Going paperless: On what resolution to use for document scanning

Overview

When orthodontic practices go paperless, the question of resolution arises: what is the best resolution to scan documents? Rumors say that 300 DPI is the level that is suggested on-line for preservation of materials which will be destroyed but need to be maintained from a legal perspective. However, this resolution produces large amounts of data and can eat up drive space quickly.

X-Ray

The recommended resolution for 2D Cephalogram X-Rays is 12bit grayscale (ca 4k shades of grey) and 300DPI scanning resolution. This is based on published studies, that state that below this resolution, the identification of landmarks becomes less reliable. However, this is crucial only for x-ray which need to be measured, i.e. cephs and, in some rare cases, postero-anteriors. For all other x-rays, the minimum resolution to get the job done can be much less because the job gets usually done by simply looking at the radiograph, without taking any measurements.
In any case, i would avoid BMP: they can get extremely large and slow to manipulate. DICOM would be the way to go. But if that's not an option, a high-quality JPG works great too: It can provide some compression, while keeping the images usable.

Paper

While 150 DPI is enough for practical usefulness (in other words, for being able to read and understand all information which was present on the paper version of the scanned document) of maybe (i'm guessing based on my personal experience) 90% of printed material, 300 DPI will make a difference if one wants to OCR the scanned documents, or for those 10% of documents which have a *very* fine print. I have no idea about the legal perspective. However, one would expect a modern database system not to have any issues with 300DPI scanned PDF files. I would personally therefore keep scanning at 300DPI, and upgrade storage solution/practice management server to a 1 or 2TB drive. A 2TB should allow an average of 180MB/patient, for 10k patients. That's about 20 9MB images (very high 300DPI xray or other). And in a few years, when they start getting close to the 10k patients, the practice probably upgrade storage to 10TB or so.

See Also

- http://blog.legalsolutions.thomsonreuters.com/practice-of-law/the-paperless-law-practice-getting-the-most-out-of-your-scanner/
- http://www.slideshare.net/appfolio/green-paperless-a-property-managers-competitive-advantage