, however. Only the thought police mattered. Behind Winston's back the telescreen was still babbling away. The telescreen received and transmitted simultaneously. Any sound that Winston made, above the level of a very low whisper, would be picked up by it; moreover, so long as he remained within the field of vision which the metal plaque commanded, he could be seen as well as heard. There was of course no way of knowing whether you were being watched at any given moment. How often, or on what system, the Thought Police plugged in on any individual wire was guesswork. It was even conceivable that they watch everybody all the time. But at any rate they could plug in your wire whenever they wanted to. You had to live - did live, from habit that became instinct - in the assumption that every sound you made was overheard, and, except in darkness, every movement scrutinized.⁸

The irony is that George Orwell's United Kingdom has been using video surveillance cameras extensively since the 1970s, not to repress the population, but to protect and defend its citizens. The cameras were initially installed in London, England to combat the Irish Republican Army (IRA) who had been waging a terrorist war there since the late 1960s.⁹ The United Kingdom population has become the most video surveillance watched in the world. In 2000 there were more than 250,000 closed circuit television (CCTV) cameras transmitting images to police throughout the United Kingdom.¹⁰

Surprisingly, most United Kingdom citizens are unbothered by such developments and generally are very supportive of their use and expansion.¹¹ Research conducted for the UK Home Office in 1992 found that only 6 percent of adults worried about CCTV cameras. A more recent study conducted in 1996 found that 95 percent were in favor of video surveillance and only 7 percent thought it infringed on civil liberties.¹² Fear of street crimes was given as the most likely reason for support of police CCTV surveillance.¹³ Cases such as the murder of two-year-old Jamie Bulger in 1993 by two older Liverpool boys, and the 1984 Harrods Department Store bombing, where video evidence was crucial in securing convictions, have reinforced public support in the United Kingdom.¹⁴

A similar study conducted by Gallup Poll in 1978 found that just 10 percent of the American public was comfortable with the prospect of government video surveillance. By 1997, that figure had jumped to 52 percent approval, and an even larger percentage expressed willingness to accept video monitoring in various retail settings.¹⁵ It is suspected the percentage would even be higher in a post September 11, 2001 America.

It is not surprising that by 2003 the Atlas of the Future predicted the US will have mass government surveillance, the same rating given to the United Kingdom. This level is just one below the state of surveillance in many tyrannical countries.¹⁶

According to Constable Anthony Nicholson of the London Police Department, their CCTV cameras are a form of pro-active policing in action. Constable Nicholson reports that from any of England's central CCTV monitoring stations you can witness their effectiveness. He states, "Remote video viewing by the support center used with two-way police communication systems can mean faster police decision making."¹⁷ Details on the number of suspects, types of weapons, vehicles, descriptions and directions are routinely supplied to the police before they arrive. Suspects are traced as they leave the field of view of one camera and enter another. Constable Nicholson cannot imagine the London Police Department being as effective without the cameras. Street crime rates in and around London have fallen on average 50 percent once cameras are installed.¹⁸ Police have also noticed a halo effect of the cameras by reducing crime rates in the surrounding areas.¹⁹

By contrast a 1999 RAND Corporation Law Enforcement Technology Survey (LETS) found in the United States only 41 percent of local police departments and 67 percent of state police departments use fixed-site video surveillance cameras.²⁰ Only 3 percent of local departments and 7 percent of state police departments report making widespread use of this technology and none of rural departments reported making widespread use of it.²¹ Similarly, the RAND survey found that only 31 percent of local departments and 73 percent of state departments used mobile video surveillance cameras. Mobile video surveillance cameras are those that might be used on a stakeout

or hostage negotiation situation and usually employ a wireless technology. This category does not include video cameras in patrol cars. Only 1 percent of local departments and no state departments report making widespread use of mobile video surveillance. None of the small rural or urban departments serving populations less than 25,000 reported making widespread use of this technology.²²

While the agencies surveyed felt that video surveillance was an important tool, 69 percent of local departments felt cost was the most inhibiting factor to the implementation of this technology.²³ Most all of the small rural or urban departments serving populations less than 25,000 reported cost as a main limiting factor in the use of this technology.²⁴ Only 7 percent of both state and local departments felt training requirements (human risks) as limiting; 4 percent cited effectiveness or reliability of the technology (technology risk), and surprisingly, only 1-2 percent cited public opinion as a concern. None cited risk or liability (both unanticipated costs) as a block to implementation.²⁵

The Current State of Video Surveillance and Wireless Technology

Police in Tacoma, Washington were among the first in the United States to use CCTV surveillance. In 1993, security cameras were mounted in one crime-ridden neighborhood. Monitoring of open-air drug and prostitution markets helped police make 55 arrests in the first three months of the program.²⁶ In Baltimore, 16 CCTV cameras were installed in a historic 16-square-block area near the city's redeveloped inner harbor and Orioles Park at Camden Yards in 1996. The program was expanded when a dramatic drop in crime was experienced.²⁷ Baltimore, like many cities across the

United States, is now using cameras to monitor red-light traffic signal violators in all of its 106 downtown intersections.²⁸ New York City has a program for 24-hour remote surveillance in Central Park, subway stations, housing projects and other public places.²⁹ And during the 2002 Olympic Winter Games in Salt Lake City, Utah over 400 surveillance cameras, many of them wireless, were used to provide the tightest security at any Olympic event to date.³⁰

Most of these CCTV systems are based on either old hard-wired technology or are video recording cameras for later review in the event of an incident. The tape-recorded cameras are useful to investigators after the fact in locating suspects, but do little to prevent the crime or give the police real time information. The video cameras mounted in many of the nation's police cars often serve as silent witnesses as horrific events unfold. Imagine the benefit to the officer and the community if dispatchers, supervisors, or other officers could be viewing in real-time many of the tragedies heretofore only caught on tape. How many injuries could be avoided; how many lives could have been saved?

The hard-wired CCTV are costly and usually only allow for one monitor at one location. Wireless technology offers a revolution in the way police will be able to use this technology by allowing real-time images to be viewed at multiple locations and even in the field. This technology has already been deployed in Seal Beach, California, who in 2001 converted many of the city's bank security systems to a special video server that transmits the output of the bank's security cameras during an alarm.³¹ Officers in the field or dispatchers can view the real time images by logging onto a secure web site.³² This system allows officers to see prior to arriving if the alarm is false or

legitimate. “This system gives the responding officer better situational awareness,” says Seal Beach Police Sergeant Dean Zanone who implemented the system through a unique partnership with the banks and a technology company who are paying for the entire system.³³ The system has only a ¼ of a second time lag and transmits at 15 frames per second (FPS). Seal Beach is currently looking into converting their patrol vehicle video cameras to wireless transmitters and recorders.

“As criminals become more violent and better armed, real time situational awareness becomes an imperative for law enforcement,” says Sergeant Zanone.³⁴ “Imagine if the Jefferson County Sheriff’s Office had Columbine High School’s security cameras on a similar IP network on April 20, 1999,” Sergeant Zanone asks. The Sheriff could have quickly assessed the situation inside the school and moved into a rescue mode.³⁵ Sergeant Zanone also sees this technology being used to replace standard police radios. “If you can transmit video, then you can transmit sound over the same system,” he states. Sergeant Zanone sees the day when police agencies can save thousands of dollars they are spending on current radio systems that are based on obsolete technology. Wireless Internet technology and smart video systems can offer law enforcement more critical tools in the fight against crime.

School Safety and Video Surveillance

Nowhere has video surveillance been more embraced recently by government than at public schools. Public schools are among the fastest growing users of CCTV technology. Most of the increased CCTV surveillance is due to fear of school shootings.³⁶ In a one-year period from July 1, 1997 through June 30, 1998, there were

2,752 homicides and 2,061 suicides of children between the ages of 5 – 19 in the United States.³⁷ Only 35 homicides (1.3 percent) and seven suicides (0.3 percent) occurred at school.³⁸ Although children appear to be less likely to be killed at school, non-fatal crime, however, is another matter entirely. The number of violent crimes against students ages 12 – 18 away from school is only slightly higher than those occurring at school, and thefts against the same group occur more commonly at school than elsewhere.³⁹

Many schools are using cameras to monitor hallways, outside lockers, gyms and libraries in order to combat school crime. Huntsville, Alabama schools were plagued with problems; assaults were up and they would typically experience 150 burglaries a year, so in 1995 they installed cameras on each of their 41 campuses.⁴⁰ The cameras are monitored at the district offices. The school noticed an immediate reduction in crime and burglaries are down to no more than 5 a year.⁴¹ By 1997 the school district had saved \$700,000 in insurance premiums because of their use of CCTV surveillance.⁴²

Although many teachers support cameras in the public areas around the school, most resist their use in the classroom according to Julie Rowland, of SL Streaming, a San Diego company that installs video cameras in schools.⁴³ Their school systems are newer and use the latest technology by having some sort of Internet monitoring capabilities and digital recording directly onto hard drives.⁴⁴ In January 2001, the Ramona High School in San Diego County installed four cameras to monitor the outside of school classrooms. The cameras are connected to a secure Internet site, which allow school administrators, dispatchers and police, to view the cameras from any computer with an Internet connection. The images are stored on a hard drive instead of

a magnetic tape. Twenty-four hours of recording of four different cameras take up less than one gigabyte of disc space. This has several advantages in storage and retrieval over standard taping systems.⁴⁵

In March 2001, over 100 lockers were broken into at Ramona High School. Rowland was able to search the stored data of the day in one-hour increments. Within seconds she was able to locate the time before and after the break-ins had occurred. Searching just that section, she found images of three boys breaking into the lockers. The school was able to identify the suspects. She then transferred the video to a CD ROM disc and gave it the Sheriff's investigator. All this took place in a matter of minutes. While interviewing one of the suspects, the investigator was able to play the CD on her laptop computer. The suspect immediately confessed and most of the stolen property was recovered.⁴⁶

The Future of Wireless Video Technology

As stated earlier, the future benefit of wireless video technology will be in the ability of peace officers to access real-time video images in order to achieve the ultimate situational awareness.⁴⁷ First, let's identify what streaming video is. According to Mr. Frank Maas, of World Wide Video, a research company in Virginia, any moving image is actually a series of still images shown in fast sequential action. A movie will play at approximately 24 frames (a single still image) per second; television in the US is running at 30 frames-per-second (FPS) and streaming video is anywhere between 15 to 24 FPS. Anything less than 15 FPS and the image becomes choppy. The human eye cannot discern any difference in video greater than 22 FPS. Jerky frame-grabbing

technology of 3 to 4 FPS that many computer cameras transmit at can allow for lost action and is not suitable for police use.⁴⁸ The more frames per second are increased, the more the video file size increases, thus taking longer to transmit.

There are however several impediments to the immediate implementation of wireless streaming video technology. Currently, the military and the government agencies have the ability to deliver 24 frames-per-second video to mobile units via wireless technology, but the cost is prohibitively high, says John Lusardi, of SL Streaming.⁴⁹ Hence the wait until this technology is available for the small law enforcement agency at a cost-effective price. According to Mr. Frank Maas, "Bandwidth is the main obstacle and bandwidth is a very finite number."⁵⁰ Making an analogy to a highway, bandwidth refers to the size of the road. The wider the road or the bandwidth means the greater the number of users who can access a certain frequency at the same time. Transmitting video images takes up a lot of bandwidth. An example of how bandwidth works occurs when accessing a computer network when very few people are using it; information is transferred at a much faster rate. Once a lot of other users try to download on the same network at the same time, the speed is dramatically decreased.⁵¹

Bandwidth becomes more of a problem for the larger law enforcement agency. While a small law enforcement agency may be able to transmit video images to and from a dozen vehicles in the field, a large agency with a hundred vehicles will definitely experience bandwidth problems with current technology.⁵²

With speed decreased, images are delayed in transmission. This delay is called Latency. There is always a delay when any data is transferred from one computer to

another. It takes time to convert files, compress them, send them over a wire or a wireless system then reassemble them on the other end. Latency is the sum total of all these delays. In order for the video to be of the greatest benefit it has to be real-time, which is under $\frac{3}{4}$ of a second latency.

To get around the bandwidth problem, video images are compressed, as the file size is made smaller. Several methods are used like MPEG (Motion Picture Experts Group), which only transmits the part of the image that changes. The more motion, the more files transferred and more the impact on bandwidth.⁵³ Breakthroughs are expected soon in the bandwidth dilemma with technology like Wavelet, which will allow for greater compression and less of an impact on bandwidth.⁵⁴

At the heart of any wireless video transmission is a wireless local access network, or WLAN. These systems are commonplace and the City of Pacific Grove, California, has such a network installed. Pacific Grove's system is currently used for data transmissions such as reports and crime data, still images such as booking photographs and Internet access. The product allows for 11mb of data transmission per second, which is 8 times faster than a high speed T1 line, or 200 times faster than a 56K modem. Each site has battery back-up capabilities (UPS), which can provide power to the antenna for up to two days, as they draw only 100ma of power.

The system broadcasts on a 2.4GHz band, which has several advantages over 900MHz or 5GHz (see table 1.1). All three bands are considered public bands and do not require Federal Communication Commission (FCC) licensing; however, as wireless networks become more popular, there could be increased interference and a reduction of bandwidth. In December 2001 the FCC began state licensing of UHF 700 MHz

frequency with a bandwidth of 2.6 GHz as an exclusive public safety wireless band.⁵⁵ It is estimated that this public safety only band will not be fully operational until 2005.⁵⁶ This step, along with new compression methods should help avoid bandwidth problems in future systems.

	900MHz	2.4GHz	2.6GHz (not public)	5GHz
PRO'S	Greater range than 2.4GHz (for in-building LANs)	Global market IEEE 802.11 Higher data rates (10+Mbps) Smaller antenna	Public safety only IEEE 802.11 Higher data rates (10+Mbps) Smaller antenna	Global market IEEE 802.11 Higher data rates (20+Mbps)
CON'S	Maximum data rate of 1Mbps Limited bandwidth Crowded bandwidth	Less range than 900MHz (for in-building LANs) 2.4GHz same as microwave and absorbed by water	Not currently for use Less range than 900MHz (for in-building LANs) 2.6GHz close to microwave and absorbed by water	Much less range than 900MHz or 2.4GHz Higher cost RF components Large antenna Required

Table 1.1⁵⁷

The WLAN's antennas are relatively small, only 5 feet tall and several inches wide. They can be mounted on poles, which make them almost unnoticeable on buildings. The cost for each antenna site including all required hardware and battery back up is also relatively small at approximately \$3,000 each.⁵⁸

An overlapping system of antennas allow for roaming. Roaming is the ability of a laptop or other portable workstation to communicate continuously while moving freely throughout an area greater than that of a signal hub or access point.⁵⁹ Roaming is the most important function of a wireless LAN network.

The laptop or workstation accesses the network through a wireless LAN Adapter inserted in the PCMCIA slot of most computers. These cards cost about \$400 each and are the only addition required to a computer to allow wireless access to the network.

Video Transmissions and Privacy Rights

What would cause Americans to accept this invasion of their privacy when freedom of unrestricted mobility has been a cornerstone of democracy? The answer can be found in the daily headlines. Because many people have become so terrified of violent crime and terrorism, many accept the loss of some personal freedom for a feeling of security. On the surface, video surveillance by police departments in public areas seems to be a noninvasive measure implemented for the well-being of the public.⁶⁰ It is commonplace for the audience of the nightly news to view footage of bank or store hold-ups. Oftentimes this leads to the arrest of a suspect. In April 1994 a bank ATM camera filmed a Ryder truck outside Oklahoma City's federal office building just before the blast that killed 167 people. That clue helped police track down Timothy McVeigh.⁶¹ Cases such as these make it hard to argue that video surveillance cameras should not be used.

The critics notwithstanding, video surveillance devices in public do not seem to violate any constitutional principles. If these devices were set up to gaze into a private dwelling, however, that would be a different story.⁶²

The United States Supreme Court has decided in a long line of cases, most notably in *Katz v. United States* 389 U.S. 347, 88 S.Ct.507 (1967), that there is no expectation of privacy in a public place.⁶³ The court ruled that the limits of Fourth Amendment protections against an illegal search did not stop at a physical trespass into a constitutionally protected area. However, some protection is suggested in that the court set forth two tests that since 1967 have been the reference point for other decisions. The first test is expectation of privacy and the second is reasonableness of

government search. Neither test is explicitly in the 4th Amendment; however, the 4th Amendment does speak of unreasonable searches and seizures.⁶⁴

Up until this case in 1967 the court focused heavily on property rights. Charles Katz had been convicted in federal district court of bookmaking based on an eavesdropping device attached to the outside of a public telephone booth without a warrant. The Supreme Court threw out his conviction. Justice Potter Stewart writing for the majority declared, "the Fourth Amendment protects people, not places." Katz holds that "what a person knowingly exposes to the public," is not a subject of Fourth Amendment protection. But what he "seeks to preserve as private, even in an area accessible to the public, may be constitutionally protected."⁶⁵

Therefore it would follow that a person in public cannot have a reasonable expectation of privacy from video surveillance cameras.

Unlike the US Constitution, which only implies a right to privacy, California added specific language to its State Constitution in the 1970s, which reads:

ARTICLE 1 DECLARATION OF RIGHTS

SECTION 1. All people are by nature free and independent and have inalienable rights. Among these are enjoying and defending life and liberty, acquiring, possessing, and protecting property, and pursuing and obtaining safety, happiness, and privacy.⁶⁶

Recently, the US Supreme Court stunned the law enforcement community in *Kyllo v. the United States*, 190 F.3d 1041(2001). In this case, the court ruled that the police use of an infrared thermal imaging camera directed to the outside of a residence to detect a marijuana growing operation without a warrant was an invasion of privacy and a violation of the 4th Amendment protection from government intrusions.⁶⁷ Prior

lower court opinions had accepted this law enforcement practice because scanning was done of the outside of buildings; suspects never made an effort to conceal the escaping heat; and scanning did not reveal sufficient details of what was occurring inside the structure. Justice Scalia, delivered the opinion of the Court, in which Souter, Thomas, Ginsburg, and Breyer joined. Stevens filed a dissenting opinion, in which Rehnquist, O'Connor and Kennedy joined. Justice Scalia, a conservative member of the bench, wrote in his opinion:

It would be foolish to contend that the degree of privacy secured to citizens by the Fourth Amendment has been entirely unaffected by the advance of technology.⁶⁸

Legal scholars see this case as an otherwise conservative court worried about the advancing state of technology. It is suspected the Justices foresaw the day when this type of technology could actually be used to see through walls. Already cameras exist that can see through clothing enabling the users to conduct the functional equivalent of a strip search without the subject's knowledge. Although useful to see if a person is carrying concealed weapons, they can also reveal a precise image of intimate anatomical details. Devices that can see through building materials are not far off.⁶⁹

Undoubtedly, a video WLAN system will raise some privacy issues and concerns with the general public or civil libertarian groups such as the ACLU, which could result in legal challenges. Moreover, if not developed, implemented, and promoted properly, a feeling of mistrust within the community could occur, as the agency is perceived as Big Brother.

Presently, the ACLU is closely examining and monitoring all individual privacy issues as they apply to government surveillance of public areas. The ACLU is philosophically opposed to general surveillance by video cameras.

Still, some people question whether the use of video surveillance cameras in public areas is reasonable police action versus unreasonable police infringement of the 4th Amendment. “There is enough concern that the American Bar Association (ABA) has issued standards that take into consideration the authorization, purpose, and duration of the surveillance, the notification of the community, and use of the images,” said Sheldon Krantz, a Washington, D.C. attorney, who chaired the task force that developed the standards.⁷⁰ Under ABA standards, video surveillance cameras and other detection devices can only be used to see into a particular area if the Fourth Amendment allows a traditional search of the area. Under those standards, the use of such devices would be permitted if they were reasonably likely to achieve a legitimate law enforcement objective, have been approved by a politically accountable public official, and have been presented to the public, which must be given an opportunity for comment.

System Security

Security concerns are associated with privacy concerns. While many are willing to trust the police not to misuse the system, they are concerned about unauthorized access. In the United Kingdom, B-grade filmmakers have raided footage from public video cameras to make risqué movies, often featuring unsuspecting couples.⁷¹ Wireless transmissions allow for greater opportunity for the system to be compromised. Early wireless models relied on a simple 56-bit encryption standard. However, the 56-bit security scheme was relatively easy to defeat, and encryption “cracker” programs soon appeared on the Internet.⁷²

The Seal Beach Wireless system mentioned earlier relies on two levels of encryption. The first level is a 128-bit WEP (wireless encryption privacy) solution that generates a unique key every forty-five minutes. The second level uses a virtual private network design using IPSEC (Internet protocol security) or triple DES-type (data encryption standard) encryption.⁷³ These security measures (and others such as spread spectrum and firewalls) are military-proven and should relax public concerns over the CCTV system integrity.

Paradigm Shift and Conclusion

Because of the challenges facing small law enforcement agencies with limited budgets, implementing a wireless video system poses greater challenges than those facing larger agencies. However, the public's concern over the use of video surveillance by police is an issue all agencies face. Police departments nationwide have made great strides in police and public partnerships through community policing efforts, largely supported by the federal government in the form of grants. To implement an effective wireless video program, police administrators will have to develop an entirely new paradigm. No other program has the potential to unite so many different factions of our society against its development. Police officers will naturally resist working under the prospect of constant monitoring; the general public and civil libertarians will have concerns over police invasion of privacy and the prospects of misuse; city government will have concerns over costs; and the courts will question the ever-expanding capabilities of technology that can intrude into everyday lives.

Collaboration and cooperation during wireless video program development may reduce privacy concerns expressed by civil libertarian groups and the general public. Cost concerns will have to be addressed through grants and collaborative partnerships with private enterprise. Peace officers will have to be sold on the safety aspects of wireless video and its promise of greater police efficiency. The legal challenges will likewise have to be addressed beforehand and a strong set of guidelines will have to be developed.

In conclusion, wireless video technology offers a revolution in the way police work will be conducted in the future. Research indicates that implementation of wireless video technology will spread further throughout law enforcement agencies, both small and large. The impact of this technology will be dramatic with an emphasis on event documentation, a high level of officer safety, police accountability and public security.⁷⁴ But police administrators merely embracing this emerging technology will not ensure its successful widespread integration into the profession. In the following chapters, the major hurdles facing wireless video implementation into law enforcement agencies are examined. Alternative strategies and implementation plans for successful integration of wireless video technology are also examined. The next chapter introduces future forecasting through a facilitation process of the Nominal Group Technique (NGT).

Times are changing and the means and methods of documenting events are also changing quickly.⁷⁵ To some, this technology can either be embraced as an important tool for police, or time and energy can be wasted on attempting to prevent the inevitable.⁷⁶

CHAPTER II

FORECASTING THE FUTURE

The purpose of forecasting the future is to provide the opportunity to examine alternative futures, select a course of action, and then systematically set out to influence or shape the future. In any case, the process enables those who enlist it to better prepare themselves and their organizations for the inevitable changes that will occur in the world, with or without their influence. These objectives do not just occur. They require sustained effort and a systematic approach utilizing strategic planning and transition management techniques. Forecasting facilitates these processes by supplying enough baseline information that, when combined with judgment and intuition allow for the future to be managed as successfully as possible. When forecasting the future it is important to remember that “what may be” must be viewed as a possibility not probabilistic. In order to forecast the future of the impact of wireless video technology on small law enforcement agencies, a Nominal Group Technique (NGT) was employed.

Utilization of the Nominal Group Technique

A Nominal Group Technique (NGT) is a structured group process, usually facilitated by a third party, which identifies the major problems or issues affecting or of concern to the group. “NGT processes are geared toward issues involving judgmental or creative decision making. An NGT allows for maximum feasible participation by group members in the decision making process by avoiding the dominance of group output by strong personality types and allowing all participants the opportunity for influencing the direction of the group decision outcome.”⁷⁷

The NGT panel consisted of seven members from diverse backgrounds which included an ACLU attorney, a police captain from Monterey Police Department, a community activist concerned with speech and environmental protection, a patrol officer from the Pacific Grove Police Department, a partner of a police records management and software company, the Mayor pro-tem for the City of Pacific Grove with a liberal studies and research background PhD., and a retired school biology teacher who is currently the head of a community organization concerned with marine life preservation in Pacific Grove's tide pools (See Appendix A).

Prior to the NGT panel being convened, each participant was provided with an informational packet containing background material concerning the potential and current use of wireless video technology in law enforcement, the issue statement and a list of definitions (see Tables 2.1 and 2.2). They were also provided a general overview of the NGT process, its purpose of identifying trends and events to assist in the development of a strategic plan, and the guidelines and procedures that would be used for forecasting both trends and events. In addition, the participants were asked to identify individually several trends and events prior to the scheduled NGT. The complete list of trends can be found in Appendix B.

Strategic Purpose and Definitions

The purpose of this Nominal Group Technique exercise was to identify trends and events that could impact the strategic purpose statement.

STRATEGIC PURPOSE STATEMENT
How will the implementation of wireless video technology impact small law enforcement agencies by 2007?

Table 2.1

DEFINITIONS
<p><u>Wireless Video Technology:</u> Refers to the transmission of real-time video images over a wireless network allowing officers in the field to monitor remote locations, or the ability for dispatchers and supervisors to monitor officers in the field.</p> <p><u>Trend:</u> The occurrence of several similar events that take place over a short period of time and are indicators of possible change.</p> <p><u>Event:</u> A single occurrence that can be traced to a given point. (Several events occurring over time may create a trend.)</p>

Table 2.2

Trend Summary

During the session, the panel members were asked to consider what trends they believed could impact the issue. The question presented was: “What trends – whether positive or negative – regarding the implementation of wireless video technology will impact small law enforcement agencies by 2007?”

The panel members were led through the standard NGT process of silent idea generation, round robin idea verbalization, group clarification, voting and ranking, and discussion of the results. The identified trends that the group believed could most impact the issue are presented in Table 2.3.

TREND SUMMARY TABLE						
		1	2	3	4	5
	TRENDS	- 5 Years	Today	+ 5 Years	+ 10 Years	Concerns (1-10)
T1	Police efficiency	25	100	140	180	7
T2	Privacy concerns	50	100	150	200	8
T3	Public awareness of how technology can be used	30	100	165	170	4
T4	Level of judicial restrictions placed on wireless video technology	45	100	175	245	5
T5	Level of acceptance by users of technology	60	100	150	185	6
T6	Application of wireless video technology in Community Oriented Policing & Problem Solving (COPS)	35	100	125	170	5
T7	Sophistication of wireless video technology	30	100	225	370	4
T8	Public concern over government intrusion	70	100	160	190	5
T9	Cost of wireless video technology	70	100	120	150	5

Table 2.3

NGT future trends affecting implementation and the impact of wireless video technology on small law enforcement agencies.

NOTE: The values in Columns 1, 3, and 4 represent the panel's subjective evaluation of the trend with Column 2 ("today") representing the reference value of 100. The value in Column 5 represents the panel's concern (1-10) for the trend's impact on the issue with 10 being the most significant.

A further analysis of the trends discussed by the panel members is as follows:

1. Police efficiency

As police salaries increase and police applicant pools decrease, police departments are going to be challenged to perform their job with much more efficiency (achieve more with less). The panel forecasted that wireless video technology would increase police efficiency as cameras can be placed in high crime areas to monitor potential violations, deter crime and increase the police presence in the community without increasing the number of peace officers.

2. Privacy concerns

At the heart of any opposition to wireless video technology is that it intrudes on a person's privacy rights. The panel forecasted that the public concerns over privacy rights would continue to increase and work against wireless video. Such intrusions would have to be minimized or would have to be based on overriding government interests, while always mindful of constitutional restrictions.

3. Public awareness of how technology can be used

Most of the general public is unaware that current technology allows for police to monitor remote locations over wireless networks, or that small cameras on officers' clothing or in their vehicles can transmit and be recorded. How this technology is introduced and used can affect how the public accepts it.

4. Level of judicial restrictions placed on wireless video technology

Depending on the use and level of sophistication, the courts could have drastically different views on the use of wireless video technology. The panel predicted that if poorly implemented the courts would place more restrictions on wireless video.

5. Level of acceptance by users of technology

The panel generally believed that initially an older work force would be more resistant to using this technology, where a younger work force would accept it. Over time it was felt that wireless video would ultimately integrate into general law enforcement as younger workers replace older workers.

6. Application of wireless video technology in Community Oriented Policing & Problem Solving (COPS)

The panel believed that while on the surface police monitoring from a remote location seems at odds with the personal interaction espoused in community oriented policing, they saw an increase over time. The panel forecasted cameras being located based on community input and needs.

7. Sophistication of wireless video technology

As sophistication increases allowing video transmissions to be more reliable, more secure and useful at greater distances during day and night, police departments will embrace the technology even more.

8. Public concern over government intrusion

There was a general feeling among the panel that widespread use of video transmission by government was somehow repugnant. There was also the feeling in light of recent terrorist attacks in the US (September 11, 2001) this technology was necessary and would be accepted due to homeland security.

9. Cost of wireless video technology

The panel saw concerns over cost of this technology in austere economic times would directly affect a small law enforcement agency's ability to allocate resources necessary to purchase and maintain such sophisticated systems.

Cost was seen as a major obstacle due to economic downturn and fewer federal and state grant funding programs.

Event Summary

Following the discussion on trends, the panel members were asked to consider the following question: “What events – whether positive or negative – will impact the implementation of wireless video technology in small law enforcement agencies by 2007?”

For a second time, the panel was led through the standard NGT process of silent idea generation, round robin idea verbalization, group clarification, voting and ranking, and discussion of the results. The identified events that the group believed could most impact the issue are presented in Table 2.4. A complete list of events can be found in Appendix C.

EVENT SUMMARY TABLE					
		1	2	3	4
	EVENTS	Year >0	5 Years	10 Years	Impact + or - (1-10)
E1	Court decision prohibiting use of wireless video technology	1	35%	45%	- 8
E2	Another Terrorist attack on multiple government buildings	2	70%	85%	- 4
E3	Officer exonerated by wireless video evidence	4	50%	65%	+7
E4	Citizens demand wireless video technology in high crime ghetto for public safety	3	60%	70%	+8
E5	Violent crime of recreation trail recorded by wireless video technology leads to arrest	5	25%	35%	+8
E6	Police misuse wireless video technology violates citizens' First Amendment rights	5	45%	55%	- 4
E7	Racial profiling by officers stopped by use of wireless video technology	5	30%	50%	+3
E8	CHP announces wide-spread use of wireless video technology	5	35%	40%	+8
E9	Bad cop gets caught and convicted of wrong doing by wireless video technology	4	30%	50%	+4
E10	Innocent man convicted of crime by wireless video evidence	5	20%	25%	- 8

Table 2.4

NGT future events affecting implementation and the impact of wireless video technology on small law enforcement agencies.

NOTE: The values in Column 1 represent the panel's determination of the first year the probability of the events occurring exceeds zero. The values in Columns 2 and 3 represent the panel's determination of the event's probability (0% to 100%) of occurring within five and ten years, respectively. The value in Column 4 represents the positive or negative magnitude of the event's impact on the idea.

A further analysis of the events discussed by the panel members is as follows:

1. Court decision prohibiting use of wireless video technology

It was felt that if this emerging technology were to move too fast or if it were implemented in such a way that would shock the conscience of the courts, then serious restrictions could be enacted that would have a detrimental effect on its use. The panel thought some court restrictions would occur within five years of widespread wireless video technology.

2. Another terrorist attack on multiple government buildings

The terrorist attacks on September 11, 2001 were discussed and it was noted that video surveillance was discussed as a safeguard against future attacks. Future terrorist attacks would lessen resistance to wide spread use of wireless video technology. The panel thought that a similar event as September 11th could happen within the next two years.

3. Officer exonerated by wireless video evidence

Wireless video was seen as having the capability to protect officers not only during violent encounters in the field, but also from frivolous complaints or lawsuits. Officers and citizens would appreciate the use of this technology for this purpose. The panel thought wireless video technology would end frivolous complaints almost immediately.

4. Citizens demand wireless video technology in a high crime ghetto for public safety

If this technology became successful in affluent communities, it was felt that a large urban area plagued by high crime and depressed economically conditions would insist on this protection. The panel believed that this would have a positive effect on the general acceptance of this technology in other communities.

5. Violent crime on recreation trail recorded by wireless video technology leads to arrest

Several high profile crimes have been committed on the Pacific Grove recreational beachfront trail. The panel felt that if a crime was either prevented or recorded and later led to the arrest of the offenders, this would have a significant benefit in the future use of wireless video.

6. Police misuse wireless video technology to violate citizens' First Amendment Rights

The panel believed that if police misused wireless video technology during a demonstration in order to either intimidate or identify peaceful protesters, this would have a detrimental effect on the future use of wireless video.

7. Racial profiling by officers stopped by use of wireless video technology

Use of wireless video technology could be beneficial in eliminating racial profiling and other police abuse by having a record of each police citizen contact.

Although the panel thought that line police officers would resist the use of this technology for this purpose, the public would appreciate the extra protection. It

was also believed that officers would be on their best behavior if their actions were subject to third party monitoring.

8. California Highway Patrol announces wide-spread use of wireless video technology

The panel felt that if a large law enforcement agency were to develop and have success with wireless video technology, then small agencies would most likely feel compelled to implement similar programs. This would have a positive effect on the future use of wireless video technology by small law enforcement agencies. Most of the panel thought this was likely to occur.

9. Bad cop gets caught and convicted of wrongdoing by wireless video technology

This event is similar to the racial profiling stopped scenario in that it involves police misconduct being identified and eliminated through the use of wireless video technology. The panel thought wireless video technology would likely lead to identifying inappropriate police behavior and have a positive effect on how the public viewed this technology within five years of implementation.

10. Innocent man convicted of crime by wireless video evidence

In this event an innocent man is convicted on either the misinterpretation or the intentional altering of wireless video technology evidence. This would lead to a breakdown of trust and eventually could lead to either restrictive rules or outright banning further use. The panel saw this event as having a very low probability.

Cross Impact Analysis

After identifying the trends and events that could most impact the issue, the panel was then asked to consider the following questions: “If an event occurs, what effect will it have on a trend? Will that impact have a positive or negative effect on the particular trend?” The cross impact analysis identifies the positive or negative impact of an event occurring and is presented in Table 2.5 by using a scale of -10 to +10.

CROSS IMPACT TABLE									
EVENTS	TRENDS								
	T1	T2	T3	T4	T5	T6	T7	T8	T9
E1- Court decision prohibiting use of wireless video technology	- 3	+5	+3	+7	- 2	+3	- 2	+4	- 3
E2- Terrorist attack on multiple government buildings	+6	+2	+5	+5	+6	+1	+5	- 1	0
E3- Officer exonerated by wireless video evidence	+5	+5	+8	+6	+6	+4	+1	0	+2
E4- Citizens demand wireless video technology in high crime ghetto for public safety	+9	+4	+8	+5	+6	+1	+1	0	0
E5- Violent crime on the recreation trail recorded by wireless video technology leads to arrest	+7	0	+6	+2	+8	+7	+2	0	+1
E6- Police misuse wireless video technology violates citizen First Amendment rights	- 5	+2	+1	- 1	- 8	- 3	0	+2	- 1
E7- Racial profiling by officer stopped by use of wireless video technology	+1	+2	+5	+4	+7	+6	+1	- 2	0
E8- CHP develops wide-spread use of wireless video technology	+5	+6	+5	+6	+5	+5	+5	+5	+2
E9- Bad cop gets caught and convicted of wrong doing by wireless video technology	+5	- 2	+5	+5	+6	+7	0	- 2	0
E10- Innocent man convicted of crime by wireless video evidence	0	- 4	+2	+7	- 5	- 5	0	+7	0
Trend 1- Police efficiency Trend 2- Privacy concerns Trend 3- Public awareness of how technology can be used Trend 4- Judicial response to wireless video technology Trend 5- Levels of acceptance or resistance by users of technology Trend 6- Trends in Community Oriented Policing and Problem Solving (COPS) Trend 7- Sophistication of wireless video technology Trend 8- Public concern over government Trend 9- Cost of wireless video technology									

Table 2.5

NGT future events and trends cross impact analysis affecting implementation and the impact of wireless video technology on small law enforcement agencies

NOTE: The events are given a positive or negative value between –10 and 10 as to the impact an event may cause a trend to occur.

Two of the NGT panel members had strong opinions in opposition to video surveillance by any means including wireless transmissions. Three members were supportive and two members saw a use, but expressed a need for civilian oversight and a limited deployment of cameras in the field. Although most of the events were seen as having a positive impact on the listed trends when the medium numbers were calculated, opinions did differ widely in the panel.

Upon examination, Table 2.5 indicates that another terrorist attack on multiple government buildings (event 2) would have a positive impact on most of the trends and would lead to a wider use of this video technology. The panel again expressed an opinion that such an attack and outcome was likely.

The panel also discussed the impact of wireless video technology and its ability to exonerate officers accused of wrongdoing (event 3) and even having the ability to prevent police misconduct as in the case of racial profiling (event 7). In both cases either event was viewed as having a positive impact on the main identified trends.

The panel viewed a violent crime on recreation trail recorded by wireless video technology that leads to an arrest (event 5) as again having a positive impact on trends and on future use of this technology in small communities. This response was due in part to the panel's intimate knowledge of several high profile, violent crimes that had occurred in the community.

On discussing the issue statement and the specific impact of wireless video technology on small law enforcement agencies, it was felt that once the technology was adopted and used by large agencies like the California Highway Patrol (CHP) (event 8) that this would have a trickle-down effect on smaller departments implementing its use.

Also noted was that many small agencies do not have the financial resources to implement such costly programs, but that citizens might demand their use by the police in order to increase safety in high crime areas (event 4). Both events were widely viewed as having an overall positive impact on the top trends.

Futures Scenarios

Information that was developed through the literature search (past and present day trends and events), as well as information derived through the NGT forecasting process was melded together as a basis for developing three scenarios of possible future states or alternative futures. These are presented as a pessimistic scenario, a surprise free scenario, and an optimistic scenario. The purpose of developing these scenarios is to utilize the information for strategic planning; through a specific pattern of actions and decisions (strategy) the ability actually exists to influence or bring about a future desired state. A pessimistic scenario, such as the one presented, is not viewed as a positive outcome and is to be avoided if possible. The optimistic scenario is where law enforcement should want to be, but is unlikely given the level of organizational and community resistance to wireless video technology. A surprise free scenario may not be the most desirable alternative future, though it is the most likely.

Pessimistic Scenario

The year is 2007 and the police profession has been hit with one major scandal after another involving alleged police abuses. Fueled by several high profile incidents caught on videotape, the public is growing increasingly distrustful of the police. Since

2005, civilian police review boards have been mandated by the California legislature to investigate and review all complaints of police abuse. This has led to a polarization of the police and the community at opposite ends. Working in large urban cities as a police officer is one of the least desirable professions and police pay has stagnated. The quality of the police applicant has decreased, which in turn has led to more allegations of police abuse.

To reassure a weary public, the California Legislature mandated in 2006 that all police citizen contacts would be recorded on video and audio. Wireless technology is employed for this task since the images can be simultaneously viewed from a remote location and recorded on a digital file that the officer never handles. This was done in response to a large segment of the minority population who were already wearing miniature cameras to record contacts with police. Every police group opposed the legislation, but due to a lack of political base it easily became law over their objections.

The law mandates that police record all citizen contacts, arrests, vehicle stops, investigations and interviews. The recordings have to be kept for six months if no complaint has been made, longer if a complaint is made. Since “the Wilshire file alterations scandal,” all digital recording files are turned over immediately to the local citizen review board, which can view them without restriction. Many veteran police officers, frustrated over the state of affairs, are leaving law enforcement for other careers in private sector security, which has higher status than the police profession.

Stress related illness has increased to a point that many new officers cannot handle being under constant monitoring and are receiving medical retirements. As a

result, police work has become one of the least desirable professions, behind sewer worker and custodian in terms of job satisfaction.

Optimistic Scenario

In 2003, the small 30-member River City Police Department installed several wireless cameras on their recreation waterfront trail. The cameras were paid for with a combination of state and federal grants. The technology allows the police officer in the field to access and control the cameras through their vehicle's laptop computer, which is linked to a server via a wireless network. The cameras allow officers to scan up to one mile away, including at night. The city's recreational trail was plagued with robberies, rapes and one murder. Signs were posted advising of the camera and an immediate drop in the crime rate is observed.

Within five months, officers noticed an assault occurring near the river dock while monitoring the computer camera. They rushed to the area and were able to prevent a homicide. The incident was captured on tape and led to a speedy conviction. Overwhelming support for the cameras was reported on the news and in the newspaper. Federal and state departments approve the camera for widespread use with grant money in other communities.

On the heels of the success of the fixed wireless cameras, River City Police installs wireless cameras in their police vehicles and small cameras mounted on the officer's uniform. Dispatchers in the station and supervisors can switch on a monitor and see what the officer is seeing as it is occurring. Dispatchers are able to assist officers during pursuits by viewing and processing information observed on the camera,

freeing officers to concentrate on driving. Likewise, supervisors can better determine if pursuits should be terminated by viewing them as they occur. License plates can be run and dispatchers can request additional officers during traffic stops with the use of the wireless technology. The uniform cameras also provide for better documentation of events and provide greater officer safety and supervision as they can be monitored remotely.

Studies commissioned by the Department of Justice found that departments that used wireless video technology were less likely to have sustained citizen complaints, had higher conviction rates and overall lower crime rates as the fixed cameras deterred crime. Communities across the nation embraced the wireless video technology and found a greater efficiency in their police forces.

Surprise Free Scenario

The year is 2007 and police departments across the nation are embracing wireless video technology. Forced to become more efficient due to a dwindling applicant pool, departments have installed cameras that allow both sworn and support personnel to monitor high crime areas remotely. On the heels of several successful investigations and interventions where the technology either prevented a crime or assisted in the apprehension of the responsible parties, communities were quick to adopt wireless video. The federal government was also quick to support the use as they approved video wireless systems for Cops-More funding. The small 30-officer agency of River City in California installed the cameras after the California Highway

Patrol successfully implemented their use several years ago. The cameras were funded by state and federal grants.

The technology is not without its critics. The ACLU made several unsuccessful attempts to block installation of cameras in public places claiming it violates California's Constitutional guarantee against government invasion of privacy. The courts were quick to distinguish between cameras in public places, especially if notice was posted, and an invasion of privacy in a home or other private place. Some police officers also resisted the technology, especially older officers with limited technological skills. Many of these officers felt overwhelmed by the technology changes in their job and became outspoken critics of wireless video. Many community members had concerns at first, but following a wave of terrorist attacks on the west coast a year earlier; they were quick to add any support that improved their sense of security.

Many departments including River City have also added wireless video transmission of the patrol vehicle's camera. This has many benefits, including eliminating the storage space requirements of the old VHS videotapes as wireless images are digital and can be stored in a computer. Supervisors applauded the technology that allows them to assess the situation quickly when officers are in pursuits or requesting help. Cameras can also be turned on remotely when officers do not respond and their safety can be quickly checked. At first officers resisted the intrusions, but a number of high profile incidents where officers were saved because of wireless video quickly earned the cameras the nickname of "the best beat partner."

Next year River City and three adjoining jurisdictions will be entering into a joint project to place an unmanned aerial vehicle (UAV) on patrol. The craft will be controlled

from the ground and beam video images down to officers in the field or commanders in the station. The crafts are safer than, and operate at a fraction of the cost, of a traditional police helicopter. The crafts will have 6th generation see-in-the-night capabilities, computer aided suspect tracking and can stay hovering in the sky for periods of 48 hours before having to refuel. Pilots can be trained in a matter of weeks, instead of months, like pilots of the past.

Departments that resisted the technology had to quickly change after juries expected video recording of police investigations in order to convict. Afterwards many of these departments and their administrators admitted that the wireless video was one of the best innovations for police efficiency since the introduction of the two-way radio.

Assessing the Impact of Wireless Video Technology

Research and NGT forecasting indicates that wireless video technology will impact most law enforcement agencies in the near future. As illustrated in the alternative future forecasting, that impact can be either negative or positive. It is essential that the enlightened law enforcement administrator realizes the potential impact of this technology on the police profession and plan accordingly. Realization of the optimistic scenario will likely come only through a concerted, systematic effort. Scenario development is but one aspect of the strategic planning process, which will be discussed in the next chapter.

CHAPTER III

STRATEGIC PLANNING

Strategic Planning

It is important to be prepared to deal with issues that will face the organization in the near future. Some people may take the position that planning has to do with the future, so we will deal with it in the future. Others may assume a position that we'll do planning when there's nothing else to do. Of course, there are the organizations that soon find themselves stuck in a quagmire and, after the world passes them by, wonder what happened to them.

Strategic planning is a systematic way to create and manage a desirable future. There are five steps to this planning process: 1) selection or identification of the corporate/organization mission and major goals; 2) analysis of the organization's external competitive environment to identify opportunities and threats; 3) analysis of the organization's internal operating environment to identify strengths and weaknesses; 4) selection of strategies that build upon the organization's strengths and correct its weaknesses in order to take advantage of external opportunities and counter external threats; and 5) strategic implementation.⁷⁸

The Surprise-free scenario presented in Chapter II, instead of the Optimistic scenario, was chosen as the basis for developing a strategic plan. When implementing a wireless video network, failure to focus on the natural resistance that exists to this technology by civil libertarians, the general public, and rank and file officers would be a fatal error.

Based on information obtained during the literature search as well as the results of the Nominal Group Technique process, this scenario is one that will create a paradigm shift towards a wireless video system for a small law enforcement agency with a reasonable likelihood of implementation. As a whole, it is intended to be a model for small-size law enforcement agencies; however, portions of the model may assist all agencies searching for a way to address wireless video technology.

Mission Statement and Major Goals

Law enforcement's traditional overarching mission has long been considered the protection of life and property, the detection and arrest of violators of the law, crime prevention, preservation of the public peace, and enforcement of laws. In the past several years, that mission has expanded somewhat to include a greater emphasis on service and on working collaboratively with the community to improve upon quality of life issues (e.g., fear of crime, neighborhood problems and concerns, and school safety). As one can see, the law enforcement mission is really quite expansive. Though many specific goals could be identified for the various law enforcement agencies throughout California, it is not necessary to do so here. Based upon the literature review, wireless video technology has the potential to further the overarching mission of California law enforcement. The mission statement also acts as one of the benchmarks that leaders use during the strategic decision-making process and evaluation.

Clearly, enhancing community safety, officer safety, police accountability and increasing police efficiency is consistent with law enforcement's responsibility and is the mission of most agencies in providing public service and public safety. Additionally, an

agency's mission statement should include the concepts of private sector collaboration and partnerships, which are required in order to support the paradigm shift necessary for an effective strategy towards the implementation of a wireless video network. The absence of public-private sector partnerships will likely result in public mistrust and lack of buy-in from some or all of the stakeholders.

External Environment Situational Analysis

External forces and environment will affect the strategic planning process. The STEEP model examines external forces across five domains – Social, Technological, Environmental, Economic, and Political. Before developing an effective plan for implementing wireless video technology, the law enforcement leader should conduct an analysis of the agency's external environment to identify threats and opportunities. The following are examples of issues to consider while conducting such an analysis:

Social

- Society as a whole is suspicious of CCTV surveillance technology (threat).
- Advancements in technology have the potential to invade every aspect of our lives, robbing us of any privacy without us even being aware (threat).
- Society demands that police become more efficient (opportunity).
- Courts and juries demand that police do a better job of documenting evidence (opportunity).
- Society demands greater police accountability (opportunity).

Technological

- Wireless video technology is not currently at a stage for widespread use, but it is anticipated that will change in the near future (threat).

- Technological advances in wireless video technology and data storage will allow for greater use by police (opportunity).
- Technological advances in video technology will allow for cameras to scan crowds and search for wanted persons and confirm identities (opportunity).
- Wireless Technology is susceptible to attack by hackers and crackers (threat).
- Encryption technology could decrease the susceptibility to cyber attack of wireless video technology by hackers and crackers (opportunity).

Economic

- Public and private sector organizations are discovering the cost benefits of video surveillance will open the door to economic partnerships (opportunity).
- State and Federal grant funds available for wireless video networks (opportunity).
- Equipment costs associated with wireless video technology are cost prohibitive for many small law enforcement agencies (threat).

Environmental

- Stationary cameras could have a visual impact on the environment (threat).
- Microwave transmissions from a wireless network might have adverse health effects (threat).
- Special interest environmental groups are increasingly resorting to terrorist activities to influence public opinion and may damage cameras or networks (threat).

Political

- Community political leaders will weigh economic costs and public resistance when deciding to implement a wireless video network (threat).
- Greater police efficiency would have widespread political support (opportunity).
- Potential court restrictions based on police abuses could render most uses of wireless video technology unconstitutional (threat).
- Segments of society perceive video technology as infringing on civil liberties (threat).

Internal Environment Analysis – Strengths and Weaknesses

The comparison of the organization's external opportunities and threats, and its internal strengths and weaknesses is normally referred to as a SWOT analysis. The SWOT analysis typically encompasses the five STEEP domains as a reference framework. "The central purpose of the SWOT analysis is to identify strategies that align, fit, or match an organization's resources and capabilities to the demands of the environment in which it operates. Put another way, the purpose of strategic alternatives generated by SWOT analysis should be to build on an organization's strengths in order to exploit opportunities, counter threats, and correct weaknesses."⁷⁹ The organizational analysis model SWOT is an objective inventory and assessment of the organization and focuses on an organization's Strengths, Weaknesses, Opportunities, and Threats. Using Pacific Grove Police Department as a model for the future impact of wireless video technology, the following questions and statements were considered while conducting this analysis:

Strengths; leveraging organizational strengths:

- The organization is effective in securing grant funding.
- There is a strong organizational commitment to community policing and understanding of collaboration and partnerships.
- Community trusts the police department.
- Officers are generally trustful of police administration.

Weaknesses; potential challenges where the organization needs to focus:

- Most officers will resist the prospect of video monitoring.
- Costs are prohibitive due to budgetary constraints of a small agency.

- Is there sufficient support and buy-in from the key stakeholders? If not, the stakeholders must be provided sufficient articulation to become supportive.
- Some existing department members will actively resist.
- Training and equipment are costly.
- Organization's work force is older and may be more resistant to technology.

Opportunities; benefits of a wireless video network for the organization:

- Heighten level of public safety and security.
- High profile crimes (murders, rapes, robberies) in certain city locations could create a sense of urgency for a proactive police response.
- Enhance mutual trust through collaborative efforts with the private sector.
- Better police accountability.
- Further overall community policing efforts.
- Realize cost savings benefit through greater police efficiency.
- Greater police documentation.

Threats; forces which negatively impact the transition or threaten it altogether:

- A cost effective wireless video system is not immediately available.
- Create a public perception of a totalitarian police state.
- Is there a lack of full support and buy-in from key stakeholders?
- Public resistance could be strong against wireless video technology.
- Rapidly changing technology outmodes existing technology.
- ACLU and other civil libertarian organizations resistance will be strong against wireless video technology and will most likely mount a public campaign or legal challenge.

Stakeholder Identification and Analysis

Prior to any attempts to develop a set of strategic alternatives, it is critical to identify stakeholders. Stakeholders are individuals, groups, or organizations that may impact what you do; be impacted by what you do; or otherwise care about what you wish to do as it is related to the issue. Stakeholders may be internal or external to the organization and are interrelated to varying degrees. Stakeholders are in a position to oppose, support, or be indifferent to the change issue, depending on their own unique perceptions. The degree of credibility and trust among stakeholders should be evaluated because of their impact on the proposed change. Several of the stakeholders who could have a role in the development and implementation of a wireless video network in small law enforcement agencies are:

Community Members – These are the individuals who the agency serves and protects. They have a clear expectation of their department in that public safety is a high priority.

- The community generally supports law enforcement efforts to enhance community safety.
- The community expects and relies on its law enforcement to be accountable to issues of police misconduct.
- The community may see law enforcement's proactive measures towards greater police efficiency as overreaction and an invasion of their privacy.

Wireless Video Infrastructure Vendors – Are the individuals and privately owned businesses that are critical to the development and implementation of a wireless video network.

- Video camera manufacturers and installers

- Computer manufacturers
- Wireless Network manufacturers and installers
- Software developers

Civil Libertarian Organizations – These are the groups (or individuals) who have spoken against police use of video technology in the past or may in the future and are viewed as potential adversaries.

- American Civil Liberties Union (ACLU)
- National Association for the Advancement of Colored People (NAACP)
- League of United Latin American Citizens (LULAC)

Police Chiefs/Sheriffs – These individuals implement policy and provide direction for their departments.

- Police chiefs/sheriffs set the vision for how the organization will use wireless video technology.
- Police chiefs/sheriffs have political influence on policymakers outside the organization, such as local government, federal and state officials.
- Police chiefs/sheriffs are strongly committed to public support.
- Historically, police chiefs/sheriffs rely on management and supervisors to implement policy and develop operational plans.
- Police chiefs/sheriffs are in a better position to form public and private business partnerships.

Police/Sheriff Managers and Supervisors – These individuals manage and supervise all of the operations and services provided by the agency.

- Some police/sheriff managers and supervisors may not be supportive of the technology.

- Most police/sheriff managers and supervisors probably see the potential benefit of wireless video technology.
- Police/sheriff managers and supervisors will be directly responsible for policy and procedure development.
- Police/sheriff managers may lack experience or proper training in computer technology to immediately use wireless video technology.
- Police/sheriff managers and supervisors will coordinate all field activities in ensure that the technology is not misused.

Police Officers/Deputy Sheriffs – The individuals that perform the line-level law enforcement functions of the agency.

- Police officers/deputy sheriffs may not be supportive of the technology.
- Most police officers/deputy sheriffs probably see the potential benefit of wireless video technology.
- Police officers/deputy sheriffs will be responsible to ensure that they do not misuse the technology and violate the public’s trust.
- Police officers/deputy sheriffs may lack experience or proper training in computer technology to immediately use wireless video technology.

Professional Peace Officer Associations & Government Oversight Institutions – These organizations provide research and assistance in all aspects of law enforcement and have a degree of political influence at the federal, state and local level.

- International Association of Chiefs of Police (IACP) and Sheriff Associations provide research and administrative assistance to agency heads.
- Officers Associations; Police Officers Research Association of California (PORAC), California Organization of Police and Sheriffs (COPS), California Peace Officers Association (CPOA) and local associations provide lobbying collective bargaining and legal assistance to rank and file peace officers.
- California Commission on Peace Officer Standards and Training (POST) sets training standards, approves training programs, provides management assistance to agency heads, and certifies California peace officers.

- District and City Attorney's offices because of their oversight and prosecution Roles would have input on method and uses of wireless video evidence.
- Department of Justice, both state and federal because of their oversight roles and their awarding of law enforcement grants through Office of Criminal Justice Planning (OCJP), State Law Enforcement Supplement Fund (SLESF), Local Law Enforcement Block Grants (LLEBG), and DOJ Copsmore technical grants.

Private Sector Businesses – Private businesses offer partnership opportunities to implement a wider wireless video network and share costs.

- Insurance industry might supplement the cost of installing cameras in certain high crime areas.
- School districts could allow police to access their CCTV systems via the Internet or wirelessly.
- Banks and other businesses could allow police to access their security CCTV networks via wireless or the Internet.

Media – The media is a well-established and most turned to source of information for members of the community. The information and manner of reporting may have a degree of influence over the public's perception of law enforcement and community safety.

- Depending on their position, they have the potential to influence the community in favor of, or against wireless video technology.
- Community outreach is a resource for law enforcement.
- Media information could assist or compromise investigations.
- It has a degree of influence over federal, state, and local policies.
- Media may actually bring the issue forward on their own to promote a discussion of wireless video surveillance.

Oftentimes overlooked during this analysis are potential snaildarters.

Snaildarters are those who may not initially be considered to be a stakeholder (their interests often are not readily evident or may even seem irrational) but ultimately they can become obstructionists if their concerns are overlooked or not considered. It is necessary to anticipate their position and take measures for the appropriate response. The courts are a potential snaildarter in wireless video technology. An adverse court decision, not unlike the *Kyllo v. the United States*⁸⁰ ruling discussed in chapter I, could have the potential to block the usage of surveillance cameras after they have been installed at a great expense.

Careful guidelines will have to be established and followed, to avoid police misuse and potential unfavorable court rulings. A starting point for such guidelines could be the 1999 IACP “Guidelines for Closed Circuit Television (CCTV) For Public Safety and Community Policing” (see chapter VI, recommendations).⁸¹ These guidelines, with further community and stakeholder input, could alleviate any judicial concerns.

Development of Alternative Strategies

The next step in the strategic planning process requires generating a series of strategic alternatives that builds upon the organization’s strengths and corrects its weaknesses in order to take advantage of external opportunities and counter external threats. The strategies proposed should be designed to bring about a desirable future as envisioned. Based on the research as well as the results of the NGT process, three alternative strategies were developed relating to the implementation of wireless video

technology on small law enforcement agencies. Each of the following three strategies represents varying levels of the impact and approaches to wireless video technology.

Strategy One – Do not implement wireless video technology

This strategy is indifference to the issue. Although this strategy is the easiest and will generate the least resistance of the three, it is not a proactive approach to implementing emerging video technology. While the possibility exists that the community will eventually insist that wireless video technology be used to combat crime and increase police efficiency, there are no guarantees this will occur.

Strategy Two – Gradual introduction of wireless video technology

In this strategy, the organization gradually introduces wireless video technology, concentrating at first on areas where there will be the least public resistance. Although public involvement is minimal in this approach, the police leader should take the opportunity to gauge public support and plan for future expansion of the program. The police can concentrate on converting existing video systems to wireless and phasing in wireless video technology. There is a possibility that much of the existing equipment can be retrofitted to allow wireless applications and police department use and access. Examples of existing security networks that can be converted would be school systems, banks and other business security systems that can be accessed during times of crime.

The next phase can be the most controversial inside the organization and involves converting existing patrol vehicle's video recorders to wireless transmitters. Depending on the method selected, this technology either exists currently (Internet) or is close to development in a cost effective system. This plan will require substantial buy in

from the police officers who will resist being monitored. Officers will have to be shown that wireless video transmission is in their best interests by providing them greater officer safety and event documentation. Of course, the likelihood of success is increased and resistance should be less if the agency is already using video recorders in their police vehicles.

The third phase of this strategy will be to place fixed cameras in selected high crime areas. Only a few locations should be selected initially and would be preferably located in remote areas with limited views of residences and crowds. Mobile cameras could also be purchased and moved to temporary locations as crime patterns dictate. As the cameras become more accepted, they can be phased into other areas of the city as well. This will also address one of the biggest obstacles to the smaller agency, cost. By spreading purchases over time, initial costs will be held down.

Partnerships with businesses such as insurance companies and grant funding should also be explored to hold down costs. Before any development of a wireless video network, police leaders will have to assemble stakeholders and generate support. Because this will be done incrementally, resistance can be held to a minimum by tackling the least intrusive applications first, thereby winning support for an ever expanding wireless video system.

Strategy Three – Implement a widespread wireless network of both fixed sites and mobile transmitting

This strategy involves a leadership role including active promotion and development of an immediate widespread wireless video network. Strategy three clearly involves the most work and the highest level of commitment on the part of the

agency's leader and the policymakers of the previously identified stakeholders. This is also the strategy that will meet with the most resistance.

The police leader will have to form broad based community support, convince city government that the technology is worth the commitment of substantial resources and ease the natural suspicions of the community and the police workforce. This is a daunting effort and if handled improperly has the potential to derail the entire program. It is recommended that this approach only be followed if there are urgent issues that need to be addressed requiring immediate action. Such issues would include multiple violent crimes or police credibility and accountability issues.

Selection of the Appropriate Strategy

Alternative strategies are dependent upon many different variables, as discussed. They are dependent upon the particular organization, the applicable external environment, and the issue(s) contemplated. In the selection of an appropriate plan, each agency and community will need to assess not only their level of need, but also the weaknesses, opportunities, strengths and level of resistance likely by the various stakeholders. When contemplating a particular strategy it is also important to focus on the issue statement, "how will the implementation of wireless video technology impact small enforcement agencies?" As stated before, cost is going to be a main factor. This will require the police executive to assess resources and estimate ongoing costs before any system can be installed.

Barring any urgent issues, strategy two has the most appeal for the average community even if cost is not a factor. It allows for a gradual implementation at a speed

consistent with the level of resistance and resources. This plan also has the potential to unite various factions behind a wireless video program, where plan three, widespread immediate implementation, has the potential to unite various factions against the plan. The best chances to develop partnerships, collaborations, and shared vision rests in an incremental approach, which will be outlined in the next chapter.

CHAPTER IV

IMPLEMENTATION PLAN

Implementation Planning

Prior to carrying out any implementation plan, it is essential that law enforcement leaders fully understand the proposal. They must also ensure that they, and other key individuals, are well versed in the facilitation of the change process. Perhaps most importantly, they must be supportive and committed to the proposed change. Assuming the law enforcement executive of a small agency has the resources and tacit approval by the government funding body for a wireless video network, focus can then concentrate on bringing together the various factions. This is an enormous undertaking. By spreading various implementation plans over a longer period of time, the likelihood of success is increased.

The following implementation plan is a very broad example for a small law enforcement agency's implementation of a wireless video network. The law enforcement executive will have to take into account uniqueness of their jurisdiction, assess resistance and modify a plan that best suits the community.

Assess the Organization and Stakeholder Readiness for Change

As stated earlier, a wireless video network will require various collaborative approaches requiring partnerships and trust with police – community, police management – police rank-and-file, public – private sector. If the agency or the stakeholders are not yet ready to change, then the most comprehensive strategic plan

will not produce the desired results. Some key questions the law enforcement leader must answer are:

- What is the level of trust among the key stakeholders?
- Do the stakeholders have any experience working collaboratively in the past?
- Are there any shared interests between the stakeholders?
- What are the roles of the stakeholders?
- Does the organization have sufficient resources to implement either a full or partial wireless video network?

Establish Steering Committees

In any change effort, there is always at least one person who is key to the success of the endeavor. Whoever this person is or whatever title is bestowed upon this person, he or she must be capable of leadership and must embody the vision. Typically, this person (sometimes referred to as the chairperson or project manager) will head a steering committee that acts as a change catalyst throughout the entire process. This project manager is critical to the success of the transition because this person quite literally sets the tone for how the process will be facilitated. The success of this strategy requires the creation of different advisory committees for each phase of the master implementation plan. These committees, which will have some overlapping members, should include representatives of the major stakeholders and agency leaders. The role of the advisory committee will be to assess support, create policy and give the organization direction. Once a phase is fully implemented, the agency leader can move to the next.

Develop a Collective Vision

Developing a collective or common vision is crucial to the successful implementation of a wireless video network. If leaders aspire to be change agents, they must have a vision and they must be able to communicate it effectively. A vision that is frequently, as well as enthusiastically, shared with the organization's members will likely be very helpful in garnering the support necessary from those who will help create the change. All too frequently people are inclined to maintain the status quo unless they become involved and are somehow motivated to help make change happen. The vision or desired future must be clearly illustrated and it must be designed to be as appealing as possible. "The most important role of visions in organizational life is to give focus to human energy. Visions are like lenses that focus unrefracted rays of light. To enable everyone concerned with an enterprise to see more clearly what's ahead of them, leaders must have and convey a focus."⁸² Once the vision is established it must be effectively communicated throughout the community and the organization, which will, in turn, act as a catalyst for transformational change.

Strategy Implementation - Stakeholders

When implementing the selected strategy, timing, trust, shared vision, and buy-in are all critical for success. One role of advisory committee members will be to assist in communicating the vision, reassuring an apprehensive public and police work force, and to provide ongoing evaluation of the success of the various phases.

Identification of the key stakeholders was accomplished earlier; now is the time to actively involve representatives from each of these groups or individuals, as the case

may be. Successful change is a dynamic process and it involves many key participants; here again stakeholders must be considered as key to success. To the extent possible, representatives should be involved either with the steering committee or on other future task groups. Again, it is important to apprise participants of the change vision and other important key elements of the process. Another important factor to interject at this point is to communicate to the stakeholders that they are constituents in the process, not spectators or opponents. Obviously, based upon the earlier stakeholder identification analysis, stakeholders will fall somewhere on a continuum, from very supportive to not supportive of the proposed change. This dynamic is to be expected and is part and parcel to the change process.

Strategy Implementation -Task Groups

Task groups are essential to planning, developing, and implementing practically any change process. Implementing a new technology into any organization is a significant task. Depending upon the scope of the project, it may take many months to work through all the necessary steps to successful implementation. Small task groups will perform the various tasks involved. These groups typically evolve from the steering committee, oftentimes with steering committee members serving as task group chairpersons or task group managers. This arrangement also helps to insure that enthusiastic participants, also known as change agents, oversee the task groups.

Generate Short-Term Wins

Since the selected strategy calls for the gradual implementation of a video wireless network, focus should be on implementing the least offensive plan, which has the highest potential of success. Since weaknesses, strengths and opportunities vary for each jurisdiction, that critical first step is so very important. The adage, you have to crawl before you can run, is a very appropriate outlook when implementing a plan and selecting the first phase. Generating short-term wins is crucial in building support both within and outside the organization. Advertising the progress and benefits, and focusing on success will help build mutual trust and credibility essential to continued expansion of wireless video over time.

The media can be an excellent source in informing the public, and every opportunity must be taken to highlight the program, which will lead to an increase of public confidence and a sense of security and safety in the community. Press releases and public demonstrations of this technology are critical steps in an implementation plan and should be carefully crafted to have the greatest impact. The organization should closely watch the wireless video program for any favorable press opportunities.

Likewise the organization will have to promote successes within the organization. Law enforcement leaders will have to capitalize on events, which demonstrate the potential for the wireless video program to bring greater safety and efficiency to line officers.

Resources Required for Implementation

As indicated earlier the implementation of a wireless video network will require a variety of funding resources. While initial funding for the plan may come from federal and state grants, and local government sources, sustained funding may also be found in private sector partnerships. Some of the costs associated with a wireless video network include equipment, training, administration, implementation and maintenance. State and federal government grants have been very popular since the 1990s and offer one of the easiest sources of funding. Many of these grants embrace technological improvements if it can be demonstrated that increased police efficiency equates to more police presence in the field. The wireless video program offers such potential.

Since funding is listed as a main factor in the RAND study on CCTV implementation, especially in small agencies, the law enforcement leader is going to have to be creative in forming partnerships to insure adequate funding. This was the model followed by Seal Beach Police Department in California. They formed partnerships with various banks in the community that switched their security cameras to the police wireless video network and paid the cost for their businesses. The Seal Beach Police Department further formed a partnership with a major technology company that donated over \$200,000 in technology hardware and software and utilized them as a beta test site. Other partnerships could include insurance companies that could see the increased security as having an impact on reducing claims.

The impact on law enforcement agencies of implementing a wireless video network has the potential to be an enormous undertaking both monetarily and from the innate resistance that may exist in the community and in the organization. All law

enforcement leaders will have to demonstrate exceptional leadership and communication skills when explaining their vision of the benefits that can come from wireless video technology, while small agency leaders will have to be creative in looking at internal and external funding sources.

The successful implementation of any plan will require some degree of organizational change. To achieve the desired change transition management is necessary and will be discussed in the next chapter.

CHAPTER V

TRANSITION MANAGEMENT

Transition Management and Critical Mass

Organizations seeking transformational change must recognize that in order for strategic plans to be effective, proper leadership of the transition itself must occur.

Though several essential elements of the change process have already been discussed, it is necessary to examine other critical aspects that are more relative to setting the stage for change. Leaders who accept the change challenge must be aware of and understand the principals of critical mass as it relates to the change process.

Critical mass is defined as the minimum quantity of specific individuals or groups, who if they actively support the proposed change, will insure that the change will come about in a desirable fashion. Similarly, their opposition to the proposed change may lead to a breakdown or complete failure of the process.

Change is naturally resisted and the process is risky for leaders and organizations. As pointed out earlier, change is best accomplished through a series of calculated transition stages instead of frenzied actions. Each phase of a wireless video network system will have its own transition stages. For the purposes of this project, two transition management models will be examined: one for video monitoring mounted either in the patrol car, or on the officer, and one for fixed site video cameras.

Commitment Planning: Critical Mass Evaluation

Critical mass may be determined for any such change process, in part, by reviewing the key stakeholder analysis accomplished during the SWOT process. Each

organization and each issue under consideration will present unique critical mass components. In considering a critical mass evaluation, it's also a good idea to seek input from others to make sure that none of the key individuals or groups have been inadvertently left out of the equation – doing so could potentially impact the desired outcome. Charting the commitment levels of these groups and individuals assists in identifying the areas where additional commitment is necessary. The following groups and individuals are critical for a successful transition to wireless video technology:

- Police Chiefs/Sheriffs
- Community Members
- Civil Libertarian and Special Interest Groups
- Wireless Video Infrastructure & Technology Vendors
- Professional Peace Officer Associations & Government Oversight Institutions
- Police/Sheriff Managers and Supervisors
- Police Officers/Deputy Sheriffs
- Private Sector Business Community
- Media

Critical Mass Commitment

The commitment chart displayed in tables 5.1 and 5.2 identifies the nature of current positions and desired positions of those individuals and groups who constitute the critical mass for the issue of implementing a wireless video network system into the typical small size law enforcement organization. Those who have already bought into the change can assist in moving individuals or groups to desired positions through a

concerted effort. Typically, this group or driving force is made up of the organization’s management team, as well as other key stakeholders and constituents who have adopted the collective vision as their own. Methods and techniques to move constituents effectively to the desired position are discussed later. The Critical Mass Commitment Chart for the transition to fixed site wireless video camera network, which members of the community and civil libertarian groups will potentially oppose, is described in Table 5.1.

CRITICAL MASS COMMITMENT CHART FOR FIXED LOCATION WIRELESS VIDEO CAMERAS				
Critical Mass Members	Block Change	Let Change Happen	Help Change Happen	Make Change Happen
Police Chiefs/Sheriffs			X→	O
Community Members		X→		O
Civil Libertarian and Special Interest Groups	X→		O	
Wireless Video Infrastructure & Technology Vendors			X→	O
Professional Peace Officer Associations & Government Oversight Institutions		X→	O	
Police/Sheriff Managers and Supervisors			X→	O
Police Officers/Deputy Sheriffs		X→	O	
Private Sector Business Community		X→	O	
Media		X→	O	
X = Current Position		O = Desired Position		

Table 5.1

Analysis of the critical mass provides leaders with an overall picture of the present positions of key groups and individuals in the transition process. The present state is symbolized with an “X” and the ideal state is symbolized with an “O.” The arrow indicates the desired path for a successful transition.

The Critical Mass Commitment Chart for the transition to a mobile wireless video camera network, which members of the organization at the line officer level will potentially oppose, is described in Table 5.2.

CRITICAL MASS COMMITMENT CHART FOR MOBILE WIRELESS VIDEO CAMERAS				
Critical Mass Members	Block Change	Let Change Happen	Help Change Happen	Make Change Happen
Police Chiefs/Sheriffs			X→	O
Community Members		X→		O
Civil Libertarian and Special Interest Groups		X→	O	
Wireless Video Infrastructure & Technology Vendors			X→	O
Professional Peace Officer Associations & Government Oversight Institutions		X→	O	
Police/Sheriff Managers and Supervisors			X→	O
Police Officers/Deputy Sheriffs	X→		O	
Private Sector Business Community		X→	O	
Media		X→	O	
X = Current Position	O = Desired Position			

Table 5.2

Analysis of the critical mass provides leaders with an overall picture of the present positions of key groups and individuals in the transition process. The present state is symbolized with an “X” and the ideal state is symbolized with an “O.” The arrow indicates the desired path for a successful transition.

Transition Management Structure

The Police Chief or Sheriff in his or her role as the law enforcement organization leader is in the best position to promote visions, inspire others, and impart enthusiasm. Regardless whether the vision was the Chief or Sheriff’s idea, he or she is recognized as the leader of the organization. As such, he or she has position power and hopefully recognized leadership characteristics and are further empowered to elicit willing commitment to ideas and endeavors. It is therefore recommended that this individual take the lead as the transition manager for any significant organizational transition into wireless video technology. What this designation says is that the Chief or Sheriff is 100 percent behind the transition and they are confident that the organization is moving in the right direction. It will also position them to liaison with the City or County Manager

and/or the City or County Council on important matters related to policy direction, budget, and other items of magnitude.

The Chief or Sheriff will liaison with the aforementioned project manager who will keep him/her informed on all matters of importance regarding the change process. Depending upon the transition, it may also be prudent to form a transition team. This team should be made up of key management staff and others who have a keen interest in seeing the transition through to fruition. This team may be useful to accomplish some of the heavy work associated with complex transitions, such as budgetary matters or other tasks that may require some degree of administrative expertise.

Techniques and Methods of Implementation

Successfully persuading members of the critical mass constituency to move from their original position to the desired position is oftentimes critical to the success of the transition. The best way to accomplish this is through stakeholder participation, education and communication. This process is time consuming and can seem redundant and even unnecessary, but nothing is farther from the truth. Sharing information is perhaps one of the single most important things that leaders can do. Sharing information results in strengthening others to make informed decisions about their future; it removes the mystique of uncertainty from the change process and it allows others to break the bonds of fear from the unknown. This educational process should be part and parcel to any significant organizational transition. The process may take many forms including department meetings, newsletters, video presentations or

any other medium that will help get important information out. In some instances, it will be necessary to approach certain key individuals and/or groups and conscientiously promote the transition. This will set their minds at ease and possibly even negotiate with them regarding certain matters pertaining to the transition.

One such group in the transition to wireless video is the labor union. This group, more than any other constituent, likely will have some very serious concerns regarding the implementation. They will be concerned that managers and supervisors will be sitting around the computer watching their every move and documenting their movements. The specter of big brother will play a role and it must be effectively discussed and worked through. Who will have access to the video information (both real time and archived) and what will it be used for (disciplinary purposes?) are just a few of the questions that will need to be discussed. These issues are not insurmountable; other agencies have already worked through similar issues successfully.

Responsibility Charting

Responsibility charting lists the stages needed to initiate changes during the transition to a wireless video technology network. It outlines role responsibilities to accomplish the strategic plan. Responsibility charting reduces conflicts between the stakeholders because roles are clearly defined and understood. The responsibility chart for the transition to wireless video technology is described in Table 5.3. This responsibility chart is similar for each phase of an incremental plan and will assist when assessing the impact of implementing wireless video technology into the organization.

RESPONSIBILITY CHART								
DECISIONS	PARTICIPANTS							
	Chiefs Sheriffs	Com- munity Members	Civil Libert. Groups	Tech. Video Vendor	Profes. Groups	Private Sector Busin.	Police/ Sheriff Mgrs/Sup	Officers/ Deputies
Set Initial Planning Meeting	R			I	S/I	I	S	I
Select Advisory Committee	R	A	A	I	I	A	S	I
Select Committee Chairpersons	R	I	I	I	I	I	S	I
Establish Goals & Objectives	R	A	A		I	A	S	I
Develop Policy Guidelines	R	A	A		I	A	S	I
Resource ID & Commitment	R	A	A		I	A	S	I
Develop Evaluation Components	A	A	A		I	A	R	S
Set Implementation Dates	A	A	A	I	I	A	R	S
Conduct Training	S	S/I	S/I	S/I	S	R	R	S
R = Responsibility (not necessarily authority) A = Approval (right to vote) BLANK = No role				S = Support (put resources toward) I = Inform (to be consulted before action)				

Table 5.3

The media was not listed as a participant for charting purposes due to their mandate of being impartial. Reporters would be brought in from time to time and informed of various program developments and called on to help in communicating goals, objectives and guidelines. This is also the case with the courts, which were identified as a potential snaildarter. It is difficult to include the courts in any stakeholder meetings or have representatives on committees, also due to their mandate of being impartial.

As explained, the transition to wireless video technology is a huge undertaking to the organization and its leaders. It is worth repeating that change is naturally resisted and the process is risky for leaders and organizations. But it is also worth noting that during any period of change and uncertainty there is tremendous opportunity. The hope for a better future exists with wireless video and its benefits outweigh the risks.

Recommendations for the successful implementation of wireless video technology and a case study of a failed implementation program are examined in the next chapter.

CHAPTER VI

RECOMMENDATIONS AND CONCLUSIONS

Recommendations

Research indicates that the benefits of wireless video technology to law enforcement will lead to greater applications by agencies in the near future. By 2007, it is anticipated that wireless video use will be commonplace in forward thinking organizations. The challenge to small agency executives will be balancing the concerns of the community over privacy rights, concerns of the organizational work force over monitoring them and government concerns over cost.

While cost concerns expressed by most small law enforcement agency executives are best addressed through grants and partnerships, privacy concerns can only be addressed with trust. A first step in easing concerns will be to assemble stakeholders and establish clear guidelines. In 1999 the International Association of Chiefs of Police (IACP) addressed the issues of video surveillance in a published document called "Guidelines for Closed Circuit Television (CCTV) For Public Safety and Community Policing."⁸³ These recommendations are for law enforcement leaders and their counterparts in the private sector who are using video in public places.

RECOMMENDATIONS: IACP GUIDELINES ON CCTV

- In promulgating these guidelines, the security industry and law enforcement agencies seek to establish voluntary parameters restricting the non-court-ordered use of CCTV to public places, to enhance public safety and security in a manner consistent with accepted rights of privacy.
- Except in situations of the investigation of a crime committed by a person(s) whose description is known, CCTV programs must not be based on individual

characteristics, or classifications, including race, gender, sexual orientation, national origin, or disability.

- These guidelines are intended to demonstrate that the security industry and law enforcement communities are committed to enhancing the public's quality of life by integrating the best practices of public and private policing with the responsible use of technology.
- The principle objectives of any CCTV program should include:
 - 1) Enhancing public safety;
 - 2) Preventing/deterring crime and public disorder;
 - 3) Reducing and removing the fear of crime;
 - 4) Identifying criminal activity;
 - 5) Identifying suspects;
 - 6) Gathering evidence;
 - 7) Documenting police actions to safeguard citizen and police officer rights;
 - 8) Reducing the cost and impact of crime to the community; and
 - 9) Improving the allocation and deployment of law enforcement
- CCTV use for safety and security purposes should be conducted in accordance with accepted legal concepts regarding privacy, and in a professional, and ethical manner. Personnel involved in CCTV use should be appropriately trained and closely supervised in the responsible use of this technology. Violations or breaches of any program protocols should result in appropriate discipline and may subject those involved to civil or criminal liability under applicable State and Federal laws governing CCTV video monitoring.
- Initial and ongoing needs assessments should be conducted as a part of any CCTV for safety and security program or protocol. Such needs assessments should consider that CCTV is only one of many tools available in protecting the public's safety, and that other alternatives may be more appropriate or cost effective.
- Information obtained from CCTV use should be used exclusively for safety and law enforcement purposes. Information in any form obtained through the use of a CCTV program, or CCTV technology should be handled according to accepted law enforcement procedures and legal rules governing the handling of evidence. Dissemination of such information should be conducted in accordance with applicable state and federal laws. Unusable or non-case specific video or digital image data should not be retained, and should be purged from data storage within an appropriate time, and in conformance with governing State and Federal legal and public policy requirements.

- Law enforcement agencies should actively seek consultation and input from their community prior to implementing any CCTV program, or any significant expansion or alteration of such a program.
- Law enforcement agencies implementing a CCTV program shall be responsible to oversee and coordinate the use of CCTV for public safety and security purposes, and shall establish a liaison with their community regarding the program's policies and procedures.⁸⁴

A majority of NGT panel members stated that a written policy concerning CCTV use by police was needed. They recommended that this policy be collaboratively worked out with the community and the police department. Many expressed a belief that the need for this collaboration was greater in the small community than in bigger urban centers. The NGT panel further believes that the IACP CCTV recommendations can provide an excellent starting point for a committee of stakeholders to craft a policy specific to the community. Such collaborations will create an atmosphere of trust both within the organization and between the community and the police.

As for funding, creativity seems to be the best recommendation for the law enforcement leader of the small agency. Law enforcement agencies today are operating more like businesses, where the emphasis is on achieving greater efficiency and effectiveness and better customer service. Business and police partnerships, government grants and internal funding sources can provide the resources necessary to implement a wireless video network. As in any undertaking, personnel selection to oversee and implement a wireless video network is critical to its success.

Case Study: Oakland Police Department

Society is experiencing, and will continue to experience, unprecedented technological advancements. These advancements will very soon allow for widespread use of wireless video technology by all law enforcement agencies. However, just the existence of technology is no guarantee that everyone will embrace the technology. Consider the case of Oakland Police Department in California. In 1997 Chief of Police Joseph Samuels saw CCTV cameras in high crime areas as an effective crime-fighting tool and proposed their installation.⁸⁵ Costs of the cameras were estimated between \$500,000 to \$1,000,000 and the department was actively pursuing grant funding to make it happen. Chief Fred Sanchez, of the Pomona Police Department in California, was the Deputy Police Chief in Oakland at the time and remembers being surprised by the level of resistance they received.⁸⁶ Chief Sanchez said that they had support from the neighborhood groups, but didn't include all stakeholders like the ACLU and the City Council in their initial assessment.

The ACLU and other community groups mounted an anti-camera campaign. The ACLU's main argument was that camera operators could zoom in and read documents that unsuspecting individuals might be holding and claimed that this would be an invasion of privacy.⁸⁷ This eventually led to the City Council changing its mind and recommending against the cameras, opting instead for video recorders at intersections for red light violators only.⁸⁸

Chief Sanchez states that if he had to do it over again he would do more research with stakeholders from the ACLU, community groups and local politicians prior to announcing implementation plans. He would also recommend that any project be

started on a much smaller scale and data be collected on crime statistics both before and after camera installation. If the cameras were successful in reducing crime and promoting greater police efficiency, then he would move for expanding the system by pointing to tangible results.⁸⁹

Conclusions

When assessing how the implementation of wireless video technology will impact small law enforcement agencies by 2007, one is of course assuming that this will occur. The future of wireless video technology in law enforcement seems almost a certainty. In many ways it is a natural extension of that first two-way police radio that was introduced in Bayonne, New Jersey in 1933. Although video surveillance has played a part in policing around the world for decades, wireless technology is poised to have a dramatic effect on the way law enforcement works in the very near future. But to take full advantage of this emerging technology will require more than just the technological know-how and the financial resources. It will require a greater degree of collaboration, partnership, and a higher level of mutual trust between public safety entities and the communities they serve. The phased-in response seems to be the best way to achieve that end.

The recommended strategies in this paper are based on extensive literature research, interviews with technology innovators and law enforcement executives and a community cross-section panel. The implementation of wireless video technology will require a paradigm shift at every level both within and outside the organization; this will be its greatest impact. But the implementation of this technology, if approached

correctly, has the potential to bring the community even closer together and more involved in its police department. Nowhere is that potential greater than in the small law enforcement agency.

As stated earlier, the impact of wireless video technology on the law enforcement agency's leadership could be tremendous as many factions both internal and external to the organization may have fundamental opposition to its implementation. The successful integration of this emerging technology into law enforcement will truly require a law enforcement leader of the future; one with vision, communication, leadership and organizational skills.

In the final analysis, if either the community or the organization would feel better if a wireless video network was not in place, then it should not be utilized, despite its clear advantages.

APPENDIX A

NOMINAL GROUP TECHNIQUE PANEL MEMBERS

Mr. Chris Hunkel
Police Officer
City of Pacific Grove Police Department, California

Mr. Timothy Shelby
Police Captain
City of Monterey Police Department, California

Mr. Kenneth Rolle
Partner
Trac Net, police records management and police software company
Menlo Park, California

Mr. Ed Leeper
Citizen, Community Activist and Free Speech Advocate
Monterey, California

Mr. James Willoughby
Citizen, Environmental Activist
Chairman of Citizens for the Protection of the Marine Tide pools
Pacific Grove, California

Ms. Michelle Welch
Attorney
President of the Monterey Co. Chapter of the American Civil Liberties Union (ACLU)
Pacific Grove, California

Mr. Robert Huitt, PhD.
Mayor pro-tem
City of Pacific Grove City Council
Pacific Grove, California

APPENDIX B
POTENTIAL TRENDS IDENTIFIED BY NGT PANEL

1. **Police efficiency**
2. **Privacy concerns**
3. **Public awareness of how technology can be used**
4. **Judicial response to wireless video technology**
5. **Acceptance and level of resistance by users of technology**
6. **Trends in community oriented policing & problem solving (COPPS)**
7. **Sophistication of wireless video technology**
8. **Public concern of too much government**
9. **Cost of wireless video technology**
10. Changes in Municipal Budgets
11. Availability of outside funding resources private/government
12. Public awareness of police conduct
13. Officer training needs
14. Storage of data 3
15. Collection of Citizen Data
16. Road and traffic condition
17. Collaboration of public government and private enterprise
18. Use of wireless video for surveillance
19. Reliance on Technology by Government
20. Development of new technology
21. Security of wireless video
22. Change in workforce
23. Development of networks
24. Data storage
25. Terrorism and public safety concerns
26. Public concerns of personnel cost
27. Development of technology to other areas
28. Standardization of technology

** First nine trends in bold type were the top selected trends by NGT panel*

APPENDIX C

POTENTIAL EVENTS IDENTIFIED BY NGT PANEL

1. **Court decision prohibiting use of wireless video technology**
 2. **Terrorist attack on multiple government buildings**
 3. **Officer exonerated by wireless video evidence**
 4. **Citizens demand wireless video technology in high crime ghetto for public safety**
 5. **Violent crime on recreation trail recorded by wireless video leads to arrest**
 6. **Police misuse of wireless video violates citizen First Amendment rights**
 7. **Racial profiling by officer stopped by use of wireless video technology**
 8. **CHP develops widespread use of wireless video technology**
 9. **Bad cop gets caught and convicted of wrong doing by wireless video**
 10. **Innocent man convicted of crime by wireless video evidence**
 11. High profile crime murder of politician solved by wireless video technology
 12. Police use of wireless video technology stops criminal act
 13. Public perception of police conduct requires wireless video technology
 14. Wireless video technology used in Earthquake assessment
 15. Data transmission of crime info quickly solves crimes
 16. Crooks steal wireless video camera from high crime area
 17. Wireless video technology used in unmanned aerial vehicles replaces helicopters
 18. Federal Government increase grants for wireless video technology
 19. Wireless video technology used to quell civil protest, civil suit by supports
 20. Police wireless video technology goes down, police work stymied
 21. Public information of dangerous conditions by wireless video technology (i.e. ocean)
 22. Police wireless video technology jamming devise develop
 23. Police team with media to catch homicide suspect caught on wireless video
 24. Police use wireless video technology to bypass news media
 25. Innocent man convicted of crime by manipulated wireless video technology
 26. IACP supports wireless video technology in police field
 27. Law enacted requiring all police/public contact be video recorded
 28. Insurance industry funds wireless video technology for Police Departments
 29. Need for court testimony lessened by wireless video technology
 30. Wireless video technology used by police administrators to ID problem officers
- * First ten events in bold type were the top selected events by NGT panel**

GLOSSARY

ACLU - Acronym for **American Civil Liberties Union**, organization concerned with protecting individual freedoms and rights as outlined in the US Constitution.

Bandwidth - The difference between the highest and lowest frequencies that an analog communications system can pass. For example, a telephone accommodates a bandwidth of 3000 Hz: the difference between the lowest (300 Hz) and highest (3300 Hz) frequencies it can carry.

CD ROM - Acronym for **Compact Disc Read-Only Memory**. A form of storage characterized by high capacity (roughly 650 megabytes) and the use of laser optics rather than magnetic means for reading data. Although CD-ROM drives are strictly read-only, they are similar to CD-R drives (write once, read many), optical WORM (write once, read many) devices, and to optical read-write drives.

Closed Circuit Television (CCTV) - A television transmission circuit with a limited number of reception stations and no broadcast facilities to other station not on the network.

Compressed - A method of data being pressed together or into less volume or space for either storage or transmittal purposes.

Connectivity - The ability of hardware devices, software packages, or a computer itself to work with network devices or work with other hardware devices, software packages, or a computer over a network connection.

Copsmore - US Department of Justice grant funding source which competitively awards money to police agencies for technological innovations.

Cracker - A person who overcomes the security measures of a computer system and gains unauthorized access. The goal of some crackers is to obtain information illegally from a computer system or use computer resources. However, the goal of the majority is to merely break into the system.

DES - Acronym for **Data Encryption Standard**. A specification for encryption of computer data developed by IBM and adopted by the US government as a standard in 1976. DES uses a 56-bit key.

Digitized - To put (video image data, for example) into digital form recognized by computers.

Encryption - The process of encoding data to prevent unauthorized access, especially during transmission. Encryption is usually based on a key that is essential for decoding. The US National Bureau of Standards created a complex encryption standard, DES (Data Encryption Standard), that provides almost unlimited ways to encrypt documents.

Facial Recognition - Computer software program which allows cameras to scan individuals and compare against a known databank of photographs.

Firewalls - A security system intended to protect an organization's network against external threats, such as hackers, coming from another network, such as the Internet. A firewall prevents computers in the organization's network from communicating directly with computers external to the network and vice versa.

Frame-Grabbing - Earlier method of transmitting motion video by sending 3 to 4 still images every second. It was characteristic by its jerking motion.

Gigabyte - 1,073,741,824 bytes which are short for binary term. A unit of data, today almost always consisting of eight bits. A byte can represent a single character, such as a letter, a digit, or a punctuation mark. Because a byte represents only a small amount of information, amounts of computer memory and storage are usually given in kilobytes (1024 bytes), megabytes (1,048,576 bytes), or gigabytes (1,073,741,824 bytes).

Harrods Department Store - Famous, exclusive department store in London, England which was bombed by the IRA in 1984. Evidence from a police CCTV led to the arrests of the suspects.

Infrared Thermal Imaging - Device used to detect Infrared heat or having a frequency in the electromagnetic spectrum in the range just below that of red light. Objects radiate infrared in proportion to their temperature.

Internet Site - The worldwide collection of networks and gateways that use the TCP/IP suite of protocols to communicate with each other. At the heart of the Internet is a backbone of high-speed data communication lines between major nodes or host computers, consisting of thousands of commercial, government, educational, and other computer systems, that route data and messages.

IPSEC - Acronym for **I**nternet **P**rotocol **S**ecurity. IP is the protocol within TCP/IP that governs the breakup of data messages into packets, the routing of the packets from sender to destination network and station, and the reassembly of the packets into the original data messages at the destination. Security refers to protecting the data from unauthorized viewers.

Jamie Bulger - A two-year-old boy from Liverpool, England who was murdered in 1993. Police CCTV cameras recorded the child being abducted by two ten-year-old boys who later admitted to killing the child to see what it was like.

Key - The code for deciphering encrypted data.

Latency - The time required for a signal to travel from one point on a network to another.

Light Intensifying Technology - Device which amplifies ambient light to allow vision in the night.

LLEBG - Acronym for **Local Law Enforcement Block Grant**, US Department of Justice grant funding source which awards money to police agencies based on crime rates.

mb – Abbreviation for megabyte. Usually 1,048,576 bits (2^{20}); sometimes interpreted as 1 million bits for computer information.

Microwave Transmissions - A high-frequency electromagnetic wave, one millimeter to one meter in wavelength, intermediate between infrared and short-wave radio wavelengths used to transmit data.

MPEG - Acronym for **Motion Pictures Experts Group**. An ISO/ITU standard for storing motion pictures in compressed digital form. Individual periodic key frames (called I-frames) are encoded using the JPEG method and then further compressed by recording only the differences between them

Modem- Short for modulator/demodulator. A communications device that enables a computer to transmit information over a standard telephone line. Because a computer is digital (works with discrete electrical signals representing binary 1 and binary 0) and a telephone line is analog (carries a signal that can have any of a large number of variations), modems are needed to convert digital to analog and vice versa.

NAACP - Acronym for **National Association for the Advancement of Colored People**, an organization who concerns itself with promoting the interests of people of color and is a frequent critic of police and minority community relationships.

Pan - To move a movie or television camera to follow an object on a horizontal plane (left and right) or create a panoramic effect.

Paradigm - An archetypical example or pattern that provides a model for a process or system.

PCMCIA - Acronym for **Personal Computer Memory Card Interface Adapter**, an international organization that has developed a standard for adding memory and to personal computers and credit card size devices.

P.O.S.T. - Acronym for the Commission on **Peace Officer Standards and Training**, California State agency responsible for overseeing and certifying police training and setting minimum standards.

Public and Private Sector Partnerships - Partnership between the government and private industry to reduce our costs in implementing wireless video technology.

Pro-Active Policing - Acting in advance to deal with an expected difficulty; anticipatory: *not reactive, but proactive steps to combat terrorism.*

RAND Corporation - A nonprofit institution established in 1946 that helps improve policy and decision making through research and analysis.

Situational Awareness - Being aware of would surroundings, having information to base decisions and perceive threats during a dynamic event.

SLESF - Acronym for **State Law Enforcement Special Funding**, California State grant funding source which awards money based on community size.

Spread Spectrum - Pertaining to or referring to a system of secure radio communication in which the content of a transmission is broken into split-second pieces, which are transmitted over separate frequencies. When a receiver identifies a spread spectrum signal, it reassembles it to its original form.

Stakeholders – Individuals, groups, or organizations that may impact what you intend to do, be impacted by what you intend to do, or desire to impact what you intend to do.

T1 - A T-carrier that can handle 1.544 Mbps or 24 voice channels. Although originally designed by AT&T to carry voice calls, this high-bandwidth telephone line can also transmit text and images.

Tilt - To move a movie or television camera to follow an object on a vertical plane (up and down).

UK (United Kingdom) Home Office - United Kingdom government agency responsible for domestic issues.

Unmanned Aerial Vehicle (UAV) - Aircraft which is flown via remote control and has no pilot onboard.

UPS - Acronym for **Uninterrupted Power Supply**, a device that provides power to an electric device during a power failure.

WLAN - Acronym for **Wireless Local Area Network**. A group of computers and other devices dispersed over a relatively limited area and connected by a wireless communications link that enables any device to interact with any other on the network. WLANs commonly include microcomputers and shared resources such as printers and large hard disks. The devices on a WLAN are known as nodes, and a radio transmitter through which messages are transmitted connects the nodes.

Wireless - Pertaining to, or characteristic of communications that take place without the use of interconnecting wires or cables, such as by radio, microwave, or infrared.

Zoom - To move a camera lens rapidly towards or away (wide angle) from a subject.

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