Perspective of Immersive Media (From Samsung VR Ecosystem)

MPEG121 WS

KyungGeun Lee
Media Standard Lab.
Samsung Electronics

2018.1.24
Table of Contents

• GearVR and Next Steps
• 360 Contents Ecosystem
• Software and Services
• Summary
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

- Relúmíno
  - 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
What makes a great VR system?

**Wide & Vivid True Immersion**
- WQHD Super AMOLED Display
- 101° FOV
- Optics
- Chromatic Aberration Correction

**Head Tracking**
- Persistent tracking at 1KHz sampling rate from Gear VR sensors

→ Precise and smooth 360° Experience

**3D Spatial Sound**

**Minimized Motion Sickness**
- AMOLED Low Persistence technology
  - VS
  - 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

**Immersive VR Experience**

**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.
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
360 Round

- Capturing Device

**Best 360 contents**
- The Best quality, 4K 3D
- Low Latency
- Real-Time preview / capturing
- 1 Step Stitching
- Variable Edit Functions

**Design Excellence**
- 17 cameras / 8 Stereo cameras
- Unibody Design
- Compact Design

**Durability & Manageability**
- Water & Dust Resistance (IP65)
- Expandability
- PC Controller / Viewer
Gear360

- Capturing Device

- 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

LIVE Broadcast
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

Cloud Editing

Video Stabilization
Cloud Stitching for 4K 360 live streaming

Cloud Stitching

- Introduction of GPU Cloud Service
- GPU optimization
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)
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
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!!!