VMI's 2014 Consumer Electronics Show (CES) Best of the Best

January 2014

By Vanguard Marketing International, Inc.

www.e-vmi.com

v.3 August 29, 2014

VMI's 2014 CES Best of the Best

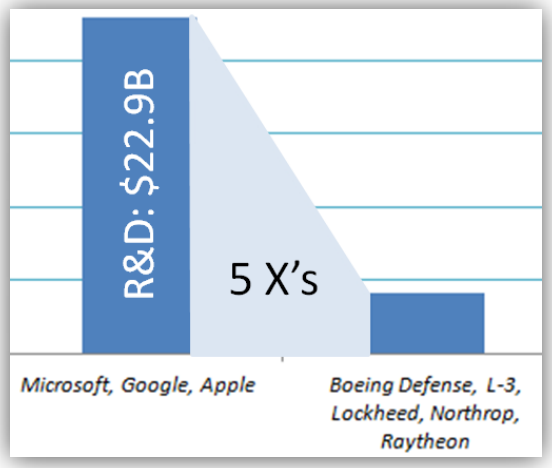
Welcome!

- ***State of Innovation: 2014 Consumer Electronics Show***
  - *CES attracts the "who's who" of the technology and related industries.*
  - **Continues to include C-level executives from the entertainment, mobile and consumer electronics industries.**
  - *150,000+ visitors*
  - *34,000 international attendees*
  - *3,300 Exhibiters represented 170 countries*
  - *20,000+ new products were launched*

19

- ***Number of Years VMI has attended CES***
- ***The VMI team has canvassed CES in Las Vegas to bring you their pick of top innovations and enabling technologies:*** ***See What's Next, Be What's Next!***

Why VMI focuses attention on CES

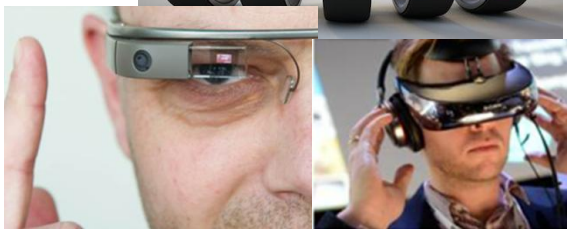


- **Tech giants Microsoft, Google and Apple invested $18.8 billion more than the five largest US defense companies on R&D projects in 2013**[1]
  - Boeing Defense, L-3 Communications, Lockheed Martin, Northrop Grumman and Raytheon
  - **Why? Because business models and regulations. Available to *ALL (friend/foe)* for *use (good/bad)*.**

- **Innovative technology, high volume manufacturing techniques, and commercial scale can deliver a price point that is an order of magnitude below what is available in Defense**
  - FLIR Lepton Core
  - MEMS enabling a more intuitive IoTS

1. Byron Callan, an analyst with Capital Alpha Partners

2014 Exhibitors



- 10% of 3,300 exhibiters: digital health & wearables
- More Augmented Reality & Immersive, Neuro Gaming
- The Internet of Things and Services (IoTS), market will reach US$1.9 trillion by 2020 Source: Gartner
- A record nine automotive manufacturers exhibited – not about the car; it was about the technology
- Twenty-Seven 3D-Printing companies
  - By next year, sales of 3D printing goods and services will hit $3.7 billion world-wide – and 4D is on its way
- A couple of NEW Acquisitions since CES 2014
  - $3.2B NEST by Google -- Nest (a smart-thermostat company) = "Conscious home"
  - $2B Oculus Rift by Facebook -- Immersive experience

BEST OF THE BEST AND TOP INNOVATIONS 2014 CES SHOW

VMI's 2014 CES Best of the Best Highlights

Best of the Best

- FLIR ONE™ Thermal Imaging accessory for iPhone 5/5 Case
- IoTS: MEMS' the Word!! 94Fifty Basketball, Xensr & PrioVR!
- Digital Health & Human Performance…
- Nanoport™ by Nano Magnetics Ltd

Highlights of the Top Picks

- Automotive Awareness & Connectedness
- On the Road - Energy-Power Innovation
- Powerful Mobile Platforms (Processors)
- Thermal Vision… Self Protection
- Accessories: Wireless Charge, Water Proof & Sterilize
- Tiled Screens… Secure Authentication
- Smartphone Robot Companies
- Smart Home Sensor Networks
- Internet of Things and Services (IoTS): MEMS; SD-Card sized PCs
- Digital Health – Personal Health Monitoring
- Concussion Alert; Get in the Zone
- Wearable Performance Trackers
- Personal Performance Coaches
- Extreme Sports Performance
- Totally Immersive VR Gaming ~$1,400
- Ultra High Definition Curved TVs and 4K Content
- 3D Printing/Scanning – AKA Additive Manufacturing

If you see the YouTube icon - click on it, it will take you to a video about that product or technology!

See more from VMI on our Blog with topics ranging from innovative technologies to business models and their applications
http://blog.e-vmi.com/wordpress/

But first… Google Glass

Reaction to Google Glass at CES…

- *VMI is part of the Google Glass Explorers Community*
- Where ever we went… always a crowd!
  - ***Did we like it?*** Yes. Still getting used to it… But, very easy to use.
  - ***What do you use it for?*** Taking pictures, directions and searches.
  - ***What's the best part of it?*** The voice recognition is excellent; Clarity of the display. You forget that you're wearing it.
  - ***How do I get one?*** It will be available to the general public some time in 2014.
  - ***Is it better than Vuzix?*** Yes. It's a much better experience.

2014 National Science Foundation Grantees

→→→→→→→→→→→→→→→→→→→→

- Showcasing new startups and home-grown innovations

Need more information?
Give us a call at 480-488-5707

Watch for What's Next at CES 2015…

- *Google Glass… more Augmented Reality*
- *Internet of Things… Giving us unlimited knowledge and control over our lives*
  - *MEMS: Lights, Security, other home controls, etc.*
- *Low-Power Nanoelectronics*
  - *Environmental Metrics*
  - *Wearable nanosensors / Medical Physiology*
- *Graphene batteries*
- *Wearable/flexible batteries*
- *Energy harvesting devices powered by user's own kinetic energy*
- *Human computer interactions – close looped neural-interactive systems to enhance human mental-performance & memory*
- *Optical Wireless*
- *Superman vision: Detect and locate people through walls and obstructions*

National Science Foundation Grantees

Automotive Awareness & Connectedness

Mercedes -- A step ahead

- **Predictive User Experience – Contextual awareness where the car senses you and your passengers… learns your driving styles and habits,** e.g. learns how you get from point A to B – then prepares for what you normally do, like calling your spouse, Starbuck locator, etc…without you having to initiate
  - Designed with data privacy – no third party
- Other highlights: CarToX-enabled car, that warns other cars of things like oncoming ice patches

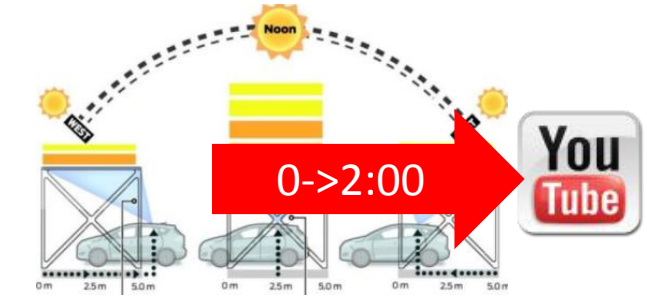
New: Jaguar and Land Rover HUD

Automakers quickly standardizing on Car Technologies (Audi, BMW, Chrysler, Ford, GM, Kia, Mazda, Mercedes, Toyota):

- *Assisted driving & parking; Collision avoidance; 360 degree radar*
- *LIDAR (Light Detection And Ranging) for situational awareness and detection*
- *Laser beams – illuminates twice the distance – about 1,640 feet*
- *Car Connectivity (4G LTE) – Mobile Hotspots; CarToX for Navigation, Traffic alert…*
- *Infotainment (HD Radio, Twitter, Facebook, Cloud-based apps)*

- ***Thumbs up: Predictive and Voice activated** system UVO (YourVoice); Eyetracking*
- ***Thumbs down: Touch screen** - especially as state laws crack down on interactive use of*

On the Road – Energy-Power Innovation



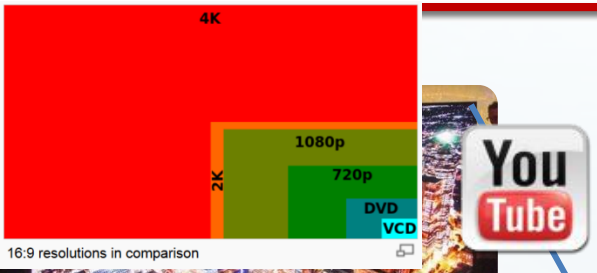
Ford C-Max Solar Energi Concept

- Ford, in collaboration with SunPower and Georgia Institute of Technology; Specs
- Photovoltaic solar on its roof, which alone, can charge 300 watts of power -- not enough to fully recharge battery in one day.
- ***But,* can recharge 100%, if coupled with solar concentrator infrastructure (low cost canopy)**
  - **With lens that magnifies sun rays…think carport ceiling**
  - Vehicle will move to optimize solar energy concentration
  - **Can harvest 50% more energy with this innovation (what will Tesla do?)**

Toyota's Fuel Cell Vehicle (FCV) Electric Car

- A "reasonably priced" Hydrogen Fuel Cell electric car; ***available in California by 2015***
- Prototype consistently delivered ~300 miles; Zero-to-60 mph in ~ 10 seconds; Specs

Powerful Mobile Platforms (Processors)



What's in store for Mobile Platforms

Qualcomm Snapdragon www.qualcomm.com/snapdragon; LG G2 Phones

- **Next big growth area: TVs (Snapdragon 802 and 805 for TVs and mobile devices) and Automobiles (Snapdragon 602a for the Connected Car)**
- Year 2 at CES: Qualcomm demonstrated the power of Snapdragon System on a Chip (SoC).
- **The Smart Phone's 805 chip drove a 4K, HEVC (50% reduction in file size) streaming viewing experience to a big screen TV -- very impressive**, included DSP for Dolby Digital and DTS **Surround Sound**, with the option to **integrate custom audio or gesture controls**
- Advantage: Qualcomm remains the one to beat **across all Android** phones.

Nvidia Tegra KI www.nvidia.com Santa Clara, Ca

- **Nvidia's mobile chip with 192-core GPU based on the Kepler architecture**, translating in the ability to run Unreal Engine 4 and OpenGL 4.4.
- **See the devices in the first half of 2014;** been certified by AT&T and Vodafone. Spec
- **Advantage – Rendered on the fly**: **"K1 offers real-time computing, global illumination, higher dynamic range and greater detail like reflective surfaces, dripping water and other realistic physically-based rendering."** - Engadget

:35->2:05 You Tube

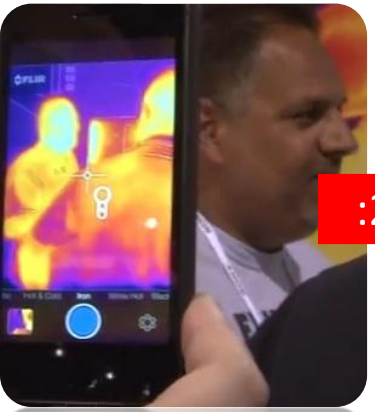
Computer generated on your mobile phone / 7" tablet

Expect…

High Performance Computing (HPC) Graphic Processor Unit (GPU) wars to heat up this year *between Qualcomm and NVIDIA; with Apple being more aggressive – better gaming experience on mobile*

Battling Intel's processor space… GPUs also power datacenters in government labs, universities, enterprises, and small & medium businesses

Thermal Vision… Self Protection



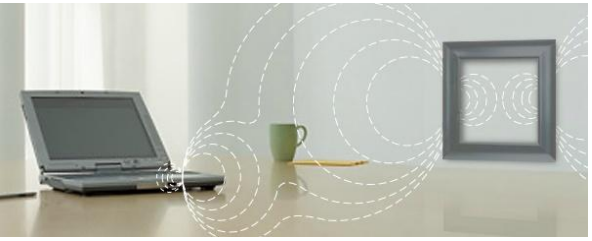
:20->3:20

- **FLIR ONE™ Thermal Imaging accessory for iPhone 5/5 Case** http://flir.com/flirone/
  - **Priced at $349 for the FLIR ONE** ***(Breakthrough: $ Order of magnitude on Core elements)***
    - ***Compare: Commercial Thermal Rifle Scope recently released, priced under $3,500 – GOAL 2016: under $100***
    - **First commercial use of FLIR Lepton thermal imaging camera core comprising detector, lens and electronics; utilizes uncooled detector, smaller pixel size; Similar in size to CMOS camera used in cell phone** Source
    - Thermal (heat vision) and visual imager (**overlays visual outlines** onto infrared image) for up to 100 meter distance; Displays accurate temperature
      - No thicker than average case; acts as backup battery (extend battery life by 50%)
      - Available off of website in spring 2014; Planning Android soon

- ***Fast follower: Israeli firm,* Opgal Launches Therm-App Android Thermal Imaging Camera** Mar 23, 2014 Source
  - $999 for security, defense markets http://therm-app.com/#toggle-id-8

- ***Yellow Jacket Stun Gun for your iPhone 5/5S case***
  www.yellowjacketcase.com
  - *Enables self defense; 950,000 volts of power*
  - *Detachable stun gun pack; also extends battery life of iPhone*
  - *Available March 2014 (20% Code: CES14)*

Accessories: Charge, Water Proof & Sterilize



- **WiTricity Corp.** http://www.witricity.com/index.html Watertown, MA
  - Wireless power for OEMS to embed into their products
  - WiTricity is developing wireless electricity technology that will operate safely and efficiently over distances ranging from centimeters to several meters—and will deliver power ranging from milliwatts to kilowatts.
  - Vision is to develop a family of wireless electric power components that will enable OEM's in a broad range of industries and applications to make their products truly "wireless." Wireless electric power delivered over room scale distances, and with high efficiency.

- **Dry Case** www.drycase.com
  - Dry BUDS, DryCASE Tablet, Sport Belt by DryCASE, DryCASE Backpack… more!
  - Water proof at 100 feet
- **Liquipel** www.liquipel.com
  - Water resistant, **nano-coating** that protects your electronics from all liquids, from water to coffee to wine; **Costs $80 for iPAD; $60 for iPhone; includes warranty for 2 years**
- **Integrated Surface Technologies, Inc.** www.insurftech.com Menlo Park CA
  - **Blue Lantern (Mid & Full Size Chambers) "Junior Plasma System"**
    - This ultra-compact, bench top Plasma System **deposits an invisible nano coating on cell phones** and other portable electronics to protect them from accidental liquid exposure
  - Winner of the 2013 Edison Award in Material Science

Mid-Size Chamber

Before After

- **PhoneSoap Charger ($49.95)** https://www.phonesoap.com/

Universal charging case that **simultaneously kills 99.9 % of all surface germs** on a smartphone by exposing it to ultraviolet-C lighting. **Even kills so-called superbugs.**

Tiled Screens… Secure Authentication

Nanoport™ by Nano Magnetics Ltd. (ON, Canada) And Nano Magnetics USA Inc. (Wilmington, DE) www.nanomagnetics.net

- See Nanoport in action!
- Discriminator: **Nanoport effectively turns electronics into building blocks that can be combined to create new devices, then reconfigured for alternate uses**
  - Modular plug and play ***"stackable" hardware (Batteries, displays, speakers, controllers, other devices)***
  - Power transfer; Supplemental interfaces (for electronics, appliances, and vehicles)
  - Other Products: nanodots

  - Developer program: http://www.nanomagnetics.net/developers.php#software

HoyosID™ by Hoyos Labs MIT Innovation Center, Cambridge, MA

www.hoyoslabs.com

- ***Biometric authentication - get rid of passwords, car keys, credit cards***
- **A free mobile app (announced at CES and available in February 2014**) for Android and iPhone devices. **Leverage biometrics to securely and accurately authenticate one's identity and eradicate the need for usernames and password; *has anti-spoofing built in***
- Advantage**: leverages smartphones as real-time biometrics pattern acquisition devices**; **no need for additional hardware to carry**. Moves authentication out of a browser's username and password fields and on to the mobile device at no cost to the user
- For any system that requires opening, closing, turning-on and turning-off.

Smartphone Robot Companions

Why we are following?

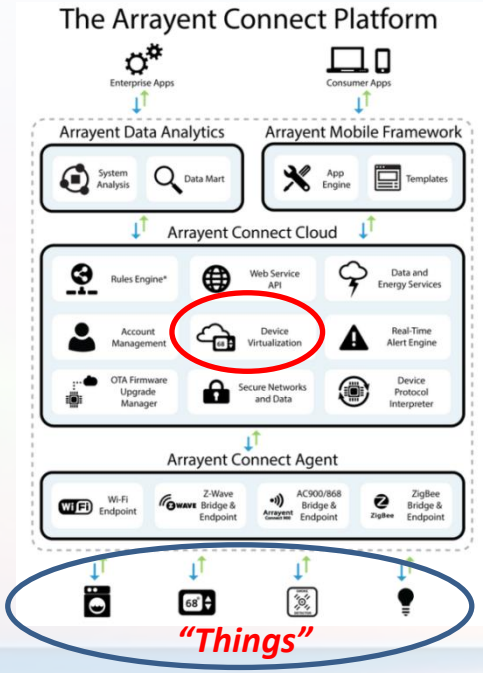
It's about the building blocks of Artificial Intelligence (AI)

And the Learning Roadmap: First Toys -> then Tools -> and finally Real Robots

- **ROMO for iPhone by Remotive** Devices needed
  - Kid programmable; cute, friendly and quirky; Responds to your face; play chess, roam around the house, connect with family and friends
  - $149, available on website http://romotive.com/meet-romo
  - 2 hours of constant play
  - R&D Pedigree: Stanford University; backed by Sequoia Capital
  - 5-Star rating from: Brookstone, iTunes, Popular Science, Engadget

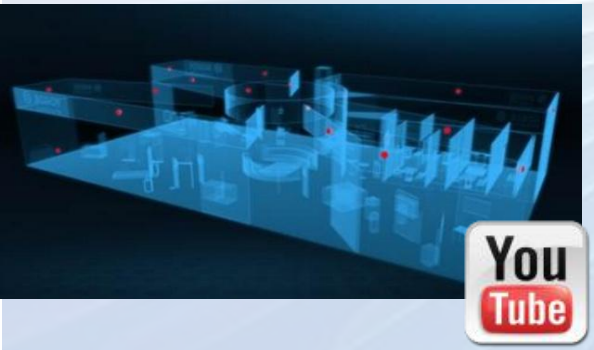
- **AIBrain, Inc.** http://aibrain.com **Palo Alto, CA**
  - **"If you see someone you don't recognize, call mom"**
  - Partnering with **Bonavision's Tyche Robot-toy** (S. Korean)
    - For Android-based phones
  - Vision: to create the world's first practicing version of "true" AI – that learns autonomously by interacting with the world
  - R&D Pedigree: MIT Media Labs; one of the co-founder of Siri

IoTS – MEMS Smart Home Sensor Networks



Arrayent (Redwood City, CA, 650-260-4520, www.arrayent.com)

- **CLOUD BASED:** IOT Platform for Connected Products and Systems: **A cloud and embedded platform that enables manufacturers, retailers, and service providers to connect consumer products to web and smartphone applications**
- Differential Advantage – ***Device Virtualization technology that minimizes the hardware and software complexity and moves it to the cloud*** *-- add Internet connectivity to any consumer product.* Reduces the cost and improves reliability and ease of installation & use.
- 2013 Investors: DCN Ventures and **Intel Capital**



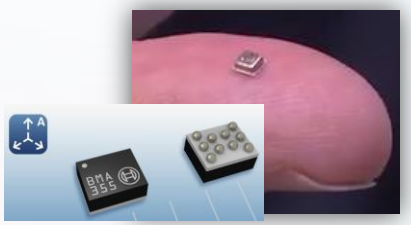
Bosch Connected Devices and Solutions (Stuttgart, Germany) link

EDGE BASED: Bosch designs and manufactures **the world's broadest portfolio of micro-electromechanical systems (MEMS),** the building blocks of the Internet of Things and Services (IoTS).

- ***New business unit, Connected Devices and Solutions*, creates custom IoTS solutions.**
- *Bosch MEMS sensor portfolio* with *low-power wireless networks*, application-specific algorithms and Bosch´s electronics manufacturing technology, provides consumers with seamless ways to monitor and interact with their environment

Connections ahead: Watch out for Google Nest

IoTS: MEMS and SD-Card sized PCs



Bosch Acceleration Sensor

Background: **Micro-Electro-Mechanical Systems (MEMS) chips and solutions showcased at CES included leading edge motion sensing capabilities…**

- MEMS and sensor fusion will play a critical role in **enabling a more intelligent and intuitive Internet of Things (IoT)**—one that will revolutionize the consumer space forever.
- *For all Products/Devices:* Be it on **location, altitude, velocity, temperature, illumination, motion (pitch, yaw & roll), power, humidity, blood sugar, air quality, soil moisture…**

InvenSense (MEMS) http://www.invensense.com/ San Jose, CA (HQ)

- **World's Smallest & Lowest Power Integrated Nine-Axis Motion Tracking Device**
  - ***Shake to answer; Point for Augmented Reality and Location Based Services***
  - **Very Low latency; 3 millimeter precision; 400 readings/second**
  - Technology found in gaming devices; smartphones, tables, OIS, remote controls for Smart TVs, extreme sports and industrial applications

Wearable Challenge

Inside the turtle, which is attached to a baby-sized Kimono* the Edison sensors monitors the baby's temperature, breathing, motion, and more.

Intel Edison (mini PC) www.intel.com Santa Clara, CA - Edison Development

Adds intelligence to the sensors at the network Edge… Opportunity to control and mitigate

- **System on a Chip (size of an SD Card)** – for an entirely new level of embedded, interactivity in a wearable or other mobile devices; makes for smart integrated edge – control any device
- Edison is Intel's **ultra-power-efficient mini-PC** that packs a 22nm dual-core 400MHz Quark processor, with wireless capabilities via Wi-Fi and Bluetooth; **runs Linux**
- **Advantage: Fast growing wearable/embedded market**, Intel is hoping to help usher in as many data driven devices as possible. *Intel has set up $1.3M in prizes for developers.*

Digital Health – Personal Health Monitoring

Dexcom G4 Platinum, Continuous Glucose Monitoring (CGM) San Diego, CA www.dexcom.com

- **A break-though in diabetes management,** no matter how you deliver insulin
- Tracks glucose levels continuously for **7 days throughout the 24-hour** period using wireless technology, enabling users to view their glucose levels on demand.
  - Self-Calibration (FDA approved); Comes with a built-in alarm; Notification to up to 5 others
- ***Google-Glucose reading Contacts? Only concept stage - Dexcom is here today!***
- Receiver range: 20 ft; Sensor needle (1/3 smaller) inserted under the skin

Note: The Dexcom G4 PLATINUM does not replace a blood glucose meter. Brief safety statement (see end of announcement) ***Note: FDA has yet to allow CGM tracking to be a cell-phone app.***

Health Labs; Take Charge of your Health https://store.ihealthlabs.com/

- Wireless ambulatory blood pressure monitor (pictured) – noninvasive method of obtaining BP readings over 24 hours
- Online store: Blood pressure wrist monitor; Wireless body analysis scale; Wireless activity and sleep tracker; Smart Glucose monitoring system (uses lancets)… and more.

FDA & HIPAA pose challenge to Real-time Healthcare advancements

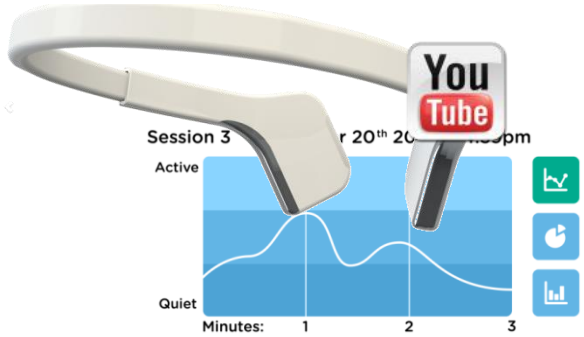
While Qualcomm Life , launched two years ago, was missing from CES this year, they did recently buy Healthy Circles, a software-as-a-service platform that uses social-networking ideas to coordinate heath care – Basically, patients send self-gathered data to a web portal, that stores their medical record that may inform professional caregivers. However, the industry has HIPPA and the FDA to contend with… which may push out the promise of always-on health care. Healthcare providers, not the Consumer Electronics Industry, will ultimately be the ones to make it happen.

In the meantime… digital health helps each individual consumer to focus on their own needs.

Concussion Alert and Get into the Zone

CheckLight by Reebok reebok.com/checklight

- Alerts athletes, coaches, athletic trainers and parent to the severity of impacts to the head.
- Sensors that are directly coupled to the head to reflect direct accelerations that the device, not a helmet or chin strap, experiences
- Cost: $150
- *Note: Not a concussion diagnostic tool*



Muse by InteraXon (pronounced inter-ax-on), Toronto, CAN http://interaxon.ca/

- With access to information, entertainment, and news 24 hours a day, with more and more distractions surrounding us, ***it's no wonder we're losing the ability to relax and concentrate.***
- ***Muse helps you get in the Zone…*** contains 7 EEG sensors to detect and monitor brain activity which will help people understand how their brain works and let them attain peak performance, reduce stress and enjoy better brain-related health
  - By seeing your brain's performance in real time (iPhone/iPad app) it will help you train your mind
- ***First, consumer friendly thought-controlled computing device***
- $269 EEG headset will be available in April 2014

Advanced Brain Monitoring: Armatures into experts in a single day

Start 2:20

You Tube

Wearable Performance Trackers

Pebble Technology's Pebble Steel www.getpebble.com Palo Alto, Ca

- Android 2.3+ and iOS, wireless Bluetooth
- This Smart Watch is packed with an always on display, fitness tracking, notifications, control for other products, games, 5-7 days before needing recharged
- Info: $249, Low power (e-paper), finished design, mobile compatibility, multiple watch faces; more apps soon - SDK 2.0 in beta
- Pebble's early market entrance definitely showed in terms of maturity

Jay Bird's Reign Activity Tracker (band & app)

http://www.jaybirdsport.com/ **Salt Lake City, UT**

- We liked best for the minimalistic design, the Jay Bird and its accompanying app; Compatible with Android and iOS
- Tracks walking, biking, swimming, running; Provides recommendations going forward, overtime
- Info: $199 (May 2014); Encompasses both physical activity and sleep (quality of); Plus "go zone score" - how ready you are to be active; You compete against yourself… not others
- Other product: BlueBuds X-secure fit wireless ear buds

Personal Performance Coaches

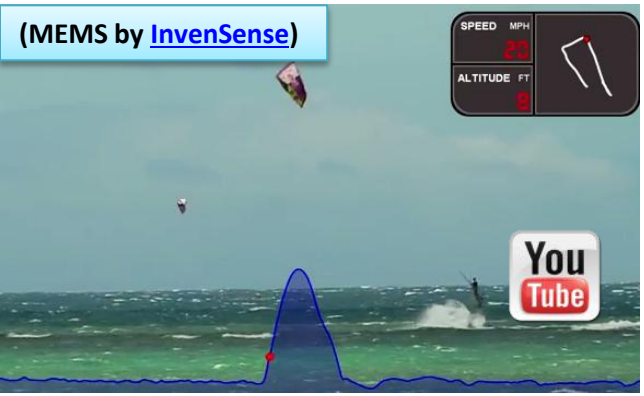
- **Mio Link** http://www.mioglobal.com/Default.aspx
  - Continuous heart rate technology, 99% EKG-accurate at performance speed
    - **Optical sensor monitors the volume of blood under your skin** and algorithms are applied to the pulse signal so that the heart's true rhythm can be detected
  - **No chest strap; Sleek wrist band with Bluetooth**
  - **Forthcoming mobile app, *Mio Go,*** provides an **immersive training experience. "Adventure trips"** allow users on stationary bikes, treadmills or rowing machines, to experience trails and courses from around the world on their tablet or SmartTV
  - $99 Wristband (most monitors cost over $200); available in March

- **94Fifty Smart Sensor Basketball by Info Motion Sports Technologies** http://www.infomotionsports.com/products/94fifty-sensor-basketball/
  - **In real time, a coach can analyze a player's 360 degree aspect of motion and have them make adjustments**
  - **Measures muscle memory** that the human eye can't see, learns the strengths and weaknesses of players at any level, adapts as the player improves, and provides basic, intermediate, and advanced level training to build better shooting and ballhandling skills – fast. **It's like having the best coaches in the world with you every day of the year.**
  - How: By measuring the motion of the object, you measure the player with great detail.
    - **Patented inertial motion sensor arrays inside of the ball or puck, combined with sophisticated pattern recognition algorithms to automate what the ball can count;** then use scoring algorithms based on thousands of samples produces the most complete personalized assessments of athletic skill ever available in any sport.
  - ***Learn complex skills more quickly; What's next: Soccer, Football, Volleyball…***

Extreme Sports Performance

Captures your motion at 400 times per second

(MEMS by InvenSense)



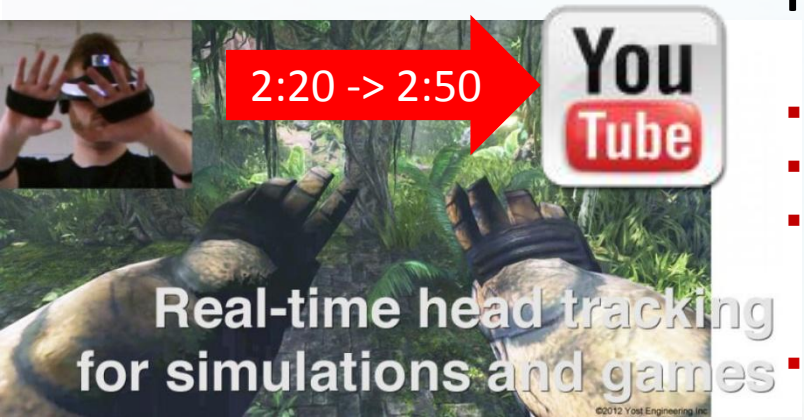
- **Xensr-Case (with GoPro Cam)** Green Bay, WI http://xensr.com/ http://gopro.com/
  - **The world's first 9-axis MotionTracking devices** designed for battery operated, high performance consumer electronics product **enables you to track and measure your extreme sports in real time** - fully integrated
  - **TruMotion™ 3D location data at 400 Data Samples/Second with 3mm precision**
  - **When it comes to extreme sports**, there is no precise way to measure the performance of an athlete**…. the action that happens between the once-per-second GPS data**
  - **Speed, jump heights, rotations, flips, g-loading and more.**
    - **Size: smaller than an Oreo** (affix one to mast, bike, etc.; and one to self)
    - 7-9 hours on a charge; Water-resistant to 5ATM
    - Open SDK allow developers to make Xensr and Xensr+ compatible with their apps
  - **MERGE with Go-Pro Video –**
    - Record and ***share your session in real time*** – via cloud, YouTube and social media; **-- allows you to compete with riders all over the globe, against people on the same gear as you or by any number of different categories.**

Xensr+ (*$199.99*) Dedicated Dual Constellation GPS and 4 hours of memory.

Xensr (*$149.99*) Uses smartphone GPS with 2 hours of memory.

Built by athletes who are also engineers, coders and developers… these guys love their sports and love to push the limits. They are passionate!

Totally Immersive VR Gaming ~$1,400



PrioVR by YEI (Yost Engineering Inc.) Technology

www.YeiTechnology.com **Portsmouth, OH**

MEMS

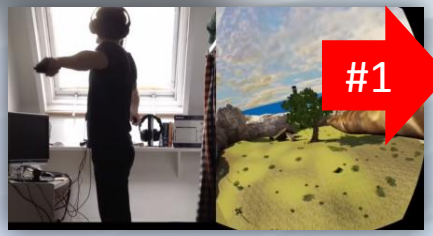
(MEMS by InvenSense)

- **Based on YEI 3-Space Sensor technology**
- **Achieve fully immersive virtual reality gaming –**
- See your body move as you move, manipulate items as if they were right in front of you, and interact with the game world or virtual world as naturally as you would with the real world.
- **PrioVR offers strap-on upper (<$300) and full body (<$400) suits with 7 Wireless 3-Space Sensors; Available July 2014**
- **YEI maintains and active R&D lab and fosters a creative and challenging environment or employees**

facebook

Add the Oculus Rift http://www.oculusvr.com/ Irvine, CA

- Now supports 1080p and motion tracking.
- *Full immersion, virtual reality, minimal latency, no motion blur*
- Mounted inside a ski-goggle type headset; Games will allow you to turn and view 360 degrees, has ultra-low latency head tracking
- **Priced at ~$500--- "everyone can afford"**
- **Pre-order Developer Kit 2 now**

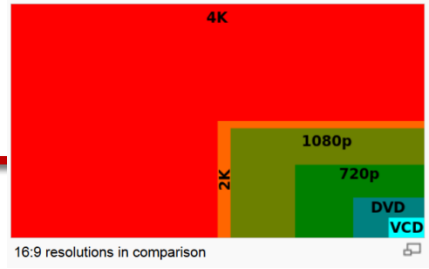


+ Real View

Add Virtuix's Omni http://www.virtuix.com/ Houston, TX

- An Omni-directional treadmill, includes shoes, belt, tracking HW/SW and you'll have everything
- **Pre orders start at $500**

UHD Curved TVs & 4K Content



Samsung Electronics Company., Ltd

- The curve creates ***a really immersive experience***!
- **105-inch Ultra High Definition (UHD), worlds largest with a curve**
  - Samsung and LG rolled out massive high-definition TVs featuring a curved screen
- **85-inch UHD bendable –OLED**
  - High-definition television to deliver movies or TV with crisp resolutions not enough? Those flat-screens now bend and curve to the user's will!
- **Both TVs in the U.S. later this year – pricing not available; Will be "Future ready"** with HEVC (*), HDMI 2.0, MHL 3.0 and HDCP 2.2., to protect consumer's investment.
- *To give you an indication of prices:* ***LG's 84-inch UHD display is priced at $17,000 vs. last year at $19,999 and Sony 84 inch, in 2013, 4K TV was $25,000***

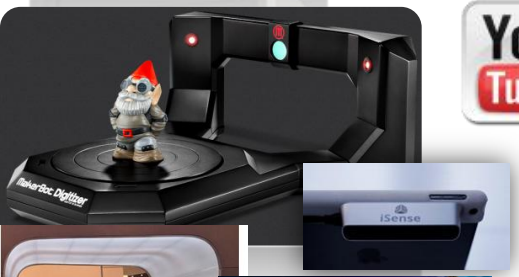
Panasonic displayed both concave and convex curves!

(*) Industry Emerging Technology Breakthrough:
streaming 4K encoded video which will **deliver 50% reduction in file size**
via **4K MPEG-DASH using HEVC/H.265 processing (or Google's VP9)**

Where's the Content? 4K Content is needed for UHD Televisions

- YouTube showcased videos in 4K at the show, while Netflix says it will start streaming 4K content mid February 2014, with House of Cards, Season 2
  - *Google's VP9 is a royalty-free video codex that it created as an alternative to the H.265 video codec that many other hardware and software providers already use for 4K video. The VP9 codex should also help deliver HD content faster, speeding up video streaming.*
- Consumers will soon record their own UHD content with devices such as Sony's 4K camcorder

3D Printing/Scanning – (AKA Additive Manufacturing)



- **MakerBot** http://www.makerbot.com/ Brooklyn, NY, Founded 2009
  - **The Replicator Mini** ($1,375)- Spring 2014 , offers one-touch printing – **200 Micron Layer Resolution**
  - **The Replicator** ($2,899) with a bigger build chamber **(8 x 10 x 6 inches)** plus a 3.5 inch full color LCD display.
  - **And for Industrial Users:** The MakerBot Z18 ($6,499) -- a huge 3D printer made for creating large objects or up to 10 small ones simultaneously
  - **MakerBot Desktop and Mobile App,** with popular 3D modeling software, ***MakerWare***, a Cloud-based model cataloging component, and access to ***Thingiverse*** – a library of user-created 3-D models.
  - **MakerBot Digitizers**, (by 3DSystems) a Desktop 3D Scanner
  - ***Partners: Microsoft, Nokia, Autodesk, eBay and others***

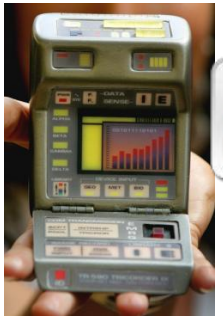
- **3DSystems** http://www.3dsystems.com/ces (partners with MakerBot; Cubify, others) Rockhill, SC
  - **A leading provider of 3D printing centric design-to-manufacturing solutions**
  - **3DMe Photobooth – connected to Cubify's Cloud Printing fulfillment service**
  - **iSense ($499):** Created for 3DS by Occipital and powered by Structure Sensor technology – available Q2.2014
    - **Advantage: Attach the iSense to an iPad, and you can literally walk around and scan entire objects**.

What's Next – Army Exploring 4D Printing Source

Dynamic, mechanical structures…

Self Assembly smart materials video

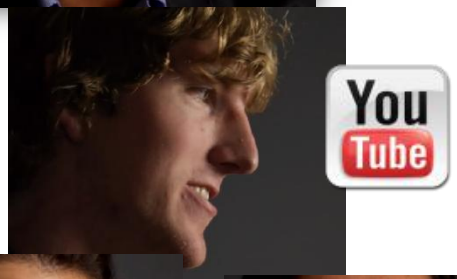
2013 Update – Top 10 Finalists TriCorder



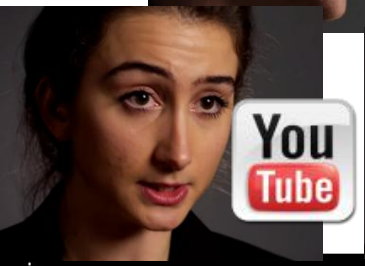
Star Trek Tricorder Prop (2006)

- **Top 10 Finalist XPRIZE Foundation** Source
  - Worldwide competition to develop a mobile device that can diagnose and interpret 15 medical conditions and five vital health metrics
  - Just like Dr. McCoy's TriCorder, in Star Trek
  - **SCANADU, Mtn View, CA,** became one of 10 finalists for a $10 million prize offered by Qualcomm's non-profit XPRIZE Foundation

- **Team Gen Z, Seattle, WA – a 16 year old**



- Team Luminar, near Stanford, CA (real-time Hyper Spectral Imaging and LADAR) – interested as a 10 year old



- Team Aezon, Baltimore, MD, multi-disciplinary team
- SDUS X-Team, San Diego, CA

2015 Briefing

Watch for What's Next at CES 2015…

- *Google Glass… more Augmented Reality*
- *Internet of Things… Giving us unlimited knowledge and control over our lives*
  - *MEMS: Lights, Security, other home controls, etc.*
- *Low-Power Nanoelectronics*
  - *Environmental Metrics*
  - *Wearable nanosensors / Medical Physiology*
- *Graphene batteries*
- *Wearable/flexible batteries*
- *Energy harvesting devices powered by user's own kinetic energy*
- *Human computer interactions – close looped neural-interactive systems to enhance human mental-performance & memory*
- *Optical Wireless*
- *Superman vision: Detect and locate people through walls and obstructions*

National Science Foundation Grantees

What would you like to see?

- Choose on next page…

2015 CES: What Interests You?

✓	Category
	Accessories - Audio Accessories
	Accessories - Automotive Accessories
	Accessories – Computer Hardware and Software
	Accessories - Digital Imaging/Photography Accessories
	Accessories - Fitness and Sports Accessories
	Accessories - Gaming Accessories
	Accessories - Smart Home Accessories
	Accessories - Video Accessories
	Accessories - Wireless Accessories
	Audio
	Audio, High-Performance/High-Resolution
	Automotive Electronics
	Biometrics
	Computer Hardware and Software

✓	Category
	Content Creation
	Content Distribution
	Crowd funding/Sourcing
	Digital Imaging/Photography
	E-commerce
	Energy Management
	Fitness and Sports
	Gaming
	Health and Biotech
	Internet Services
	Mobile Commerce/Digital Finance
	Nanotechnology
	Online Media
	Other Consumer Technology

✓	Category
	Personal Privacy
	Robotics
	Safety & Security Products
	Sensors
	Smart Home/Appliances
	Streaming Services
	Telecommunications and Infrastructure
	Video
	Wearables
	Wireless Devices
	Wireless Services

Email to: Jack@e-vmi.com

Seeing What's Next, Being What's Next

What's Next? Why, your Innovation is What's Next!

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Thank you. Laura Byers, Cameron Mehin, Conrad Wade – VMI: 480-488-5707

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