

DANIEL BURRUS'

# TECHNO TRENDS

July 2014  
VOL. XXX, NO. 7

THE BIG IDEAS THAT ARE  
CHANGING EVERYTHING

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## Forget Lean and Agile - It's Time to be Anticipatory

By Daniel Burrus, CEO of Burrus Research

We are all good at reacting and responding, putting out fires, and crisis management. In addition, organizations large and small have learned how to be lean and agile, and how to best execute a strategy at a high level.

However, despite these skills, General Motors still declared bankruptcy, Blockbuster closed its last store, and Blackberry quickly moved from leading to bleeding. And let's not forget Hewlett-Packard, Sony, Dell, and a host of other companies who failed to thrive despite its leaders and workers being constantly busy.

To thrive in this new age of hyper-change and growing uncertainty, it is now an imperative to learn a new competency—how to accurately anticipate the future. That may seem impossible, but it's not. The future is there for you to see when you know where and how to look for it. And when you and your employees master this skill, you'll be able to create what I call an "Anticipatory Organization™."

Based on three decades of research and applying the principles I've developed to organizations worldwide, I have developed a way of separating what I call Hard Trends from Soft Trends. Over the years I've written about this extensively in books and articles.

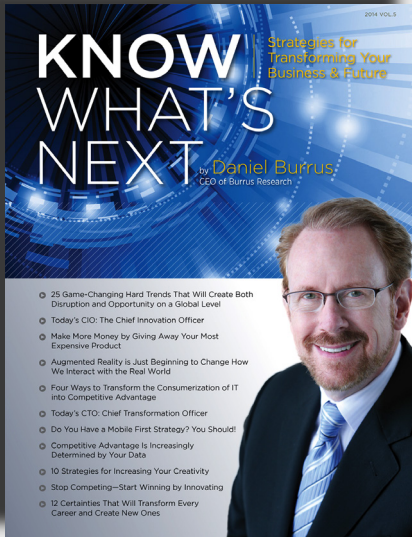
A Hard Trend is a projection based on measurable, tangible, and fully predictable facts, events, or objects. It's something that will happen: a future fact that cannot be changed. In contrast, a Soft

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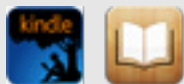


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## TECHNOLOGY NEWS HIGHLIGHTS

### Self-Driving Robot

A Silicon Valley startup has developed a device that can turn any car into a driverless vehicle for about \$10,000. Called Cruise RP-1, the system will initially be available for Audi A4 or S4, however, the company intends to quickly expand their product offering to other makes and models.



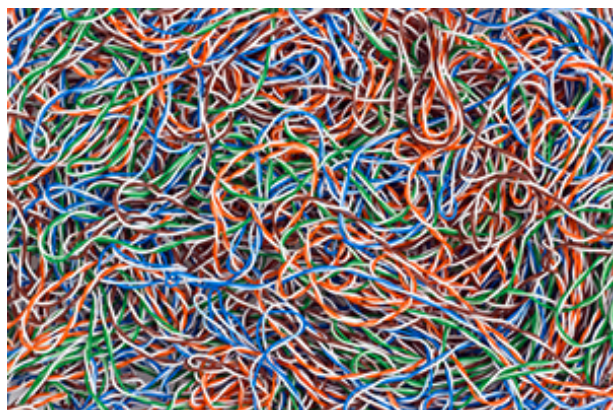
A control panel installed near the console enables the driver to engage or disengage the system at the touch of a button. The sensor pod, mounted on the roof of the car, contains a combination of cameras, sensors and radar – data from which is fed into a CPU located in the trunk. The computer continuously monitors the road and surrounding vehicles, and operates a series of actuators installed behind the pedals and on the steering column to control speed, steering and braking. Although mainly designed for highway driving to ensure that your vehicle stays in its lane at a safe distance from the car in front of you, RP-1 can also navigate through stop-and-go traffic and bring the car to a full stop if necessary.

The first fifty systems are expected to be available for installation in 2015 and as you might guess, the price will drop quickly as competition enters the market.

For information: Cruise Automation, Inc., 548 Market Street, Suite 40873, San Francisco, CA 94104; email: [info@getcruise.com](mailto:info@getcruise.com); Web site: [www.getcruise.com](http://www.getcruise.com)

### Elastic Battery

Wearable electronics and “smart” clothes are the wave of the future as new technologies continue to emerge that are capable of discreetly monitoring vital signs and other health-related information. But the question remains: Where do we get the



power to keep these things running? Clearly, bulky batteries are not the ideal solution, so researchers in China have set out to develop a battery that can be woven right into the garment – in fact, it could become the garment.

The yarn-like lithium-ion battery is made up of wires that are fabricated by nesting carbon nanotubes inside each other. Pairs of these wires are then coated with lithium titanium oxide and lithium manganese oxide nanoparticles to create an anode and a cathode. The pairs are twisted together, separated by an electrolyte gel and a strip of insulating material to form a battery.

The researchers reported that a 10-centimeter (4-inch) long thread could power an LED for up to a minute, and weighs only 0.08 grams.

To make it more fracture-resistant, the battery was then coiled around an elastic thread. The resulting “yarn” could be pulled and bent hundreds of times without degrading its performance.

While previous fiber-like batteries have been documented, most of them utilize copper and aluminum wire. The ability to achieve this level of performance without the need for metallic components makes this latest advance more desirable for use in conductive textile applications.

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## Robot Gardeners

Don't be surprised if, the next time you visit your local nursery or greenhouse, you see robots rather than people doing some of the back-breaking work. With a shortage of



workers to perform agricultural tasks, more and more farmers are enthusiastically embracing technology as a way to improve production reliably and cost-effectively.

For example, this year alone, twenty nurseries throughout the U.S. have started using the HV100 (nicknamed Harvey). Specifically designed to space and re-space plants as they grow, collect and consolidate them for retail, Harvey employs Behavior-Based Robotics to provide intelligent and adaptive functionality. As a result, it requires minimal training, no programming, and is fully autonomous, making it easy to deploy in unstructured outdoor environments.

The Department of Agriculture is funding research on several projects to create robots for a variety of agricultural applications, including harvesting fruits, sampling water in remote locations, and detecting early signs of plant pests and diseases. All of these initiatives are aimed at meeting the needs of a growing population, as it's estimated that the demand for food will increase 70 percent by the year 2050.

For information: John Kawola, Harvest Automation, Inc., 85 Rangeway Road, Building 3, Suite 210, Billerica, MA 01862; phone: 978-528-4250; Web site: [www.harvestai.com](http://www.harvestai.com)

## Scent Texting

Behind every great experience – whether it's a fabulous meal or a walk on the beach – there are not



only sights and sounds, but aromas as well. And the sense of smell is known to be a powerful stimulant for eliciting memories, reducing stress and evoking emotions. Now there's a way to capture those aromas – and even share them with your friends – with a new device called the oPhone.

The system consists of a base station (oPhone Duo) and an iPhone app (oSnap). To send a “scent” message, simply take a photo and tag it with up to eight of 32 available basic aromas. When used in combination, these are capable of generating up to 300,000 smells. The recipient of your oNote will receive a link to the photo as well as the aromatic notes you've attached. So, provided they have an oPhone Duo, they can experience the sights, sounds and smells as if they were there.

The hardware is available for purchase on the company's Indiegogo crowd-funding page. In addition to the base station, a variety of oChips (aromatic cartridges) are available with more specific “aroma vocabularies” such as foods and coffees. Shipments are scheduled to begin in April 2015.

For information: Web site: [www.onotes.com/](http://www.onotes.com/) or [www.indiegogo.com/projects/ophone-duo](http://www.indiegogo.com/projects/ophone-duo)

## No More Drilling and Filling

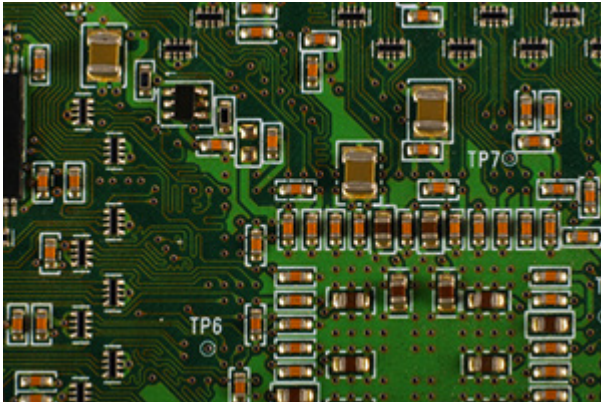


The shrill, high-pitched sound of a dentist's drill is enough to send chills down anyone's spine, but a new technique for treating dental cavities could put an end to the endless cycle of drilling, filling and re-filling that many of us have come to know (and dread). Known as Electrically Accelerated and Enhanced Remineralization, it can be performed without the need for analgesia or anesthesia because it's totally painless.

Cavities form as a result of bacteria breaking down (demineralizing) the tooth enamel. With the new technology, a tool (dubbed a “healing hand piece”) is placed over the cavity and emits an electric charge. This accelerates the natural movement of calcium, phosphate and other minerals back into the enamel, enabling teeth to re-build themselves. Best of all, since the repair is stronger than typical patching methods, it only needs to be done once, and the cost should be about the same, or less, than a traditional filling.

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## Terabyte Storage on a Chip



Another milestone in the quest for high capacity, non-volatile data storage will enable a full terabyte of data to be stored on a chip the size of a postage stamp. Utilizing a super dense memory array architecture, the three-dimensional resistive RAM technology (3D RRAM) overcomes many of the technical challenges that have previously limited high-speed data access and throughput.

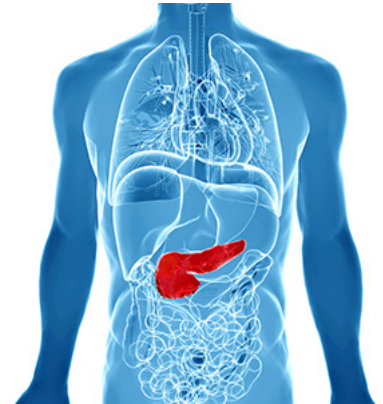
First, the memory cell structure contains a conductive layer with a metallic nano-filament to prevent performance degradation, which is a problem with traditional flash memory. Second, the patented 3-D architecture can be built on top of standard CMOS wafers, making it cost effective to produce. Finally, the new technology builds on a technique that has a proven track record for high speed storage and retrieval.

In today's high speed, data driven world, the demand for better storage solutions will continue to increase. It's been estimated that the market for non-volatile memory will reach nearly \$50 billion by 2016.

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## Bionic Pancreas

Type I diabetes (previously known as juvenile diabetes) occurs when the pancreas fails to produce insulin – a hormone that converts sugar and other starches into energy. It



affects more than 200,000 people in the U.S. and can only be managed through careful monitoring of food intake, activity, and blood glucose levels, along with regular injections of insulin and glucagon. But a new device currently undergoing clinical trials may free patients from the burden of managing their disease on a day-to-day basis.

A wireless glucose monitor implanted under the user's skin sends a signal every five minutes to an iPhone app. The app determines how much insulin or glucagon is necessary to bring blood sugar levels back into balance and signals a small pump to deliver the required dosage automatically through a catheter.

More than 50 patients (age 12 and older) have participated in studies to compare the new device with their usual routines of finger-pricks and manual insulin pumps. With more frequent checks and the ability to monitor round-the-clock, the new device did a better job of managing the disease, and gave participants a glimpse of what it would be like to live without diabetes. If all goes well and the device is approved by the Food and Drug Administration,

in about three years' time, many more diabetes patients may be able to experience that same freedom.

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## iOS Hearing Aid



Hearing aid manufacturers are now using iPhone platforms to bring new functionality and added control to their products, while enhancing the sound quality and audibility of mobile devices. And thanks to a new wireless protocol developed by Apple last year, the latest designs don't require users to wear an additional dongle around their neck like current Bluetooth enabled in-ear hearing aids.

When used as hearing aids, smartphone apps allow users to recalibrate audio settings without a visit to the audiologist. They can be fine-tuned for different acoustic environments, and different locations can even be geo-tagged to automatically switch to preferred settings for home, office, coffee shop, etc. The mobile phone can also be used as a directional microphone to better isolate desired sounds in noisy surroundings.

At a time when it takes an average of ten years for a person to go from needing a hearing aid to actually using one, anything that reduces the stigma will be beneficial. The truth is...these new devices may appeal to people with good hearing as well, since the tiny aids can also function with a variety of iOS devices as wireless stereo headphones for streaming music, movies and podcasts or to enhance video calling.

*For information: ReSound US, 8001 E. Bloomington Freeway, Bloomington, MN 55420; phone: 800-248-4327; fax: 952-769-8001; Web site: [www.gnresound.com](http://www.gnresound.com) or Starkey Hearing Technologies, 6700 Washington Avenue South, Eden Prairie, MN 55344; phone: 866-781-3161; Web site: [www.starkey.com](http://www.starkey.com)*

## It's Time to be Anticipatory

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Trend is a projection based on statistics that have the appearance of being tangible, fully predictable facts. It's something that might happen: a future maybe. Soft Trends can be changed, which means they provide a powerful vehicle to influence the future and can be capitalized on.

This distinction completely changes how individuals and organizations view and plan for the future. Understanding the difference between Hard and Soft Trends allows us to know which parts of the future we can be right about.

When you learn how to analyze trends in this way, you can accurately predict future disruptions, identify and solve problems before they happen, and practice what I call "everyday innovation." This enables you to solve challenges and problems faster and see opportunities that were impossible just a few years before. In other words, you become

anticipatory rather than reactionary.

Employees of an anticipatory organization understand that those who can see the future most accurately will have the biggest advantage. They know that you cannot change the past, but you can shape the future based on the actions you take in the present.

As such, they actively embrace the fact that many future disruptions, problems, and game-changing opportunities are predictable and represent unprecedented ways to gain advantage. They know that it's better to solve predictable problems before they happen, and that future problems often represent the biggest opportunities. Above all else, they are confident and empowered by having a shared view of the future based on Hard Trends and what I call the "science of certainty."



What is the science of certainty? Once you can separate Hard Trends from Soft Trends—once you can differentiate between the things you know will happen from the things that might happen—you can accurately define the certainties going forward. For example, we know that the iPhone 7, 8, and 9 will all have faster processing chips than those before them.

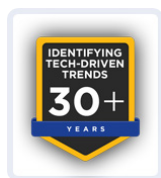
We know that after 3G and 4G will come 5G and 6G in a predictable way. And we know that we are putting more and more in the cloud—that we're not going to discontinue using cloud computing.

Those are technical examples. Here are some non-technical ones: We know that Baby Boomers are not going to get younger. We know that governments are going to continue, all over the world, to issue future regulations. We know the cycles of nature, such as after winter comes summer.

In other words, there is so much we can see that it's absolutely possible to create certainties using the Hard Trend/Soft Trend model I've developed.

Why is this so important to business? Because strategy based on certainty (on Hard Trends) has low risk, while strategy based on uncertainty (on Soft Trends) has high risk. Also, when you have certainty, you have the confidence to say "yes," to move forward, to hire, to start businesses. When you have uncertainty, it's like a giant roadblock. You're stuck and you don't move forward.

To succeed in business these days, simply being lean and agile is no longer enough. You and your team need to harness the ability to anticipate the future. In fact, I see this as being the most important missing competency that we've seen for decades. So learn how to anticipate today, before your competitors do.



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