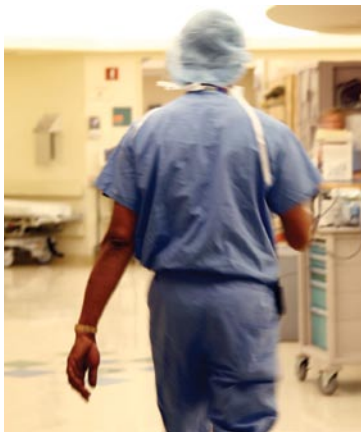


Adobe® Photoshop® CS3 Extended for medical professionals

Maximize the power of digital images to document and facilitate patient care and enhance communication with patients and colleagues



The challenges of patient care and communication

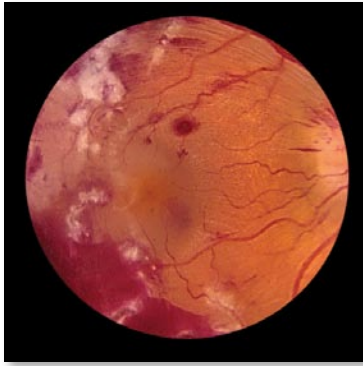
As the demands on medical professionals to do more for more patients in less time continue to grow, so does the importance of digital images in medicine. When used effectively, digital images help physicians understand a patient's condition and the progress of treatment faster and more efficiently, and enable them to communicate better with patients and colleagues.

Historically, it has been difficult to use medical images effectively. The information contained in these images is not always clearly evident, and the tools for extracting and communicating that information, and for managing the sheer volume of image data, are not as versatile or as effective as they should be. Murky or ambiguous images that are hard to access, display, and use can easily cost medical professionals more time than they save.

Making digital images effective

Adobe Photoshop CS3 Extended software helps medical professionals efficiently maximize the power of their digital medical images. It includes all the features and capabilities of Adobe Photoshop CS3 and adds new tools and capabilities designed for physicians, medical professionals, and biomedical photographers in a wide range of fields, including radiology, pathology, ophthalmology, surgery, cosmetic surgery, dermatology, cardiology, and dentistry.

With Adobe Photoshop CS3 Extended software, medical professionals enjoy both the highest quality imaging toolset and the broadest range of digital imaging capabilities, including built-in support for the DICOM image format. Helping you achieve better clarity and accuracy in your digital medical images, Photoshop CS3 Extended can assist you with patient care, facilitate collaboration with colleagues, and dramatically enhance patient communication. Extract quantitative data from images with new measurement and counting tools. Visualize and demonstrate your capabilities for patients, and show them possible outcomes of treatment. Even strengthen your lectures, presentations, journal articles, and books with the highest quality, most flexible image illustrations. Adobe Photoshop CS3 Extended can improve effectiveness and save physicians and other medical professionals time in the many ways they use digital images.



Richard Hackel, director of Ophthalmic Photography at the University of Michigan Kellogg Eye Center in Ann Arbor, Michigan, uses Adobe Photoshop CS3 Extended to correct and enhance fundus photographs—images of the interior of the eye. Hackel uses layers and masking to clean up images, as well as brushes and the Lasso tool to fine-tune contrast, brightness, and color balance.

“Although the lighting is often imperfect in fundus photographs, I can correct it using Adobe Photoshop CS3 Extended,” says Hackel. “The software also helps me eliminate unwanted shadowing that can occur when retinal images are sewn together using specialized, automated montage software.”

Photoshop CS3 Extended pays off for medical professionals

Among the many benefits it offers medical professionals, Photoshop CS3 Extended can help you:

- Facilitate patient care
- Derive quantitative data
- Improve communication with patients and colleagues
- Present and publish work

Facilitate patient care

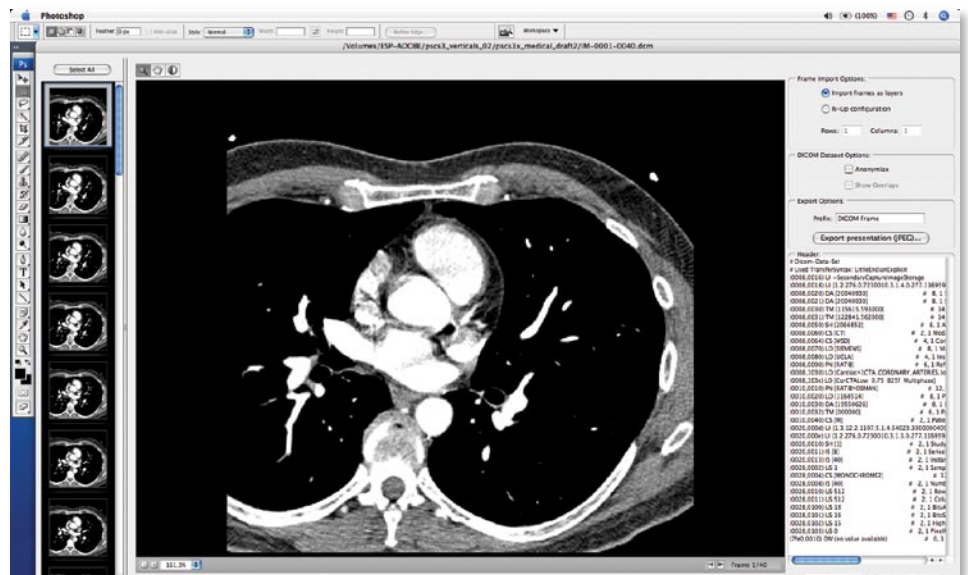
The industry-leading image processing tools in Adobe Photoshop CS3 Extended software help physicians and other medical professionals see and use the diagnostic and treatment information contained in digital medical images.

Photoshop CS3 Extended software’s unmatched range of high-quality correction tools for image contrast, brightness, sharpening, color correction, and more produce clearer images that reveal more detail and are easier to interpret, either with the naked eye or by using quantitative image analysis tools. With new Smart Filters and other nondestructive editing tools, you can make changes and adjustments without altering the underlying pixel data, thereby ensuring the integrity of the original image and allaying potential patient care, ethical, or legal concerns.

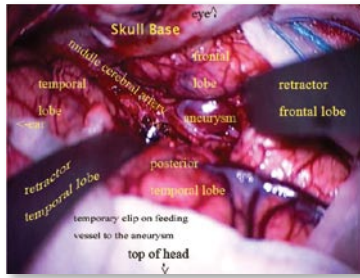
Equally important to busy medical practices, a high proportion of Photoshop CS3 Extended software’s processing power can be automated, producing top-quality results in less time and helping to ensure consistent results from day to day and operator to operator. A dental imaging professional, for example, can set up an automated process for first optimizing a series of intraoral images from a given patient and then combining them in a single montage image. Once written, the automated process produces a consistent result for every patient, and assistants can easily run it after minimal training.

Photoshop CS3 Extended also offers powerful and time-saving compositing and image overlay tools, including Align by Content and Image Stack processing. Physicians can track the progress of disease or of a treatment regimen by efficiently overlaying multiple images of the same region taken at different times, making any differences easy to identify. You can automatically process multiple images—such as a series of radiological images from one patient—that are layered in a single Photoshop document into a composite, which previously required painstaking manual blending.

And support for the DICOM medical image file format is built into Photoshop CS3 Extended, so its unmatched processing power can now be directly applied to the native images produced by a variety of medical imaging devices. Photoshop CS3 Extended offers a range of options for working with multi-image DICOM files, as well as embedded metadata and patient information.



Medical professionals can now use Photoshop CS3 Extended to analyze DICOM files, such as this cross-section view of a torso, produced by a variety of medical imaging devices.



Dr. Joel Winer, M.D. of WellSpan Neurosurgery in York, Pennsylvania, uses Photoshop CS3 Extended to correct and clarify digital photographs that he captures in the operating room during surgery. He frequently needs to make adjustments to brightness levels, contrast, and color balance because operating room lights often cast red or orange hues or are otherwise not ideal for photography.

“Images are a universal visual language that lets everyone avoid medical jargon, but they’re typically not very clear in their raw forms, such as MRIs or CT scans,” says Dr. Joel Winer, M.D., head of WellSpan Neurosurgery. “By combining, clarifying, or drawing attention to portions of images with Photoshop CS3 Extended, I can obtain better consultations from other specialists and also help patients understand the rectifying actions and possible complications of their conditions.”

Dr. Winer often creates layers in Photoshop CS3 Extended and places MRIs or CT scan images on top of anatomical illustrations to give patients more context and clarity.

“Patients want to see the enemy and understand what’s going on in their bodies. That’s what Adobe Photoshop CS3 Extended and surgical videos help me do,” says Dr. Winer. “It sounds like a small thing, but it’s vital in terms of peoples’ ability to understand, cope with, and combat their conditions.”

Derive quantitative data from images

Previous versions of Adobe Photoshop have provided qualitative data from images—for example, showing whether a given region is larger in one image than it was in the previous image. Through its new Analysis menu, Adobe Photoshop CS3 Extended can now easily provide quantitative data as well. In other words, it can not only derive that a region is larger, but it can also measure exactly how much larger—or calculate the area, the density, or the perimeter.

With Photoshop CS3 Extended software’s new analysis features, you can specify the scale of an image using any known value—the width of a medical scan, for example. Then use the Ruler tool or any of several selection tools to define and measure a region, and send the results to a dedicated measurement log that keeps a running record of your findings. The new Count tool lets you tally features within an image simply by clicking them with the tool. Its results can also be tracked in the measurement log, and the measurement and counting information recorded in the log can be exported to any spreadsheet or database program in plain-text, comma separated value (CSV) format.

Improve communication with patients, colleagues, and others

Communicating effectively with patients is a challenge faced by all medical professionals. Visual explanations can obviously be much more effective than words alone, but specialized medical images are often a mystery to the untrained eye. Using Adobe Photoshop CS3 Extended software’s class-leading tools, the subtle information contained in the raw form of a medical image can be highlighted, enabling physicians to give patients a better understanding of their condition and treatment options and to do it in less time. And many cosmetic surgeons and dentists use the advanced editing tools available in Photoshop CS3 Extended to help patients visualize how their appearance may improve after a procedure or treatment.

For communicating with colleagues, Photoshop CS3 Extended offers the best toolset for easily and quickly annotating images. A doctor seeking a second opinion, for example, can add text, arrows, and other graphics to an MRI or CT image, and then easily save it in a format that’s suitable for sending by e-mail or posting on the web. A neurosurgeon can use digital imagery and Photoshop CS3 Extended to document a patient’s brain surgery, enhance the clarity of the images, and annotate the photos so that another doctor who treats the same patient years later has a visual record and explanation of the previous treatment.

The editing and annotation capabilities, along with the powerful compositing and analysis features built into Photoshop CS3 Extended, make for higher quality documentation images such as a before-and-after series. Many medical professionals make such documentation images for their own records, or they simply like to provide them as a service to patients.

Present and publish work

In the course of their careers, many physicians and other medical professionals are called upon to publish or present their work, and clear, informative images are a key ingredient in compelling presentations. Adobe Photoshop CS3 Extended offers an extensive range of powerful and versatile tools for preparing high-quality images for publication or for conference lectures and seminars.

Of course, Photoshop CS3 Extended excels at the basic image processing tasks that all published images require, such as cropping, sizing, adjusting contrast, and sharpening. But beyond that, you can use powerful advanced tools in Adobe Photoshop CS3 Extended to polish your work and add impact. You can easily add graphics and text annotations to images and highlight regions of interest by blurring backgrounds, adding color to black-and-white images, or selectively brightening a particular area of an image. Now you can also use the new Timeline palette to easily generate time-series animations. For example, you can combine a sequence of still images of a wound healing, taken at regular time intervals, into a single animation and export it to a common motion-image format, such as QuickTime, MPEG, or FLV.

"One of the greatest advantages of Photoshop CS3 Extended is its ability to import DICOM images directly. This eliminates hours of wasted time and steps that were previously required to convert scans to a format that Photoshop could read. Quality is also preserved, which can be vital with regard to subtle findings.

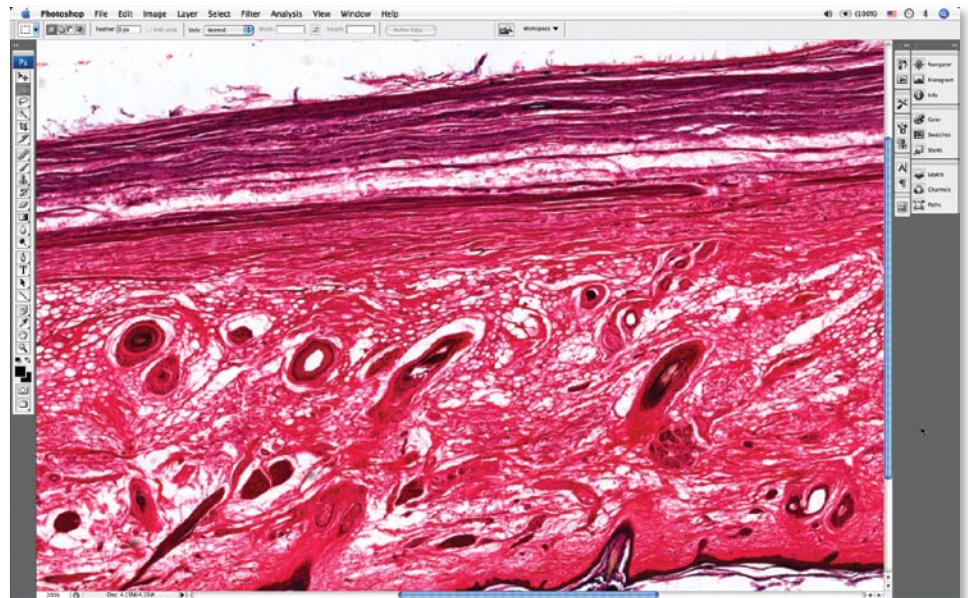
"It's great to see Adobe providing tools in Adobe Photoshop CS3 Extended for medical practitioners. It's simple: the more time we save and the better we can communicate, the more we can help patients."

Dr. Joel Winer, M.D.,
WellSpan Neurosurgery

Enhanced power for medical images

Many medical professionals have been using Adobe Photoshop in their practices for years, recognizing its value as the unchallenged standard in digital image processing precision and versatility. With that legacy as a foundation, Adobe has built Photoshop CS3 Extended with new power tailored to the demands of a wide range of medical professionals.

From its new nondestructive adjustment tools to its quantitative analysis features and its support for the DICOM image format, Photoshop CS3 Extended is designed to help medical professionals improve patient care; enhance patient education; collaborate more effectively with colleagues; and produce stronger articles, books, and presentations—in short, to help medical professionals use images to accomplish more in less time. Discover new dimensions in digital imaging with Adobe Photoshop CS3 Extended.



Photoshop CS3 Extended offers an extensive range of tools to prepare high-quality medical images for publication or presentation. This image of the dermal layer was shot through a microscope and then enhanced in Photoshop CS3 Extended.

For more information

For more information about Adobe Photoshop CS3 Extended or to download a trial version, visit www.adobe.com/go/ps_medical.

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