



DANIEL BURRUS'

TECHNO TRENDS

THE BIG IDEAS THAT ARE CHANGING EVERYTHING

The Top 20 Technology-Driven Trends for 2012 (Part I)

By Daniel Burrus, CEO of Burrus Research



No matter what industry you're in, your company can't survive without technology. And these days, even non-technical employees know that technology goes way beyond desktop computers and networks. From smart phones and tablet computers to mobile apps and cloud-based technology, there's a plethora of technological advancements to not only keep track of, but also to profit from. To stay competitive, your organization needs to anticipate the future technology trends that are shaping your business and then develop innovative ways to implement them in your organization.

Now that 2012 is well underway, be ready for the following 20 technology-driven trends to continue to create both disruption and opportunity in the business world. But rather than just react to them, be pre-active to future known events and plan how your company will profit from them now. That's the only way you'll gain competitive advantage in the coming years.

1) **Rapid Growth of Big Data.** Big Data is a term used to describe the technologies and techniques used to capture and utilize the exponentially increasing streams of data with the goal of bringing enterprise-wide visibility and insights to make rapid critical decisions. **High Speed Analytics** using advanced cloud services will increasingly be used as a complement to existing information management systems and programs to tame the massive data explosion. This new level of data integration and analytics will require many new skills and cross-functional buy-in in order to break down the many data and organizational silos that still exist. The rapid increase in data makes this a fast growing hard trend that cannot be ignored. *continued on page 2*

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2) **Cloud Computing and Advanced Cloud Services** will be increasingly embraced by business of all sizes, as this represents a major shift in how organizations obtain and maintain software, hardware, and computing capacity. As consumers, we first experienced public clouds (think about when you use Google or Apple's MobileMe and now iCloud). Then we saw more private clouds and hybrid clouds from businesses such as Flextronics, Siemens, Accenture, and many others, all using the cloud to cut costs in human resources and sales management functions. This was only the beginning, as cloud services enable the rapid transformation of all business processes.

3) **On Demand Services** will increasingly be offered to companies needing to rapidly deploy new services. **Hardware as a Service (HaaS)** joins **Software as a Service (SaaS)**, creating what some have called "IT as a service." All will grow rapidly for small as well as large companies, with many new players in a multitude of business process categories. These services will help companies cut costs as they provide access to powerful software programs and the latest technology without having the expense of a large IT staff and time-consuming, expensive upgrades. As a result, IT departments in all industries will be increasingly freed to focus on enabling business process transformation, which will allow organizations to maximize their return on their technology investments.

4) **Virtualization of Storage, Desktops, Applications, and Networking** will see continued acceptance and growth by both large and small businesses as virtualization security improves. We will continue to see the virtualization of processing power, allowing mobile devices to access supercomputer capabilities and apply it to processes such as purchasing and logistics, to name a few.

5) **Consumerization of IT Increases** as the source for innovation and technology continues to be driven by the consumer thanks to rapid advances in processing power, storage, and bandwidth. Smart companies have recognized that this is a hard trend that will continue and have stopped fighting consumerization. Instead, they are turning it into a competitive advantage by consumerizing their applications, such as recommending safe and secure third party hardware and apps. Encouraging employees to share productivity enhancing consumer technology will become a wise strategy.

6) **Gamification of Training and Education** will fuel a fast moving hard trend using advanced simulations and skill-based learning systems that are self-diagnostic, interactive, game-like, and competitive, all focused on giving the user an immersive experience thanks to a photo-realistic 3D interface. Some will develop software using these gaming techniques to work on existing hardware systems such as the Xbox and PlayStation. A social component that includes sharing will drive success.

7) **Social Business** takes on a new level of urgency as organizations shift from an Information Age "informing" model to a Communication Age "communicating and engaging" model. **Social Software** for business will reach a new level of adoption with applications to enhance relationships, collaboration, networking, social validation, and more. **Social Search** will increasingly be used by marketers and researchers, not to mention Wall Street, to tap into millions of daily tweets and Facebook conversations, providing real-time analysis of many key consumer metrics.

8) **Smart Phones & Tablets Become Our Primary Personal Computers**, and the **Mobile Web** becomes a must-have capability. **An Enterprise Mobility Strategy Becomes Mandatory** for all size organizations as we see mobile data, mobile media, mobile sales, mobile marketing, mobile commerce, mobile finance, mobile payments, mobile health, and many more explode. The vast majority of mobile phones sold globally will have a browser, making the smart phone our primary computer that is with us 24/7 and signaling a profound shift in global computing. This new level of mobility will allow any size business to transform how they market, sell, communicate, collaborate, educate, train, and innovate using mobility.

9) **Tablet Computers with Enterprise Level Web Apps** will be used to transform sales and service support and then move to purchasing, logistics, just-in-time training, and much more.

10) **Intelligent Electronic Agents** using natural language voice commands takes off with Apple's Siri, rapidly followed by Android, Microsoft, and others all offering what will become a mobile electronic concierge on your smart devices including your phone, tablet, and television. Soon retailers will have a Siri-like sales assistant, and maintenance workers will have a Siri-like assistant. The possibilities are endless.

Next month, I will share the other ten technology-driven trends for 2012 to complete my top 20 list. In the meantime, think about the 10 technology-driven trends I've given you this month and how you can adapt them to your unique environment before the competition does.

TECHNOLOGY NEWS HIGHLIGHTS

Augmented Reality Contacts

A new technology that enables the eye to view very close objects in extreme detail could revolutionize virtual reality by eliminating the bulky optics used in traditional systems. Called iOptik, the new device combines nanotechnology-enhanced contact lenses with compact eyewear that looks just like standard glasses to produce high definition, 3D images with a large field of view. Images from a flat panel screen embedded in the eyewear are focused through a lens in the center of the contacts while ambient and distant light pass through a filter that surrounds the pupil. This allows the wearer to see the close-up imagery and still be able to focus on the world beyond. The new technology is currently being used in defense simulations and covert ops training. Future applications include helping sufferers of macular degeneration through electronic image amplification as well as immersive video.

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Fuel from Algae

Researchers in Japan have partnered with agriculture corporations to begin commercial production of biodiesel from green algae. The plan is to complete three algae growing facilities and one processing facility by next spring. It's estimated that these four facilities will have an annual capacity of 900 kiloliters (nearly 250,000 gallons) of biodiesel per year. A specific type of green algae that has a high lipid content (70 to 80 percent) is cultivated using special light-emitting diode lamps to accelerate growth. Although the biofuel will initially be used to power airport vehicles, this same algae can also be processed into aviation fuel at about half the cost of conventional petroleum-based fuels. A major benefit of algae-derived biofuel is that productivity is much higher, since one acre of algae will yield an estimated ten times more fuel than corn. In addition, it does not compete with food sources such as corn and sugar cane.

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Obesity & Diabetes Pill

A new hormone was recently discovered that could have tremendous potential in treating metabolic diseases like obesity and diabetes. Dubbed irisin, it acts like exercise on muscle tissue, transforming white fat in to brown fat, burning calories and improving insulin regulation. The hormone occurs naturally in humans and in mice. In laboratory studies, mice given irisin lost a few grams of weight within ten days of treatment. It also appeared to reduce damage caused by high fat diets. Researchers are hopeful that continuing studies will provide new understanding of the link between exercise, weight and diabetes and the potential of a pill to help fight the negative effects of obesity and diabetes to name a few.

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Wireless Chargers

The next big thing in mobile devices might not be the devices themselves, but the way they're charged – thanks to a new technology that can transfer power without plugs or cords. In fact, the device doesn't even have to touch a charging surface. The new technique utilizes near-field resonant magnetic induction, which, up until now, has been limited to low-power applications such as cell phones. Development has been fueled by the finalization of the "Qi" standard in 2010 by the Wireless Power Consortium (WPC). But soon, it is expected that the standard will be expanded to increase the delivered power from five watts to up to 120 watts of power, making it applicable to a wider range of devices. WPC currently has more than 100 member companies, including five auto manufacturers who are planning to release vehicles with Qi-enabled charging within the next year.

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Sound Cloak

Just as light waves can be guided around an object to make it invisible, scientists have now succeeded in making an acoustic cloak that makes sound “unhearable.” The cloaking device consists of a thin (one millimeter) micro-structured plate made from two polymers – one hard and one soft. As it vibrates at a frequency around 100 Hz (within the audible range) the sound is guided around the plate in such a way that the waves cannot enter or leave the area. At the same time, the speed of the waves is increased as they travel around the outside, so they arrive at the other side at the same time as they would have, had they passed through it. This capability enables an acoustic cloak to be formed that has many industrial and commercial applications for reducing or eliminating noise.

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Human Exoskeleton

A few years ago, *Technotrends Newsletter* reported on a technology being developed for the U.S. military that used hydraulic sensors and mechanisms for enabling soldiers to carry heavy loads. Today, that same technology is making it possible for paraplegics to walk. An electronic suit – known as Ekso – was recently launched at the London International Technology Show. Although the current model requires an operator to control it remotely, a fully independent model is already in the works with plans to release it later this year. It will utilize a series of sensors to detect the wearer’s desired movements and use a computer equipped with artificial intelligence to bend their legs while a set of electronic crutches maintains balance. The system’s battery provides nearly four hours of power. Future improvements include making it smaller and lighter as well as developing a version specifically for stroke patients.

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Textile Transistors

Scientists recently announced that they’ve found a way to turn cotton clothing into computerized circuits by applying a conductive polymer layer laced with gold nanoparticles. The process increased the conductivity of the fabric 1000 times without reducing its suppleness. Using the interconnections between the individual threads, it’s possible to create transistors for a variety of applications. For example, a t-shirt could be embedded with sensors to measure heart rate and body temperature. Or a firefighter’s suit may be equipped with detectors for airborne pollutants.

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Fuel Cell Boat

The latest in luxury watercraft is a boat that draws all of its power from the sea itself. The motor runs on a fuel cell, but rather than requiring a hydrogen tank to store the fuel, it extracts hydrogen from the water as it’s needed. The onboard generator is capable of producing 50,000 volts, which is enough electricity to power the 500 horsepower engine as well as all of the onboard systems. Known as the MIG 675, the luxury cruising craft is 22 feet long and 8 feet wide, with adequate space for three people. It boasts a top speed of 70 miles per hour and a cruising speed of 45 miles per hour. The manufacturer plans to market the boat for about \$325,000. But most importantly, when applied to large container vessels, the technology could save hundreds of millions of dollars in shipping costs and represent a huge step forward in reducing pollution, since sea traffic is one of the biggest offenders when it comes to global emissions.

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