TV Sales Data

Bran way

2.4M 4K/UHD sets sold in last 12 months Ave price fell below \$1,500

40% of +50" TV sales are 4K/UHD % of 4K/UHD will increase in 2016 as homes replace TVs

60% of +50" TV sales are Smart TVs 45% of recent smart TV buyers say the feature is important 38% said important 2 yrs ago

18% YOY October increase in media streaming boxes (Roku, Apple TV) Expect content partner announcements (especially 4K/UHD) at CES

Watching if consumers buy both or choose one for OTT

0.5M curved TVs sold in last 12 months HDR will be biggest TV-related innovation at CES

Expect 4K/UHD Blu-ray players, but not many discs

13% increase in premium audio sound-bars

VR & AR

Phil Lelyveld VR/AR Initiative ETC@USC

VR will break into the mass market consciousness
But Oculus and Vive have both re-delayed

Advertising firms are building VR into their marketing mix.

• But metrics are needed

Effort to define 'premium VR experience' and charge • The Martian

Wave of VR content experiments

- immersive journalism
- Sports
- music videos
- Story extensions (The Martian)

Experiments with...

- Agency
- Presence
- Wander freely vs 'on rails'
- UI and language of interaction



Tiers of VR experiences as we decide VR's place in the media mix

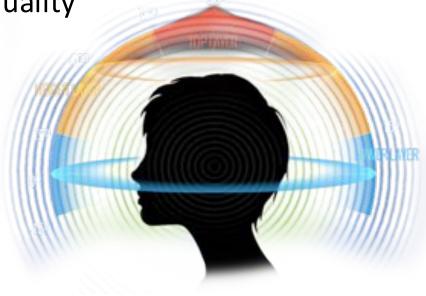
- Swipe and scroll on the phone/tablet,
- Magic window (wave the phone/table)
- Cardboard (non-isolating)
- Gear VR and other mobile cases
- High end HMDs
 - Sitting, standing, walking
 - Controllers, hand-tracking, eye-tracking, ...
 - Haptic feedback



VR distribution bandwidth demands will free-ride on UHD-TV buildout



The emergence of audio as a primarily important storytelling device, superseding image quality



The purists will be overtaken by the market and the 'democratization of VR.'



CES 2016 – Virtual Reality

Conference Sessions – 12 related to Virtual Reality

- "Five Practical Uses for VR"
- "Immersive World of Kids and Games"
- "The Business of VR"
- Multiple Hollywood/Storytelling sessions



Marketplace – 47 exhibitors under Gaming & Virtual Reality Vendors – 31 matching keyword 'Virtual Reality'

Avegant Redwood City, CA South Hall 2 – 26033



Sphero Boulder, CO South Hall 2 – 26402





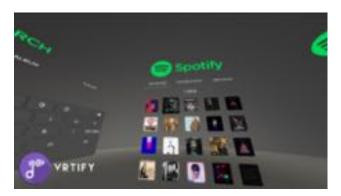
Robots injected with humanity and personality

Sigma Integrale

Pomona, CA South Hall 2 – 26219



VRTIFY Palo Alto, CA South Hall 2 – 26215





VR Music Platform



60 mikes with sensors at venue allow you to virtually wander around a concert venue

Philip Lelyveld PLelyveld@ETCenter.org

uSens

San Jose / China Sands Hall G – 81535

Mobile VR headset with built-in hand gesture tracking



Scale-1 Portal

France South Hall 2 – 26601

SCALee – 1,2, or 3 surface home VR 3D interactive cave in a box



Reach Bionics

Wilshire Blvd., Los Angeles Sands Hall G – 80251



Sponsor of clinical study at USC Dept Biokinesiology and Physical Therapy

Facial expression and side muscle controllers



Voke VR

Santa Clara, CA South Hall 2 - 26430

PANORAMIC

1804

CAMERAS.

PRODUCTION

TRANSCODING

SOFTWARE

CONTENT

ON VR HEADSETS

PANORAMIC

CAMERAS

USE OUR BUILDING BLOCKS

ON

MOBILE

NECT GEN

SOCIAL

MEDIA-TWIRLS-4U GRAPHIC

OVERLAYS

The next generation media technology platform for LIVE immersive virtual reality experiences 0

Philip Lelyveld PLelyveld@ETC

2D MMERSIVE

FEED

MOBILE APPS

Augmented Reality Trends for 2016

AR on mobile devices will explode

Niche markets for specialized AR experiences will grow (industrial)

Mapping virtual objects onto the real world will have major advances It isn't just about Magic Leap and HoloLens

CES 2016 – Augmented Reality

Conference Session – 2 directly related to AR

"What's next in Augmented Reality"

"Emerging Tech and Family Life"

Exhibitors – 21-30 directly related to AR



CES 2016 – Augmented Reality

Exhibitors

Google glass competitors (Westunitis, Remote Eye)



HoloLens-like glasses (ODG, Vuzix, Lumis)

Object and room scanning apps for tables, phones, connected camera systems (Occipital, Levels3D, VanGogh Imaging, Matter and Form Inc.)

AR for marketing and fashion (Marxent, Modiface)

Lowe's Innovation Lab

Mooresville, NC South Hall 2 – 26229 and

Venetian, Lvl 3 - Toscana 3801

The Future of Retail

Roving helpful robots 3D printers VR pre-viz of products

Osterhout Design Group (ODG)

San Francisco, CA South Hall 2 - 26424



- AR glasses
- Almost first AR to Int'l Space Station (rocket exploded)

NuEyes

Seal Beach, CA Sands, Hall G - 80559



- Visually impaired hardware/software aid
- Built into ODG AR glasses

enter.org

QD Laser, Inc.

Japan South Hall 2 - 26432



Demo?



"retinal imaging laser eyewear technology is planned to be commercialized on March 2016"²⁸

Modiface Toronto, Canada South Hall 2 – 26720



- AR apps for the beauty industry
- 150 mobile applications, 60 million downloads

IndoTraq

Plano, TX Sands, Hall G – 81031

Weight: 3g Length: 1 in (31.8 mm) Width: 1 in (31.8 mm) Thickness: 0.2 in (5.4 mm) 800mAHr Battery Life: 8 hours (60 Hz) 100mAHr Battery Life: 60 hours (1 Hz) 100mAHr Battery Life: 600 hours (once every 10s) 100mAHr Battery Life: 3600 hours (once per minute)

- Indoor/outdoor <5mm tracking accuracy
- x/y/z Position, orientation, acceleration tracking
- Drones, HMDs, equipment

VR & AR at CES

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