Case Study

Disc Players, the Records Manager/Archivist, and the Development of Optical Imaging Applications

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Abstract: Although the computer literature is full of stories about successful imaging (optical disc) applications, records management professionals have countless stories about failed ones. As the technology matures, archivists and records managers are increasingly being asked to join imaging application development teams. How can these disciplines contribute to a successful application? This paper suggests some indicators archivists and records managers can use in evaluating imaging applications and some questions they can pose to improve the chances that the application will be a successful one. It is not the goal here to look at long-term storage and transportability issues; rather, the essay concentrates on what records professionals can do to improve the odds that an imaging application—either their own or one whose records they may someday inherit—is a success.

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MANY ARCHIVISTS and records managers have an immediate response to the words *imaging* or *optical disc*: they cringe. Too many stories—and sometimes personal experiences—focusing on failed systems, inaccessible records, and long-term storage problems have soured many records professionals on the promise of imaging.[1] They have spent too much time with people who share the misconception about optical disc applications illustrated by the cartoon on the cover of this issue, namely, that simply running the contents of disorganized but overstuffed filing cabinets through a scanner solves records management problems. The following (true) example is all too typical. Names are omitted to protect the guilty.

> A program had to decide what to do with the contents of 20 five-drawer file cabinets. For reasons that were never clarified, the program staff were convinced (incorrectly) that they could neither destroy the records nor store them off-site. However, a consultant had convinced them that they could purchase a relatively inexpensive desktop imaging system running proprietary software that (so he promised) would solve all of their problems. The program planned to have part-time students scan and index the documents.

Such applications are as common as they are poorly conceived. The Environmental Protection Agency (EPA) has established a formal position on imaging.[2] EPA's view is that imaging technology is a powerful but easily misapplied tool. EPA's strategic goal is to allow programs to exchange and integrate information, both data and images, by implementing imaging in a coherent fashion. To support this vision, there is an imaging policy in place, as well as life-cycle guidance designed specifically for imaging systems.[3]

The life-cycle guidance does two important things. First, as part of the mission needs analysis, programs considering imaging are required also to evaluate other technologies, including microform, automated indexing, and improved procedures for handling paper records.[4] Second, the guidance makes the records manager an active partner in the life-cycle development process.[5]

The Systems Development Life-Cycle Concept

The systems development life-cycle concept that EPA is employing is the process for managing the design, development, implementation, and operation of information systems.[6] Although the number of steps in the life cycle may vary from one life-cycle document to another,[7] there are at least

[1]In this paper the term *records professionals* will be used to refer to both archivists and records managers.

[2]U.S. Environmental Protection Agency, Office of Information Resources Management, "Policy Directive 90-01, Implementation of Image Processing Systems," 24 October 1990.

[3]U.S. Environmental Protection Agency, Office of Information Resources Management, "Guidance for Developing Image Processing Systems in EPA," February 1991.

[4]EPA, "Guidance for Developing Image Processing Systems in EPA," 28–30 and Appendix B; "Document Management Approaches," 61–76.

[5]EPA, "Guidance for Developing Image Processing Systems in EPA," 15.

[6]A good introduction to the life-cycle concept for records professionals is U.S. National Archives and Records Administration (NARA), Office of Records Administration, "Records Management and the Systems Development Life Cycle," a presentation used in 1990 by the Office of Records Administration in its training class on the management of electronic records.

[7]NARA, "Records Management and the Systems Development Life Cycle." Other versions of the life cycle are found in the Office of Management and Budget's draft revision to "Circular A-130, Management of Federal Information Resources," *Federal Register* (10 September 1993, 47793); U.S. Environ-

three main steps: the initiation phase, in which mission needs analysis and concept development take place; the development phase, which includes design, acquisition, and construction; and the operations and maintenance phase, in which the system is in actual operation for between five and ten years. After that time the system will need to be updated and the cycle begins anew with another initiation phase. Records professionals should be active participants in the entire life-cycle process and have a role in each phase of the life cycle.[8] Increasingly, records professionals are being asked to join a systems development team as technical experts who understand seemingly arcane concepts such as the records life cycle or records disposition. However, their unique experience base will help them outgrow that limited role. Only a records professional will understand the intricacies and realities of the existing records system and its paperwork flow, knowledge critical to any successful application. Probably most records professionals will bring another valuable asset to the team: an attitude more skeptical of imaging and less hostile to paper.

What follows is a brief overview of some lessons I learned as a member of several imaging-application design teams. It includes both positive and negative indicators for a successful imaging system and reviews a number of issues that need to be considered carefully before developing an imaging system. Although these lessons are based on federal agency experiences, they parallel many of the findings reported in *Digital Imaging and Optical Media Storage Systems: Guidelines for State and Local Governments.*[9] That report, which is oriented toward systems managers, provides an analysis of several administrative objectives and management issues relating to imaging applications. In particular, systems administrators' comments concerning whether their systems had functioned "as anticipated" show that the issues discussed in this essay are common across applications.

What Makes for a Good Imaging Application?

Six indicators should be considered when reviewing imaging proposals. As the number of these indicators characterizing a records problem increases, so does the likelihood that the problem is ripe for an imaging solution.

1. **Workflow improvement.** Can the documents be processed more efficiently? To use the current buzz word, imaging allows for "reengineering" of a process to improve productivity.
2. **Redaction capability.** Will some information need to be redacted for use by those outside the organization? Many imaging systems have sophisticated redaction capabilities.
3. **Document security.** Should some users of the system be able to access only a limited selection of documents? Imaging allows the system manager to specify access at the document level, assign tailored access privileges to each user, and change access levels easily.

mental Protection Agency, Office of Information Resources Management, "EPA System Design and Development Guidance, Volume A," June 1989, 2; U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, "SDMS System Concept Volume I," 25 March 1991, 1–2.

[8]The last third of the "Records Management and the Systems Development Life Cycle" presentation cited in note 6 of this essay is devoted to a detailed look at the role of the records professional at each stage of the life cycle.

[9]National Archives and Records Administration and the National Association of Government Archives and Records Administrators, *Digital Imaging and Optical Media Storage Systems: Guidelines for State and Local Governments* (Albany, N.Y.: 1991).

4. **Document integrity and preservation.** Is there a danger of documents being damaged, misfiled, or even stolen? Imaging allows the original documents to be retired from active use while at the same time providing a security copy or copies for vital records or archival purposes.
5. **Multi-user access.** Do multiple users at different locations need simultaneous access to the same document? Rapid multi-user access is one of imaging's greatest advantages.
6. **Integration and expansion.** Is there the potential that the documents might be useful to other clients once they are in the system? If properly implemented, imaging expands easily and integrates with other systems to form larger, more powerful tools.

In addition to these six positive indicators, five secondary factors, if applicable, increase the probability that an imaging application will be the correct solution for a records problem.

- Is there a regular life cycle for the use of the documents?
- Is there a predictable pattern of use, i.e., do users often call for related documents together?
- Is simultaneous processing important?
- Are different media involved (e.g., photos and text)?
- Are the indexing requirements relatively limited, or can the documents be readily accessed via full-text searching?

The relevance of the six indicators becomes clear in a partially hypothetical example of an insurance company that uses an imaging system to process claims for automobile insurance.

Consider the case of Jean, who was involved in a minor traffic accident and filed a claim with her insurance company. Unless there is a problem, her claim will be processed within a specific period of time, normally thirty days or less. Because the insurance company knows it will need claim documents primarily during the first thirty days they are in the system, it allocates storage accordingly. Most imaging systems have two storage areas—magnetic and optical—with the magnetic storage providing quicker retrieval times. The system keeps all documents in magnetic storage for thirty days and then "retires" them to optical storage. That gives the quickest retrievals and maximizes efficient use of both storage media (*Indicator 1*).

There is also a predictable pattern of use (*Indicator 2*). When Jean calls about her claim, a copy of her policy is already in the insurance company's imaging system. The employee who answers Jean's call will need all the information relating to both her claim and her policy. As the employee looks at the first document, the system—which has been programmed to "pre-fetch" other claim documents and the policy so that they are available instantly when needed—pulls up the necessary materials.

The system allows parts of Jean's claim to be processed by different individuals in different locations simultaneously (*Indicator 3*). One person verifies information about the claim while another accesses the same documents to inspect the damage to Jean's car.

Insurance claims mean forms, handwritten notes, photos of the car's damage, data entered from telephone calls, and other materials. All can be easily stored and shared with the imaging system (*Indicator 4*). Finally the indexing for such documents is quite simple: policy number, name and address, claim number, and date (*Indicator 5*).

Limitations

Although imaging has tremendous potential for improving the management of documents, it has a negative side as well.

Cost is one element to consider. Most people are aware that hardware costs can be high; other costs include document conversion, hardware maintenance, and support services. Maintenance and support are critical in minimizing the risk of system failure. As imaging moves into enterprise-wide applications, the system manager has the unenviable opportunity to bring the enterprise to its knees if the system is not reliable. Finally, there has been no federal decision on legal admissibility of images, so many who use imaging also keep the originals in storage in case of litigation. At this point most systems at EPA are used as working copies for day-to-day operations, with the original paper record copies stored off-site until all legal issues have been fully resolved.[10]

Case Study

The issues surrounding an effective imaging application can be most easily understood by reviewing a brief case study, the EPA Superfund Document Management System (SDMS). The SDMS development team raised all the issues discussed earlier in this essay. Over the course of more than three years, the solutions evolved as imaging hardware and software improved. The system has just begun pilot implementation, so a final report on the effectiveness of the chosen solutions is not yet available. The actual system implementation is not what is important, because it is a unique response to unique records. However, the issues raised are worth examining because they are similar to those encountered in any imaging application.

The Superfund program is responsible for cleaning up approximately 1,200 existing toxic waste sites, such as Love Canal and Times Beach. In 1988 and 1989, a records management study had surveyed the Superfund program and suggested imaging as one way to manage the 90 million pages of documentation estimated to reside in the regional offices.[11] In response to that survey, SDMS was developed. As originally proposed, SDMS was to serve EPA headquarters, its ten regional offices, and several other facilities. The current pilot implementation will focus on the records of one very large site, the San Gabriel site in California. SDMS had five initial objectives:

- Providing broad simultaneous access to Superfund documentation, reducing the need to maintain multiple copies of the same document.
- Eliminating the need to retain thousands of feet of paper records on site for reference.
- Increasing document security and integrity by creating an unalterable copy of the documentation that staff could use in their work.
- Improving the ability of staff to identify documents needed for the administrative record, litigation support, or other documentation needs.

[10]The legal questions surrounding the admissibility of documents stored on optical disc are a subject unto themselves, and several jurisdictions are moving to enact laws that would resolve the question. While many will argue that the images should be acceptable given existing laws, few are willing to take the chance at this point. For a recent summary of the issues, see Association for Information and Image Management, *Technical Report: Performance Guideline for the Legal Acceptance of Records Produced by Information Technology Systems, Part I: Performance Guideline for the Legal Acceptance of Records Produced by Information Technology Systems as Evidence* (Silver Spring, Md.: Association for Information and Image Management, 1992). It is also interesting to note that of sixty imaging applications surveyed in the joint NARA/NAGARA report, twenty-one retain the originals and nine retain microform. See *Guidelines*, 21 and 61–62.

[11]EPA, "SDMS System Concept Volume I," 2–4.

- Addressing vital records considerations by creating backup copies of all documentation.[12]

The EPA's records officer was invited to participate in the development of the system and took an active role in the process. Were records management considerations important for this system? Yes, if one equates "important" with "bottom line." A surprising amount of the overall projected system cost was for managing records, not for hardware, and one way to look at system cost is by comparing the costs of the life cycle. The initiation phase constituted only 3 percent of total system cost over six years. Implementation, which is primarily hardware procurement, software, and start-up costs, was projected to be 30 percent of the total. That left two-thirds of the system cost for the production phase, essentially operations and maintenance. A large part of that is traditional records management costs, which becomes clear when the costs are analyzed by component.[13]

Looked at by system component, hardware was projected to be only 12.7 percent of the total cost. As projected, development costs would constitute 1.91 percent; conversion of existing files to images (backfile conversion), 1.86 percent; and continued records management operations for remaining paper files, 6.8 percent. These four items equal only about one-quarter of the total cost. Fully one-third of the total six-year cost was for staff to process, scan, and index the documents. The remaining costs (over 40 percent) were slated for supplies, current operations, and systems maintenance.[14]

Although few would admit it initially, records management became a major question during the initiation phase of the project. By the end of the third month, the lead analyst on the team observed, "I joined this team thinking I was going to solve an imaging problem. What we are doing is trying to solve a records management problem." The eight criteria the team used to determine the overall system concept illustrate the truth of that statement. Four of the eight related to records management: document size (how many pages per document), document uses (how the documents would be requested and by whom), backfile conversion (which of the existing files should be imaged), and document collections (what types of future documents should be imaged).[15] Decisions on these issues helped determine the path SDMS would take on the four remaining issues, which related to technical criteria: the medium for storing the documents (paper, microform, or optical disc), the indexing hardware architecture, the indexing software architecture, and workstation distribution. As SDMS evolved, the hardware and software configurations changed dramatically as new technology allowed the team to develop better, more efficient, and less costly solutions to the same document management problems.

[12]EPA, "SDMS System Concept Volume I," 2–8. At this point, the SDMS development team has completed the initiation phase and is about to begin a pilot in its San Francisco office.

[13]U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, "Superfund Document Management System Concept (Presentation to OSWER Senior Management," 12 April 1991), 26.

[14]EPA, "Superfund Document Management System Concept," 27. The cost figures are for the original proposed system. Cost projections for the entire system as now planned are unavailable, but a cost-benefit analysis was done for the San Francisco pilot. The figures are not completely comparable due to differences in the methodology, but they still show that start-up costs (hardware, software, and training) amount to just over one-third of the total six-year projected cost. Document conversion and management (conversion and indexing) account for 41 percent, and system maintenance and improvement, 21 percent.

[15]U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, "SDMS System Concept Volume II," 25 March 1991, 3-3.

Initially, the analytical team considered several possible options: continue the current practices; microfilm everything; use a mix of paper, imaging, and microfilm; image everything; and use imaging together with full-text retrieval. At that time the project director chose the all-imaging approach over both the mixed-media and the imaging-plus-full-text solutions. But only two years later, improvements in the technology caused the team to switch to imaging plus full-text. In the pilot project, the system will run on a local-area network (LAN) with users accessing both the the system indexes and the documents themselves from their personal computers (PCs). The system will incorporate optical character recognition (OCR) technology that allows for full-text retrieval of documents. The only drawback is that a standard PC monitor will allow users to view only part of an image at a time.

Both the all-imaging and the imaging-plus-full-text solutions addressed a majority of the five initial objectives and offered several advantages, such as simplicity both in processing documents and in retrieving them. The effectiveness of either solution was limited by several existing conditions.

- Staff were generally unwilling to adopt new uniform operating procedures for processing, using, and handling documents. Some staff, for example, resisted surrendering "their" documents long enough to scan them into SDMS, delaying until the documents were no longer active. This limited opportunities to improve workflow by reengineering how documents were processed. Other staff members were unwilling to leave their own PCs to go to workstations with large, high-resolution monitors; they preferred sacrificing the advantages of a larger screen and higher resolution for convenience.
- Current operations within regional offices made integration of information across organizational boundaries difficult. This reduced the potential for SDMS to eliminate duplicate copies within the region.
- There was no identifiable pattern of recall and use of SDMS records, thereby limiting the opportunities to "pre-fetch" documents. This slowed retrieval times.
- Many documents were long, often running several hundred pages. Approximately 20 percent of the documents accounted for 80 percent of the volume of the records to be imaged. The available imaging system had the most difficulty handling this very type of document. Again, the result was slow retrieval times.
- Indexing was complex. Participants in the joint application design sessions identified thirty-six indexing fields essential for readily retrieving documents.

Improved software is mitigating the effects of some of these problems, especially in the areas of indexing and long documents. Newer hardware and improved optical character recognition software are but two advances that SDMS has incorporated to make the system more efficient and less costly. Many of the problems, however, are organizational and human, not technical. In the final analysis the primary function of SDMS will be to store and retrieve essentially inactive records. SDMS will, in the words of its proponents, "get the paper off the floor." The biggest payoff will be in improved litigation support, where the system will assist legal staff in identifying and organizing records for court proceedings.

Lessons Learned

The process of developing a large and expensive imaging system is itself long and expensive. To do as thorough an analysis as the SDMS team conducted may well be beyond the means of many who want to employ imaging. The SDMS team successfully learned some important lessons, but that success followed from asking the right questions in the first place, which enabled the team to avoid a number of pitfalls that could have spelled disaster.

Lesson 1. The records professional must ask whether the problem really calls for an imaging solution. In theory, everyone agrees that imaging is not a toy. Unfortunately, when it comes to selecting a system, many still act as if it is and rush into imaging without thinking through the implications. Talking to program managers, one senses a lusting after the newest, fastest, most advanced hardware, whether needed or not. As a result, imaging may be recommended in situations where microform or an improved paper system would be equally serviceable. One needs to question the need for imaging for another reason as well. Many have the misperception that imaging is the answer to their difficult records management or document management problems, but the most overlooked rule in imaging is "If it ain't fixed, don't automate it." Successful imaging systems are built on reasonably well-functioning manual ones. Imaging offers an opportunity to reengineer the process and use technology to eliminate bottlenecks, but this presupposes an existing "system," not just existing records. In the case of SDMS, the decision to embark on an imaging system followed more than three years of systematic attention to, and improvement of, the paper documentation system.

A corollary to these two points is that it is very hard to justify the cost of an imaging system if it is simply going to be used as a very compact storage device. Unless a program is willing to reevaluate and restructure operations and change how it does business, imaging probably is not worth the investment.

Lesson 2. Many of the real obstacles to effective implementation of an imaging system are human and organizational. Restructuring operations to make the best use of new technology is more easily conceptualized than accomplished. Moreover, training staff to use the new system can be time-consuming and expensive, but it is absolutely necessary.

Lesson 3. Know the records in detail. As the SDMS team learned, details about the records and how they were used were very important in understanding how well or how poorly SDMS would function in real life. A knowledge of these details drove the search for new hardware and software that would meet user needs. That knowledge was acquired by asking questions, some of which focused on:

- *Backfile conversion*—What is the volume of existing records (backfile), what does the backfile contain, and why does it need to be converted? Converting a backfile is much more labor intensive, and therefore expensive, than starting at ground zero and moving forward. The SDMS project originally planned to convert the entire backfile but eventually decided to convert only those records that were likely to be involved in litigation.
- *Growth rate*—What is the anticipated growth rate? Jukeboxes can fill up. Looked at over a six-year system life, it would be quite possible to fill three to five platters in even a modest-size office.
- *Document retention*—What are the retention requirements for the documents? Can an imaging system meet those requirements? Will images have to be migrated to a new system in six to eight years because they are not yet disposable? Can the system serve as the official legal record, or will it be simply a reference and backup copy?
- *Differences in retention*—Do all the documents going on the system have the same retention, or do retentions vary? If they vary, will the entire disc

be preserved for the life of the longest document, or will selected documents be migrated onto other discs? If so, how is that done?[16]

- *Document length*—How long are the documents? The system originally available to EPA under its contract had a difficult time handling longer documents (100 pages or more), which bogged down the system. The issue was resolved in SDMS only by switching to different software.
- *Document format*—Are sizes of documents standard and uniform? The high scanning speeds cited in vendor literature are based on single-sided 8.5-by-11-inch paper. Odd-size pages, even small ones such as routing slips, cause problems.
- *Document reception*—How do documents enter the organization? When and where will they be captured for scanning? Can the scanning and indexing be done centrally?
- *Document handling*—What are the details of the active life of documents? What are the bottlenecks? Understanding this is essential to improving productivity by reengineering.
- *Document uses*—Who will use the documents, and under what conditions? This is the key to indexing the documents efficiently and to setting up routines to recall documents. Understanding document users, document uses, and retrieval patterns is critical to designing an efficient system.

Lesson 4. Know the equipment. Another set of questions directs careful attention to hardware and software:

- How well does the system handle long documents?
- What are the real retrieval times, for both magnetic and optical storage, when the system is relatively full?
- What are realistic printer and scanner speeds for the types of documents you will be imaging?
- Can the scanner accommodate double-sided pages?
- How are documents stored on the disc? Can multiple platters be placed in the jukebox and documents routed to specific platters to simplify retention and disposition?
- Where and how are documents decompressed? If the system is to be run on a LAN, are the documents routed over the communications networks compressed or decompressed documents?[17]

All of these considerations will influence how well a system will respond in real time. To test response time, the SDMS team completed two validation studies of proposed configurations and is now piloting the system in EPA's San Francisco regional office. The benchmarking studies used special software to simulate what it would be like to run SDMS at average and peak projected capacity, with up to fifty people making requests simultaneously—not an unlikely scenario in a large regional office. When the initial proposed system was tested, the answers were in some cases astounding, at least to people who expect images to appear in seconds, as they always do in demonstrations. Significant changes would have to be made to the proposed system to reduce average retrieval times for shorter documents to an acceptable level of three minutes. The retrieval of

[16]For other disposition, document conversion, and data migration considerations, see *Guidelines*, 17–22 and 38–41.

[17]For a related set of technical issues, see the sections on digital imaging and optical media storage in *Guidelines*, 22–38.

longer documents in high-stress periods could take much longer.[18]

Lesson 5. Indexing can kill a system. Technology may be able to solve this problem in time. Bar coding offers promise, as does optical character recognition (OCR) with full-text retrieval, but SDMS will need a considerable amount of indexing even though the pilot system will include full-text retrieval as part of the package.[19] If people will be indexing documents, who should identify the terms to be used for each field: a technical person familiar with the documents and the subject matter, or a trained indexer familiar with indexing? The SDMS team tested both approaches but settled on professional indexers. In tests lasting several weeks, indexers could complete ten to twelve indexing fields on four to six documents each hour. Improved automation with more fields automatically entered would help, but it is doubtful that the rate would ever exceed ten documents per hour.[20] To convert that to concrete terms, the EPA's San Francisco regional office, the site of the SDMS pilot, has a staff of approximately ten indexers for their interim microfilm system.

Some might question the need for extensive indexing, given the fact that the documents will be full-text searchable. Full-text searching is a tremendous access tool, but it does have several limitations. Finding documents using simple full-text retrieval is relatively slower than finding them with the help of indexes. Without indexes to assist in limiting searches (e.g., search for *acid rain* only in documents dated between 1991 and 1993), the number of hits in a search can become unmanageable.

Moreover, it is quite possible that a document relating to a subject may not include a specific term used in a search. An example would be a situation in which a subordinate outlines a plan of action in a detailed memorandum to the supervisor. The supervisor's response is often brief and merely approves or disapproves specific actions or choices without providing any context or discussion of the issue under discussion. Full-text searching alone will not capture the relationship between the two documents and will therefore miss potentially important documentation.

Most important, for records professionals, documents are more than simply sources to be mined for information on specific subjects. In archival terms, they have more than informational value; they may have fiscal, administrative, legal, and other values to the creating agency. In a paper world, their "recordness" would have been captured in part by the physical filing structure.[21] Incoming letters and outgoing replies would have been filed together physically; case file documents would be in the same folder; records with the same file code would have been filed together. Imaged documents normally lack a physical structure, so indexes provide an intellectual structure that organizes the documents. Information such as document date, document type, file code or other identifier, sender and recipient, and disposition

[18]U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, "Imaging Validation Results and Impact Assessment" (Draft 2.4.1 dated 13 January 1992), 9–30. Section 3.1, "Retrieval Results," provides an excellent discussion of issues such as document contention, platter contention, and request prioritization, which slow retrieval time.

[19]The initial study for SDMS argued against using OCR and full-text retrieval as a replacement for indexing, primarily on grounds of reliability and cost. However, that recommendation was made during 1990–91 and was later reversed following testing of improved software.

[20]U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, "Index Validation Results and Impact Assessment" (Draft 3.4.1 dated 29 January 1992), Appendix A-2, Test Results E-2 and E-5.

[21]Procedures also provide structure in imaging and other electronic records applications, but procedures play an equally important, but often overlooked, role in paper records.

are necessary to manage the documents as records instead of simply as sources of information. Most of the thirty-six indexing fields proposed for the SDMS project were concerned with the characteristics of the documents themselves, not with their contents. They were proposed by program staff and records managers who understood how the documents were used and what information was necessary to manage them. It is that cooperation that lays the foundation for a successful imaging application.

Imaging's potential is tremendous, both for current users and for archivists. Unfortunately, many applications do not use imaging to its fullest potential. A large enterprisewide imaging system may or may not be the solution to a specific document management problem. It simply may not be the right solution to the problem, or if it is the right solution, it may not be implemented properly to meet the long-term needs of the program or the archivist. Success depends on how well the development team understands not only the problem itself and the technical options, but also the realities of how documents are created, maintained, used, stored, and finally preserved or destroyed. That knowledge is the domain of the records professional who must be able to advise the development team on those issues. Failure to obtain this advice will impoverish the record, both now and in the future.