

DANIEL BURRUS'

# TECHNO TRENDS

May 2014  
VOL. XXX, NO. 5

THE BIG IDEAS THAT ARE  
CHANGING EVERYTHING

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## Being Anticipatory: The Missing Competency

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 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 responsive, agile, and executing well.

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. Much of 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™.

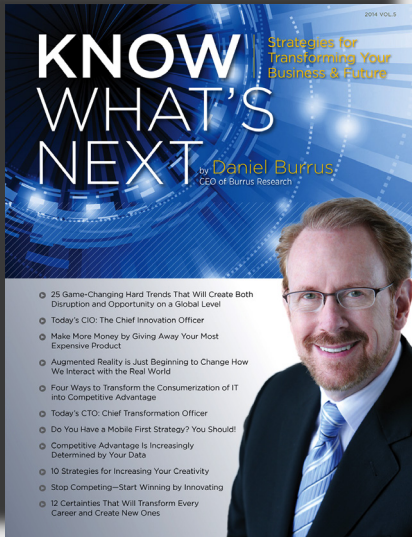
Based on three decades of research and applying the principles I've developed to organizations worldwide, I have developed a proven methodology for separating what I call Hard Trends from Soft Trends. Over the years I've written about this extensively in several best selling books, including my latest New York Times bestseller, Flash Foresight, and hundreds of articles and blogs.

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## TECHNOLOGY NEWS HIGHLIGHTS

### 3D Printed Building

Four hundred years ago, the ornate canal houses of Amsterdam became a symbol of trade, living and craft that is still recognized throughout the



world. Today this traditional architectural style is being combined with innovative 21st century technology to construct a fully functional canal house using 3D printing.

The project is part of an open, international collaboration for bringing together science, design, construction and community. The goal is to create building techniques, methods and materials that are cost-effective, sustainable and comfortable. Currently, the material being used is a bioplastic called Macromelt, which contains 80 percent vegetable oil, has a relatively low melting point, but is sturdy and stable. Other recycled materials are also being researched as possible additives, including wood pallets and natural stone waste.

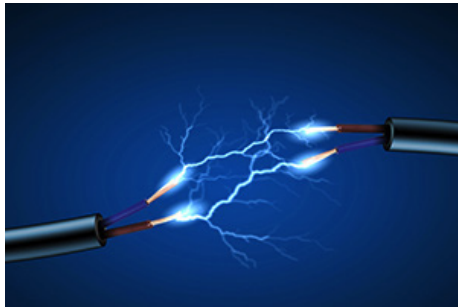
The benefits of using 3D printing to construct buildings are many. As an additive manufacturing technique, the process takes raw material straight through to finished product with no waste. Designs can be printed locally eliminating transportation costs. And adding ornamentation and detail (to a canal house façade, for example) is easy and inexpensive.

At the end of the 3-year research project, it's expected that the 3D Print Canal House will become a public building, but it will likely remain an important innovation hub for the building industry as well.

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## Cordless Living

Truly wireless electricity is no longer a fantasy of the future. It's here! And it's not just for charging



your smartphone or your electric car. New developments in resonance technology are making it possible to transfer power efficiently over longer distances using non-radiative, magnetic coupling.

It's based on technology that's been under development for several years. As far back as 2007, researchers were achieving wireless transfer of up to 60 watts of power with about 40 percent efficiency over distances of more than 2 meters using highly-resonant wireless power transfer (HR-WPT). Today, wireless electric power can be delivered over room-scale distances with a high level of efficiency.

The implications of being able to go truly cordless extend well beyond the convenience aspect of no longer needing to figure out ways to hide your stereo wires. Eliminating cables would enable devices to be designed in totally new ways, with new functionality, and even change the way in which we interact with them. Replaceable batteries could become a thing of the past, and many systems that depend on electric power (including industrial and medical equipment) would be more reliable as well as more flexible.

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## Fingerprint Payment System



In the quest for more secure identity management (without the need for more passwords), Samsung decided to incorporate a new fingerprint payment system into their recently released Galaxy S5 smart phones. The new technology can be used to authorize purchases on Web sites and apps that accept PayPal with a swipe of a finger. It's also compatible with the PayPal mobile app to pay for goods in certain U.S. brick-and-mortar stores.

The protocol is designed so that an individual's fingerprint record is only stored on their personal device. Cryptographic keys generated by the integral fingerprint reader are combined with other keys from the device's cryptographic chip to ensure that the fingerprint can't be copied.

The new payment system was developed by the FIDO (Fast IDentity Online) Alliance, a group of more than 100 companies, whose members include technology giants, device manufacturers, and representatives

of the financial sector. The core mission of FIDO is to improve multi-factor authentication, reduce complexity, and promote open standards to ensure interoperability.

For information: FIDO Alliance; Web site: [www.fidoalliance.org](http://www.fidoalliance.org)

## Ship Without a Crew



So what comes after unmanned aerial vehicles, self-driving cars and package delivery drones? Autonomous ships, of course! While unmanned freighters haven't hit the water yet, researchers in Germany have made some real headway in developing a navigation simulator that brings the world one step closer to bulk carriers that can sail the open seas without a crew.

Fueled by a dwindling number of workers interested in making a career in shipping, at a time when transport volumes are on the rise, the project represents a collaborative effort between eight partners from five European countries. Known as Project MUNIN (Maritime Unmanned Navigation through Intelligence Networks) the goal is to develop a ship that could be controlled remotely by an operator in a shore-side control station. Although much of the necessary technology already exists on today's modern ships – including autopilot capabilities, GPS, tempo automation systems and radar equipment – the new design will need to incorporate a variety of sensors, cameras and communications in order to operate fully autonomously.

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## Reversing Paralysis



A spinal implant capable of restoring movement to victims of paralysis has been tested on four wheelchair-bound men with remarkable results. The device consists of an array of 16 electrodes that are implanted in an area of the spinal cord which is still intact, as opposed to the injury site. The idea is to “awaken” those nerves that have lost function due to lack of use and restore the flow of information by stimulating nerves in the lumbosacral region – the neural “hub” which links the brain and the limbs.

Once the baseline electrical activity has been reestablished, complex algorithms are needed to translate the brain's intended movements into actual movements. These algorithms must be optimized for each individual, for each task, and even for each side of the body. In addition, multiple algorithms must be designed to work simultaneously to coordinate an activity such as walking.

In spite of the challenges, all four subjects can now move their legs and toes, and all have recovered bladder, bowel and sexual function to varying degrees.



The researchers are planning to expand their testing to include an additional eight patients, and are working on a second-generation device that will increase the number of electrodes to 27.

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## Time Travel on Google Maps



A recent update to Google Maps allows you to view past street views with the click of a clock. Over the years, the company has updated their snapshots as many as eight or nine times in large metropolitan areas, and now you can see for yourself how some of these landscapes have evolved by toggling between past versions.

Although the change to your screen is inconspicuous (the addition of a tiny clock icon in the upper left corner) the effort represented a huge overhaul for the Internet map giant, doubling the total number of still shots being stored. And, of course, the option isn't available for street views everywhere. For every spot on the Map where Google's vans have made multiple sweeps, there are many more where only one street view exists. Regardless, it's an interesting tool for exploring how natural disasters or economic fortune have shaped our world in recent years.

*For information: Web site: [www.maps.google.com](http://www.maps.google.com)*

## Cardiac Power Generator

Researchers at the University of Illinois have developed a stamp-sized patch that can turn muscle movement into electricity. The technology could eventually eliminate the

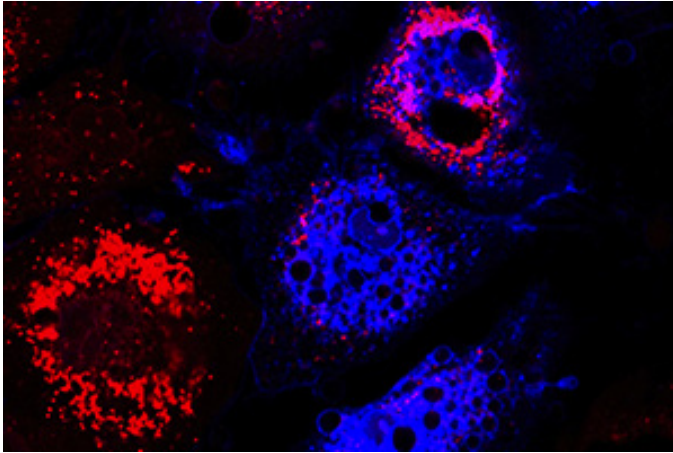


need for batteries in implantable devices like pacemakers, neural stimulators and glucose monitors.

The patch consists of a lead zirconate titanate nanoribbon mounted on a plastic substrate. When sewn to an organ inside the body – such as the heart or diaphragm – muscle movement causes the nanoribbon to bend and stretch, producing an electric current. A microbattery, also mounted on the substrate, stores the power being generated. In recent animal testing, the patch was capable of storing up to 8 volts of electricity, which is adequate to provide power for certain commonly used biomedical implants. The next step is to begin long-term testing in animals.

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## Patient-Specific Stem Cells



Scientists have taken a big step forward in developing healthy stem cells to replace diseased ones in the same patient. Using a cloning technique similar to the one that created Dolly (the sheep) – known as somatic cell nuclear transfer (SCNT) – they replaced the nucleus of a single cell from a human embryo with one from an adult skin cell. In this case, the subject had Type 1 Diabetes, which destroys insulin-producing beta cells.

To slow down the division process and allow more time for the genes in the new nucleus to transform into embryonic cells, caffeine was added. Cell division was then induced by exposing the cell to electrical impulses and chemical catalysts. The resulting bundle of up to 200 cells contained embryonic stem cells capable of differentiating into insulin-producing beta cells to replace those that were lost. The method could eventually lead to cell replacement therapies for a variety of other degenerative diseases including Parkinson's Disease, multiple sclerosis, and macular degeneration.

The new technique reduces recently identified risks associated with induced pluripotent stem (IPS) cells. IPS cells require the addition of

four extra genes, which have been the basis for concerns regarding incomplete reprogramming and the potential to trigger cancer.

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## Being Anticipatory

*continued from page 1*



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 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. Hard Trends can't be changed, but they can be identified before they impact you, your business, and your customers. 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.

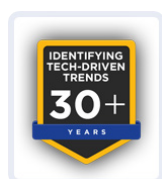
Those are technical examples. Here are some non-technical ones: We know that Baby Boomers are not going to get younger. We know that governments are going to continue, all over the world, to issue future regulations. We know the cycles of nature, such as after winter comes summer.

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, agile, and executing well 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.

How much time do you spend trying to keep up, putting out fires, crisis managing, and reacting to change? Are these activities helping you to get ahead? Learning to be anticipatory can change that and provide you with a new way to actively shape your future.



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