TECHNO TRENDS
THE BIG IDEAS THAT ARE CHANGING EVERYTHING

FLASH FORESIGHT

BY DANIEL BURRUS, CEO OF BURRUS RESEARCH

Have you ever wished you could predict the future—and be right? What would it be like if you could clearly see critical changes in the months and years ahead, and use those glimpses to shape that future, instead of just letting it unfold by default?

You can accurately predict enough of the future to make all the difference. In fact, you can hone your ability to trigger a burst of accurate insight about the future and use it to produce a new and radically different way of doing things. Called a flash foresight, this is about looking into the future and transforming it into a new paradigm for solving "impossible" problems, unearthing "invisible" opportunities, and running extraordinarily successful businesses in the twenty-first century.

In my new book Flash Foresight, I share seven principles that can make invisible opportunities visible. Here is a brief overview of each:

START WITH CERTAINTY

Many people confuse cyclical change (the stock market) with linear change (population growth), and don't know how to distinguish hard trends (baby boomers are aging) from soft trends (there won't be enough doctors to treat aging baby boomers). However, by distinguishing what's certain (future fact) from what's uncertain (future maybe), you can make accurate predictions. *continued on page 2*

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In the spirit of abundance, over 40 top authors who love Daniel Burrus' latest book Flash Foresight want to get the message to as many people as possible and have agreed to contribute one of their products that support the message of the book. The total collection is valued at over $20,000.00

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ANTICIPATE

Base your strategies on what you know about the future. Based on the certainty of hard trends, ask yourself, "What are the problems I am about to have?" Then look for creative ways to solve those problems before they happen.

TRANSFORM

Use technology-driven change to your advantage. Transformation means doing something utterly and radically different. Using hard trends, how do you expect your business or profession to transform in the next few years? Your answer will help you start crafting strategies to transform how you sell, market, communicate, collaborate, and innovate.

TAKE YOUR BIGGEST PROBLEM AND SKIP IT

The key to unraveling your organizations' most intractable problems often lies in recognizing that the problem confronting you is not the real problem. The real problem lies hidden behind the distraction of what you think the problem is.

GO OPPOSITE

Look where no one else is looking to see what no one else is seeing and do what no one else is doing. When searching for the real problem you want to address, it's not always easy to know where to look. One way to help tease that insight to the surface is to note what everyone else is thinking and doing—and then look in the opposite direction.

REDEFINE AND REINVENT

Identify and leverage your uniqueness in new and powerful ways. Forget competing; instead, leapfrog the competition by redefining anything and everything about your business. Additionally, decommoditize continuously—look for creative ways to make the mundane exceptional and transform the normal into the extraordinary.

DIRECT YOUR FUTURE

Directing your future is the conscious exercise of your creative capacity to envision and rewrite your future life and career that wraps all the other flash foresight principles together. You become what you dream; therefore, what are you dreaming?

CHART YOUR COURSE

Having accurate flashes of insight about the future are the key to successful innovation and accelerating growth. By committing to these seven principles, you'll keep your company and yourself ahead of the curve so you can navigate a solution before the rest of the world even sees a problem coming.

TECHNOLOGY NEWS HIGHLIGHTS

AUTONOMOUS CHIP

Researchers in the Netherlands have developed a microchip that can run without the need for an external power supply. Tiny solar cells placed directly on the chip harvest enough energy from its surroundings to operate the chip, even indoors. The solar cells are manufactured using amorphous silicon or CIGS (copper-indium-gallium-selenide) which can produce power in low light environments. Although the maximum power draw of the current design is one milliwatt, the technology could eventually be used to develop chips with onboard wireless capabilities, including a built-in antenna.

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SELF-HEALING MATERIALS

A new class of materials called mechanophores may someday allow engineers to predict mechanical failures

before they happen. They incorporate molecules called spiropyrans which change from being colorless to red or purple when they undergo mechanical stress. Materials such as these would provide an early warning sign of potential failures in many applications from bridges and buildings to aircraft components. They can be "tuned" to display color changes at various levels of stress, and could eventually be made dynamically responsive to remodel, reorganize, and even repair damage in the early stages.

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100 GBPS BANDWIDTH

A new high-speed fiber optic cable has been developed that is capable of transmitting data at a speed of 100 gigabits per second (GBPS). Rather than using the intensity of a single bit to encode data, the new technology encodes two bits in both the polarization and phase of a pulse of light. This allows the signal to carry up to four times as much data and reduces the impact of minor imperfections in the cable. A 38-mile test link has already been installed in Germany. The cable has also been tested on a dedicated Ethernet system in Dallas. It's now available for commercial installation to help fill the ever-increasing demand for bandwidth.

For information: Alcatel-Lucent, Corporate Headquarters, 3 av. Octave Greard, 75007 Paris, France; phone: +31-1-4076-1010; Web site: www.alcatel-lucent.com

SOLAR POWER FOR THE MASSES

In a bold move to bring renewable energy to a broad population, China's top producer of polysilicon – the main raw material used in solar cells – recently reduced the cost of their product to about one-quarter of the international market price. The goal is to bring photovoltaic (PV) solar batteries to families throughout China in the next three to five years. It has been estimated that China produces more than 21,000 tons of polysilicon annually – nearly 20 percent of the world's total.

For information: GCL-Poly Energy Holdings Limited, Unit 17038-1706, Level 17, International Commerce Centre, 1 Austin Road West, Kowloon, Hong Kong; Web site: www.gcl-poly.com.hk/eng/index.php

LASER-POWERED HELICOPTER

A new method for powering unmanned aerial vehicles (UAVs) was recently demonstrated that could be used to supplement fuel or batteries. And, unlike solar, the new technology would be able to meet the higher power demands of military aircraft by using lasers to generate power. The proof-of-concept demonstration used a 22-gram, radio-controlled, model helicopter equipped with photovoltaic cells that were optimized for a specific wavelength of light. The ground-based laser system consisted of an array of near-infrared light sources which were focused down to a 7-centimeter-wide beam. An automatic tracking system was also employed to keep the beam focused on the PV cells. About half of the power reaching the cells was converted into electricity – enough to keep the rotors spinning for several hours on end. The method can be scaled to power much larger systems in the future. For example, drones that never need to land and even the possibility of space elevators may someday be designed to lift objects thousands of kilometers into orbit.

For information: Jordin Kare, LaserMotive, 19645 79th Avenue South, Kent, WA 98032; phone: 253-872-3300; Web site: www.lasermotive.com

INDUCED STEM CELLS

Reprogramming adult cells to behave like stem cells has been the goal of researchers worldwide as they strive to avoid the controversial destruction of embryos. In recent years, breakthroughs have been made using viruses to "infect" cells with cancer-related genes. However, concerns over the safety of such methods, and the fact that they are highly inefficient (only one in 1,000 cells is typically transformed) have prevented their widespread adoption. Now a new method has been unveiled which uses ribonucleic acid (RNA) that has been engineered to overcome the cells' natural immune defenses to create induced stem cells. It is 40 to 100 times more effective than the cancer-mutation method, and can also be used to turn the cells into specific types of tissue.

For information: Derrick Rossi, Children's Hospital of Boston, 300 Longwood Avenue, Boston, MA 02115; phone: 617-355-6000; Web site: www.childrenshospital.org

SUPERMICROPHONE

The recently patented AudioScope is a new microphone system that can make a single conversation audible, even in a crowd full of people. It consists of a circular array of 300 microphones and a fixed, wide-angle camera that can zoom to any location within its range. A software algorithm calculates how much time it would take for sound to travel from that point to each of the microphones. When the individual audio feeds are synchronized to remove background noise, the resulting signal comes through loud and clear. The system was originally developed for televising sports events, and the response has been mixed, since it allows broadcasters to hone in on conversations that coaches and players would rather keep to themselves. Future applications for the technology may include security and surveillance.

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THIS CAMERA CAN SEE AROUND CORNERS

Applications for computational photography are beginning to take center stage in the race for the next leap forward in digital camera technology. Apps such as True HDR and Pro HDR already allow users to combine images taken at different exposures to create high dynamic range (HDR) photos that can't normally be obtained in a single shot. In fact, computational photography may someday make lenses obsolete by using processing power to form the images themselves. One such device is a prototype camera that uses ultrafast lasers to deduce the location of hidden objects. For example, the camera can be pointed at the half-open door to a model room. It fires trillions of light pulses per second, which bounce off the door, hit objects in the room and then bounce back to a detector in the camera. Each pulse is tracked, photon by photon, based on where it lands to mathematically model the geometry of the room. Although it has yet to go beyond the laboratory, the technique may someday help rescue robots see around corners or allow medical cameras to peer around blockages.

For information: Ramesh Raskar, Massachusetts Institute of Technology, Program in Media Arts and Sciences, E14-474G, 77 Massachusetts Avenue, Cambridge, MA 02139; phone: 617-253-0329; email: raskar@media.mit.edu; Web site: www.mit.edu

ARTIFICIAL MUSCLES

Although touchscreen devices are gaining in popularity, the lack of tactile feedback has kept many users from embracing the technology. But one company has come up with a way to combine the best of both worlds by placing a plastic actuator under the glass to give the "feel" of typing on a keyboard. When tapped with a finger, an electric current flattens the "artificial muscle" by a few tenths of a millimeter, giving the illusion of typing on a keyboard. Compared to piezoelectric devices, the plastic muscle is less expensive, less fragile and more flexible. In addition to smart phones, they will likely be widely used in gaming applications to help users "feel" the kickback of a gun or the jolt of being tackled.

For information: Artificial Muscle, Inc., 749 N. Mary Avenue, Sunnyvale, CA 94085; phone: 408-215-7320; fax: 408-245-0361; Web site: www.artificialmuscle.com

SMART METALS

Researchers have developed a new "thermally elastic" metal that could replace the fluid coolants used in compressors today. The two-state alloy is capable of alternately absorbing and creating heat with 175 percent greater efficiency than traditional refrigeration and cooling systems, resulting in reduced energy consumption and lower costs. In addition, it is estimated that using smart alloys would reduce carbon-dioxide emissions by 250 million metric tons annually in the United States alone.

For information: Eric Wachsman, University of Maryland, Energy Research Center, 3232 Jeong H. Kim Engineering Building, College Park, MD 20742; phone: 301-405-8193; email: ewach@umd.edu; Web site: www.umerc.umd.edu

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