



# TECHNO

THE BIG IDEAS THAT  
ARE CHANGING EVERYTHING

# TRENDS

## UNIFIED COMMUNICATIONS

BY DANIEL BURRUS, CEO OF BURRUS RESEARCH



Competition is continuing to increase in all areas. To become more competitive and profitable is often accomplished by lowering costs and increasing efficiency. It can also be accomplished by creating new products, services and markets.

The vast majority of businesses focus on lowering costs because product and service innovation is often seen as a new expense, and a new risk. From an employee standpoint, they have seen year after year of relentless downsizing, or as it is often called, rightsizing. In other words, far fewer people to do more and more work. That is not a big problem, as long as technology is used to dramatically increase each worker's productivity.

The problem we often run into is that communication technologies that were meant to help us save time, such as cell phones, e-mail, group ware, audio and video conferencing, and instant messaging, to name a few, can actually take our valuable time as well. Not only that, but electronic gadgets are useless if the person you're trying to reach is unreachable.

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## UNIFIED COMMUNICATIONS *(continued from page 1)*

An early attempt to solve this problem was Unified Messaging. The idea was to bring together all types of fixed and mobile communications into a single delivery system. With voice, data, and video traffic all on the same network, users could send any type of message without having to consider how the recipient would receive it. In other words, I might leave someone a voice mail message and they might read it in their e-mail. Getting all of your messages in one place is good, but now we can do even better – getting a fast response from the person we are trying to reach!

Now, thanks to the majority of companies moving over to voice over IP (VoIP), it is possible to combine all forms of communications with “presence.” Presence lets users know who’s reachable where and when. If you have ever used instant messaging, you know when a person is present or away from their computer. This ability to know if the person you are trying to reach is actually there is a powerful business tool. By adding VoIP capabilities such as presence to Unified Messaging, we can now achieve what is being called Unified Communications. Not only are your communications unified with the power of presence, they can also be embedded in your applications. For example, sales people at a client location could reach out to experts for fast answers and get them without leaving their sales software application. Ask yourself: How much time would you save if you could reach key people with one call or e-mail?

### TECHNOLOGY NEWS HIGHLIGHTS

#### TEXT MINING

It’s been estimated that researchers spend half of their time locating information. Now, a new search tool called Gene Minerva will permit them to sift through mountains of literature – including scientific articles and patents – and find what they need more efficiently and effectively. Using a technique called Natural Language Processing, the proprietary algorithm combines advanced statistical models and adaptive processing to help computers understand sentences rather than simply matching words. The system is currently being used for biological research, but it can be customized to suit other applications as well. The developer plans to license the product for an annual fee of \$1,800.

*For information: BrainWave Biosolutions, Limited, MAC House, 4 Sardar Patel Road, Guindy, Chennai 600 032, India; phone: +91-44-6551-1132; fax: +91-44-2230-0194; Web site: [www.brainwave.in](http://www.brainwave.in)*

#### ULTRASOUND BIOFUEL “DISTILLER”

A new method for isolating bioethanol could greatly reduce the cost of mass-producing biofuels. Bioethanol liquid (with an initial alcohol content of about ten percent) is exposed to ultrasound waves, generating a mist at the surface. These particles, which contain a higher concentration of alcohol, are collected and the process is repeated until the bioethanol is 98-99 percent pure. The technique is as fast as distillation and up to ten times more energy efficient, making it an attractive alternative to conventional production processes.

*For information: Honda Electronics Co., Ltd., 20 Oyamazuka, Oiwa-cho, Toyohashi City, Aichi, Japan 441-3193; phone: +81-532-41-2511; fax: +81-532-41-2093; Web site: [www.honda-el.co.jp](http://www.honda-el.co.jp)*

#### 3D TELEVISION

Soon, digital light processing (DLP®) televisions will bring the magic of high definition with three-dimensional viewing into your own living room. The new systems, which are expected to hit stores this fall, consist of a transmitter that generates independent views for right and left eyes. These signals are synchronized with “shutter glasses” to insure that the images alternate correctly. With a frame rate of 120 Hertz (60 Hertz per eye) the images are perceived as a single three-dimensional picture.

The kit will require a DLP-ready HDTV, models of which are already available from Samsung and Mitsubishi, at prices ranging from \$1,500 to \$4,500. Video and graphic content that is created using the 3-D format promises to deliver color fidelity and picture depth that is far superior to older anaglyphic (red/blue) technology, with images that appear to leap right off the screen.

*For information: Texas Instruments, 12500 TI Boulevard, P. O. Box 660199, Dallas, TX 75266-0199; phone: 972-995-2011; Web site: [www.ti.com](http://www.ti.com) or [www.dlp.com/3D](http://www.dlp.com/3D)*

## WIRELESS ELECTRICITY

Engineers at MIT have come up with a way to wirelessly power multiple electrical devices. Dubbed WiTricity, the system exchanges energy between two objects through a property known as magnetically coupled resonance. A copper “source” coil is plugged into a standard electrical outlet, creating a magnetic field that oscillates at a frequency of 10 MHz. “Receiver” coils, resonating at the same frequency, are placed within the field where they pull only as much power as they need to run the devices to which they are attached, such as lamps, computers, or cell phone chargers. The low frequency signals pass through intervening objects, people and animals with no apparent threat, and should not interfere with other electronic devices that generally operate at much higher frequencies. In initial experiments, the team was able to generate a 7-foot diameter field and power a 60-watt light bulb using two 20-inch diameter coils. Before the system can be commercialized, they hope to improve efficiency and reduce coil size, while expanding the field of operation.

*For information: Marin Soljacic, MIT, Department of Electrical Engineering and Computer Science, Institute for Soldier Nanotechnologies, 77 Massachusetts Avenue, Cambridge, MA 02139; phone: 617-253-2467; fax: 617-253-2562; email: [marin@alum.mit.edu](mailto:marin@alum.mit.edu); Web site: [www.mit.edu](http://www.mit.edu)*

## PORTABLE HYDROGEN POWER

A portable, environmentally friendly, hydrogen-powered generator is due to be released soon that will produce up to 200 watts of power from water. At the heart of the system is an innovative fuel canister called HydroCell that safely stores hydrogen embedded in sodium and borax (sodium borohydride). When exposed to water, the hydrogen molecules are released and converted into hydrogen ions and electrons, creating an electric current. The positively charged ions are then pushed through a proton exchange membrane, where they combine with oxygen from the air to produce water, which is then recycled to sustain the reaction. The system weighs less than 20 pounds and provides power outputs of 12 volts DC or 120 volts AC –adequate for charging batteries or directly powering small appliances. Because it produces no harmful emissions, it can be used indoors. It also eliminates the noise problems inherent in gas-powered systems.

The HydroCell canisters are compact in size and may be transported using traditional carriers. Unlike batteries and liquid fuels, which can deteriorate over time, the canisters also have a long shelf life. The company plans to begin marketing the system next year with an initial price tag of \$2,000.

*For information: Trulite Technology, LLC, 1401 McKinney, Suite 900, Houston, TX 77010; phone: 713-888-0660; fax: 713-768-4915; Web site: [www.trulitetech.com](http://www.trulitetech.com)*

## TV GLASSES

A new device that resembles an ordinary pair of glasses may be the next big development in mobile television. The PD20 series of eyeglass displays combines patented Light-guide Optical Element (LOE) technology with an ultra-compact delivery POD to deliver a superior viewing experience without being bulky. The key is in the optical substrate, which contains a series of reflective facets. Unlike conventional optics that requires thicker material to produce a wider field of view, LOE can project a wide-angle image using a lens as thin as 3 millimeters. To the wearer, it appears as though it's being projected on a large, distant screen. Expect to see cell phone- and mobile device-compatible versions of these futuristic specs hit the consumer market in 2008.

*For information: Lumus, Ltd., 2 Bergman Street, Rabin Science Park, Rehovot 76705, Israel; phone: +972-8-947-3361; fax: +972-8-947-3362; Web site: [www.lumus-optical.com](http://www.lumus-optical.com)*

## SAFER KIDNEY STONE TREATMENT

Japanese researchers have developed a high-precision ultrasound device for safer treatment of kidney stones. Current devices operate at wavelength of about 10 cm and bombard the area around the stone thousands of times until the stone breaks apart. This can cause damage to the surrounding tissue that results in internal bleeding. In contrast, the new system directs a short wavelength of approximately 0.5 mm at the stone, creating thousands of microscopic bubbles on its surface. When exposed to

a second wave, at a wavelength of about 3mm, the bubbles burst, releasing energy and pulverizing the stone. In tests on pigs with kidney stones measuring 7 mm in size, the device totally eliminated the stone while producing no discernible damage to the surrounding tissue.

*For information: Yoichiro Matsumoto, University of Tokyo, Department of Mechanical Engineering, Room 61A1, Engineering Building, #2, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan; phone: +81-3-5841-6286; fax: +81-3-3818-0835; Web site: [www.u-tokyo.ac.jp/](http://www.u-tokyo.ac.jp/)*

## IMPROVED CREDIT CARD SECURITY

An innovative and smarter credit card has been designed to help guard against electronic fraud. It contains a small LCD screen, battery, circuit and chip to generate a one-time password at the push of a button. Each password is good for only one transaction and for a limited period of time, insuring that the buyer is in physical possession of the card and eliminating the possibility of online fraud. The display cards are also available as key cards and tokens.

*For information: InCard Technologies, 10880 Wilshire Blvd., Suite 950, Los Angeles, CA 90024; phone: 310-312-0700; Web site: [www.incardtech.com](http://www.incardtech.com)*

## SOLAR QUANTUM DOTS

Up until now, the high cost of generating power using solar cells has limited their widespread use. However, recent breakthroughs in the use of quantum dots to convert light into electricity may finally make solar energy a viable alternative for reducing greenhouse gases. Quantum dots are nanosized semiconductors through which electrons can move very quickly. Researchers have found that when indium-arsenide dots are stacked together, they can generate electricity with an efficiency of about 7percent. In addition, different size dots respond to different wavelengths, so by using a variety of sizes, the devices can be used over a wide range of wavelengths for even better efficiency – up to 63 percent.

*For information: Yoshiataka Okada, University of Tsukuba, 1-1-1 Tennodai, Tsukuba-shi, Ibaraki-ken, 305-8577 Japan; phone: +81-29-853-2111; fax: +81-29-853-2111; Web site: [www.tsukuba.ac.jp/eng](http://www.tsukuba.ac.jp/eng)*

## “CHROME” PAINT

Mercedes Benz and BASF recently teamed up to develop a new paint that shines like metal plating. Called Alubeam, the new finish was created by incorporating tiny aluminum flakes (30-50 nanometers across). When applied evenly, they lie flat to form a continuous layer of metal, which reflects light more evenly and intensely than traditional paints. Because the finish needs to be applied by trained experts, the cost is high – an estimated \$10,000 per car – so it will only be available initially on a limited number of anniversary edition CL 65 models. However, manufacturers are already working on automated application techniques to make the process more cost effective.

*For information: Mercedes-Benz USA, LLC, 3 Paragon Drive, Montvale, NJ 07645; phone: 800-367-6372; Web site: [www.mbusa.com](http://www.mbusa.com)*

## ALL ABOARD!

July 1st marked the maiden voyage of the fastest bullet train in service. The Series N700 boasts a top speed of 186 miles per hour and is equipped with an active tilting system that allows it to take corners without slowing down. The sleek design is made even more aerodynamic (and quieter) by fabric hoods that cover the gaps between cars. Acceleration is also improved by more than 30 percent over its predecessor – going from 0 to 60 in only 37 seconds. Best of all, the N700 uses 19 percent less power than current bullet trains, thanks to a regenerative braking system and the use of lightweight materials.

*For information: Japan Railways Group; Web site: [www.japanrail.com](http://www.japanrail.com)*

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