LAW ENFORCEMENT MANAGEMENT INSTITUTE

THE IMPACT OF DOCUMENT IMAGING

ON MANAGEMENT STRUCTURES (LAW ENFORCEMENT)

A RESEARCH PAPER
SUBMITTED IN FULFILLMENT
OF THE REQUIREMENTS FOR
MODULE III

BY

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STATEMENT OF RESEARCH PURPOSE

The purpose of this research paper is to document, organize, and evaluate how Image Information Systems impact organizational structure. This research will provide future insight giving consideration to planning, evaluating and implementing massive technological changes.

This research is important to assist in providing various law enforcement entities and business organizations with information needed to manage large volumes of technical data and how organizational structures can impact the effectiveness of that management. The intent is to show how an image system solution allows for the integration of paper based information with computer systems currently being used for managing data. The result of this integration is that through proper implementation an organization can get all that they need when they need it whether in a core group, across a central location, or throughout an entire organization, region or state.

The Texas Department of Public Safety is committed to implementing a Digital Imaging and Document Imaging System throughout the agency. The adoption of this system will not only affect structures in the Department of Public Safety but other law enforcement entities as well. This document will help law enforcement agencies and businesses enhance their understanding for the need and necessity to plan effectively.

REVIEW OF THE LITERATURE

The major sources used in researching information on digital imaging, document imaging, and optical image management have been from the fields of science, technology, criminal justice, education and business and accounting.

A computer search of ERIC, NCJRS data base, science abstracts, technology abstracts and professional journals provided several articles, pamphlets, and memos with information concerning image management systems. Several organizations such AIIM, IBM, BIS, and DIR have been exceptionally helpful in providing literature concerning the future of this industry. Researchers and authors all generally agree that document image management is the most efficient method to maximize benefits of an information system. This research will enhance the knowledge and understanding of organizational management and law enforcement executives and support staff by providing greater insight. Image systems require a major financial commitment which is a large investment in new technology. I believe this research paper gives better insight which allows organizations an opportunity to buy into an investment in technology that will provide a strategic advantage for managing large volumes of documents. Image systems are not the solution to poor computer and office systems, but it is a more effective tool to control and manage information.

STATEMENT OF PROPOSED METHODOLOGY

Several methods were used in conducting my research. I used the traditional method of research for examining information on various topics and reviewing the literature.

Also, I conducted personal interviews with Mrs. Judy Sibert, Project Manager and Mr. Frankie Waller, Chief of Administration of the Texas Department of Public Safety. Both were able to give me valuable insight as it pertains to organizational structure and the anticipated impact of optical imaging.

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I. INTRODUCTION

Meeting the challenges of future organizations with the need to flatten their management structures and focus their personnel on performing better customer service is a primary reason for developing this paper. Access to information and resources has increasingly become critical to the success of an organization. Effective document management is the foundation for efficiency, and essential for accuracy, integrity and consistency of an information management system.

In today's challenging environment of automated information systems organizations are recognizing that data and information contained in their file cabinets and on their computers in the form of documents is an asset of enormous value. There is now and perhaps for the next decade a need for traditionally conservative organizations such as law enforcement to find new ways to access and manage this exploding volume of external information.

Managing automated information systems and electronic data is not something new to most organizations. Organizations' Management Information Systems and Data Processing Departments have built, maintained, and managed systems and applications that capture, store and make available certain information used in vital business processes for several decades. The problems in the pass and present with automated information systems is on-line availability of data and the limiting of that data to only those individuals and organizations who can justify the expense of computers, terminals, connections and CPU time needed for access to the applications.

Others, on the other hand, have had to be content with printed reports and copies, often late in arrival and most likely diminished in value. Information need to get to the right people at the right time or it is of no value. The management and control of business processes and the way information flow through these processes can greatly enhance operational effectiveness. Solving today's information explosion requires in most cases a hybrid system made up of a variety of technologies. The key ingredient is that these systems must be integrated with appropriate tools such as word processors, spreadsheet and graphics generators, translation handlers and filters, optical scanners, as well as OCR. Integration must also include technologies similar to CC-Mail, E-Mail and optional gateways enabling an enterprise wide sharing and collaboration of information.

Generally all consultant groups agree that an effectively designed system with integrated technologies must reside on a hardware and software base familiar and non-threatening to the end user. The common thread that leads to success is that all technologies must be tied to the applications and processes that run the organization.

Digital and Document Imaging today envisions more than simply text creation and retrieval systems of a few years ago. In essence, it is the ability to captures electronically processed data in words and pictures and effectively using that information in the daily business processes. A real key to success is the ability of organizations to develop solutions by combining image-based systems and document based systems. This will enable the creation of a business process model which adds value to the overall business enterprise.

II. THE MANAGEMENT STRUCTURE

The volume and speed at which information is currently distributed, coupled with a search for efficient process methodologies, has caused organizations to streamline their business operation systems. The advent of new imaging technologies allows management to be proactive when looking at the functionality of its work activities. Managing new information technologies today has literally changed how enterprises must be structured physically in order to cope with an explosion of information. The key to creatively managing information is in the ability of an organization to empower its users, necessary in an environment that requires business to do more with less.

A Reactive System Versus A Proactive System

"Today's managers are tasked with an increasing burden of storing and managing vast amounts of computer based information in multiple and variable formats."[1] In order to overcome a growing amount of paperwork business enterprises have found it necessary to proactively seek methods to implement image management systems. The storage and communications capabilities of imaging technologies have provided the basis for enterprise-wide systems that has enhanced overall information systems environment.

"The document image management market has grown substantially since 1991, and the subset of this market devoted to the conversion of paper documents to images is growing even faster. This activity spans every level of computing from enterprise-wide electronic document management systems down to the individual desktop. It is in this latter arena that the technologies of document imaging management are likely to have the most impact by empowering individuals and small to medium sized businesses with the tools they need to manage the glut of paperwork that never seem to diminish."[2]

Reactive systems of the past messaged information through processes of extraction in an effort to conform to limited automated data structures. In most cases those processes would weaken the values of management systems by distilling information which may have value at a later time. When management is proactive, document imaging management systems can be designed to prevent problems of this nature by preserving original document integrity.

The problem with traditional management structures is they generally lack accessibility to end users. For the most part all data formats were forced to fit into rigged structured environment. The inability to adequately handle primary data such as this has continued to contribute to the distortion of knowledge and information. A major problem for old information management systems has been the approach to searching large volumes of information and dynamically organizing the results for an effective presentation.

Efficiency Enhances Production

"Goals for most organizations have always been to improve the way their business processes work. Everyone wants to get the most productivity and performance from their business processes. That's why organizations are integrating the way they handle paper documents."[3] Efficient image systems allows organizations to utilize and manage paper based information and control the document flow in the most feasible and productive way possible. This can be accomplished by converting paper based documents into electronic digitized images, in order for them to be used in business processes concurrently across organizational structures. "Image based processing promises enormous efficiencies and productivity gains for labor intensive processing functions."[4] It is incumbent upon business and law enforcement organizations to except as fact that electronic document imaging has finally come of age and is being rapidly integrated into mainstream automated information systems."[5] Organizations not taking advantage this technology may find themselves losing the battle in systems productivity. For organizations to maintain a competitive edge "it all adds up to a complete information and image processing system that can better meet business needs in the following areas: (1) The organization can benefit from reduced staffing requirements, as well as saving in paper storage, because there's much less need for paper handling. (2) The employees no longer have to wait for paper documents associated with business processes to complete their job functions. (3) The customer can be more satisfied with the quality and responsiveness of business

service, due to the time and cost savings business realize from using imaging in its operations."[6]

"The use of images offers an integral, precise representation of information. Prior to imaging technology, some information couldn't be effectively transferred into an on-line format, and some of the meanings were either lost or overlooked. Now with imaging, exact electronic reproduction of the original information can be captured for end users.

These images provide a simple and effective way to communicate information on all personnel levels because they are easy to understand throughout an organization structure. Using imaging accelerates the flow of business communications faster than inter-office mail so employees can process and forward materials to other departments.

Utilizing images diminishes the chances of mis-filed, mislabeled, or misplaced information. With image management systems, information is captured and securely stored optical disk files. Therefore, unlike paper files, information is never removed from its file, and is always ready for immediate retrieval and use.

The effective use of images will literally reduce the space needed for information storage. Image management systems condense mountains of paper files into compact, computer accessible images. Imaging will save business time and money while making employees more productive. Availability and accessibility of information will result in executives having more time to make decisions and employees having more time to turn decisions into profitable actions. The bottom line is that the use of electronic images will provide your organization easy access, management, and productive end-usage of information."[7]

Change Interjects Conflict

Massive volumes of paper and the inability to reduce or control that paper has all but brought business enterprise to a state of confusion. With file cabinets overflowing document imaging systems are proving to a be viable option in the paper chase.

Document imaging systems do an efficient job of duplicating paper we correctly create manually. Scanning in and tracking documents on computer is far better than the in-baskets and out-baskets we are growned accustomed to. "Document imaging systems enable organizations to control the paper morass by maintaining keyboard and scanned data simultaneously. As documents are entered, important key words are manually entered identifying that document for search and retrieval."[18] The traditional organization with its hierarchical structure is being reshaped in today's environment of corporate restructuring due mostly in part because of the information explosion. Organization hierarchical structures are designed to develop formally across lines of command which are not conducive for managing large volumes of information. Increasingly organizations are having to re-evaluate and analyze organizational structures in order to meet changing demands placed on business systems for more and efficient information.

A major facet of automated information systems is the ability of business enterprise to identify the formal and informal communication network which consultants agree is integral to effective management.

The advantage of electronic image systems not only speed the recovery and compilation of data but allow the enterprises' management to see interactive communication links.

The advantage of electronic image systems not only speed the recovery and compilation of data but allow the enterprises' management to see interactive communication links. This allows business to address needs, recognizing the ability and necessity to streamline and change organizational structures. The bottom line is that organizations are forced to re-examine and change how work is processed. Change in many cases is met with resistance but if handled properly will result in a system performing to its fullest potential. In today's falling and stagnant economy business' use of imaging technology will help close the gap and provide an edge.

III. MANAGING LARGE VOLUMES OF INFORMATION

"In most office environments, information comes in two forms, data and paper. Data is managed through computers, paperwork is managed manually. Although computers produce literally tons of paper, they only process a small fraction of the total information that flows through the business world. The bulk of information is coordinated, moved, processed, and stored on paper. Think of all the loan files, correspondence, resolutions, credit reports, invoices, purchase orders, bank statements, and computer reports that must be filed and made readily available to several departments within a Department. Data and paper are not typically processed together without expensive manual effort and coordination. Neither the information in the computer nor in the file cabinet is complete without the other.

"Today's computers, using new image processing technology, make it possible to store and retrieve a vast number of images at relatively economical prices."

"In summary, business clientele today need quick and easy desktop access to heterogeneous information in the form of multi-element documents that come from many different users in disparate locations, and which are generated on many different application and software bases, both host and desktop.

Finally, all of this must be managed with appropriate security and access control."[10] According to Computer Extension Systems Incorporated the best information system should also be an information management solution. The right solution for a business enterprise is one that easily integrates into an organization's computing environment: a solution that becomes part of the total automation of an organization's operations. It is the nature of all business organizations to generate information and it is the objective of information management systems to respond to any business environment. Effective management of information is required in whatever size or complexity of an organization and regardless of operational concerns or product development.

The Paper Based Systems Dilemma

Thomas M. Koulopoulos states, "the operational life of most organizations is still heavily steeped in paper, and that the problem of business is the inability to deliver powerful technology simple, fast, and basic to all users across the technical and managerial boundaries of the

organization. In a study done in 1987, Coopers and Lybrand for AIIM showed that 95% of all corporate information was stored on paper. But this finding was only symptomatic of a much deeper problem, the inability to share paper electronically across an enterprise."

"Koulopoulos believes "paper will continue to be the medium for most business enterprises. The irony is, most proponents of paperless environments fail to see the difficulty in transferring from a basic paper process to an electronic document process. Unless organizations take advantage of multi-platform support for electronic document communications, paper will continue to be the end user's preferred medium.

In short, technology and paper must work together to create continuity throughout the many pieces of a business process, rather than battle for dominion over the entire process."

The ideal solution should provide end-users with a single point of access from which all information can be electronically retrieved through a common messaging infrastructure. The point is image management systems streamlines the management of paper based information through business processes and provides various functions that enable organizations to control workflow and quickly accommodate changing business needs.

Emphasis on achieving a paperless environment business' way of trying to improve organizational effectiveness. Document imaging systems that store and distribute digital replicas of the paper they replace offer a solution to those who do not want to give up paper.

However, recent advances in technology are adept at storing images making them accessible at low cost to desktop computers, and for businesses to give up paper.

Advantages of an Automated Information System

The last ten years has witness a revolution in automated information systems which include sweeping changes in the way organizations currently conduct business. The role of the automated information systems approach has changed from the traditional batch oriented process providing basic support services to strategic planning and evaluation of critical functions that impacts the organization's daily operations and business plans. It is believed that automated information systems influence organizational performance such as through improved revenue and customer satisfaction. Businesses that use information systems for strategic purposes automatically improve the quality of their planning process, on the contrary businesses that plan to use information systems primarily for support purposes only do not have a very good quality planning process. The fact that modern structures are being built around new imaging technology, the role of automated information systems is being challenged. The focus however, must remain on the needs of the business and the infrastructure developed to support it. This places pressure on information system developers to re-think in terms of open systems which focus on scalability.

Automated information systems are key in the process of creating long-range plans of computer based applications to enable an organization to achieve its goals.

Automated information systems when integrated properly offers common process functionality. This allows for the opportunity to operate in an integrated software environment.

The Benefits of Optical Image Systems

Business enterprises using optical image systems normally experience major benefits in areas such as increased productivity, improved data flow, reduced operating cost, improved customer service, and enhanced data integrity. Several things organizations tend to experience are the time taken to retrieve files is reduced to seconds, and employees spend less time on filing, sorting, routing, and matching documents; tasks can be streamlined, prioritized, and re-prioritized in response to changing business needs; costs for document storage space and staffing can be dramatically lowered; immediate access to documents enable employees to respond to inquiries and resolve questions faster; and computerized document control eliminates the need to keep multiple copies of documents and helps to ensure that the documents are not misfiled or lost.

"Optical image systems makes it possible to store and retrieve a vast number of images at relative economical prices. Organizations using optical imaging systems technology make it possible to add text, data and voice to the stored information. In addition, the data can be transmitted effortlessly and instantly to other, distant computer systems. What makes this technology, so convenient is that, after the image is stored and indexed for future retrieval, it can be added to or adjusted in a wide assortment of ways. An important capability of this technology is that it has the ability to convert information from an image into the standard data processing format."[11]

When evaluating this technology, management should give strong consideration to accessing the system's functional requirements in terms of its storage capacity, document conversion speed, retrieval effectiveness, reliability, capacity to ensure data integrity, and longevity in terms of both the optical media and the system as a whole.

IV. NEW WAYS OF MANAGING INFORMATION

The ability to manage massive volumes of data is the key to business success and survival. To maintain this data, however, requires more effective ways to store and retrieve information. Organizations require information to keep informed, make appropriate decisions, stay profitable, and maintain a competitive edge.

According to Computer Extension Systems Incorporated, "American companies handle an estimated one trillion pages of documentation per year. One third are preprinted forms which cost upwards of $6 billion per year to purchase. For every dollar spent on initial forms purchases, an additional $60.00 is spent on front end handling processing, distribution, and storage. retrieval costs can run as high as $120.00 per page. Approximately one third (1/3) of the forms purchased by an organization in a year are wasted due to changes, loss, and other issues. The result is $2 billion per year in wasted paper costs. Computer Extension Systems Inc. estimates that only two percent (2%) of all documentation handled by business enterprises resides in digital formats within computer databases. That's very important point to remember when you consider the fact that 2.7 billion new sheets of paper are put into file folders every day. Industry estimates show that a standard four-drawer cabinet contains 15-20 thousand pages, cost $25,000.00 to fill and about $2,000.00 per year to maintain. Compare this to an electronic environment where the cost of scanning, indexing, and storing an equivalent file cabinet is approximately $8,500.00 and that cost is declining. This translates into over sixty percent (60%) or $18,500.00 savings at the bottom line. It is summated that about three percent (3%) of all documentation in a paper environment is incorrectly filed, or lost; and that the average executive spends about four weeks per year waiting or documents to be located."

Attempts to manage this over abundance of information evolved in the form of microfilm based systems. Microfilm systems could not totally address the problem due to the inability to access information quickly. The reason is similarly related to the problem with paper files; film cartridges, and file cabinets which require information to be manually retrieved. The problem continues to accelerate because organizations are dealing with and producing more printed information than ever before. The irony of this situation is that computer vendors are offering ways to create and produce more paper while not providing ways to manage that paper.

In fact Thomas Koulopoulos states "the claim that any technology which converts documents from paper to electronic form will solve the problems plaguing organizational information systems is pure myth."

Image Management Systems

In the past PC processing speed and disk storage space has hindered developers in their use and adoption of imaging systems. However, technical advances in database applications and fine tuning of image management systems has made imaging a viable solution in helping to manage the paper glut.

Developers at Computer Extension Systems Incorporated states that "today there's a way to put virtually all important business information into a secure, accessible on-line system. A way to provide users with volumes of corporate information not typically available on-line.

A way to capture information, index it to find it quickly, process it fast and efficiently, store it securely, retrieve it instantly, and share it with users throughout the organization. In short, a way to access, manage, and use information like never before."

Although the immediate potential benefit may not be known until fully tested. Generally, users can expect enhanced access and better economical communication of image data over long distances. This technology will impact such management issues as work processes, modification and distribution of forms, human resource allocation, flatten of supervisory staff, document and records management, and inter-departmental relations. Implementation of an image management system may not necessarily be the solution, but it may be the point from which organizations gain insight into program directions to increase organization efficiency.

Maintaining Image Management Systems

Image management systems should be designed for the long term with the capacity to transfer data to future developments in the technology. It is vital to the systems success that all aspects be documented, both the technical specifications of the hardware and software components as well as proposed administrative support functions. This is to ensure consistency when developing policies and procedures prior to implementation. Image management systems can significantly change the way business operates, new technology has encouraged the implementation of new systems to ensure a smooth and easy application of this innovative technology.

The implementation of systems of this nature demands a high degree of flexibility.   The idea is that there needs to be movement toward an approach which does not impede the organization's effectiveness and efficiency in implementing the imaging application.

In addition, James J. Fruscione states "support mechanisms must be designed to evolve along with the technology.   The only way to successfully fight against obsolescence is actively to scan the imaging environment to keep current on technical developments and innovations, standards activity, and useful imaging applications. Information on recent developments should be incorporated into imaging systems policies, procedures, training sessions, procurement practices, records management programs, etc."   Fruscione further states that "equally important, central staff agencies must actively seek feedback from organizational members who use the imaging system support mechanisms and be willing to make periodic adjustments based on this feedback."

A major point to remember is that this form of technology requires expertise from multiple disciplines, therefore seek information from an integrated approach.

Imaging Technologies

Imaging technology consists of the ability to capture, scan, import, deliver, retrieve, and present interchangeably an imaged document in a timely manner as part of the business process.

The concepts, principles and technology of imaging have been around for a number of years.   The inability to contain costs relating to this technology basically limited its market.

Due to recent advances in computer technologies in this industry the problems of records storage has escalated rather than decreased. The capacity of computers to produce documents efficiently have added to the dilemma of volumes of paper being printed for filing, rather than storing that information on electronic media. The ability of computers to scan in images has expanded the market and placed a greater demand on imaging production. Computers have made imaging feasible for two basic reasons: it created an avenue for imaging afford ability, and access to reasonable high capacity disk storage space. The transferring of this technology to document storage within a computer environment has all but doubled business operation efficiency. The computer environment gives access to a broad range of hardware and software applications which can be integrated over multiple work processing functions, that enhances an organization's total operating efficiency.

Imaging technology when used effectively can provide organization decision makers with fast and easy access to information to make strong solid judgments. A key point to remember about imaging technology is that in order for it to be effective it demands that organizations evaluate and streamline current work processes. Otherwise you end up with an automated manual process resulting in product inefficiency.

The Future of Image Information Systems

Image information systems developed to integrate easily with variable processing functions in order to provide an enterprise wide solution is the trend toward which this industry is headed.

The most efficient image information system is one designed flexible enough to adept to current business environments and operate along a median process range allowing organizations to implement interfaced hooks for future requirements. The research in this paper indicates that developers are consistently designing new systems to optimize document flow and provide multiple access for all users across the business enterprise. Current trends indicate that computer technology will continue to expand the use and need for information. While at the same time generate more paper based documents. The best efforts for business in the future is to use this technology to respond to needs and maintain profitability. The future of image information systems all but demands business enterprise to seek and employ modern methodologies and solutions to manage the paper explosion. The Computer Extension Systems Incorporated Consulting Group states "those organizations who can meet the future with solutions today will move into future business endeavors un-hindered by outdated, inadequate and ineffective systems."

According to a business paper by IBM Software Solutions a major indicator of change in current trends is the fact that "groups within an organization that were once segregated are finding they need critical data traditionally reserved for host connected users. Conversely, the users of host based applications are finding they need the productivity applications and group interfaces currently available to PC users. Thus, the needs of both groups are being driven together and the requirement for the right information is becoming pervasive. Further, as the elements that make up documents expand, the volume of information to be managed continues to rapidly increase, beyond the scope of the individual user."

V. THE IMPACT ON MANAGEMENT AND INFORMATION STRUCTURES

The changing nature of how organizations are structured is being facilitated by rapidly emerging document imaging technologies. According to Herbert F. Schantz "information and imaging technologies usually minimize or eliminate many of the direct labor costs associated with current manual or semiautomatic work processes."

Information and imaging technology revolutionize organizational environments by providing the opportunity for streamlining and integrating the information based activities from within. This can be an enormous asset when downsizing an organization becomes a necessity. The key however, is that this is a long term solution when used appropriately. This technology will aid in uncovering inefficiencies and allow businesses to plan by adequately predicting future trends and taking advantage of them.

The fact is this form of technology makes information so accessible it requires users to be empowered. Because of the way users are empowered and how information is channeled, organizations are finding that in order to become more responsive it requires re-engineering or re-structuring of the traditional pyramid command grid. The best reasoning for this change in philosophy is that the technology creates an environment of information sharing and responsiveness between the users. This develops into an ongoing exchange of data which refines itself as the process matures. Probably the best benefit of this technology is the fact that it shows potential for keeping the users actively involved in the business operating process.

In fact, Thomas M. Koulopoulos states, "this shift will shatter the conventional paradigm of software and hardware development. The new paradigm calls for the decentralization of power to everyone's desktop through intuitive interfaces, which mask powerful network conductivity and application integration."

Controlling Information Gridlock

According to studies conducted by Delphi Consulting Group, there is clearly a trend toward electronic document creation.

In fact, Delphi states "two percent (2%) of all organizations have forty percent (40%), or slightly more, of their corporate information on-line in electronic format. The vast majority of organizations, however, still have no more than 10% of their information on-line. The report goes on to say that in many cases the result is frustrated knowledge workers who cannot get at the information they need and are drowning in information they don't need. The overwhelming amount of information available to today's information worker is dramatically reflected in the hours spent, on average, searching for misplaced information. Estimates place this wasted effort at 150-250 hours per year for the average executive and 500-750 hours per year for a manager. The time spent searching is both unproductive and costly. Minimizing this effort can result in tremendous productivity gains and cost reductions relative to paper based information systems."

The Information System Paradigm

The traditional form of information processing focused mainly on the process or the system program. Information was generally cataloged in a highly structured environment at very low levels. Unlike modern information management systems user interface and report formats were basically a non-issue. This philosophy gradually changed as technology advanced. Eventually sophisticated programming language and tools were added along with the concept of database manager and the notion of information repository.

This environment lacked flexibility for it was relatively self contained, with minimum interoperability. Currently the trend has been to centralize the database and use it as the central processing point for gathering information rather than a simple repository. Databases are now designed with flexibility which primary functions are to collect, interpret and present information sources regardless of origin or format. With the use of imaging technology this concept gives credence to the idea of a paperless manager-less office.

Redefining The Document

Technology has changed the meaning of document it is no longer one or more pages of paper. But has evolved into much more. For all practical purposes a document is now considered to be a collection of data which can be dynamically categorized for the purpose of organization, ease of understanding, precision and relevancy. This definition gives credence to its ability to be transferred electronically.

Research by the Delphi Consulting Group indicates that the "electronic document takes on an number of interesting characteristics: (1) its a pointer of information resources contained within itself with the ability to update itself, (2) it has the ability to retrieve, display, and print the latest version of each of its components from within, (3) it has the ability to route itself through the organization, maintaining audit trails, usage trails, and supervising activities such as deadlines and default actions, and (4) it has the ability to be self aware by analyzing its contents and comparing these to user profiles or interest levels. These attributes help in fully appreciating the new meaning of "document" in terms of what an electronic document is capable of performing."

VI. RECOMMENDATIONS FOR THE FUTURE

Imaging technology is probably best suited for organizations that have a requirement to store and retrieve large volumes of information frequently and easily. This profile is especially true for most large corporations and medium to large law enforcement agencies. A factor to remember is that a decision to convert to imaging can not be based solely on volume. It would be cost ineffective to do so. Frequency and speed of retrieval must be factored in for consideration to avoid implementing a cost prohibited project. A rule of thumb gauge would be if the information you seek to image has a time value, where quick reaction is vital, than an imaging management system is a prime candidate.

The decision of an organization to invest in an imaging management system should be followed only after careful evaluation and consideration of costs involved. This is not just another "computer automation system" to implement an efficient image management system requires: a requirement analysis, Workflow analysis, cost benefit analysis, and an in-depth strategic plan. A major factor to consider is that technology in this industry change consistently. Therefore, you face a constant fear of equipment obsolescence. This author strongly suggests that one should seek expert advise and/or help in pursuing a project of this nature.

Research convinces the author that imaging should be the focus of the future. The use of image management systems alone to eliminate paper is not enough to create efficient business cycles.

This research makes the point that imaging technology, when used appropriately, causes organization awareness which leads to a reassessment of business processes. It is during this process that business enterprises should take advantage and fine tune its operating processes. The reality, without a doubt, is that organizations failing to take advantage of image management systems and invest in imaging technology is all but doomed to perpetuate in their inefficiencies, rather than expunge them.

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