Perspective of Immersive Media (From Samsung VR Ecosystem)

MPEG121 WS

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GearVR

7M+ units shipped

#1 Mobile VR Platform

➔ Enjoying VR with Movies, Games
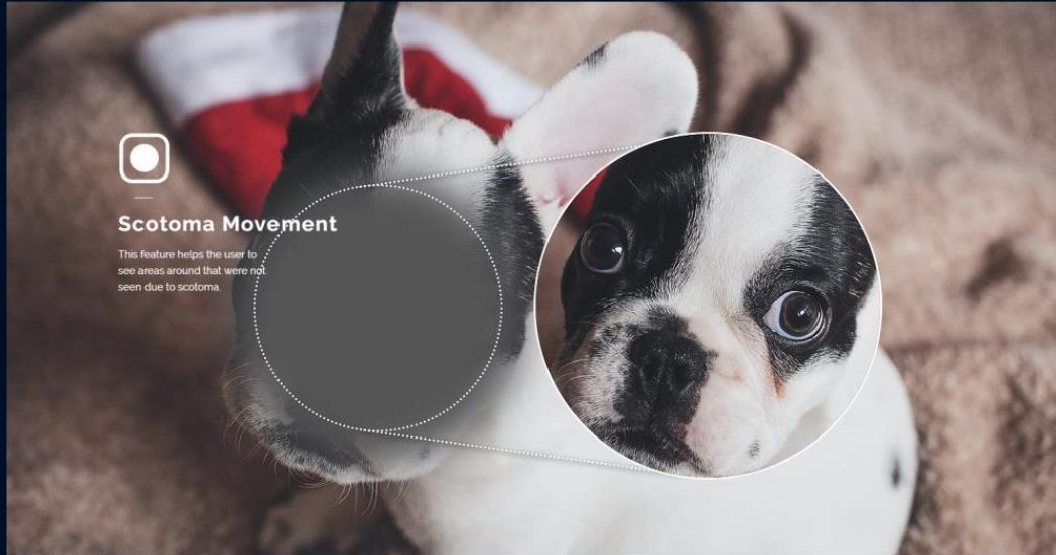   and 360 Live Broadcasting etc.

Strong Ecosystem

- Content Creators, Service Providers, Consumers etc.

Over 1000 apps for GearVR

Changing People's Lives

- Relúmĭno
  - Visual aid application working with Gear VR & Galaxy mobile
  - Launched on August for free, to help 240 million of Visually Impaired people
  - Lower price (Gear VR:~$100) compare to thousands dollar of competitive.
- ➔ Demo at CES18

Scotoma Movement

This feature helps the user to see areas around that were not seen due to scotoma.

[Visual impairment]　　　[Improved vision by Relumino]　　　[Original vision]

What makes a great VR system?

Wide & Vivid True Immersion

WQHD Super AMOLED Display
101° FOV
Optics
Chromatic Aberration Correction

Optics | Display | User's view | Before | After

Head Tracking

Persistent tracking at
1KHz sampling rate
from Gear VR sensors

→ Precise and smooth 360° Experience

3D Spatial Sound

Immersive VR Experience

Minimized Motion Sickness

AMOLED Low Persistence technology

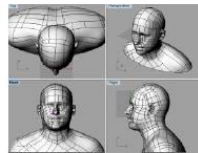High Persistence | VS | Low Persistence

MTP Latency <20ms
High Frame Rate 60fps
Sensor Fusion + Sensor Calibration
→ Decreased Motion Blur & Judder

Ergonomic Design

Reduced Perceived Weight | Fitting Various Face Shapes | Soft Suede Face Foam

Comfort

Future of Virtual Reality

- Based on the future technologies, we can experience the following features;

motion
tracking

untethered

touch

holodeck
experience

Samsung HMD Odyssey

- MS Windows MR Platform
- Mixed Reality Experience, 6DoF, 110° FOV

360 Content Ecosystem

The 360 Video Ecosystem

- To give the best experience, all components should be well connected, and operated/supported organically.

Capture

Audience

360°

Creators

Consumption

Distribution

SAMSUNG VR

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Connected Thinking

VR Live Pass

✓ **360 Live broadcast the most exciting Sports & Music events**

    ✓ **UFC 212, June 3rd**

    ✓ **X-Games(Minneapolis), July 13~16th**

    ✓ **Coldplay music concert, August 17th**

    ✓ **Replays available in Samsung VR**

UFC

X GAMES
MINNEAPOLIS

LIVE NATION

ALDO vs HOLLOWAY
Unframed
Streaming Live June 3rd
on SAMSUNG VR

Gear VR

UFC 212

XGAMES
Skateboard Vert Final
Live streaming July 13 5:45PM CT/6:45 PM ET
Available only on Samsung VR

COLDPLAY
Unframed
Watch Coldplay live with Gear VR
on August 17th

360 Round

- Capturing Device

Best 360 contents	Design Excellence	Durability & Manageability
✓ The Best quality, 4K 3D ✓ Low Latency ✓ Real-Time preview / capturing ✓ 1 Step Stitching ✓ Variable Edit Functions	✓ 17 cameras / 8 Stereo cameras ✓ Unibody Design ✓ Compact Design	✓ Water & Dust Resistance (IP65) ✓ Expandability ✓ PC Controller / Viewer

Gear360

- **Capturing Device**

LIVE Broadcast

✓ 4K 360 Video
✓ Social Live on Mobile & PC
✓ Easy VR Contents Creation
✓ Wide Smartphone Compatibility

SW upgrade for Re-launching

- 360 Photo/Video sharing via Samsung Cloud
- iOS 11 compatible (HEVC Codec support)
- Hybrid Image Stabilization
- SDK for Android & iOS

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Gear360 Camera SDK

Directly control Gear 360 from your app

Gear 360 SDK

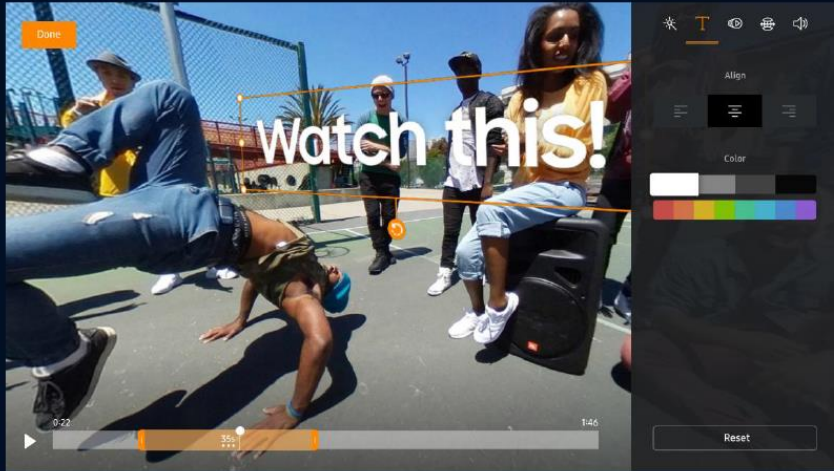|	
Connection /Device information / Device settings	Camera settings
Start preview / Take a photo / Record a video	Start live broadcast / Image & video file list

+

Your application

Cloud Tools for Creators
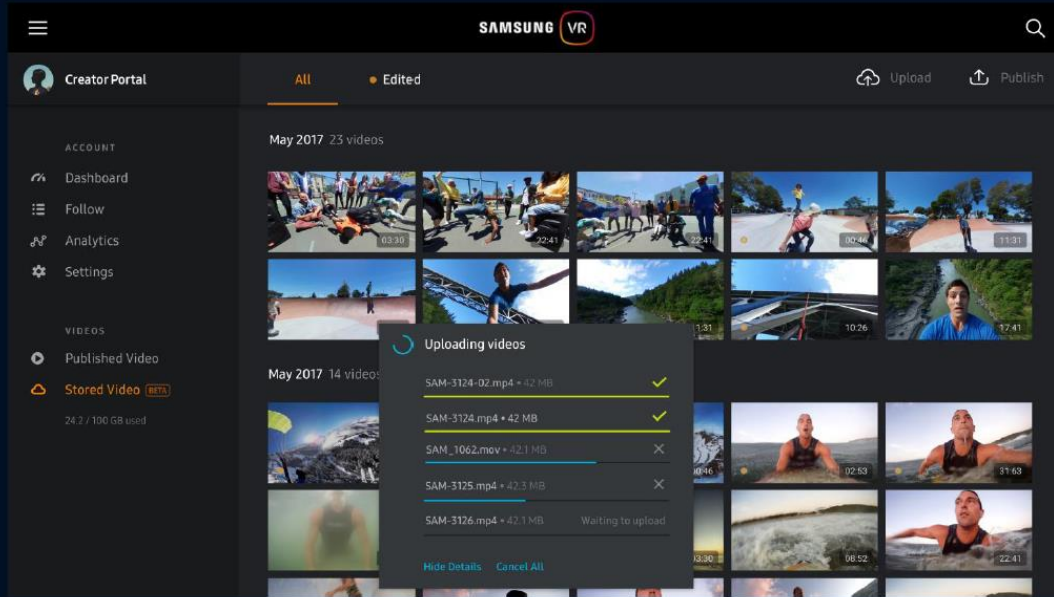
✓ **Cloud Storage**

✓ **Cloud Editing**

✓ **Stabilization**

✓ **Analytics**

✓ **4K Live Streaming**

Enhancing Your 360 Contents on Cloud

Before   After

Cloud Editing   **Video Stabilization**
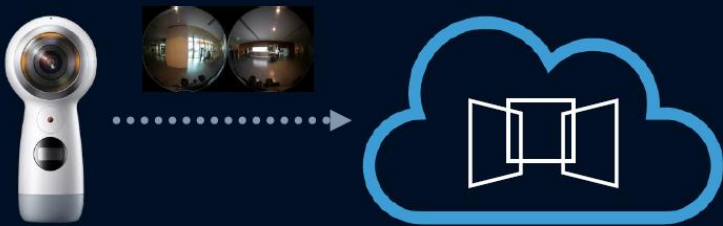
Cloud Stitching for 4K 360 live streaming

VR

✓ **Cloud Stitching**
    ✓ Introduction of GPU Cloud Service
    ✓ GPU optimization

2K   **4K**

COFFEENIE CAFE

Software and Services

Software and Services

Samsung Internet for Gear VR

Samsung VR Service

Samsung Gallery VR

Samsung PhoneCast VR

Samsung Internet for GearVR

Navigate the sea of internet contents in more intuitive and immersive way


- ✓ Optimized Web Browsing for Gear VR
- ✓ Support all types of videos on the web
- ✓ Featured Media
- ✓ WebVR support

WebVR Support

WebVR is an API that provides access to input and output capabilities commonly associated with Virtual Reality hardware like the Samsung Gear VR, Google's Daydream, the Oculus Rift, the HTC Vive, and Windows Mixed Reality headsets. More simply put, it lets you create Virtual Reality web sites that you can view in a VR headset.
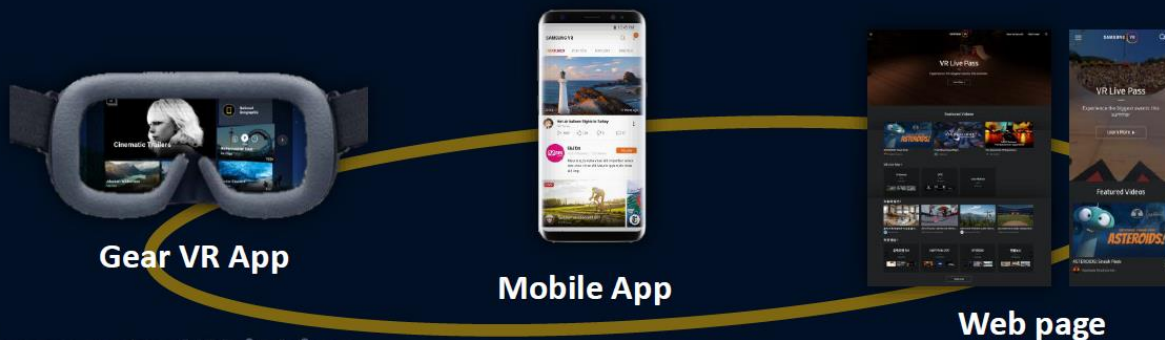
WebVR Frameworks
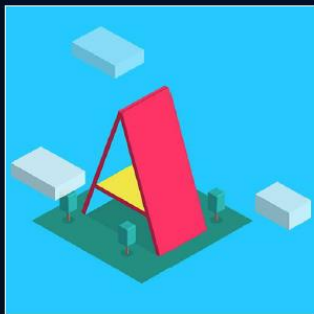
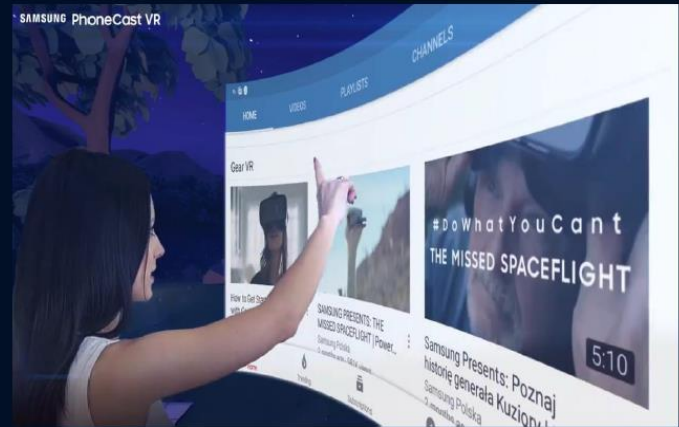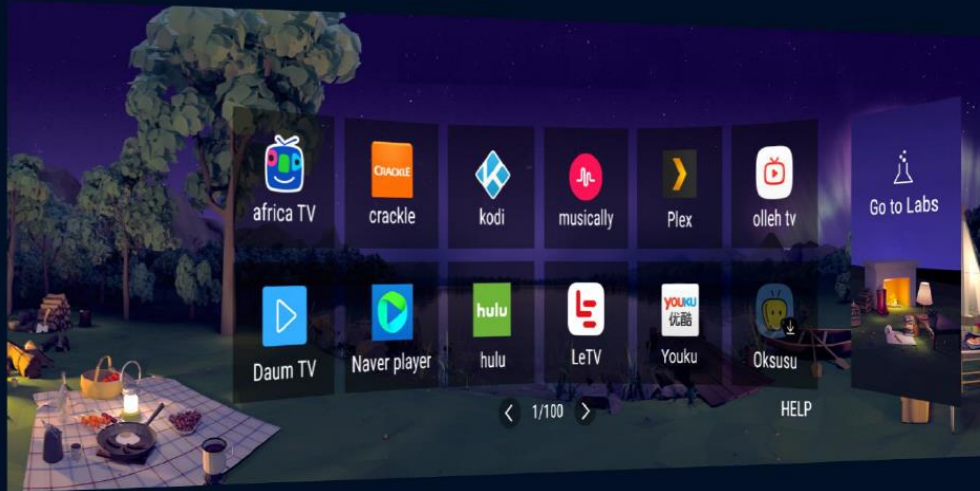**A-Frame**

React VR

X3DOM

Samsung VR Service

✓ **360° and Immersive Video** - A premium virtual reality video service

✓ **Ever-expanding library** - Over 10K high-quality videos

✓ **Premier partners** - Joint collaboration with top content creators and brands (NYT, Hearst and others)

✓ **Top Ranked** - One of the most used video apps in GearVR

✓ **Multiple Platform** - Support Gear VR/Mobile app and web page(www.samsungvr.com)

Gear VR App

Mobile App

Web page

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Samsung PhoneCast VR

Transplant the mobile phone experience to the VR environment

➔ Feel the immersive experience as if you are in 3D theater.

GearVR framework (GVRf)

Lightweight, powerful, open source rendering engine with a Java interface for developing mobile VR games and applications

- ✓ Simple
- ✓ Powerful
- ✓ Optimized for mobile
- ✓ Open source
- ✓ Platform agnostic

WebView

Camera

Video

Summary

- Introduced Samsung's Products, Ecosystem and Services/Software of VR.

- Now, Samsung globally has been leading and establishing for VR E2E Ecosystem as 1st ver. Immersive media.

- In near future, High quality Immersive media and Volumetric contents such as AR, MR, Hologram will be the main content for devices.

- For that, E2E Ecosystem technologies are essential for creating markets and the end-users benefits, thus Samsung does hope MPEG will deliver the core technologies on time for the Immersive media.

Thank you!!!