What technology do you expect to take the consumer space by storm in 2013?

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Advancements in CMOS image sensor technology coupled with better imaging analytic software are bringing 3-dimensional motion sensing and control to the masses. Popularized in recent years by game consoles like the Xbox Kinect, 3D gesture recognition and 3D motion control are becoming more refined and precise. The latest system from Leap Motion, a San Francisco-based start-up, is capable of detecting movement of fingers and objects down to 1/100th of a millimeter, making it an interesting next step in the evolution of man and computer toward all-natural interfaces. In fact, Leap Motion is not alone. At this year's Consumer Electronics Show (CES) in Las Vegas, PMD technologies also demonstrated a unique single-sensor 3D Time of Flight (ToF) system that requires a small PCB footprint that can be easily integrated into existing chassis of all-in-one devices or mobile PCs and TVs. Both companies have begun working with leading PC OEMs on integration and are eyeing product introduction later this year. Beyond acting as a wireless mouse for a PC or a hand-waving remote control for a TV, precision 3D motion control holds great promise for medical, robotics, automotive, and other applications where an accurate, responsive, and touch-free man-computer interface could enable unique and compelling use cases. As consumers moved from traditional PCs to smart phones and tablets, swipe-and-pinch replaced point-and-click. 2013 will mark a new beginning of the next chapter in the evolution of 3D man-computer interfaces.

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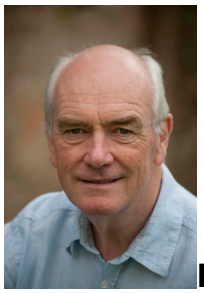
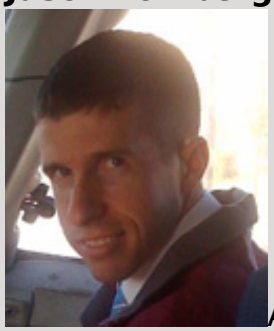
So, what is the real smart home? A refrigerator that I can change the temperature of from my car? You must be kidding. A real smart home is a home where the

rooms are continuously monitored via sensors for usage and evaluated for security, comfort and convenience. This evaluation takes place "in the cloud" and enables the homeowner to control and monitor the various systems throughout the home from any web connected device, anywhere in the world. This

includes arming the house if no one is home and turning on a light if someone is entering the garage. If a window gets left open, the system is smart to turn off the air conditioning or heating in that room to ensure no power is wasted. That is the real smart home, which will help us to improve security, comfort, and convenience while reducing energy costs. The real smart home of the future begins with: 1) Solid plumbing: ZigBee, an open standard that wirelessly connects devices to the set-top box or gateway, makes them controllable from any place in the house or anywhere in the world; 2) Existing applications will be first, with devices that people are using regularly, not with devices that people hardly touch: security, comfort, convenience, and energy management; 3) Cable and Internet service operators, capable of defining products (business/service models), including making installation easy/infra-structure in place to make money on the roll-out. The challenge of the smart home is not the vision; it's the implementation of the intermediate steps needed to get us there. Currently, operators rolling out ZigBee RF remote controls and ZigBee security services are fulfilling these three requirements and creating intermediate steps toward the real smart home.

 **Bob Jones, MD, Publitek,** www.publitek.com **[3]**
Coming from an electronics PR agency, I always look forward to CES to see how client innovations at component level create the consumer technology trends for the year ahead. With this in mind, 2013 will be a particularly interesting year. Arguably, ultra-high-definition TV has been the biggest story from this year's show, but I'll ignore this – limited content and too expensive – and instead to turn to two lower-profile but more game-changing launches. First of all, Plastic Logic's Papertab, a 10.7 inch tablet PC that's as thin as a piece of paper and completely flexible. Novelty aside, this is a powerful tablet and (running an i5 processor) gives Intel an interesting route into the tablet space. It is just a prototype, however, but curved screens are in production; and these tie nicely with a couple of client innovations that really grabbed our imagination throughout last year. Atmel's XSense allows precise touch controls on curved screens, enabling them to be placed anywhere on any device – for example buttons on the side of a phone … or even the handle of a coffee cup. An increase in touch panels will need better feedback. Third-generation (configurable and position-specific) haptic feedback controls, HiWave haptics use bending-wave technology to do this, allowing manufacturers to replicate the feel of a button push (very realistically) on these curved and thin surfaces. And the same transducers that provide haptic feedback can simultaneously turn a flat surface into a loudspeaker. My second disruptive technology for 2013 comes from the software world with Ubuntu for Android – to give both a phone OS when walking about and a PC OS when plugged into a display. From what I've seen, this is the first passable example of merging the phone and PC, and the consequences are very exciting. But, the move also puts pressure on component manufacturers that supply PC OEMs, which could make Intel's fight with ARM very interesting during 2013.

Jason Lomberg, Technical Editor



Although the technology won't enter the mainstream just yet, 4K – or "Ultra HD" – will make the biggest splash in 2013.4K was all the rage at the 2013 International CES (aka, the Consumer Electronics Show). Whereas 3D dominated the conversation the last 4 years, 4K took center stage at the latest showcase for consumer technologies.But unlike 3D – which many saw as a gimmick and subsequently failed to connect with consumers – I think that 4K has a real chance to penetrate the marketplace in the same way that HD became the de facto home-entertainment standard.At CES 2013, every major manufacturer trotted out fancy looking 4K devices – TVs, cameras, projectors – in much the same way that they previously touted stereoscopy as the next coming of the electron. But 4K feels more natural…more organic. The tech denotes a horizontal resolution of approximately 4,000 pixels, which is 4x that of the current 1080p HDTV format (hence the name).In terms of ultra HD – which is what we're primarily concerned about here – 4K means a resolution of 3840 × 2160 (8.3 megapixels). To the human eye, the difference between 4K and HD is subtle but noticeable, especially as you approach larger form-factor TVs. At CES, I demoed a number of 4K monitors, and you can get a lot closer to these visual wonders than you can with HDTVs without pixelization.4K TVs will enter the market well beyond the price range of your average consumer, and a dearth of 4K content will initially render it completely superfluous. But, like HD, early adopters will drive prices down, and companies like Sony have already announced near- and long-term support for UHD.The Japanese manufacturer plans to launch the world's first consumer 4K video distribution service this summer and will re-release select Blu-Ray titles in 4K.4K is still 2-3 years away from complete ubiquity – at least as much as HDTV – but it will take the consumer space by storm in 2013.

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