



## High-tech trends: Meeting demands for efficiency *and* better care

Better patient care as well as greater efficiency are at the core of the year's high-tech trends, which range from clearing up computer clutter with versatile chairside media systems to a growing interest in advanced treatment devices such as lasers and CAD-CAM systems.

**D**entistry's most significant high-tech trend continues to be the placement of computers in the dental-treatment room. This is significant because it opens up so many other options for using advanced systems: Everything from paperless charts to digital radiography must start with a computer in the treatment room.

In response to this trend, dental equipment manufacturers are developing systems specifically designed to bring computer technology into the treatment room in an effective and ergonomic fashion. This article looks at two systems that integrate monitors and media.

Beyond the use of computers, there are some exciting trends in high-tech clinical systems, which allow us to treat patients more effectively. This article also looks at two technologies making inroads in the dental office: lasers and CAD-CAM.

### Integrating monitors, instruments, and media

"Where in the treatment room do I put all this computer stuff?"

This is one of the questions I am asked most often in my role as a consultant.

For years, if a dentist wanted to integrate computer technology (such as a monitor showing digital images of a patient's tooth) into the treatment room, the dentist would have had to adapt to technology that a company had designed to be used by a single person sitting at a desk. This resulted in awkward designs for monitors and other high-tech devices, mismatched components, wires dangling everywhere, and systems that often compromised function, ergonomics, esthetics, and asepsis.

Equipment manufacturers have made a number of attempts to integrate 'high tech' into patient chairs, delivery units, and cabinetry. Here's a look at two well-thought-out, integrated designs.

### The CCC (Chairside Communication Concept) Multimedia System

This multimedia system isn't an afterthought. Rather, the CCC (Chairside Communication Concept) Multimedia System from KaVo America Corp. ([www.kavousa.com](http://www.kavousa.com)) is an integrated component of Kavvo's *environment* line of dental equipment.

The *environment* line is an ergonomic equipment line that includes



An ERGOcom flat-screen monitor, mounted on a dedicated arm, is part of KaVo's CCC Multimedia System. In turn, the CCC system is seamlessly and ergonomically integrated into KaVo's *environment* delivery system. There are no loose cables, no afterthought monitor ... Everything is at the doctor's fingertips, where and when they need it.



KaVo's CCC Multimedia System includes this MULTIbox unit, which acts as a traffic cop to connect all existing media and the office computer system to the Multimedia system.

a patient chair, delivery systems, cabinetry, lighting options, and operator seating.

The CCC Multimedia System includes the ERGOcom intraoral camera and the ERGOcom medical-grade flat-screen monitor, both of which are fully integrated into the *environment* delivery system. It also includes the so-called MULTIbox, which acts as an interface to the existing computer network and other media devices.

Here's how the CCC Multimedia system integrates its components:

- The high-resolution ERGOcom monitor mounts on a dedicated arm, as part of the dental chair and unit.
- The color and design of the monitor and pivot-mount match the rest of the system. The pivot-mount allows the monitor to be positioned in the sightline of the patient in the supine position. A touch-

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screen eases interaction with a patient during presentations.

- The wires are hidden. In other words, no wires are exposed—they are completely integrated into the unit and the monitor arm.
- The monitor screen and controls can be wiped down for easy asepsis.
- The CCC Multimedia unit not only looks good; its MULTIbox unit helps create an “Open Access” feature that integrates all multimedia imaging and data devices at the point of care—the patient chair. At the user’s fingertips, one can easily and efficiently create, access, view, store, and transmit vital information. One can even entertain the patient using the office computer and dental imaging software. As a result, with a single touch, when using the MULTIbox, the dentist can switch from the camera, to patient education, to radiographs, to a chart, or even to the Internet.

## The Technology and Lighting Center (TLC)



**The Seltzer Institute’s TLC combines an operatory light with a patient entertainment, case presentation, and education system. Staff can adjust the lights and monitor for customized patient comfort.**

Nicknamed the DentalChairPotato, the Technology and Lighting Center (TLC) system from the Seltzer Institute Inc. ([www.dentalchairpotato.com](http://www.dentalchairpotato.com)) combines a track-mounted ceiling operatory light with a high-resolution flat-panel monitor. The system serves as a case presentation and education system.

The system’s operatory light is composed of two independent fiberoptic units, which are reportedly heat-free, glare-free, esthetic, ergonomic, and efficient. In ad-

dition to this dual-beam operatory light, which is 30% brighter than a conventional track light, the TLC system enables a clinician to plug their own fiberoptic headlight into a receptacle, which is conveniently located on the system above the doctor’s head.

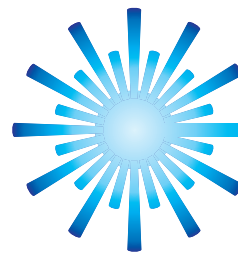
With the TLC system, patients can

comfortably view patient education programs, DVDs, intraoral-camera images, or computer images either in an upright or reclined position. The patient is provided with unobstructed viewing during treatment. The dentist or hygienist can also use the screen to view images from an intraoral camera, to check x-rays, or

for charting.

Steven M. Seltzer, TLC’s inventor and President of the Seltzer Institute, relates a story a dentist told him about a highly anxious patient who now travels an extra 10 miles to the doctor’s second office because it has a DentalChairPotato. The patient finds that viewing DVDs during treat-

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ment is so distracting that she has stopped needing sedation medication.

### Advanced treatment devices: lasers

In addition to innovations in monitors and media programs, advances are being made in high-tech treatment devices, including

lasers. Awareness is growing rapidly among patients and practitioners about the benefits of lasers for both soft- and hard-tissue applications. Lasers can be used to perform procedures that are simply not possible with traditional methods.

I have been a user of a diode soft-tissue laser since 1999, and frankly, I could not

practice without it. We use the diode for so many things. In particular, we find it invaluable for cosmetic applications, most commonly gingival contouring and troug-

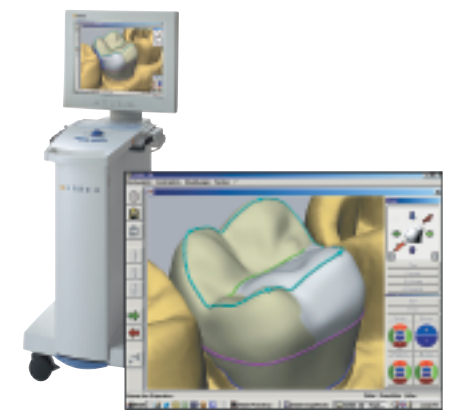
ing around preps; trouging eliminates the need to pack retraction cord. Other soft-tissue applications include gingivoplasty, gingivectomy, lingual and labial frenectomy, treatment of aphthous ulcers, sulcular debridement, hemostasis, fibroma removal, and biopsy. So it's obvious that lasers are versatile dental instruments—and the advent of hard-tissue laser technology increases applications even further to include cavity preparation and bone contouring.

Right now, I believe the laser trend is just beginning. However, as more dentists learn the facts about laser use, and as laser devices become easier to use and less expensive, laser treatment will move into the mainstream.

### Advanced treatment devices: CAD/CAM systems

Other treatment devices making inroads into the dental office (and dental laboratories as well) are CAD/CAM systems. CAD/CAM stands for Computer Aided Design and Computer Aided Manufacture. CAD/CAM systems use an imaging device to take an optical image of a prepared tooth. The computer then designs a restoration and mills it in a specialized chamber. The result is a one-step, lab-type restoration with no impression, no temporary, and no second appointment. Here's a look at two CAD/CAM systems.

#### The CEREC 3D CAD/CAM system



**New software for the CEREC 3D CAD/CAM system has extended the system's capabilities, simplified its use, and enhanced its esthetics.**

The most well known CAD/CAM system is the CEREC from Sirona Dental Systems ([www.sirona.com](http://www.sirona.com)), which has been available since 1986. The CEREC system is distributed by Patterson Dental Supply Inc. ([www.pattersondental.com](http://www.pattersondental.com)).

Stefan Hehn, PhD, is Vice President Dental CAD/CAM for Sirona. According to Hehn, there has been a definite change in how dentists approach CEREC at trade shows.

"In the past," Hehn said, "dentists came to see an exotic piece of equipment. Now they are coming with the intent to buy." As a result, CEREC sales have been increasing at a steady and significant rate every year, he said.

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The CEREC 3D CAD/CAM system, the newest generation of CEREC, offers the following advantages over previous versions:

- Marginal fit is improved.
- Esthetics are enhanced because the milled materials are similar to pressed porcelain, like IPS Empress from Ivoclar Vivadent, and composite polymers, like belleGlass from Kerr Lab.
- And, the CEREC system's new 3D software streamlines and

simplifies the design process—a single restoration can be designed in as little as three-to-five minutes.

### The Evolution4D Dental Office CAD/CAM System

New to the CAD/CAM market is the Evolution4D Dental Office CAD/CAM System from D4D Technologies ([www.d4dtech.com](http://www.d4dtech.com)), which will be launched in 2005. D4D will offer CAD/CAM systems for both the dental office and the lab, which will be exclu-



**A laser-based intraoral scan of a tooth preparation is in progress using D4D's Evolution4D Dental Office CAD/CAM System.**

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sively distributed by Henry Schein ([www.henryschein.com](http://www.henryschein.com)).

Here are some of the features of the Evolution4D's dental-office version:

- The intraoral scanner uses a laser-based grid to define a preparation.
- The milling chamber uses an automatic tool changer, enabling the use of up to three different bur sizes, which speeds the process and enhances detail.
- The milling machine is designed to be highly accurate, fast, and durable.
- The Evolution4D design-center software uses 3-D graphics and user-friendly design tools to enhance the restoration-design process.

Check out D4D's Web site to see more images of the system.

Technology in dentistry continues to change rapidly. Trends come and go, but one thing remains the same: The future is coming, and it will be amazing! **DPR**

*Dr. Larry Emmott, a recognized authority on dental technology in America, is a practicing general dentist in Phoenix. He also is an award-winning speaker who has addressed hundreds of professional groups. He is a featured instructor at the Las Vegas Institute, and is a member of the American Academy of Dental Practice Administration. He has written hundreds of articles on dentistry, computer use, and management. He also writes a monthly electronic newsletter, "Emmott on Technology," which shows dentists how to minimize costs and maximize profits through the effective use of technology. Dr. Emmott offers hands-on technology courses. His next hands-on tech program is scheduled for March 18-19, 2005.*

*For more information, call Dr. Emmott at 602-279-1641 or visit his Web site, [www.drlarryemmott.com](http://www.drlarryemmott.com).*

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