

방송과 AR의 접목



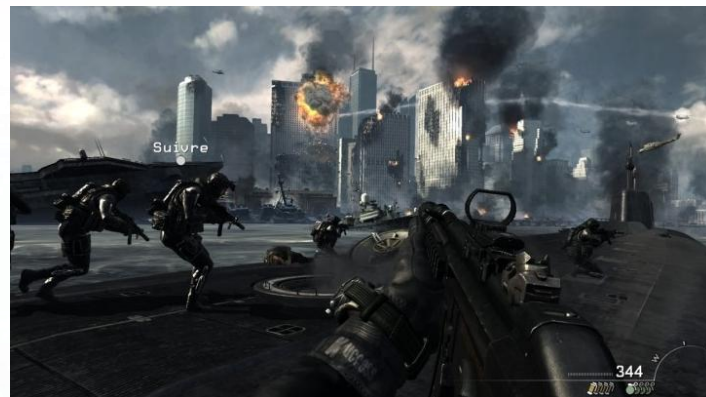
2012. 10. 24.

최범석

스마트TV서비스연구팀
차세대스마트TV연구단

가상현실과 증강현실

가상현실 – not real



증강현실 – half real?



● 증강현실 광고



Ref: https://www.youtube.com/watch?v=rFuUFQIdpk&feature=player_embedded

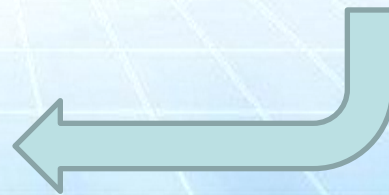
● 증강현실 교육

A chance for everyone

See BBC
Frozen Planet
AR here!

Ref: <http://vimeo.com/appshaker/natgeo>

증강현실 장난감



Ref: http://www.smart-on-ict.net/sub_02/sub_01.php?m=01

증강방송

증강현실 + 방송서비스

□ 실감형, 몰입형 콘텐츠를 방송 프로그램에 자연스럽게 융합시켜 줌으로써 이용자에게 증강된 정보 및 정보 선택권을 제공하는 방송 서비스 기술



<classic augmented broadcasting service examples>

시점의 제약

- ❑ One source multi user
- ❑ 일반적으로 고정 디바이스



H/W의 제약

- ❑ 증강현실에 필요한 센서(GPS, motion) 부재
- ❑ Low CPU/GPU power



인터페이스의 제약

- ❑ Camera, touch screen 등



양질의 콘텐츠

- ❑ 고화질 콘텐츠
- ❑ 전문적인 제작 및 다양한 콘텐츠



H/W의 장점

- ❑ 넓은 스크린
- ❑ Smart TV with network



인터페이스의 발전

- ❑ Motion remote control
- ❑ Smart TV application 연동



증강방송 Use Case 1

증강영역 기반 서비스



<Original Broadcasting Content>



Scenario
Plan



<Augmented Broadcasting Content>

Augmentation
Region
Definition

Replace by
preferred content



(Simple broadcasting)



(Augmentation region define)



(AR broadcasting)

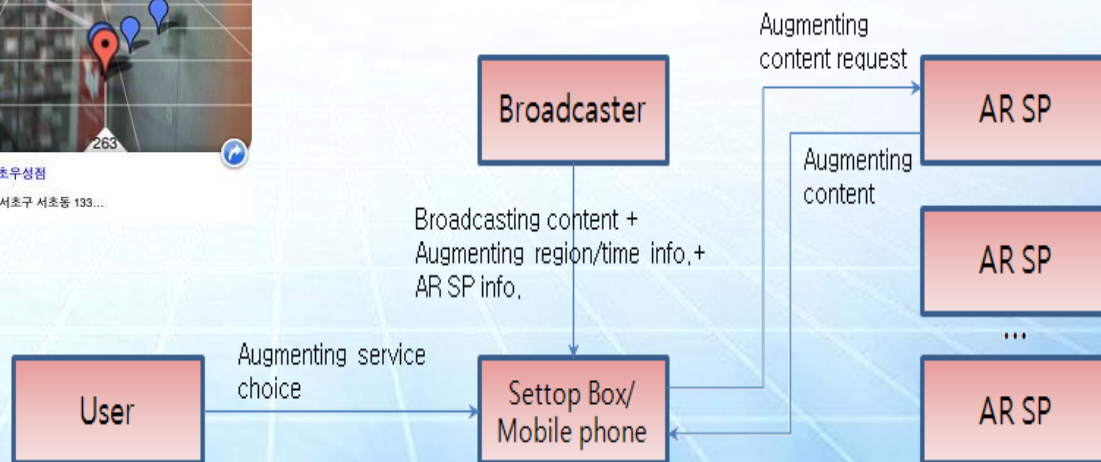
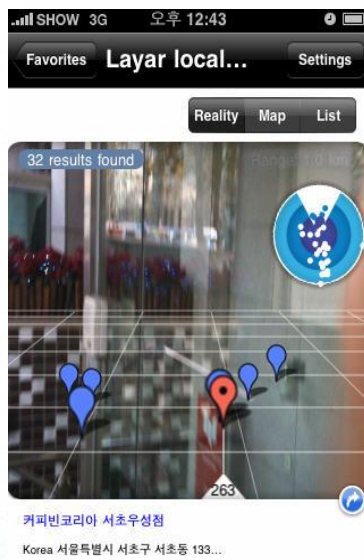
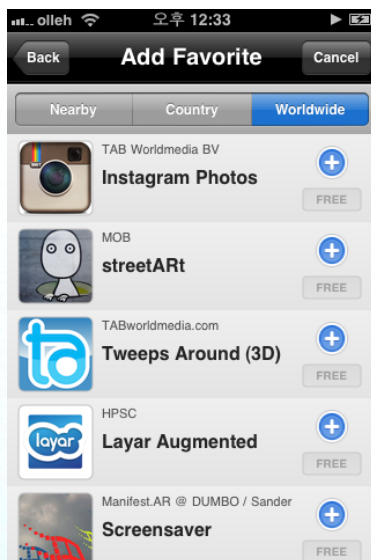
● 증강객체 컨트롤



Interactive broadcasting with manipulation of the 3D object. A user can manipulate 3D object on TV screen by using a second-device.

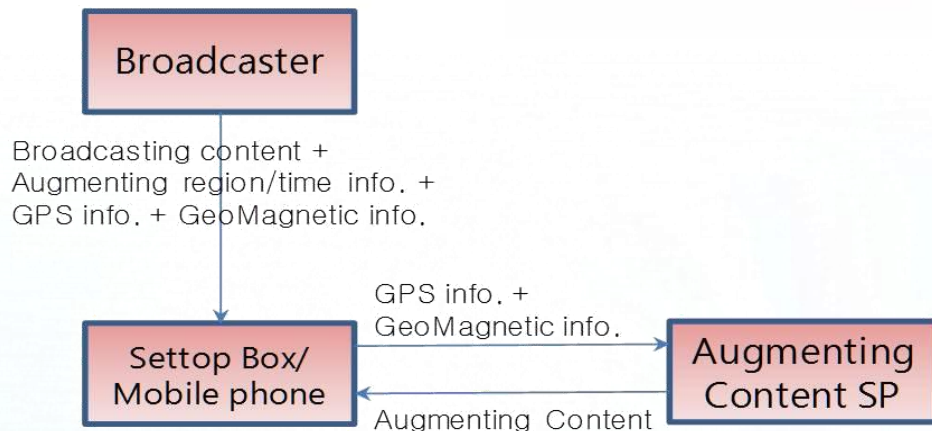
증강방송 Use Case 3

AR 서비스 제공자 선택



증강방송 Use Case 4

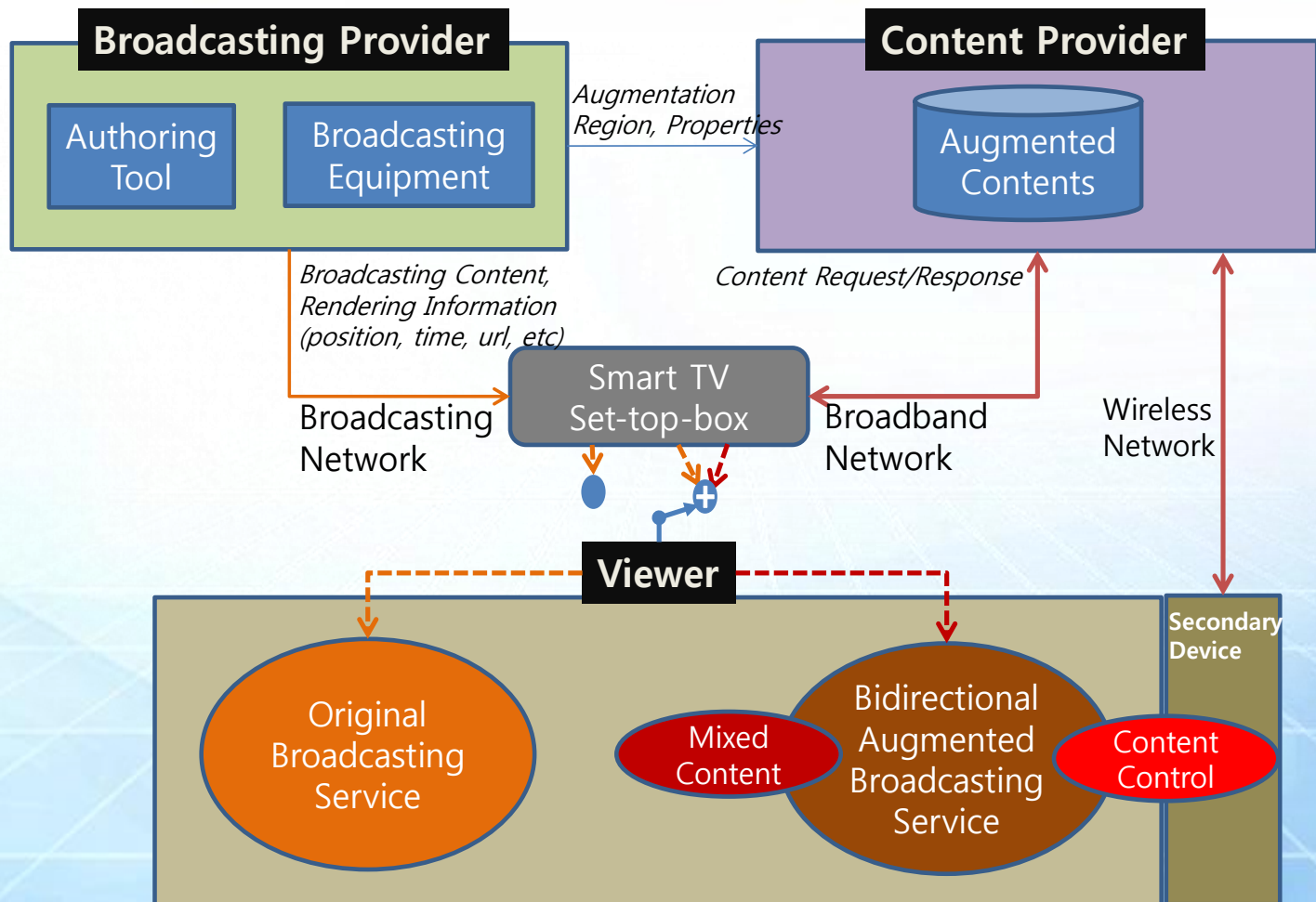
● 위치정보 기반



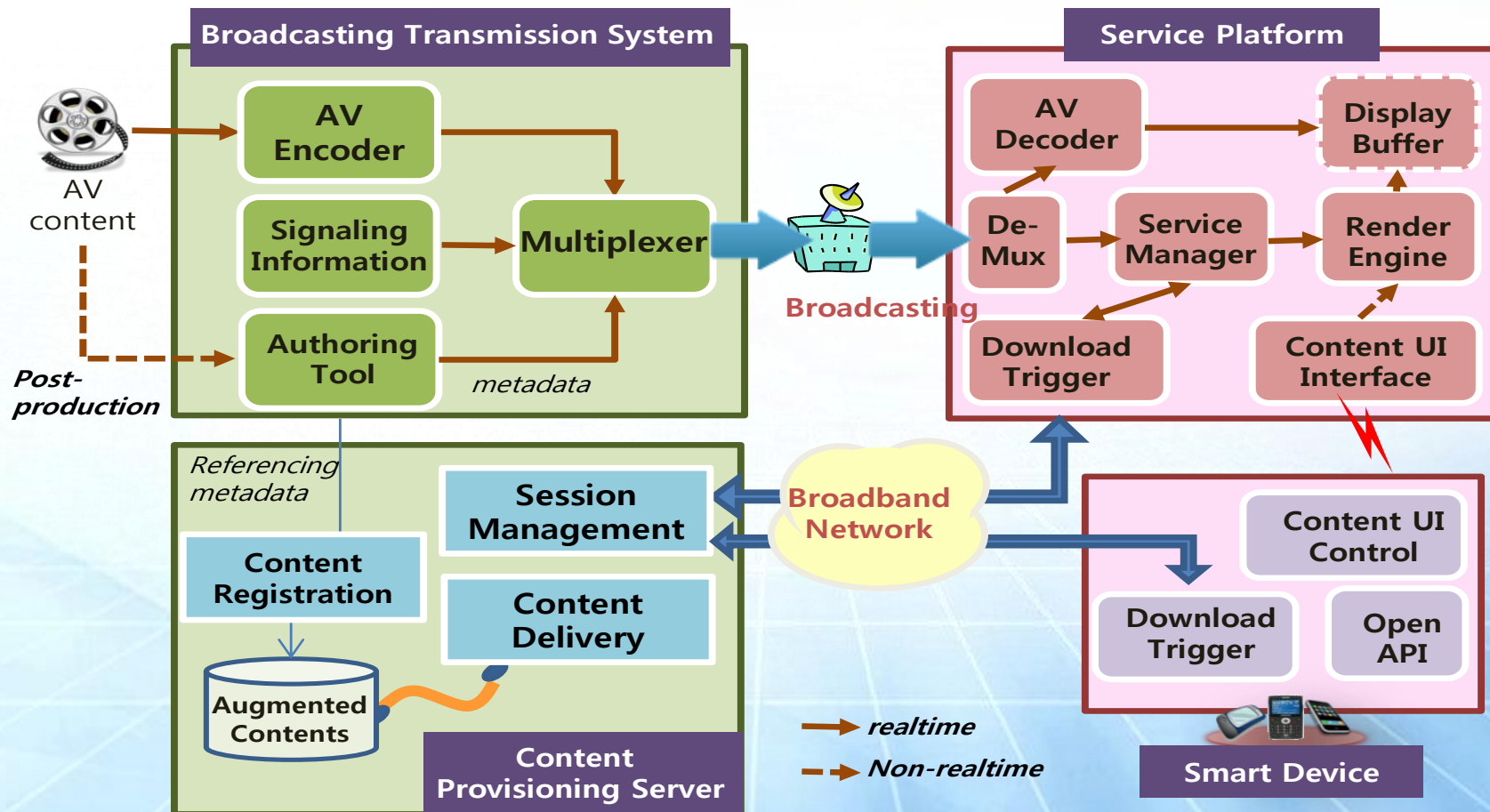
Location based broadcasts.
Golf or tour broadcasting
program can give viewers the
additional information which
is acquired by location based
sensors.



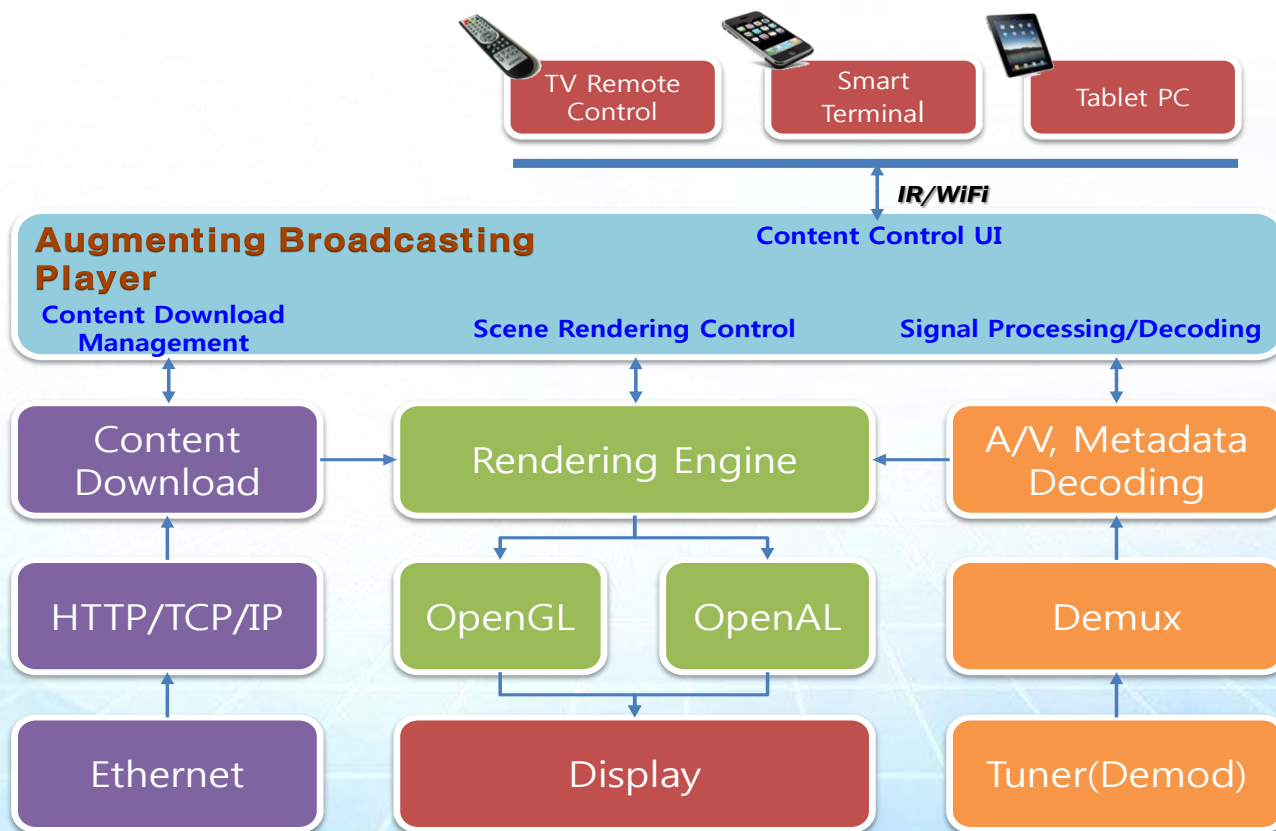
서비스 요소



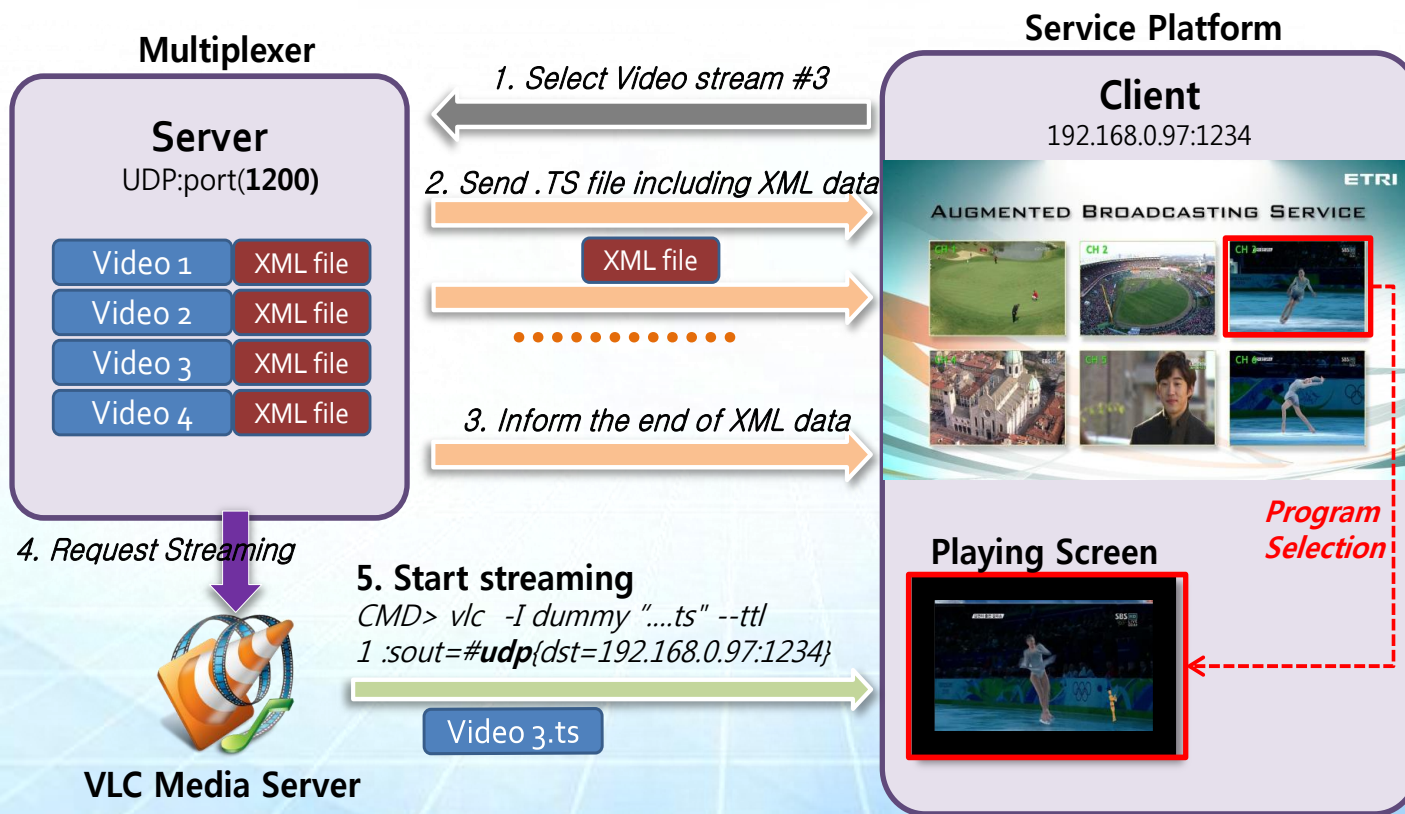
시스템 요소



PC based 플랫폼 구조

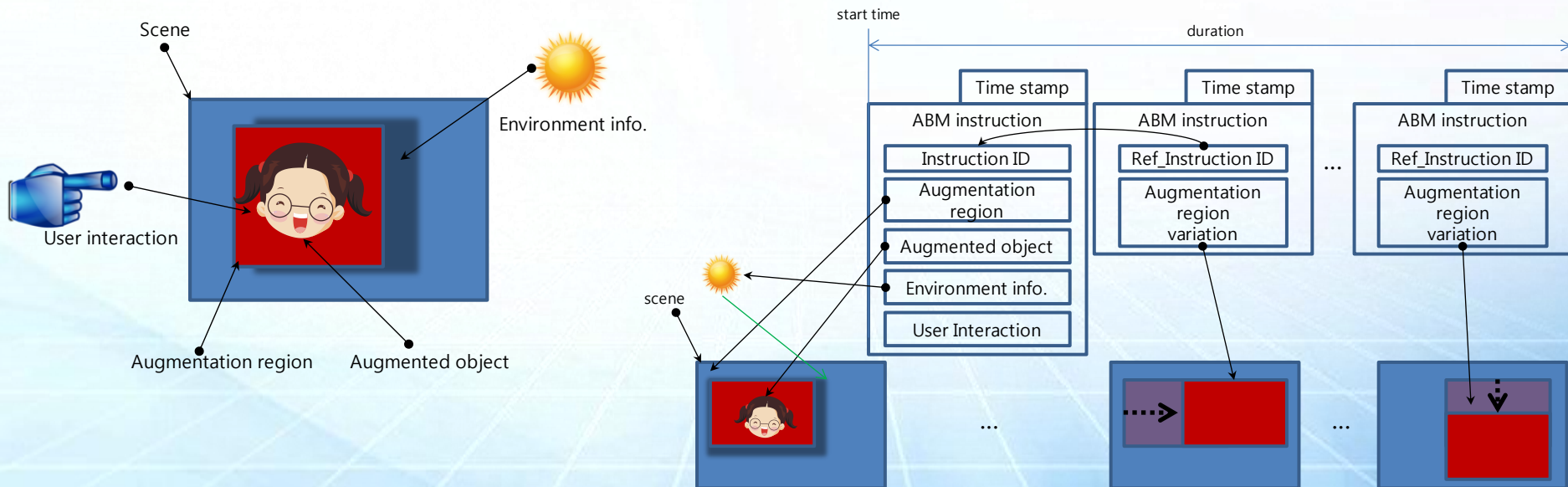


서버-클라이언트 전송구조



증강방송 메타데이터란?

- 방송 콘텐츠에 증강 콘텐츠를 오버레이하기 위해 필요한 정보(증강영역, 표현방법, 증강 콘텐츠 타입 및 속성, 동기화 정보 등)를 포함하는 XML 기반의 메타데이터

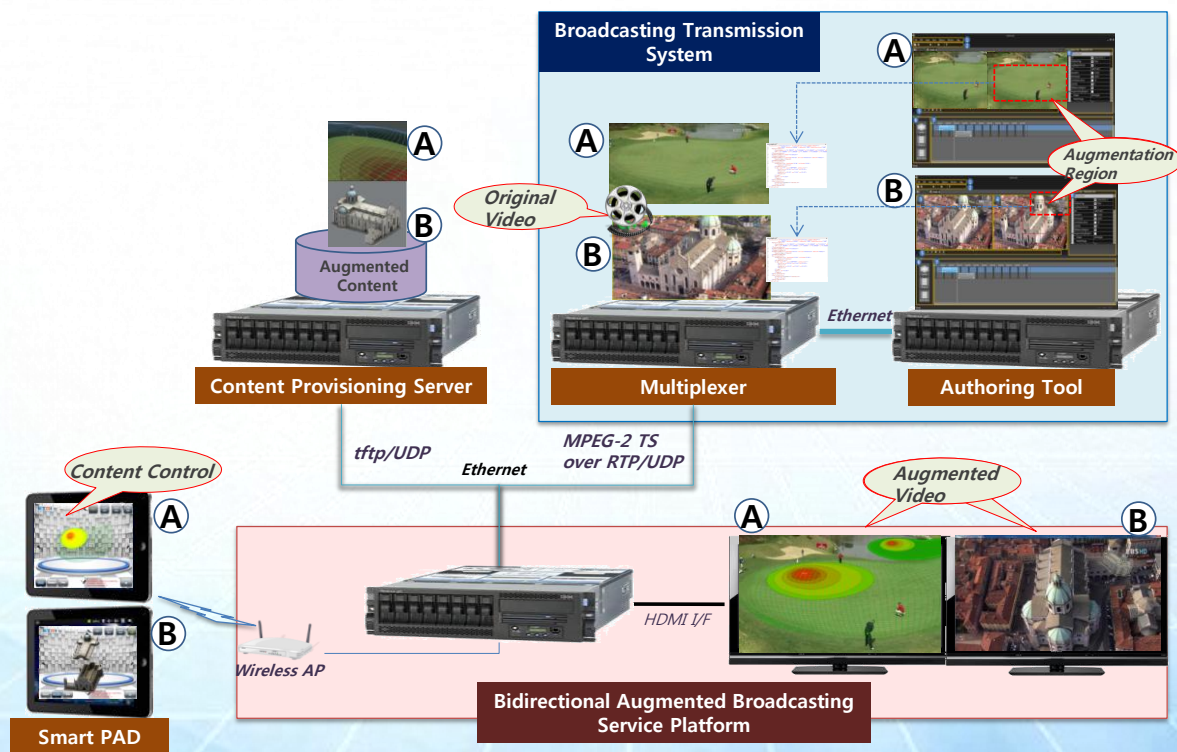


- 증강방송 메타데이터는 전송에 용이해야 함
- 방송채널 bandwidth의 효율성을 고려해야 함



XML generation from attributes

증강방송 테스트 플랫폼



표준화 동향

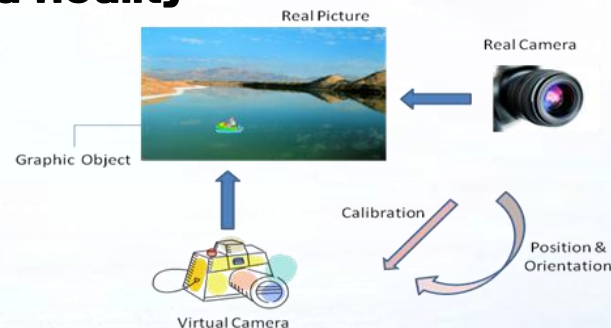
Goal

- Compile existing MPEG technologies and add new tools that will enable applications and services for Augmented Reality

Related Standard

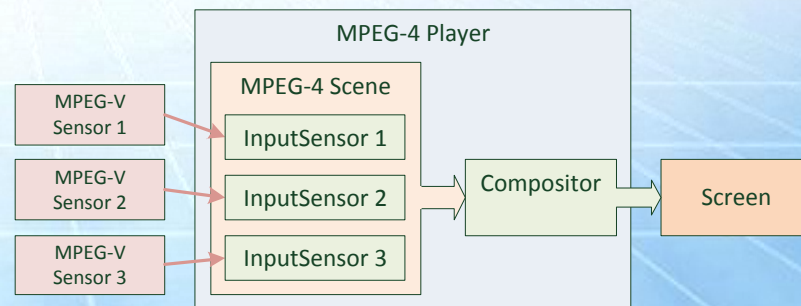
- MPEG-4 BIFS
- MPEG-V Part 5 (Sensor descriptions)

<Simplified illustration of the AR principle>



Target Dates

- WD: 2012-02
- CD: 2012-05 (two months ballot)
- DIS: 2012-07
- FDIS: 2013-01 or 2013-04 (only if there is a negative vote on DIS)

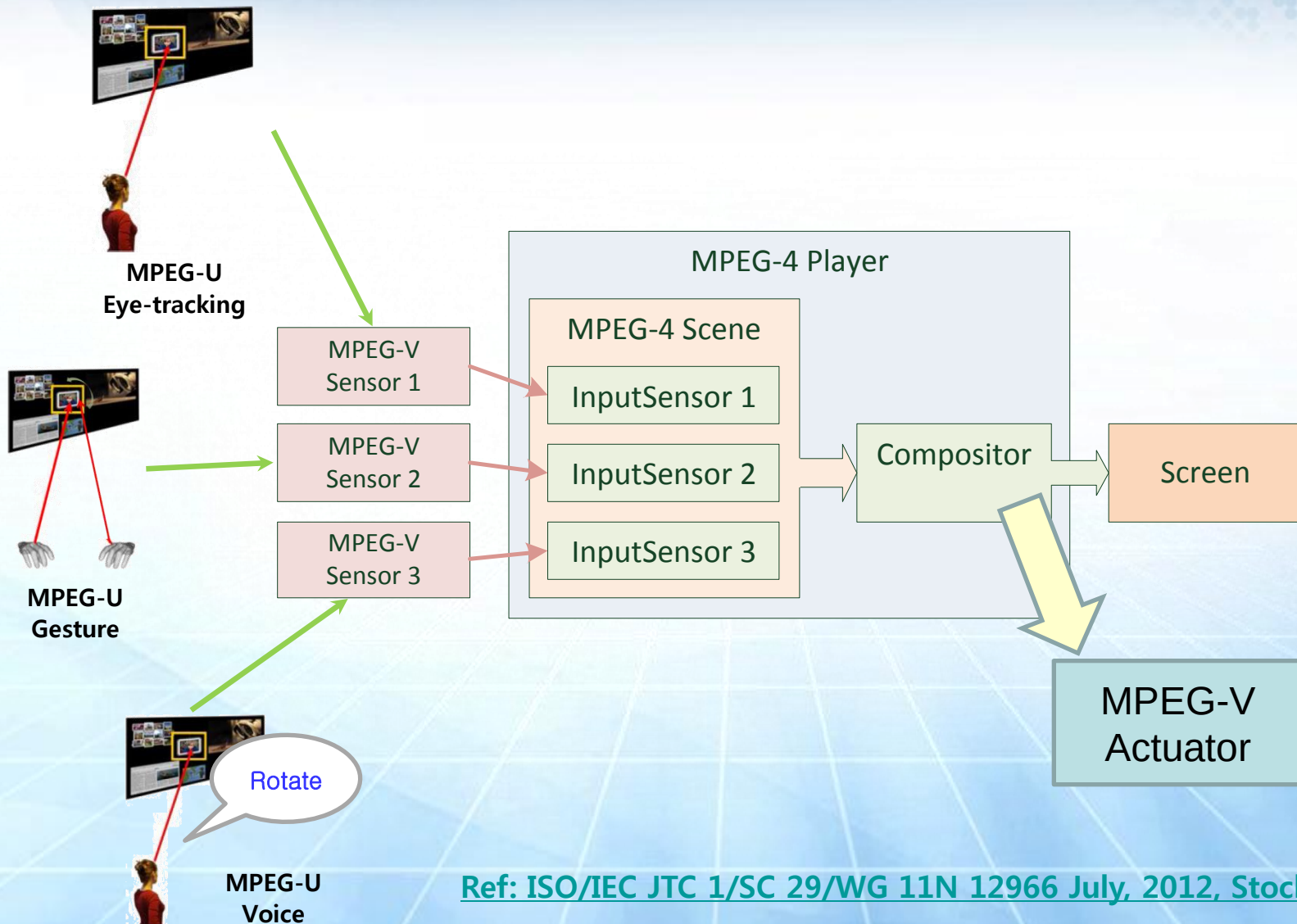


<Accessing MPEG-V sensor data>

Collaborative Work

- ARRM is based on work coordinated by AR Standards and contributed by several organizations and companies;
- Collaboration with **SC24**
 - Face to face meetings and remote communications
 - Experts from each working group participating in meetings of the other
- Collaboration with AR Standards, **Khronos, OGC, Web3D** and **OMA**
 - By liaisons
 - Experts from all SDOs participating to AR Standards meetings
- A Trac system is supporting the activity
<http://wg11.sc29.org/trac/augmentedreality/>

MPEG ARAF 표준화 진행 방향



Ref: ISO/IEC JTC 1/SC 29/WG 11N 12966 July, 2012, Stockholm, SE

Next Generation of AR

AR with Sensory Effect

Light effect
Flash effect



Water spray
effect



Scent effect

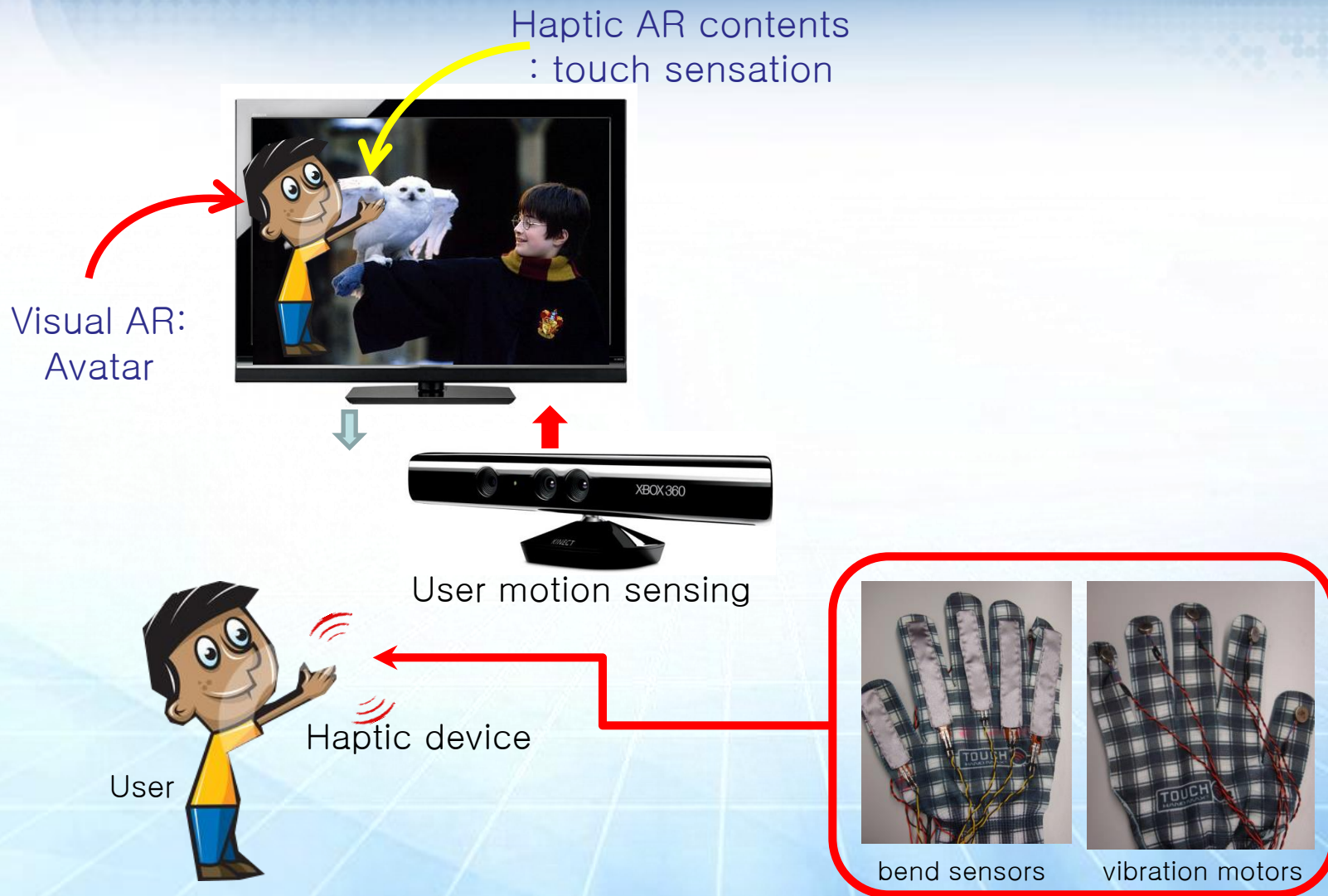


Vibration
effect



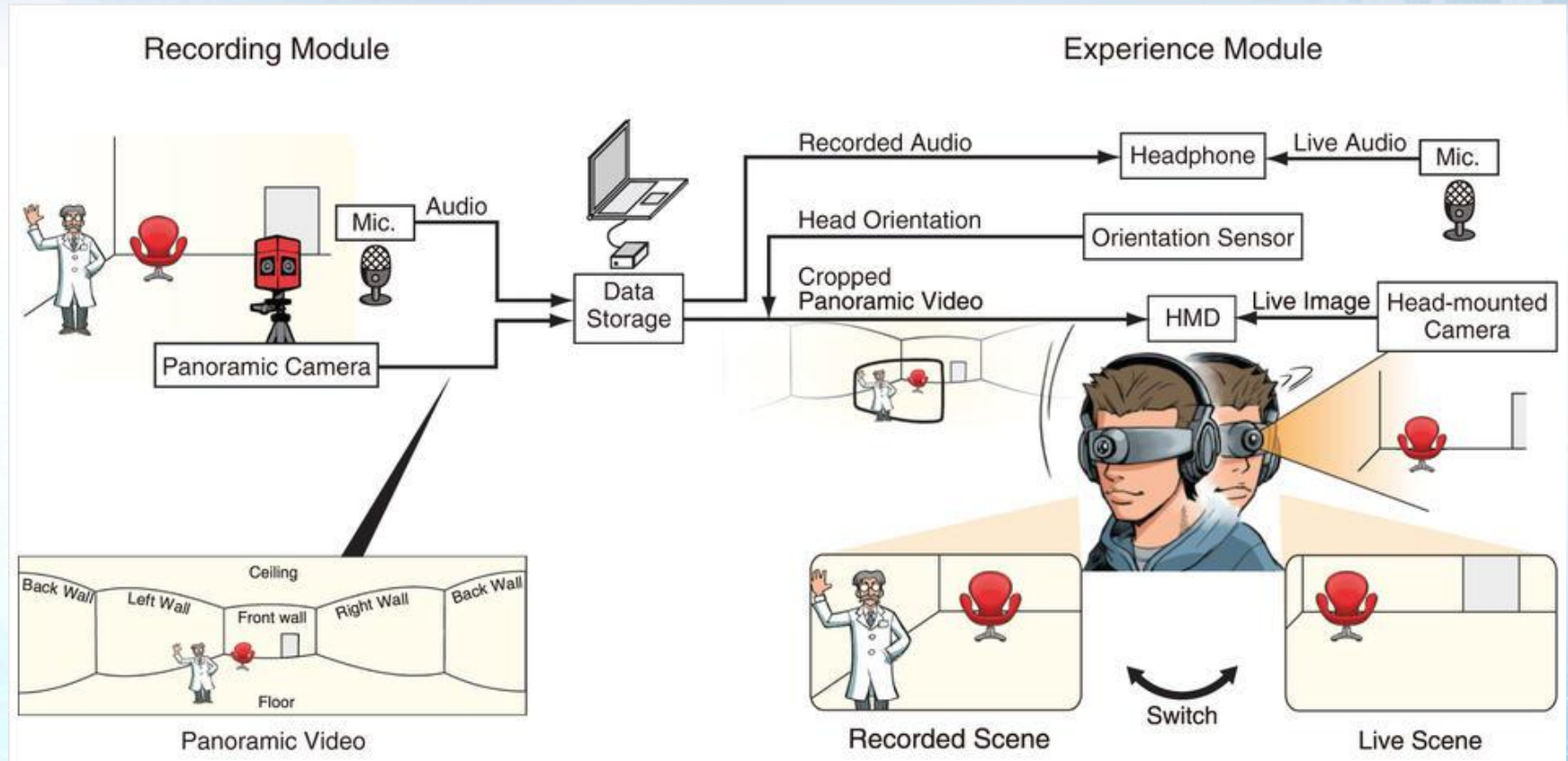
Ref: <http://www.appshaker.co.uk/>

AR with Haptic



Ref: ETRI 스마트TV서비스연구팀이 개발 중인 햅틱/모션 정합 증강방송 시스템

AR with HMD



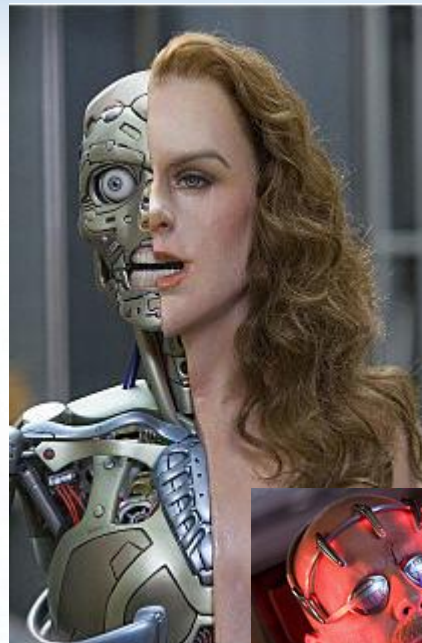
Ref: Substitutional Reality System: A Novel Experimental Platform for Experiencing Alternative Reality
Journal name: Scientific Reports Volume:2, Article number:459

AR with e-nose

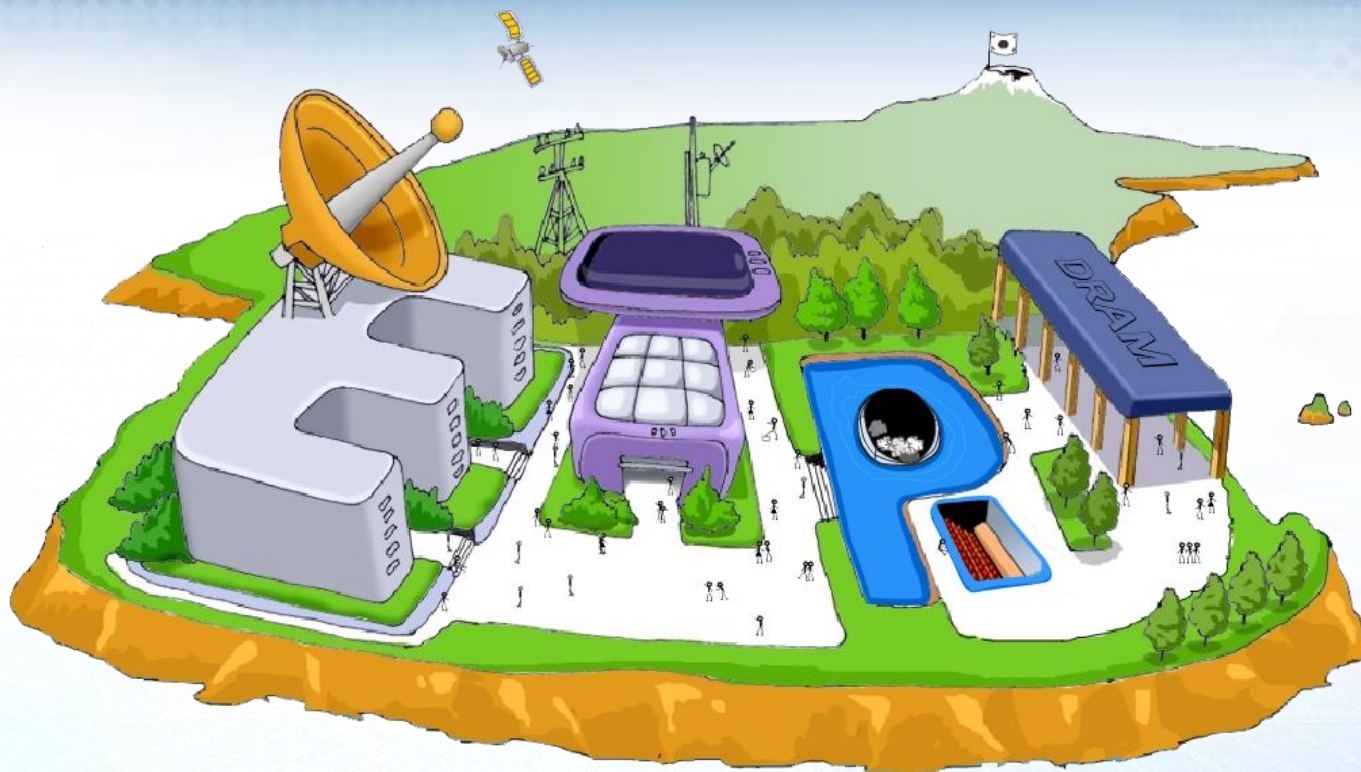


Ref: 도쿄 대학의 Tajuki Nrumi팀이 만든 이 증강현실 헤드셋

And so on...



See and act with real world through the avatar?



감사합니다