



# **VR/AR Initiative update**

Philip Lelyveld

VR/AR Initiative program lead

[Plelyveld@etcenter.org](mailto:Plelyveld@etcenter.org)

# VR Summit @ NAB

April 20, 2016

## 1:00pm **The Current State of VR**

Philip Lelyveld, VR/AR Initiative program lead, ETC@USC

## 1:30pm **Live Streaming VR**

NextVR, general live events

Vantage.tv, live concerts

Fox Sports Media Group, live sports

CNN, live news

1:00pm The current state of VR; market projections, recent hardware and software developments, and some perspective on the business opportunities for content creators

Philip Lelyveld, VR/AR Initiative program lead, Entertainment Technology Center at USC

1:30pm Live Streaming VR; producers with hands-on experience in a variety of live VR streaming situations will discuss their victories, pitfalls to avoid, and lessons learned

DJ Roller, co-founder, NextVR (all types of live events)

Juan Santaillan, co-founder and CEO, vantage.tv (live concerts)

Mike Davies, Senior Vice President of Field and Technical Operations, Fox Sports Media Group (live sports)

Jason Farkas, Executive Producer, CNN (live news)

Chris Blandy, EVP Technology Solutions, Fox (moderator)



# VR Summit @ NAB

## 2:30pm **The Business of VR**

Touchdown Ventures (VC /Moderator)

LittlStar (Aggregator)

Springbok Entertainment (Producer)

The VR Fund (VC)

## 3:30pm **VR Audio**

Vendors

DTS

Dolby Labs

Nokia Technology

Creatives

Headspace Studio

Source Sound, Inc.

Q Department / Mach1 (moderator)



# VR Summit

## 2:30pm **The Business of VR**

Scott Lenet, President, Touchdown Ventures (Moderator)

Tony Mugavero, CEO, LittlStar

Brandon Zamel, CEO, Springbok Entertainment

Marco DeMiroz, General Partner, The VR Fund

## 3:30pm **VR Audio**

Jacqueline Bosnjak, CEO & Partner, Q Department /  
Mach1™ (Moderator)

Martin Walsh, Vice President, R&D, DTS, Inc.

Nicolas Tsingos, Director of E-media technology, Dolby Laboratories

Jyri Huopaniemi, Head of Formats and Platforms, Digital Media Business  
Unit, Nokia Technology

Jean-Pascal Beaudoin, President and Lead Creative Sound Director,  
Headspace Studio

Tim Gedemer, President, CEO of Source Sound, Inc.

# Sony Music VR Initiative

Description; 10-15 USC summer associates will develop  
**new VR music experience concepts**

Deliverables; concept prototypes, not finished products

## ETC@USC Involvement

- ETC is facilitating as a prototype for potential future member initiatives
- Sony is solely funding and providing resources for this initiative
- A general form of the results will be shared with the ETC membership

# Sony Music VR Initiative

## Status

- Sony Music, Sony Pictures, and Sony Electronics are involved
- USC faculty and staff are very interested in being involved
- Sony has approval and funding
- USC students and faculty-advisors are being recruited
- Initiative will run from June 6 – August 12 (10 weeks)





# **VR & AR update**



# **VR & AR** **update**



# New and USEFUL

STYLE & TRAVEL

## PERSONAL JOURNAL.

Shower Power

Fab fetes for a bride-to-be **TRICKS OF THE TRADE | D4**

Olympians  
Don't Fear Zika  
**SPORTS | D6**

© 2016 Dow Jones & Company. All Rights Reserved.

THE WALL STREET JOURNAL.

Thursday, March 24, 2016 | D1

### Virtual Reality: It's Not Just for Gamers

BY JOANNA STERN

You're going to own a virtual reality headset one day.

Yes, you're going to put those funny-looking goggles on your face and your eyes won't be rolling at me like they are right now.

I've been there. My interest in gaming stops at Monopoly. The promise of virtual reality meant

little more to me than a funny photo opp.

But the buzz! It's the future, they say! So I

went on a journey to find virtual reality's practical uses.

You can take a class of fifth-graders across the world without needing permission slips. You can inspect the countertops in that dream house you've been eyeing. You can practice your big speech in front of a room of people who aren't actually there.

It's hard to believe how powerful it is until you've put on the headset. With that in mind, I created a 360-degree video viewable at [WSJ.com/PersonalTech](http://WSJ.com/PersonalTech). It's best seen with VR goggles, or at



You can now use virtual reality to stand in the middle of this scene from the Broadway production of 'The Lion King.'

least Google's cheap Cardboard phone holder. (We'll get to that.)

By visiting places in the real world that I'd already seen in VR, I came to realize that these silly headsets can be magical. They also have a dark side: It's easy to end up nauseous, and—more frighten-

ingly—virtual experiences can sometimes get too real. More often than I imagined, the line between the two realities starts to blur.

#### Better Buying

I'm walking into the master bath of a \$7.3 million penthouse.

The blue tub backs up to a stunning view of downtown San Francisco. While examining the square showerhead, I feel something I never have before, a newfangled sort of déjà vu. Though my physical body has never been here, I remember it. In my office just two

days ago, I stared at the same brass spigot, via a VR headset.

The first person you try VR with could be a realtor rather than a Best Buy employee. San Francisco realtor Roh Habibi now keeps a Samsung Gear VR headset in his car. "I've locked in showings just after having a client put on the headset," he says.

Virtual tours are made by capturing 3-D images using a \$4,500 camera and special software sold by a startup called Matterport. You can click around an interactive model on a website, but it's nothing like viewing it in Matterport's Gear VR app, where you can tilt your head up to inspect the molding.

Though the images are still, you can move from one point to another. Just stare for a second at the spot you want to go to. Sound convenient? It's like being thrown onto a fast moving train. In VR, when roaming from room to room, I needed Dramamine. In the real house, I just wanted Chardonnay.

#### Better Learning

I'm in a real classroom full of  
Please see VR page D2

3/24/16  
WSJ



# THE VR FUND 2016 VR INDUSTRY LANDSCAPE v1.1

APPLICATIONS/CONTENT

LOCATION BASED	SPORTS/LIVE EVENTS	SOCIAL	GAMES	ENTERTAINMENT	ENTERPRISE	HEALTHCARE	EDUCATION

TOOLS/PLATFORM

DISTRIBUTION (APPS/VIDEO)	3D TOOLS (ENGINES/AUDIO)	REALITY CAPTURE (360 VIDEO/NEXT GEN)

INFRASTRUCTURE

HMD (TETHERED/MOBILE)	INPUT (HAND/EYE/WEARABLE/OMNI TREADMILLS/HAPTICS)

[Home](#) > VR and AR Headsets[Share](#)

# Compare Virtual and Augmented Reality Headsets

Results

[How to Choose a Headset](#)

Manufacturer or Model

99 results

99 Results

Sorted by

Refresh Rate ▾

High to Low

Viewing

List ▾

Reality Type

- ☐ Virtual Reality
- ☐ Augmented Reality

Price

- ☐ Under \$50
- ☐ \$50 - \$200
- ☐ \$200 - \$500
- ☐ \$500 - \$1,000
- ☐ \$1,000+

\$ 10

\$ 3,000

Currently Available

Headset

Reality Type and Release Date

Price

Refresh Rate

Processing Source

Field of View

**Avegant Glyph**

Virtual Reality

Expected Release: Q1 2016

☐ [Add to Compare](#)MSRP  
\$699

- Computer
- Game Console
- Smartphone

45°

**Sony Playstation VR**

Virtual Reality

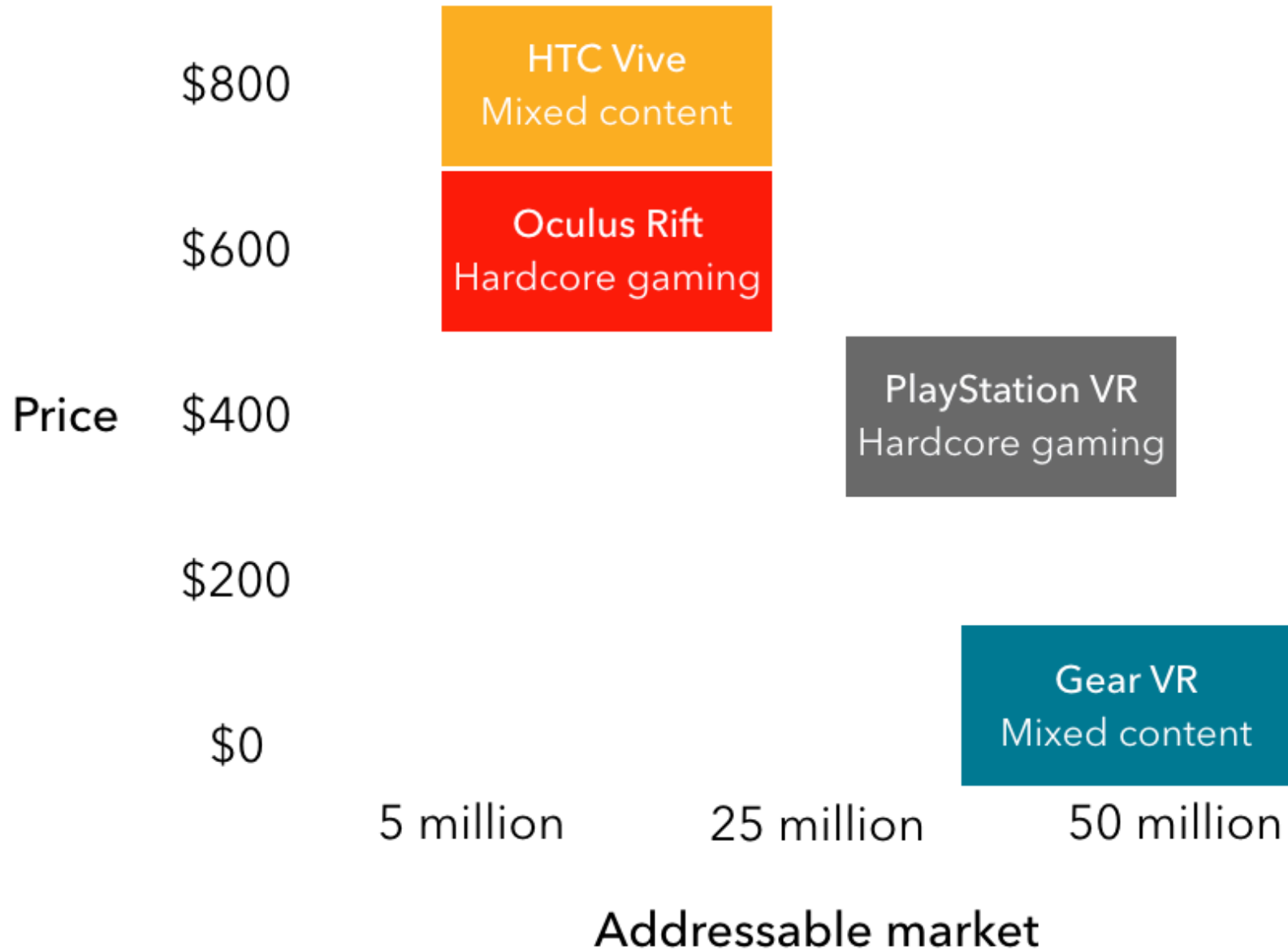
Expected Release: Q2 2016

☐ [Add to Compare](#)[See Prices](#)

Game Console

100°

# Virtual Reality HMD price versus market size



Source: Jackdaw Research



# Digital Distribution of VR

- YouTube 360
- Apple TV 360
- Hulu 360
- Amazon 360
- Netflix 360

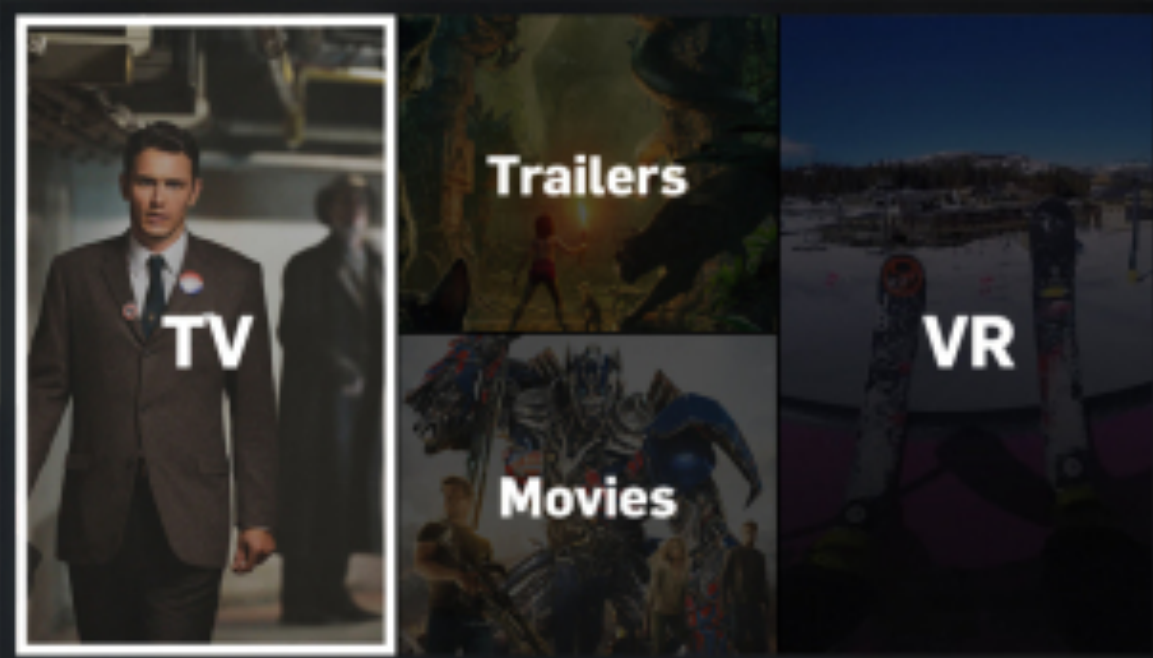


YouTube Help

[Upload videos](#) > [Upload instructions and settings](#)

[Upload 360 degree videos](#)

To watch 360 degree videos, you'll need the latest version of Chrome, Opera, Firefox, or Internet Explorer on your computer. On mobile, use the latest version of the YouTube app for Android or iOS.



## Hulu VR App for Samsung Gear VR

- ~30 360-degree videos
- From Discovery Communications, Baobab Studios, the National Geographic Channel, RYOT, Showtime Networks, Viacom and others

**hulu**



# VR Cameras (consumer mkt.)



Ricoh Theta (\$350)



Bublcam from Bubl (\$799)



Kodak SP360 (2X\$290)



Samsung 360  
Two 15MP cameras  
360-degree video in 3,840-by-1,920 resolution  
Galaxy S7 and S7 Edge, Gear VR



Nikon KeyMission 360 (\$?)  
Waterproof to 100'



Giroptic (\$499)



# Seeding the VR Market

## HTC will send Vive VR Headset to 100,000 Chinese Internet Cafes



\$2 to \$5 for 10 minutes of Vive time

# New Course for February Session:



Virtual Reality and  
Cinematography

Support for GCI's  
**"Virtual Reality and  
Cinematography"**  
Class Provided by:



## NEW at GCI: "Virtual Reality and Cinematography"

*This one-of-a-kind class covers a new, exciting field for Cinematographers*

The bounds of Expanded Cinematography® continues to grow to encompass what will be the *next* revolutionary venue for visual storytelling, the ever evolving field of **Virtual Reality**. In the past few years, the accessibility to Virtual Reality hardware and demand for content has exploded, creating an unique opportunity for Cinematographers to embrace the medium and apply their skills in "traditional" visual storytelling - a key component to GCI's mission to prepare Cinematographers for "Expanded" career possibilities.

With the generous support of **Radiant Images**, one of the leading suppliers of Virtual Reality cameras and solutions in Los Angeles, GCI is thrilled to offer this course as part of our "Level 1" program. The class will focus of the core concepts of 360 degree / immersive storytelling, how to harness the traditional tools of Cinematography in this new "arena", and conclude with a production workshop getting hands-on with the latest in Virtual Reality equipment.

To better prepare students for the "reality" of Virtual Reality capture, GCI has enlisted two of the top experts in the field to teach this new, innovative course: **Andrew Shulkind** and **Sinclair Fleming**. Andrew is at the forefront of working Directors / Cinematographers in the field of VR, and Sinclair is an expert at creating solutions and training for "traditional" filmmakers to approach the creative possibilities / restrictions of Virtual Reality. We welcome both Andrew and Sinclair to the GCI Teaching Faculty!

*Apply today to GCI Level 1 - February Session to be part of this new, one-of-a-kind course "Cinematography for Virtual Reality" - taught ONLY at Global Cinematography Institute!*



## VR as compliment to linear programming



ABC launches first scripted virtual reality experience to coincide with midseason premiere of its hit drama 'Quantico'



# Concerts



Samsung hails virtual reality gig as the 'future of music'  
- is this the end of rock'n'roll?



What to build for?  
Hand tracking? ....?  
No Standards Yet



Job Simulator: Making VR Games for Oculus Touch and HTC Vive

# Samsung Enttrim 4D Headphones

## Galvanic Vestibular Stimulation (GVS)

GVS uses tiny electrical impulses to stimulate your vestibular system into thinking you're moving when you're not.

Enttrim 4D has been declared "safe"

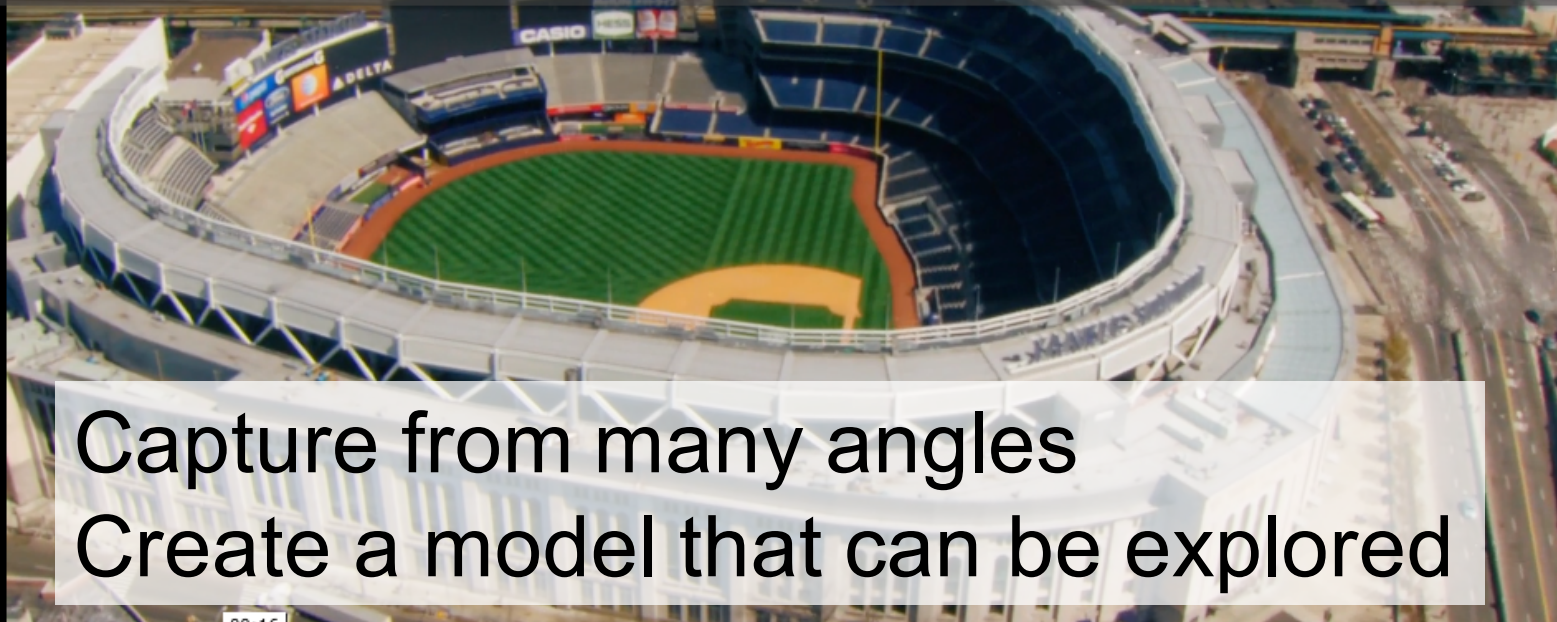
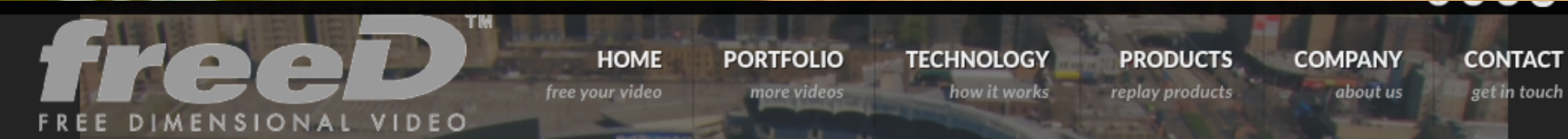
- 1500 human guinea pigs
- 30 'movement patterns'



3/24/16 Demo at SXSW



# Hybrid - Outside to Inside 'Volumetric VR'



Capture from many angles  
Create a model that can be explored



Replay-technologies.com

**Bought by INTEL**



# Mixed Reality

## Spherical capture live and insert into CGI



# In-VR Advertising

LA-based  
**Immersv**  
Launches  
Video  
Advertising  
Platform for  
Virtual Reality  
Apps



Stare at an ad to unlock bonus features



# Psychology of VR

## Dr. Kimberly Voll\*

### GDC 2016

#### “Fidelity Contract”

- the rules, typically unspoken, of the VR experience
- the brain anticipates consistency
- simplicity and fidelity produce a better flow state
- break the contract and the brain immediately notices

“Presence is proportional to the amount of immersion”

Jean-Pascal Beaudoin, Headspace Studio

\* Dr. Kimberly Voll, cognitive scientist, programmer, game developer at Riot Games and Radial Games  
ETCentric article by Don Levy, 3/16/16

# Legal Issues in VR

## Manatt Digital Media

Expect litigation centered on claims that virtual worlds can affect, and ultimately alter, an individual's behavior in the physical world

“Instructive speech,” as applied to violent and illegal acts, may not be protected speech

- *Rice v. Paladin Enterprises, Inc.* – detailed instructions in a book on how to commit murder was not entitled to First Amendment protection
- Immersive experiences may cross the threshold for “advocacy of lawlessness”

# *Six Flags and Samsung partner to add VR to roller coasters this summer*



- Six of Six Flags' North American parks will get "New Revolution Virtual Reality Coasters," putting passengers in a fighter jet racing through a city and taking out alien invaders.
- Three others will get "Superman Virtual Reality Coasters," travelling alongside the man of steel as he takes on a gravity-gun-wielding Lex Luthor.



# *Pulse Evolution is developing Virtual Pop Star business*



Tupac Shakur, Michael Jackson, rights to Elvis  
Creating a fictional artist and launching a VR version of a new artist  
**Using AI to have virtual artist respond to questions and situations**



# VR & **AR** update



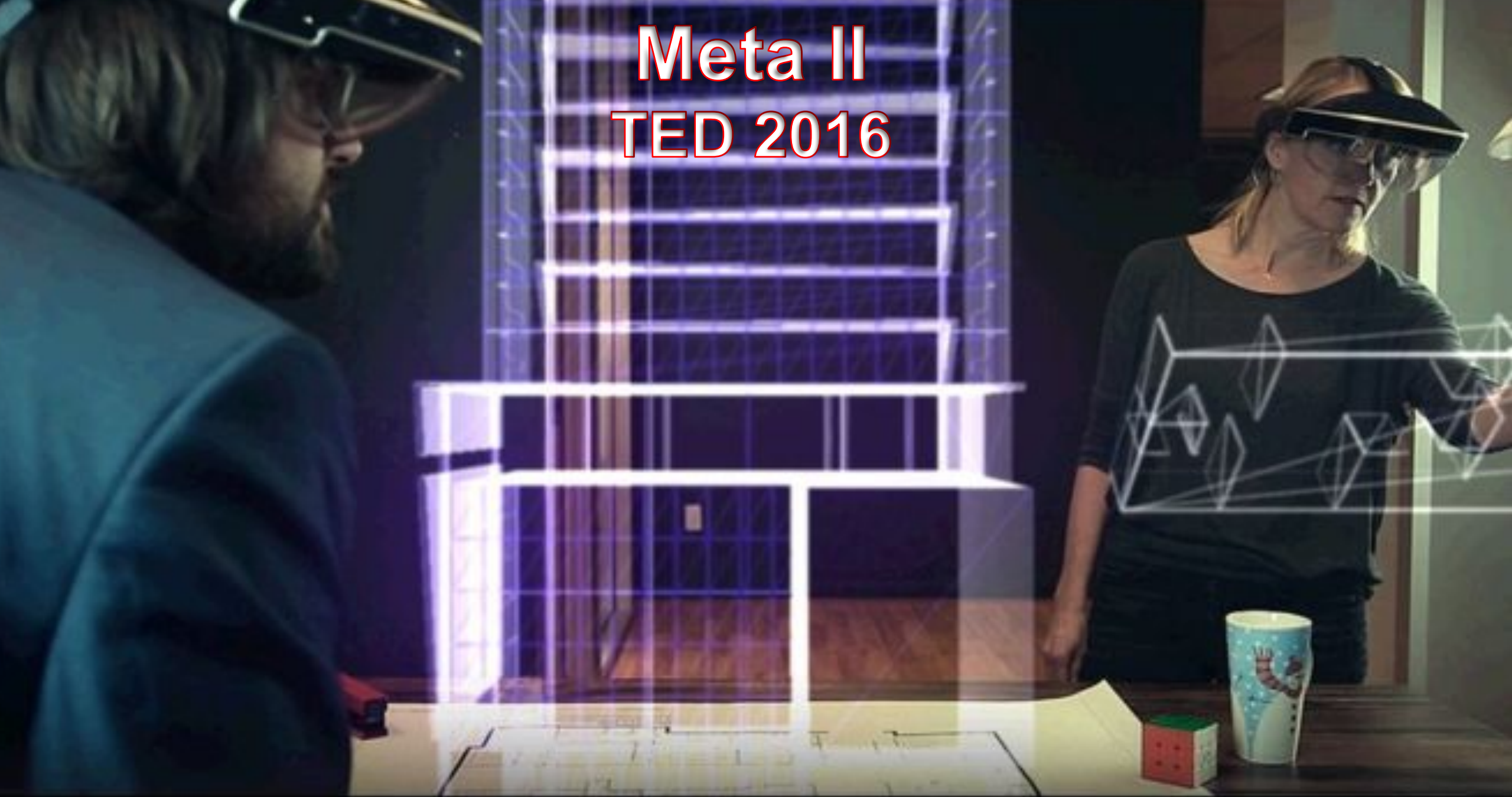
# Microsoft HoloLens TED 2016





# Meta II

## TED 2016





# Sony SmartEyeGlass



Beyond supertitles at the opera

# Magic Leap

## Concepts based on patent filings

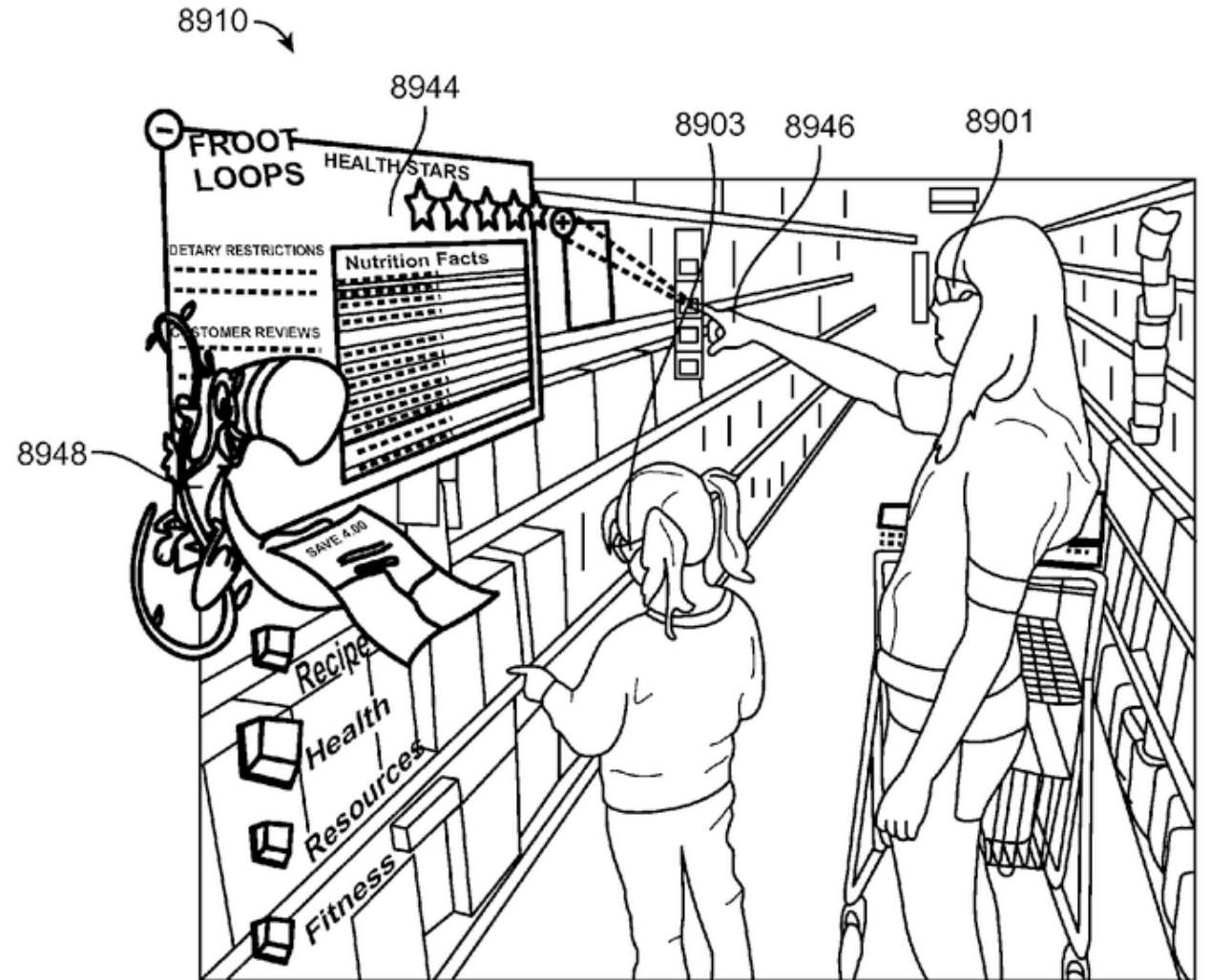


FIG. 89E



# Epson BT-300 AR glasses



23° Field of View

100,000:1 contrast ratio!

90% of NTSC color gamut

720p resolution (1280x720)

Touchpad controller

Gyroscope, accelerometer, 5MP camera, ...

\$700 expected price

# From “40 Predictions for VR/AR through 2025”\*

By Jesse Schell

- The majority of VR dollars will be from social experiences
- A new VR social media player will emerge; social platforms don't jump media types (Avatar/social media/motion capture blends; AltSpace, High Fidelity, Project Sansar, Beloola, IMVU, Surreal,...)
- VR board games as social experience will be huge
- 2017 State Fairs will have VR pavilions
- AR will be synched with the TV (AR concept videos already)
- Touch – by 2025, robots will provide active haptic feedback in VR

\* 3/14/16 GDC VR session



# UploadVR



## ROBERT SCOBLE

Entrepreneur In Residence - UploadVR

*"I'll be developing new shows, events, and working with other entrepreneurs in the Upload Collective, a coworking space for virtual reality-focused startups."*

3/22/16

# WORK SPACE, BUILT FOR VR COMPANIES.

APPLY



OFFICE SPACE



MENTORS



CAPITAL PARTNERS



TALENT



PARTNERSHIPS



VR HARDWARE

## WORK WITH BRILLIANT MENTORS



Andrew Dickerson  
Samsung



Amit Mahajan  
Presence Capital



Timoni West  
Unity



Anush Elangovan  
Nod Labs



Tipatat  
Chennavasin  
VR Fund



Zvi Greenstein  
NVIDIA



Sylvio Drouin  
Unity



Nick Dicarlo  
Samsung



Sarah Hill  
StoryUp



Ted Schilowitz  
20th Century Fox



Nancy Bennett  
Two Bit Circus



Morgan Schwanke  
Unity Technologies

# Virtual Reality Festival



**School of Cinematic Arts, USC**

**April 15th, 10am-5pm**

**(900 W 34th St, Los Angeles, CA 90007)**

Enter your virtual reality project into a student VR competition for prizes!  
Open to all USC and non-USC college students in America. Prize Categories:

Live action 360 videos  
Animated/experimental VR  
VR interactive games  
Immersive technology  
Augmented reality

**Apply online at: <https://vrsc1.typeform.com/to/E14NNH>**

**Deadline to apply is April 4th**

Questions? Email us at: [vrscfestival@gmail.com](mailto:vrscfestival@gmail.com)  
Follow the event on Facebook: <https://www.facebook.com/events/244610365875523/>





# **VR/AR Initiative update**

Philip Lelyveld

VR/AR Initiative program lead

[Plelyveld@etcenter.org](mailto:Plelyveld@etcenter.org)