

# Digital Preservation Strategies

## *What's Good. What's Bad. What Should You Do?*

*Professional Perspectives—Tools and Techniques of the Trade. The Professional Development Committee encourages members to continue to explore topics after presentations at the local, regional, and national levels. We welcome your comments and article suggestions. Please contact Susan Siebers at 312/902-56759 or susan.siebers@kmz.com.*

### Introduction

Sweeping changes in information technology have forced us to rethink how we receive, retrieve, process and store information. A very visible effect of this information evolution is digital technology. Many of us now store significant portions of our collections digitally and provide access to this information through various technologies, such as CD-ROM and Internet-based applications. Nearly every library is doing, or thinking about doing, something with digital collections; many believe that digitization is the solution to the access and storage quandaries with which libraries have been faced historically. This digital solution, however, is not an absolute solution; it raises several significant technological questions. The most significant, and apparently the most overlooked, is how we preserve the physical technology upon which our digitized information is stored.

### Preservation Background

It is not uncommon for law librarians to create or convert information in a certain

format with the belief that the information will remain accessible forever (or at least a very long time).

Historically, unfortunately, this has not been the case. Quite frequently I have heard horror stories about how certain pieces of information are no longer accessible because the technology used to access it has become redundant. A well-known historic example of improper technology planning occurred in the late 19th century when the high demand for books resulted in publishers generating new materials hastily. True, the publishers responded to this market demand and produced the desired materials. Unfortunately, however, they failed to take into consideration the long-range preservation of these books. The result was books produced on acidic paper with a significantly shorter shelf life than books made with higher quality paper.

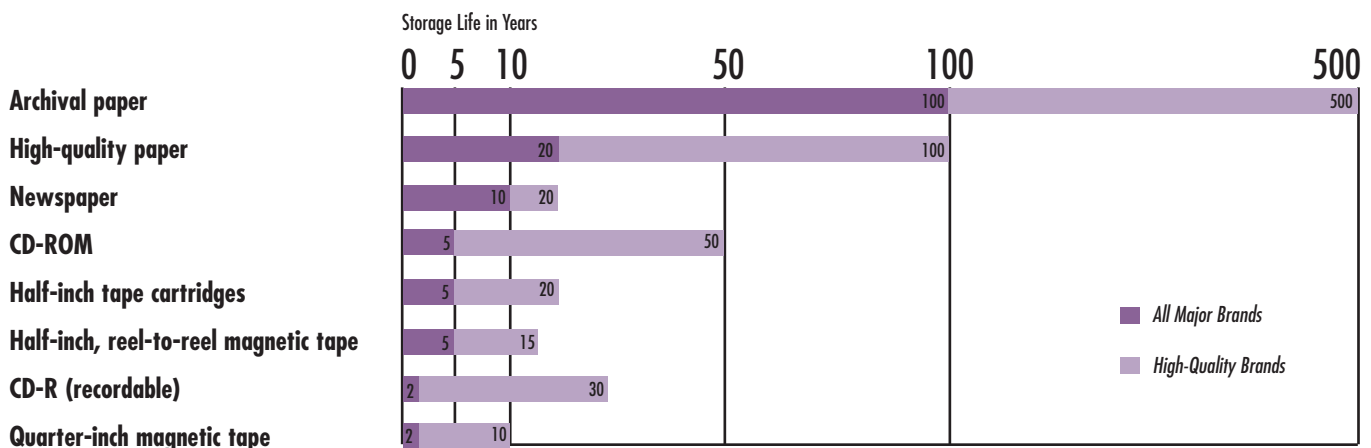
A more timely example of improper technology planning, or lack of technological foresight, may be found in the quarter-inch magnetic tape libraries and storage rooms. Magnetic tape has a

storage life of two to ten years (depending on the quality of the tape) but that did not deter users from storing important information on this medium. Remember when a majority of computer users saved their information on 8-inch floppy disks or the more recent 5 1/4-inch disks? Try to find a machine to access that information. Good luck!

To retain potentially valuable information, those storing information on various types of technology with a finite storage life will have to take steps to preserve it in a new format, through use of more durable technology, or by some other means. Some more technologically savvy librarians are aware of this problem and have attempted to address it on various levels, but not enough is being done to ensure that important information is not destroyed or rendered useless technologically. Most of us are employing only short-term thinking about digital information storage. We do not think that this is a real problem or that it is something we need to address immediately. This grave mistake will have a significant impact on the state of information storage in time.

## Life Expectancy of Storage Media

*Old newspapers last about 20 years; high-quality magnetic tapes can last up to 15 years*



Note: Assumes medium is properly stored at 68° F and 40% relative humidity • Source: National Media Lab, St. Paul, Minnesota ([www.nml.org](http://www.nml.org))

# A Desktop Learning Opportunity

## Storage Media Life Spans

The life expectancy of various storage media varies greatly. In fact, most forms of storage do not provide very effective long-term storage at all (see chart). As the chart indicates, paper is still the most reliable form for preservation. The capacities of other media are limited to two to 50 years. The longer-term numbers provided here (50 years for CD-ROM) have not even been adequately tested so these numbers are speculative. The question remains: how can we effectively store electronic and digital information without risking the loss of the information due to evolving technology? There is no easy answer and there are a host of options varying in effectiveness and level of risk.

## The Options

Determining what preservation strategy to employ will be your most difficult task. Once you decide to store information in a digital or electronic format, you must analyze the type of information to be stored. Electronic text may be more suitable for one type of storage format; complex sound or picture files may require another. Next, you will need to ensure that the information will have a long life. This is not a simple task: you must realize current technological limitations and tread carefully into any project that may jeopardize any information entrusted to you. Below are some options.

One of the more common choices law librarians make is **migration**—the periodic transfer of digital materials from one hardware/software configuration to another, or from one generation of computer technology to another. A simple example is word processing applications, most of which permit the user to save a document in a variety of formats. The application usually lets the user save a document in a different word processing format or in an updated or older related format. This operation represents migration of data from one application to another.

**Refreshing** involves transferring digital materials to a new medium—for example, saving information from a 5 1/4-inch floppy disc to a CD-ROM, or from a CD-ROM to a DVD refreshes the information

from an older to a more durable or newer technology.

A third strategy is **technology preservation**, which requires the user to physically maintain the actual technology needed to read the digitally preserved information. Although enjoyable to some, holding onto and ensuring continued operability of old technology (for example, an old eight track player, Betamax player or Commodore 64 computer) for “someday” access to information usable only on those machines is not feasible. Also, this option does not take into account the life expectancy of the storage medium to be used in conjunction with the technology.

**Digital archaeology** is another untenable option that may seem attractive. Baseless in theory and practice, this option is premised on simple trust in future endeavors of computer engineers. More specifically, it presumes that, by the time you have to worry about possible loss of information, your computer engineers will have figured out how to solve the problem.

Another strategy is **emulation**—retaining information about how the original digital information was created and accessed so that access can be accurately and faithfully reproduced. This option is designed to afford you the ability to retain the functionality, look, and feel of the original document and retrieve it using the original standards. With more and more documents created electronically, this option provides no real solution for documents that are not created in this manner.

Finally, there is **preservation through redundancy**, which requires preservation of all previous formats in which documents have been stored (8-, 5 1/4-, and 3 1/2-inch floppies, CD-ROMs, and DVDs). I call this the “when in doubt, keep it all” theory. This strategy requires significant amounts of storage space and the continued ability to support the aging technology.

## What Should You Do?

Since none of the above strategies seems to provide a reliable solution to the digital preservation question, employing any one

of them should be done with great reservation. Similarly, you should not advise someone else to employ any of these strategies without making that party fully aware of the potential implications of their decisions. You must inform that person that the risk of losing the information far outweighs the potential value of digital preservation.

Therefore, any preservation strategy must ensure that there is minimal risk of loss of information. The only feasible solution is the **digitize-microfilm strategy**. This strategy requires the creation of both computer output microfilm (COM) and digital images of the document and thus accomplishes dual desirable functions: preservation and access.

Microfilm is the most durable form of preservation and is readable as long as you have a microfilm reader. Similarly COM technology provides a high quality copy of the actual image but permits the information manager to copy or convert that image into other digital formats. It is almost the equivalent to having access to an original for an immeasurable (but finite) period of time. This enables the information manager to bypass the digital preservation concerns that must be addressed when considering the other various methods. This strategy also permits you to convert the microfilmed image to just about any digital format into the future as digital technology continues to evolve.

## Conclusion

Ensuring that historically pertinent information remains intact and usable well into the future should be one of the main priorities for law librarians. Similarly, digital access to your library collection must also be provided. However, neglecting to develop a digital preservation program that satisfies these needs is imprudent and should be avoided. A well-thought-out plan to ensure preservation and accessibility of digital information must be developed and implemented. The digitize-microfilm strategy will satisfy both these needs.

*Daniel R. Campbell (dcampbell@kinoy.rutgers.edu) is Head of User Services at Rutgers Law Library in Newark, New Jersey.*