

Virtual Reality: What does VR Look Like Today, and What Will Lead to Its Adoption?

As new technologies are developed and price points drop, virtual reality (VR) is poised to take off for some applications.

In this new *Executive Insights'* "Spotlight on Media & Entertainment" series, L.E.K. seeks to answer the following questions:

- What are the three approaches to VR, and which players are using each approach?
- Is VR possible without the expensive glasses?
- What will be the main drivers of VR adoption?



What are the approaches to virtual reality? »

There Are Actually Three Virtual Realities: Many Think Only Traditional Super VR, But There Are Three Types

There are three approaches to providing VR:

1. Super VR
2. Medium VR
3. Casual Mobile VR

A format war is breaking out among these three approaches, as well as among the individual companies using each approach.

Let's first discuss the traditional dedicated display approach to virtual reality, Super VR.

1. Super VR
(dedicated display built into headset)



Key brands

2. Medium VR
(split-screen smartphone display used by headset)



Key brands

3. Casual Mobile VR
(smartphone-only VR)



Key brands



Source: L.E.K. analysis



What sets Super VR apart? »

Beam Me to The Holodeck With Super VR: Advanced Technologies for the VR-Purist

Without a doubt, Super VR headsets will offer the most realistic VR experience with separate displays for each eye.

Advanced technology in the headsets that will contribute to the realism include:

- 360 degree head tracking so viewers can look around as in the real world
- Wide field of view (Oculus provides 110 degrees)
- 3D positional audio (Sony Project Morpheus)
- Augmented reality (Microsoft HoloLens overlays holographic images over real world scenery)

	Price	Expected Release	Software Source
Oculus Rift	Casual Mobile VR (smartphone-only VR)	Early 2016	Plugs into computers' DVI & USB ports
Sony Project Morpheus	TBD	First half of 2016	Connects to Playstation 4's HDMI & USB ports
Microsoft HoloLens	<\$500 (expected)	2016	Full Windows 10 system built into headset

Source: L.E.K. analysis

What content is available for Super VR? »

Fan Boy Excitement: Super VR Content is Hardcore Immersive Entertainment To Discerning Fan Boys

A few developers are already churning out content for Super VR.

Only a few games are currently available, given the cost to create content and the low installed base of expensive Super VR development-stage glasses.

Fan favorites include VR updates to older hardcore gaming franchises like Elite, Half-life and Minecraft.



Photo:Frontier Developments
Source: Elite Dangerous

A few developers are producing content for Super VR. For example, in Elite Dangerous, viewers experience immersive space combat, diving and twisting through a real-time 3D environment.

Could VR work at a lower cost using mobile phone displays? »

Easy Does It: Medium VR Headsets Prove the Power of Simplicity and Lower Cost

In Medium VR headsets, the smartphone contains the real VR power for lower-cost glasses (even cardboard "glasses" with Google Cardboard).

Key elements enabling the Medium VR experience include:

- An app to split the smartphone screen
- Tracking of the head orientation via built-in phone sensors (gyroscope, magnetic compass, gravity sensor)
- Tracking of the head location via GPS and accelerometers



Source: PC Mag

By splitting the screen, the retina of each eye receives a 2D projection, which the brain reconstructs into a 3D experience.

In the Google Cardboard approach, headset magnets work with the phone's magnetic gyroscope sensor; sleeker versions use a button to replace the literal Google magnet.

What are the price points and who is providing Medium VR? »

Holodeck on the Cheap: Quick-to-Market Medium VR Headsets use Smartphones For Cheaper Modern VR

Medium VR lets consumers use their existing smartphones to power VR headsets.

Key benefits of Medium VR include:

- Lower price than Super VR headsets
- More immersive VR experience than Casual Mobile VR (see next)
- Smartphones (and therefore VR software) are easily upgraded



Google Cardboard

Price

\$5-60,
depending
on case brand

Smartphone Compatibility

Any phone
with iOS or
Jelly Bean 4.1
or later

Software Development Kit

Google offers
Android
and Unity 3D SDKs



Carl Zeiss VR One

\$99.99

Any iOS or
Android with
4.7-5.2 inch screen

Unity 3D SDK



Samsung Gear VR

\$199.99

Samsung Note 4
or Galaxy S6

Oculus Mobile SDK

Source: L.E.K. analysis

What content is available for Medium VR? »

Hold on Tight: Medium VR Content Offers Viewers Exciting New Experiences

With relatively inexpensive headsets already on the market and open source software development kits (SDKs), developers are already churning out content for Medium VR.

Fan favorites include rollercoaster rides, zombie shoot-outs and a Volvo test drive.



Photo: VR Roller Coaster
Source: Trusted Reviews

Could VR work without the glasses? »

The New Reality is Casual Mobile VR: A Cheap Alternative Approach to VR That Billions Can View Today

Apart from VR headsets, there is another intriguing approach to virtual reality – VR enabled simply by using one's own smartphone.

The Casual Mobile VR approach is the only way for the masses to view VR content without expensive glasses. It is also ideal for those who want the VR experience without the dorky headpiece.

Casual Mobile VR is an optimal vehicle for music videos, movie trailers, film shorts and other forms of entertainment that people want to keep in their pockets.

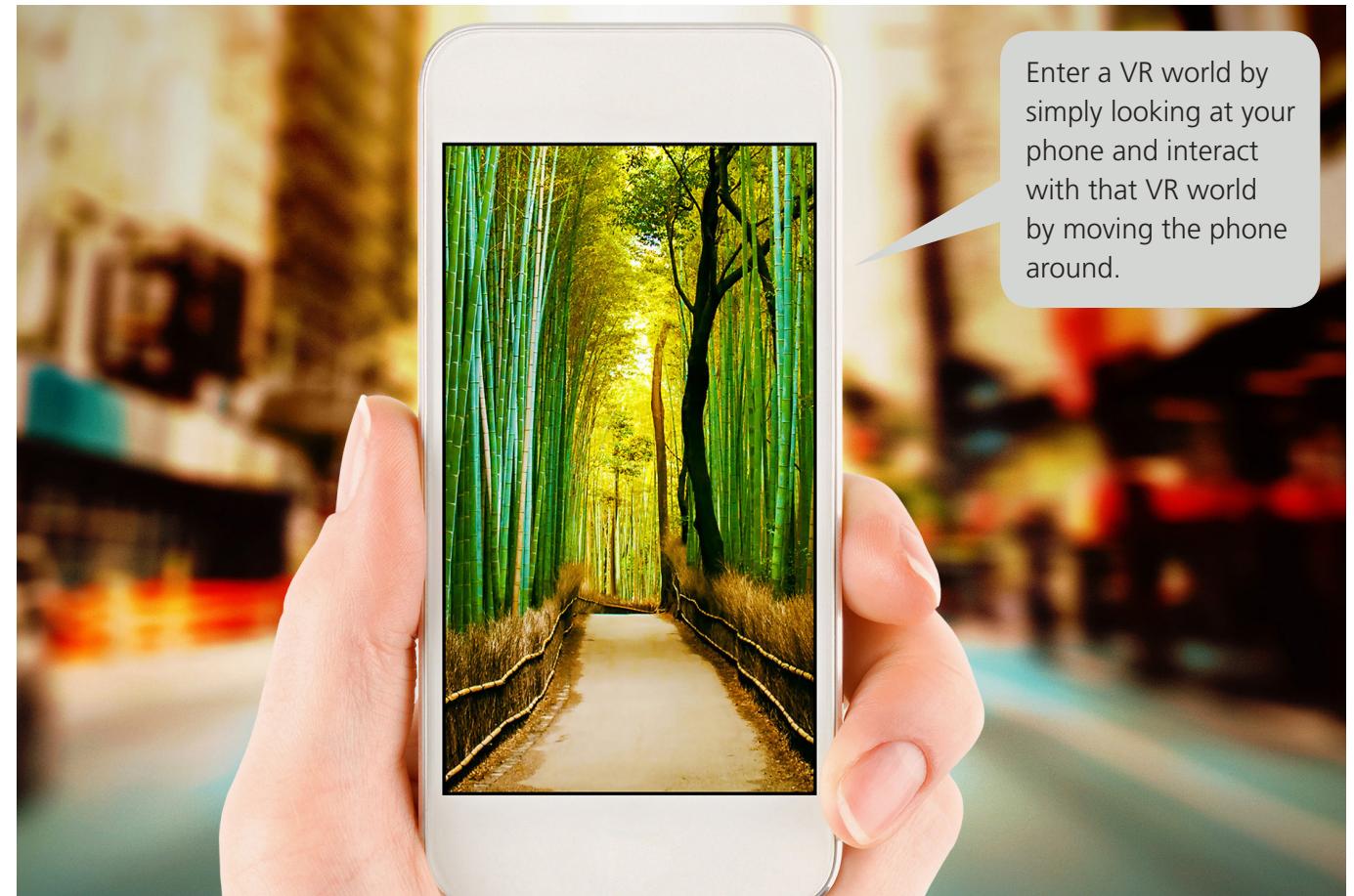


Photo: Adtile Technologies

Enter a VR world by simply looking at your phone and interact with that VR world by moving the phone around.

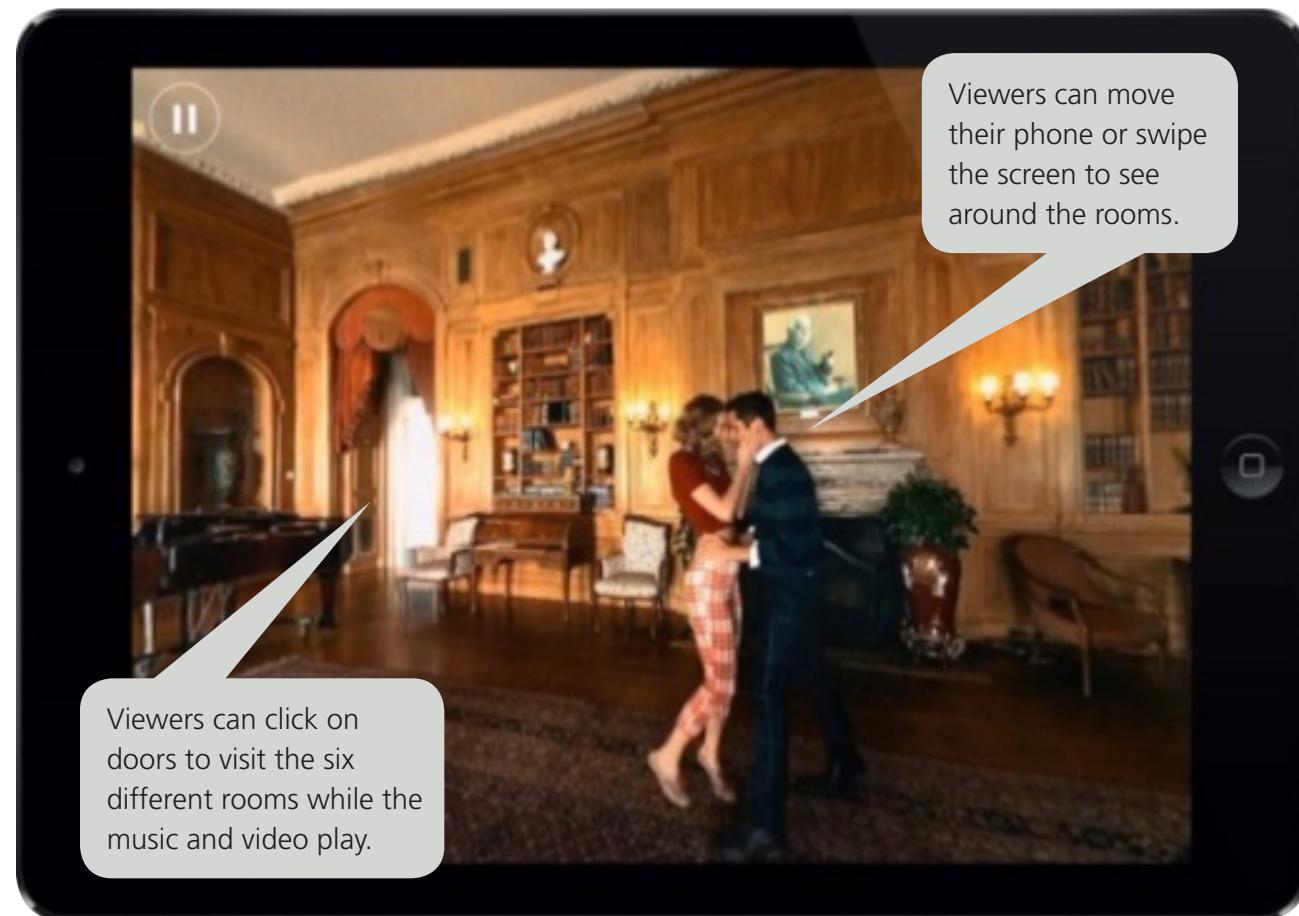
How are consumers using Casual Mobile VR? »

Placing Fans Closer to their Favorite Stars: Casual Mobile VR is Real Today for Interactive Music Videos

An intriguing use of lightweight VR is the American Express' Onstage Taylor Swift Blank Space Experience app, which lets fans interact with Swift's "Blank Space" music video.

Rather than simply watch as Swift flits through palatial rooms, Casual Mobile VR lets fans navigate throughout the music video on their own accord.

This application requires downloading a big app, but new approaches are on the way (smaller apps as well as "stream to the phone" similar to YouTube).



Source: *Wall Street Journal*, RadicalMedia, American Express

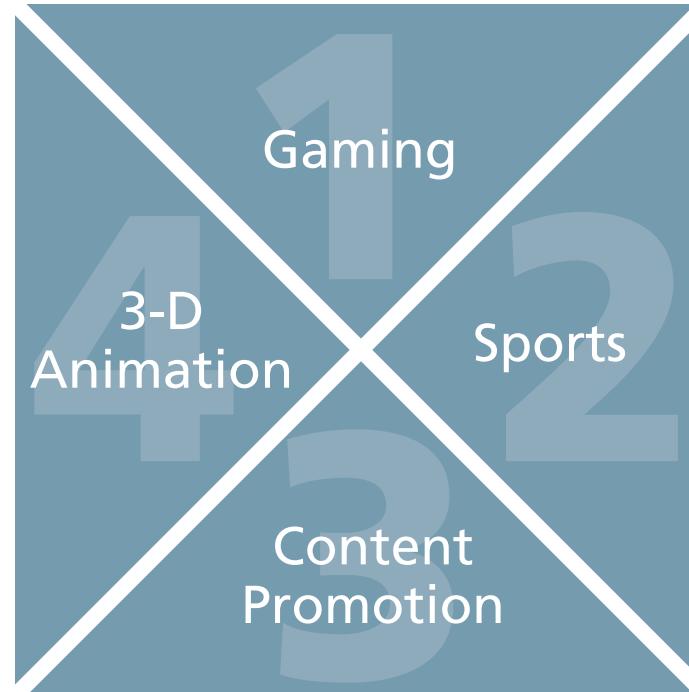
Which consumer applications for VR will lead to mass adoption? »

VR for the Masses: Which Consumer Applications for Virtual Reality Will Pave the Way?

While VR has been a familiar topic for decades now, what applications will finally drive consumer adoption?

These applications (see right) will drive VR to the tipping point and lead to mass adoption.

Four Key Drivers of Virtual Reality Adoption



Why is gaming such a strong driver? »

If You Build It, They Will Come: Gaming as a Strategy to Incite Consumer Demand for VR Headsets

As Super VR headset competitors prepare to release their headpieces, they are pushing for gaming content creation, knowing that compelling content will drive hardware sales.

As more developers work to develop content, more are likely to hit on games that excite consumers enough to promote headset sales. As a result, headset developers are pushing SDKs to tens of thousands of developers.



“... People won’t want to buy a VR headset if they can’t use it for a compelling game. And these games need to be ready to go when the headsets hit the market ...”

CNN, June 2014

Source: CNN

How could VR change the sports viewing experience? »

Grand Slam: Sports as a Unique Opportunity to Leverage VR

There are three reasons why sports offer prime content for VR adoption:

1. Filming live game content that is already being produced is cheaper than developing new content
2. Sports fans want immersive, high-quality content, as shown by early adoption of HD
3. Fans will pay large sums for this viewing experience, likely through a Pay-Per-View model



Imagine “sitting” next to Jack Nicholson courtside at a Lakers game in an immersive 3D viewing world for a \$60 pay-per-view ticket.

“... Every sports league, team, corporate America, sponsors and broadcaster... They all want to have a VR strategy, because they know this is coming and it is totally disruptive ...”

Brad Allen, Chairman of NextVR, April 2015

Photo: NextVR
Source: Toronto Star

How could film studios use VR to promote upcoming releases? »

Entering the Twilight Zone: Viewers Step Into Films with VR Movie Trailers

Major movie studios spend a lot to market films (close to half a billion for each studio each year), and many are already gearing up to produce VR trailers to promote their films.

Some say every big tent-pole movie release will have a VR trailer.

Lionsgate has already shown the appetite for VR advertising promotions by partnering with Samsung and investing in "Shatter Reality," a virtual reality experience aligned with the film "Insurgent."

In "Shatter Reality," viewers are immersed in the role of "Divergent" members of society and must undergo a series of VR mental simulations.



"... Virtual reality elevates the world of Divergent to a whole new level by creating a uniquely exciting and immersive experience for our fans ..."

Tim Palen, Lionsgate Chief Marketing Officer, February 2015

Photo: Lionsgate
Source: Lionsgate press release

Why would 3-D animation be a driver in VR adoption? »

Not Your Average Sunday Morning Cartoon: Virtual Reality Enables Immersive Animated Viewing

With conventional 3D cartoon animation repurposed for VR, viewers can move within a film.

Rather than develop new content, as in the case of gaming or live action, pre-existing 2D or 3D renderings can be adapted for VR. In other words, a movie studio producing a 3D animated movie can take the 3D models developed for a feature film and then repurpose this existing content for VR.



Bruce Timm, creator of "Batman: The Animated Series," is recreating the "Bat-cave" from the show's original 1992 designs and fans will be able to view it through VR devices.

"... As the animation art form evolves in the 21st century, it has the potential to transcend its history as a passive viewing experience and become an immersive and interactive experience in which the viewer experiences the cartoon world from within ..."

Cartoon Brew, November 2014

Photo: OTOY Inc. and DC Entertainment
Source: *Cartoon Brew*

What have we learned? »

Our Outlook: Virtual Reality is Becoming a Reality

Our Executive Insights' "Spotlight on Media & Entertainment" series covering "Virtual Reality" has clarified the complex approaches to the VR space and identified key drivers of VR adoption.

Current momentum in the development of viewing devices and VR content indicate that VR is here to stay and grow.

What have we learned about Virtual Reality?

1. Three approaches: Super VR, Medium VR and Casual Mobile VR
 - a) Super VR headsets are yet to be released to the public but promise exceptional immersive experiences
 - b) Medium VR headsets are relatively simple but their simplicity and low cost has driven a big catalog of good VR content
 - c) Casual Mobile VR is an accessible approach to virtual reality that billions can view today (requiring nothing more than the already ubiquitous smartphone); and this will drive the market this year
2. There will be a format war among the three approaches and among the ~20 companies trying to own the format – only a few can win the upcoming war
3. Gaming, sports, content promotion and 3D animation applications will drive both the mass adoption of virtual reality and which companies will win

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