THE IMPLEMENTATION OF DIGITAL PHOTOGRAPHY IN LAW ENFORCEMENT AND GOVERNMENT

THE IMPLEMENTATION OF DIGITAL PHOTOGRAPHY IN LAW ENFORCEMENT AND GOVERNMENT

An Overview Guide

By

CRAIG A. COPPOCK

With Special Assistance from

Scott Kruse
Computer and Electrical Specialist

and

Erik Berg
Forensic Specialist
Tacoma Police Forensics Unit

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PREFACE

It is hoped that management of law enforcement and governmental agencies will take the responsibility of the implemention of digital photography seriously. There are many aspects of this new technology that must be addressed to ensure the efficient and effective use of both the computer hardware and of personnel. Simple oversights can cost thousands of dollars in lost productivity, and for law enforcement the possible loss of criminal cases. Each agency and/or their departments should be able to extract the appropriate information from this guide that is best suited for the implementation of their photographic applications. Some may need only basic technical information, while others may consider all aspects of digital photography implementation contained herein.

Additional books are available that cover more than just the implementation of digital photography, and include the more technical details of digital imaging in general. Also, this guide is intended to complement technical publications by law enforcement technical support commissions, groups, or associations.

This guide was completed with technical assistance from computer and electrical specialist Scott Kruse of Wenatchee, Washington, and with a special contribution from the presentations of forensic specialist Erik Berg of the Tacoma Police Forensics Unit. I am grateful for their assistance.

C.A.C.

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Chapter 1

INTRODUCTION

The technical revolution that is now upon us is a product of the golden age of science. We are fortunate to be able to participate in these exciting times. Digital photography, also called digital imaging, now represents a large share of the money spent on photography. Whether to implement digital photography is not the question. The question is how to implement digital photography with respect to legal aspects, platform compatibility, efficiency, productivity, and overall cost savings as compared to traditional photography. It is not prudent to implement digital photography on any scale without a comprehensive long-term plan. Also, if your agency currently operates an in-house photographic lab, it is best to implement a digital photography solution before your current processors and printers need replacement. This would allow the lab to remain operational until the demand for printed negatives subsides and the lab is totally replaced by digital images. For many larger agencies this transition may take up to two years. After which, the remaining active cases that were documented with negatives could be taken out for printing at an independent laboratory. If only a few negatives remain to be printed this could be accomplished with a negative's conversion to digital photography via a film

scanner (see section 5D).

There are many aspects of digital photography, and digital photography's computer hardware that require careful consideration. A comprehensive plan combined with proper management of a centralized computer system will be needed. Without this, a department may implement an insufficient digital imaging solution that may suffer from problems with image resolution, long-term compatibility, image authentication, image storage/archive, and evidence chain of custody protocols. In addition, an non-centralized digital imaging solution may lack proper access controls and may be inefficient in itself and inefficient in its use of personnel. This guide is designed to prevent the investment of time and money into relatively slow and obsolete computer interfaces, as well as, provide the needed information to make a system effective and manageable. It is well known that in the fast paced computer industry, everything is obsolete once it is delivered to the store. However, it is best to see which major companies are investing in the technology that is pertinent for digital photography, as your computer can only be as fast as the slowest part. "Times and conditions change so rapidly that we must keep our aim constantly focused on the future" (Walt Disney).

In digital photography, it is also important to understand long-term trends for sake of compatibility and image archiving purposes. Who's responsible to follow these trends in your department? Remember that a computer system designed for digital photography *is not the same* as a computer system used in business or home use. This important fact cannot be overstated.

The creation of a digital photography workstation *requires* considerable attention to many details that are relevant to digital photography's special demands on computer hardware. For instance, a single uncompressed high resolution digital photograph will not fit on a traditional 3.5" floppy due

to its limited data capacity. In fact, some computer manufacturers no longer include 3.5" drives on their computers! A high resolution photograph can range from several megabytes to hundreds of megabytes of data depending on acquisitions or scanning resolutions. Accordingly, high resolution is the key to digital photography. This high resolution can be thought of as large quantities of data (see Figure 1). Another such detail may involve your monitor. A 20" CRT (cathode ray tube) monitor will not operate in true color with only 2 megabytes (MB) of video random access memory (VRAM) on the graphics card. These are just a few samples of digital photography implementation issues. While all undesirable computer gremlins cannot be avoided with this guide, it should greatly simplify building a workable digital imaging workstation that will meet the digital photography needs of various law enforcement and government agencies now and well into the future. The information contained in this guide can be utilized in whole or in part, depending on the needs of the user.

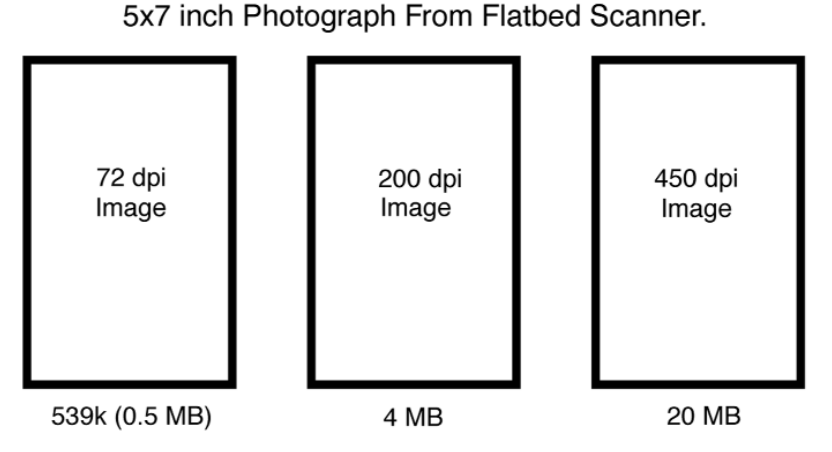

Figure 1. Illustration of the relationship between file size in megabytes (MB) and resolution in dots per square inch (dpi) of a color photograph.

It is of course, assumed in this guide that the reader is after a digital photography system that will handle all current, many anticipated needs of law enforcement and government as it relates to evidence issues and various other photographic projects. Such a system will need to be easily expandable for future hardware additions and software upgrades. Accordingly, you could consider yourself a computer *power-user*. That is, you will need to assemble a fast, powerful, and stable computer system. Simplicity and ease of operation should also be a major concern. This will allow for more control over the system's use, expansion, and upgrades. This necessity for a proper design will become apparent as the basic parts of a custom digital photography workstation are discussed in the following sections.

The basic reason for becoming a power-user is that time is money. A fast, powerful, and easy to use computer system will save you time. With your saved time your productivity will be increased, your system will be able to handle most any photographic task, and your system will be compatible longer. Also, software improvements cause increased demands on your computer's processor, available RAM, and hard-drive space.

The requirements for a fast, reliable, and upgradeable system must be designed into the original system. It may not be wise to convert an older computer system into a digital photography workstation unless it is anticipated that system will have very limited use. The following is a basic list of what an *ideal* digital photographic computer system would look like. This ideal system contains the elements needed for a complete digital solution to the traditional photography question. *These system components can, of course, be tailored to meet the needs of individual agencies.* The details of this list are covered in sections 5 and 6 of this guide.