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Acceleration[3]

By
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Your parents probably warned you to look both ways before crossing a street, one of life's universal lessons after Henry Ford started tinkering with the internal combustion engine. Many of us forgot that good advice, or assumed it didn't apply, when crossing from the 1970s into the 80s. It happened a second time moving into the 1990s, and again as we entered the first decade of the 21st century. The prevailing assumption was that the future would be relatively similar to the past, and that major changes only took place over long stretches of time, which provided plenty of leeway to adjust. We stepped off the curb, looking straight ahead – and wham! Individuals and organizations were blindsided by massive changes. It happened to IBM, Motorola, Kodak, Sears and countless others. Based on this painful experience, the prevailing assumption was dramatically adjusted: *Change is speeding up – get used to it.*

Crossing the street of change is an exercise in advanced risk analysis. Dodging the on-coming traffic is now the name of the game. The "game" has already moved on. Technology-driven change spotting provides only part of the solution. Literally thousands of important high-tech breakthroughs are zooming at us from left and right. Not only do we need to carefully look both ways, it is essential to actually see and understand the ramifications of what's coming. Hopping out of the way in panic or jumping onboard the next new, new thing isn't the answer; nor is taking a wait-and-see attitude. By reinventing the way we *look* at technology-driven change, it is possible to reinvent the way we *think* about change. Once that happens, the reinvention of how we *act* in response to change takes place. Look. Think. Act. These distinct steps are the key to both finding and profiting from the many new opportunities that are headed our way.

Change Is Changing

Technology-driven change has been a ferocious problem for all of us because it comes from so many sources and directions at once. The U.S. Patent and Trademark Office awarded nearly 335,000 patents in 2003 and 2004. That's both an impressive number and a depressing number, especially for those expecting a letup in the pace of technology-driven change. Since the volume of patent awards has been running at about the same clip for the last ten years, there are a million and a half new, new things out there waiting to happen. Is it humanly possible to keep up? You don't need to. In this article, I will slash the number by 1,499,997.00. If you're doing the math, you'll see I have reduced the tech-driven change onslaught down to 3. This is admittedly fuzzy math because it is impossible to precisely calculate how many significant high-tech developments are emerging. The key point, however, remains: The catalyst for transforming our businesses and futures is generated primarily by only three technological forces.

Three Digital Trend Accelerators

Three of the most powerful digital trend *accelerators* – computer processing power, storage capacity and bandwidth – have reached an intense new phase and are already turning business **(continued on page 2)**

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models upside down as they spawn fresh generations of procedures, tools, products and services. By focusing on the three accelerators instead of the dozens of new technologies covered by the press each month, we can get a more accurate sense of where technology-driven change is coming from and where it is likely to lead. The terms processing power, storage, and bandwidth are not new. We see the words in print all the time, but it is imperative to realize that their newfound power will have a major impact on the future. In next month's article, I will show you how and why each accelerator is going through a major transformation at this unique point in time. It is my intention that this article will heighten your awareness of the massive changes the three accelerators are causing.

TECHNOLOGY NEWS HIGHLIGHTS

REAL-TIME TRANSLATION

Imagine sending a computer text message to your supplier in China and having it instantly translated into Chinese with the touch of a button. Or, envision your customer in Portugal emailing you with a question, and not only can you read their message without a translator but you can respond in English and have your reply translated into Portuguese in seconds. This kind of real-time translation used to be the stuff of science fiction. But now, a new software program makes it available to anyone for as little as $3.00 per month. The proprietary software can translate in 16 languages and be tailored for finance, health care, government, and legal applications, to name just a few. It's designed to work with online or mobile applications, including smart phones, PDAs, email, chat, and corporate and government enterprise portals.

For information: TransClick Inc., Dag Hammarskjold Tower, 240 East 47th St., Suite 15-C, New York, NY 10017; phone: 212-751-5150; Web site: www.transclick.com

GEARING UP FOR A NEW TRANSMISSION

A New Jersey inventor has found a way to give traditional automatic transmissions better fuel efficiency and longer life spans. The new design reduces the size and weight of a standard automatic transmission, leading to a 20 percent increase in fuel efficiency. By giving one of the gears the ability to roll backward, a vehicle can be slowed down in relation to the engine speed, similar to the way that walking backward on a conveyor belt slows your forward progress. This eliminates the need for a clutch and torque converter, and reduces the size of the new transmission by one-third and the weight by one-half when compared to conventional transmissions.

For information: Josef Wodeslawsky, W.J. Sunns, 314 S. Dean St., Englewood, NJ 07631; phone: 201-871-0568

NANO-SIZED HYDROGEN SPONGE STORAGE SYSTEM

One of the factors preventing hydrogen from being more widely adopted as a fuel source is the problem of its storage: the thick-walled tanks required to contain pressurized hydrogen gas are big, bulky and heavy. A group of U.K. scientists has discovered a new type of material that could be one answer to the storage problem. They created a lightweight, compact nanosponge that can trap hydrogen gas. The material consists of long carbon chains connected by metal atoms. As it crystallizes, cavities with windows smaller than a hydrogen atom are created. When loaded into the sponge-like material at high pressure, the hydrogen atoms squeeze through because the chains are flexible. However, once the cavities are filled, the chains become stiff and the molecules are essentially locked into place.

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Web site: www.ncl.ac.uk

ROBOT TO ASSIST IN THE HEALTH-CARE FIELD

With the aging populations in the United States and Japan, the expected shortage of doctors is of great social concern. One way to help the problem may come from new "remote-presence" robots being tested in hospitals and nursing homes to demonstrate how they can enhance patient care. One of the "people substitutes" being tested right now is a 5'6" 220-pound robot called the RP-6. Its developers emphasize the fact that the robot is not meant to replace physician interaction with their patients, but rather to enhance it. The RP-6 is equipped with a flat-screen computer monitor that displays the operator's face in real time. Additional features include wireless broadband capability, a microphone, speakers, a live two-way video feed, and infrared sensors to help it navigate. From a remote location, the doctor will be able to maneuver and communicate as though she or he were right in your room. Doctors can also access the clinical information system and retrieve test results to address problems quickly and efficiently.

For information: InTouch Health, 90 Castilian Dr., Suite 200, Santa Barbara, CA 93117; phone: 805-562-8686; fax: 805-562-8663; Web site: www.intouch-health.com

NOW HEAR THIS!

Researchers at the University of Michigan may have found an answer to restoring acquired hearing loss, which is damage caused by aging; being subjected to loud, repetitious noises; diseases; and medications. Healthy auditory hair cells deep inside the ear pick up sound vibrations and convert them into electrical signals that are transmitted to the brain. When they are destroyed, deafness results. The only way, to date, to restore this type of hearing loss would be to grow new hair cells. Unfortunately, the gene responsible for generating these hair cells (Atoh1) shuts off in the embryo once the development of the cells has been completed. In order to determine whether hair cells can be regenerated, the researchers induced deafness in laboratory animals using large doses of drugs known to cause hearing loss. Then they inserted the Atoh1 gene into the inner ears of the test subjects. After eight weeks, new hair cells had begun to grow, and further testing indicated that hearing had also returned in the treated animals.

For information: Yehoash Raphael, University of Michigan Medical School, Otorhinolaryngology, 9303 MSRB III, Ann Arbor, MI 48109; phone: 734-936-9386; fax: 734-647-2563; email: yoash@umich.edu; Web site: www.med.umich.edu/medschool

YOU'VE GOT QUESTIONS? WE'VE GOT ANSWERS!

When you query a typical search engine about any topic, what you get in return is pages and pages of links that may or may not guide you to the specific answer for which your are looking. Now, a new search engine called Answers.com is designed to change the way we think about conducting Internet searches. Drawing from a database of over 100 reference sources – including Wikipedia, American Heritage Dictionary, and Who2 – Answers.com provides answers, not just links, on some one million different topics. It's powered by GuruNet software (the same software that powers the reference section of Amazon's A9 search service), which allows users to Alt-click on any word on the screen to initiate a search. A downloadable version of the GuruNet program is available on the Answers.com Web site.

For information: GuruNet Corporation, 441 Route 306, Wesley Hills, NY 10952; phone: 845-362-4842; Web site: www.gurunet.com

RIDE 'EM ROBOT!

The government of Qatar recently announced that they were banning the practice of allowing children to be jockeys in the popular sport of camel racing. Instead, camel owners will be jockeying for position using joysticks and remote control robots. According to reports, the camel-riding robots are equipped with hands that direct the camel. Future models are expected to include cameras, so that the controller can get a view of the course as though they were riding the camel themselves. An unnamed Swiss company is manufacturing the new robots.

For information: Web site: www.middle-east-online.com/english/qatar

FAILURE-SIGNALING PLASTICS

Researchers at Case Western Reserve University have found a way to make plastics that indicate when they are about to fail. By mixing standard polymers with fluorescent dyes, they were able to create low-cost plastics that change color when they are stressed, and the greater the degree of stress, the greater the color change. The products could be used in food wraps to warn of potential tears that would cause spoilage, or as early indicators of impending failure of plastic components.

For information: Chris Weder, Case Western Reserve University, 10900 Euclid Ave., Cleveland, OH 44106; phone: 216-368-6374; email: christoph.weder@case.edu; Web site: www.cwru.edu

WANT TO HEAR A SONG? JUST SAY THE WORD

Wouldn't it be nice if you could select songs on your digital music player without having to thumbwheel through thousands of tracks and titles on a tiny LCD screen? In a collaborative effort, two companies – one, a premier provider of automated speech recognition products, and the second, a leading developer of music databases – have teamed up to create a user interface for digital music players that will select the desired soundtrack based solely on voice commands. The software, which is tied into a database of over 43 million songs, would create a play list based on the user's request by title, artist, geographic region, or musical genre.

For information: ScanSoft, 9 Centennial Dr., Peabody, MA 01960; phone: 978-977-2000; fax: 978-977-2412; Web site: www.scansoft.com Gracenote, 2000 Powell St., Suite 1380, Emeryville, CA 94608; phone: 510-547-9680; fax: 510-547-9681; Web site: www.gracenote.com

SNIFFING OUT NUCLEAR MATERIALS

A new technology developed at Lawrence Livermore National Laboratory could prove to be an important breakthrough for homeland security by providing a means to quickly and easily scan ship containers for the presence of concealed nuclear materials. Current x-ray technology is unable to detect nuclear devices if they are simply shielded in a steel box. However, the new technique – called active neutron interrogation – works by bombarding the cargo with neutrons, which produces gamma rays whenever fissile material is present. The rays can be isolated using low cost detectors. The goal of the research is to be able to detect as little as a few pounds of plutonium, while scanning each container in less than a minute, with a false alarm rate of no more than one in a thousand.

For information: Adam Bernstein, Lawrence Livermore National Laboratory, 7000 East Ave., Livermore, CA 94550; phone: 925-422-5918; fax: 925-422-5512; email: bernstein3@llnl.gov; Web site: www.llnl.gov