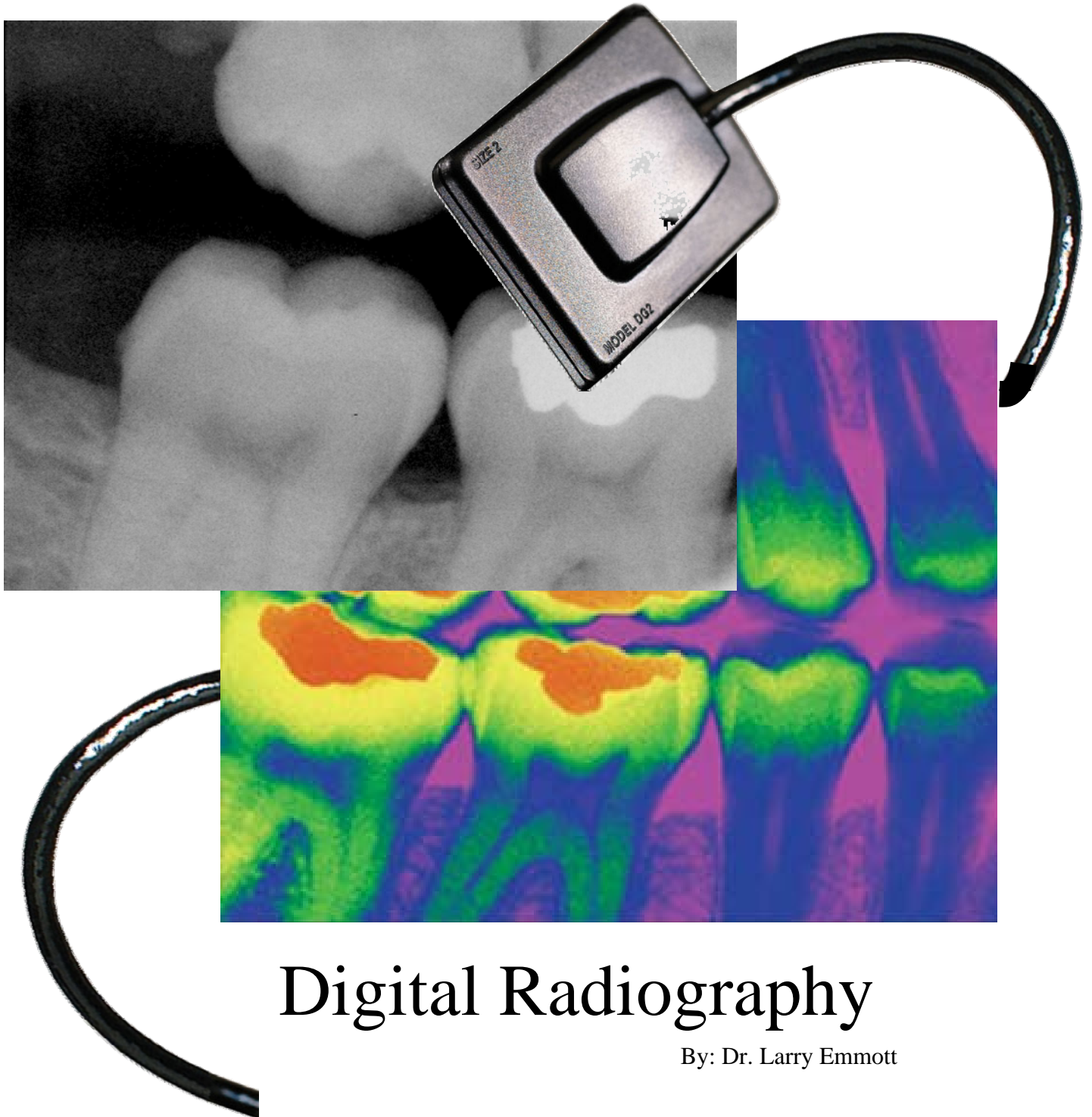


Technology Guide



# Digital Radiography

By: Dr. Larry Emmott

Digital Means **NO**

**No Processor**

(That needs to be repaired every other week)



**No Chemicals**



**No Cleaning Up the Processor**



**No Ruined Films**





She waits some more, no film. The hygienist starts knocking on the door, no film. This time the machine did eat it. Harriet pries off the lid and there it is stuck between two rollers. She pulls it free and holds it up to the light. It looks really dark from over processing and there is a jagged white scar across the middle from the rollers.

Back with the patient Harriet is ready to try again. Mr. Grumple has been here almost an hour, he is still in pain and now he is clearly ticked off. Joanie the front desk fool person is standing in the hall frantically gesturing toward all the people in the waiting room and pointing at her watch. Dr. Paperman steams in, sees what is going on and asks, "Where is the x-ray?" Harriet bursts into tears.

"I'll never understand women." Paperman mumbles.

## Frequently Asked Questions

- Is digital radiography cost effective?
- Computer products often go down in price over time. Should I wait to buy digital radiography?
- Will digital radiography completely replace all my film needs?
- Will digital radiography work with my existing x-ray tube?
- Is the diagnostic quality of a digital radiography system as good as that of film?
- How big are the sensors?
- What about the Cord?
- How can I use digital radiography with my practice management software?
- How safe is my data with digital radiography?
- Will I have to change the way my practice handles radiography?
- How do I sterilize the digital radiography sensor?

### **Is digital radiography cost effective?**

Yes. Digital radiography will save time and eliminate the cost of film and the toxic waste associated with processing. Dentists using this technology consistently report a rapid return on investment.

### **Computer products often go down in price over time. Should I wait to buy digital radiography?**

The economies of scale which have driven down the price of many high tech products simply do not apply to digital x-rays. There is no general consumer demand outside of dentistry. The market is limited, and the cost of development, service and support is very high.

### **Will digital radiography completely replace all my film needs?**

Yes. Intraoral sensors and digital panoramic machines can replace all film and eliminate the need for a dark room and a film processor.

### **Will digital radiography work with my existing X-ray tube?**

If your X-ray tubes are more than ten years old, you may find that you get better images if you purchase a newer "digital ready" DC tube system.

### **Is the diagnostic quality of a digital radiography system as good as that of film?**

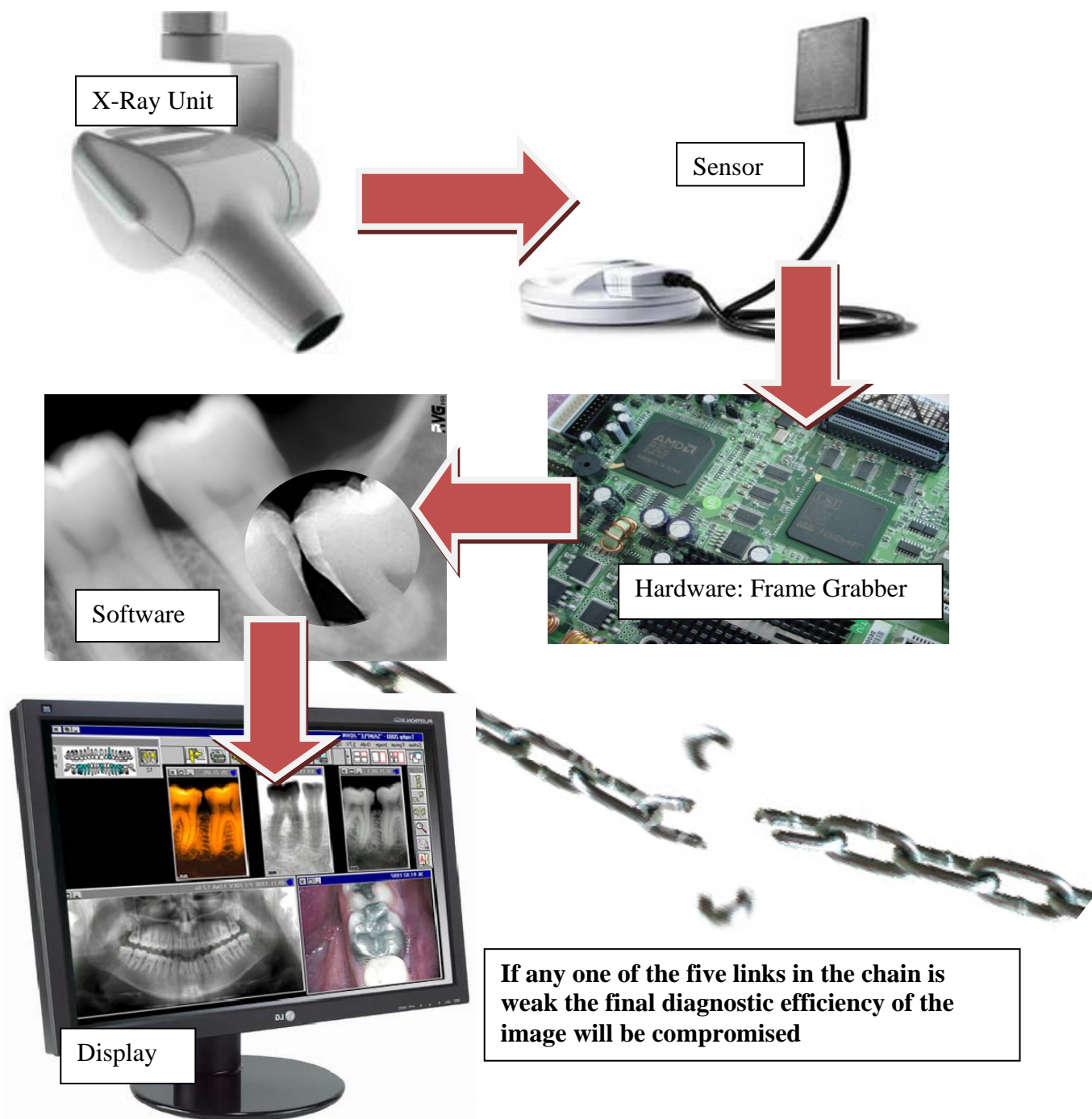
Digital x-rays are not the same as film. But that is OK. What we really want is not something that is just like film; what we should really want is something that is diagnostic. Based on that

**Software:**

Like the sensors all the software is adequate but all the software is not equal. Many of the software tools have limited diagnostic value. The best measure of software is diagnostics and ease of use. For example, does the software have pre-set optimal settings to detect various conditions such as caries, bone loss, soft tissue or periapical conditions? And how many mouse clicks does it require to go from one function to the next or one image to the next?

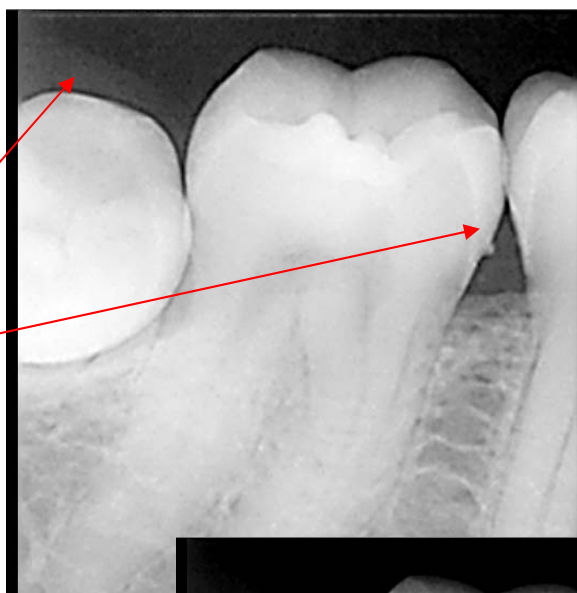
**Monitor:**

Even the best images will look bad if the monitor is inadequate. The minimum specifications for a monitor to diagnose digital x-rays are a contrast ratio of 400:1 and a dot pitch of 27 or less.



## Optimizing the Image for Diagnosis

**Soft Tissue Optimization:** note the shadow of soft tissue over the third molar and the obvious calculus on the mesial of the second molar. The bone and enamel are a little light.



When looking at a radiograph for diagnosis we are looking at different tissues; soft tissue, bone, tooth, enamel, roots and the special periapical tissues. We are also looking for different pathologies including caries, bone loss, fractures, periapical lesions and so on. With an old fashioned film radiograph we have to interpret all of this from a single view. With a digital image we can optimize the image for each tissue and each pathology.

**Bone and Endo Optimization:** Note the soft tissue is no longer apparent but the bony detail is very clear even in the magnified view.



**Enamel DEJ Optimization:** Note the soft tissue and calculus are no longer visible. The whole image seems dark. However look at the enamel and the DEJ. That area is very distinct.

