

DANIEL BURRUS'

# TECHNO TRENDS

THE BIG IDEAS THAT ARE  
CHANGING EVERYTHING

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## What Can Watson Do For Your Company?

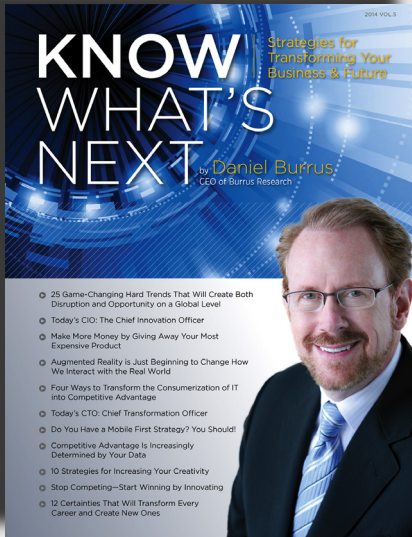
By Daniel Burrus, CEO of Burrus Research

Companies are using IBM Watson to grow and transform their businesses in huge ways that are making a lot of professionals nervous. Instead of writing it off as “another new supercomputer,” let’s take a look at what actually makes Watson unique. Watson is a cognitive technology that processes information much more like a smart human than a smart computer. Rather than thinking humans will be replaced by a computer, you should realize that this is, in fact, a huge opportunity.

In 2011, you may recall, Watson summarily bested its human competitors on Jeopardy. It was able to accomplish that because it doesn’t just use conventional computing; it also combines three additional capabilities: natural language processing, hypothesis generation and evaluation, and dynamic learning. No other technology on the market today possesses these combined capabilities. It’s this synergy that has the potential to make Watson your business’s new best friend.

Unlike typical computers, Watson can unlock the vast world of unstructured data that makes up as much as 80 percent of existing information today. Watson knows that all data is not created equal. It’s able to distinguish between different kinds of information. It culls relevant data from disparate sources, and it creates hypotheses and continually tests them in order to narrow in on the most reliable and accurate results. Because Watson can read, analyze, and learn from natural language, just as humans can, it can make the sorts of informed, context-specific decisions we would expect from a person,

## Know What's Next Magazine

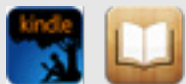


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## TECHNOLOGY NEWS HIGHLIGHTS

### Hoverboards In The News

When *Back to the Future II* was released in 1989, hoverboards were nothing more than a pipedream. They have recently moved much closer to reality with the introduction of Hendo – a real-life hoverboard that's expected to hit production sometime in 2015 (coincidentally, the same year Marty McFly travelled to...hmmmm).



The concept actually began with a technology for buildings called magnetic field architecture (MFA) in which structures could be lifted out of harm's way during earthquakes or floods. In the process, what was discovered is a highly efficient method for transmitting electromagnetic energy that can be used to move people and materials of virtually any size and weight.

The prototype hoverboard uses a strong magnetic field to float about one inch above a non-ferrous metal substrate, such as aluminum or copper. It can carry loads of up to 140kg (about 300 pounds) for about 15 minutes. The first 11 prototypes, which were offered for \$10,000 each as part of a Kickstarter campaign, are already spoken for. However, engine development kits are expected to become available in July 2015.

We expect to see a hoverboard type ride at large amusement parks in the near future, not to mention new industrial applications for this technology.

For information: ArxPax, P.O. Box 843, Los Gatos, CA 95031; phone: 408-335-7630; Web site: [www.arxpax.com](http://www.arxpax.com) or [www.kickstarter.com/projects/142464853/hendo-hoverboards-worlds-first-real-hover-board](http://www.kickstarter.com/projects/142464853/hendo-hoverboards-worlds-first-real-hover-board)

## Retail Robot



This holiday season saw the arrival of the first autonomous retail service robots at a hardware store in San Jose. Known as OSHbot, they are designed to provide an additional layer of customer support by answering simple questions, remotely connecting with employees if necessary, and communicating with customers in multiple languages.

For example, the robots will be able to direct shoppers to specific products and provide information about promotions and inventory. They also incorporate technology that enables customers to scan an object that they're looking to replace and quickly find where it's located in the store. And when a customer needs to consult a human expert, OSHbot can summon them for assistance.

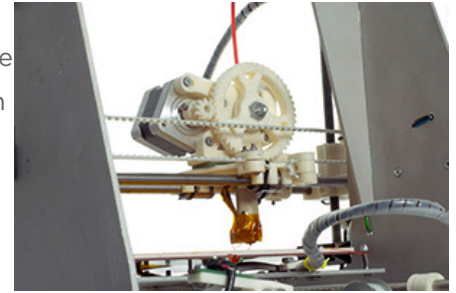
The goal is to improve the in-store experience for shoppers by providing a consistent level of service, while freeing employees to focus on delivering project expertise and advice.

*For information: Lowe's Companies, Inc., 1000 Lowe's Blvd., Mooresville, NC 28117; phone: 704-758-1000; Web site: <http://media.lowes.com/>*

*SU Labs and Fellow Robots, NASA Research Park, Building 20, S. Akron Road, MS 20-1, Moffett Field, CA 94035; phone: 650-200-3434; Web site: <http://singularityu.org/labs/> or <http://fellowrobots.com/>*

## Super-Strong, Super-Light Material

In conventional materials science, the rule has always been that the stronger the material, the greater its weight and density, so very strong materials,



like ceramics, are not useful in applications where weight is a consideration because their structural and mechanical properties make them prone to shattering under certain types of force. Recently, however, researchers discovered that the structure of a ceramic "lattice" can be altered very precisely at the nanoscale level. The result is a material that is one of the strongest, yet lightest, substances ever made.

Using a technique called two-photon interference lithography, a 3-D laser printer is used to create a polymer lattice structure. The lattice is coated with a ceramic, and the polymer is etched out to leave behind crisscrossed trusses of hollow ceramic tubes that are extremely strong, but light as a feather. By altering the thickness of the tubes, the researchers were also able to control its failure mode. For example, thicker walls caused it to shatter, but when the walls were made thinner (on the order of 10 nanometers) the material would buckle under a load, and then recover its shape when the load was removed.

In addition to being used as structural materials, their high surface area and light weight could make nanostructure ceramics very useful for creating fast-charging batteries, capable of storing large amounts of power in a small, convenient package.

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## No More Needles!



When it's time for your annual physical it's common to get a blood test. Anyone who's experienced the bruising (and even scarring) of a blood draw when they can't find a vein knows routine tests can even be downright scary. But a team of researchers recently developed a patch that could eliminate the need for traditional blood draws.

The transdermal patch is about the size of a nickel and contains many microscopic needles that can penetrate the skin surface without pain or bleeding. The sensation is somewhat like a cat's tongue. On the skin, the needles turn into a jelly-like material, creating channels that can be used to take samples from the interstitial fluid, which provides all of the information typically contained in blood. They could also be used to deliver medication and/or vaccines, eliminating many of the risks associated with traditional needles.

Clinical trials of this revolutionary technology should be underway in the near future.

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## Smart Earrings



Fitness bands and smart watches have been making a big splash in the fitness world, but in the world of fashion, they leave something to be desired - particularly for women. So, one inventor came up with an innovative solution that not only looks good, but may actually perform better.

Ear-o-Smart earrings combine all the functionality of a wrist-mounted fitness tracker, including heart rate, calories burned and activity level. They connect to an iOS or Android smartphone via Bluetooth 4.0 where you can analyze your data and track your improvement over time.

Using a technique called photoplethysmography (PPG), heart rate is detected by illuminating a blood vessel with an LED and measuring the amount of light absorbed by the blood. While most devices measure this on the wrist, the ear may actually provide more stable results due to less interference from movement.

The small size (about 0.63 inches in diameter) was achieved by stacking three circuit boards on top of each other. Although the current models use a small cell battery, a rechargeable version is in the works which will utilize a USB charging cradle. The first units are scheduled to ship in June 2015 pending a successful Kickstarter campaign.



For information: BioSensive Technologies, Windsor, Ontario, Canada; Web site: <http://earosmart.com/> or <https://www.kickstarter.com/projects/704054850/ear-o-smart>

## Home Help Bots

As the population ages, we can expect robots to assume a larger role in our lives. In fact, in many parts of the world, robots are already well on their way to providing everything from medical assistance to companionship for elderly owners.



For example, an EU-funded initiative known as Giraff+ has equipped homes with telepresence robots to check on seniors and monitor their health. Sensors can measure blood pressure and detect falls, while a Skype-like interface enables virtual visits with family and caregivers.

In Korea, robots that were originally designed to automate industrial tasks are now being redesigned to carry out simple jobs in elder-care facilities, like delivering meals. Someday, they could become part of the family, folding laundry and washing dishes.

And on the softer side of robots, Paro, a robotic harp seal, has been bringing comfort to lonely residents in Japan and Europe since 2003. With tactile, light, posture, sound and temperature sensors, Paro responds to interaction, which has been shown to reduce stress, stimulate socialization and improve motivation.

For information: Giraff+ Project, Amy Loutfi, Center for Applied Autonomous Sensor Systems, Orebro University, Orebro, Sweden; email: [amy.loutfi@oru.se](mailto:amy.loutfi@oru.se); Web site: <http://giraffplus.eu/>

Yujin Robot Co., Ltd., Namseong Plaze, Room 1214, 130, Digital-ro, Geumcheon-gu, Seoul, Korea; phone: +82-70-4657-7000; Web site: <http://yujinrobot.com/eng/>

Paro Robotics U.S. Inc., 10 North Martingale Road, Suite 400, Schaumburg, IL 60173; phone: 847-466-1180; fax: 847-669-2912; Web site: <http://www.parorobots.com/>

## Rapid Recharging

In the quest for appreciably longer battery life (which has proven to be somewhat elusive), the next best thing is a faster recharge cycle. Now, engineers have found a way to create ultra-fast charging batteries using a technology that was originally discovered during a research project on Alzheimer's Disease (AD).



The same peptide molecule that gives AD displays the ability to hold electrons in place – a trait known as “charge trapping” – can be artificially synthesized from natural building blocks such as hydrogen and oxygen to produce crystals about two nanometers long. Called NanoDots, the tiny crystals fill in the cavities that are typically present in the electrodes of standard batteries, increasing their capacity by up to ten times. More importantly, they create a capacitive buffer that is capable of storing electrical current from a charging system in about 30 seconds, and then letting it flow slowly into the battery. As a result, not only are recharge times drastically reduced, but overall life is improved by changing the chemical reactions that occur inside the battery.

The new technology can also be used to replace many of the toxic materials used in today's displays while making them more energy efficient and creating a richer, more colorful matrix.

*For information: Gil Rosenman, StoreDot, Ltd., 16 Mena-chem Begin Street, Gamma Building, 5th Floor, Ramat-Gan, Israel, 5270003; phone: +972-3-509-7710; fax: +972-3-509-7716; Web site: [www.store-dot.com](http://www.store-dot.com)*

that can be placed at the entry of a mass transport system or busy shopping area. It's conceivable that such a setup could generate enough power to illuminate, or at least supplement, public lighting in those areas.

*For information: Abel Macias Hurtado, Center for Research in Advanced Materials (CIMAV), Avenue Miguel de Cervantes 120, Complejo Industrial Chihuahua, Chihuahua, Mexico, C.P. 31109; phone: +52-614-439-1100; fax: +52-614-439-4884; Web site: [www.cimav.edu.mx/en/](http://www.cimav.edu.mx/en/)*

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## Walking Power



In the quest for "green" energy, finding creative ways to harvest even small amounts of power can make a big difference. For example, massive amounts of energy are generated every day by people as they walk, and turning that energy into usable power may soon become a reality.

To illustrate this, a group of scientists has developed a tablet-shaped device that fits in the sole of a shoe. Approximately two inches in diameter and 3 millimeters thick, the device contains a piezoelectric sensor which captures the mechanical force with each step and converts it into electrical energy. The prototype systems have been used to successfully charge watch batteries as well as AAA batteries to power electronic devices.

But they don't intend to stop there. The next step will be to adapt the technology and build it into a mat

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## What Can Watson Do For Your Company?

*continued from page 1*

as opposed to a search engine.

Such as... what to cook for dinner? Yes, in fact, when Bon Appétit invited Watson to plumb the magazine's database of some 9000 recipes, Watson effectively taught itself how to cook. Once it understood the principles of taste and cuisine style, as well as the intricate mechanics of flavor combinations—it was able to generate new, creative dishes. And since Watson is capable of dynamic learning, it literally gets smarter by tracking feedback from its users and learning from both failures and successes.

IBM is betting big on Watson's ability to transform the world of business. It recently opened a \$1 billion dollar Watson Headquarters in New York to provide support for entrepreneurs and developers interested in the technology. We're beginning to see the tech applied to the fields of education, retail, and medicine. If the success of this rollout indicates anything, it's that Watson is going to be here for a very long time, and if you think your field is somehow immune to disruption from Watson, it's time to wake up.

## It's Elementary

Imagine if your employees and customers had the ability to receive help from the most knowledgeable expert in your field at a moment's notice. You may begin to understand the implications of Watson as a potent disruptive technology and why it's currently poised to revolutionize a huge array of industries.

A majority of online shoppers don't end up buying because, without a great sales associate, they lack confidence in their selection. To solve this problem, retail clothing and supply company, The North Face, is now using an app developed by Fluid Inc., which draws on Watson technology to provide customers with an infinitely patient and expert personal salesperson who can intuitively and conversationally answer questions like "What do I need for a two-week hiking trip in the mountains?"

This retail expertise extends into the realms of travel, banking, real estate, and finance. Watson-based technologies are able to replace many of the current services of human travel agents, bank officers, real estate agents, and financial advisors by drawing upon comprehensive knowledge of existing information to provide detailed answers to questions traditionally posed only to fellow humans, such as: "Given our interests, what's a low-key and romantic beach I could travel to with my wife this summer?" "Given my age and goals, how should I diversify my retirement portfolio?" and "Given our family dynamics and income, which neighborhood in my city offers both great schools and affordable homes?"

Even more disruptive is the way Watson is already

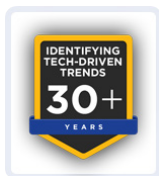
altering the medical industry. Imagine your ideal human doctor: you know, the one with the top-notch education and impeccable track record who makes it his mission to keep up with the very latest research. As Watson takes over the role of an expert diagnosing diseases and prescribing the most cost effective treatment, the human doctor's role will change to focus on what humans do best.

Last July, MIT Technology Review reported that Watson is poised to overtake human doctors in oncology expertise. With some tweaking to its current knowledge base, Watson will soon be able to stay informed of all the cutting-edge research data and provide up-to-the-minute treatment recommendations, exceeding what even the most focused human doctor is able to provide.

At this point, it's important to understand that there is a science and an art to every profession. Soon, Watson will know the science better than a human. Humans will need to focus on the art of their profession — the creative elements only they can provide.

Now you may begin to understand why so many professionals are beginning to worry that they'll soon be replaced by Watson. As a forward-thinking strategist, though, it's obvious that Watson provides you with an unparalleled opportunity to leverage information, to both grow your profits and provide amazing services.

The question isn't "What can Watson do?" It's: "How will you put Watson to work for you?"



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