

**ADVANCED POLICE COMMUNICATIONS TECHNOLOGY:  
THE FUTURE IMPACT ON PATROL SUPERVISION**

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## INTRODUCTION

The American police industry is on the brink of a communications technology explosion. There is a virtual logjam of telecommunications technology awaiting developmental or pre-market stages which will throw law enforcement into a technical era which would have been considered science fiction only a few years ago.

The last revolution in police communications, the introduction of the two-way radio was introduced in a relative vacuum. Like most innovations of the time, the two-way mobile police radio was a single event revolution in technology. It was a one-function development, but one that had no further application beyond voice communication that transcended the capacity of the local coin-operated telephone. In essence, it was a "coin-operated" telephone that the street officer could carry in the patrol car.

Police management of the time was able to take this revolutionary device, study it, and fit this one innovative piece into the police services puzzle. The impact of instant two-way communications was the most significant technological development since the concept of modern police work was formed by Sir Robert Peel. Police officers instantly had the capacity to be not only immediately responsive to community needs, but immediately accountable to supervisors.

The coming revolution in advanced police communications differs from the introduction of the two-way system in many ways. The speed with which the innovations will be introduced is perhaps the single most important difference. The two-way system was introduced, grudgingly accepted, then was depended-upon over a period of decades. Advances in the next decade will be as fast paced as a whirlwind.<sup>1</sup>

Police circles will no sooner grasp the basic understanding of the introduction of a revolutionary communications technology when another "star wars" era breakthrough opens additional doors of communication. While the technology itself is intriguing, the study of future applications and effects of this next communications revolution on the working relationships within police departments commands not only attention, but riveting fascination. This study used analyze how emerging communication technology may effect the daily working of police field supervision. The issue to be examined is:

**What will be the impact of emerging law enforcement communication technology on patrol supervision in a medium sized department by the year 2004?**

The sub-issues are:

- \* **How will communications technology enhance the effectiveness of field supervisors?**

- \* How will police training keep pace with innovation and technological breakthroughs?
- \* How will police departments of the future finance technological advances?
- \* How will technology impact the privacy of the field officers?

After the researched information was analyzed, one word came to mind, synergism. Each technological breakthrough, in and of itself, would have a large impact on the effectiveness of supervision. As the technologies are combined, they enhance sister communication or computer advances, increasing the uses and effectiveness of each many times over. The following is a look at what the future scan revealed as likely police communications systems available by the year 2004.

To get a feeling for the coming innovations in police communications systems, it is first necessary to investigate the base of communications, the delivery systems. Both broadband telecommunications and fiber optic cable systems offer revolutionary advances over the current analog delivery systems. Fiber optic cable refers to a physical cable made of glass that transmits large amounts of data by light pulses. Fiber optic cable is currently the optimum medium for broadband telecommunications<sup>2</sup>. The current level of fiber optic technology could carry the equivalent of 45 copies of the *Autobiography of Malcom X* per

second; a current analog phone line could carry only several pages per second.<sup>3</sup> Nearly 8,000,000 strand-miles of fiber-optic cable have already been laid in this country<sup>4</sup>, laying the infrastructure for the "Information Super Highway."

The ability to carry massive amounts of information to police field units will open the doors to delivering the developing advances of the 21st century to the front seat of a patrol car. Broadband police radios will bring not only digitalized booking photographs and fingerprints to Mobile Computer Terminals (MCT), but digital video transmitters that will permit the viewing of on-scene activity from the police station or other field unit.<sup>5</sup> The value and uses of additional information sources to the patrol officer is fairly obvious, and follow traditional benefits of the two-way communications. Digital video transmissions will provide an entirely new dimension to police communications. With the trend of advancements toward miniaturizing, it does not take much imagination to envision a miniature transmitter that could be worn on the person of the future police officer that would be able to transmit and record virtually everything the officer can see or hear.

Other advancing technologies will also find their place in the future of police communications systems once the delivery systems to the patrol officer attains compatibility with the "Information Super Highway". Virtual reality, interactive video, computer

bulletin boards, intelligent work stations, and artificial intelligence are some of the common technological advances that are approaching convergence with police communications capabilities.<sup>6</sup>

Taken a step further, direct face-to-face communications could be used to provide a link between citizens and either patrol units or supervisors over a multimedia 9-1-1 system.<sup>7</sup> With a fiber-optic link at the police communications center, field officers will have access to the "Information Super Highway". A college library full of information and search capabilities will be at the fingertips of both officers in their patrol cars and supervisors at police headquarters.<sup>8</sup> Communications will be greatly simplified and enhanced, with strides being made in computer technology, such as those described below.

One of the emerging breakthroughs is voice recognition as a means of initiating programs, or composing written material.<sup>9</sup> Verbal prompts are more user-friendly and allow for continued attention to tasks other than computer accessing. Verbal recognition also opens the door to instant translation to or from English to any other major language of the world.<sup>10</sup> The United States military is currently testing a hand-held voice recognition technology (VRT) computer with a 500 word Spanish vocabulary that is used for in-field translation. It hears and speaks both English and Spanish.<sup>11</sup> Being able to instantly locate field police units for accountability purposes and to select the most appropriate unit

for dispatching purposes will be an advantage available to the police supervisor of the future.

Global Positioning Systems (GPS) will be able to fix the position of field units in future police fleets to within five meters.<sup>12</sup> With the increased accuracy of GPS systems, coupled with the increased storage of future computers, an officer's activity and patrolling patterns can be stored and retrieved at a later time to assist in supervision or an investigation.

Through the investigation and scanning of literature, it became apparent that it would be easy for the issue to become unnecessarily cluttered with the scientific workings of the communication technology. This study dealt, instead, with the impact, uses and application of the emerging technology on patrol supervision.

### **Findings**

Futures based research revealed several trends and events related to the issues and sub-issues. An investigation of these trends and events revealed that the future of police communications holds many changes for the police patrol supervisor. Many of the innovations promise to make the supervisor more efficient and effective, but possible side effects to the implementation could create enough negative changes in the day-to-day operation that

implementation of available technologies could be delayed or avoided.

After viewing the list of leading edge technologies many patrol supervisors would become keenly interested in the voice recognition technology. To be able to dictate evaluations, memoranda, and reports directly to an in-car computer would reduce the amount of time a supervisor spends on one of their most labor intensive tasks. Verbal prompts and computer commands would make using a computer much less intimidating to those who are not totally computer literate.

Field officers would be afforded the same access to voice recognition word processing. Though the amount of time an officer spends on paperwork varies from jurisdiction to jurisdiction the amount of time spent putting pencil to paper is time that the officers can not be actively patrolling their assigned beats. Freeing an officer more quickly will allow the field supervisors more resources when dealing with the needs of the community the department serves. Other technologies that will be time savers for patrol officers include: The "Fingerprint 2000" or similar system that will allow the field officers to instantly identify most subjects they come into contact with; and voice recognition translation that will allow an officer to communicate effectively in virtually any language.

Of the investigated technologies, the one with the most potential to supervisor, and the one was found to be most controversial, is digital video recording and transmission. Officers who go on patrol with a video transmitter on their person will have virtually all they see, hear, and do recorded and retrievable from the station's computer. A field supervisor will be able to accept the transmitted video and view a situation in real time and give immediate direction or input.

The digital video system will allow a field supervisor to better view and evaluate the performance of their field officers. Viewing events, as they occur or from recordings, will allow a supervisor to evaluate an officer's performance under all conditions, and as the officers generally conducts themselves, not how they conduct themselves while a sergeant is physically at the scene. A more effective and realistic means of evaluation will allow departments to reward outstanding officers and identify weaknesses and training needs. The ability to readily identify weaknesses, either in an officer's performance or in training, will allow problems to be dealt with in a more effective, proactive manner.

Digital video will also make the field supervisor more available to field officers. Face-to-face communications will allow for more effective communications and a visual image will give the field supervisors the ability to make a better assessment of many situations, as opposed, to a voice-only transmission, allowing

the opportunity for more appropriate direction. The same face-to-face capability will be available to citizens through the "911 Superhighway." A caller with an unusual need, or one who has a complaint could be assisted from the front seat of the supervisor's patrol car. The visual communications will give supervisors a more realistic opportunity to handle the needs of the caller, while allowing them to remain in the field and accessible to their officers.

One of the most critical areas to a modern police department is the manner with which it handles citizen's complaints. Many times there is little hard evidence, and the matter is reduced to the word of the citizen versus the word of the officer. Recorders, with the capability to receive audio and video when the officer is as much as five hundred yards from his vehicle, will provide persuasive evidence in nearly all instances. Video evidence would bring a quick and fair conclusion to most cases. The same video evidence will provide equally strong evidence in traffic and criminal cases that the officer personally viewed.

Training should be ongoing consideration of every field supervisor. Training must be consistent, appropriate, and verifiable. Interactive training, research material, and the resources of the "Information Superhighway" will be delivered to the front seat of every properly equipped patrol car. Training videos, complete with an evaluating test, to ensure the information was understood

by the officer, will change the way police departments view and schedule training of their officers. Officers will have the ability to become adept in virtually any field, limited only by the officer's motivation and time to dedicate to the material.

With the foregoing benefits to supervision it is a logical assumption that advanced communications systems could be a natural step into following the private sector into the trend of downsizing. The span of control of a field sergeant could realistically increase dramatically, leading to a reduction in the number of sergeants needed by a department, or depending on the size and structure of the department elimination of a rank entirely.

The innovations that seem destined for the future of police communications technology promise a new era of police effectiveness and accountability. Change and innovation, however, seldom arrive without side-effects. The author investigated the possible negative impacts of introducing the revolutionary changes into the traditionally conservative environment of a law enforcement agency.

The insertion of high technology into the communications process could reduce the face-to-face interaction between patrol supervisors and officers that is now the norm. The loss of personal

interaction could degrade the interpersonal relations and drive a technological wedge between the officers and supervisors.

Advanced technology, if used properly, can be an effective tool. Overused, the technology can become a crutch. A field supervisor who depends entirely on data and information received from computer programs and video transmission will reduce the human element of the officers as well as the opportunity to demonstrate their human side to the officers. The personal bond that can develop between a trusted supervisor and the officers who work for them is much more valuable than the convenience of technology and difficult to quantify.

Though there were several areas of concern that developed when researching the effects of implementing components of the advanced communications technology, none surfaced as frequently than the loss of privacy and autonomy, whether real or imagined, of patrol officers. No other issue related to the topic evoked such strong emotional responses as the invasion of privacy issues. Having every move monitored and every action recorded is a possibility that some feel will be resisted, to the point of legal injunction and sabotage. At the center of the debate is trust. There was a definite trend by those who mistrusted supervision the most to have the strongest feelings that the intrusion on the once autonomous patrol car would be used in less than appropriate ways.

The fear of technology is a phobia that has many subscribers in the police industry. Like the business industry many police officers have a fear of change, especially when the change is associated with technology and computers. The author's research showed that those who were least comfortable with computers were most likely to resist technological change, and downplay the expected benefits of the coming communications technological advances to police work and patrol supervision.

Technology as a means of limiting liability is a double edged sword. Recorded information does limit a department's, as well as an involved officer's, liability if that evidence is favorable to the department. Recorded evidence is also discoverable (open to the public), however. If that evidence demonstrates wrongdoing on the part of the department or the officer the evidence will open all parties to additional liability, liability that may have been mitigated in the past in the absence of conclusive evidence.

A peace officer is required to make split-second decisions, sometimes with only a fraction of the information necessary for a totally informed decision. Decision making, many times, is a learned skill. It is developed after years of being in a position to make a decision that others cannot. If technology places a supervisor in the position of second guessing and directing

every aspect of an officer's, duties those skills may not develop to the level now universally enjoyed by seasoned peace officers. It could be possible that officers could become dependent on a third party directing their actions, leaving them at a loss in a crisis situation, when peace officers are the most indispensable part of society.

### Policy Considerations

In reviewing interviews and research the author found several common themes that seem to constantly assert themselves.

The first of these themes, and the most obvious to the author, is the training. Proper training, coupled with well established expectations of technology, helps assure productive use of the systems. It was also seen as a means of reducing the fear of technology and change. Training, assuming the training was effective, has a lessening impact on the undesirable events or side-effects of advanced technology that have been forecast.

Effective planning, especially planning involving all impacted levels of the organization, is seen as a means of developing informal leadership and support for planned change. Planning was suggested by this research as a means of bringing the field officers "on board", and allowing those involved officers to sell the systems to their peers. This system of peer education was seen

as far more effective than having a supervisor expound the merits of the new communications technology. Field officers were found to be quite suspicious of a supervisor's motives for being enthusiastic about a system that may invade the once predominately autonomous working environment of the patrol officer.

Before investing in, or implementing a new communications system, definite goals for that system should be firm. It is the strong belief of the author that, if little is expected from a system, little is exactly what will be produced. The goals need to be established, preferably with input from all affected levels of the organization, and then a system found or developed to meet those goals. Finding a system, then attempting to discover its useful attributes is a recipe for failure, frustration, and resistance.

The logical step after planning and setting goals is a evaluation process. Checking on the effectiveness of the implemented systems and gauging those findings against the goals established during the implementation process will give invaluable insights into the effectiveness of the training and systems. The information gained during this evaluation process will be of significant value when the next phase or technology is to be implemented. Just following a process that was successful for another department does not guarantee that the same process will work for another. Each department is unique and dynamic, and slight differ-

ences in culture can make dramatic differences in the end result of the implemented plan.

Re-evaluation of implementation procedures and system effectiveness is not the end of the process. As new technologies are placed into the organization department policies must be re-evaluated to determine if the new technology clashes with the old procedure, or if the new technology makes the old policies obsolete.

Some misuse of the new technologies and systems may be inevitable. Significant or systematic misuse, or the appearance of that misuse, can doom a potentially valuable system and bring negative attention, specifically media attention onto the department.

Last, the ingredient that ensures that the systems purchased or developed will reach their useful life expectancy is flexibility. A system that can not change, that will not accept new technologies, or can not communicate with systems of other departments or forms of communication will become a department's albatross. The future is fluid. The most beneficial systems, to future law enforcement, may not even be imaginable today. A system put in place must be capable of change, not only to accept new technological breakthroughs, but to be able to meet the individual needs of the department and its community.

## Conclusions

The efficiency with which a police department communicates may be the key factor to the success the department enjoys with virtually every undertaking. Successful communications must be taken in the broad sense when viewing the future. Police departments will find that effective communications with the public they serve will begin to take on the importance that communications to and from dispatch, patrol officers and the patrol supervisors have enjoyed.

### **How will communications technology enhance the effectiveness of field supervisors?**

It became blatantly obvious during this research that communications technology is a tool. Good communications comes from gifted, energetic supervisors. Good communications will be enhanced by the implementation of advanced communications and it will allow for a wider range and number of personal contacts and guidance. If the communications skills of a supervisor are poor, or if motivation and motives are suspect, no system will mask the deficiencies and can in fact magnify the flaws of the supervisor.

Advanced communications will give supervisors an added insight to the abilities of field officers. Having the ability to view virtually all incidents the officer becomes involved with, either

as the event occurs or at a later time, will assist in better evaluating performance and an officer's suitability for special assignments or promotion. The presence of recorded transmissions, either voice and/or video, will aid in the timely and appropriate disposition of personnel complaints. The appropriate and fair handling of personnel complaints does not only assist in identifying weaknesses, it relieves innocent officers from many frivolous accusations, perhaps reinforcing the officer's faith in the "system".

Advanced communications will also make face to face contact, via digital transmission, possible between officers and many citizens at virtually any time. This will allow a supervisor to keep in touch with officers and situations with greater effectiveness, while permitting the opportunity for more sound decision making and interpersonal communications.

**How will police training keep pace with innovation and technological breakthroughs?**

It is very important to realize that communications technology will not develop in a vacuum. Technology will be making quantum leaps in most of the fields related to police work. The main ally in training personnel in the uses of communications technology will be the technology itself. Linking a patrol car with the "Information Superhighway" will allow the officer access to

interactive learning programs, instant assistance from user friendly help programs, or another officer who is perhaps more literate in the particular system.

Police department training must now include planning. Research and forecasting of needs of the organization will be necessary to make every dollar spent on training effective. Additionally, training will have to be designed to deal with the effects and side effects of the technology, not just the uses.

**How will police departments of the future finance technological advances?**

Several possibilities for funding were explored in the future research. One suggests that a department, coming out of lean economic times, uses the increase in funds to make the officers more effective, as opposed to hiring additional officers. Another explores the possibilities of investing in a communications system as a byproduct of several departments combining in a regional police force. The last involves a cooperative effort that involves a lesser degree of regionalization. Regionalization may be in the form of two or more departments working together and combining their efforts to implement new communications technologies, or one department developing the systems and offering a contracting system to interested agencies, therefore offsetting their initial and ongoing expenses. All three are possibilities

and interesting to study, but the most likely means of acquiring additional funds would be to show that the investment would be cost-effective, in the purest business sense. A system that could be shown to reduce or prevent additional personnel costs, or prevent a demonstrable trend in civil liability would be likely to receive serious consideration.

Another possibility is that there will be no choice; advanced communications will be necessary and cost effective. The futures forecasting pointed to a strong concern over the civil liability associated with all aspects of police work. A scenario presented during the course of the research involves a future where a police department is viewed as attempting to hide wrongdoing or a pattern of abuse by not implementing advanced communications systems other departments had employed. The assertion that a department is more culpable because the lack of technology is a strong motivator for finding the funding.

**How will technology impact the privacy of the field officers?**

This sub-issue demanded the most attention of the four sub-issues. The perceived intrusion was the main focus of many who were involved in this research, and the steps to address or minimize the concerns developed took a major portion of the author's effort.

The intrusion, on what once was a fairly autonomous working environment, will be felt and, in all but the most optimistic of instances, be resisted to some extent. Participation in planning and implementation must be from all affected levels within the police department. The early and meaningful involvement can solicit a "buy in" to the system from key personnel, who can then inform others on a peer level. Involvement in the planning phase by all levels can give a users perspective that may help identify and plan for problems that management could easily overlook.

A key factor in officers acceptance of an intrusive technology would be trust. The level of trust earned by supervision in the past will have a great bearing on the lengths field officers will go on the word of the department's hierarchy.

According to data obtained, to most easily gain acceptance of additional intrusions, officers must see the benefit as outweighing the anticipated intrusion. Proposals and presentations must include this element, and presentations must be geared to the benefit of the system to the officer. In no way is the author proposing a "soft soaping" of the issues related to implementation, intrusions and limitations must be addressed, but the beneficial element should be well thought out.

It is the author's belief that advances in technology will be a necessary and inevitable part of the future of police work. It

is also his belief, based on this study, that any communications system is a tool, a tool that can be used properly to effectively enhance good communications, or that can be abused, causing legal, financial and personnel problems for the offending administration.

## END NOTES

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