

# Compression Preserves Pre-Digital Data

## TECHTIME

**I**n recent years, organizations have been “scurrying around” in an attempt to find the most efficient ways to store, manage and distribute the large volumes of electronic data that have descended upon their workflows.



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Organizations need to know how to capture such information, how to store it for quick access and archiving at the same time, how to optimize it for use across networks, etc. Because such questions persist, and the technologies change so rapidly, it's easy for an organization's pre-digital data (e.g., paper, Mylar and other physical “stuff”) to lie abandoned.

This is a shame for several reasons—pre-digital data hold a lot of information that isn't duplicated elsewhere and can't be recreated. On a larger level, the absence of this information's “voice” in analyses and assessments can falsely suggest that we live in a world that only began a few years ago. Such hubris regarding history, as we have heard, leads to repeating its worst aspects.

### Backwards Incompatible

But when attention is turned to pre-digital stores, with the intention of applying technologies that might bring them into the electronic workflow, the technologies often aren't “backwards compatible.”

For example, a large, hand-drawn and hand-colored map can easily be scanned, but the size of the raw electronic file created in the process renders it unusable in most software applications, and it's impossible to send via a network or publish on the Web. The files may be compressed to make them easier to store and use, but, depending on how they're compressed, the visual details that make them so valuable in the first place may be lost.

It's important, therefore, to pause long enough to bridge the gap between old and new forms of visual information, before moving so far ahead that such material is forever forgotten.

### History in Mylar

An exemplary case is Rockville, Md., a city of about 57,000 that owns a significant portion of its

utilities, including water, sewer and storm drain systems. The city maintains thousands of engineering drawings generated in the development of those utilities and capital-improvement projects, and it scans them so other city employees can use them online. It also reviews development and improvement plans in accordance with the city's design standards.

In all, Rockville preserves a catalog of more than 8,500 original records dating as far back as the 1940s for viewing online and printing. To preserve and extend the usefulness of such documents, Rockville started scanning them to TIFF format using a large-format scanner. Originally, all documents, whether color or grayscale, were scanned in black and white at just one bit per pixel for more efficient use of storage space, quicker transfer via networks and easier online access.

### After TIFF?

Although one-bit scanning reduced file sizes, it made preserving the detail inherent in color and grayscale drawings impossible. In addition, the resulting image files didn't display well in the city's many installed ArcView 3.2 viewers.

Wavelet-based technologies, such as the ISO-standard JPEG 2000 format and LizardTech's MrSID format, enable significant compression in a lossless file, meaning that no image data are discarded although the file size is reduced by as much as half. Visually lossless compression retains all the image detail that most applications and users need, while saving 95 percent on storage and transfer burdens.

Using LizardTech's GeoExpress, for example, Rockville now preserves color information at 24 bits per pixel for an average file size of 6MB, whereas the same file would measure 100MB uncompressed. Similarly, grayscale images preserved at eight bits per pixel go from an average of 33MB uncompressed to 2MB compressed.

Benefits of wavelet compression include greater value in a smaller file and easier online viewing. Rockville now serves color and grayscale versions of its documents with all image details preserved, but the smaller file sizes make transfer time and download much quicker. And compressed images also display with better quality than the one-bit TIFFs in Rockville's legacy GIS viewers.

There are several makers of compressed image formats, and users should choose a format carefully based on needs. Whatever format is chosen, users can rest easy knowing that compressed image technologies allow them to put pre-digital assets back on the “information highway” where they belong.

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