2016 Consumer Electronics Show, Las Vegas: Virtual 3D Cameras and More

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Just because it can be made, is there a market for it? This year's conference once again displayed products that solve a problem and will likely find their way into the consumer (and possibly library) marketplace. And there were also some arcane products that had huge investments, yet few will survive the logarithmic growth of the new worldwide consumer electronics economy. Similarly, just because data are generated, does not mean it will be useful?

The conference is HUGE, with well over 160,000 attendees taking over the entire Las Vegas Convention Center, the Sands Exposition Center, the Aria Hotel and for the press conference, the Mirage. One needs very very comfortable shoes which I learned the hard way this time around.

Some interesting bits of trivia from Twice Magazine (January 6, 2016 p. 62): 150 countries participated in the show, 3,631 exhibitors (46 were related to virtual reality), 68 per cent increase over the 2015 show, 10 per cent of households own a fitness tracker of some sort, $248m in sales in robotics is expected this year and there were over 200 conference sessions. Here are the projections in sales in dollars for consumer technology in 2016 according to CTA: smartphones (55bn), tablets (18bn), 3D printers (152m), wearables (3.7bn), drones (953m), laptops (17.4bn), virtual reality (540m) and 4K ultra HD plus smart TVs (26.5bn) (Plate 1).

Consumer Electronics Show (CES) tries to group exhibits together into marketplaces, some of which were three-dimensional (3D) printing, accessibility, app economy, augmented reality, cyber and personal security, education and technology, Eureka Park (my favorite with flagship start-up companies), family and technology, fitness, gaming, global technology, health, kids, robotics, smart homes, smart watches, university innovations, unmanned systems (drones), vehicle intelligence and wearables. Three universities showcased entrepreneurial consumer products – University of Michigan, Carnegie-Mellon and Case-Western Reserve. Conference tracks also covered the gamut under these same themes. More on TransformingEDU below.

Although the annual show will still be called CES, the name of the association was changed to CTA, the Consumer Technology Association, to reflect the organization's expanded role in advocacy, innovation, digital privacy, trade markets and to promote green technologies.

Quick and fast-sweeping changes have brought about a disruption in all segments of today's digital world from disruptive technology, disruptive education and disruptive innovation and ideas. It is this disruption (sort of a kick in the pants) that keeps us moving forward as libraries and educators. Disruption exists when the marketplace (or in libraries, services or users) are ahead of the curve and others need to catch-up. One example is artificial intelligence that has been bandied around for years. According to CTA, artificial intelligence will combine content analytics and discovery and cognitive systems leading to a new world of digital assistants (Schreiner, Susan. "C4 Trends." I3, January/February 2016, p. 15). At one of the CES sessions, it was noted that so much data are collected which could be useful for cognitive development and decision-making. Learning and adapting may be the hallmarks of AI, but this is still a very nascent technology.

Marketplaces

Drones were huge at CES 2016 with products from Advanced Aerodynamics, Autel Intelligent, AuVS, MyRobot, DiI, EHang, Eken, the FAA, HRP, Parrot (a major payer) and Yuneec. CTA expects that there will be over 1 million unmanned aircraft system flights per day within the next 20 years. Geo-fencing will keep these products from "sensitive" areas such as airports. There were sessions on drone policies and innovation and robotics.

Three-dimensional printers keep dropping in price. One nice compact low-cost device at $399 is New Matter that provides 3D printers for free to schools and discounts for libraries (www.newmatter.com).

Virtual reality cameras and more

Three-dimensional printers and drones continue to be hot, but the greatest leaps in technology of great interest to libraries were virtual reality cameras and headsets. Lots of virtual reality headsets were on display following the success of Google Cardboard. Once expensive, these devices can be found for $50 or less, and there are many apps and 3D videos available for free on the various App stores and the Internet. Not just for gaming, these devices have applications for virtual tours, documentaries of community events, special community features, nature, education, etc.

Virtual reality cameras: a game changer for libraries and education?

A highlight of this line of new products is the Allie Home that is a 380 degree by 360 degree interactive camera that allows one to create your

Plate 1.

own virtual reality films. Some ideas include documenting a special library event or how about a tour of a historic building in your community or a demonstration of a cultural event. The completed videos can be displayed on special goggles and even low-end goggles like Google Cardboard (www.alliecam.com). Recorded videos can be threaded together and include narration. Also, it can be used as a stationary device that will provide cloud storage at a specified duration of time (Plate 2).

With dual-lens cameras like Allie capture a 720-degree immersive view; 360-degrees horizontally and 360-degrees vertically. Along with the app, the camera delivers a 3D experience. ALLIE (pronounced all-ee, like "selfie") is a dual-lens camera placed on a countertop and connected to a Wi-Fi network. Allie can panoramically scan from floor-to-ceiling and completely around the camera itself – even zoom and freeze images. Recording is made possible via the camera's integrated SD card (stores up to about 2 hours). The proprietary video analytics make possible home automation control via hand gestures. Because ALLIE is a portable camera and has a built-in rechargeable battery, users can make immersive videos anywhere they want, for example, sporting and musical events, family gatherings and so forth (from Allie press kit).

Plate 2. *The new Allie home camera*

VUSE also includes a 3D 360-degree camera, but unlike Allie, it only includes a single camera. VUSE studio includes automatic vr movie generation, ability to stitch videos and edit movies with 3D effects (www.vuse.camera).

The Impression Pi from uSens provides 3D hand tracking and augmented or virtual reality videos (www.impressionpi.com).

The Royole audio visual smart mobile theatre headset provides immersive cinematic experiences. Royole supports HDMI, wireless streaming, Wi-Fi sharing, internal memory storage and USB connectivity (www.royole.com).

Nikon has also entered the field with a 360-degree camera of its own, the Key Mission 360 that is also waterproof to 100 feet (www.nikonusa.com).

Not really in this category but with special mention is Movi that is a piece of hardware that turns your smartphone into a real-time video editing studio (www.getmovi.com).

A potpourri of new products at CES 2016

It is impossible to list all the new products that were on display, so below is just a sample:

- The NextPaq Control includes modules for a USB card reader, breathalyzer, LED flashlight, air quality measurement, temperature and humidity sensor, SD card reader and more (www.nextpaq.com).
- Aerio is an intelligent indoor light controlled by a smartphone that uses solar power (www echy.com).
- Spun has created the first smart eating utensils. Imagine a fork that helps you count calories and track nutrition (www.spun utensils.com).
- Oliba is a cuddly bear that interacts with kids and is operated by bluetooth and your smartphone (www.oliba.fr).
- Pic is a very colorful and flexible video camera, where each one has a unique playful design and can be used remotely via bluetooth. Each looks like a cartoon character and can wrap around your wrist or anywhere else. It is great for kids and could be a great mini-version of a GoPro camera.
- ReSound makes a great smart hearing aid, great for older librarians, that learns from the user at which times to increase the sound. Also, it works with a smartphone app and bluetooth.
- Great for teaching is HAWK, a projector that connects to your smartphone.
- How about a smart piano that teaches one how to play. The smartphone app provides LED-guided practice, games, demos, professional lessons, thousands of sheet music and allows one to record and share learning sessions (www.smartpiano.com).
- Prynt allows one to print screenshots from video with a small footprint product that uses no ink and managed by your smartphone (www.pryntcases.com).
- Traitify allows one to identify personality traits and one can use personality traits in hiring decisions and for other applications such as finding out more about you (www.traitfy.com).
- On your feet too much? Try smart insoles that help one design insoles ideal for your feet (www.wiiviv.com). Freetime also includes smart insoles with real-time feedback on training (www.feetme.fr).
- More on personality, how about measuring your intentions. Fluent claims 95-100 per cent accuracy using speech, action, content and behavior (www.fluent.ai).

- Zozobot is a an extendable robogaming product that allows one to add sensors, electronics and software for solo or competitive games (www.zozbot.com).
- Lexifone provides automated in-call translation services with global language support. The world just got smaller (www.lexifone.com).
- With the Digipen, no special paper is needed and one can write directly on their smartphone or tablet (www.stablio.com).
- The Kanega watch is created just for seniors for medical emergencies, medicine reminders. It uses Wi-Fi and GPS (www.unaliwear.com).
- Lots of smart remote controls are on display. One is the Second Hugs remote (www.sevenhugs.com).
- HairMax is a product for those with thinning hair and that stimulates new hair growth (I was told I was too far gone). It is backed by clinical studies and cleared by the FDA (hairmax.com).
- Blink is a very affordable wire-free home monitoring and alert system (www.blinkforhome.com).
- Cube is a very mobile pico projector with 20,000 hours of LED light bulb life. It easily attaches to smartphones and other portable devices (rif6.com).
- It is one of the many sleep trackers on display that quantify sleep and connect to other devices (www.itBed.com).
- Motion-controlled robots can be built using ziro (www.zeroui.com).
- Another companion robot is Adopt Me that provides social interaction, multimedia, entertainment, assistance for seniors and provides smart home applications (www.bluefrogrobotics.com).
- After so many smartwatches and smart fitness bands, it was only a matter of time until other smart wearable devices came on the market such as a smart belt (www.wearbelty.com).
- With Google Cardboard and so many virtual reality programs and apps available, lots of goggles were on display. One is IonVR (www.ionvr.com).
- Talk to your cats and dogs while away at a conference using the Pet Cube (www.petcube.com).
- Feeling stressed? BioTrack Health's Halo helps one to manage tension using one own body senses (www.halocalm.com).
- Nervana sends pleasure signals to the brain synchronized with music for a positive altered feeling of calm (www.nervanasys.com).
- Having trouble waking up in the morning? Try spritely (www.spritely.me).
- iPal is another robot for kids that provides entertainment, education and social networking. For parents, it includes tutoring safety monitoring and video chat and was a finalist of CES's Last Gadget Standing contest (www.avataar.com).
- One of many new solar charger companies with a variety of products in Enerplex (www.goenerplex.com).
- For the fashionista, Neyya is an attractive ring for bluetooth remote control for your computer, smartphone and other devices. You tap on the ring rather than a mouse and you get notifications from your phone as vibrations (www.myneyya.com).
- Kids will love Edwin the Duck, a large plastic duck that is interactive via a smartphone and plays a variety of games. It is waterproof, and with a separate sleepy time app, it can adjust its LED nightlight and play lullabies (www.edwintheduck.com).
- Using 3D for gaming and education, iPlay toys also incorporate virtual reality (www.iPlayToys.net).
- Prizm senses your mood in playing music similar to the way NEST senses your movements in controlling your home's thermostat (www.meetprizm.com).
- Phree is a mobile input device which writes on ANY surface, not just smart devices and saves it on your device (www.otmtech.com).
- Tikee is a brand new device not yet on the market to create timelapse videos (www.enlaps.io).
- MUSE was on display once again with their newest version of their brain-sensing headband that can be used for meditation and eliminate stress (www.choosemuse.com).
- Ili is a wearable translator. No need for the Internet, the system has a sophisticated translation engine, dictionary and docking system for updates. You wear it around your neck and it is much smaller than a phone. It is a great option for international conferences. More information can be found at www.iamill.com
- How about a 200 GB wireless USB flash drive. This was just one of the new products from SanDisk for under $120.
- A little unusual is the smart bowl for pets that tracks your dog's or cat's nutritional needs. Of course special formula foods are part of the package. A smart feeder is also available (www.petnet.io).
- Another affordable 3D printer is available from Wistiki with one model, the Da Vinci Mini selling for only $249. Wistiki also produces a 3D pen, higher end printers, a biometric tracker and humanoid and wheeled robots (www.wistiki.com).
- Beam and BeamPro combine mobility and video (sort of rolling video displays) that could be a major hit in your library (www.suitabletech.com).
- The Wocket smart wallet stores up to 10,000 credit, membership, loyalty and gift cards which are password protected, and once used, the information is erased (www.wocketwallet.com).
- Oura is a wellness computer ring and app that helps with sleep and work/life balance (www.ourring.com).

For Last Gadget Standing, this year, there were two winners. Ripple Maker uses 3D printing technology and prints on your latte foam in coffee. The other winner was the VUZE 3D and 360-degree camera (see above). For the Mobile Apps Showdown, the winner was iHearLocaal, which help build and strengthen relationships between consumers and their favorite places Finalists included:

- MyOpenRoad, a social sustainable mobile apps to help one reduce their carbon footprint by using alternative transportation;
- myEmerg, for messaging on health, wellness and fitness;
- SunPort that tracks and supports solar panels for non-profits;
- WeatherBug provides real-time weather information and relates it to home energy efficiency;

- Gloops allows one to created one-min branded videos from your smartphone for businesses;
- the PBS Kids Party App that gets kids up and moving through creative play;
- Kuddly for baby advice; and
- WriteIt that provides a search engine to social media.

TransformingEDU

Of particular interest to libraries is the one-day session on transforming education through technology. Although geared to entrepreneurs in the education space, there were many ideas of interest generally. Some of the topics included digital learning games, online course accreditation and robot teachers. Speakers included John Katzman of Noodle, Jonathan Finkelstein of Credly, Steven Mackenzie of LEGO Education, Bart Epstein of Jefferson Education and Don Burton of EDGE. Noodle is a company that helps to connect with parents and students, school branding and recruitment goals. Credly is a company that helps educators to incorporate credentials and badges for completing courses or sets of courses. Edgeedtech helps start-up education companies (education is now big business). Similarly, Jefferson Education Accelerator brings people together in developing new educational programs and assessment.

Living in Digital Times organizes the TransformingEdu each year brings together leaders and innovations related to lifestyle. Besides TransformingEdu, they also produce the Digital Health Summit, Fitness Tech, Baby Tech, Kids@Play, Family Tech Summit, MommyTech TV, Beauty Tech, Wearables and the FashionWare runway show, as well as the Mobile Apps Showdown and Last Gadget Standing.

For kids, Vexrobots and Rolling Robots are great learning tools. Someone noted that we should not leave vulnerable students behind as education becomes more global in nature. Another speaker talked about the ecosystem of creation and innovation that we are all part of in the digital age. Ooka Island is an example of 24 levels of programs that guarantees to teach any child to read.

One survey noted that of the 100 free mobile apps, only one is relevant to education. The price of textbooks was another theme of interest. A six-min video is the ideal length to keep a group of students engaged. A recurring theme at the past three years' sessions was traditional education as we know it is a thing of the past? With so many non-traditional students, educational programs must reinvent themselves to meet these students in non-traditional ways as well, especially with a focus on life-long learning. Measuring student outcomes is extremely critical to determine which learning methods and styles are best. Do regulations and current standards keep change from happening sooner than later?

CES: keeping up

There are numerous ways to keep up with technology through the various CTA media challenges, such as facebook.com/ces, @CTAtech on Twitter, @CTA on Instagram, +CES on Google +, @CESOfficial on Snapchat and CESontheTube on You Tube. Next year's CES will be from January 5-9 and I plan to wear more comfortable shoes.

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