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REVIEW

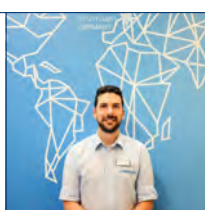
39th International Dental Show • Cologne • 22–25 September 2021



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IDS 2021 gives impetus to the dental industry

Trade show attracted 23,000 visitors from 114 countries.

■ From 22 to 25 September, the 2021 International Dental Show (IDS), held six months later than usual owing to the COVID-19 pandemic, offered the dental industry and dental professionals the opportunity to experience products live and, above all, to socialise with one another in person. This IDS was the first to be held in a hybrid format, allowing visitors who were unable to travel owing to restrictions to participate digitally.

A total of 830 companies from 59 countries participated in IDS 2021 in an exhibition space of 115,000m². There were 228 exhibitors and five additionally represented companies from Germany, together with 591 exhibitors and six additionally represented companies from abroad. The foreign share of company participation was 72%. Including estimates for the last day of the fair, more than 23,000 trade show visitors from 114 countries attended IDS 2021. Of these visitors, around 57% came from abroad—from Europe, especially Italy, France, the Netherlands and countries in eastern Europe, as well as from the Middle East and elsewhere overseas.

“Optimism has returned within the international dental family. We held intensive discussions with interested visitors and most of them ultimately came to make investment decisions,” said Mark Stephen Pace, chairman of the executive board of the Association of the German Dental Industry, which organises IDS.

For Pace, IDS 2021 marked a fundamental moment since the start of the pandemic in that the whole industry took up the opportunity to switch from crisis mode into working mode, “because it was the ideal place to take stock of the current situation and to identify future opportunities”.

IDS gave a comprehensive overview of the state-of-the-art in dentistry, emphasising the significant advancements in research and development, particularly the drive towards digital innovation.

Digital solutions gain momentum

Digital technology, such as remote care digital tools, intra-oral scanners, 3D diagnostics, CAD/CAM, radiography, CT and other imaging techniques, is playing an increasingly



▲ More than 23,000 trade show visitors from 114 countries attended IDS 2021, around 57% of whom came from abroad. (Image: Koelnmesse/IDS)

“We offered the physical meeting place here in Cologne in the exhibition halls and, in addition, the digital platform IDSconnect with added opportunities for presentations and networking, which was very well received.”

Oliver Frese, chief operating officer of Koelnmesse



▲ 3D printing has become one of the major trends in dental technology. (Image: Koelnmesse/IDS)

IDSconnect, the digital platform of the fair, featured 77 exhibitors from 16 countries with 88 daily contributions and 1,310 minutes of broadcast time. Oliver Frese, chief operating officer of IDS staging company Koelnmesse, commented on the hybrid format in a press release: “We offered the physical meeting place here in Cologne in the exhibition halls and, in addition, the digital platform IDSconnect with added opportunities for presentations and networking, which was very well received.”

important role in dentistry. The SARS-CoV-2 pandemic has hastened uptake and development in this regard, as these technologies have enabled dental practitioners to monitor treatment progress remotely, for example, and in many cases to continue with treatment. During IDS, new digital interfaces that allow for a truly integrated digital workflow were presented, and these also promote a more collaborative approach between the laboratory and practice for greater efficiency.

For instance, exocad's series of new Galway software releases underscores seamless digital workflows and simplicity of use. The new ChairsideCAD 3.0 Galway is highly automated, intuitive and optimised for practice use. “When we developed

the Galway releases, the focus was on increasing productivity for our customers,” said Novica Savic, exocad's chief commercial officer, in citing new features that simplify the design process. Instant Anatomic Morphing enables the anatomy of the teeth to

automatically adjust in real time for dynamic occlusion, and artificial intelligence-based detection of facial features makes smile design with Smile Creator faster and more accurate.



▲ Integration of artificial intelligence has accelerated in the dental industry. (Image: Koelnmesse/IDS)

« 1

Artificial intelligence: Possibly the next big thing

The benefits of the use of artificial intelligence (AI) are already tangible, and AI will most likely be a major future trend. From initial consultations, diagnosis and treatment planning through to surgical procedures and postoperative care, AI technologies are steadily being adopted by dental practices aiming to digitise and streamline their workflows.

The main focus of current dental AI research is the analysis of radiographs, and in the long run, this capability could lead from diagnostics to prognostics through to AI support in making therapy decisions.

American software company Pearl introduced Second Opinion, an AI software application that helps dentists detect pathologies and other conditions in dental radiographs. It is the first AI-powered device with this application to enter the European dental market and the latest addition to a range of products the company has developed that apply its patented computer vision technologies to bring

greater efficiency, accuracy and consistency to various dental industry stakeholders.

“AI is something we should look forward to rather than fear. It is not coming for our jobs; it is coming for the parts of our job that we do with least efficiency and that give us the greatest hassle,” said Dr Kyle Stanley, a specialist in implantology and chief clinical officer of Pearl. “Certainly, embracing AI alone cannot eradicate work-related stress, but the time AI will save us and the accuracy it can ensure will allow us to focus on the work only we can do—work, like preparing crowns, that requires human dexterity, intelligence and chairside manner,” he continued.

Another success story of the dental AI boom is undoubtedly DentalMonitoring. Founded in France in 2014, this orthodontics technology specialist has developed AI-powered solutions for conducting clinical analysis of images and 3D files, tracking tooth movement in a virtual setting and creating photorealistic simulations. From its humble beginnings as a start-up, DentalMonitoring has now grown to have over 400 employees across 53 countries, gathering invest-

ments from dental titans like the Straumann Group along the way.

At the company's press conference at IDS, Philippe Salah, CEO and co-founder of DentalMonitoring, said: “Now, general dentists and orthodontists are able to monitor all their aligner and fixed appliance treatments, regardless of the brand, with the same, highly scalable, AI-driven workflow. In addition to controlling the treatment progress, they can actively set and monitor clinical goals for each patient. This means more active control, more productivity, and a new level of safety and confidence for their practice—a real game-changer for our industry.”

The current status and future of 3D printing

Additive manufacturing has become increasingly established, in part because it involves practically no loss of material. Crowns, bridges and denture bases, for example, can be fabricated in this manner using non-precious dental alloys (e.g. through selective laser melting, selective laser sintering, direct metal laser sintering or LaserCUSING).

The strengths of resin printing are primarily visible in models or occlusal splints. Veneers and gingival masks too are fabricated on the basis of an intra-oral scan using additive manufacturing. In addition, denture bases and teeth are printed and then bonded to form a full-arch or complete denture or are even fabricated in one piece through this technique. Furthermore, mock-ups can be printed from try-in resins.

In implantology and endodontics, drilling and orientation templates can be printed. In orthodontics, high precision is achieved with positioning trays (indirect bonding trays). The positions of the brackets are initially planned virtually, and the brackets then have to be cemented precisely in the correct position in the patient's mouth. The template printed from resin provides additional security in this regard.

In an interview with Dental Tribune International (DTI), Patrick



Heikki Kyöstilä (left), president of Planmeca

“IDS 2021—a feeling almost like normal. In my view, IDS has been going on surprisingly well—about the same as normal. September as the new date for the fair has turned out to be the best choice. Friends and customers were coming up to say hello or to decide on and buy their new equipment. There were not as many visitors as in 2017 or 2019, and even for the future, I expect IDS to be a bit smaller than in the past. But we will still initiate and maintain a lot of communication here in Cologne—which is the fuel for innovation and success.”



Torsten Fremerey, executive director, EMS Electro Medical Systems

“It is a great pleasure to finally be able to present our new Guided Biofilm Therapy (GBT) products to the audience of IDS live again. It is great fun seeing the huge interest in our GBT protocol innovations and celebrating the live dental trade fair with the trade audience. Participating in IDS 2021 is a great success for EMS. The strong feedback from our customers confirms that GBT is the best prophylaxis of all time. EMS's decision to make a strong appearance at IDS 2021 was spot on.”

Thurm, managing director and general manager for Europe at SprintRay, said: “Cost efficiency, speed and usability are key advantages of 3D-printing. The material used is the most important factor for innovation in upcoming fields. More and more indications can be printed already, and more are coming in the near future. If one has an intra-oral scanner, there is no reason why one should not invest in a 3D printer.”

According to Thomas Kwiedor, head of business development for 3D printing at BEGO, “3D printing is the most important manufacturing method of the future. [...] We ourselves are currently working intensively on a material that enables the

3D printing of artificial teeth. One area that will certainly be exciting is that of multi-material and multi-colour printing, which among other things, will make it possible to reproduce the light-optical properties of natural teeth in the best possible way. In the future, we will also encounter material combinations that enable different properties within one material. It can also be assumed that the automation of individual work steps, such as post-processing, will be further professionalised.”

The latest in restorative dentistry

Direct restorations have been an outstanding and innovative field for

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years. Since they represent the bread and butter of the vast majority of practices, even minor advances in procedures and materials have a clearly positive impact. IDS visitors had the opportunity to learn more about the latest developments in dental filling therapy, which is considered an extremely dynamic segment.

For example, VisCalor, the first composite to feature thermally controlled viscosity behaviour, was on display at the VOCO booth. "It is available in various VITA shades, allowing the dental professional to carry out aesthetic restorations in the anterior and posterior regions, in addition to performing bulk filling, with the material," said Dr Axel Bernecker, head of marketing at VOCO, in an interview with DTI.

GC Europe presented numerous new restorative products at IDS 2021. G2-BOND Universal, a universal two-bottle bonding solution which features excellent adhesive strength and has a wide range of indications. G-aenial A'CHORD is a technologically extraordinary universal composite that combines simplicity, aesthetics and functionality optimally in one product. EQUIA Forte HT is a glass hybrid restoration material that provides stability and aesthetics. G-CEM ONE, a new self-adhesive luting composite, impresses with its simple luting procedure, high adhesive force, problem-free removal of excess material and long-lasting aes-



Christian Mönninghoff (left), founder and CEO of BLUE SAFETY

"The reason for our participation lies our confidence in the basic hygiene competence in dentistry and our eager anticipation to finally be able to exchange news in the dental industry with like-minded innovation enthusiasts again. The COVID-19 period has been stressful for all of us. We are all the more pleased that IDS is happening and that the more than 800 exhibitors have put so much effort into it. It is a special trade show, and it is taking place under special circumstances. In terms of content, it is even more exciting than in earlier years."

thetic results. Initial LiSi Block, a fully crystallised lithium disilicate block with optimised physical properties, promises naturally beautiful restorations in just one appointment. Developed for the laboratory, Initial IQ ONE SQIN provides for highly aesthetic colourings and micro-layering with paintable ceramics.

Summary and outlook

Overall, IDS attendees learned how they can increase their practice and laboratory efficiency by using new, automated processing strategies. Software releases presented at IDS will enable this.

Many techniques, product innovations and prospects for the future



Sven Isele, general manager of sales and marketing at NSK Europe

"This IDS has once again demonstrated that lots of visitors to our booth have been delighted to try out our instruments and products live on-site. Of course, we're also thrilled that we have been able to use this year to show off our booth in its new NSK branding after all. Owing to the pandemic, we've largely had to forego the participation of our international colleagues. Nevertheless, our German and Austrian sales teams are giving their all to provide information to visitors in a comprehensive and expert fashion."

were to be found at IDS. For professional orientation, for research and development, and for the fine tuning of many practices and laboratories, this IDS was indispensable. It was probably even the most important edition in many years, according to Koelnmesse. IDS has adapted to the conditions, and its hybrid format of-

fered visitors attractive added value. Particularly the technology-savvy dental industry participants employed digital tools as an enhancement to the physical event in the halls, pointing the way for many other industries too.

The next IDS will take place from 14 to 18 March 2023.

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1 Over the course of four days, over 23,000 trade fair visitors attended IDS 2021. - 2: EMS presented important innovations for its GBT protocol. - 3: IDS 2021 was staged in Halls 2, 3, 10 and 11. - 4: To provide a digital enhancement to the classic physical event, the free platform IDSconnect intended to maintain IDS's extensive international reach together with a successful on-site trade fair experience. - 5: Ribbon cutting ceremony. From left: Prof. Christoph Benz, Mark Stephen Pace, Gerald Böse, Lord Mayor Henriette Reker, Dr Markus Heibach, Dr Gerhard Seeberger, Oliver Frese, Lutz Müller. - 6: Owing to the COVID-19 pandemic, tickets could only be obtained in a digital format. - 7: Participants were asked to provide recognised digital proof of vaccination or COVID-19 recovery upon entering the trade fair premises. - 8: Talks at the ACTEON booth. - 9: 3D printing remains a major topic. - 10: IDS offered the dental industry and dental professionals the opportunity to experience products live again. - 11: Conversations at the COLTENE booth. - 12: IDS visitors had the opportunity to discover new products and, above all, to socialise with one another in person. - 13: Visitors explored Planmeca's products. - 14: At IDS, Align Technology showcased the most recent and innovative solutions from the Align Digital Platform. - 15: VOCO presented the first composite in the world to feature thermally controlled viscosity behaviour. - 16: Medical solution company DENTIS presented its offerings related to implant dentistry at IDS, including its novel implant UV activator. - 17: Osstem Implant had the single largest booth at the trade fair. (All photos: © koelnmesse)

“Our service meets all of the needs that arise in the dental clinic and laboratory”

An interview with Riccardo Molinelli from SHINING 3D.

By Jeremy Booth

■ Intra-oral scanners and 3D printers were two of the biggest topics in the halls of this year's IDS. At the show, Dental Tribune International visited the booth of SHINING 3D and spoke with Riccardo Molinelli, regional sales manager for the Europe, Middle East and Africa region, about the company and its new Aoralscan intra-oral scanner and AccuFab-L4D large-format dental 3D printer.

Could you please tell us about SHINING 3D?

The company was founded in 2004, and for the last 17 years, it has been focused entirely on the development of 3D-digitising and 3D-printing solutions. We are fully focused on the development of scanners and 3D printers for multiple applications. Indeed, dentistry is only one of the business areas served by the company. We also cover industrial and metrological applications and the 3D-digitising of most common objects. These different business units have application for both scanning and 3D printing.

What is the company offering to dental professionals?

We began developing dental scanners around 2012. We are proud to look back to our very first product, which was a desktop scanner for a dental laboratory, and to compare it with what we see around us here at our IDS booth—a full suite of digital solutions for both dental clinics and dental laboratories. Over the years, we have developed more powerful and better-performing desktop scanners, and we have also developed and launched 3D printers and our intra-oral scanning solution.

The company is exhibiting two new products at IDS: Aoralscan 3 and AccuFab-L4D. What should dental professionals know about these new products?

The first thing that I would say is that we can think about these two



2 Digital dentistry specialist SHINING 3D demonstrated its new Aoralscan 3 intra-oral scanner at the recent International Dental Show in Cologne. 3 SHINING 3D said that IDS visitors were impressed with the Aoralscan 3—in particular with its scanning speed and the precision of the data collected. (© SHINING 3D)

products either as stand-alone solutions or as a bundled solution that has been developed specifically for a dental clinic. That does not mean that the L4D printer cannot be used in the laboratory. However, from our point of view, this is an ideal 3D printer for use with the intra-oral scanner in order to cover the needs of dentists. There is a series of different reasons behind this. Firstly, the footprint and design of the unit are ideal for clinics, where space is often limited. Furthermore, all of the possible applications that the printer is equipped for—such as printing crowns, orthodontic models and surgical guides—make it an ideal choice for dental clinics. One additional point I would like to stress is that the printer is an open system. This means that, if the dentist is already familiar with third-party materials, we can integrate those third-party materials into our 3D printer without any limitations.

We just saw a demonstration of the Aoralscan intra-oral scanner. How have dental professionals at IDS reacted to it?

Aoralscan is something that we are very proud of. We have worked on this technology for several years, and

what we see being demonstrated here at the booth is the result of our constant investment in research and development and in product improvements.

This intra-oral scanner comes with a lot of nuances, both from the hardware and software point of view. The previous generation remains an excellent product, but what I can say about the new scanner at the end of

“Our philosophy is to provide products that have the longest possible lifetime—not only from the hardware point of view but also in terms of software.”

this four-day exhibition is that we have received extremely positive feedback from users from all around the world. We have had excellent feedback with regard to the scanning speed, the precision of the data collected, and the multiple applications and options that can be covered by this brand-new device.



The company has a global network. What are the advantages of this for dental clinics and laboratories?

We have a sales network that covers five continents and three offices. Our headquarters is located in Hangzhou in China, and we have offices in San Francisco in the US, and in Stuttgart in Germany. The greatest benefit of this structure is that, for technical support and sales

What more can you tell us about the software?

We work in partnership with exocad—the world leader in CAD—and through this partnership, we have direct integration of exocad software. Both our scanners and printers directly communicate with exocad in the most efficient way, and we also have integration with other software providers on the market.

What I can say is that we offer a fully open system. Our devices, scanners and printers are an open system that can communicate and interact with any other open system. Our philosophy is to provide products that have the longest possible lifetime—not only from the hardware point of view but also in terms of software. That is why we provide software licences that do not have annual fees and do not have fees involved for updates.

What should dental professionals watch out for in order to ensure that these digital tools remain an asset in their daily practice?

Digital dentistry represents an improvement and an advantage for dentists and dental technicians only if it is integrated into a complete system—only if the digital tools assist them from the beginning to the end of the treatment or task. Otherwise, it is possible that the technology can represent an obstacle.

If one company provides all the steps of the digital solution, and if that company has expertise in the different segments of this digital workflow—scanning, CAD and 3D printing—then this represents the greatest advantage for clinicians. There is a simple reason behind this: the learning necessary for the individual steps will be drastically reduced, owing to the fact that the customer will always be able to rely on the most direct support.

This is what SHINING 3D represents: a digital solution that is integrated, complete, constantly up to date, and accessible and affordable for all dentists and dental technicians. ◀

More information about SHINING 3D can be found at www.shining3d.com.



1 Riccardo Molinelli, SHINING 3D's regional sales manager for the Europe, Middle East and Africa region. (© Dental Tribune International)

Imagine the CADabilities

Exocad presented DentalCAD, exoplan and ChairsideCAD highlights at IDS 2021.

■ At IDS 2021, exocad, an Align Technology company, presented highlights of its three core products—DentalCAD 3.0 Galway, exoplan 3.0 Galway for implant planning and ChairsideCAD 3.0 Galway for single-visit dentistry.

The 360 m² booth was a central meeting point for exocad's global community at IDS. The trade show offered a rare opportunity for exocad users to meet specialists and developers from the Darmstadt-based software company in person. Visitors could linger at the booth's dozen software stations, learn about the 3.0

Galway release's highlights and ask exocad's software experts questions.

DentalCAD 3.0 Galway

Visitors experienced the 90 new and 80 additionally optimised features of DentalCAD 3.0 Galway. For example, they had the opportunity to try out the new Instant Anatomic Morphing. This feature automatically adjusts teeth in real time, greatly improving the speed and precision of anatomical tooth placement. Another exciting feature is parametric shape adjustment,

which can transform all tooth libraries from a younger to an older anatomy. At another station, on-site experts demonstrated how the Smile Creator module can automatically recognise facial features using new artificial intelligence-assisted technology. Other demonstrations included: the improved processing of bridge connectors and how multiple connectors can now be adjusted simultaneously, the creation of mock-up tooth set-ups and how the software supports virtually prepared models, and virtual tooth extractions.

Exoplan 3.0 Galway for implant planning

Exoplan 3.0 Galway is a powerful, open and efficient software package for virtual implant planning. Having over 40 new and over 60 improved features, the new Galway version represents a significant expansion of guided implantology possibilities and offers improved integration with exocad's DentalCAD software.

ChairsideCAD 3.0 Galway for single-visit dentistry

During IDS, dentists experienced the widest range of indications in the chairside CAD software market. That is because exocad's ChairsideCAD 3.0 Galway software offers a broad level of indications.

The joint platform with exocad DentalCAD, the world's leading CAD laboratory software, also unlocks unimagined possibilities for digital collaboration with tens of thousands of laboratories. More information can be found at <https://exocad.com/ids>. ◀



▶ For dental professional, who were unable to attend IDS in person, exocad offered live streamings during the show.



▶ IDS visitors had the opportunity to watch a number of live demonstrations at the exocad booth.



▶ At this year's IDS, exocad announced the release of ChairsideCAD 3.0 Galway, the next generation of its easy-to-use CAD software for single-visit dentistry.



▶ "Sharing ideas, discussing improvements, learning about new technologies that is really what IDS is all about," said exocad CEO Tillmann Steinbrecher. (All images: exocad)

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G-CAM: The ideal material for prostheses

Pioneer in graphene nanotechnology in dentistry exhibits at IDS.

■ The research by Spanish company Graphenano Dental on the reinforcement of polymer matrices has made it a pioneer of the use of graphene nanotechnology in dentistry. At the 2021 International Dental Show in Cologne, Graphenano Dental exhibited its products, such as the G-CAM disc for CAD/CAM milling systems, which relies on this technology.

Graphene is a form of carbon in which the atoms are arranged in a single layer in a 2D honeycomb lattice nanostructure. Among its principal properties are its high traction resistance, lightness, biocompatibility and low coefficient of thermal expansion. Furthermore, it is ecological and recyclable.

“Unlike zirconia, for example, which is still widely used, our graphene nano-reinforced biopolymer G-CAM disc has excellent blending properties,” explained Graphenano Dental General Manager Jesús Martínez. He went on to say that “the appearance is extremely natural and resolves all the mechanical, physico-chemical and biological failures of the rest of the materials currently used in the industry”.



▲ Jesús Martínez, general manager of Graphenano Dental, met with Dental Tribune International at the 2021 International Dental Show to discuss the company's revolutionary products.

© Dental Tribune International



▲ With the aim of producing sustainable and biocompatible materials that reduce manufacturing costs and workload, Graphenano Dental launched its first commercialised product, G-CAM, with improved mechanical, chemical and biological properties.



▲ G-CAM bears a CE mark and is now available in more than 40 countries.

The incorporation of graphene into polymers is an innovative strategy to improve mechanical properties, increasing the elastic modulus as well as the tenacity, reducing the appearance of cracks and/or the spreading of them, as well as decreasing the shrinkage rate during polymerisation.

“Our material also benefits patients, of course, as it is really light and a lot softer than zirconia. A zirconia prosthesis that weighs 70 g may only weigh as little as 12 g when manufactured using the resin and graphene combination. With G-CAM, patients feel no difference

to their natural teeth,” Martínez added.

G-CAM has a CE mark, and Graphenano Dental has thus mainly focused on the European market, but is steadily branching out. The South and North American markets are its next target. The G-CAM disc has

been submitted to the U.S. Food and Drug Administration for market clearance, and it will be available throughout the US in two to three months. To find out more about Graphenano Dental and the G-CAM disc, visit www.graphenanodental.com. ◀

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“We’re giving dentists the ability to clearly communicate their diagnoses”

An interview with Pearl founder and CEO Ophir Tanz

■ At IDS, dental technology start-up Pearl introduced Second Opinion, an artificial intelligence (AI) software application that helps dentists detect pathologies and other conditions in dental radiographs. In this interview, Pearl founder and CEO Ophir Tanz speaks about why he developed Second Opinion and what dentists can expect from it.

Mr Tanz, you chose to leave your leading role in another AI company you founded, which focused on media, in order to launch Pearl. What made you turn to the dental field?

We spun Pearl out of my previous company, so it was a gradual shift. I’ve been interested in AI since I was a student. The early 2010s brought significant advances in the field. My previous company focused on media, which is largely visual, so we started working with computer vision, the category of AI that focuses on visual intelligence. I knew AI was a paradigm-shifting technology, and I started looking for new applications for our computer vision capabilities. Radiology was a fairly obvious choice. I investigated several medical fields and decided that dentistry would be the best. We began collecting and annotating radiographs to train an AI to perform dental diagnoses and assembled what is, to my knowledge, the largest collection of expertly annotated panoramic, bitewing and periapical images in the world. All that early development work took place at my previous company. Ultimately, I decided to spin off the dental division as Pearl, because I wanted to focus more on it. I guess you could say it was my baby. I saw how much potential it had to transform the dental field, and I wanted to give it my full attention.

You said you investigated several medical applications for AI. Why did you choose dentistry?

My dad’s a retired dentist, so I grew up in a practice, which may have influenced me a little. However, the main reason was that dentistry is uniquely suited to AI—at least compared with most other medical fields.

In what way?

It’s unique in several ways. In other fields you have radiologists—experts who are well educated and well paid. They are the gatekeepers who would have to give AI their blessing and push it forward in an organisation, but they would naturally feel threatened by something that might be able to do their job better than they could. They wouldn’t want to become redundant. Therefore, the threat of technology taking over the role of the key diagnostician creates a great deal of friction for anyone trying to introduce an AI radiology tool. However, in dentistry there is little of that friction because dentists aren’t radiologists. They’re asked to do that work, but it’s not their specialty and you’re not taking anything away from them by giving them a tool that helps them identify the conditions they’re trained to treat. Another difference is that, because of privacy concerns, there’s a much higher level of sensitivity around data associated with other medical fields. For brain cancer, lung cancer or mammography, it’s incredibly difficult to acquire the massive amounts of data that is needed to train the AI.

Was it easy to acquire data in dentistry?

Raw data, yes. You have to employ experts to annotate the data,



▲ Pearl announced at IDS 2021 that its Second Opinion AI solution is now commercially available in Europe. (© Dental Tribune International)

which is very time consuming and expensive, but obtaining radiographs is relatively easy. We actually have an excess of radiographs—far more than we will ever need to annotate. However, in other fields nobody wants to share imagery. And even when you are able to acquire that data, it’s incredibly scarce compared with what’s available in dentistry. If you do obtain that data, then of course, the final point of friction in other medical fields is that you’re

dealing with large hospital systems, which are quite hard to penetrate. These systems are incredibly bureaucratic. They’re legacy-oriented. It’s hard to sell into them. You go through the trouble to acquire data and convince radiologists to give your technology their blessing, only to be faced with the challenge of actually being accepted into the hospital system.

Would you say dentistry is more adaptable when it comes to new technologies?

Yes, for AI in particular. In dentistry, you have plenty of data, and you have dentists who won’t be adversely affected by AI—who, in fact, want it. In addition, it is easier to get into dental practices, as they are smaller, more agile and generally more interested in cost-effective innovation. Individual dentists and dental practices form a very entrepreneurial group. They want to make more money, deliver better care, and reduce overheads and liability. Also, they’re able to make adoption decisions directly, whether it’s an individual practice, a tenoffice group, or even a thousandoffice corporate dental company. I don’t mean to say there aren’t any hurdles for AI in dentistry, but they are considerably smaller than those in other medical areas.

What hurdles do you see as you prepare to release Second Opinion?

So far, dentists have been overwhelmingly positive, but I think convincing all dentists that AI assistance is a significant benefit will be very challenging. It seems un-

necessary to point out that all humans make mistakes. In order to encourage adoption of the product, we will probably have to raise more awareness of the surprisingly high level of diagnostic inconsistency among dentists. People don’t like to admit mistakes, though, even when they’re obvious. Therefore, it will probably be more productive to address that objection with education on how, even for perfect dentists, Second Opinion is extremely valuable as a patient communication tool.

How does it help with patient communication?

It’s an objective third party alongside the dentist and the patient. Patients generally have to place blind trust in their dentist. Whether the dentist’s diagnoses are objectively perfect or not, patients will visit another dentist if they have doubts or don’t like what they have been told. We’re giving dentists the ability to clearly communicate their diagnoses with the support of a tool that gives their patients a greater sense of assurance. It eliminates the doubt that makes patients seek a second opinion elsewhere—that is why we call it Second Opinion.

Is there anything you would like to add?

There’s so much that could be said about this topic. For now, I would just like to say that I’m looking forward to sharing this technology at IDS. Our team has worked extremely hard to deliver a highly accurate and complete radiological assistant, so it will be rewarding to see it put to use. ◀



▲ Ophir Tanz is the founder and CEO of Pearl. (© Dental Tribune International)