

DANIEL BURRUS'

TECHNO TRENDS

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THE BIG IDEAS THAT ARE
CHANGING EVERYTHING

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Use Creativity to Breathe New Life into Your Products

By Daniel Burrus, CEO of Burrus Research

Many of us work in organizations that have been around for many decades. For example, IBM—a popular employer—is over 100 years old.

Older organizations are great, but they often have a corporate culture that has not changed much over the years. In addition, their traditional products and services continue to sell well, but the margins are much lower and there is much more competition. Some people blame stagnation and lower profits on age—that only new and hip things sell these days.

But the age of your product, service, culture, and even your people is not the problem. Let's face it, I know old people who are young in their thinking, and I know young people who are rigid and old in their thinking. With that said, a corporate culture that has been in existence for a long time can work for you, or against you, depending on the key values of that culture. If innovation, creativity, and change are important and those related behaviors are rewarded in some way, then an old culture can do well.

Often it takes a crisis to make us step back and rethink our products, services, and even our culture. For example, in 1993 IBM almost crumbled due to their failure to anticipate the changing needs of their customers. Even though they had a division that made something new—PCs—that division was held back so that the mainframe business would not feel threatened within their own organization.

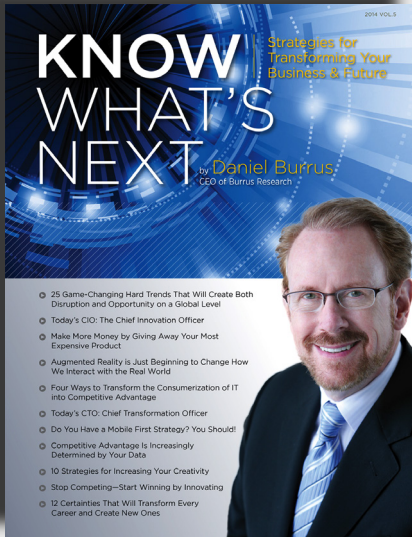
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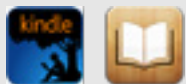


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TECHNOLOGY NEWS HIGHLIGHTS

Eyesight Protection

Studies have shown that, similar to ultra-violet (UV) light waves, long-term exposure to blue light may lead to retinal damage and a permanent loss of vision in the center of the eye – a condition known as macular degeneration.



Commonly referred to as age-related macular degeneration (AMD) due to the fact that it is usually found in older adults, the prevalence of the disease is on the rise. Some experts believe it could take on aspects of an epidemic as people spend more and more time gazing at LED-backlit computer screens.

One manufacturer has developed a solution that reduces exposure by 90 percent without the use of filters, dimmers, or color distortion. By shifting the peak wavelength of the LED backlight from 450 nanometers to 460 nanometers, the blue light emissions move out of the harmful range without compromising display quality.

The patented Anti-Blue Light technology will be available in AOC 76V Series displays.

For information: AOC International USA, 47490 Seabridge Drive, Fremont, CA 94538; Web site: www.aoc.com

Cutting and Pasting Genes

Gene therapy has been an effective tool for treating many diseases, but some, such as HIV, brain cancer and Alzheimers Disease have proven more difficult to combat. Now new treatments are being tested that effectively cut out portions of DNA and fuse the pieces back together.



A Phase II clinical trial is currently underway in which a specific gene that's necessary for HIV (CCR5) is removed and a mutation that's resistant to the virus (delta32) is inserted. Early results indicate an increase in the modified cells and a corresponding decrease in HIV cells in the twelve subjects being tested.

In other research, similar techniques are being used to model certain diseases so that they can be studied in more detail. For example, models have been developed to target cystic fibrosis, sickle cell anemia, and autism, as well as hepatitis C, cholesterol, and insulin sensitivity. What used to take months and years to develop in animals can now be done in weeks using targeted genome editing.

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Robot Flash Mob

A team of researchers has developed a swarm of 1,024 self-organizing robots that can perform complex tasks without any central guiding intelligence. Known as Kilobots, they are designed to collaborate using "hive intelligence" much the way social insects, such as ants, do.



Each unit is about the diameter of a penny and contains a microprocessor, infrared sensor and two vibrating motors that enable it to slide along a surface on rigid legs. They're basically programmed to understand three things: to follow the group, to track the distance they've covered and to measure their proximity to neighboring robots. A single command to the entire swarm sets them into motion. Their collective artificial intelligence also incorporates rules to correct for traffic jams or errors in positioning.

Applications for the low-cost robots are vast, including transportation, construction, environmental cleanup and search and rescue.

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Thermopower



A revolutionary new process for generating electricity exploits the thermal and electrical conductivity of carbon nanotubes to produce large bursts of power quickly. The idea started with an experiment in which a piece of yarn made of nanotubes was coated with TNT and lit with a laser. Although it was highly inefficient, it was capable of producing large amounts of power, and engineers are now looking at ways to improve efficiency for broader applications.

Rather than using heat to expand gases, which drive a turbine or piston, the new generator creates electricity more directly by using a phenomenon called a thermopower wave. As the fuel burns, the exothermic (heat-producing) wave pushes electrons along the length of the nanotubes, creating a current. And since the nanotubes are not destroyed in the process, they can be used over and over again simply by replenishing the fuel.

The process is especially well-suited for applications requiring short bursts of power. But improvements in efficiency combined with long shelf-life may pave the way for the technology to be used to develop longer-lasting batteries. They've already determined, for example, that using flat graphene sheets in place of nanotubes not only improves performance but enables the energy to be more precisely directed.

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Drought-Resistant Crops

Drought is the biggest cause of crop failure worldwide, and if climate changes continue to make rainfall patterns increasingly unpredictable, water shortages could reduce yields severely. Recently, researchers identified a gene that could help reduce crop loss by utilizing a plant's innate ability to adjust to changing water conditions.



Engineering a single solution to drought tolerance has proven to be problematic because different plants use different strategies involving hundreds of genes. However, they all seem to rely on calcium as a signal to conserve water. What the researchers discovered is that the gene known as OSCA1 triggers a protein in the cells of leaves and roots which boosts calcium levels, allowing the plant to respond using whatever coping mechanisms it possesses. In side-by-side studies on plants containing normal OSCA1 genes and others containing defective OSCA1 genes, the mutant plants responded poorly to the stress of drought. This finding could lead to new genetically-engineered crops that can produce more food with less water.

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Anticipatory Alarm System

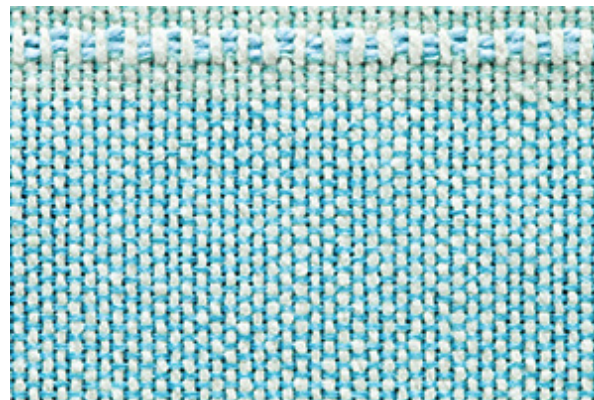


Large industrial plants usually contain complex systems of interdependent alarms, and one fault can trigger a flood of alarms in a domino effect. But too many alerts can be detrimental to diagnosing the root cause by generating undue confusion, which often leads to unnecessary shutdowns and loss of production.

A new intelligent system that borrows from the dynamic models used in extreme weather forecasting could reduce the number of flood alarms by predicting when they might occur. By combining process models with historical data, it can estimate the likely rates of change so that operators can assess each variable and take evasive action before an alarm occurs.

The system has been tested in a depropanizer plant by simulating a variety of faults including loss of cooling water and fouling of the condenser. In every case, the alarms were predicted accurately, allowing operators to diagnose problems more quickly.

Soft Robots



A robotic fabric that stretches, contracts and is embedded with sensors could lead to a new class of soft robots with sensory “skin” that are less sensitive to vibration than conventional electronic hardware, yet rugged enough to explore extraterrestrial terrains. The material might also be used to create robotic garments, much like exoskeletons that augment the power of human limbs to help stroke victims walk or enable soldiers to carry heavy equipment long distances.

The cotton material contains shape-memory alloy threads that coil when heated, causing the fabric to contract, similar to a muscle. When oriented in one direction around a piece of foam or an inflated balloon, it produces a bending motion, moving forward like an inchworm. When oriented in a different direction, it produces a peristaltic motion. Flexible polymer sensors embedded in the fabric provide feedback and information about the environment.

The new material will enable robots to be more flexible and versatile by moving much of the functionality to the electronic “skin.”

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Smart Bikes



The next big idea isn't always about creating new technology, but integrating existing technologies in creative ways. For example, a new handlebar is revolutionizing bicycle safety by combining state-of-the-art lighting, communication and navigation to transform the way cyclists interact with other drivers.

Called the Helios Bar, the new device can be installed on any bike. It includes a battery-powered CREE LED light that provides illumination comparable to a car headlight. A GPS tracking system links to Google Maps and built-in Bluetooth connects to a smartphone for access to a variety of smart features including turn-by-turn directions and proximity lighting, which automatically turns the headlight on as you approach and off as you walk away. Tactile blinker buttons on either side of the bar activate rear-facing LEDs to function as turn signals. The rear LEDs also operate as a speedometer, changing

color as you change speed. And ambient lighting (in your choice of nine different colors) further enhances safety at night.

The system currently retails for \$279.

For information: Helios Bikes, San Francisco, CA; Web site: www.ridehelios.com

Use Creativity to Breathe New Life Into Your Products

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Of course, there is a lot more to the IBM story, but if you look at what happened to them, they failed to anticipate the shift in computing that was there for all to see. They fell into the classic mindset of “protect and defend.” However, protecting and defending the status quo will always get you into trouble when technology is shifting how we live, work, and play, as it is doing today.



Fortunately, IBM reacted quickly, and in 1993 they brought in new leadership to upgrade both their products and culture to fit the new world they were living in.

As someone who has been a recent advisor to IBM's leadership, I can tell you that today they are more focused on using Hard Trends to anticipate change versus simply reacting to changes. That focus has helped IBM lead instead of bleed, even though they are over 100 years old.

I used IBM's long history as an example, but there are many more. Let's look at something far removed from technology: classical music.

Quartets playing classical music have been around for hundreds of years. In today's fragmented world of music, large concerts, and social media noise, not to mention the entertaining distractions that technologies such as smart phones and YouTube bring us, quartets playing classical music often have trouble filling their relatively small theaters and selling their music.

Whether you're selling computers or music, if you want to attract a new audience (customers) to an old product or service, or increase the relevancy of an organization with a long history, try giving it a rebirth by adding something humans do best: creativity.

The following three-minute video is worth viewing to see how a classical music quartet used their creativity to add a new dimension to the overall audience experience and to attract new listeners to an old form of music.

By expanding their traditional audience, they are now in high demand and can dramatically

increase their income. This wonderful performance is by the German quartet Salut Salon. Enjoy.



https://www.youtube.com/watch?v=BKezUd_xw20

So, what are you doing to give your products, services, and business a rebirth to attract new audiences, expand your market, and increase sales?



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