

Virtual and Augmented Reality Industry Executive Summary

March 2016

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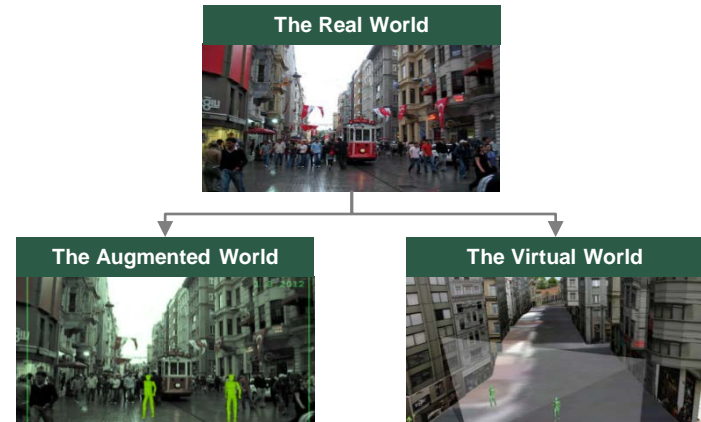
Executive Summary

Industry Overview

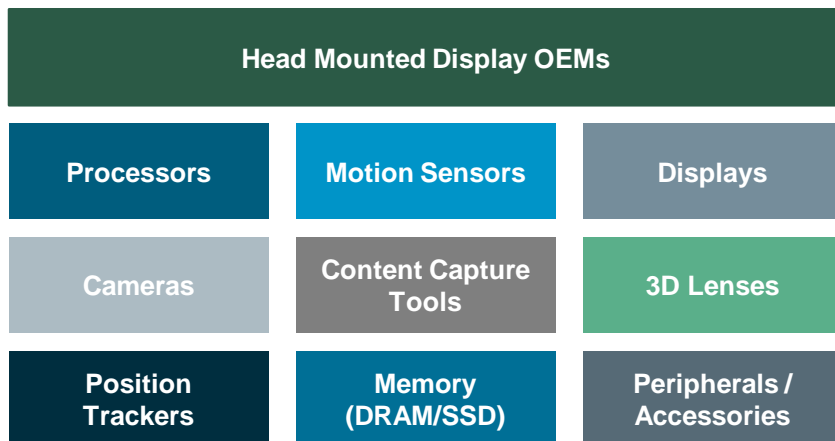
Commentary

- ▶ **Virtual Reality:** The creation of artificial three-dimensional images and environments
- ▶ **Augmented Reality:** The projection of images, data and information on top of a real world environment
- ▶ Emerging industry that has received increased investment in recent years as a result of technology developments that make AR/VR economically feasible
- ▶ Large potential market opportunity. AR/VR can be used for many different applications. Industry is still in the early inning and it is still very unclear if and how the industry will develop

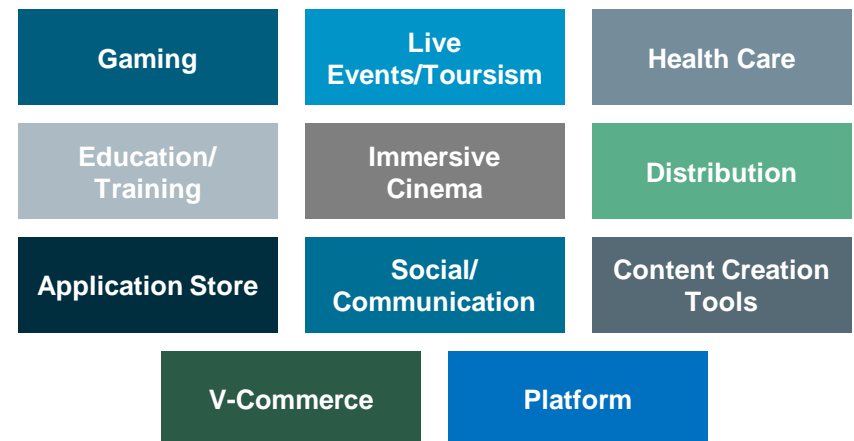
The Augmented and Virtual Reality Worlds



Hardware Ecosystem



Software Ecosystem



Executive Summary

Product Overview

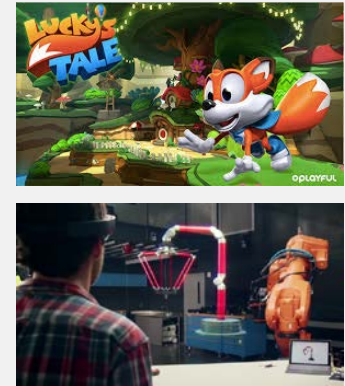
Head Mounted Displays

- ▶ Wearable hardware audiovisual device that connects a user to the AR/VR world
- ▶ Multiple types available
 - Slide-ons (\$20-\$100)
 - Integrated (\$600-\$800)
 - Discrete (\$1,000+)



Content

- ▶ Content creates an immersive experience for AR/VR users
- ▶ AR/VR content can range from video game and entertainments applications to enterprise applications



Host Systems

- ▶ Provide the computing power necessary to support AR/VR content
- ▶ High computing and graphics processing power is required to quality AR/VR experiences

PCs



Consoles



Smartphones



Supporting Components

- ▶ Tracking systems measure, position, orientation, and movement that allows users to feel that they are immersed in an AR/VR environment
- ▶ Controllers and remotes are input devices that enhance the user experience

Tracking Systems



Controllers



Remotes



Executive Summary

Companies and Strategies

Hardware Companies

Strategies

Develop Quality Hardware Devices that Offer a Great Consumer Experience

Attract a User Base

Foster Software Development

Commentary

- ▶ Hardware companies have taken the lead in building devices for users to engage in AR/VR experiences. However, the industry cannot succeed without quality software content and hardware companies are working to incentivize software development and ecosystem growth
- ▶ Leading technology companies have adopted different approaches to the AR/VR market
 - **Facebook** Market entry through Oculus acquisition and is first mover in the industry
 - **Google** Low end market entry through Google Cardboard
 - **Sony** Sony VR headset to complement PlayStation 4
 - **Microsoft** Focused on enterprise market

Software Companies

Strategies

Market Decisions

B2C

B2C

Business Decisions

Distribution

Monetization

Timing

Development Decisions

Project
Budgets

Development
Strategies

Platform

Commentary

- ▶ Most software development companies have not made sizeable investment into AR/VR content development and are still trying to determine how they want to enter the market
- ▶ Need to see a large install base for economics of game development to exist
- ▶ Content development for AR/VR is a new art form and will take time to develop
- ▶ Many hardware and software companies are relying on independent developers to create content to offset cost and risk

Executive Summary

Market Overview

Overview

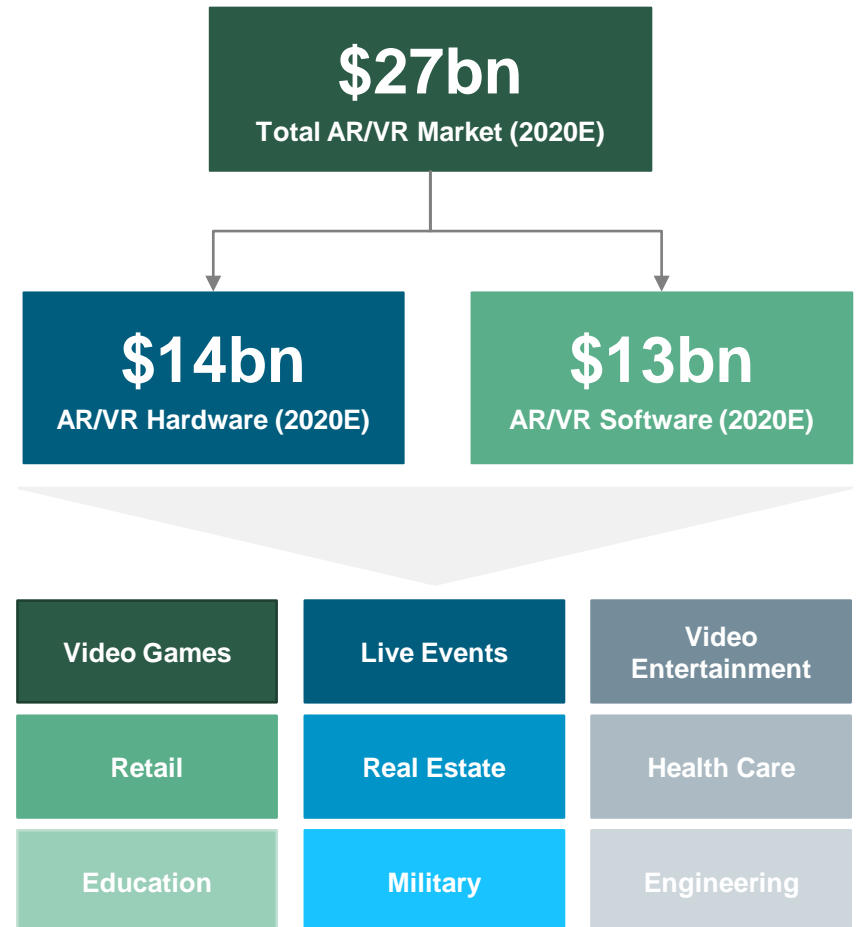
Hardware

- ▶ Multiple markets for AR/VR to penetrate
 - Console & PC Gaming
 - Gear VR
 - Digital Video Streaming
 - Enterprise
- ▶ Hardware market is expected to grow faster than software in early years as consumers make the large upfront expenditure to purchase AR/VR hardware
- ▶ Product pricing will be high but at low gross margin to encourage adoption. Pricing will go down in later years as component costs decrease and gross margins will increase

Software

- ▶ Development of quality content will be the key driver of growth for both hardware and software
- ▶ AR/VR software is likely to see its highest initial adoption for video game content consumption
 - In later years growth will shift to other verticals where AR/VR has a strong value proposition
- ▶ High install bases will provide the scale for software companies to earn profits. High volume, high gross margin sales are needed to offset research and development costs

Market Opportunity and Applications



Executive Summary

Capital Markets⁽¹⁾

Overview

M&A Transactions

- ▶ Transaction values for AR/VR related transactions are frequently unreported as deals typically involve companies that are not earning revenues
- ▶ Valuations are largely based on a strategic acquirer's perception of the opportunity, potential synergies, and ensuring that early VC investors are able to earn acceptable investment returns
- ▶ Acquisitions are being made to acquire technology, market entry, market entry option, and acqui-hire

Private Placement Transactions

- ▶ Most investments are still quite small (<\$10mm) as investors are making multiple small investments in various companies in the anticipation that they will receive no investment return on most of these investment and very large returns on a few of them
- ▶ Gaming and entertainment content are the sectors within AR/VR receiving most investment funding
- ▶ Investments are being made to foster ecosystem growth, invest in companies where acquisition may occur at a later date, develop partnerships and relationships, and the potential for high investment returns

Virtual/Augmented Reality M&A

Total Deals	<ul style="list-style-type: none">▶ 112 Acquisitions (2005-2015)▶ 40 Deals with Disclosed Deal Value▶ \$3.9 (bn) Disclosed Deal Value
Software Target Deals	<ul style="list-style-type: none">▶ 87 Acquisitions (2005-2015)▶ 28 Deals with Disclosed Deal Value▶ \$1.1 (bn) Disclosed Deal Value
Hardware Target Deals	<ul style="list-style-type: none">▶ 25 Acquisitions (2005-2015)▶ 12 Deals with Disclosed Deal Value▶ \$2.8 (bn) Disclosed Deal Value

Virtual/Augmented Reality Private Placement Activity

Total Deals	<ul style="list-style-type: none">▶ 503 Deals (2005-2015)▶ \$2.8 (bn) Disclosed Investment Size
Software Target Deals	<ul style="list-style-type: none">▶ 396 Deals (2005-2015)▶ \$2.1 (bn) Disclosed Investment Size
Hardware Target Deals	<ul style="list-style-type: none">▶ 107 Deals (2005-2015)▶ \$0.7 (bn) Disclosed Investment Size

Source: Capital IQ

(1) Deal activity is somewhat skewed from the Facebook's acquisition of Oculus in 2014 for \$1.9bn and \$1.4bn in investment funding that Magic Leap has received across two funding rounds

**McCAFFERTY
& COMPANY**

Los Angeles

2029 Century Park East, Suite 1140

Los Angeles, CA 90067

Phone: 310-551-4040

Fax: 310-551-4041

mccaffertyco.com

