TECHNO TRENDS
THE BIG IDEAS THAT ARE CHANGING EVERYTHING

# REAL-TIME ORGANIZATION (PART I)

*BY DANIEL BURRUS, CEO OF BURRUS RESEARCH*

Thanks to modern technology, today's computers and networks are ready for real-time data communications, and the advantages are nothing short of revolutionary. Some industries, including telecommunications, finance, and manufacturing, are already using real-time data in parts of their operations.

But having real-time data is not enough. To successfully compete and increase your company's bottom line, you need to become a real-time organization. In other words, you need to use your real-time data to change how you work, how you manage, and how you sell.

Imagine for a moment how much more productive and profitable your company could be if you could track products from warehouse to store shelves in real-time, provide targeted offers the moment a customer calls, and give executives up-to-the-minute reports on critical operations data? When you integrate existing technologies to become a real-time organization, you can do precisely that and so much more.

The fact is that organizations operating in real-time can deliver better customer service, turn around inventory faster, respond *continued on page 2*

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## REAL-TIME ORGANIZATION *(continued from page 1)*

quicker to changes in the marketplace, and better anticipate challenges before they impact the business. Consider the following benefits of becoming a real-time organization.

### YOU CAN BE PREACTVE

You've likely used the word "proactive," which means taking positive action now. But how do you know the actions you're taking will be positive when you have to wait and see? Those aren't good odds. A better idea is to be pre-active to future known events. For example, if your real-time data indicates that there was a run on blue jeans, size 32 waist and 34 inseam, in store number 53 and that there is only one pair left, you can safely predict that tomorrow there will be one or more customers who will not find what they want. You can solve this problem before it occurs. When you use your real-time data to be a real-time organization, everyone involved with keeping the shelves stocked will automatically be informed of the stock levels and the supply chain wheels will turn to make sure no customer is unable to find what he or she wants.

### YOU CAN HAVE UP-TO-DATE INFORMATION ON DEMAND

While many companies offer information on demand, most of the information is not up-to-the-minute. Becoming a real-time organization changes all that. Here is a simple yet powerful example of how real-time data can change even the most routine of chores. Remember when you were in college and needed to use the school Laundromat to wash your clothes? All too often, everyone else had the same idea you did and all the washers and dryers were taken. Today, many universities use real-time data to change the Laundromat problem. Now students can use their computers from their dorm rooms to see which washers and dryers are in use and which are out of service. They don't have to worry about how much exact change they have or if the coin machine is broken because they don't need coins anymore. They use smart cards that deduct money from their accounts whenever they use the machines. The smart Laundromat system can even e-mail or send a text message to a cell phone to let the users know that the machines are finished. Ask yourself, "Is my business as advanced as a college Laundromat?"

### YOU CAN CONDUCT EVENT BASED MARKETING

The best time to market to people is when they demonstrate a need. As such, good salespeople do event-based marketing all the time. If you show an interest in something, they grab the opportunity to show you something else they feel you might also be interested in. With real-time data you can do event-based marketing without human intervention. For example, consider how Amazon.com makes additional sales. If you click on a book about the Lewis and Clark expedition, you will get a list of other top selling Lewis and Clark books on the same page. Does such an approach work? It's one of the reasons that Amazon's stock has been one of best performing Nasdaq stocks for many years. The real-time trend is very real and its impact will be felt by every industry, whether they choose to buy into the concept or not. In today's hypercompetitive marketplace, there is a great advantage to extending your business processes via the Internet to your customers, partners, suppliers, and employees in real time. Next month, I will share additional strategies to take advantage of this trend so businesses can emerge as the market leaders and watch their profits and productivity dramatically increase.

## *TECHNOLOGY NEWS HIGHLIGHTS*

## FLEXIBLE MICROCHIPS

Researchers recently developed a way to fabricate silicon chips so that they can be folded and stretched into a variety of shapes. Integrated circuits embedded in a thin plastic coating were deposited on a pre-stretched rubber substrate. When the rubber was released, the silicon layer buckled, but the circuitry remained intact. Best of all, it could be stretched in any direction. The discovery could be used to create "smart" clothes, or implantable medical sensors. One group has proposed using the material to design an electronic "sheet" that could be wrapped around the brain to study epilepsy.

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## 3D CELL PHONE DISPLAY

By 2010, cell phone displays are likely to take on a whole different dimension. A new panel, based on a high-resolution XGA LCD, will allow users to view images in 3D. Using specialized programming to control how the images are projected, eight different views, each from slightly different angles, are sent to the display simultaneously. Lenticular lenses separate the image data so that the user sees only one at a time, depending on the angle at which they are viewing the display. To maintain resolution, the panel also incorporates technology that allows three different colors to be displayed on a single pixel. With a 25-degree viewing angle, the 2.5-inch display also has a 50 percent wider viewing capacity than standard LCDs. Other applications for the new device will undoubtedly include arcade games and navigation systems.

*For information: Seiko-Epson Corp., 3-3-5 Owa, Suwa, Nagano 392-8502, Japan; phone: +81-266-52-3131; Web site: www.epson.co.jp/e/*

## ROBOT BRAIN SURGEON

In the first surgery of its kind to be performed by a robot, Canadian doctors successfully removed an egg-shaped brain tumor from a 21-year-old woman. The robotic device – called NeuroArm – allows surgeons to manipulate surgical instruments using remote controls and an imaging screen, similar to a video game. The device operates with much greater precision than can be achieved by hand. The NeuroArm can move in increments of 50 microns as compared to a human hand which is only capable of maneuvering in increments of one or two millimeters. In addition, the operation is less invasive and more delicate because the instruments themselves act as the robots "hands."

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## YOUR OWN CELL TOWER

For anyone who has been frustrated with spotty cell phone reception at their home or office, Sprint's Airave wireless base station may be the answer. The new device offers about 5,000 square feet of enhanced wireless service even in areas where there is no coverage by plugging into existing broadband data service to transmit calls over the Internet (similar to VoIP). Pilot programs are currently underway in three U.S. cities. The company plans to launch the new service nationally later this year.

*For information: Sprint, 6391 Sprint Parkway, Overland Park, KS 66251; phone: 800-877-4646; Web site: www.sprint.com/airave*

## RIVER POWER

Energy companies are tapping into the capacity of rivers to generate power, but not by building dams. Instead, they're developing what is known as "kinetic hydropower" by installing turbines on river bottoms. The Roosevelt Island Tidal Energy (RITE) Project in New York's East River is the world's first initiative of this kind. It consists of six turbines that generate and deliver electricity from the tidal flows. A second project, slated for completion in 2012, will utilize currents in the St. Lawrence River to generate 15 megawatts of electricity – enough to power up to 11,000 homes.

*For information: Verdant Power Inc., The Octagon, 888 Main Street, Suite 1, New York, NY 10044; Web site: www.verdantpower.com*

## DRUGS FROM SILKWORMS

Researchers have developed a less expensive way to produce antibodies used in vaccines and diagnostic drugs by genetically altering the eggs of silkworms. When the silkworms reach maturity and spin their cocoons, they produce a protein that holds the silk together. This protein (known as sericin) contains the target antibodies.

In order to retrieve them, the cocoons are immersed in a saline solution where the antibodies readily dissolve. The water can then be refined to extract the desired compounds. Tests have confirmed that as much as 2 milligrams of antibody can be recovered from a single 70 milligram cocoon. And since the antibody-producing genes are passed from generation to generation, subsequent quantities can be created even less expensively. It's estimated that production costs may be as little as 10 percent that of traditional approaches.

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## IMPROVED BATTERY POWER

A new method of fabricating electrodes for lead-acid batteries has been shown to nearly quadruple their power output. Conventional electrodes are molded from molten lead alloy. The drawback of this technique is that as the metal cools, impurities can crystallize, creating the potential for short circuits that degrade performance. The new process still uses molten lead, but the liquid is sprayed through a nozzle. The fine mist cools instantly into a powder, preventing impurities from crystallizing. The powder is then rolled, hardened, and shaped into an electrode that is just as strong as the conventional type, but only one-quarter as thick. Thinner electrodes mean that more can be built into a battery, and the increased surface area means greater power output. The new design will generate 1500 watts of power per cubic liter at a temperature of 20 degrees Celsius (65 degrees Fahrenheit) and 1200 watts at minus 30 degrees Celsius (minus 20 degrees Fahrenheit). In comparison, a nickel hydride battery, such as those currently used in many hybrid cars, produces 2000 watts at higher temperatures but drops to 500 watts in colder conditions.

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## BETTER THAN DEET

Although DEET has long been considered to be the "gold standard" for mosquito repellents, in recent years, several safety questions have been raised regarding its use. Now, with the help of an artificial neural network, scientists have discovered a new family of compounds that can ward off mosquitoes more than three times longer. First, they input the molecular structures of 150 known repellents into the neural network. They then compared these structures to a library of about 2,000 untested compounds called piperidines, which are related to an active ingredient in black pepper. Finally, they selected the best candidates and tested them against DEET by placing patches impregnated with the substances on the arms of human volunteers. Each day, the subjects placed their arms in cages containing approximately 500 mosquitoes and held them motionless for one minute. The DEET successfully repelled the insects for 17.5 days, however, some of the newly identified compounds warded off the pests for up to 73 days.

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## NANOPAPER

Investigators in Stockholm have developed a paper that can resist tearing better than cast iron. The key is the use of a cellulose nanocomposite that helps fibers adhere to one another. Instead of using individual fibers, nanopaper is made by swirling cellulose fibers together to create a weblike structure. This gives the product remarkable tensile strength and keeps it from ripping apart when pulled. The new material may even find applications in construction.

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## RECYCLING TEA LEAVES

Researchers have found that used tea leaves are useful for much more than telling your fortune. They have developed a fuel from tea dregs that can be used to manufacture iron and cast iron parts. The new fuel burns hotter than coke, which is typically used for processing iron. As a result, it actually melts the iron faster. And since it's derived from plants, it has no net impact on carbon dioxide emissions when it's burned. On experiments in actual foundry conditions, the group determined that fuel made from tea leaves could effectively be substituted for about 11 percent of the coke currently used in furnaces.

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