



VR 行业介绍 & Unity跨平台内容开发

高川 gaochuan@unity3d.com



今日内容

- VR 市场概况
- VR 在不同行业中的应用
- Unity跨平台内容开发
- Unity教育资源 and 社区



VR 市场概况



VR 不是新事物

- 始于50年代
- 80年代晚期和90年代初期又兴起一波浪潮

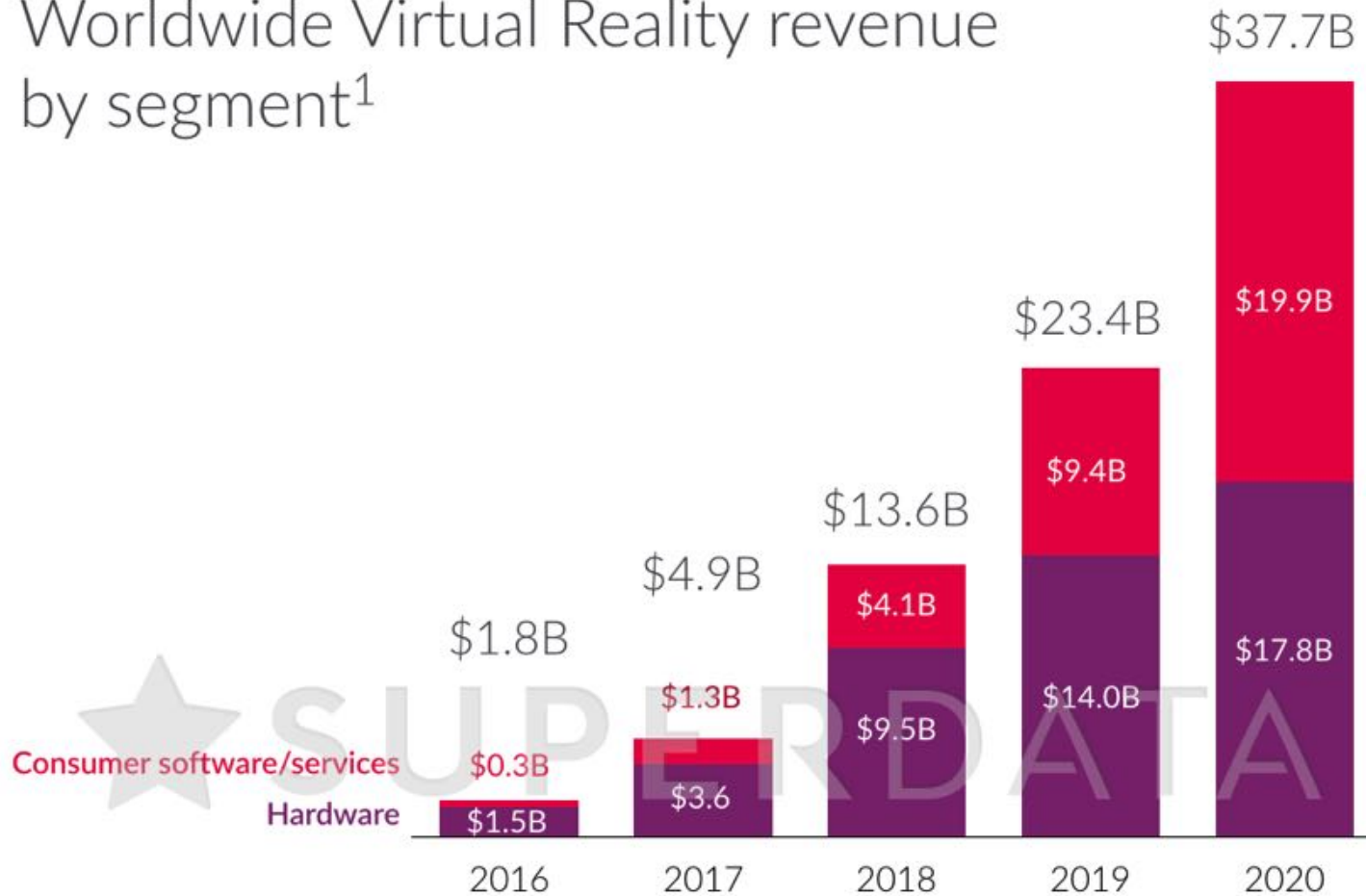






VR revenue will total almost \$38B by 2020 – 20 times what it was in 2016

Worldwide Virtual Reality revenue
by segment¹



SuperData Research VR Data Network, February 2017

Total earnings will rise 168% from 2016 to 2017.

Supply constraints limited access to headsets like the Oculus Rift in 2016, holding back both hardware and software revenue, but these issues have largely been resolved. Greater availability of both headsets and compelling content will drive consumers to spend more this year.

VR software revenue will reach \$19.9B by 2020, surpassing hardware earnings for the first time.

Hardware will earn more than software through 2019 due to the high upfront price of console and PC hardware and limited monetization opportunities for paid content.

¹ Does not include advertising or sponsorship revenue. See definitions, slide 51 for additional details on revenue measurements.
THE VIRTUAL CONSUMER | © 2017 SuperData Research. All rights reserved.

VR / AR / MR

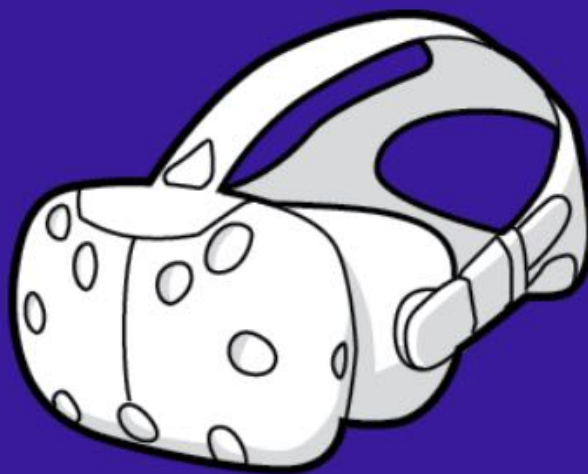




Facebook

► NOW 

In 2014, Facebook bought Oculus, the company that dreamed up the Rift headset and (literally) kick-started the VR revolution. [Read more](#)



HTC

► NOW 

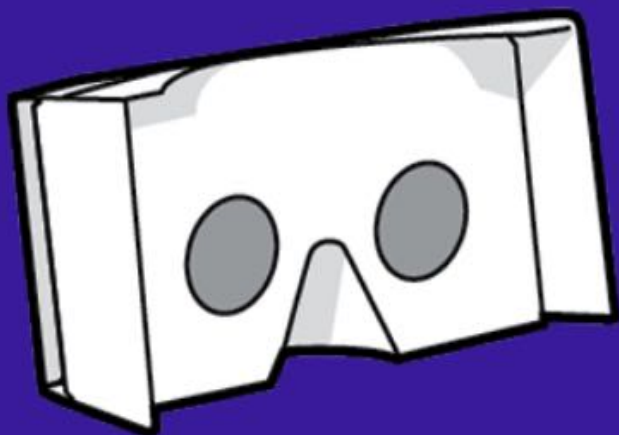
The Taiwanese phone manufacturer teamed up with game maker Valve Software to launch a high-end headset, the HTC Vive. [Read more](#)



Sony

► OCTOBER 2016 

Unlike the Rift and the Vive, Sony's PlayStation VR is designed to work not with a PC but its own game console—which more than 36 million already own. [Read more](#)



Google

► NOW 

Google created Cardboard, its cheap assemble-it-yourself viewer, to bring virtual reality to the masses via their smartphones. [Read more](#)



Samsung

► NOW 

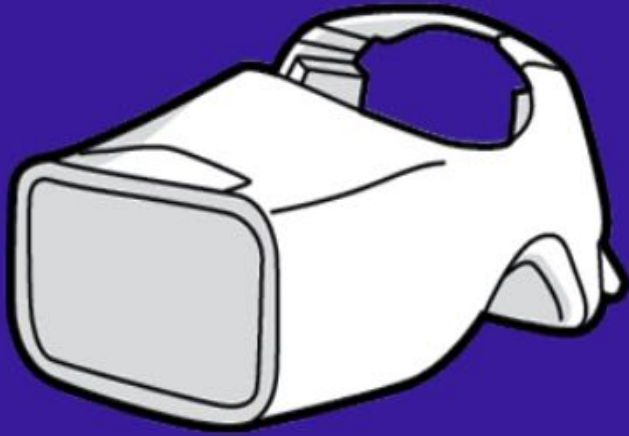
The Gear VR straps a Galaxy smartphone (new models only) to your head to deliver games and apps—all powered by Oculus software. [Read more](#)



OSVR

► DEV KIT AVAILABLE 

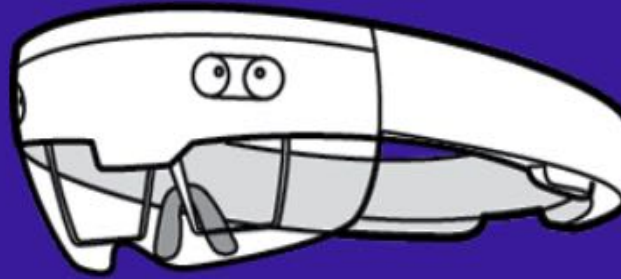
An open source platform for VR and MR launched in 2015 and backed by a consortium of companies like Intel and gaming outfit Razer. [Read more](#)



Fove

► FALL 2016 

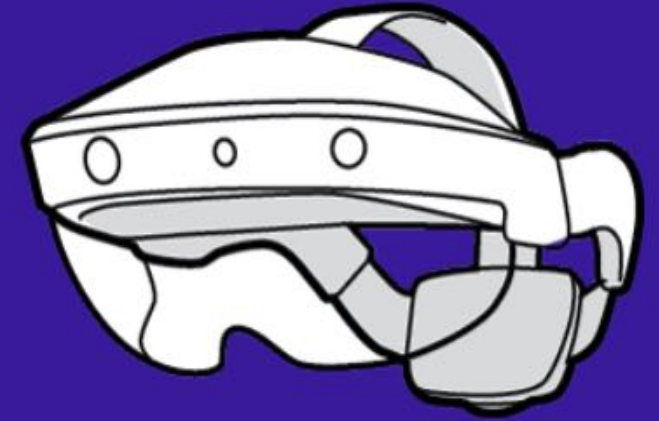
This startup proposes to use eye tracking to sharpen what you focus on and blur everything else, cutting down on processing power.



Microsoft

► DEV KIT AVAILABLE 

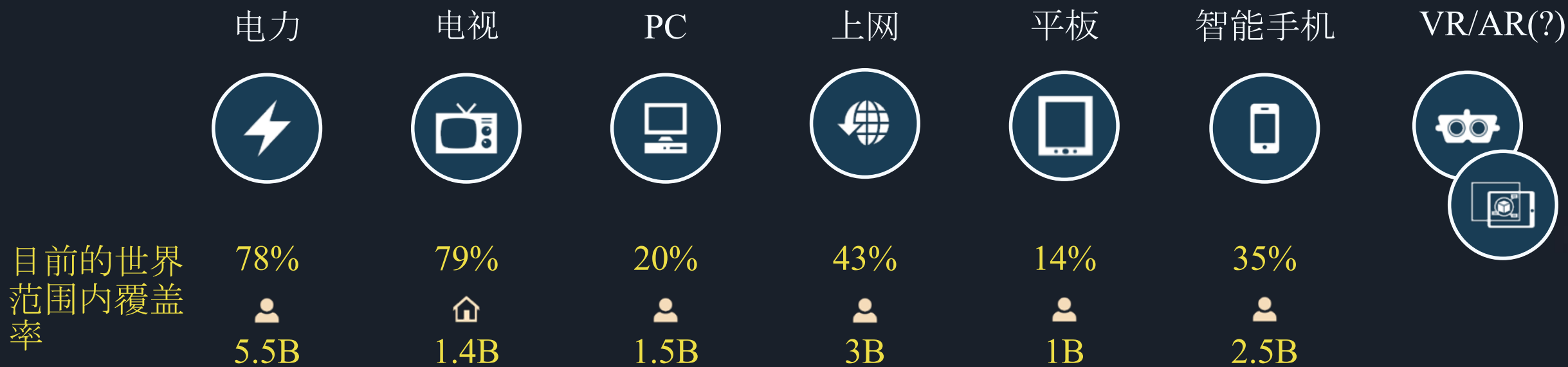
The company's HoloLens is a wireless, wearable, sensor-packed computer that aggregates its data to embed holograms in the user's environment. [Read more](#)



Meta

► DEV KIT, FALL 2016 

Initially funded via Kickstarter in 2013, the startup has created a visor that projects virtual interactive displays in the wearer's field of vision.



数据来源: Worldbank.org - TVTechnology.com - GSMA – SMSGlobal – eMarketer – Gartner - Unity Technologies

目前的世界
范围内覆盖
率

电力



78%



5.5B

电视



79%



1.4B

PC



20%



1.5B

上网



43%



3B

平板



14%



1B

智能手机



35%



2.5B

VR/AR(?)



数据来源: Worldbank.org - TVTechnology.com - GSMA – SMSGlobal – eMarketer – Gartner - Unity Technologies

为什么这次VR会成功

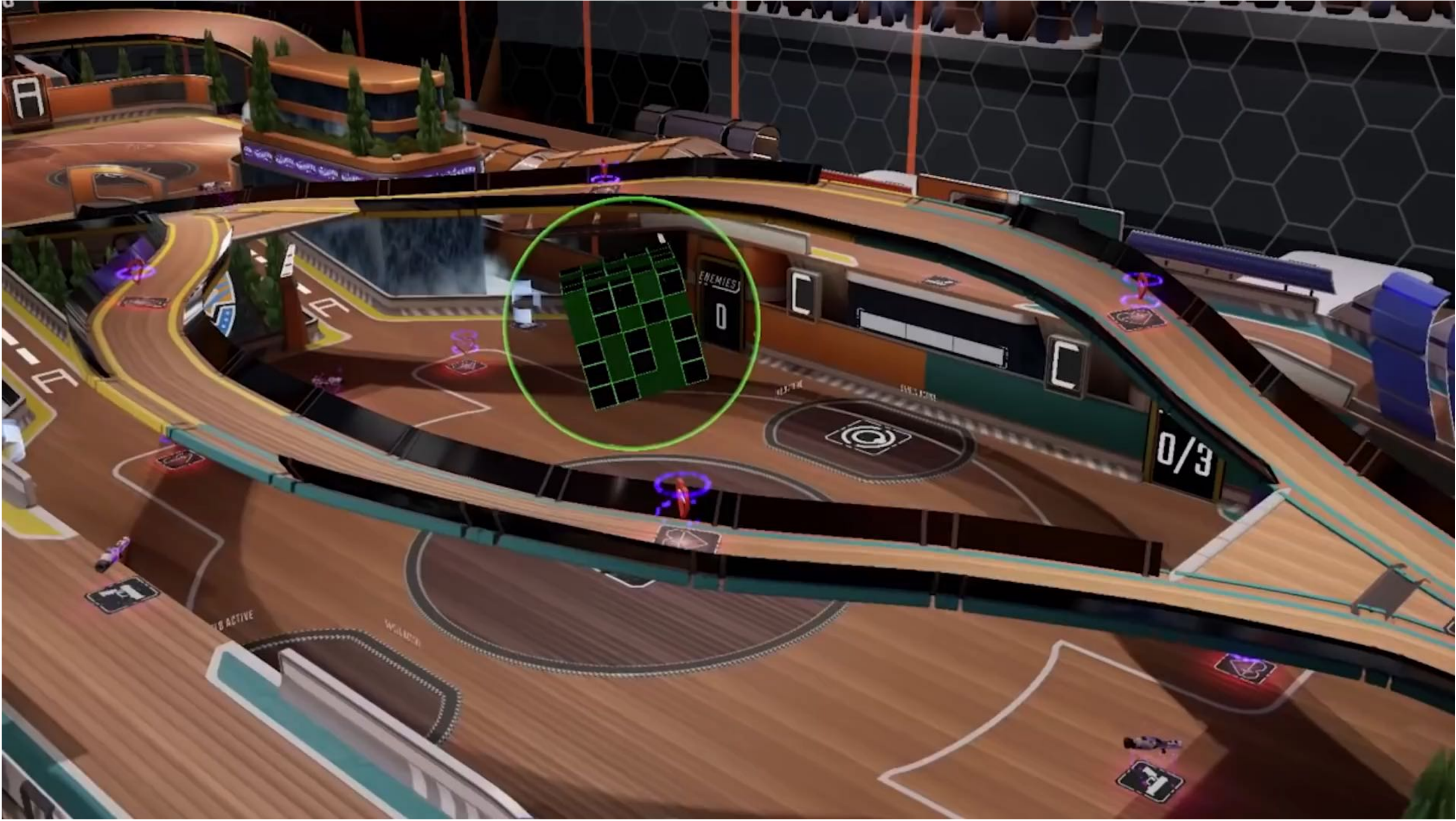
- 每个人口袋里都有一台高性能电脑
- 高速网络
- 满足日益增长的社交需求（游戏本质上也是一种社交）

VR 在不同行业中的应用



游戏





Pokémon GO



远程协作





医疗



Optera Clinical Education



Arloon Anatomy

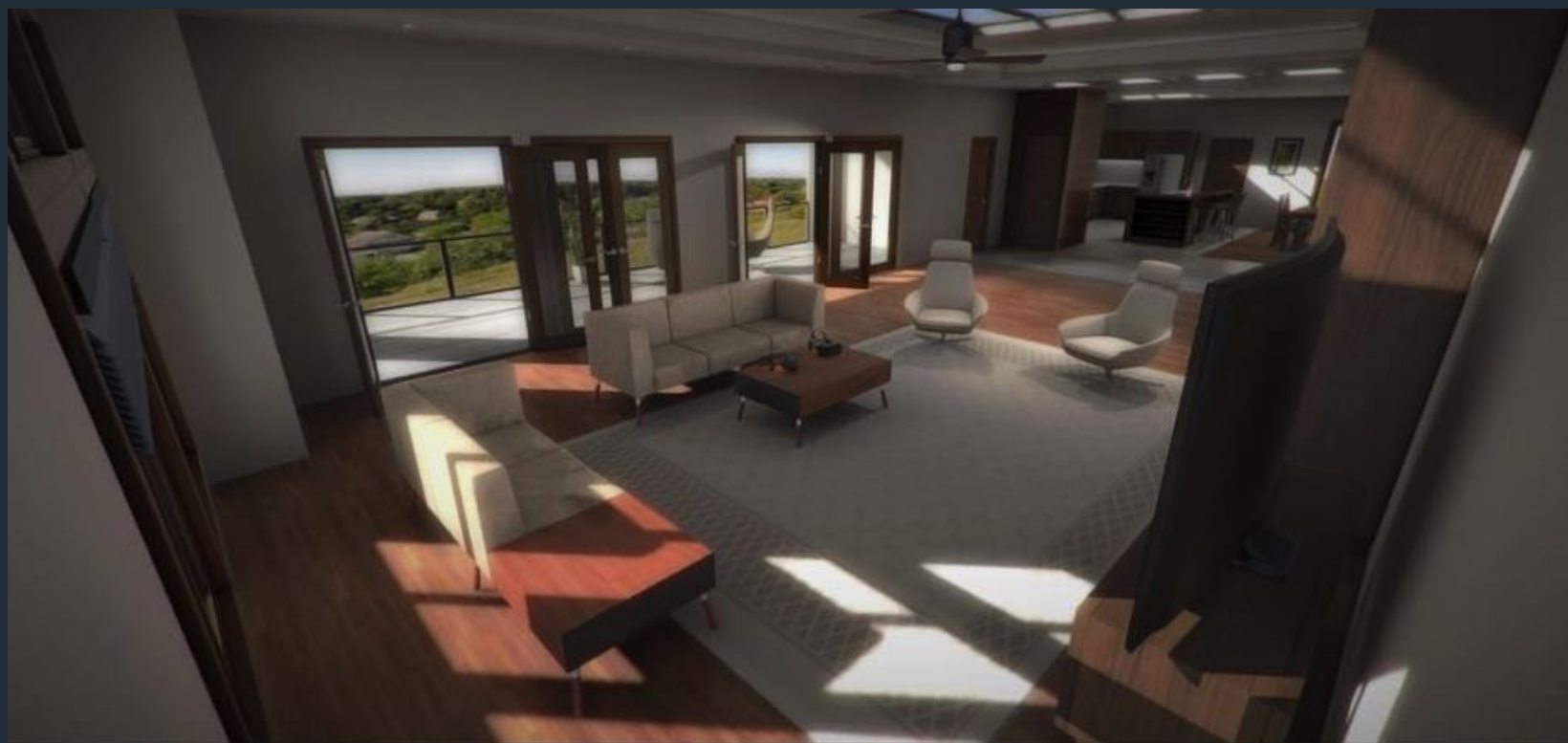
工程



ISAACS - 沉浸式半自主无人机指挥系统



建筑



Arch Virtual – 建筑虚拟化



商业虚拟化应用



BMW VR/AR Unity Apps



教育



Apollo 11 VR



Google Tilt Brush – 虚拟现实3D空间作画



VR电影



360 度全景电影



实时 VR





Unity跨平台内容开发



Unity的历史



- 2005年成立于丹麦，哥本哈根
- David Helgason, Nicholas Francis 和 Joachim Ante



Unity引擎 友好界面



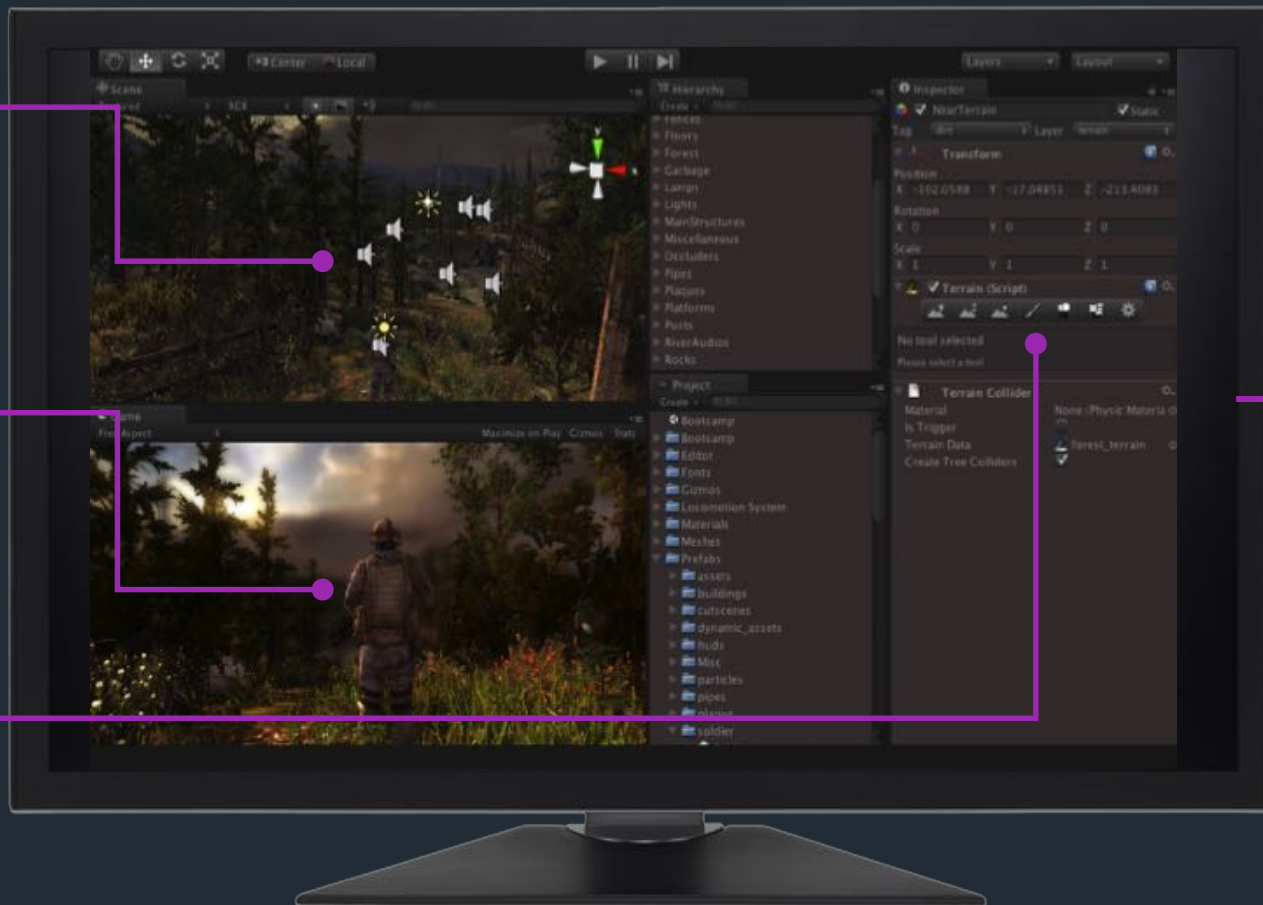
策划设计游戏故事



艺术家创造声音和视觉模块



程序员编辑行为模块



User Code

OS unity
PS4



User Code

OS unity
Xbox One



User Code

OS unity



User Code

OS unity
Browser





Democratize
development



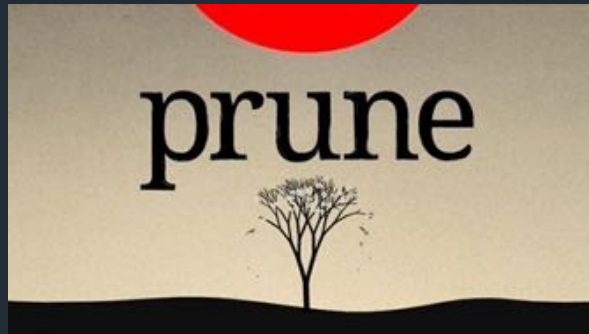
Solve hard
problems



Enable
success



2D



3D



VR





《Super Mario Run》



《Pokémon GO》

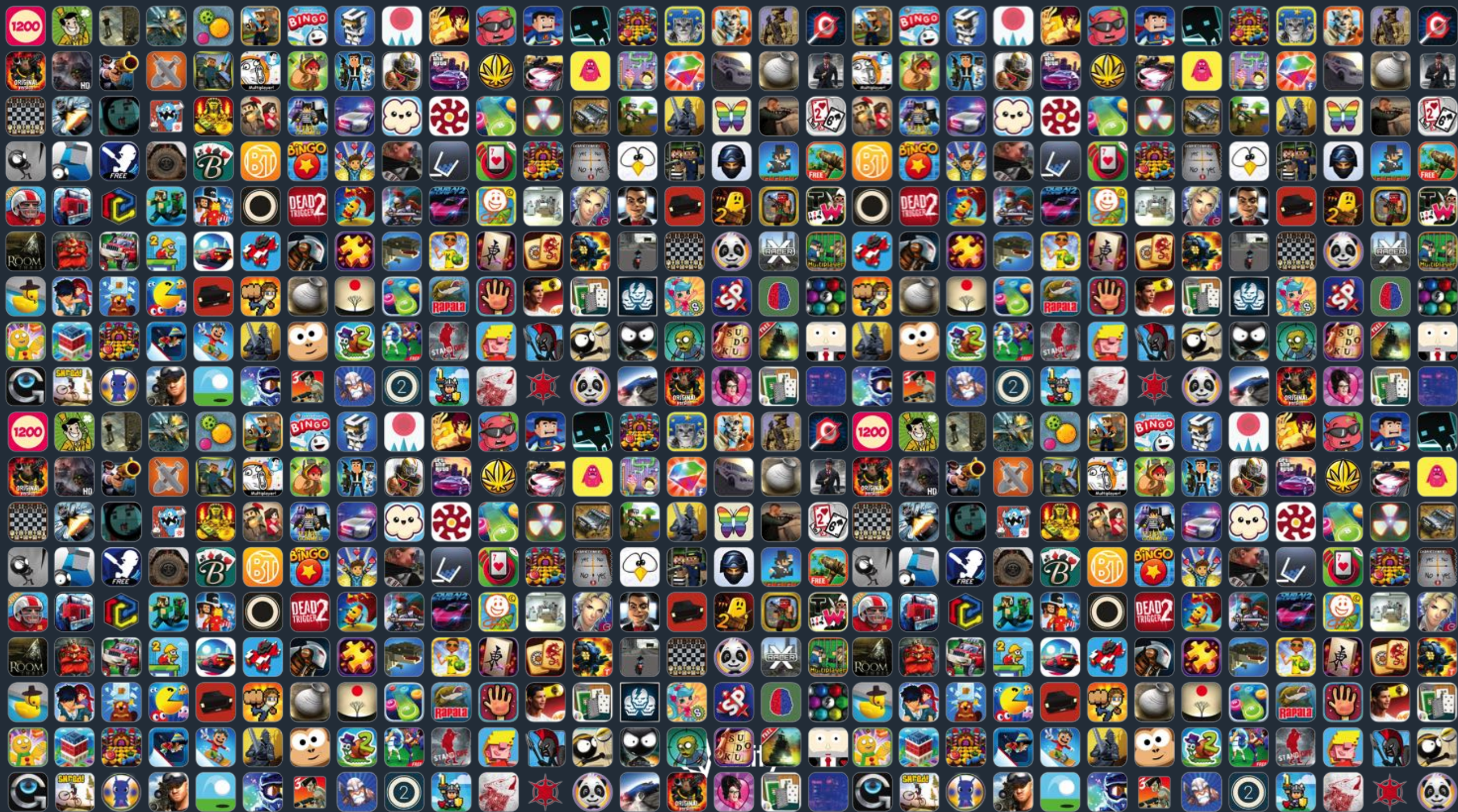


《王者荣耀》



《The Gift》





iOS



Windows
Phone



TIZEN™



PlayStation.
.VR



Microsoft
HoloLens



Apple



Linux™



Windows Desktop

PS4



LiquidVR™
by AMD

fire OS5

Gear
VR



XBOX ONE



Windows
Store

androidtv

PSVITA



Google
Cardboard

NINTENDO 3DS.



tvOS

SMART TV

Wii U™



Daydream



Xiaomi

facebook





Oculus Rift



Microsoft HoloLens



Playstation VR



Steam VR/HTC Vive





Google Cardboard



Google Daydream



Gear VR





Unity 5.1 – 2015-06-09 开始拥有统一的VR接口



Unity 5.2 – 2015-09-08 添加对PSVR的支持



Unity 5.3 – 2015-12-08 添加一些新的VR功能

- 用户可以重写Head Tracking (view matrix + FOV)



Unity 5.4 – 2016-07-28 很多新的VR功能

- 同时支持多种VR设备
- Single-Pass Stereo Rendering
- Graphics Jobs (Experimental)



Unity 5.6 – 2017-04-01

- 原生支持Android上的Google Daydream
- Gear VR Single-Pass Stereo Rendering
- 原生支持Google Cardboard



原生支持多种VR设备

- 最新的Unity 5.6版本支持Daydream, Cardboard, Oculus, GearVR, OpenVR (SteamVR/HTC Vive) 和 Playstation VR (PSVR需要单独设置), 微软Hololens
- 提供统一API用于和不同的VR设备进行交互
- 无需添加额外的SDK (因为已经集成到Unity了)
- 可以在同一个项目中切换不同的设备做测试
- 统一的底层优化 (例如 : Single-Pass Stereo Rendering, 移动平台也支持)



Unity支持的两种VR整合模式

- 第三方插件
 - 通常由第三方硬件厂商提供SDK
 - 需要渲染左眼+右眼, 需要双倍的CPU/GPU渲染成本
- Unity原生支持VR模式
 - 直接将对第三方硬件的支持集成于Unity中
 - 可以直接在底层对设备进行渲染管线的优化, 可以尽量做到左右眼一起渲染



Single-Pass Stereo Rendering

- 改变了之前先渲染左眼，再渲染右眼的模式，一次性完成两只眼睛的渲染
- 通常情况下可以把Main Thread上的渲染时间减半，也可以降低Render Thread上所消耗的渲染时间
- 有一些脚本和Image FX可能不工作，要具体项目具体分析



Standard Two Pass VR



Single Pass VR



Unity编辑器演示



Unity教育资源社区



Unity Certified Developer Courseware

Unity认证开发者课程通过视频教学 and 实际游戏项目工程案例，
指导学生实践性地完成学习Unity开发游戏的全过程。
该课程契合不同能力学生的需求，助力顺利通过认证考试。



Unity Certification

成为Unity认证开发者，
让Unity官方证明你拥有符合行业标准的游戏设计和编程技能。
Unity官方认证，帮助您的学员脱颖而出，寻找梦寐以求的理想工作。





认证证书

通过考试，你不仅将拥有电子版证书，个人信息还将被收录在全球在线Unity官方认证系统，以便潜在雇主可以实时查询认证。

unity





认证学员



Unite 2016 上海

一年一度的盛会









Unity开放日

Unity Open Day



Unity 开放日 北京 | 上海 | 广州 | 天津 | 西安



线下社区

UUG: Unity User Group



广州 | 武汉 | 西安 | 成都 | 北京 | 天津 | 上海



Unity大师课程

Unity Master Class





UNITY MASTERCLASS x 上海



Unity Master Class x 广州



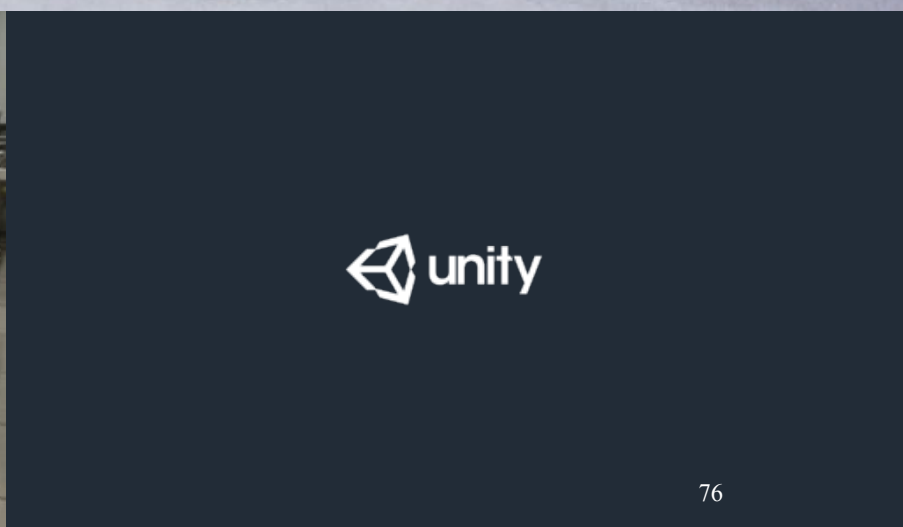
UNITY MASTERCLASS x 北京



Unity教师培训

Unity Teacher Training





Unity校园宣讲

Unity Campus lectures



UNITY 校园宣讲 2016年 北京、上海、广州、成都



更多活动





官方微信



官方微博



加入社区

<http://forum.china.unity3d.com>





时间：2017年5月11日-5月13日

地点：上海国际会议中心

中文官网: <http://unite2017.csdn.net>

全球官网: <http://unite.unity3d.com>



谢谢

高川 | gaochuan@unity3d.com