

TECHNOTRENDS®

Newsletter

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Knowledge Era Enterprises

By
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Over the next 15 years, organizations worldwide will create new economic value by converting information into knowledge, sharing that knowledge internally to increase its value, and then selling it in non-competing industries to a global client base. Just as the icon-based, user-friendly World-Wide-Web spawned a new industry in a short amount of time, organizations will want their intellectual property (IP) formalized, captured, and leveraged to produce assets of a higher value. This shift in focus is already spawning a fast growing new industry that helps organizations do just that.

Just as manufacturing companies, such as IBM, saw their profits shift from hardware in the 1980s to software and services in the 1990s, in this decade and beyond businesses of all sizes and from all industry segments will use Internet-based technology to leverage the talents, knowledge and wisdom of employees in new and exciting ways to create high margin products and services in this decade and beyond. Three components are necessary to begin the process leveraging and profiting from IP:

- 1) Everyone in the organization must see the tremendous opportunity and added value in going beyond the current activity of converting data into information, to higher levels of value by creating and delivering knowledge and wisdom, which clients can quickly act upon. In addition, auditing and valuating intellectual assets must be seen as a strategic direction.
- 2) Everyone in the organization must see that its technology infrastructure and organization are the keys to unlock the vast wealth the Knowledge Era has to offer, both for the organization and its clients. Knowledge is created and increases in value when it is shared within the organization. But, organizations must jump into the Communication Age internally before they can truly enter the Knowledge Era. Informing someone is very different than communicating with them. A knowledge-sharing technology strategy that focuses on fostering two-way communication and dialog will enable organizations to achieve this goal.
- 3) Everyone in the organization must see the importance of his or her own participation as essential to building a strong foundation for the enhancement, sharing and delivery of knowledge. You get the behaviors you reward. There must be a rewards system for sharing knowledge. Keep in mind that there are many ways to reward people and not all have to involve money.

At this point in time, technology is no longer a barrier to creating a Knowledge Era enterprise. The key is to see the tremendous opportunity that exists right now, and take action.

TECHNOLOGY NEWS HIGHLIGHTS

BRIDGING THE NERVE GAP

Researchers at MIT have developed a new nanotech material that is apparently able to bridge the gap between severed nerves – a breakthrough that could someday lead to a treatment for spinal cord injuries, stroke, or brain

trauma. Called self-assembling peptide nanofiber scaffolds (SAPNS), the material is made up of protein particles that form a mesh when mixed with fluids in the brain. It then acts as a temporary scaffold to support the growth of new neurons. The technology was tested on hamsters in which the optic nerve had been severed, rendering them blind in one eye. A solution containing the protein fragments was injected at the sight of the injury. After three months, 75 percent of the animals treated had regained partial vision, although some showed improvement in as little as six weeks.

For information: Rutledge Ellis-Behnke, MIT, Department of Brain and Cognitive Sciences, 77 Massachusetts Avenue, 46-6007, Cambridge, MA 02139-4307; phone: 617-253-4556; email: rutledg@mit.edu; Web site: www.mit.edu

BAR CODES PLAY VIDEO

A printable, three-dimensional bar code could be the next technology to revolutionize advertising. It's based on the QR (quick response) Code, a two-dimensional code currently used in a wide variety of industries. The new technology, called PM (paper memory) Code, consists of a matrix of 24 separate color layers, and is capable of storing between 0.6 and 1.8 MB of data in a space the size of a postage stamp. This format could be used to encode up to 20 seconds of low-resolution video, for example, and then be printed in a magazine ad. When scanned with a mobile camera phone equipped with the PM Code reader software, the user could then play back a video and audio commercial. The first PM Code ads are expected to debut in Japan this summer. The reader software will be offered at no charge.

For information: Content Idea of Asia; Web site: www.ci-a.com (Japanese only)

BETTER WINE THROUGH GENETIC ENGINEERING

Italian researchers recently announced the successful mapping of the pinot noir grape genome. Their goal is to use molecular markers to develop fruits that are more resistant to disease and climate changes as well as better quality wines.

For information: Department of Genetics and Molecular Biology, Agricultural Institute of San Michele, Via Mach, 1, I-38010 San Michele all'Adige, Trento, Italy; phone: +39-0461-615111; fax: +39-0461-650872; Web site: www.iasma.it

HARNESSING THE POWER OF FUSION?

The Z Machine at Sandia National Laboratory was originally developed to examine safe ways for maintaining a nuclear weapons stockpile. But in the process of generating high radiation output to validate computer models, researchers may have inadvertently stumbled upon a strategy for building the first fusion reactors. The Z Machine normally generates Xrays by zapping spools of tungsten wires, finer than human hair, with 20 million amps of electricity. The wires instantly dissolve into charged particles called plasma that quickly release energy in the form of radiation at temperatures of several million degrees. In this experiment, the tungsten filaments were substituted with larger cylindrical arrays of steel wire. The resulting temperatures exceeded 3.6 billion degrees – hotter than the inside of the sun. This work may represent a first step in achieving what scientists have been working on for decades to accomplish – the fusion reactor.

For information: Chris Deeney, Sandia National Laboratories, P.O. Box 5800, Albuquerque, NM 87185-1168; phone: 505-845-3657; fax: 505-845-7685; Web site: www.sandia.gov

BOOSTING YOUR BRAIN WITH PORK

Omega-3s are believed to be helpful in preventing heart disease, and adequate levels are needed for healthy development of the brain and central nervous system. While Omega-3 is plentiful in cold-water fish, such as salmon, increasing prevalence of mercury toxicity in fish can cancel out any health benefits. A transgenic pig that is high in omega-3 might help to circumvent this problem. A team of genetic engineers at the University of Pittsburgh and Harvard Medical School recently announced the development of some very special pigs. What makes them different from typical porcines is that they contain higher concentrations of omega-3 fatty acids – up to five times the normal levels found in pork. The transgenic pigs were produced by cloning a gene called fat-I from a nematode worm found in pig eggs. Fat-I is known to convert omega-6 fatty acids into the omega-3 variety. The eggs were then implanted into surrogate sows. Of the ten piglets born during the course of the experiment, three had omega-3 concentrations that were four to five times the normal rate. Modified chickens and cows are next in the pipeline, but it will take years of testing before the FDA will approve genetically engineered meat for public consumption.

For information: Yifan Dai, University of Pittsburgh, BST W1014, 200 Lothrop Street, Pittsburgh, PA 15213; phone: 412-383-8616; fax: 412-624-6666; email: daiy@upmc.edu; Web site: www.pitt.edu Jing Xuan Kang, M.D., Harvard Medical School, Massachusetts General Hospital, 149 13th Street, Charlestown, MA 02129; phone: 617-726-8509; fax: 617-726-6144; email: kang.jing@mgh.harvard.edu; Web site: www.hms.harvard.edu

LEARNING ON THE GO

Apple recently announced iTunesU, a free, hosted service for colleges and universities that allows students to download educational content – including audio and video – quickly and easily directly to their iPods. Lectures, interviews, audio books, and more can then be accessed, reviewed, and shared anytime, day or night, to adapt to individual learning needs. Apple hosts the content, which instructors can post and change at will. Their innovative management tools make the implementation virtually seamless. It can be searched, browsed and configured to permit open or secure access as necessary, with little or no impact on the IT staff. Members of the iTunesU program include Duke University, Brown University, Michigan School of Dentistry, the University of Missouri, and the University of Wisconsin-Madison. In addition to academic content, iTunesU also offers a source for legal digital music downloads.

For information: Web site: www.apple.com/education/solutions/itunes_u/

POWER FROM FLUORESCENT LIGHTS

A new device has been developed that is capable of converting energy emitted from a fluorescent tube into electricity. When current passes through a fluorescent light, it generates a magnetic field. The ring-shaped device, which is designed to fit an inverter-type light, harnesses this energy to generate electric power. It could be used to power small devices, such as infrared transmitters, in the vicinity of the fixture where power plugs are not available. A practical adaptation of the technology may be available in as little as two years.

For information: NEC Corporation, 101 East 52nd Street, New York, NY 10022; Web site: www.nec.com

BRAIN CELLS FROM BONE MARROW

Research has shown that stromal cells, found in adult bone marrow, may be capable of converting into neural cells that could be transplanted into the brain. But clinical trials cannot be undertaken until the mechanism that

could be transplanted into the brain. But clinical trials cannot be undertaken until the mechanism that controls this transformation is better understood. Japanese researchers may have uncovered a key piece of the puzzle by placing radioactive markers in stromal cells and examining how they bind to protein receptors in animals that have suffered strokes. Their findings showed that the bone marrow cells migrated toward the injured area of the brain and then developed the neuronal functions. The use of stromal cells could provide a safe and ethical source of cells to replace those lost to diseases like Alzheimers or Parkinsons.

For information: Satoshi Kuroda, M.D., Hokkaido University School of Medicine, North 15, West 7, Kita-ku, Sapporo, 060-8638, Japan; phone: +81-11-716-2111; fax: +81-11-717-5286; Web site: www.med.hokudai.ac.jp

SEARCHABLE PODCASTS

The amount of video content available on the Web is growing exponentially. The problem is being able to find what you're looking for. The solution? PodZinger: a new search engine that uses speech-to-text conversion to automatically index each and every word of spoken audio content on thousands of podcasts. The result is that users can quickly and easily find information on their favorite topics and pinpoint relevant results from the ever-expanding list of video Internet content. Each result includes transcribed excerpts highlighting the time and context in which the search term appears, so users can jump directly to the most relevant portions of the podcast. Players are also embedded in each result so programs can be played directly from the list of results. Like many speech recognition applications, accuracy can be affected by background noise, heavy accents, and unclear diction; and singing is not interpreted at all. However, for things like blogs, vlogs, news, and entertainment, PodZinger can help users exploit the full value and power of Web-based video content.

For information: BBN Technologies, 10n Moulton Street, Cambridge, MA 02138; phone: 617-873-8000; Web site: www.bbn.com or www.podzinger.com

GASOLINE FROM MANURE

Japanese scientists recently reported producing gasoline from cow waste. Using metal catalysts, they heated the manure to 300°C while applying 30 atmospheres of pressure to the mix. From 100 grams of waste, they were able to extract 1.4 milliliters of gasoline. The process could not only represent a significant source of fuel in the future, but also address the problem of dealing with livestock waste. They hope to commercialize a large-scale facility within the next five years.

For information: Tokyo University of Agriculture and Technology; Web site: www.tuat.jp or National Institute of Advanced Industrial Science and Technology; Web site: www.aist.go.jp

ANTI-CANCER DRUG

A chemical compound called ARC is showing promise as a way to kill tumor cells without harming normal cells. It works by inhibiting formation of blood vessels in tumors – a process called anti-angiogenesis – and by blocking a key step in the cell cycle, causing cancer cells to effectively commit suicide. The mechanisms by which ARC work are not totally understood, and further research is planned to explore its potential in treating different types of cancers.

For information: Andrei Gartel, University of Illinois at Chicago, Hepatology, Department of Medicine, Banner Dept. 2-586013, 1041 CSB MC787, 840 S. Wood Street, Chicago, IL 60612; phone: 312-996-1855; fax: 312-355-2643; email: agartel@uic.edu



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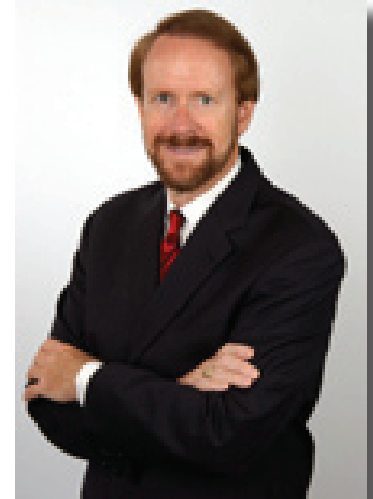
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About Daniel Burrus

Daniel Burrus is one of the world's leading technology forecasters and business strategists, and is the author of six books, including the highly acclaimed Technotrends, which has been translated into over a dozen languages. He is the founder and CEO of Burrus Research Associates, Inc., a research and consulting firm that specializes in global innovations in science and technology, their creative application, and future impact.



In 1983, Burrus became the first and only futurist to accurately identify the twenty technology categories that would drive two decades of revolutionary change. Since then, he has established a worldwide reputation for his exceptional record of predicting the future of technological change and its direct impact on the business world. He has helped hundreds of clients identify new opportunities and develop successful competitive strategies based on the creative application of leading-edge technologies, and has delivered over 2,200 keynote speeches to corporations, associations, and professional organizations worldwide.

In his presentations, Mr. Burrus blends timely and provocative knowledge with just the right amount of humor and motivation. He is a master at tailoring his presentations to his audiences as he addresses relevant trends and offers powerful, practical guidance for turning rapid change into a competitive advantage.



Burrus' client list encompasses a wide range of industries, and includes many Fortune 500 companies such as GE, IBM, Oracle, Microsoft, DuPont, Yahoo!, Toshiba, American Express, Northwestern Mutual, ExxonMobil, and Sara Lee. He has been the featured subject of a PBS Special, has appeared on programs such as Larry King, CNN, and Bloomberg, and is quoted in a variety of publications, including USA Today, Fortune and Industry Week.

"From all of us at Yahoo!, a very BIG thanks for your insight, candor, ideas, inspiration, enthusiasm and sheer presence at our annual conference. You made a real contribution to our program and helped elevate our thinking."

-- Wenda Millard, Chief Sales Officer, Yahoo!