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**3-D NATURAL INTERFACES WILL CONTROL A WIDE RANGE OF GEAR - FROM PC'S TO
TV'S AND MUCH MORE, SAYS CANESTA CEO**

Gesture-controlled TV is Just the Beginning; 3-D Vision is the Wave of the Future

SUNNYVALE, CA - NOVEMBER 16, 2009 - Natural human interfaces, based upon hand gestures in free space, represent the next big evolutionary jump in consumer and industrial electronics, said Jim Spare, CEO of 3-D chipmaker Canesta. Spare made this prediction, and explained the business potential of 3-D-based input methods to an audience of industry veterans at the recent GigaOM "NewTeeVee Live Conference", in San Francisco.

Natural interfaces utilize advanced 3-D vision technology to interpret actions by users - such as hand gestures or other movement-based input - as commands for the device. But unlike the mouse or the touchscreen, with which the user has to make physical contact, there is no physical device that is touched. Rather, the TV, PC, or other appliance simply observes the user and the user's surroundings, and derives meaning from what it sees. And with the same ease that an officer can direct traffic at a busy intersection with a few natural gestures, we will be able to convey our intent to our devices.

"It's not about replacing the remote, the mouse, or the touchscreen," Spare said. "It's about expanding the breadth of interaction between us and our devices, to enable them to seamlessly integrate with our lives."

Spare forecasts that 3-D natural interfaces will significantly improve the convenience, utility, and enjoyment of using everyday devices, and that common frustrations with how our devices 'work' - or don't work - with our lives will virtually disappear. But that's only part of the story, says Spare. The business case is also compelling.

"It's great that you don't have to hunt for the remote, but the real impact of 3-D natural interfaces, such as gesture controlled TVs, is that they will make a broad array of complex services easily available and accessible through a very natural user experience."

The Next Wave in Consumer Electronics

And expanding the accessibility and broadening of services is just what manufacturers and developers are looking for - a way to fuel the next important wave in consumer and industrial electronics. "The iPhone's multi-touch interface has spurred the development of an astounding 100,000 applications for that device," Spare says with obvious amazement. "Well, 3-D natural interfaces go way 'beyond multi-touch'.

It was to another television-focused audience that Canesta and Hitachi first unveiled the possibilities of gesture-based interfaces, earlier this year, with a jointly-developed TV prototype that

can be controlled from across the room using hand gestures. Hitachi has announced that it will have such a TV, utilizing Canesta's technology, in the market by 2010.

But the broader implications of the technology are extremely important to consumer and industrial electronics manufacturers, as well as to service providers, Spare told his audience.

"Imagine," he says, "if you can re-invent TV-based services the way the iPhone re-invented the mobile phone. Well, the natural interface will enable just that." For the TV OEMs, Spare expects nothing less than the rebirth of an industry. But it doesn't stop there, he said.

"We are working with a number of companies that have broad visions of immersive advertising, augmented reality, interaction in the 3-D web, and numerous other unique uses," he said. "Within a few years, we will see impressive applications that solve fundamental ease-of-use issues with advanced immersive 3-D services and experiences. 3-D natural interfaces enable such applications to become mainstream."

Mass Market, 3-D Perception Chips are Key

The key, enabling technology for natural interfaces is a mass-market, 3-D "vision" capability, said Spare. Only when devices are able to effortlessly recognize, in real time, fine-grained features in a scene, in any lighting condition and against any background, can subtleties such as hand gestures - across a room in many cases - be reliably interpreted.

Canesta has pioneered 3-D "electronic perception" chips designed for just such applications, built using the same low cost, high-volume CMOS manufacturing processes as the ubiquitous webcam or cell phone video camera chips.

But unlike those chips, which see the world as flat, 2-dimensional arrays of colored dots, Canesta's chips sense the distance to the various details in a scene. The chips can report these distances - at over 60 frames per second - to the devices in which they are installed, as fine-grained "depth maps".

Thus, features such as a hand moving in circles in front of one's torso - which might mean "scroll through my media library" to a suitably programmed media center - are reliably discriminated by the chip in real time. It has been, Spare admits, the breakthrough that has finally enabled natural interfaces to become reality.

The "Other" Side of 3-D

3-D technology has received growing amounts of recognition and consumer interest in recent years, as 3-D presentation and representation technologies have gotten increasingly sophisticated and realistic - particularly as a result of advances in graphics processing chips. But, as Spare points out, such applications are all about 3-D as *output* from a device.

By contrast, Canesta's 3-D electronic perception technology is all about the "other side" of 3-D - 3-D as *input* to everyday devices. "It's this *other* side of 3-D that will transform our relationship with the machines that serve and entertain us," Spare predicts. "And that's a good thing, for both consumers and for manufacturers." Perhaps the wave of the future...

About Canesta

Canesta is the inventor of revolutionary, low-cost electronic perception technology that is the foundation for the “other side of 3-D” - true 3-D perception as *input* to everyday devices, rather than the widely-understood 3-D representational technologies as *output*.

Canesta’s 3-D input technology, based upon tiny, CMOS 3-D imaging chips or “sensors”, enables fine-grained, 3-dimensional depth-perception in a wide range of consumer, security, industrial, medical, automotive, factory automation, gaming, military, and other products. Such products can then react on sight to the actions or motions of individuals and objects in their field of view, gaining levels of functionality and ease of use that were simply not possible in an era when such devices were blind.

Numerous applications are under active development by Canesta's OEM customers and partners, including consumer electronics, PC, TV, building automation, security, robotics, automotive, and others. Such customers and partners include Hitachi, Honda, Optex, Optronic, Quanta, SMSC, and others which have yet to be announced.

Canesta is located in Sunnyvale, CA. The company has filed in excess of fifty patents, 40 of which have been granted so far.

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