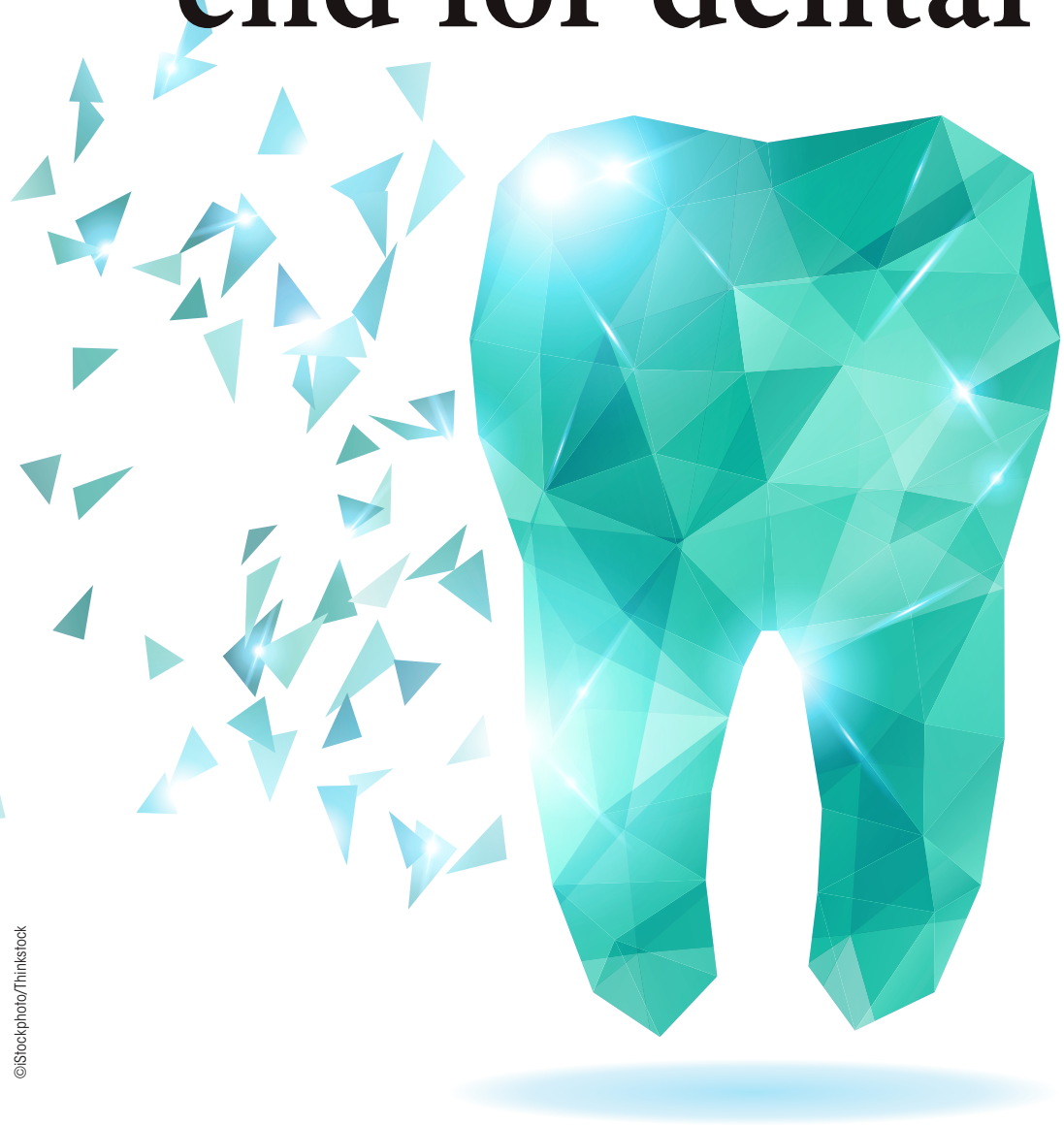
# Is CAD/CAM the end for dental labs?



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**John Battersby** examines a topic covered extensively at the Dental Technician Forum at IDEM Singapore 2014.

Buzz words like digital dentistry, CAD/CAM, intraoral scanning, extraoral scanning, 3D milling and 3D printing are reverberating through the dental industry these days. It seems whenever two or more dental professionals get together it's not long before one or all are being discussed.

So it's hardly surprising that when nearly 8,000 dental professionals from every aspect of the industry got together in Singapore at the beginning of April for the premier dental event of Asia-Pacific, IDEM Singapore 2014, the exhibition halls also rang with them. They were also to be heard in many of the lectures presented as part of the scientific conference but perhaps where they were most frequently heard was in the lecture halls and coffee break rooms of the Dental Technician Forum.

While everyone seems to agree that 'the future is now', as the theme and tagline for this year's IDEM Singapore so aptly put it, there was also some ambivalence and even trepidation toward the future that seems to be knocking on the doors of Asia's dental labs and surgeries.

The question worrying some, especially the older and more established labs and technicians, is whether 'the future's' arrival is sounding the death knell of the traditional, craftsmen-based prosthetics and restoration business. Or, is it heralding a boom that will see more demand in Asia's developing economies than could ever have been dreamed of 20 or even ten years ago?

The doomsday scenario in the back of many technicians' minds is that one day the advances in scanning technologies, coupled

with ever more powerful and capable software, feeding virtual 3D models to ever cheaper and more accurate 3D printers, will mean dentists will be able to handle their own manufacturing needs.

According to the manufacturers and purveyors of the various digital dental technologies, that day is already here. The technology is available to allow dentists to scan patients' teeth and create crowns for them while they wait. A process that traditionally took weeks can now in theory be done in an hour or two.

Instead of making a mould and sending it to a lab for scanning, a well-equipped dentist could use a variety of technologies from intraoral cameras to CBT to scan the teeth directly. The digitised scan could then be sent to an on-site milling or 3D printing machine to carve the crown from a block of porcelain or print it from resin while the patient relaxes in the waiting room and catches up on back issues of their favourite magazines. Then, after a little finishing and preparation work, the crown is ready for fitting and a satisfied patient is heading back to work.

It is a scenario that would definitely appeal to patients: a single visit with no need to wander around with a temporary crown for a couple of weeks offers them savings in both time and money. In theory it appeals to quite a few dentists too as they see an opportunity to cut out the mould and the middleman, the poor technician. But is it yet reality?

The short answer is no. Any lab owners or technicians that have been losing sleep over the prospect of the imminent loss of their livelihoods can relax. It is not that CAD/CAM is not going to revolutionise the industry - it certainly already is doing that and will continue to do so - but it is unlikely that it will do so in the hands of dentists.

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While 3D printing is still new, CAD/CAM isn't. In Europe, the UK and the US, dentists have had access to the scanning technology, computer power, and even desktop milling machines for 20 years or more but have not adopted it *en masse*. Even in the United States, the world's largest and most technically advanced dental market, only something like 8-10% of dental surgeries have in-house CAD/CAM facilities. Roughly one in ten of those don't use the equipment despite having made significant financial investments, usually because they found the learning curve too steep or were put off by early mishaps or clinical issues. The majority of those that do use the equipment only do so for single posterior crowns and still send the more complex posterior and all their anterior jobs to external labs. Or, they have hired their own in-house technicians to use the equipment to its full potential.

It is unlikely that the majority of the older dentists practising today, those with only 10-20 years before retirement, will be willing to change to these new technologies. While they might be at the stage of their careers where they are well established enough to afford it they are usually put off by the daunting learning curve required to master it. As two of the world's leading experts on the use of CAD/CAM technologies in dentistry, the Italian dentist brothers Andrea and Alessandro Agnini, pointed out during one of their lectures to technicians at IDEM Singapore, in their experience even when it came to intraoral scanning most dentists with 20 or more years' experience working with moulds found it hard to switch and usually prefer to stick with what they know, moulds.

The latest generation of recently graduated dentists and current students will be more comfortable with digital technology, as the Agninis have found at their training facility in Emilia Romagna, Italy. Student dentists, who had no experience of either moulds or 3D scanning technologies, preferred the latest high-tech methods for data acquisition and the ability it gave them to work more closely and interactively with technicians. However, while fresh graduates are comfortable with the latest scanning technology at the start of their careers, they are unlikely to have the capital to invest in in-house production facilities.

The Agninis can't imagine a future without highly skilled, artist technicians helping them to create the cutting-edge prosthodontics they are famous for. In summing up their last lecture on the final day of IDEM Singapore they assured the audience of technicians that as technology and materials advance and make more elaborate and complex restorations possible the role of the expert artisan technician will become increasingly important in delivering the best possible outcome for patients.

Dr Dobrina Mollova of the Centre for Advanced Professional Practices (CAPP) certainly does not think technology can replace skilled technicians: 'There will always be a need for technicians, for highly skilled professionals who are experts in the use of the machines that make the prosthodontics that modern dental practices rely on to stay in business. The machines and technologies they use may change from generation to generation but the need for experts to operate them will always remain. So, as long as technicians keep their skills and knowledge up to date they will always be a vital part of the dental team. 3D printing is already with us in dentistry and I am sure that as new materials and technologies develop, to exploit it, it will become more common place but like all the other new manufacturing technologies it will still need expert technicians to run it.'

Rather than being the death of the traditional dental lab, digital technologies and especially the latest materials and manufacturing technologies are likely to see a growing demand for prosthetics and restoration work as they bring them within reach of more people, especially the growing middle classes of the world's developing economies.

So it seems IDEM Singapore 2014 was correct to say 'The future is now' and dental labs and technicians need to embrace that future and make it their own.

*What do you think? Do you think digital dentistry is a new beginning for dental technicians? Send a letter to the editor of* BDJ Team *or visit the BDJ Team Facebook page to comment: www.facebook.com/bdjteam.*

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