



TECHNO

THE BIG IDEAS THAT
ARE CHANGING EVERYTHING

TRENDS

THE TRANSFORMATION OPPORTUNITY

BY DANIEL BURRUS, CEO OF BURRUS RESEARCH



With this issue we celebrate our 25th year of publication, providing you with the technology news and insights that have shaped this technology-

enabled world we now live in. As I look at our subscriber list, which is made up of major news agencies, universities, research labs, executives from almost every industry, entrepreneurs, and interested individuals from all over the world, I'm amazed at how many have been with us from the very beginning – thank you!

Having just re-read our first issue where we reported the rise of e-mail, electronic news, downloadable software, laser eye surgery, medical and industrial robots, optical storage disks, wireless communications, and genetic engineering, to name a few, it's hard now to imagine that there was a time when we didn't have all of those things. As predicted, technology has changed how we live, work and play.

FROM CHANGE TO TRANSFORMATION

We are now at the dawn of a profound technology-driven transformation that will make the changes we have experienced over the past 25 years seem small and slow.

Notice I used the word transformation and not change. *continued on page 2*

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TRANSFORMATION OPPORTUNITY *(continued from page 1)*

When I was in high school, I listened to my music on LP albums, one album per spinning disk. Years later a welcome change happened, I could listen to my albums on a CD, basically a smaller spinning disk without the hiss and scratches. I liked this change and repurchased all of my favorite albums. Thanks to the iPod revolution, I now have all my albums in one small device that is with me all the time. iPods and all other MP3 players haven't changed how we listen to music, they've transformed it. And once transformed, you aren't going back.

We are about to transform how we sell, market, communicate, collaborate, innovate, watch TV, learn and, as you might guess, much more.

THE OPPORTUNITY IS BIGGER THAN THE CRISIS

As we've all read about and experienced the financial crisis, the housing crisis, and the unemployment crisis, it's important to understand that under the fog of crisis, sits a mountain of unprecedented opportunity for all who take the time to discover and act on it. Technology is driving transformative change, our new president is driving change, the new global reality is demanding change, and as the ancient Chinese philosophers wrote, change is opportunity. Look at the hard trend drivers I have discussed in past articles, demographics, government regulations, and technology innovation. Look for opportunities and embrace change.

GM, Chrysler, and Ford saw change as a threat and spent valuable time and money protecting and defending the status quo. The unions spent time and money protecting and defending the status quo. Protecting and defending the status quo is human nature, but in a world of transformational change you need to get over it fast. The auto industry is going through a needed rebirth based on the new realities of the 21st century. Those that see the direction of change and change with it will prosper.

We have a new president whose platform is change. Billions of dollars will be put into play, and new laws will be passed that will provide a window to profitability and growth. Pay attention! If money is going into infrastructure, opportunity will follow. If money is going into alternative energy and green, opportunity will follow. If money is going into research and science, opportunity will follow. Follow the money and you will see the opportunity.

My grandfather lived on a farm in north Texas and one day while helping him on the farm he shared some wisdom with me. He said, "It's easier to ride a horse in the direction it's going". The horses we have been riding have been on a familiar path making it easy. They are about to change direction and if you try to ride them in the same old direction, it will be a battle all the way. This is a once-in-a-lifetime opportunity for you personally, and for your organization. Don't miss it!

TECHNOLOGY NEWS HIGHLIGHTS

THE HYDROGEN CAR HAS ARRIVED!

Honda recently rolled the first mass-production fuel cell automobiles off the assembly line. Called the FCX Clarity, the revolutionary new car looks and drives just like its gas-powered counterparts, but produces no harmful emissions. It's powered by a specially-designed, 100-kilowatt fuel cell that's 65 percent smaller than other designs, leaving enough interior room to carry four passengers comfortably, while boasting a top speed of 100 miles per hour and a range of 280 miles. The FCX can be leased for \$600 per month for 36 months, but because of limited access to service and fueling, they are currently available only in Torrance, Santa Monica and Irvine, CA. Honda is also working on development of a Home Energy Station, which will be able to generate hydrogen from natural gas while providing heat and electricity for the home.

For information: American Honda Motor Co., Inc., 1919 Torrance Blvd., Torrance, CA 90501; phone: 800-999-1009; fax: 310-783-3023; Web site: www.honda.com

AFFORDABLE MAGLEV

A new magnetic levitation (maglev) system is currently being evaluated that may make these fast, quiet trains more affordable as a mass transit alternative. It allows existing rail systems to be converted to maglev systems, and would

enable maglev trains to interoperate with conventional mass transit vehicles. In a small scale study, neodymium-iron-boron magnets were installed alongside existing train tracks, while opposing magnets were mounted on the individual cars, allowing them to float above the track without the need for auxiliary power. Small electromagnets are used to position the cars and direct them right or left when they encounter a switch. The cost of the system is about one-third that of current maglev designs, not including the savings in real estate that could be realized by utilizing existing rail right-of-ways.

For information: Andrew Hayes, FasTransit, 1 Rockefeller Plaza, Suite 1005, New York, NY 10020; phone: 212-554-3120; email: ahayes@fastransitinc.com; Web site: www.fastransitinc.com

INTELLIGENT TRAFFIC SYSTEMS

A new application for RFID technology may soon make roads much safer. The revolutionary system, which utilizes some of the bandwidth that is being freed up by the switch to digital television, is designed to reduce accidents by alerting drivers of the presence of nearby cars or pedestrians. In recent tests, people were equipped with electronic tags that operate in the 950 MHz band. When the tags are activated by a magnetic field, they broadcast a signal that can be detected by approaching vehicles equipped with a 950 MHz receiver. The pedestrian's position is calculated in relation to the driver's location, direction and speed, and the data is displayed on the vehicle's navigation system display.

For information: Hideo Oda, National Institute of Information and Communications Technology, 4-2-1, Nukui-Kitamachi, Koganei, Tokyo 184-8795, Japan; phone: +81-042-327-6677; fax: +81-042-327-7587; email: oda@nict.go.jp; Web site: www.nict.go.jp/index.html

DEVICE IDS DANGEROUS LIQUIDS

Czech scientists recently announced that they have discovered a way to identify potentially dangerous substances – the kind that could be used to prepare explosives – without the need to open the bottles. The detector reportedly takes about one second, and would alleviate the need to inspect liquids while going through x-ray at airports. Current systems are plagued by inaccuracies caused by different shapes of plastic and glass bottles. In addition, certain non-dangerous substances, such as nail polish remover and peroxide, may produce erroneous results. The researchers are working with Prague Airport to test the new device; however it will take a number of years to pass the necessary certifications before it can be put into widespread use.

For information: Jiri Blaha, RS Dynamics, Starochodovska 1359/76, CZ-14900 Prague 4, Czech Republic; phone: +42-0267-908-300; fax: +42-0267-908-302; Web site: www.rsdynamics.com

BIODIESEL FROM E. COLI

The same bug that can cause upset stomachs in humans is now being used to produce a biofuel that could someday replace gasoline, diesel and jet fuel. The process uses a genetically modified version of E. coli, which is mixed with sugar cane in large vats of water. As the microbes metabolize the sugars, they produce fatty acids with the same hydrocarbon configuration as petroleum. The fuel has a higher energy content than ethanol or butanol and can go directly into vehicles or be further processed at a refinery. And at a current cost of \$50 per barrel, the price is already competitive with conventional diesel, but the process will also work with wood chips and other biomass, making it even more cost effective. A pilot plant was opened in September, but large scale production is expected to begin as early as 2011.

For information: Greg Pal, LS9, Inc., 100 Kimball Way, South San Francisco, CA 94080; phone: 650-243-5400; fax: 650-589-1289; Web site: www.ls9.com

SALIVA TEST FOR HEART ATTACKS

Timely diagnosis of a heart attack is the first and most important step toward initiating appropriate treatment. Currently, an accurate assessment involves multiple laboratory tests, which are time consuming and require multiple blood samples. Now a new lab-on-a-chip allows clinicians to diagnose a cardiac event quickly and easily using a simple saliva test. Called the Electronic Taste Chip (ETC), it analyzes a sample for a variety of biomarker proteins that have been linked with coronary heart disease (CHD). Instead of waiting for tests at the hospital, the test can be administered in the

ambulance, saving valuable time and allowing for earlier intervention.

For information: McDevitt Labs, University of Texas at Austin, Chemistry and Biochemistry Department, 1 University Station, A5300, Austin, TX 78712; phone: 512-471-0046; fax: 512-232-7052; email: mcdevitt@mail.utexas.edu; Web site: www.tastechip.com

RENEWABLE FUEL...AND PLASTIC TOO!

Researchers have been looking at switchgrass as a renewable source of biofuel for some time. But recently, they found that the same crop can yield another useful product – a biodegradable substitute for petroleum-based plastics. When genetically modified bacteria were spliced into the DNA of switchgrass, it was found that granules of plastic accumulated in the leafy tissue. The naturally occurring compound, called polyhydroxybutyrate (PHB) can be easily harvested to produce a variety of “green” products including food packaging, foam and plastic bags. As for the leftover switchgrass, it can then be processed into biofuel.

For information: Metabolix, 21 Erie Street, Cambridge, MA 02139; phone: 617-583-1700; fax: 617-583-1768; Web site: www.metabolix.com

WIND TOWER

A unique, new wind generator is designed to address many of the drawbacks of conventional propeller systems. Called the Windspire, it combines low cost and aesthetically pleasing design with ultra-quiet operation and rugged construction to produce approximately 2000 kilowatt-hours per year in 12 mile per hour average winds. At only 30 feet in height, the vertical-axis turbine falls within typical residential and urban zoning restrictions. It operates at a low tip speed ratio of 2 to 3 times wind speed, making it very quiet. It's durable enough to withstand winds of up to 100 miles per hour, and can be installed in a matter of hours. Best of all, the cost (complete with generator, inverter, monopole and wireless performance monitor) is only about \$5,000.

For information: Mariah Power, 5470 Louie Lane, Suite 104, Reno, NV 89511; phone: 775-831-9463; Web site: www.mariahpower.com

MOBILE MICROSCOPE

Engineers at UC Berkeley have come up with a revolutionary product that could change the face of telemedicine. Called CellScope, it combines a cell phone with a microscope to capture, organize and transmit images. With a range of 2x to 50x, the CellScope can be used at low magnification for imaging areas such as the ear, mouth and throat or at higher magnification to examine blood or tissue samples. Because it moves with the care provider, it can greatly improve access to care for underserved populations throughout the world.

For information: Daniel Fletcher, Blum Center for Developing Economies, University of California, F402 Haas School of Business, #1930, Berkeley, CA 94720; phone: 510-643-5316; fax: 510-642-2826; email: blumcenter@berkeley.edu; Web site: www.blumcenter.berkeley.edu

ANTI-COUNTERFEIT SCANNER

A proprietary, patented technology called Laser Surface Authentication™ (LSA) is designed to identify counterfeit products or documents easily and cost-effectively. Nanoscopic variations on the surface of an object are like a fingerprint or DNA sequence, and can be used to positively identify it, even if it has been crumpled, soaked or written on. Using a low-cost, laser scanner, the surface characteristics of any object can be recorded. A unique digital serial code is then assigned to the object, which cannot be copied. The system requires no modification of existing manufacturing processes because there are no tags to apply. In addition, it's far more reliable than current methods of establishing authenticity such as holograms and watermarks.

For information: Ingenia Technology Ltd., 73 New Bond Street, 2nd Floor, London, W1S 1RS, United Kingdom; phone: +44-(0) 207-495-0844; fax: +44-(0) 207-495-6562; Web site: www.ingeniatechnology.com

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