Welcome to

Digital Orthodontics

Using CAD/CAM to offer in-office clear-aligner therapy

"Most orthodontists would fully expect to see a return on their digital investment, but what I didn't count on was the word-of-mouth and the flood of new patients it would bring."

Three years ago, I decided to take the leap and switch from a traditional impression workflow to a digital one with CAD/CAM.

It was a big investment—I now understand why a poll in the January/February 2016 edition of Orthotown showed that for 57 percent of orthodontists, the price to convert to digital imaging was preventing them from switching.

However, when you look at the effects digital imaging will have on your workflow and your business, the return on investment makes it all worthwhile. Here's my story.

First, a little background on my setup: With an intraoral scanner, Orchestrate 3-D software and a 3-D printer (EnvisionTEC Perfactory Micro), I'm able to take digital impressions, design a virtual treatment plan, print a series of models and use a vacuum-forming machine to fabricate clear aligners.

An assistant even assembles the finished product into a nice little package for my patients.

The design software's ease of use is what first made me believe that switching to in-house CAD/CAM could be possible. I've had such success with my 3-D printer that I'm currently looking to upgrade to one that can print more models.

Finding the right intraoral scanner to complement my system was the missing piece, and played the biggest role in making or breaking my return on investment.

Avoid hidden fees—do your research

Many orthodontists balk at the costs associated with going digital—and for good reason.

To be honest, there can be hidden fees that can cut into your return. I put my mind at ease by doing extensive research into the equipment to make sure the cost of upkeep wouldn't outweigh my investment.

During my discussions with scanner vendors I discovered one of the biggest unforeseen costs were "click fees"—essentially, a per-use or annual fee to save the scan to the company's cloud and then have the ability to access it again for conversion to an .STL file.

Unfortunately, click fees could add up to an additional $4,000 a year. If the scanner were to work with my open system setup, I would need a scanner that didn't have associated fees. I was adamant that I would not "rent" my own scanner after making such a significant investment.

Another hidden fee was related to consumables, which I thought I'd be reducing by getting rid of alginate. One vendor required a new tip for each scan. We anticipated taking five or six scans in a day (in actuality,

by Roy Scott, DDS

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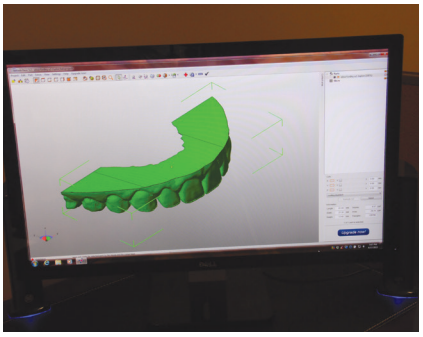
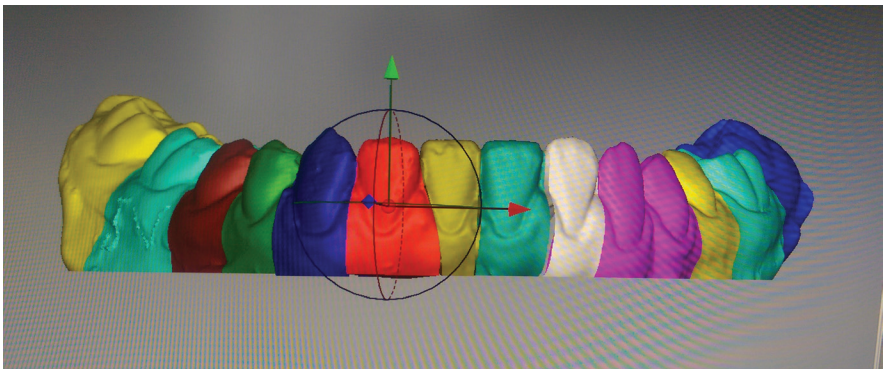
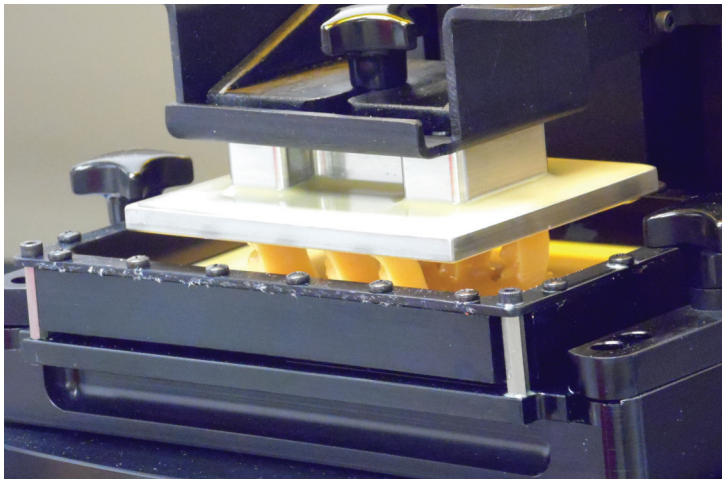
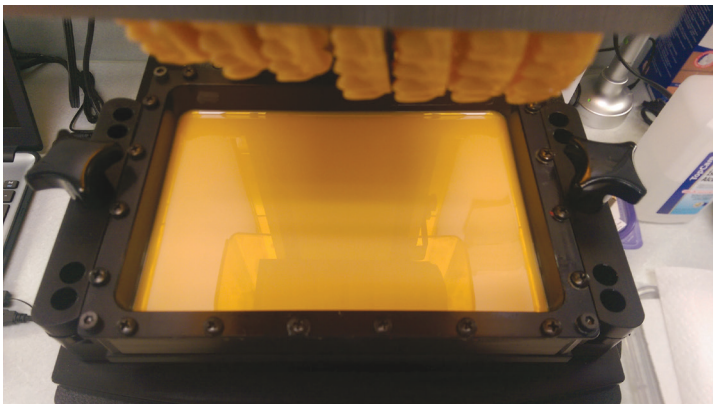


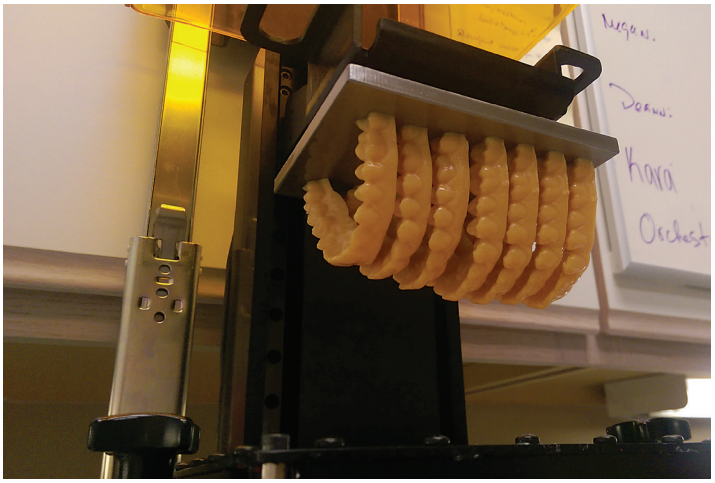


it can reach up to 12), which could add up to $100 a day in material costs.

So after meeting with several vendors—and with no click fees and an open system at the forefront of my mind—I narrowed my decision to an intraoral scanner that was part of an open system that converts the scans to .STL files immediately. It's even portable, which is perfect for my satellite office.







Show me the numbers—all of them

My scanner and 3-D printer have saved money in ways I expected, such as enabling us to cut back on consumables, and some that have surprised me.

First, there's what we save by getting rid of traditional impression materials. When we made the switch to digital impressions, my staff was thrilled. They all disliked alginate and PVS because of the mess and waste.

Think about it: You mix the powder, and half of it goes into the patient's mouth and the remaining half of it stays in the bowl and gets thrown away. We added up the alginate, trays, pour-ups and lab work and discovered that, conservatively, we're saving $1,500–$2,000 a month on impression material consumables.

Next, there's the cost of printing the models. We use a photoreactive resin with our 3-D printer that's $285 a liter. We typically buy four at a time, which gets us 200–250 models.

It costs me anywhere from $4.50 to $4.75 to print one model, whereas most of the labs I work with charge $15–$25 to print one, not including shipping. Say a typical case requires 20 aligners and estimate that the most it would cost me to print a model is $6. Add another dollar to overlay the plastic on the model and factor in $50 for additional materials. Ultimately, it costs me less than $200 for clear aligners that are worth $2,000 to a patient.

Now, I'm sure that's where most orthodontists would fully expect to see a return on their investment—fewer consumables, being able to print cheap models in-house—but what I didn't count on was the word-of-mouth and the flood of new patients it would bring.

Many people see commercials for brand-name clear aligners and go to other orthodontists for a quote. They're shocked and discouraged by the $6,000–$7,000 price tag.

Then, they hear that my practice is doing the same thing for significantly less. They come to me asking for "those invisible braces" and I explain how I can deliver the same results at a third of the cost.

I just finished with a patient who only wanted her social six straightened—I charged her $1,300 for six weeks of treatment. The next week, her sister called and said, "I want the same thing my sister has." To be honest, we haven't even done that much marketing—referrals are mostly word-of-mouth.

I could go on about how much more comfortable an intraoral scanner is for patients, how my design software gives me more control or how I can scan a patient on Wednesday, print a batch of models and have clear aligners ready Friday. Digital orthodontics is truly fascinating to me, and I know without a doubt that I made a wise choice for my business and for my patients when I invested in CAD/CAM.

To those orthodontists who are on the fence: what are you waiting for? Whether you start small with an intraoral scanner for record keeping, or go big like I did and use a scanner/3-D printer combo, just do it. Welcome to the future and more importantly, welcome to digital orthodontics! ■

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See Dr. Roy Scott's article on page 50.