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OFFICE AUTOMATION

IN

LAW ENFORCMENT:

THE NEED FOR CAREFUL PLANNING

A MODEL FOR THE SUCCESSFUL
ACQUISITION AND IMPLEMENTATION
OF OFFICE AUTOMATION IN
LAW ENFORCMENT

Prepared For:

COMMISSION ON PEACE OFFICER
STANDARDS AND TRAINING

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He is a wise man who wastes no energy on pursuits for which he is not fitted; and he is still wiser who, from among other things that he can do well, chooses and resolutely follows the best.

WILLIAM GLADSTONE

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EXECUTIVE SUMMARY

With the new information age have come tremendous advances in technology that have brought the "office of the future" to the present in the form of office automation (OA). With this automation has come the need for integration of office machines, data processing and telecommunications. As a planner in 1983 I suddenly found myself confronted with the task of developing an OA plan for the California Highway Patrol with no technical experience in this field. It became quickly apparent that law enforcement, like business, must carefully plan for OA and the subsequent integration of these technologies to avoid incompatible systems, inefficiency, and avoidable increased costs. By the end of the decade it will be the exception, rather than the rule, to enter a police facility where all of the technologies previously mentioned are not somehow linked. This trend toward linkage now exists and can be expected to continue into the future.

The concept of OA has many dimensions. It consists of a variety of technologies supporting a broad spectrum of applications that augment the human mental and physical processes. From a planning

perspective, these technologies provide a foundation for integration in the law enforcement business office. Through personal involvement in my department's efforts toward OA I have found that specific attention must focus on analyzing, structuring, blending and assigning priorities to the human, organizational, economic, procedural, and environmental factors and resources with the available technologies. This must be done to obtain maximum benefit without creating confusion at the work place.

Tomorrow's office will be different in many respects from today's because technology is changing and so is the way people perform their day-to-day work in the business office. Thus, the character of tomorrow's office depends on whether current and future choices are exercised by default. Careful planning can offset uncertainty and eliminate default. This is a significant challenge that must be accepted by managers to ensure that the effects of office automation are meaningful.

STUDY METHODOLOGY

This research project is the culmination of two years of advanced study at the POST Command College, Center for Executive Development. It attempts to provide the reader with an overview of office automation (OA) and the need for careful planning if law enforcement is to keep pace with the new information age. The study recognizes the need for the eventual integration of office technologies and provides a model for law enforcement managers to consider when developing their own OA plan.

Included in the study is an assessment of the future and its impact on technology related to the office. Described in some detail are what some future changes will be and what major external and internal pressures and trends will have to be monitored. The information contained in this study was obtained through personal experience, literature review, interviews with data processing/records managers and discussions with my staff.

The study is divided into two major parts. The first is an overview of OA including the objectives of OA, a technical

perspective, a description of OA users and a discussion of constraints and other issues. Also included in an overview of the future containing information about new technologies, trends and the office of tomorrow.

The second part of the study is "A Model for the Successful Acquisition and Implementation of Office Automation in Law Enforcement." It is designed to provide the police manager with a reference for use in establishing such a program through a careful assessment of all the problems and opportunities associated with automation. Included are sections on planning for OA, costs, benefits and opportunities, organization, coordination and control, analyzing needs and requirements and implementation. Throughout the model examples have been used where actual experience has occurred within my own department.

INTRODUCTION

In the past, there were only pencils, ballpoint pens, typewriters, copy machines, calculators, computers, terminals and telephones. The lines of separation were clear and distinct. Basic office machines were ordered by office managers from office supplies stores. Data Processing managers worked with computer suppliers and designed and ordered mainframes and terminals. Almost no one worried about the telephones, except for rising equipment and long-distance bills. Somewhere in the distance lurked the mythical "office of the future" but the future was far away, and other than reading about it, nothing was done. The basic incompatibility of the various office components insured that each area would probably remain separate.

Virtually overnight all this changed and even the title "office of the future" is becoming simply "office automation" (OA). The business office of the future is quickly becoming available and it will shortly be necessary for the three areas of concern to become one, with a single coordinated plan.

The actual changeover to the truly integrated and automated office will likely take years to accomplish, and many law enforcement organizations may never take advantage of the opportunities automation offers. Many others will almost immediately jump on the band wagon, possibly with disastrous results. Inadequate or lack of planning will leave a police agency with a mixture of incompatible systems, limited flexibility and increased costs. Only by moving to the automated office in a carefully planned manner can we assume the desired result.

Perhaps the best example I have encountered of how an OA project can go wrong is the Statewide Public Assistance Network (SPAN) project, which was initiated in 1979-80 to assist in the delivery of benefits to various public assistance recipients. The project never became operational, despite the expenditure of $19 million (all funds), and was terminated in July 1982. There were many reasons why the project failed, not the least of which was the state's failure to plan the project effectively.[1] This is an important example for us all to be aware of.

The increasing reliance on OA technologies in modern police organizations has made it even more important to be able to

plan for and manage technological change. Information processing systems have made it possible to deal with larger, more complex business office situations. Much of this progress has been through the classical techniques of data processing, involving systems analysis and design principles. Many operational systems, have of necessity, incorporated electronic data processing into their day-to-day workings.

In the preceding 10-15 years, the use of computers and word processers for the general law enforcement office environment has helped us cut costs and increase effectiveness outside of the traditional data processing environment. Just a few years ago, small office computers were merely the stuff of speculation. The same is true with word processing systems, intelligent terminals, "smart" copiers, printers, telecommunications stations, and all the other technological wonders. Today, you can walk into almost any police agency and find any or all of those technologies in place.

I believe that by the end of the 80's, it will be unusual to enter an office in which all these devices are not linked by some sort of networking system to allow for distributed processing, multi-tasking and rapid interoffice communications. This can only be accomplished through careful future planning

for the successful acquisition and implementation of OA technologies.

REFERENCES

1. The Legislative Analyst's Report to the Legislature on the State budget 1985-86, page 175.

I. OFFICE AUTOMATION OVERVIEW

In law enforcement, as in the private sector, we face serious issues of productivity, rapidly rising administrative costs, and diminishing resources. Although the nation no longer has double-digit inflation, the billions of dollars paid annually to white collar and professional employees, and the billions paid to clerical and other operational support services will more than double by 1990 to between 15-20 trillion dollars.[1]

The following statistics reflect some of the trends of the existing office environment:

1. Administrative costs are climbing at a rate of eight percent per year. Over fifty percent of the nation's office expenses are attributable to managerial and professional salaries and fringe benefits.

2. The white collar labor force--one-half of the total United States labor force--is annually growing at twenty percent.

3. The demand for information is steadily increasing; each year more than 100 billion telephone calls are initiated and more than 70 billion documents are created.

Its labor-intensive nature makes all of our business offices particularly sensitive to escalating costs. Recent technological developments offer dramatic opportunities for us to avoid, or at least to reduce these escalating costs and to provide better and faster information within our departments and to the public we serve.

However, only within the past eight years have we seen the introduction of these technologies into the office environment. Even with these advances, much of the office remains untouched by office automation technology. Consequently, office productivity has stagnated as office costs have continued to increase. For many departments, these costs represent fifty percent of all expenses.

Within my own department widespread use of wordprocessing began in 1985 and the use of micro-computers is still in its infancy. In my interviews with data processing/records managers in several large departments, I learned that these functions were the first to be automated. The business

office and its total integration into a combined office system has yet to be developed. In each interview it was apparent that there was no master plan for total integration, but a shared perception of the need for careful planning at all levels.

Some major reasons for the absence of widespread automating in the office are uninformed managers, complex cost justification, office politics (no one clearly in charge of all office automation functions), little or no motivation, absence of easy-to-use and "friendly" technology, and difficulty in quantifying and analyzing office tasks and processes (no planning). Recent developments and trends in the computer and communications technologies, however, have forced a reexamination of this position. If for no other reason, law enforcement must keep pace with OA in the private sector or lose more ground to privatization of our services.

The concept of office automation is broad. It consists of multiple technologies (data, text, voice and image) supporting a broad spectrum of applications (e.g., data processing, word processing; telecommunications networks) that can augment human mental and physical processes.

From a planning perspective, these technologies and applications provide a foundation for integration in the office. Specific attention must focus on analyzing, structuring, blending and assigning priorities to the human, organizational, economic, procedural, and environmental factors and resources with the available technologies. Such attention is required to obtain maximum benefit without creating confusion and trauma in the work place. Therefore, the change process must be introduced and structured to overcome the resistance to change that is characteristic of people and organizations.

The goal of integration has not been attained for the following reasons:

1. Incompatibility between different vendors. The need for compatibility is a common theme in most modern articles on OA.

2. High costs. These are coming down through increased competition in the marketplace. Thus, allowing agencies like the California Highway Patrol (CHP) to buy better and more equipment with money already budgeted.

3. Need and justification for automation.

4. Potential violation of privacy.

5. Poor security safeguards.

6, User resistance.

7. Lack of easy-to-use and available software.

In future decades, critical prerequisites for adapting the concept of integration to the integration and management of change will be an understanding of the complex user environment and the establishment of an appropriate planning and coordination framework. Although variations of the office automation concept may be customized to particular needs, a combination of factors, such as management philosophy, type of department, economics, level of technical maturity, and people, must be considered in order to determine the nature and the level of automation appropriate for a particular office environment.

OBJECTIVES OF OFFICE AUTOMATION

The objective of office automation is to improve the productivity (both the effectiveness and the efficiency) of the office and administrative environment in some of the following ways:

Increase efficiency.

Reduce and/or avoid expenses.

Support the department's environment and organizational goals and objectives more effectively.

Enhance the quality of the work environment of various levels of employees.

Expand the span and control of management.

Provide more tools for better and more timely analysis and synthesis.

Establish a foundation for more effective information integration.

SCOPE

Peter Drucker has stated that the management of a business must translate its knowledge into effective performance in three distinct yet interrelated areas: economic results, productivity and worker achievement, and enhancement of the quality of the environment.[2] Office automation affects

all the areas Drucker suggests.

TECHNICAL PERSPECTIVE

Office systems are composed of many different technologies, each of which may require the effective use of unique personnel skills. Even though the importance of communications in linking the many components of office systems is clear, there has been little progress toward achieving their integration. Where integration efforts have been successful, they were preceded by extensive planning activities that established the foundation for the integration. Of course, not all office automation activities may require integration. Many technologies may stand alone in support of local or departmental requirements; others may require only partial integration.

Integration does not require that all components reside in one physical location. This characteristic will provide a department with the flexibility to accomplish certain office activities independent of a fixed or centralized work environment and thus to optimize the use of the demographically changing work force and lifestyles of the population. Tomorrow's offices will offer a choice of the workplace--for example, the department's business office, the car and the home.

On the one hand, mobility will bring about greater flexibility; on the other hand it will create new management problems; for example, control of "deliverables" when a manager and a subordinate are not in the same location.

At first thought it may seem that portable computers are really more for businessmen than for police. But, this is not the case. For example, the FBI is using portable computers and integrating them into their total automation plan. The FBI has long used computers to manage information. All of the 19,000 employees generating and/or using computerized information. By equipping every agent in the field with a portable computer terminal they can easily and immediately tie into mainframe data base files to gain timely information to assist in case investigations and result-oriented public work.[3]

Glendale Police Department uses computerized patrol car units with mobile computer terminals linking them to dozens or more mainline systems throughout the state and nation. The Menlo Park and Atherton Police Departments have obtained federal grants for pilot projects to install mobile digital terminals (MDT's) in their patrol cars. This is designed to cut radio

dispatcher workloads and the time officers spend on filling out paperwork.

The above information is provided only as an example of how the business office and automation are moving out into the field with officers. This future trend will have to be incorporated into any total OA plan developed for law enforcement use.

USERS OF OFFICE AUTOMATION

Computerization in the office can be viewed from a number of perspectives.[4] It varies by job level, job function, degree of support required, and other factors. There are four classifications of office systems users or stakeholders.

Executive Management

As a key decision maker in your department, you need timely and accurate information to meet your objectives. The day-to-day functions and activities of the manager are relatively unstructured, unpredictable, and not very repetitive. Much of the manager's time is spend attending meetings, absorbing information, negotiating, talking on the telephone, solving difficult problems, and making decisions.

The attempts of the data processing community in the mid-1960s and early 1970s to provide management information systems directly to executives were largely unsuccessful, because the systems and technology were complex and were not designed for executive end-user utilization and operation. The initial benefit of office automation to the executive will be realized indirectly through the increased effectiveness and productivity of middle and first-line management and professional personnel, because of their access to more accurate and more timely information. In time, with the establishment of better and simpler tools and with better education, the direct use of automation by senior management may become a reality.

The technology now exists to allow a police manager to have a terminal available to him that will teleconference, calendar, handle electronic mail, process data, respond to voice commands, take dictation and do other functions. Right now the cost is high, but within 5-10 years such an addition to the manager's office will be a reality.

Middle and First-Line Management

Historically, data processing has been more supportive of middle and first-line managers than of the executive. Much of the current electronic data processing (EDP) activities have

been directed toward providing middle and first-line managers with information helpful in controlling and directing the day-to-day operations of a department. Generally, this has been predominant in accounting, inventory, and personnel.

More support is needed for timely managerial information; better integration of textual and numeric data into a base of information; improved communications with peers, subordinates, and superiors; and better access to existing information sources, both inside and outside the department.

Middle and first-line managers are also becoming more aware of the computer's potential, envisioning and demanding the kinds of services they believe the computer can supply to their sections. Demands for quicker and cheaper communications capabilities are increasing, as is penetration of quality color graphic displays, new printing devices, and other graphic media.

Professional and Technical Personnel

A significant amount of the work in any organization is relatively unstructured knowledge work normally performed by professional and technical personnel. Such work deals with ideas in support of the management functions of planning,

policy making, coordination, and control. This work is a prime target for a number of support tools that automation can provide.

1. The use of keyboards and displays to replace pads and pencils in the process of crystallizing ideas into summaries and conclusions.

2. The use of graphics composition tools, displays, and analytical computing aids to model, compare alternatives, understand relationships, and develop presentation materials. This has been used recently within the CHP very effectively for the completion of studies, and presentations to executive management and members of the executive branch of government. It greatly enhances your ability to sell your department to the people who make key decisions on its future.

3. The use of electronic media to store, cross-index, retrieve, and dispose of reference materials.

4. The use of electronic comunications to share ideas and information and to conduct meetings without the physical presence of the participants (teleconferencing).

Secretarial and Clerical Personnel

The word and text processing industry has selected the secretarial/clerical role as a prime candidate for automation--originally in the form of improved text creation and editing (wordprocessing) and more recently with electronic filing, mail, calendars, scheduling, telephone answering, and intelligent copier products. Some of these features are now in place in California law enforcement agencies.

Much has been made of the need not only to automate the secretarial function, but also to break it down into typing and administrative components. Two relationales have been presented for this approach: (1) productivity gains to be achieved by making typing a production job, which has been necessary to justify equipment costs, and (2) the need for creating secretarial career paths. However, the close association among the secretary, the manager, and the staff has real value and should probably not be tampered with initially--and then only very gradually.

Clerical personnel perform a variety of nontyping functions that can also be improved by modern technology. Whether the clerical work is in the accounting, personnel, legal, or any number of other departments, technology has been and is being

designed to supplement and reduce many of the structured and repetitive clerical activities.

CONSTRAINTS AND OTHER ISSUES

Significant nontechnical issues must be addressed if office systems are to effectively penetrate organizations. Ergonomic (workstation), privacy, behavioral, career, union, societal, safety, demographic, security, educational, and health factors and issues may have constraining influences on the growth and success of office systems if these matters are not adequately resolved.[5] Some examples follow:

1. Office systems implementation will lead to a significant reexamination of existing educational efforts, training programs, work habits, and other policies and procedures.

2. Business conditions and office technologies will accelerate trends toward decentralized support of operations. This will require a critical examination of the centralization and decentralization issues.

3. Increased attention must be given to facilities planning, aesthetics, space, and the appropriate levels of heat, noise, temperature, humidity, and color to assure human comfort. Otherwise, the technology may result in discomfort and work disruption.

4. Health and safety issues must focus on postural, visual, audio, and other human comfort factors.

5. For those employees who are displaced by office systems, departments should sponsor educational and retraining programs as part of their social responsibility.

6. To reduce resistance to change, positive implementation strategies must be developed through communications and participation. Fear of the unknown and of job security must be addressed positively by executive management.[6]

REFERENCES

1. International Data Corporation Special Report, "Productivity and Information Systems for Tomorrow's Office", Fortune, September 1980.

2. Peter F. Drucker, Management--Tasks, Responsibilities, Practices (New York: Harper and Row, 1974).

3. Ernie Hernandez, Jr., PhD., Police Computer Bulletin, Byteline, January 1984.

4. D. Drageset, "Users of Office Automation", Presentation at AIIE Office Automation Conference, New York, 1978.

5. David Barcomb, Office Automation, A Survey of Tools and Technology, Digital Press, 1982.

6. Neil Perlin, Business Technology for Managers, an Office Automation Handbook, Knowledge Industry Publications, 1985.

II. THE FUTURE

When the technological changes of the past several years are reviewed, it seems that decades of development have been merged into years and sometimes into months. Witness the obsolescence of OA equipment almost by the time we can get it installed. Thinking about this rapid change should cause law enforcement managers to visualize the directions and related implications that new technology will have over the next several decades.

As we enter into this new information age it should be apparent to law enforcement administrators that technology will have a significant impact on the entire structure of our society--the way we work, how we engage in travel, sports, how we educate, think and sleep and eat. It will impact police agencies through the way we collect and disseminate information, compete with privatization of our services, deal with computer crime, automate our offices and patrol cars, and conduct future training for our personnel.

The period of change over the next decade will be rapid, dramatic and exciting with computer growth expected to grow at eight percent to nine percent a year. The improvements in

technology will allow manufacturers to place millions of transistor circuits on a chip. These capabilities will result in exponential improvements in small systems performance (mobile digital terminals for patrol cars and portability) and rapid deployment of the new technology capabilities into the everyday workplace (teleconferencing, management terminals). Similar improvements will occur in the development of magnetic storage devices as capacity increases and costs diminish. This will be of particular importance as more and more information and sources become available to law enforcement. Our data systems processing and record management will only be successful if fully automated.

We have recently witnessed rapid cost reductions in all three categories of computer systems: mainframes, minicomputers, and microprosessors.

As the computer industry moves toward systems that are smaller, faster, and cheaper, we can expect a rapid proliferation of microprocessor products capable of performing a remarkably broad range of specialized tasks at extremely low cost.

Computer peripheral equipment will also continue to decrease in cost and increase in functionality. We can expect a dramatic

increase in the number and types of available terminals. The major attraction of many of these new products will be the availability of local intelligence that will provide users with unique application software to meed individual and local requirements, and provide to remote computer facilities for additional information or processing requirements. Another growth area will be the use of portable terminal units capable of remote communication with distributed or host computers, or external information utilities (mobile digital terminals, and portable units now used by the FBI).

Of particular importance will be the communications evolution we will witness over the next ten years. Already we are offered broadbank voice, data, text, and image information simultaneously. As highspeed satellite communications facilities increase, current high costs will decrease as volume use increases. Within a few short years use of these services by business and law enforcement will become fairly commonplace. Police will look more to this form of communication to enhance the interagency exchange of information negating any continued expansion of local area networking. Satellite dishes will appear on every police facility.

We can expect to see rapid advances in printing technology which will greatly enhance the investigation techniques of police officers. Ink jet, xerographic and laser techniques will provide opportunities to produce imaginative and creative computer output. Electronic photography will provide options to store, recall, transmit, edit, and review images in color. These images will then be positioned to be merged with text and transmitted to printers or other devices for printing. Major advances consolidating word processing, data processing, communications, and typesetting capabilities will be realized by 1990. These systems will provide electronic editing, retouching, color correcting, sizing, and cropping of information and photographics on a similar system.

The police manager will be constantly challenged to plan effectively and coherently to introduce new technology in an acceptable manner appropriately suited for the economic conditions of the police agency.

Tomorrow's Office

Tomorrow's law enforcement office will be different from today's. That is because the choices of today shape our tomorrow. But while change is inevitable, the character of tomorrow's office

depends on whether current choices are exercised by design or default (careful planning).

At least four topics can be related to new information technology. First, change is reaching a critical threshold. Second, this change poses new challenges for police managers, and third, such challenges belong to management as opposed to staff specialists who handle information systems concerns. During my interviews with staff specialists, it appeared to me that future OA was being left entirely up to their discretion with minimal direction or involvement by top management. The fourth topic is, practical options exist for managers to do something about new technology so that its effects are meaningful.

Information technology is now getting cheaper and more powerful, in large part due to microelectronics. As this happens, a slow transformation will occur. Every office tool will change in two major aspects: each will become more functional and more interconnected.

Over the next five years, the typewriter will essentially disappear, to be replaced by a work station that supports many functions including limited speech recognition and vocal

output capabilities. The station will also be integrated with the telephone which, by the way, will also disappear or become transformed.

Office processes will continue to change and law enforcement will have to keep pace or be left behind and eventually out of the information age. The purpose of the office is to sift through data and then make informed choices. A new set of tools is emerging to assist all of us in this process. The coming changes in the electronics revolution will alter the way in which information processing services are rendered. Someday, the office as we now know it will disappear.

There are a number of key issues for us to monitor as managers in order to prepare for the future of OA. The introduction of new office tools, along with other types of highly sophisticated office equipment, will raise questions beyond the limits of our own internal operations. Concern about reeducation, unemployment, professional status, and economics will become more pronounced as these tools are used in the office and at home.

Management will be forced to assume responsibility for social outcomes by outside groups with the result that each agency

will need to deal with a number of public issues. This is an added challenge for management to deal with societal complications that come with new technology, and second the stakeholders who are likely to claim a voice in the effects of new OA.

As we automate we can expect to hear from professional associations, minority support organizations, organized labor, legislators, and employee groups. There are also a variety of major interest groups concerned with the effects of OA such as:

Women - their concerns must be taken into consideration since they represent the majority of workers using the equipment. Being dislocated by OA will raise issues of comparable worth, career paths, and job quality.

Professionals - new systems will place new demands on these workers requiring the development of new skills.

Minorities - they will see OA as either a greater impediment to entering the labor market or as a source of opportunity distributed unequally as in the past.

Middle Managers - this is a major concern of this group, as OA will continue to reduce the need for their skills, at least as their class is presently defined.

Older Workers - are likely to be concerned about their dislocation by OA for two reasons. First, inflation (albeit slow now) continues to eat away at their income. Second, there will be growing tension over the role of senior employees as retirements become a necessity for promotions. Witness this happening now in many police agencies.

Young Workers - changing skill requirements may create insurmountable barriers for these people who want to enter the job market.

Organized Labor - a growing proportion of the OA workforce will become a new source of union membership. They will become more active either on their own, or on the behalf of the previous mentioned groups.

The OA revolution is forcing us to generate novel alternatives, although the future is still undetermined. Several scenarios are possible. One future scenario could involve the breaking

up of office based services as we now know it. As office equipment becomes more capable, smaller units will become more powerful and flexible and will do many different things. Technology will continue to lower the cost of exchanging information thus improving the level of cooperation between police departments. At some point it may be preferable to disassemble large offices. For example, some information processing could be delegated to outside vendors that would provide different types of services. A large portion of police employees could be home-based, resulting in the need for smaller facilities. This would create additional problems, however, of supervision by management.

Another scenario might involve a reduction in administrative operations in the context of greater reliance on self-service. Banks, for example, already have decreased costs by using automated teller machines that substitute customer effort for the labor usually performed by tellers. Self-service will be developed for other applications that require large administrative structures with possible application to police work. Data processing and records management staffs are a large part of most big police organizations. If ways can be found to provide routine reports by computer to the public then reductions in future staffing needs will occur. Facility design will also be impacted.

There are four major levels of learning and change that law enforcement agencies must attempt as they incorporate new information technology. First, merely purchasing new equipment will fail to guarantee the success of such changes. The primary level is operator instruction--teaching how to push the right buttons.

The next level involves procedural modifications in which the very methods of doing work are altered, either to capitalize on new technology or to compensate for its weaknesses.

The third level concerns the structural factors of an organization.

And, the fourth level of learning and change extends beyond operator education, procedural modifications and structural factors. It involves the cultural fabric of an office. Like fabric, culture can be torn apart if not treated in a proper manner.

A MODEL FOR THE SUCCESSFUL ACQUISITION AND IMPLEMENTATION OF OFFICE AUTOMATION IN LAW ENFORCEMENT

A. PLANNING FOR AUTOMATION

Traditional office processing methods are no longer cost-effective for today's law enforcement needs. The most common office tools--pencils, typewriters, phones, copiers, ballpoint pens--all date from the 19th century or earlier. Until the early 1960s, the electric typewriter was the major innovation for improving office productivity. In the 1960s IBM introduced the Selectric Typewriter with a magnetic card/tape device for storing typed information electronically. This was the beginning of automated information processing. Careful planning is essential to ensure that we acquire, implement, and continue to develop our office automation (OA) programs.

The initiative to perform some preliminary research in this area will usually come from management. Such was my case, when as a planner, I was asked to assume responsibility for the development of the California Highway Patrol's OA program. In the beginning, I was faced with a bewildering array of options, alternatives, priorities, and constraints.

The first steps, I found in starting an OA effort are to establish a reference base, develop an understanding of the concepts, establish preliminary objectives, and to develop a systematic approach to achieve those objectives.

The general framework for the development of an OA plan should address:

Where are we? This step provides a reference base on the internal and external pressures exerted on the office. It also provides a profile of the department and the existing business office in terms of costs, resources, equipment, strengths, weaknesses, organization structure and limitations, needs assessments and management philosophies.

Why change? After thoroughly analyzing and understanding the reference base, the pressures for change that affect traditional thinking can be evaluated. This step identifies and addresses major objectives, issues, and opportunities.

What can we do? This step requires an evaluation of both strategic and operational alternatives in terms of organization structure, mission, applications, priorities resource needs, benefits, risks, constraints, and key assumptions.

How do we get there? This step provides the recommended action programs and selected alternatives, along with strategies, resource allocations, establishment of priorities, action programs, and monitoring and control mechanisms.

Establish a Reference Base

The following techniques can be used to acquaint law enforcment managers with the basics of office automation.

1. Research current periodicals, books, special reports and subscription service literature. There are some excellent examples of this material that relate specifically to law enforcement such as: PoliceNet Magazine, Criminal Justice Newsletter, Law Enforcement Technology Magazine, Police Computer Bulletin, Computer Crime Digest and others.

2. Attend schools offering courses in office automation and seminars. Courses such as: Introductory Microcomputer Workshop for the Police Manager, Microcomputer Workshop for Police Managers, Investigators Usage of the Personal Computer are a few examples of courses currently available to law enforcement in this field. The previously mentioned publications are an excellent resource for identifying these courses.

3. Join one or more professional groups that focus on some or all aspects of office systems. (WANG and IBM user groups are located in most cities).

4. Join or subscribe to one or more office automation research groups.

5. Attend conferences where promotional material is displayed.

6. Contact office automation consultants to develop a firsthand knowledge of office systems. They will to to great lengths to win your business. This worked well for the CHP. WANG, Inc., came in to our department and conducted a free long range office automation study. They performed a needs assessment through the use of interviews and questionnaires and developed a basic five-year plan for us.

7. Meet with vendors whose products and services include computers, communications, electronic storage, software and related products and services. Talk with vendors' marketing, product-planning, engineering, and executive personnel. Make sure the product you are seeking will be available for some time to come.

8. Meet with representatives of other law enforcement agencies to assess where they are and what they are doing. In my research I have found that there is little master planning for office automation in police circles. Each agency seems to be developing their own OA strategy based on perceived individual needs. The people charged with this responsibility are, however, very dedicated and knowledgeable and an excellent resource. "It is not necessary to reinvent the wheel."

Certain basic information should be accumulated in order to establish a reference base, develop plans and obtain eventual approval and commitment for an OA program.

External Factors, Pressures, and Trends

Several environmental trends and pressures affect OA. Each trend or pressure may not impact all police agencies in the same way because of differences in services provided, type of department (state, county, local), degree of labor or document intensity, size, geographic dispersion and other factors. A knowledge and awareness of such external pressures and trends such as technology, demographics, economics, social and political factors must be gathered. This can be accomplished

through a variety of techniques such as: developing a futures file on these issues, use of forecasting methods, and just plain brainstorming the issues. Information on how to do these things is available through "FUTURES" publications at the library. POST can also be a resource for learning these techniques, either through attendance at the Command College or available literature.

An example of an ongoing trend at the state level is the current administration's efforts to reduce the size of state government and the number of state employees without a reduction in public service. At the same time, there has been a major effort to increase existing employee productivity through the modern use of information technology. Many agencies like the CHP have begun to replace manual processes with automated systems because they are unable to hire additional personnel to keep up with the increasing volume of information now available. Future reductions in funding for local police agencies will present similar problems.

Internal Factors, Pressures, and Trends

Although internal pressures may not always lead to an effort to initiate OA, they certainly can help and are often essential. Internal pressures and trends can emanate from several sources, such as the executive office, bureau

managers, secretaries, professionals, and others.

The identification of these internal factors in the CHP was mostly through trial and error to begin with. However, after an initial needs assessment was completed, they became much clearer. Examples of some internal pressures and trends include the following:

1. The need to improve administrative productivity and reduce costs.

2. The need to address the critical shortage of support personnel.

3. Reducing the time to move information from sender to decision maker (information float).

4. Creating a better working and career path environment.

Understand the Department

Several key organizational elements for successful OA are:

1. Understand the power and influence bases of stakeholders. I found this to be of particular importance in my own department. As a planner, I suddenly found myself making recommendations concerning a subject that other "in house" experts felt was their responsibility. This responsibility had evolved from their previous involvement with data processing, management information and related office technologies. The point being, that these people had already established their credibility with executive management. This meant that obtaining their support and concurrence was essential if an acceptable OA strategy was to be developed.

2. Identify the key formal decision makers.

3. Identify management, professional and secretarial personnel who influence the key decision makers.

Because of these factors, it is important to identify all the key personnel management (information systems, telecommunications, human resources, and others) so that they can be informed of, and invited to participate in, the initial effort as appropriate. This is particularly important in multidivisional departments such as the CHP so that "everyone who counts" participates in the planning process. The use of a task force may be helpful in the early stages of planning.

Consider Constraints, Risks, and Uncertainties

It is important that a plan include a section on major OA constraints, risks, and uncertainties, such as the following:

Constraints

Current equipment, personnel, systems, and service base.

Resistance to change (e.g., manager/secretarial relationships, unfriendly human/machine interfaces).

Absence of technological integration because of absence of standards.

No meaningful measurement of office productivity.

Absence of significant office automation successes.

Lack of formal office systems responsibilities.

No management awareness.

No strategic focus.

Risks and Uncertainties

Risks exist at all levels. The police planner must be aware of these risks and attempt to minimize them. Without a knowledge of these risks, the planning effort will not be complete. Here are a few examples:[1]

- Benefits may not materialize and the costs of automation may be underestimated.

- Selection of inappropriate vendors may reduce the integration potential and result in greater incompatibility. This is a key factor that can eventually become an expensive mistake.

- Establishing of security and backup measures for all aspects of OA may be difficult and expensive.

- There is a risk that OA will not work properly.

- There is a risk that OA systems will work properly, but not produce useful information.

- Privacy of data may be violated becaUse of the distributed and decentralized nature of the office.

Recognize Strengths and Limitations

It is important also to assess the strengths and limitations of the existing office environment. Strengths may be leveraged and used to gain significant advantages; limitations must be overcome. Some examples of strengths and limitations are:

1. Degree of agency maturity and level of sophistication of the data processing, telecommunications, and administrative functions.

2. Availability of capital and human resources.

3. Absence of formal responsibility and authority for office automation activities.

4. Absence of strategic and operational OA plans.

5. Existence or nonexistence of department standards. Word processing and personal computing policies are desirable.

As a result of the reference base analysis, the following actions can be taken:

1. Develop the preliminary OA program objectives and recommendations.

2. Establish a plan for achieving the objectives.

3. Present the plan and action program to management for approval.

All of the above steps were used in the successful early development of the CHPs OA plan and strategies for the procurement of OA systems 1985-87. Additional information on this plan is continued in subsequent pages.

Specific objectives can be established in four ways: (1) by an individual who recognizes the opportunities of OA; (2) by an informal group with a common interest; (3) by a formal multidisciplinary steering committee (used by CHP); or (4) as a result of endorsement by top management.

1. Establish the scope of the initial effort. For example, will the initial effort be departmentwide or limited to a division or specific function. Originally, the CHP

implemented word processing in headquarters and then field divisions and offices, testing the system as we went.

2. Identify pilot application areas (e.g., word processing in planning sections, microcomputers in budgeting and accounting. It may also be beneficial to develop a model office such as has been proposed for the CHPs North Sacramento office. This will allow testing of OA systems. The pilot approach provides workload information which makes it possible to develop a realistic assessment of computing equipment requirements and other resource needs for the full system.

3. Obtain management approval and sponsorship.

4. Who has responsibility and control? How do OA systems, telecommunications, administration, and other departments interface--formally and/or informally?

5. How is the department structured (centralization, decentralization, matrix)?

6. What are the administrative expenses and where are they concentrated?

7. What are the major administrative processes, information flows, and issues?

8. Establish a preliminary office systems plan to guide short-term decisions on pilot selection, vendor selection, and application selection and priorities.

9. Evaluate office systems vendor products, services, and consultants. In today's changing computer and automation industry it is essential to ensure that the vendor you are using can deliver his product and will then be around to service it.

10. Develop an education program. This worked well within the CHP through the use of management and user training. An in-house videotape was developed to offset the uncertainty of change at the user level for word processing.

11. Develop an internal promotion campaign to familiarize and orient management and nonmanagement personnel.

DEVELOP A PLAN

In the development of a plan you may be able to get some help from the larger vendors. This is a service they can provide if your contract will be appealing to them. As an example, in 1983 the CHP approached WANG, Inc., and informed them we were interested in a long range OA plan (3-5 years). Knowing that they would be bidding on this contract they were interested in assisting us. They loaned us a consultant who performed a short study of our OA needs. This study included methodology, objectives, identification of problem areas, a long range plan, a review of centralized vs decentralized issues, and a look at a model office. Their consultant traveled all over California conducting interviews, doing site surveys and using questionnaires. The final product was useful and provided to the department at no cost. The final OA plan has yet to be developed.

Some objectives of office systems planning are:

1. To support the organization's goals and objectives.

2. To communicate the concept of office systems from management, technical, and administrative perspectives.

3. To identify key issues and resolve them.

4. To identify savings opportunities and realize them.

5. To establish a strategic direction and framework for the automated office for the next three to seven years.

6. To establish a series of strategies to maximize the broad goals of increasing productivity, reducing information float, reducing/avoiding costs, and reducing risks.

7. To better anticipate and plan for uncertainty and change.

8. To integrate the functional areas of information systems, telecommunications, and office technology within the organization.

At a minimum, any office systems strategy must focus on funding cost-justified projects, recommending organizational approaches, and obtaining management commitment along the way. The rate of development and evolution will largely be a function of resource availability and the absorption capacity of the organization to accommodate change. Some other major office systems planning considerations include the following:

1. Establish a full-time multidisciplinary office systems unit with a specific charter and mission.

2. Form an office automation advisory (steering) committee to identify specific problems, strategies, and implementation solutions, to guide progress, to promote communications among all interested groups, and to approve plans and major projects. This steering committee must consist of top management from each major operating and staff unit. The steering committee must represent users (not technologists) and must be able to represent their respective divisions. Such a committee was formed in 1984 within the CHP. However, it has only experienced limited success and impact on departmental planning. This is primarily due to a lack of commitment/involvement on the part of top mangement and the inability of users to have a major impact on OA direction.

3. Develop the appropriate office automation planning and analysis tools (e.g., survey techniques, study questionnaire, study guidelines, measurement, schedules, and program). This is essential and will often be done by vendors free of charge as WANG did for the CHP in 1984.

REFERENCES

1. Legislative Analyst's Report to the Legislature for budget year 1985/86. Pages 175 - 176.

B. COSTS, BENEFITS, AND OPPORTUNITIES

Obviously, the use of modern OA technology holds the potential to both reduce the cost of law enforcement and improve the quality of services that we provide. The quantifying and qualifying of potential benefits and cost-saving opportunities through the introduction of OA technology can best be achieved through an internal assessment program. The results of this assessment will provide the framework in which actual savings can be determined. Much of the research material that has been developed about the office has been too generalized and most of the studies have concentrated on the area of text processing or have been primarily qualitative. Some studies have made detailed analyses of management, professional, clerical, and secretarial activities; however, it is difficult to simply extrapolate publicized statistical results and apply them in any general fashion to law enforcement.

It is also necessary to analyze such areas or processes as mail, telephone use, and filing system characteristics. Moreover, it must be noted that it may be a gross error to assume that all departments have similar or identical needs.

There are several important aspects of conducting an office needs study. The first step is formation of a study team, which should consist of personnel with experience in business systems (vendors), planning, statistics, human factors, and similar disciplines. The second is implementation of a variety of available survey tools and methodologies.

SOURCES AND IDENTIFICATION OF INFORMATION

Only a broad and systematic analysis will enable us to identify opportunities over an extended period of time.

Because such an analysis may be costly, time-consuming, and sensitive, top management must approve it before the analysis is conducted. The data for the study may be gathered from a variety of sources. Among them are:

The annual report of the department.

Department archives.

Department staff profiles.

Department personnel data.

Budget data.

Departmental manuals.

Organization charts.

Additional information about management, professional, secretarial, and clerical needs will also have to be developed.

Specific data will also have to be gathered about how managers and professionals spend their time--reading, writing, attending meetings, receiving and responding to communications, searching files, planning, and other activities. This information will have to be analyzed by level, by department, by function, and by other categories.

DEVELOPMENT OF AN EQUIPMENT AND SERVICES INVENTORY

Another important segment in the preliminary office systems survey is to take a detailed inventory of existing equipment and services to help classify and identify expense levels and cost-saving opportunities. To encourage positive user participation, the preliminary data gathering process should be made as simple as possible.

An inventory of equipment and services should include the following categories:

Telecommunications systems and services.

Telecommunications networks/facilities.

Computer systems and services.

An assessment must also be made of existing procurement and related financial practices, including:

- Rental, lease, or purchase procedures and contracts.
- Inventory category by number, value of equipment, vendor, and location.
- Procurement: policy and authorization levels.

IDENTIFYING AREAS OF BENEFIT AND OPPORTUNITY

Some of the benefit and potential savings opportunity areas include:

Personnel productivity/cost displacement:

Executive.

Middle and first-line management.

Professional and technical.

Secretarial and clerical..

Expanded span of control.

Availability of information on a more timely, accurate, and flexible basis.

Reduction of paper proliferation, filing, and storage systems.

Avoidance of increases in staff.

Elimination of outside labor and facilities expenses.

Reduced travel.

Improved use of materials, space, and facilities.

Reduced use of external services (postage, messenger, etc.).

Improved employee satisfaction levels.

The opportunities should be expressed in terms of historical trends and future projections and should be presented in categories recognizable by top management. Benefits may range from modest to significant, and may be either perceived or real. The key is to present an objective analysis that identifies both positive opportunities and negative factors and considerations.

Paul Strassman stresses that the sequence for identifying opportunities should start with the budgeting process. It must identify all the components of information processing cost and segment them by (1) function, (2) technology, and (3) organization.[1]

REFERENCES

1. Guidance on Requirements Analysis for Office Automation Systems, Institute for Computer Sciences and Technology National Bureau of Labor and Standards, Washington, D.C., September 1980.

C. ORGANIZATION, COORDINATION AND CONTROL

ORGANIZATION

Before organizational issues can be discussed, it is necessary to first understand office functions, the concept of OA, how to begin and plan for OA, and how to identify cost savings opportunities. The organizational effort, however, relies less on systems experience and more on management and administrative abilities. The OA organization will require a blending of skills capable of developing objectives and performing systems studies, selling the concept, and implementing, coordination, and monitoring workable and realistic strategies and action programs.

In any endeavor, the right people in the right positions can make the difference between success and failure. This is a key factor, if management is serious about office systems and their potential benefits. It will have to commit the necessary resources. The OA organization must have multiple skills and abilities, including data processing (hardware and software), text processing, communications, and training. These skills may be purchased from consulting services, borrowed from within, or hired. Without the porper level of experience

in each of these areas, the OA effort will have only limited success.

COORDINATION AND CONTROL

Coordination and control of OA activities is a difficult process because of their broad and complex dimensions.

Certain principles should be followed in coordinating an OA program. Some major principles include the following:

As mentioned previously, develop senior-level management steering committees and advisory committees at various levels to obtain approval, involvement, and commitment. Get users involved.

Establish office systems program requisites.

Link the OA plans and activities with the information systems plans, development cycles, budgets, and control processes.

Establish a development OA unit with a specific charter and mission.

Create a climate congenial to OA coordination activities and not resistant to them.

In summary, the emerging and interrelated areas of data processing, telecommunications, and office technology have already created some overlap among traditional organizational functions. The need for integrated planning and coordination will require effective leadership, change agents, and motivators. Close coordination among data processing, OA, administrative services, and the user is prerequisite for success in the modern policy agency.

D. ANALYZING NEEDS AND REQUIREMENTS

Many principles developed and applied in the private sector can also be applied in the law enforcement office environment. These include such techniques as work breakdown structures, work flows, and time and motion studies. The key to proper OA work flow analysis is the identification of the activities, processes, and prcedures followed in all offices. The basic study methodology presented consists of the following steps:

1. Establish the study objectives.

2. Identify the study team.

3. Identify the scope of the study effort.

4. Develop the data collection methodology, value analyses, and validation tools and techniques.

5. Conduct, classify, and analyze the study results.

6. Present findings to management.

7. Prepare and implement action programs.

Data collection consists of a combination of tools, such as structured and unstructured interviews, questionnaires and observation. All of these techniques were used by WANG in their study of CHP OA needs. Computers can be beneficial in the data analysis phases of consolidating, averaging, and reporting. (PCs were utilized for this purpose.) Once the requirements have been identified, the final phase in matching the requirements with the technology requires the use of a process known as office systems development methodology. Depending on the requirements, numerous choices are available. The ultimate decision should obviously be based on satisfying a critical need that is cost justifiable and proves a contribution, either directly or indirectly, to the bottom line.

E. IMPLEMENTATION

The best-designed system, the most economical system, or the system with the highest return on your investment will not necessarily result in successful implementation. Only systems that are carefully planned, directed and monitored will succeed. Successful implementation requires skills such as attention to detail, use of checklists, good people skills, excellent negotiation skills, budgeting skills, scheduling skills, education, and communication.

The potential inconveniences that may result from improper implementation planning can provide users and management with initial and sometimes irreversible negative impressions. It is therefore necessary to consider and check every possible requirement and overcome all obstacles in order to achieve a smooth implementation program. The user must be provided with preimplementation orientation, schedules, costs, facility requirements, and potential work interruptions, along with warnings about any other risks. The implementation team must obtain user approvals on the overall effort and must continually apprise the user of any changes as they occur.

Success depends upon user acceptance and subsequent usage. Regardless of the strengths a particular manufacturer may have today, situations change. A vendor may have the best products and service and the lowest prices this year, but next year the same supplier's success and rapid growth may place a strain on its spare-parts inventory or the responsiveness of its maintenance personnel. Vendor strengths and limitations change over time. Never put "all your eggs in one basket".

III. CONCLUSIONS

A vital question in every police department is whether changes will be initiated by management. The human resource specialists in your department may help with the changes brought on by new technology, but lack the viable methods to undertake this work. Management has to do it.

What, then, can police managers do to meet the challenge? They can redefine the problems and articulate a general policy that encourages others to view technology as more than an elixir. And, they can support collaborative staff work to encourage people from different disciplines to work jointly as new technology is planned. Information managers can rise to the occasion in an era of profound change--an era where dynamic options exist for doing more than what has been done in the past.

Only through careful planning and the use of a model such as the one presented in this paper can we hope to effectively keep pace in law enforcement with the rapid changes in information technology. What I have attempted to do is provide a

basic and general framework through the use of a model to assist police planners and managers in the initiation of an OA program. Certainly, there are still a number of areas that I have only lightly touched on where future students will want to do more in depth study and forecasting.

IV. BIBLIOGRAPHY

Barcomb, David, Office Automation, A Survey of Tools and Technology, (Digital Press, 1982).

Brodwin, David R., Office Administration and Automation, "On Personal Computer," April 1985, 87-88.

Drageset, D., "Users of Office Automation," Presentation at OA Conference, New York, 1978.

Drucker, Peter F., Management--Tasks, Responsibilities, Practices (New York: Harper and Row, 1974).

Goldfield, Randy L., Office Systems '85, Compatibility is the Keystone to Link WP & Office Automation, July, 1985, 59-62.

Hernandez, Ernie, Jr., PhD, Police Computer, "Bytline", January 1984.

International Data Corporation Report, "Productivity and Information Systems for Tomorrow's Office," Furtune, September 1980.

Keitel, Glenn H., Office Administration and Automation Magazine, "The Microcomputer: A Key to an OA Strategy," September 1985, 22-28.

Legislative Analyst's Report to the Legislature on the 1985-86 Governor's Budget.

Miles, Charles S., Office Systems '84, "Six Steps in the Direction of an Automated Environment," November 1984, 44-46.

Mueller, Robert K., Today's Office, Renaissance Managers: "A new Breed for Tomorrow's Electronic Office," March 1985, 33-37.

Pava, Calvin, Managing New Office Technology, (Free Press, 1983).

Stallard, John L., Office Systems Management (Richard D. Irwin, Inc., 1984) Ninth Edition.

Terry and Stallard, Office Management and Control (Richard D. Irwin, Inc., 1980) Eighth Edition.

Udler, Allan S., Office Systems '85, "The 5 Elements of Involvement for Office-Automation Success," June 1985, 78-82.

Vernon, Robert E., Today's Office, "The Ideal Integrated Office," July 1984, 27-28.

OTHER REFERENCES

Hernandez, Ernie, Jr., Police Chief's Guide to Using Microcomputers (Frontline Publications, 1983).

Hernandez, Ernie, Jr., Police Handbook for Applying the Systems Approach and Computer Technology (Frontline Publications, 1982).

Police Chief Magazine.

California Peace Officer's Association Magazine.

Police Computer Bulletin.

California Police Recorder.