VIRTUAL & AUGMENTED REALITY

SPOTLIGHT

- *2016 is going to be a big year for virtual and augmented reality. Major players are releasing their first products to the consumer market, pushing VR and AR towards the mainstream*

- *The new devices allow users a broad variety of immersive experiences ranging from movies to travel, news, games, and shopping*

- *A whole new ecosystem is evolving, offering diverse opportunities for both established companies and startups to participate through content production, hardware, distribution, and platforms*

- *Analysts expect the global market to grow rapidly, reaching a volume of $120B by 2020*

DEFINITION

VIRTUAL REALITY (VR)

disconnects users from the real world by simulating their presence in a computer-generated environment through wearable devices. Handheld controllers let users interact with the artificial environment.

VS.

AUGMENTED REALITY (AR)

enhances the users' real-world environment by overlaying virtual elements. AR enables real-time interactions as well as three-dimensional relations between virtual and real objects.

2014

March ➤*Facebook acquires Oculus VR for $2B*

June ➤*Google Cardboard launches*

September ➤*Samsung and Oculus announce partnership*

October ➤*Google invests $542M in AR startup Magic Leap in Series B*

December ➤*Samsung introduces MilkVR, a 360-degree video content platform*

2015

March ➤*HTC and Valve present the Vive VR headset* ➤*YouTube allows 360-degree video uploads*

May ➤*Apple acquires German AR company Metaio*

September ➤*Facebook introduces 360-degree videos on its News Feed*

2016

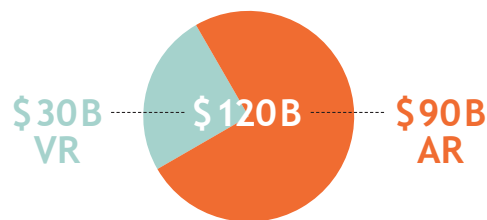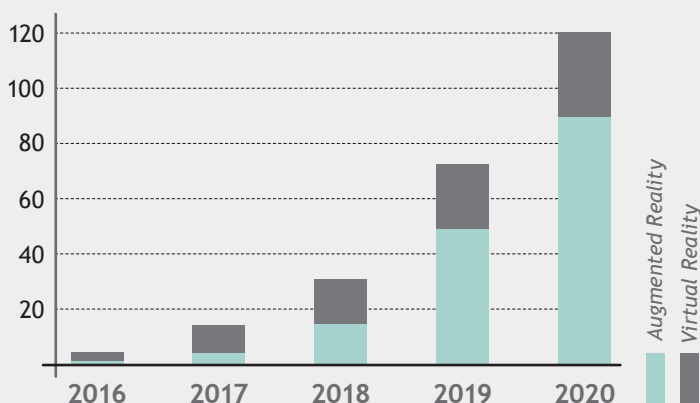*January* ➤*Preorder for Oculus Rift starts at $599*

February ➤*Preorder for HTC's Vive starts at $800* ➤*Preorder for Microsoft HoloLens Developer Edition starts at $3,000*

March ➤*Sony sets October shipping date for Playstation VR at $399* ➤*Delivery starts: Oculus Rift and Microsoft HoloLens development kit*

April ➤*HTC starts delivering Vive*

Sources: Recode (2015); Azuma (1997)

Market size

Digi-Capital Augmented/Virtual Reality Revenue forecast *(in $B)*

Augmented Reality
Virtual Reality

$30B VR   **$120B**   **$90B AR**

> According to the latest forecasts, the combined revenue of AR & VR will reach $120B by 2020

> $90B of the $120B market size is expected to be allotted to AR applications due to their integration into our daily life and habits

> $30B is expected to be allotted to VR, with games taking the biggest market share, followed by hardware, film, and theme parks

# Market drivers

HARDWARE PENETRATION

The global boom of smartphones with ever-larger displays, ever-smaller and faster sensors, and processors has rapidly advanced mobile VR. Competitive pricing and existing market penetration still put consoles at an advantage

> *The low bundle price and existing PS4 ecosystem create a strong market position for Playstation VR. 36M PlayStation 4 units have been sold globally, compared to only 13M VR capable PCs worldwide, required for using an Oculus Rift or HTC Vive*

CONTENT PRODUCTION

Professional VR content producers have already established themselves (e.g. Jaunt). Other players (e.g. Nokia, Vuze) have launched 360-degree cameras. Additionally, a variety of apps has emerged, allowing users to produce and distribute their own content
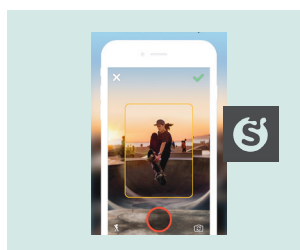
> *Splash enables users to create 360-degree videos with their smartphone and share them directly via social media. The videos can be viewed with any VR headset*

DISTRIBUTION

Product characteristics and capabilities differ, the current challenge is therefore the implementation of a standardized content development for all platforms and devices. Those standards are missing
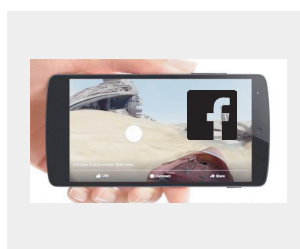
> *Facebook rolled out 360-degree videos in its News Feed in late 2015. The fully immersive experience has users view every angle by turning the device or dragging the video with the cursor. The videos can be watched on all major VR devices available on the market*

PROCESSING PERFORMANCE

Although computing power has increased strongly, many people are still sensitive to VR and show negative reactions such as cyber sickness. These issues have to be solved to develop successful future apps, e.g. through higher frame rates and resolution
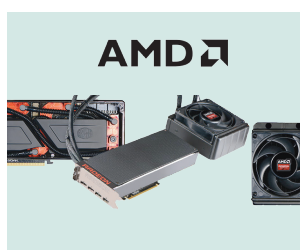
> *AMD builds computing and graphics processors central to high-quality VR performance. As an example, AMD's Radeon Pro Duo, simplifies VR adoption for consumers and content creators*

Venture Capital in AR/VR

$686M VS. $1.1B
in 2015   in January & February 2016

> In 2015, VR and AR companies have received a total of $686M in venture capital, with the majority of deals being early-stage

> In the first two months of 2016 alone, AR and VR investments have almost doubled to $1.1B

> Special effect due to the largest single investment in Magic Leap in the beginning of 2016 (see below)

TOP VCs AND CORPORATE VC INVESTORS

ROTHENBERG VENTURES

> Rothenburg Ventures has made more than 30 investments in VR and AR companies. In early 2015, they announced the launch of the virtual reality accelerator program "River"

G/

> Google Ventures has invested in Jaunt, a company providing cinematic VR experiences. Further investments include social VR and gaming companies. The big investment into Magic Leap came from the corporate headquarters, rather than the investment subsidiary
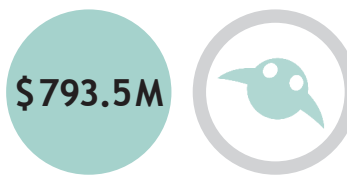
intel Capital

> Intel's VC division has invested in a broad portfolio of VR software as well as hardware companies, with some of them focusing on enterprise applications

QUALCOMM VENTURES

> Qualcomm Ventures has set a strong focus on investments in VR and AR software startups, including Matterport, Magic Leap, and Blippar

DEAL RADAR

$793.5M

Magic Leap raised $793.5M in a Series C round in February, 2016, from investors including Alibaba, Google, and Warner Bros. The augmented-reality startup is building a head-worn device that superimposes a 3D computer-generated picture into the user's field of vision

$65M JAUNT

In September, 2015, **Jaunt** raised a $65M Series C from investors, such as The Walt Disney Company and German media companies Axel Springer SE and ProSiebenSat.1 Media SE

$54M blippAR

Blippar received $54M in a Series D round from Khazanah Nasional Berhad in March 2016. The startup has developed a mobile augmented-reality search engine that recognizes objects when pointing a camera at them – unlocking additional information and content

$30M

Matterport raised $30M Series C in June, 2015, from main investor Qualcomm Ventures. The company creates explorable 3D models, especially applicable for home buying and vacation planning

Relevant for (almost) every industry

1 AUTOMOTIVE
Audi introduced a VR showroom where consumers can experience customized cars with HTC Vive headsets and Bang & Olufsen headphones, e.g. opening doors, walking around the car, or sitting in the driver's seat
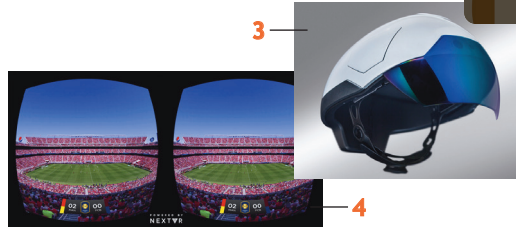
2 MEDIA
In November, 2015, **The New York Times** sent 1M complimentary Google Cardboards to print subscribers to launch their NYT VR app, including exclusive footage. Currently, the NYT is adding new VR videos to the app every other week, accompanying written pieces and extending their storytelling portfolio

3 INDUSTRIAL
Daqri Smart Helmet is a wearable AR device that inserts real-time information, such as work instructions, in a variety of industrial settings. It features thermal vision sensors for predictive maintenance and enhanced worker safety
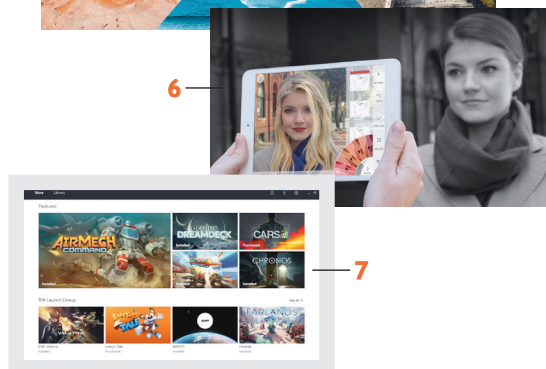
4 ENTERTAINMENT
In January, 2016, **Fox Sports** and **NextVR** announced a 5-year partnership to produce and broadcast live sports in VR. The live VR footage will be available via the NextVR app and the Samsung Gear VR

5 EDUCATION
Google Expeditions Pioneer Program is a VR platform built for classrooms: teachers can take students on more than 100 immersive journeys and bring their lessons to life. Google provides schools with a kit containing everything needed to take the class on a VR trip

6 COMMERCE
By using AR, the **Modiface** app simulates how beauty products or hair changes bolster the looks of a consumer in real time. The AR simulation drives instore sales of beauty brands, such as P&G, Sephora, or Unilever

7 GAMING
For the shipment of the **Oculus Rift** headset in March, 2016, Oculus VR simultaneously launched 30 VR games. Oculus also introduced a new version of Oculus Home for Rift, which lets users explore the library, discover new content, and connect with friends in VR
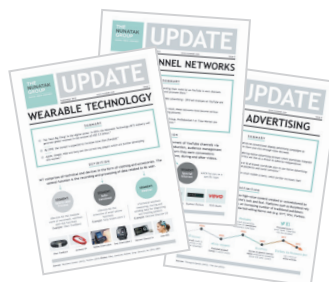

FURTHER READING

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1 Wearable Technology
2 Multi-Channel Networks
3 Native Advertising
4 Virtual Reality
5 Financial Technology
6 Targeted Content