DANIEL BURRUS'
TECHNO TRENDS
THE BIG IDEAS THAT ARE CHANGING EVERYTHING
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Increasing the Human Factor

By Daniel Burrus, CEO of Burrus Research

We live in an amazing era of technology-driven transformation that's redefining how we sell, market, communicate, collaborate, innovate, train, and educate—all in an amazingly short period of time. With that said, though, we don't want to lose sight of the fact that the future is a human future. And when it comes to humans, it's all about relationships and trust. If you don't have trust, you don't have a good relationship.

But trust isn't something you give and receive freely. Trust is earned through key values, such as honesty, integrity, and delivering on promises. These types of values are true in every country and every culture all over the world.

Today we're more connected to others than ever before thanks to the mobile Internet being on our phones. In fact, right now 2.5 billion people are connected to the Internet. At any one time, 30% of the world population is going online. And over 70% of the phones sold last year were smart phones, meaning that people have television, radio, and Internet access in the palm of their hand.

Despite all this technology, the human factor is more important for business success than ever before. For example, I know companies that have had breakthrough technology over the years and were using the latest equipment, yet they failed because they neglected the human factor of doing business. I've also seen companies using older technology, what we might call "legacy technology," and they beat out their competitors because of their focus on the human factor.

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Know What's Next Magazine

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how we sell, market, communicate, collaborate, innovate and educate.

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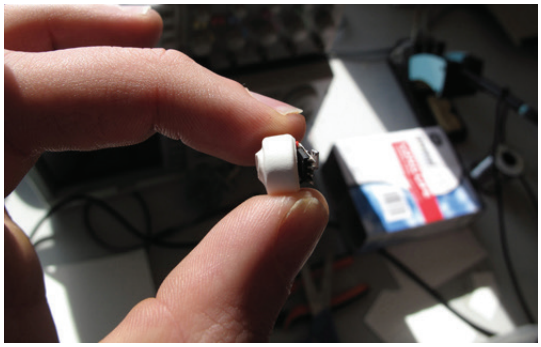
TECHNOLOGY NEWS HIGHLIGHTS

Ultrasonic Pill

A new development in drug delivery could make painful injections a thing of the past for diabetics requiring daily doses of insulin. Dubbed the uPill, the device enhances the absorption of medications that typically can't be administered orally because they don't penetrate tissue quickly enough.



It's been known for some time that ultrasound can make cell membranes more permeable by heating up the molecules in the tissue. In the past, they've been used to help increase absorption of many protein-based drugs by as much as ten times. This latest development incorporates that same concept into a pill that can be coated with the required medicine and swallowed. As it passes through the digestive system, it sends ultrasound waves through the tissues to make them more receptive to absorbing the drug.

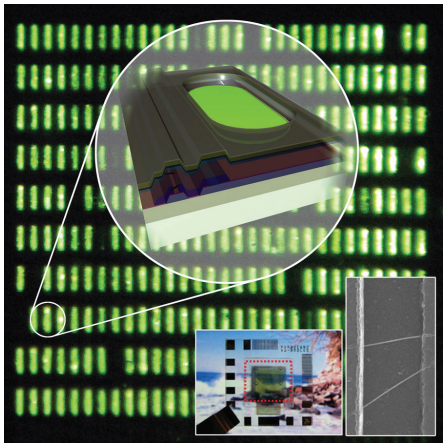
It's anticipated that the uPill would cost between $20 and $30 and could hit the market in just a few years.

For information: George Lewis, ZetrOZ LLC, Cascadilla Commons, 421 North Aurora Street, Ithaca, NY 14850; phone: 888-202-9831; Web site: ***www.zetroz.com***

Nanowire Computers

Many experts think that the speed and processing capability of silicon- based semiconductors will reach a practical limit in the next five or ten years. But that doesn't necessarily mean the end of Moore's Law.

Nanowire transistors may be the next breakthrough when it comes



to boosting processor speed. They're constructed in such a way that the wires stand vertically rather than horizontally, allowing more wires to fit on a circuit. In addition, in contrast to conventional transistors where the layers transition gradually, the elements that compose the new chips – namely germanium and silicon – allow the layers to be more sharply defined, improving performance on an atomic level. All of this translates into more processing capacity in less space...and Moore's Law continues...

For information: Eric Stach, Purdue University, School of Materials Engineering, 710 West State Street, West Lafayette, IN 47907; phone: 765-494-1466; email: ***eastach@purdue.edu****; Web site:* ***www.purdue.edu***

Low Cost, High Power Battery

In the quest for "greener" cars, the key seems to be finding battery technology that's not only inexpensive, but efficient, durable and lighter weight. Now, a new lithium ion phosphate technology may finally catapult electric vehicles from niche product to mass-market.

The new battery is known as Nanophosphate EXT, and its developer has not divulged the details of their proprietary design. However, by improving the efficiency of the electrode-electrolyte interface and the way electrons move through the system, they've

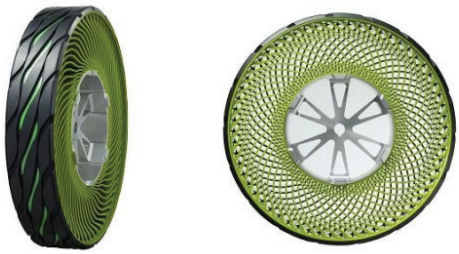
been able to produce some significant results: 20 percent more power over a wider range of temperatures (minus 30 to plus 60 degrees Celsius) in a form factor that's half the weight and 30 percent smaller in size than their lead acid counterparts. Although the new batteries are currently more expensive, they're expected to last much longer, making overall cost lower in the longer run.

For information: A123 Systems, 200 West Street, Waltham, MA 02451; phone: 617-778-5700; fax: 617-924-8910; Web site: ***www.a123systems.com***

Airless Tires

A new concept in tires was recently announced that could spell the end of flat tires. The Airless Concept Tire would not only eliminate flats, it would also save fuel and cut down on the 300 million tires that are scrapped each year in the U.S. alone.

The puncture-proof tire consists of a thermoplastic spoke structure that radiates outward from a central aluminum wheel and is wrapped with a rubber tread, which provides traction. The spokes support the weight of the vehicle and reduce road vibration, yet are soft enough to deliver a comfortable ride. Because rolling resistance is reduced, the tires also improve mileage. And the thermoplastic body can be easily melted and remolded, making them totally recyclable.

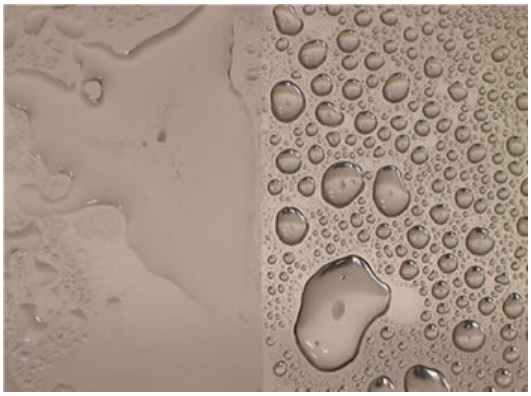


A 9.8-inch version is currently being tested on carts and forklifts in low-speed industrial applications, and a larger version (suitable for passenger vehicles) is in development.

For information: Bridgestone Corporation, 10-1 Kyobashi 1-chome, Chuo-ku, Tokyo 10-,8340, Japan; Web site: ***www.bridgestone.co.jp/*** *or Bridgestone Americas, Inc.,535 Marriott Drive, Nashville, TN 37214; phone: 615-937-1000; Web site:* ***www.bridgestone.com/index.html***

Self-Cleaning Surfaces

Researchers in Germany recently discovered that incorporating a coating of titanium dioxide molecules onto a variety of surfaces makes them self-cleaning, a characteristic that could be very useful for smartphones and other hand-held devices.



In its current form, the cleaning action is triggered by exposing the surface to sunlight. This activates an electrochemical reaction to produce free radicals and other active molecules that destroy organisms such as bacteria, fungi and algae by penetrating the cells walls and damaging their DNA.

The coating has been tested on a variety of surfaces inside and outside the lab, and work is already underway to incorporate the technology into paints and window coatings for building exteriors. But a more interesting application may be as a coating for smartphone screens that would make fingerprints disappear automatically. The next step will be to perfect a similar material that works as well in artificial lighting.

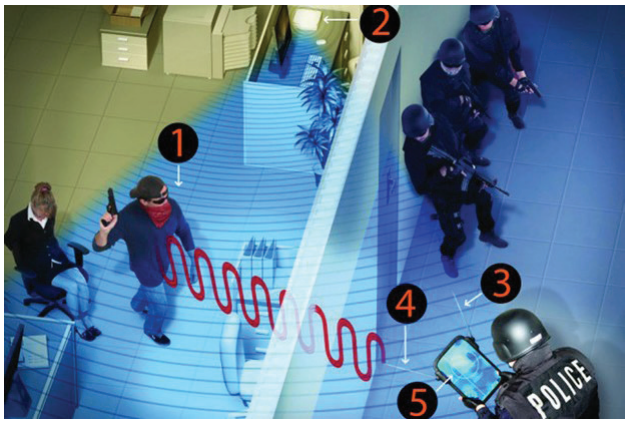
For information: Iris Trick, Fraunhofer Institute for Interfacial Engineering and Biotechnology, Nobelstr. 12, 70569 Stuttgart, Germany; phone: +49-711-970-4217; fax: +49-711-970-4200; email: info@igb.fraunhofer.de; Web site: ***www.fraunhofer.de/en.html***

WiFi "Radar"

Traditional radar detects the location of objects by bouncing radio waves off of them and detecting what bounces back. The same principle can be applied to WiFi signals to track a person's location, even through walls.

WiFi signals are fairly ubiquitous, thanks to the wide-scale use of devices like wireless routers. And just like conventional radio signals, they change frequency when they reflect off of moving objects, a phenomenon known as Doppler Effect. U.K. engineers recently developed a prototype device that can track these signals. It consists of two antennas – one to monitor the baseline signal of the room and one to sense changing frequencies produced by objects or people on the move. As they move closer, the frequency increases; and as they move further away, the frequency

decreases. An on-board computer can then calculate the location within a few feet, along with speed and direction. And because the device itself doesn't give off any signals, it's undetectable.



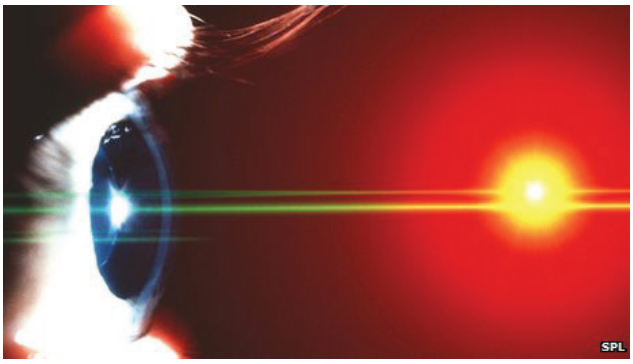
While the security implications of such a system are obvious, the developers say that it could also be adapted for use in hospitals to detect a patient's breathing more accurately than current methods.

For information: Karl Woodbridge, University College London, Department of Electronic and Electrical Engineering, Gower Street, London, United Kingdom WC1E 6BT. Phone: +44-20-7679-3969; email: ***k.woodbridge@ucl.ac.uk****; Web site:* ***www.ucl.ac.uk***

Light-Powered Retinal Implant

A new retinal prosthesis that uses infrared light as a power source may someday restore vision to millions of people with fewer complications and better outcomes than current devices.

In macular degeneration (the most common cause of blindness among older adults) the cells of the retina lose their ability to sense light, but the underlying nerves that convey information to the brain are often still intact. Retinal implants use electrodes to stimulate those nerves, but typically require patients to wear



bulky electronic hardware to supply power and image information to a chip inside the eye. In addition, pixel count is limited, resulting in poor image quality.

The new device contains an infrared projection system in the goggles which intensifies light and sends it to a wireless chip implanted in the retina. A flexible array of photovoltaic silicon pixels containing infrared-sensitive diodes converts the light into electrical signals to be picked up by the neurons in the eye. And because it uses infrared rather than visible light, there is no risk of damage to eye tissues or muddling of the image due to cells that may still be light-sensitive. Clinical trials are still a few years away.

For information: Jeffrey Browne, Dynalloy, Inc., 14762 Bentley Circle, Tustin, CA 92780; phone: 714-436-1206; fax: 714-436-0511; Web site: ***www.dynalloy.com***

Self-Chilling Can

Someday soon beer lovers may see their wildest dream come true – a can of beer that chills itself! But for now, they'll have to settle for an energy drink that comes in the world's first self-chilling can.

The revolutionary ChillCan contains its own heat exchange unit (HEU) that consists of a cylindrical chamber of high-pressure carbon dioxide gas. A button on the base of the can allows the user to open a valve.

As the CO2 rushes out, it expands, absorbing heat from the surrounding liquid and effectively reducing its temperature by 30 degrees Fahrenheit in three minutes. Currently available online and in selected southwestern states, West Coast Chill is scheduled for national distribution in 2014.

For information: Mitchell Joseph, Joseph Company International LLC, 27612 Fargo Road, Laguna Hills, CA 92653; phone: 949-474-2200; email: ***info@westcoastchill.com****; Web site:* ***www.westcoastchill.com***

Increasing the Human Factor

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So the question is, "Can you leverage today's technology to increase the human factor?" The answer is yes! And if you're in human resources or in charge of training employees, you are now in a position to not only transform your career, but also transform your organization because of the positive impact technology can have on the human factor.

Earlier I mentioned that we're transforming how we sell, market, communicate, collaborate, innovate, train, and educate over a short period of time. All those processes involve people. Without people, none of those things happen.

Let's look at education and training specifically, which are things that cost money but are essential for companies to do, especially in a time of rapid change and transformation. I recently had an executive ask, "What if I spend a lot of money educating and training my people and they leave?" My response was, "What if you don't, and they stay?"

The point is that you want your people to feel that they're working for a company that's vibrant and thriving. A strong human factor helps you create that mindset. You also want employees to feel that when they go to work, they're going into a time machine to the future. Technology helps you create that. And when the two work in conjunction—when you use technology to increase the human factor—that's when you have an engaged workforce that excels.

Following are some technologies to leverage that will enable HR and training departments to build the human factor in their organization.

Just-in-Time Training

Over the next two years we will be transforming how we educate and train people using mobile devices such as smart phones and tablets. All trainers know that the best way to learn something is by doing it. That's what just-in-time training enables people to do. Rather than sit in a classroom and learn, people learn in real-time. Since most employees have a multimedia computer with them at all times (their phone or tablet), if they have a question or need assistance, they can simply touch an icon on their device's screen and be connected to a live trainer who can help. If the trainer needs to see something to give assistance, the employee can aim the device's built-in camera to the problem so the trainer can see it. When used in conjunction with classroom-based training, this approach would cut training costs tremendously.

Gameification of Training

With today's technology we can deliver advanced simulations on not only mobile devices, but also on today's gaming systems. For example, an Xbox 360 is a perfect tool to deliver three-dimensional photo-realistic advanced simulations to train workers—all while making it fun and game-like. I've identified five core elements of gameification that, when applied together, can dramatically accelerate learning. They are to make the training self-diagnostic (so it can know each person's skill level and progress accordingly), interactive (where people actually do something as opposed to sitting and watching), immersive (using interspatial 3D where you go into scenarios versus having things pop out at you), competitive (the adrenaline rush keeps people engaged), and focused (which is a byproduct of the other four elements).

Social Learning

In the past, executives would decide what people needed to learn and then find someone to teach it to them. Today, learning is going social. By leveraging social learning, companies are empowering their employees to share their best practices and best ideas with each other, using tools like their own computer video system. And thanks to YouTube, companies don't need high production and high expense on educational videos. With social learning we can get our own employees to be both teachers and students, sharing with each other because social is all about sharing.

Visual Communications

Visual communications is very different from video conferencing. Video conferencing requires expensive equipment and is usually something only seen in mid- and large-sized organizations. And those systems are always booked by the executives. Visual communications is using free tools like Skype. The only equipment you need is a laptop, tablet, or smart phone to hear and see the person or people you're talking to. When you can see the person you're talking to, you can adjust your communications to them in real time based on their facial expressions and body language. Plus, if the kids are using visual communications when they play their Xbox games, shouldn't we be doing it with our employees when we want to communicate at higher levels?

Personalized Training

Training used to be all about customization. Today, it's about personalization. For example, if you and I both have iPhones and we both choose AT&T as our phone service provider, I know for a fact that my iPhone is completely different than yours. Why? Because we've both personalized our phones with specific apps that are most useful for us. So in essence, we've each created a "my phone." Similarly, we're now starting to see not just customized education, but personalized education for the user, based on both achievement and a menu of options that are determined by the user's needs.

Make the Human Factor Your New Priority

All these factors are transforming training and education, and they are raising the bar on the human factor in organizations. Remember, in times of rapid technological transformation, it's the human factor that will win the race, not the technical factor. So you can either be passively transformed, letting all of these technologies sweep down upon you and change your world, or you can actively be the transformer and use these tools to add value to your organization and increase the human factor. Which option will you choose?

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