



DVB Study Mission : VR Market

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Market

- Foreground
- VR Momentum
- Use cases
- Market segmentation
- Applications
- Devices
- Challenges
- Perspective

Foreground

- We study market for VR Audio/Video/Gfx immersive experience, not AR.
- Video can be 2D or 3D
- Content is live or post produced
- Delivery to 2D (TV, Mobile) or HMD devices
- Delivery across all possible network delivery mechanisms (Stream, broadcast, DL)

VR Momentum

- Facebook acquisition of Oculus in '14
- All major content & service providers announcing trials or VR Video services : HBO, FOX, Discovery, DirecTV,....
- Major MVPDs & Content companies investing : CMC/TWC (NextVR), Sky/Disney (Jaunt),...
- Oculus, Sony Morpheus, HTC all launching VR (Game) services in 2016 will be T0 of VR
- Gear VR sold 1M unit in 3 months
- Google Day Dream VR ecosystem announcement
- Rio'16 bomb : 4K not deployed, VR360 trialed


2016 Year Zero of VR

Content Providers are Moving

Discovery, MTV Virtual Reality Stunts Gain Increasing Network Interest

by Thom A. Limonte
August 27, 2016 10:28am

See five ways analytics can transform your sales.



Though we're a long way from the kind of virtual reality goggles seen in the 1990s, the technology has been steadily improving. Currently used mostly in gaming, the tech nonetheless has interesting implications for entertainment. So it goes that networks, keenly interested in drawing a more diverse viewer marketplace, are exploring VR-based gimmicks in their programming.

Related RNC Cuts NBC GOP Debate As Candidates Contemplate Coup - Update

First up, Discovery Communications has announced "Discovery VR" based product launching today with original content, extensions of network shows and a slate of short-form programming across multiplatform.

It's available at Discovery VR, Discovery VR iOS and Android, Samsung Milk VR premium version on network YouTube channel.

DOWNLOAD E-BOOK

HBO's Game of Thrones Oculus Rift exhibit is the most immersive entertainment I've ever encountered.

By Jesse Driscoll
Twitter — 12 Mar '16 (6:11pm) — HBO.com



Just 18 days until TNW Conference USA.

I just had my mind literally blown by HBO's "A Game of Thrones Oculus Rift exhibit at SXSW. I know what you're thinking: there's no way it literally blew your mind." But the exhibit does create a whoa effect, so, in my book, that counts as a win.

The exhibit puts you inside of a physical replica of the Iron Throne. You can sit on top of the 700-lb iron throne in the Thrones universe. Using the Oculus Rift virtual reality and 4D elements like physical shaking and fans, we look out upon the area Beyond the Wall.

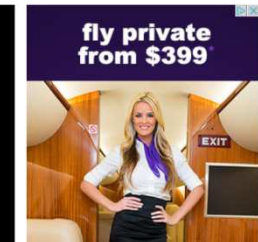
Recommended

An inside look at how network news works.

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DirecTV's First Virtual Reality App Takes Boxing Fans Ringside

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Video Use cases

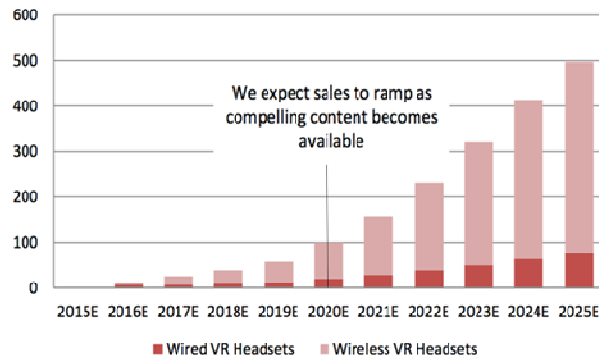
- Bonus / promotion for 2 D movies (Internet)
- Documentary
- Concerts
- News
- TV shows
- Short form content (new genre)
- Live sports
- Sports highlights (Internet)
- Mesh Video / 3D games
- Remote access (real estate, tourism)
- Personal communication
- Adult

DVB Focus



Market Segmentation

VIRTUAL REALITY HEADSET SALES
(In Millions)



Source: Piper Jaffray estimates



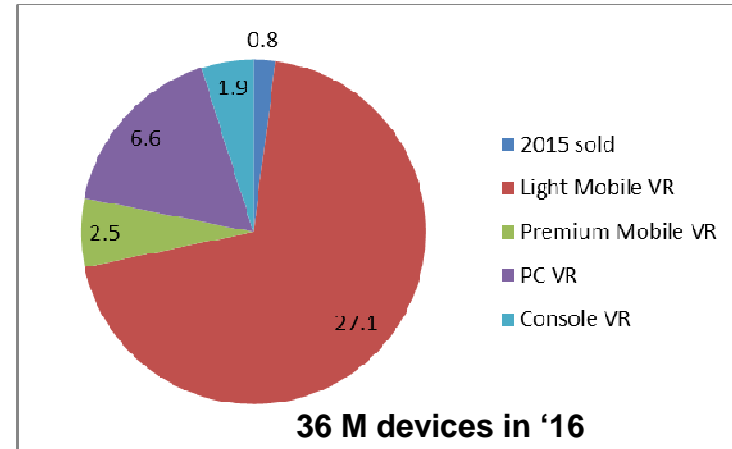
Experience

- **Thethered** : *Niche* market for games
- **Untherered** : *Mass* market for Video
 - **Promotional VR** : Cardboard
 - **Mobile VR** : Gear VR, Day Dream
 - **Portable VR** : Analogy to laptoc vs PC

'16 Ecosystems

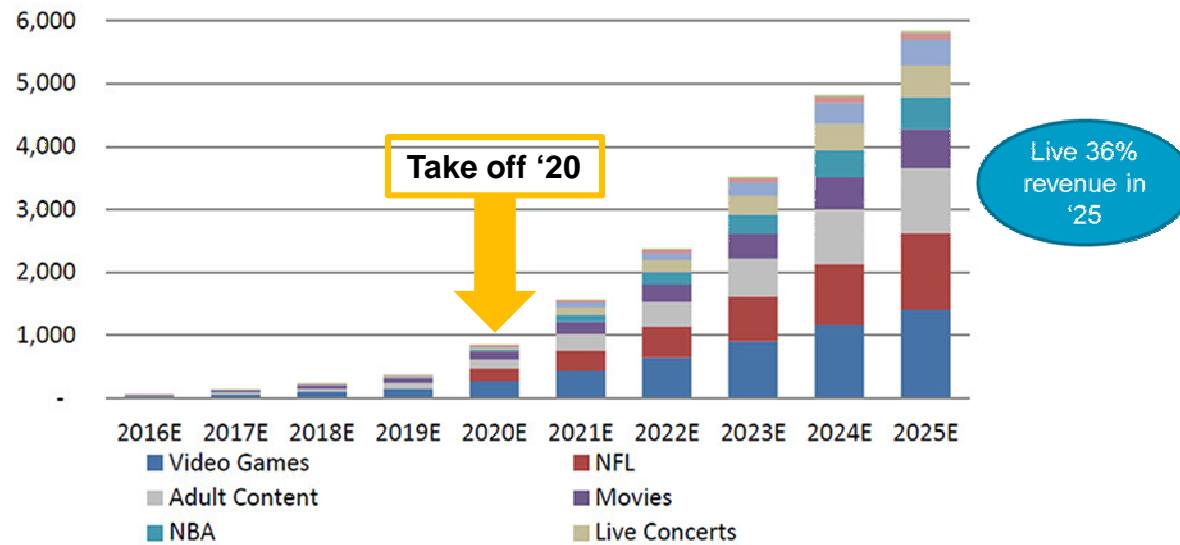
- **Facebook (Oculus)**
- **Samsung Gear VR**
- **HTC Vive**
- **Sony PS VR**
- **Google Day Dream**

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Applications

VIRTUAL REALITY REVENUE BY INDUSTRY
(In Millions)

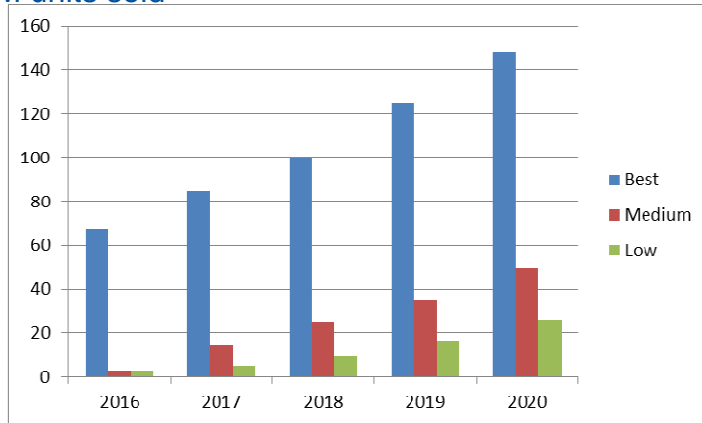


Source : Piper Jaffray, October '15

~1 \$B Video revenue in '20

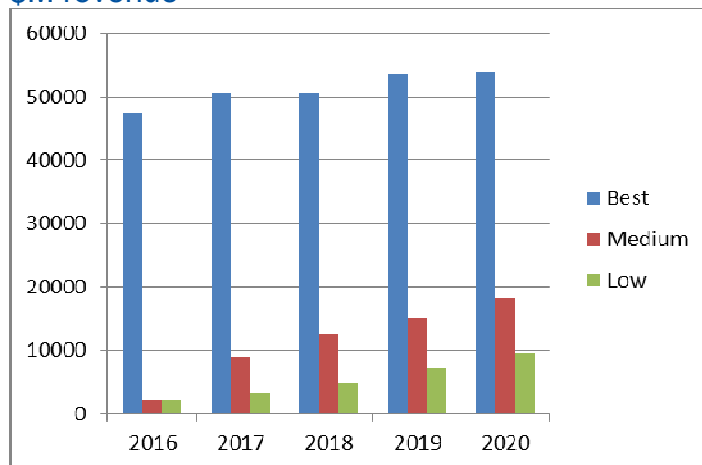
Devices Sales projections of Mobile VR

M units sold



Realistic estimate ~ 50M sold in '2020
(compared to 1.4 B smartphone sold in '15)

\$M revenue



Realistic estimate ~ \$20B in '2020
(compared to \$400B smartphone sold in '15)
~ STB market size in '15

5% of smartphone sales in '20



Challenges

- Wide availability of content on multiple devices
- Wide availability of devices especially untethered ones
- High resolution experiences, UHD Phase 2 (2160p120)
- High frame rate in order to avoid motion sickness, 90 fps is a minimum today
- Business model that can enable the market
- Theme park as a catalyst for consumer adoption

Also need a standard!

IBC Update

- Oculus Rift sales are flat and anemic, meaning the tethered approach is showing its limits
- Next big bang is the Sony PS VR in November'16
- Experts in the domain expect we need 2 more products cycles to get the content, service and technology aligned, meaning 2019-2020
- No breakthrough from startups at IBC
- Harmonic/TNO & Fraunhofer* caught the attention with their UHD/Tiling demos

* *Coincidence they present today*
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Market still in the flux



Demo

- Legacy UHD system
- Shot, produced and encoded by Harmonic
- Presented at IBC by NASA when they received the special Innovation award for NASA TV
- Available on :
 - YouTube
 - Facebook
 - Samsung VR store
 - Android application developed by Viaccess Orca*

* *VR CSI Award winner at IBC*
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- https://www.youtube.com/watch?v=lil_I_-7aOM