

X-Ray System Integration

WHAT IT MEANS (OR WHAT IT SHOULD MEAN)

by Jason Simon

Integration has been used by so many people and by so many companies that it has ceased to mean anything. Integration has meant many things in the past: during the 1970s, it meant a very noble idea of creating mixed-race schools. Direct and easy to understand — but very complicated to really understand the full impact and implications.

These days in veterinary diagnostic imaging the term integration is still a noble cause, though perhaps not as noble as in the days of old, and is still a complicated concept. This article will attempt to put meaning back into the term: a real life look at what it means to integrate your practice; why you should, and why you shouldn't.

For manufacturers and software developers: the path to true integration.

Integration is defined as *the process by which smaller pieces of software are brought together to form a larger piece of software that was designed to solve a problem*. Integration of digital x-ray systems should be easy and automatic, create efficiencies, eliminate costly mistakes, and provide convenience; all of which should make your business a more profitable and enjoyable workplace.

In our industry, integration means connecting the data contained in patient information systems, practice management systems, accounting data, x-ray exposure data, images, diagnoses, patient history and more. Integration can be defined in terms of the following workflow: to understand integration, understand workflow.

When a *client* enters your hospital with their dog named “fluffy;” for an x-ray, the client's demographics as well as the animal's demographics are collected by the front desk where they are entered into the practice management system along with possible *services* needed. In the above sentence, each word in italics generates data that is entered into a computer in one form or another, or is a critical part of integration. So, the front desk enters all of fluffy's information and the tech selects “take an x-ray” from the practice management system. The tech then proceeds as normal, measuring the animal and entering the measurements in the computer (which then sets the x-ray exposure automatically), entering patient history, positioning the animal, and ultimately taking an x-ray. The x-ray appears on the computer screen and is simultaneously entered back into the practice management system and added to an invoice.

By the time the animal is off of the table (when using direct radiography, “DR”), the doctor responsible for the patient can have reviewed the x-ray, made a diagnosis, and be consulting with the client while reviewing the x-ray, all less than one minute after the x-ray is taken. Thinking like an accountant, the efficiency gained from truly integrated DR is immense, promoting exam room turn-over and, in turn, client thru-put.

Integration in the above workflow eliminates many steps and the potential for many mistakes that lead to lost time and money. With an integrated system issues including lost, misfiled, mislabeled, unbilled, and poorly exposed x-rays requiring repetition of the process, become a thing of the past.

This example of integration can be achieved in multiple ways. For example, when the tech or front desk provides the practice management system with the animal needs and data, the practice management system integrates with a “Dicom Worklist” server. The digital x-ray system is also integrated with the Dicom Worklist server, allowing it to process the patient information from the front desk and make it available for automated input by the digital x-ray system. This eliminates double entry of information and the possibility for human error.

The digital x-ray system determines the appropriate exposure and, through further integration, communicates this information to the x-ray machine itself, eliminating the need to manually set the x-ray exposure, and eliminates the possibility of setting the wrong exposure. This further reduces the need for repeated x-rays as a result of tech error.

Furthermore, the digital x-ray machine is integrated with a Picture Archiving and Communications System(PACS) that distributes the images back to the practice management system which is, in-turn, integrated with the PACS system. The PACS system is also designed to facilitate viewing and distribution of images throughout the hospital.

Some practice management systems do a good job of incorporating image viewing software, others do not. If the image viewing software contained in your practice management system is inadequate (it won't let you change the contrast or rotate images easily) then you will need a PACS system.

Ok, take a deep breath (or two).

The above work-flow is not how most digital x-ray systems work. They may do some or none of the above and it all depends on how open your practice management system company, your x-ray vendor, and your PACS company are to working together.

There are some pretty complicated technologies that if not designed properly, or supported properly can be a real nightmare to manage (keep running). A little advice: get a work-flow definition, step-by-step, from your vendor so that you will understand exactly what integrated means to them, and exactly what effort is required in taking an x-ray. Most important of all, choose a vendor (manufacturer) whose ability to service you properly is something in which you feel confident.

The reasons to integrate your practice should now be clear. Although they are *few*, there are reasons not to integrate. First, you might be a single-doctor practice doing very little business and a few mistakes in imaging are tolerable. Second, a few thousand dollars could make a big difference in your life. Third, if we think of any other reasons we'll add them in the future.

Here comes the sales pitch: SimonDR and Infinity by ImproMed *integrate* completely as described above. Other systems probably don't do it all. Together we're on the leading edge of the wave of advancement.