

## Brainstorm: Consumer Electronics

*What consumer technology will make the biggest splash in the new year?*



**Chris Minter, Components Corp, [www.componentscorp.com](http://www.componentscorp.com)**

**[1]**

An exciting new technology is being developed in Great Britain and anyone familiar with Dr. Who's "Sonic Screwdriver" can appreciate the potential impact this new device will hold for the consumer electronics industry. Under the direction of ultrasonics engineer, Professor Drinkwater of the University of Bristol, the device uses "ultrasonic forces to move small objects like biological cells around to sort them or to assemble them".

Employing very low forces to avoid potential damage to the objects being moved, the current prototype -- called sonotweezers -- utilizes "ultrasound shock waves to move tiny cells around". By "creating a rotation movement, a force field can be created that would be powerful enough to undo screws". "Essentially what you are doing," Drinkwater told the UK Telegraph, "is using the ultrasonic sound wave to twirl the air around to create a miniature tornado."

Tiny crystals made to vibrate by passing an electrical current through them, produce an ultrasonic shock wave in the air around them. This shock wave generates a force that can be used to push the cells. The size of the shock wave can be tuned to move cells of different sizes for numerous applications.

Once in place the technology could eventually lead to devices that can undo screws, assemble electronics and delicate components for both the consumer and industrial electronics sectors.



**Matthias Rose, Fraunhofer Institute for Integrated Circuits IIS, [www.iis.fraunhofer.de/EN](http://www.iis.fraunhofer.de/EN) [2]**

In 2011 we will see further convergence of traditional broadcast and Internet media. This trend is driven by new devices, new technologies, and new media products. Very soon, all CE devices will come with a network connection and consumers will have the choice between traditional media and new web media offerings. The battle for the attention of the recipient will not only be fought with new media offerings, but also with new technologies. Internet radio stations will transmit their program in 5.1 surround sound to offer their users a distinct benefit, IPTV services will offer high-quality communication services over TV sets to separate themselves from traditional broadcast distribution, and broadcasters will use their strong brands to establish their own special-interest and non-linear formats. For the user the source of the consumed content will become irrelevant. Internet, broadcast, media files stored in their personal cloud - the boundaries become blurry. The user just expects to have all content always available on every device - be it in the train or on the sofa. This makes network capacity even more valuable than today. And this makes efficient compression schemes necessary to efficiently transmit all this content over all possible distribution channels.



**Chad Lucien, Hillcrest Labs, [www.hillcrestlabs.com](http://www.hillcrestlabs.com) [3]**

Motion-based user interfaces will make a big splash in the New Year, beyond the realm of video games.

New connected-TVs and on-demand content libraries will require a more efficient and scalable means to browse and interact with content and applications. Decades ago, the mouse and a graphical user interface supplanted arrow keys as the means

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to navigate on computers and recently smartphones have adopted touch pointing as a standard UI. Yet, TVs and set-top-boxes still rely on an "up-down-left-right" arrow-based navigation paradigm created to manage a dozen content choices, not millions. Motion control enables users to control an on-screen cursor with easier, more efficient, and faster navigation.

Until recently, motion-control technology had not been cost-effective enough to be bundled with consumer electronics devices. The use of motion-control in video game consoles and smartphones has reduced these cost and driven adoption. In 2011, TV manufacturers will differentiate their products by incorporating pointing and motion control into their designs. Companies will incorporate inertial motion sensing solutions, like Freespace technology, or optical sensors. Each approach will have its own use-cases, but in the year to come, consumers should see much more interactivity in their living rooms.



**Keith Blaha, Memory Protection**

**Devices, [www.batteryholders.com](http://www.batteryholders.com) [4]**

It's already making a splash this year- but the tide is swelling, the crest is approaching, and the wave is about to crash in 2011. Next year we will be witnessing one of the biggest showdowns in the history of consumer electronics: Ipad vs. Droid Tabs.

The battle in the smartphone arena is about to broaden into the new theater of mobile PCs. This is a great thing, as Apple has been slow to release Ipad updates (it took most of the year just to release the patch for folders and multitasking). The utter lack of competition in the tablet market since the release of the Ipad has allowed Apple to drag their feet and yawn, waiting for a worthy challenger to approach. However, the peace cannot last forever.

Google and their allies have learned a lot from their skirmishes with the iPhone, and even the advanced scout of the Droid Tabs, the newly announced Galaxy Tab, seems to be starting to shake things up. However, this fight will go largely unnoticed by the public at large until next year, when Droid Tabs start to make it to market in bulk. Ultimately, both products will exist, and the healthy competition will result in a better end product for the consumers. So find a good seat right in the splash zone, because this will be the greatest brawl in consumer electronics yet.



**Jerry Kolbe, Murata Electronics North America, [www.murata-northamerica.com](http://www.murata-northamerica.com) [5]**

Given the space that Murata plays in, we have our eyes on a number of different technologies that will drive the consumer market forward in 2011. First on that list is the proliferation of the Android™ operating system across myriad mobile platforms. The newest generation platform promises to have significant impact not just on smart phones, but for yet to be conceived mobile devices applications, as well. One such example is the coming expansion of iPad type devices, which are expected to launch in the upcoming year. The new mobile devices will increasingly be paired with wireless charging solutions.

We also expect to see increased traction for the smart energy devices that consumers interface with directly so that energy consumption can be better managed at the individual level.

Beyond those, 3D video functionality expanding into devices other than TVs will gain momentum – think cameras, laptops, video games, etc. – provided the technology improves somewhat to give a better user experience. Another hot area will be the move of consumer electronics into more automotive-focused applications. We predict more connectivity solutions to be used to enable hands-free cellular, audio player interfaces, and broadband applications in a car.



**Paul Karazuba, QuickLogic, [www.quicklogic.com](http://www.quicklogic.com) [6]**

As consumer use of tablets and smartphones increase dramatically, I believe technology focused on improving the user experience will make the biggest splash. As always, OEMs will continue to be pushed to improve their products, especially the capabilities of the displays. With the increased consumption of multimedia content on mobile, handheld devices, users will demand a better viewing

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experience wherever they use their device, and expect that their viewing experience last longer than current display technologies support.

All commonly-used smartphone and tablet color displays have issues with sunlight viewability – Amazon Kindle spent a fortune on an advertisement campaign saying as much. Further, displays frequently consume >50% of system battery power, making them the single largest power consumer and biggest barrier to making handheld devices last longer between charging.

Whether it be displays with better sunlight viewability, lower-power displays, or associated technologies that enable either (or both), I expect that the status quo in displays to be shaken up quite dramatically in 2011.



**Scott Birnbaum, Samsung**

**Semiconductor, [www.samsung.com/global/business/semiconductor/](http://www.samsung.com/global/business/semiconductor/) [7]**

Many millions now marvel at the picture clarity and richness of colors in high definition television. HDTV ushered in a new era of crystal clear TV viewing that made viewers feel like a part of the action instead of watchers from the sidelines. But the dawning of a new age of TV viewing is upon us beginning in 2011 with ultra definition (UD) television. UD not only provides a resolution four times clearer than HDTV at 3840x2160 pixels, but also provides an excellent framework for enhancing 3D TV viewing.

Last month, Samsung Electronics LCD Business unveiled the world's first very large screen commercial LCD panel prototype that supports UD viewing in 2D and 3D, at a major conference in Japan.

The 3D UD panel, uses oxide semiconductor thin film transistor (TFT) technology combined with a 240Hz refresh rate, plus active shutter glasses, to provide an extraordinarily high-quality reproduction of natural images on a 70-inch screen which should amaze TV viewers for many years.

Oxide semiconductor TFT technology facilitates the application of high-velocity, high resolution image driving on screens over 60 inches with electron transference more than 10 times faster than with the amorphous silicon TFT technology used in most LCD TVs.



**Brian Glinsman, Texas Instruments, [www.ti.com](http://www.ti.com) [8]**

Several trends on the horizon indicate that the communications market will increase its growth and momentum over the next few years. Perhaps the most noteworthy trend is the staggering deluge of data crossing our wireless networks. The use of smart phones and other mobile data devices are driving an unprecedented increase in the volume and nature of network traffic. The high data rates and increased bandwidth required to support these applications are a challenge in today's networks. As a result, networks are beginning to change, and the most significant change is the growth of small cells, referred to as femtocells and picocells, and the deployment of these small cell base stations.

As we look to 2011, we will see tremendous pressure on manufacturers to field cost effective, all-in-one smaller cell base stations that deliver all of the interoperability and managed services that operators expect. Femtocells and picocells offer operators a way to improve coverage of their networks while maintaining or improving the traffic-carrying capacity of the cellular network. It is likely that the winners in these markets will be those that figure out how to minimize interference aspects and achieve co-existence between small cell base stations and macro base stations. With such vast changes coming to cellular networks, vendors will be looking for innovative solutions that help successfully meet the challenges of increasing data demands via cost and performance-optimized femtocell base stations.

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