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## CANESTA'S INTELLECTUAL PROPERTY JUGGERNAUT ROLLS ON

**Leader in Low-cost, CMOS 3-D Sensor Technology Granted 37th Patent; Gesture Controlled TVs and PCs, Automotive Safety, Among Many Applications**

**SUNNYVALE, CALIFORNIA - FEBRUARY 25, 2009** - Electronic perception technology pioneer Canesta, Inc., inventor of a family of low-cost, chip-based 3-D sensors, has substantially raised the bar for would-be competitors with the receipt of their 37<sup>th</sup> granted U.S. patent in late December 2008, following four others that issued in the last quarter of 2008 alone, and 12 for the year. 3-D sensors are emerging as a key enabling technology for advanced automotive safety - such as back-up warnings or seat occupant characterization - and more recently for touchless gesture recognition (see [Hitachi Chooses Canesta's 3d Sensor Chip to Power World's First Gesture Controlled TV](#), January 8, 2009).

True 3-D sensing involves determining the distance from the sensor to every important feature in the sensor's field of view, and then using that information to discriminate objects, individuals, movements, body parts, hand gestures, or just about any other feature - mimicking the process performed so effortlessly by human eyes and brains. When performed electronically, however, it gives ordinary devices an entirely new degree of perception that enables unprecedented interaction with the surrounding environment.

Canesta's burgeoning intellectual property portfolio covers a wide range of inventions that make electronic perception possible.

The core technology, called "time of flight", relates to the RADAR-like aspect of the tiny CMOS sensor chips. Individual distances to features in a scene are actually determined by the sensor calculating the time it takes a photon of infrared light to travel to that feature and back. Canesta's sensors do this in real time, for thousands of details, at rates up to 60 frames per second.

That time-of-flight technology, covered by 17 granted U.S. patents and at least 4 more pending, is particularly rich and robust. For example, Canesta's 3-D sensors can operate in all lighting conditions, including bright sunlight, and are not fooled by lack of contrast, or by background features that mimic features of interest. No other 3-D sensor, true or simulated - for example, two-camera solutions - can claim this level of performance, particularly at commercially-useful resolutions.

An alternative measurement technique called "structured light", which others are attempting to use, is the subject of two U.S. patents granted to Canesta.

In addition, Canesta's patent portfolio contains several technologies relating to the interpretation of 3-D "depth" information provided by *any* 3-D sensor - not just those manufactured by Canesta - regardless of whether the sensor's design is based upon time-of-flight, structured light, stereo vision or anything else. These patents encompass gesture and virtual input recognition, and obstacle detection. The former two patents describe 3-D sensors that can acquire the position of a

body part, such as a finger or hand, and recognize that a virtual "button" has been "pushed" or that a specific gesture has been made. The latter patent, still pending, is useful, for example, in preventing cars from backing over a pedestrian, or restricting automatic doors or lift gates from closing on an obstacle or person.

As 3-D sensing applications such as touchless gesture control for television sets, avatar control within virtual communities, virtual "green screen" capability in 3D webcams, new fully immersive gaming experiences, or occupant and pedestrian sensing for automobiles become mainstream, the scope and tremendous value of Canesta's intellectual property portfolio will fully be appreciated.

A narrative overview of the 37 granted patents to date, as well as several that are pending, can be found in a supporting document entitled [Canesta Intellectual Property Overview - February 2009](#). Each individual patent disclosure may be found and read at <http://www.canesta.com/products-and-technology/products/patents>.

### About Canesta

Canesta is the inventor of revolutionary, low-cost electronic perception technology that enables ordinary electronic devices in consumer, security, industrial, medical, automotive, factory automation, gaming, military, and many other applications, to perceive and react to objects or individuals in real time. When given true, fine-grained 3-dimensional depth perception with Canesta's unique CanestaVision™ electronic perception chips and software, such products can gain functionality and ease of use not possible in an era when such devices were blind.

Numerous applications are under active development by Canesta's OEM customers and partners, including building automation, security, robotics, automotive, and others.

Canesta was founded in April 1999, and is located in San Jose, CA. The company has filed in excess of fifty patents, 37 of which have been granted so far. Investment to date exceeds \$58 million, from Carlyle Venture Partners, Honda Motor Company, Hotung Capital Management, Korea Global IT Fund (KGIF), Venrock Associates and others.

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Additional background information is available at [www.roeder-johnson.com](http://www.roeder-johnson.com).

See also: *Hitachi Chooses Canesta's 3d Sensor Chip to Power World's First Gesture Controlled TV*, January 8, 2009; <http://www.roeder-johnson.com/RJDocs/CAsubject0108.html>

*Canesta Patents - Complete Library*; <http://www.canesta.com/products-and-technology/products/patents>

*Canesta Intellectual Property Overview - February 2009*;  
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