



TECHNO

THE BIG IDEAS THAT
ARE CHANGING EVERYTHING

TRENDS

HOW TO USE TECHNOLOGY TO REDEFINE TODAY'S ECONOMY

BY DANIEL BURRUS, CEO OF BURRUS RESEARCH



Today we're in an era of technology-driven transformation. That means you can attain higher profits when you use technology to redefine your products, your services, and/or how the industry in general works.

Unfortunately, most companies are using technology only one way – to lower costs and become more efficient. They view technology as a way to “do more with less,” “streamline the workflow,” and “trim expenses.” Sound familiar?

While that is certainly one good use of technology, you can also use it to redefine the marketplace as well as your products and services. In this case, technology becomes a tool of creation. You can create new products, new services, and entire new markets, which then creates new jobs and careers.

Why is this important? Currently the United States is digging out of the worst recession since the 1930s, and the global economy is suffering its worst setback in decades. The key to recovering is all about jobs and how to create them. You don't create jobs by increasing productivity; you create jobs by creating new products, services, and markets. So even though we have a statistical recovery, we have a human recession. As such, recovery can't be jobless.

The bottom line is that we can use technology to eliminate jobs or create them. *cont on page 2*

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VOL. XXVI, NO. 3

- Water Purifier
 - Conductive Clothing
 - High-Speed Undersea Communications
 - Efficient Ethanol Production
 - Cleaning Robot
 - Artificial Silk
 - Superconductor Breakthrough
 - Plasma Hand-Washer
-

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REDEFINING TODAY'S ECONOMY *(continued from page 1)*

KNOW WHERE YOU'RE GOING

Look at your product, service, or industry and see how you can use technology to redefine it. The classic example is Amazon.com. When they first started the business, they used technology to redefine how people sell books. But they didn't stop there. They then expanded to other products and redefined how nearly everything is sold. Then they redefined again. They developed a large IT, logistics, and warehouse system and they now rent out their enterprise IT platform and warehousing space to other companies. So they are not only redefining an industry; they're also redefining themselves.

UNDERSTAND HOW TECHNOLOGY IS AFFECTING YOUR CUSTOMERS

Look at how technology is affecting your customers in your industry right now. But don't just look at productivity. Look at the overall customer experience as well as who is buying your offerings. For example, in the late 1970s, when ultra light aviation was born, the first ultra light aircrafts were basically hang-gliders with engines. The FAA decided, due to the size and weight of the plane, people didn't need a pilot's license to fly an ultra light aircraft. As a result, the first ultra light manufacturers targeted that demographic – people who wanted to fly but who didn't have the time or money to get a pilot's license. One company, UltraSports, thought they could attract a better customer, so they asked, "Why not redefine the product, the customer, and the market?"

Rather than target those who wanted to fly but didn't have a license or the income to afford buying an aircraft, UltraSports decided to target commercial jet pilots and flight instructors for their ultra light aircrafts. After all, these pilots were the best pilots, they loved to fly and they had money; however, because of their jobs, flying had become more automated and less fun. Then UltraSports went one step further and redefined the ultra light aircraft itself by adding a stick and rudder and instrument controls. They made the ultra light fly like an airplane rather than a hang-glider, which better appealed to their new target market. UltraSports went on to become a national leader in their first year, all because they redefined who their customer was and then made product changes accordingly.

TAKE COMPETITION SERIOUSLY

Look at the specific ways in which you compete in the marketplace as well as what makes you unique. Then decide how technology can redefine the way you compete. For example, when was the last time you bought something from the Polaroid Company? At one time, they were the king of instant photography. But then technology and digital photography changed their industry, and the way they competed (instant photography) changed...but Polaroid didn't change with it. Instead, they made the mistake many businesses do: they used technology to get more efficient and lower their costs.

Similarly, the Kodak Company was failing for over a decade. Finally, they looked at how they competed in the past as well as what it would take to compete in the future. That's when they embraced digital photography. And while they still have some traditional film labs across the country, it's their digital products division that's profitable today. The moral: The longer you wait to redefine how you compete, the harder it is to survive. However, when you pinpoint a way to use technology to create new products and services, you add new revenue streams and new jobs.

A (RE)DEFINING MOMENT

Staying ahead during a technology-driven transformation is indeed possible. It's all about looking at where your customers are going rather than where they have been. It's about looking at where technology is evolving and how it is shaping the market, not where it used to be. When you ask the right questions and take action on what the answers reveal, you can use technology to redefine your company, create new jobs, and experience higher profits than ever before.

TECHNOLOGY NEWS HIGHLIGHTS

WATER PURIFIER

Groundwater contamination from solvents and pesticides is a growing problem throughout the world. Remediation and chemical treatment is expensive and not readily available in many areas. But a breakthrough product made from glass could provide an inexpensive and environmentally safe way to restore clean drinking water in areas that would otherwise need to be abandoned. Called Obsorb, it is essentially a glass sponge that absorbs up to eight times its own weight by using an expanding nano matrix. Because the “nano glass” is chemically inert and hydrophobic, it only absorbs harmful chemicals. The process is also totally reversible, so the sponge can be used repeatedly, making it extremely cost-effective.

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CONDUCTIVE CLOTHING

Stanford scientists have come up with an electrically conductive dye that can turn clothes into wearable batteries – or eTextiles. Developed from carbon-nanotube-based ink, the dye was applied to porous fabrics such as cotton and polyester, creating conductive textiles that have very low resistance, even after repeated washing. The fabrics also retained their flexibility and stretchability without sacrificing performance. The next step will be to create a capacitor by coating the material with an electrolyte. This would allow it to store and release an electrical charge like a battery, and could be used to power cell phones or other mobile devices.

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HIGH-SPEED UNDERSEA COMMUNICATIONS

Because water is essentially opaque to electromagnetic radiation, underwater communication has traditionally relied on acoustic systems (i.e. sonar) for wireless data transmission. However, over long ranges, the relatively slow speed of sound in water severely limits data transmission rates. This means that, in situations requiring real-time relay of information or large amounts of data (such as video), the collecting devices must be tethered directly to the receiver. But a new system is currently under development that could revolutionize underwater communications. By combining optical transmission technology with existing acoustic systems, researchers have been able to achieve data transfer rates of up to 20 megabits per second at a range of up to 100 meters. The small, inexpensive transmitters and receivers use relatively little power in comparison to bulky acoustic transducers. The system also allows the use of sensors that can sample at higher rates and store large amounts of data. And by eliminating the need for heavy tether-handling equipment, undersea missions will be able to be accomplished with smaller ships and fewer personnel.

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EFFICIENT ETHANOL PRODUCTION

Although corn is widely used as a raw material for ethanol production, many believe that the use of a food crop to produce fuel is a misuse of resources. So scientists have been looking at ways to convert non-food crops like switchgrass, leaves and stalks into what is known as cellulosic ethanol. The problem has been that breaking down the basic building block of these plant materials – known as lignocellulose – into sugars requires the use of enzymes or highly concentrated acids that are expensive and difficult to handle. Now a new process has been discovered that uses an ionic liquid (basically a liquid salt) combined with water and less concentrated acids. The method has been shown to produce sugar yields similar to those obtained with enzymes, but at a lower cost.

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CLEANING ROBOT

As Japan continues to experience chronic labor shortages, robots have become more and more popular, and developers are addressing the need with specialized technologies to enhance cost-effectiveness. One example is the cleaning robot, which has been in use since 2001 with more than 80 units currently in use. A new version was recently unveiled that incorporates lasers to help it move in tight spaces and locate its own position. It is also smaller so it can go places that its predecessor could not. The “mechanical maid” can do the work of three or four humans, and sells for about \$32,000.

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ARTIFICIAL SILK

Researchers have made some significant strides in producing an artificial form of bee silk, a substance that has potential uses in many industries. By genetically modifying cells of E. coli bacteria, they produced a mixture of silk proteins which could be coaxed to self-assemble into structures resembling honeybee silk. The fibers were then hand drawn from a viscous mixture of the recombinant proteins to produce threads that were as strong as those produced by honeybees. In addition to manufacturing strong, lightweight textiles, silk fibers such as these could be used to develop advanced composites for aviation and marine use, or to create artificial tendons and ligaments.

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SUPERCONDUCTOR BREAKTHROUGH

A recent discovery surrounding the properties of superconductors has brought researchers one step closer to understanding how they work and how we may one day be able to use them in everyday devices. Typically the behavior of superconductors is observed at a temperature of minus 273 degrees Celsius – or “absolute zero,” however, this most recent research observed similar properties at a much higher temperature of minus 100 degrees Celsius. The results reported that when crystals of yttrium barium copper oxide are super-cooled to that temperature, the electrons move in the same direction, allowing electricity to flow with virtually no resistance. The findings answered many questions that have puzzled researchers for years. Someday they hope to achieve superconduction at room temperatures, which would lead to a whole new generation of smaller, more portable devices and highly efficient transmission of electrical power.

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PLASMA HAND-WASHER

Plasmas have been employed in many applications, including killing micro-organisms on medical instruments. Recently, it was discovered that the same principle can be applied to human tissue, paving the way for a range of new devices. One such device is an electronic cleaner that could reduce the time needed to sanitize hands from minutes to about four seconds. It bathes hands in a low-temperature version of the same luminous gas found in fluorescent lights that has been engineered to effectively wipe out germs, including supergerms like MRSA. The antibacterial cleaning action will reach hard to clean areas such as under the fingernails. It has also been shown to be effective against athlete's foot, even through socks. Although still in the prototype stage, the developer estimates that devices could be manufactured for \$100 or less. Other applications for the technology include methods for treatment of burns, tissue regeneration, and air purification.

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