VMI's 2012 CES Highlights

January 2012

By Vanguard Marketing International, Inc.

www.e-vmi.com

VMI CES 2012 Review

Welcome back to VMI's Best of the Best CES Technology!

The VMI team once again traveled the halls of CES to bring to you their pick of top innovations and enabling technologies, so that you can see and be what's next!

Background 2012 Consumer Electronics Show

- *CES attracts the "who's who" of the technology and related industries. It continues to* include C-level executives from the entertainment, mobile and consumer electronics industries
- *The show is evolving – and could be called the Consumer Technology Shows, because of advancements in software – as seen in the apps and SDKs.*
- *153,000 visitors; 34,000 international attendees; Viewed 3,100 exhibits (400 direct from China); 20,000 new products were launched*
- The fact that Apple and Facebook were not at the show, and Google and Amazon barely so, highlights a fundamental shift over the past few years in how products are launched and promoted in the high-tech industry. Microsoft says this is their last year. We say, "No problem!" Breakthroughs begin in the garage!

➔ ***Top Innovations***

- **Human-Machine-Interface** (HMI) as we see advancements in gesture recognition, touch-screens, haptics, eye and thought control, and the technology break-through of the show, 3D manipulation - not with a mouse, but with a bird!
- **Continued evolution & integration** in mobility, connectivity, MEMS integration *(accelerometers/gyros, silicon microphones, environmental sensors, inkjets/microfluids, bioelectronic probes, RF MEM devices)* augmented reality (AR), health sensors & systems, OLED, HD & 3D displays
- **Convergence**… means new "As a Service"

➔ ***Cyber Issues***

- *With new innovations such as TransferJet's 560 Mpbs wireless data transfer and the success of worldwide providers of cloud services such as Muzee, we ask, "What will their impact be on Cyber Security in the future?"*

2012 CES Highlights

Best of the Best

- Virtual Reality Kit & 3D Interface Tool "Bird" by Leonar3do
- Augmented Reality by Aurasma and Vuzix
- Business Models by Qualcomm Telcorder Xprize and Transfer Jet Consortium

Highlights of the Top Picks

- Gesture Recognition & SDKs
- Multi-Touch and Gaze-Control
- Gaming
- TVs… Smart to Smarter
- Internet-Based Multimedia Services
- Affordable 3D Printing
- Automotive
- Personal Tech
- People Movers

Check Out the NEW VMI Blog and share your thoughts with us!

Click here to go to our blog.

BEST OF THE BEST AND TOP INNOVATIONS 2012 CES SHOW

Virtual Reality SDK Kit & 3D Interface Tool

Leonar3do (www.leonar3do.com) HQ: Hungary

Dániel Rátai
founder and CTO of Leonar3Do

"World leading companies and research institutes spend billions of dollars on solving a problem, when a 19-year old teenager comes by and puts the system together using straws, Christmas lights, and fence wires."

Jury Member, Nobel Prize Ceremonies of 2005

- Key Innovations: Follow this link to see Leonar3do in action!
  - "The Bird" – a ***six-degrees of freedom 3D tool*** - pinpoint, manipulate, master with intuitive skills
  - Integrated, holistic approach, with ***advanced head-tracking***, ***real time polygon optimization***, ***vibrating engine within the bird (when you touch a surface in the virtual world, vibration will turn on), viewing from any visual angle, and you can reach 1mm accurate position detection*** *(resolution~0.3 mm, accuracy~6-7 mm.)*
- ***Affordable:*** ~$2K for the software, bird, 3D glasses and a few well placed sensors (standard PC)
- **Software Development Kit "SDK"** is available
- Next: **high level development tools *(3D GUI, modeling, physics, network)*** and presentation applications
- **Potential Applications**: ***Virtual reality gaming, 3DTV & 3D e-Commerce, 3D command and control centers, pin-point designation within 3D (e.g. for specifying augmented reality overlays); simulation and modeling environments, design, visualization-business intelligence…***

Augmented Reality (AR)

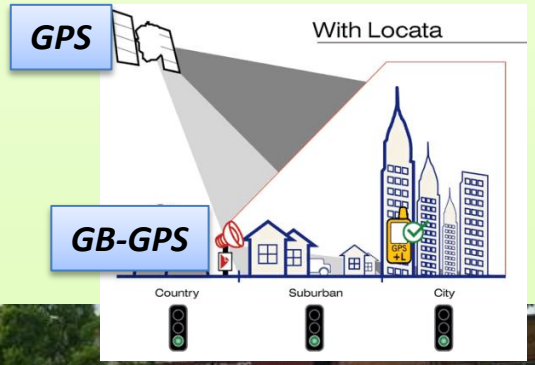
Follow this link to see Aurasma in action!

AR Browsing and Interaction

- ***Aurasma*** (http://www.aurasma.com/)
  - While we have seen AR browsers in the past such as Layar, the Aurasma browser takes the lead.
    - With **image recognition embedded** into Aurasma's browser, ***users are able to interact with advertisements, products and locations***
  - **With an image library to fuel it**, taking users straight to content without the need for a ambiguous QR code.

NEXT: GPS, Ground-based GPS to 2cm, Pixels

- ***At UC Berkeley:*** Augmented Reality Overlays, Cloud Analytics and 3D Shape Analysis
- ***Locately***[3] location analytics, for mash-up overlays
- ***Locata Corporation***[2] GB-GPS to 2cm
  - **Future: GPS accuracy to few centimeters (Locata) picocells (integrated)**
- Then… **Camera enables location accuracy to pixel**



Locately location analytics

2. http://www.locatacorp.com/
3. http://www.locately.com/company/

Business Models: Crowd Sourcing

- **World-Wide Challenge – Disruptive Innovation** (http://www.qualcommtricorderxprize.org/)
  - The Qualcomm Xprize – the $10 million Global Competition to Revolutionize Healthcare
  - ***The $10 million top prize will be awarded to the team that develops a mobile platform that most accurately diagnoses a set of 15 diseases across 30 consumers in three days***
  - Announced at 2012 CES, final competition guidelines for the Qualcomm Tricorder X PRIZE will be made available in approximately ***September 2012***

- $1M = ↑10%
- Without having to pay for internal development that had no guarantees

- In 2006, Netflix offered a $1m to anyone who could improve their Recommender System's accuracy **by just 10%**
  - **44,014 submissions made by 5,169 teams in 186 countries** http://www.netflixprize.com/leaderboard
  - Oct 2007,with 107 separate sets of predictions, AT&T **8.43%**; nearest rival **8.38%**
  - 2008, accounting for how user behavior changed over time: **9.63%**
    - Joint-team: BigChaos and AT&T's BellKor were awarded a ***Progress prize***
  - **2009 Award Winner -- *jointly to merged teams*: 10.05% -> 10.09% (last call)**

Reclab Prize ($1m) **Overstock.com** (administered by RichRelevance), to analyze 75,000 hypothetical shopping sessions, including clicks and purchasing. Prediction to be at least 10% better. **Award March 2012**

KDD CUP ($5K) **Yahoo! Music**, to analyze 300m user ratings of songs, albums, artists and genres. Two Tasks: Predict how people would rate new songs; ID songs they would *not* listen to. **Awarded 2011**

2,000 contestants from around the world

Winner: A team from National Taiwan University won both; Validated Netflix approach and methods

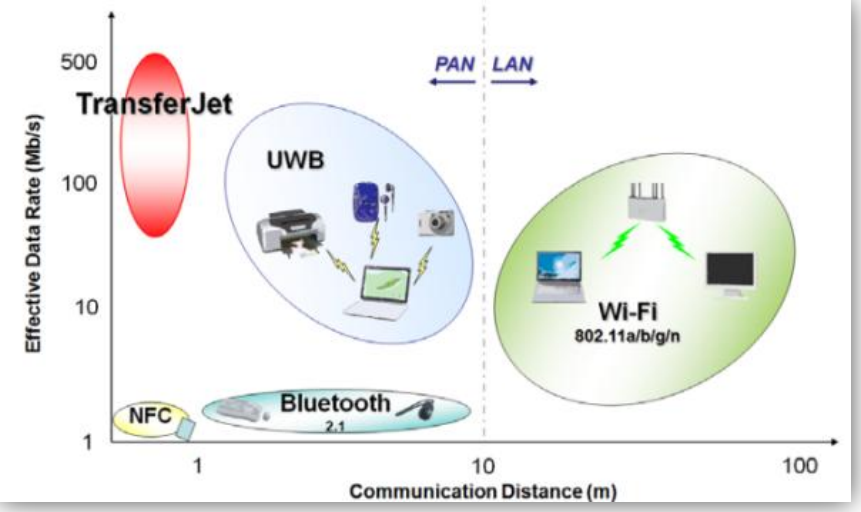
Beat pros from AT&T, Northrop Grumman and Hulu

Business Models: Consortium/State Capitalism

- **Transfer Jet Consortium** (www.transferjet.org)
  - ***50 members promoting concept***, technology and usage models for ultra-fast close-proximity Data Transfer
  - **Either close proximity or "bump" wireless transfer** – downloads files or streaming ***(560 Mbps, 1 m distance)***
    - *Note: Near Field Communications <10 Mbps, 1 m distance*
  - Easy sharing, easy backup, easy printing
  - Future: public media sharing
  - ***Became a non-profit September 2011***

→ *Cyber Issues*

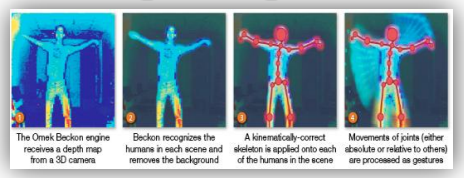
- *With new innovations such **as TransferJet's 560 Mpbs wireless data transfer** and the success of **worldwide providers of cloud services such as Muzee***
- *We ask, "What will their impact be on Cyber Security in the future?"*



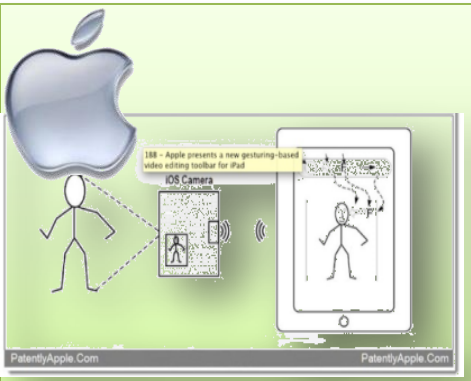
HMI: Gesture Recognition & SDKs

- ***SoftKinetic*** (www.softkinetic.com) HQ: Brussels, Belgium; US Operations: Sunnyvale, CA
  - A complete family of 3D imaging and gesture recognition solutions, including patented ***3D CMOS time-of-flight sensors & cameras,*** multi-platform and multi-camera 3D gesture recognition middleware and tools, as well as games and applications from SoftKinetic Studios.
  - ***3D Gesture Recognition Middleware compatible with all 3D cameras***

Follow this link to see SoftKinetic in action!



- ***Omek*** (www.omekinteractive.com) HQ: Israel
  - ***Gesture Recognition and Body Tracking Technology Engine and SDK***
    - Add gesture-based interfaces to your applications or games
    - 3D camera and sensor agnostic
  - Potential applications: ***Smart TVs, Medical and Physical Therapy Systems, Robotics Control, Training Simulation Systems…***



Industry Update:

- *An Apple patent suggests that on future iPads, you may be able to **control your tablet from across the room using 3D gestures, such as a swirl or swipe of the hand.***
- *The patent pre-defines a number of gestures, such as ones for **facial recognition, a selection gesture and a pointing***

HMI: Multi-Touch & Gaze-Control

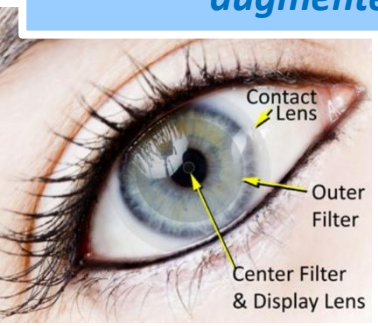
- ***Touch Revolution*** (www.touchrev.com) HQ: Redwood City, CA
  - Innovative *projected capacitive touch* (P-Cap) products allow OEMs and system integrators to ***quickly and easily add a great touch interface to their products*** – from desktops to digital signage
  - Key Innovations: ***Fusion Multi-Touch Displays with expanded Gesture Capabilities (15-32 inch diagonals)*** and an ***Integrated Device Management System*** for updates, remote monitoring, crash recovery and usage statistics
  - The world's highest-volume, projected capacitive manufacturing facilities (TPK Holdings Co., Ltd)

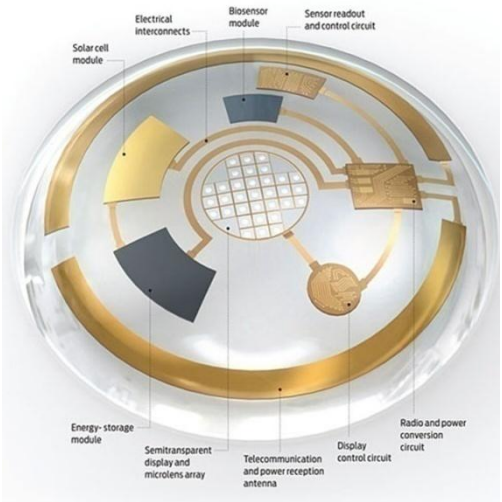
Heatmap

- ***Tobii*** (www.tobii.com) HQ: Sweden; US Operations: Falls Church, VA
  - Eye tracking software ***enables gaze-controlled interaction with displays***
    - ***E.g. Turn the page with your eyes, stare-and image expands,*** all while allowing for freedom of movement
  - Very precise…provides a comprehensive platform for recording, observation, analysis ***and visualization in heat maps and gaze plots***
    - Originally designed **for people with disabilities (Steven Hawkins)**
  - ***Some field of use: Neuroscience studies combining eye tracking and EEG data, ophthalmology studies, Gaze-contingent paradigms (ads)***

3D Augmented Vision and New Applications

Smart contact lenses for health and head-up displays.
Lenses that monitor eye healthcare, and in-eye 3D image displays are being developed too. Welcome to the world of augmented vision!





- **May 2010:** New generation of contact lenses that project images in front of the eyes became a step closer after successful animal trials. Professor Babak Amir Parviz of **Seattle's Washington University** said, "The technology is safe and feasible."
  - The technology could allow wearers to read floating texts and emails or augment their sight with computer-generated images

- **Jan 2012: DARPA Soldier Centric Imaging via Computational Cameras (SCENICC)** program **design eye-enhancing virtual reality contact lenses by** researchers at **Washington-based Innovega iOptiks**
  - Eliminate ISR capability gap existing at the individual Soldier level
  - Develop novel computational imaging capabilities
  - **Explore joint design of hardware and software that give warfighters access to systems that greatly enhance their awareness, security and survivability**

- **2014: Commercial release** by Innovega 3D focusing contact lenses

- ***New product or a product extension opportunities?***
  - Swiss Sensimed has brought to market a smart contact lens that uses inbuilt computer technology to monitor pressure inside the eye to keep tabs on the eye condition glaucoma.
  - Next: Drug dispensing

http://gadgets.tmcnet.com/topics/gadgets/articles/239444-smart-contact-lens-displays-text-emails-before-eyes.htm
http://www.newscientist.com/blogs/onepercent/2011/11/electronic-contact-lens-displa.html
http://www.designbuzz.com/ioptiks-contact-lenses-project-3d-images-eyeball.html
http://www.darpa.mil/NewsEvents/Releases/2012/01/31.aspx

Gaming

- Convergence of physical and virtual gaming:
  - ***ePawn*** (www.epawn.fr/)
    - ***Physical pieces interact with a virtual game board in ePawn's 26-inch tablet gaming space.***
  - ***Sphero*** (www.gosphero.com/)
    - Smartphone controlled, bluetooth connected robotic ball with ***induction charging, multi-colored LEDs and it includes a camera for remote viewing***.

- The new gaming platform – Internet TV
  - Internet TV, whether it be enabled through set top boxes, plug in drives or embedded will enable greater content availability to app stores
  - ***Next generation TV's integrate gesture controls*** (*Samsung, LG, Haier*)
  - TV-based gaming will likely target new customer segments including casual and family gaming and ***potentially eating up market share from consoles in this segment, such as the Nintendo Wii***

OLED & 8K TVs … Smart to Smarter

- ***LG's* OLED TV**
  - The first 55-inch OLED TV announced as shipping in 2011
  - ***4mm thin and 7.5kg, promises absolute black levels, ultra-fast panel and excellent viewing angles***

- **World's First 8K LCD by *Sharp***
  - 85 inch, 16x resolution of 1080p HDTV
  - Who needs 3D?
  - Just ***33 million pixels in one place!***
  - ***Might be 5 years until we can buy this***

- ***Samsung* ES8000 Smart TV**
  - ***Dual-core processor and a feature suite including multi-tasking, voice and gesture controls, facial recognition create a TV with as much personalization as your smartphone***
  - Incorporates Samsung's "AllShare Play" – ***enabling seamless content transition to multiple devices*** and allows users to pull content from the cloud

Internet-Based Multimedia Services

- **Content Discovery**
  - **Delivery - *Rovi Corporation*** (http://www.rovicorp.com/)
    - Combing content discovery, distribution and advertising into a ***single package, and delivering it across a number of different platforms***
    - Convergence of social media, cloud and analytics
  - **Metrics - *Audible Magic*** (http://audiblemagic.com)
    - ***Automated content recognition through digital footprint technology that identifies content in real-time***
    - Will allow for greater personalization and interactivity of digital content
    - ***Partnered with Rovi Corporation, Related Content Database, Facebook and Verizon***

Internet-Based Multimedia Services

- **Multi-platform content delivery and cloud-based multimedia**
  - ***UltraViolet*** (http://www.uvvu.com/)
    - Enables users to add any multimedia purchase to your digital library and access via multiple devices. Created by the Digital Entertainment Content Ecosystem.
  - ***Muzee*** (http://en.muzee.net/) HQ: Taiwan
    - **USB connectors and handheld devices enable users to stream content from and to** thousands of TV stations, radio, magazines, books, games, news sources, etc.

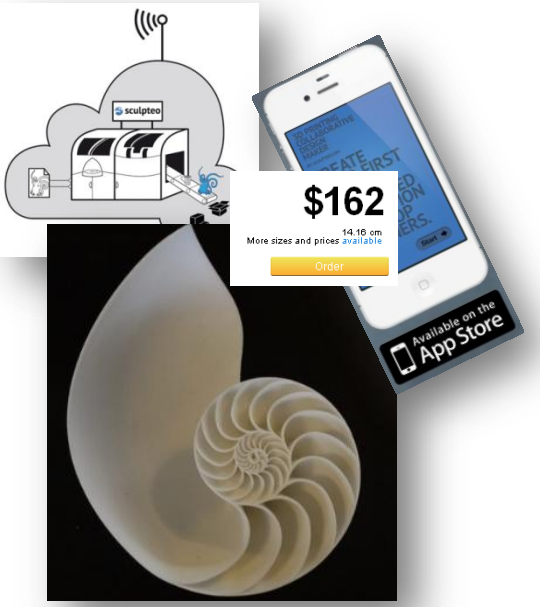
- **Ecosystems to Monetize the 4G Network**
  - Alcatel-Lucent next gen Connect Program
    - Collaborate with over 125 companies to develop business service concepts to monetize the 4G network
    - Add value to consumers through 3D, videoconferencing, interactivity, etc., while producing ROI for Verizon, AT&T, etc.
  - Verizon 4G LTE Enterprise Solutions
    - Business Services unit develops solutions for sale through industry channel partners in retail, healthcare, security, etc.
    - Major partners include Cisco, Aruba Networks, Comrex, M&A Technology, AAC-ID8, Diebold, CradlePoint, VGO

Internet-Based Multimedia Services

- **Convergence in Voice Communication**
  - ***Ooma*** (http://www.ooma.com/)
    - VoIP home phone system enables wireless mobile phone calls, ability to answer mobile line on home phone
  - ***Invoxia*** (http://www.invoxia.com/)
    - Desktop phone connects to Skype, iPod, iPhone and iPad
  - ***Biscotti TV Phone*** (http://www.biscotti.com/)
    - Works with Google Talk and other services to make free calls to anyone, anywhere via smartphone, TV, computers, tablets
- **Wireless Retail Solutions**
  - Verizon has teamed with M&A Technology (tablet device), Alpha Bay (payment), 3LM (security), CradlePoint (router) and others to provide solutions for merchant service providers over 3G/4G networks
    - Also demonstrated Virtual Personal Stylist with CradlePoint, Systech, TelePresence Tech, [TC]2, Vidyo, VisionMAX, and Alcatel-Lucent
  - LightSpeed Point-of-sale and back-office management solutions
    - Leverage PC's, tablets, mobile devices, and apps in Internet-based and in-store retail locations

Affordable 3D Printing at Home or As a Service

- **3D Printing at home or as a Service**
  - ***Cubify*** (www.cubify.com)
    - At home 3D printer… $1299 and $48 refill supplies
    - Share printing, designs with your community
    - ***Cubify also offers an API to allow third party developers to communicate with the platform and develop apps***



  - ***Sculpteo*** (www.sculpteo.com) HQ: Vanves, France
    - 3D printing is the ultimate tool ***for mass customization;*** Sculpteo are experts of additive manufacturing technologies
    - The SCULPTEO 3D printing Cloud engine is available for all businesses
    - ***AppStore for 3D printing, design and sell your creations***
    - Open your own store and sell
    - The actual 3D printer is a high-end system, capable of very complex and high definition work
    - ***Stores and designers can embed the 3D printing capability into their online shop, using the professional Sculpteo easy integration solution…***

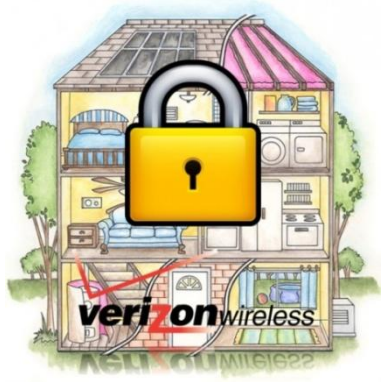
Connected Home

- ***Samsung's Transparent Window***
  - A full touch, **TFT LCD display** that can turn any plain "old" window into a ***smart window, allowing for internet access to recipes, watching TV and more.***
  - Samsung is marketing a ***46-inch and a 22-inch*** display with applications in the consumer space such as – showcases, doors on subways, commercial freezers, etc.
    - *Display Bank expects the transparent display market to grow by **US$0.9 billion in 2015 to US$87 billion in 2025***

YouTube Follow this link to see the Smart Window in action!

- ***Nest*** (http://www.nest.com/)
  - A thermostat that's as easy to use as an iPhone
  - ***Built by former Apple-team*** hardware developers, it is not only an update to the old-style dial thermostat but also includes the ability to ***learn your temperature preferences, track motion in a room and be controlled through an App***.

YouTube Follow this link to see Nest in action!



- ***Home Monitoring and Control***
  - ***Verizon's*** **Home Monitoring and Control**
    - A ***subscription based*** program built with ***Z-Wave wireless technology***, will allow control over household objects ranging from ***door security, lighting and network cameras, etc.***
    - Will be a potential uphill battle against Google, especially with Eric Schmidt's renewed announcement on the Android strategy moving into the home

Automotive / Telematics

- **The Connected Car**
  - LTE connection enables new levels of connect ability
    - Infotainment is nothing new, however as LTE coverage becomes more wide spread we will see greater adoption of data intensive apps in vehicles
    - Sadly ***according to T-Mobile and Audi we wont be seeing this in the Audi lineup until 2015, if not later***.

- **Vehicle Apps**
  - Driving Assistance – ***iOnRoad*** (http://www.ionroad.com/)
    - iOnRoad uses augmented reality technology paired with a smart phone to provide ***real time driving assistance***
    - The market for this app? Try anyone with a Smartphone looking to add affordable intelligence to their non-connected vehicle.

  - Diagnostics – ***DashCommand*** (http://www.palmerperformance.com)
    - Offering more than just recalls and check engine light decoding, this OBD data monitoring system offers the ability to ***track trip statistics, fuel economy, vehicle performance and routes*** overlaid on satellite maps all over a WiFi or Bluetooth connection delivered straight to an App.

Personal Health Technology

- **Fitness**
  - ***Body Media's* FIT-Core Armband**
    - Body Media's newest generation armband to ***measure motion, heat flux, temperature, calorie burn, physical activity, sleep duration/efficiency and a galvanic skin response sensor which measures stress***

- **Wellness**
  - ***Macaw*** (http://www.macawapp.com/)
    - With a convenient dashboard app, tracking and monitoring your health is as easy as swiping your finger through the easy to use UI.
    - The best feature, it ***can be paired with all kinds of wireless devices, such as scales, heart rate monitors, etc.***

  - ***AliveCor's* iPhone ECG** (http://alivecor.com/)
    - With a ***recent investment from Qualcomm***, AliveCor hopes to help save lives with its ECG case that fits right onto a iPhone
      - This will allow for quick monitoring of heart rates by either physicians or at home by end users, ***at a sub-$100 price***

  - **Lifestyle Connect by *ZOOM*** (http://www.zomm.com/)
    - Provides users with not only a means to reach emergency services on the go, but it also includes the technology for ***wireless leashes and hands free communications***

Personal Tech

- **Wearable Tech – Competing for your Wrist!**
  - ***I'm Watch*** (www.imwatch.it/)
    - Wrist and arm banded devices were big this year and the ***I'm Watch*** seems to be a top competitors for gaining a share of wearable device market.
    - With the ability to see and ***receive incoming calls, place calls, view text messages, facebook, emails, stocks and your calendar agenda*** makes this watch one of the best reasons to start looking at your wrist again, and not just your Smartphone.

- **Pets**
  - ***Tagg*** (www.pettracker.com/)
    - For anyone that wished they could find their lost dog as easily as their iPad, there's Tagg, the ***GPS/Cellular (provided as a subscription from Verizon) Tracker***
    - With battery power for a month, an app to get driving directions and a ***email/text notification electronic leash*** system, Tagg wont let your pooch go missing every again.

People Movers

- ***Solowheel*** (www.inventist.com) HQ – Camus, Washington
  - Similar to the Segwey, the ***Solowheel*** is the smallest, greenest, most convenient "People Mover" ever invented. This ***gyro-stabilized electric unicycle manages to transport the rider around at about 12 mph for 12 miles***, is easily moved into your office when you arrive at work, and will recharge in about 45 minutes.
  - ***$1,800, recharges in 45 minutes, weights 25 lbs***

- ***Orbitwheel*** (www.inventist.com) HQ – Camus, Washington
  - Like a cross between a skateboard and inline skates, but with more freedom and simplicity than either
  - ***Large wheel radius enables the Orbitwheel on a variety of different surfaces***
  - Sub - $100

- ***Trikke*** (www.trikke.com/fleet)
  - Smart and affordable. 17mph for 24 miles, 3 hour re-charge
  - $1,300-$1,800
  - ***Folds down; weighs 44 lbs with battery***

Seeing What's Next, Being What's Next

If last year was the year of breakthrough inventions and technologies…
the iPad, gesture-based technologies, and 3DTV;
This year was the year of human machine interfaces and augmented reality…
embedding of inventions into our daily lives and
the creation of new social networks.

What's Next? Your Innovation's Next!

Thank you. **Cameron Mehin, VMI**

If you are interested in personal introductions or information about the CES technologies, please send us an email or give us a call at 480-488-5707

Cameron@e-vmi.com

http://www.e-vmi.com/

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