

## **Best practices for producing quality digital image files**

*Version 1.0, 21 April 2006*

Image files in digital form can be generated in two ways. The first is through a process of converting an analog format such as a 35 mm photograph or a page from a book to a digital format. This process is usually referred to as digitization or scanning. The second method is by using a digital camera. Files created with a digital camera are often referred to as “born digital.”

### **General Recommendations**

The greatest stability in file formats created by either method is creating and depositing digital images in TIFF (.TIFF, .TIF) or JPEG (.JPEG, .JPG) file format. TIFF and JPEG formats are currently Level 1 formats for deposit to Deep Blue. Level 1 formats receive our highest level of preservation support, and we make our best effort to maintain all the content, structure and functionality of the work you deposit by taking appropriate preservation actions over time. Note that JPEG 2000 is not the same as JPEG; JPEG 2000 is an entirely new image file format, and moreover is currently a Level 2/“Limited” format—one for which we will preserve the content of the deposit, but whose appearance and functionality may not be preservable over time—as adequate conversion tools are not yet available.

When using imaging software applications, other “file save” as options you may see include GIF (.GIF), PNG (.PNG), BMP (.BMP) and Photoshop (.PSD) formats. These file formats are not recommended for deposit to Deep Blue. PNG is a Level 2 format in Deep Blue, meaning that the repository will make “limited” efforts to maintain the usability of the file. GIF, BMP and Photoshop are Level 3 formats; Deep Blue will make no active effort to monitor the file format, and can only preserve it “as-is.”

### **To create quality digital images either through a digitization process or by using a digital camera.**

*If you are “digitizing” an item from an analog to a digital image format, some best practices to keep in mind when setting up the scanning specifications include:*

- Scan the item at least 600 (DPI) dots per inch. If the original item is a negative or slide however, you should scan the item at least 2000 DPI. The DPI option is usually found under the file menu category – Resolution.
- Select 8-bit grayscale or 24-bit color for the depth and color. This option is often found under the file menu category-- Image Type.
- If your scanning application provides choices under the file menu category “Save as...”, save the file as: (in order of preference):
  - TIFF

- JPEG
- For TIFF, the following lossless compression schemes are acceptable: ITU Group 4 (for black and white material only), LZW, and Flate (Zip).
- For JPEG compression, use the highest quality option available.

Note that scanning settings will depend on the type of scanner and scanning application that you are using. A good way to find out what your options are is to look at the “Help” file included with the application.

*If you are using a digital camera, some best practices to keep in mind include:*

- Check the options you have for image resolution. If you can set your camera to a certain specification, select the highest resolution possible.
- When looking at the options you have in your camera, see if you can store the images in an **uncompressed** format.
- Some digital cameras offer different capture formats for storing images in-camera. Most offer different levels of JPEG (lossy) compression as well as uncompressed TIFFs and sometimes uncompressed RAW. If uncompressed TIFF is an in-camera option, **this is the best option.**
- As an alternative option, the RAW format may be used in-camera but should be converted to **TIFF** once transferred to the computer. The RAW format is uncompressed and of high quality and will allow quick transfer from camera to computer. However, the RAW format is not standardized and is proprietary to the camera manufacturer and sometimes to the specific model of camera.

*If you are using Photoshop to manipulate an image:*

- If you are using an application such as Photoshop to manipulate the image in any way, save the final version of the image in **TIFF** or **JPEG**. If you have the option, save the files as **uncompressed**. Note that the Photoshop (.PSD) file format is a **Level 3** format for deposit to Deep Blue. This means that if you deposit the image file as a .psd, no active effort will be made to monitor, transform, or migrate the file overtime.

## **Questions?**

If you have any questions, please contact us at [deepblue@umich.edu](mailto:deepblue@umich.edu) and we will be happy to help you.