

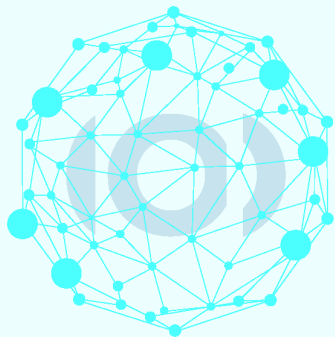
# Trends in Broadcasting Technologies

Walid Sami  
European Broadcasting Union

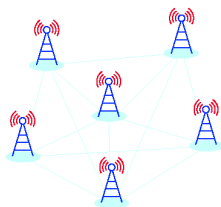
ITU-D Workshop Trends in Broadcasting Technologies  
18 March 2019

# THE EBU COMMUNITY IN NUMBERS

The European Broadcasting Union  
is the world's leading alliance  
of Public Service Media



## COMPOSED OF



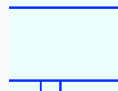
**119**  
MEMBER  
ORGANIZATIONS

IN **56**  
COUNTRIES



## OPERATING

**489**



TV CHANNELS

**720**



RADIO STATIONS

**560**



LOCAL WINDOWS



ONLINE SIMULCAST  
CHANNELS AND STATIONS

**1124**



EXCLUSIVE ONLINE  
LINEAR SERVICES

**240**

## PROVIDING CONTENT IN

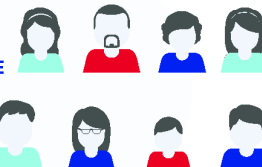


**162**  
LANGUAGES

## TO A POTENTIAL AUDIENCE OF

**1.05**

BILLION PEOPLE



**EBU**

OPERATING EUROVISION AND EURORADIO



Learn more about the EBU:  
[www.ebu.ch/about](http://www.ebu.ch/about)

EBU Media Intelligence Service 2018

Source: EBU based on Members' data

**EBU**

OPERATING EUROVISION AND EURORADIO

# I will speak about

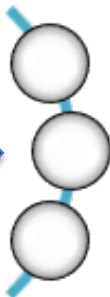
- Trends in **broadcasting distribution technologies**
  - Hybrid Broadcast Broadband TV (HBBTV)
  - DVB-I
  - 5G Broadcast
- Trends in **broadcasting production technologies**
  - UHD/HDR/HFR
  - New Generation Audio

# Distribution Models - Past

AV mediaservices

linear radio & TV

Broadcast



Terrestrial

Satellite

Cable

The audience



# Distribution Models - Current

AV mediaservices

The audience

linear radio & TV

on-demand

time shifted

hybrid

interactive

second screen

data

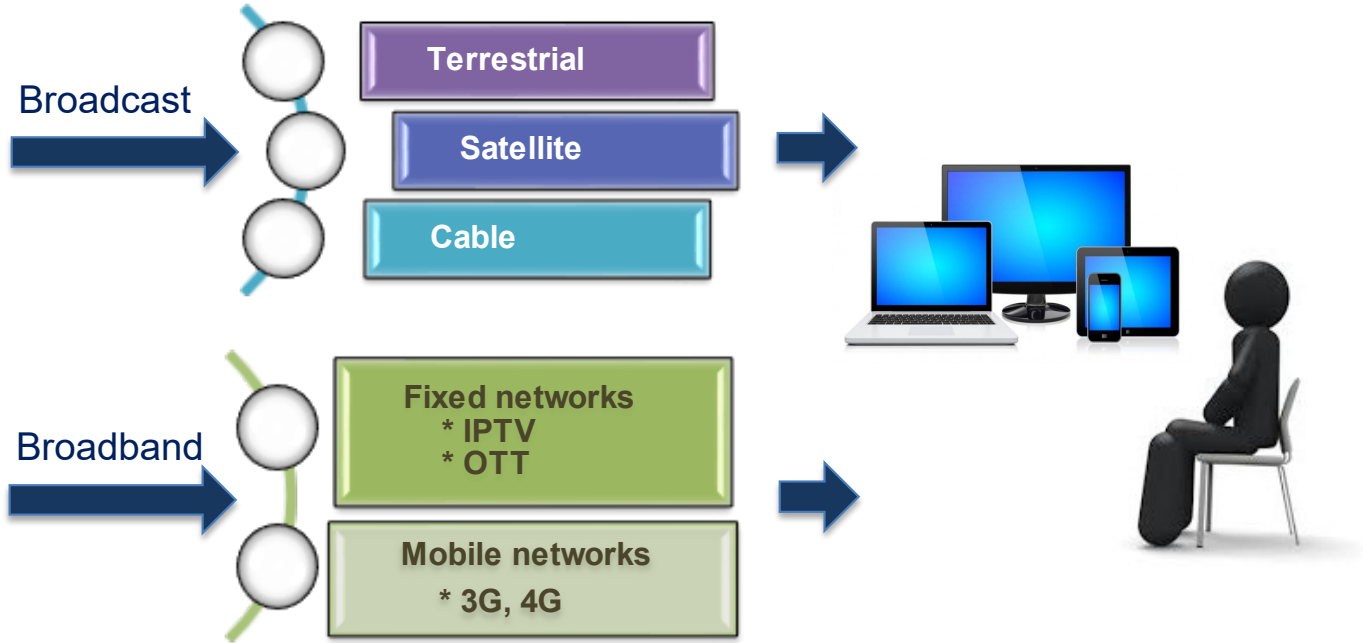
personalised

social media

cross-platform

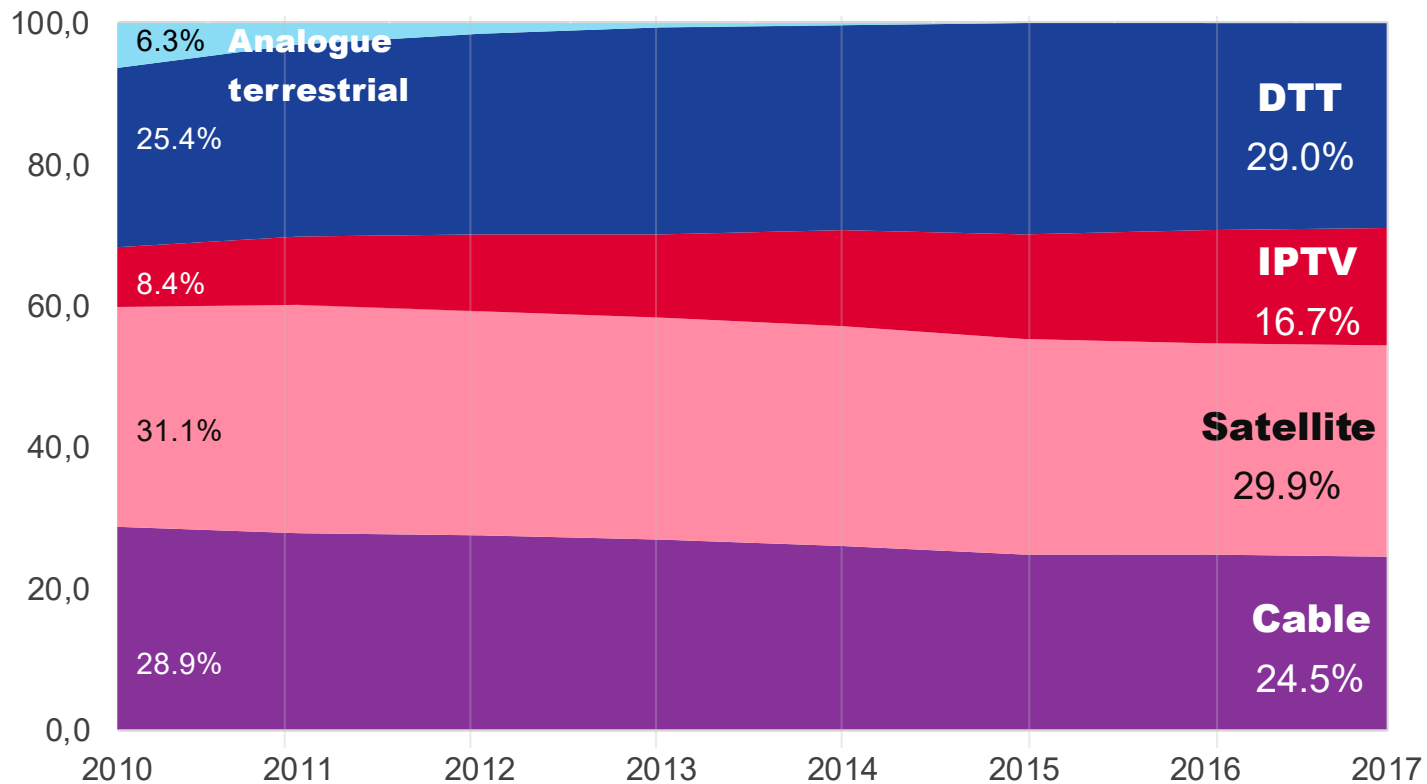
multi-view

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## TV DISTRIBUTION IN THE EU28

Primary penetration (main reception mode), in % of TV households (2010 - 2017)

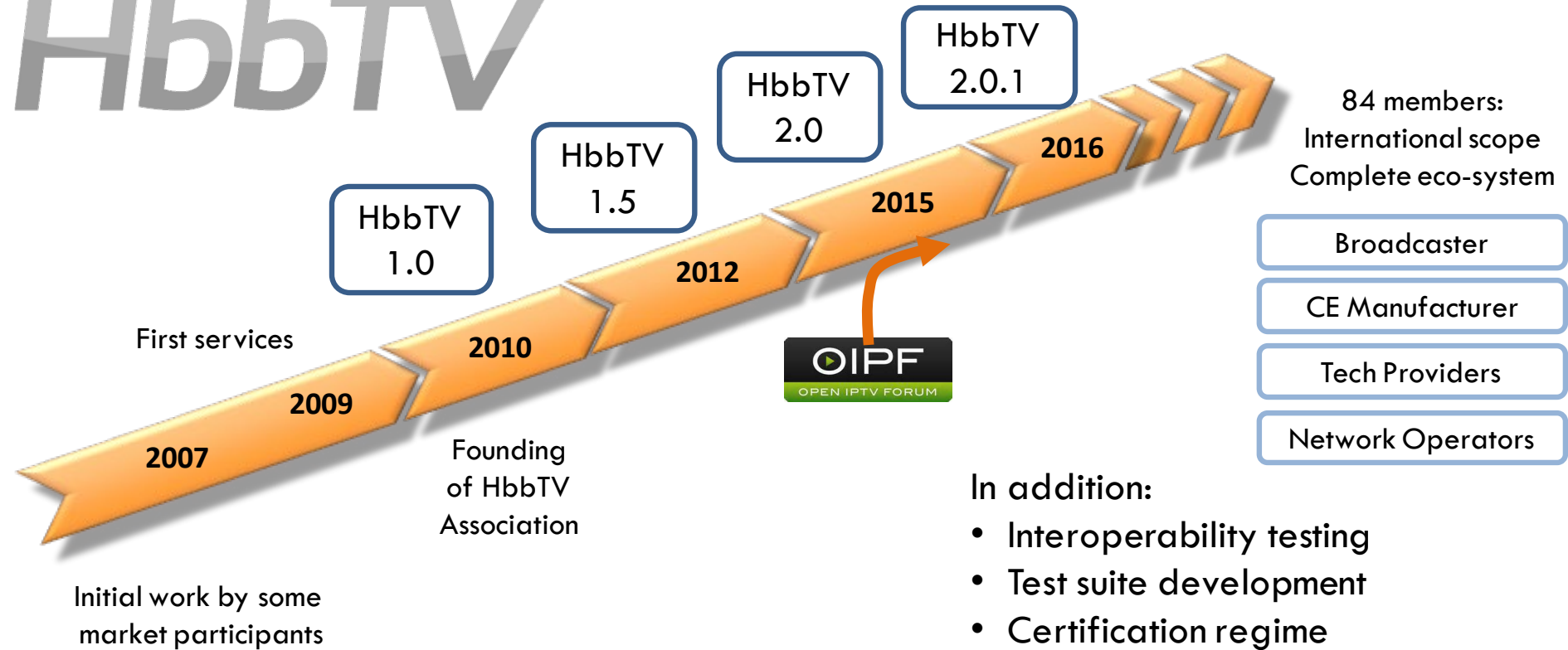


# IBB

## *Use Broadcast as portal to Broadband*

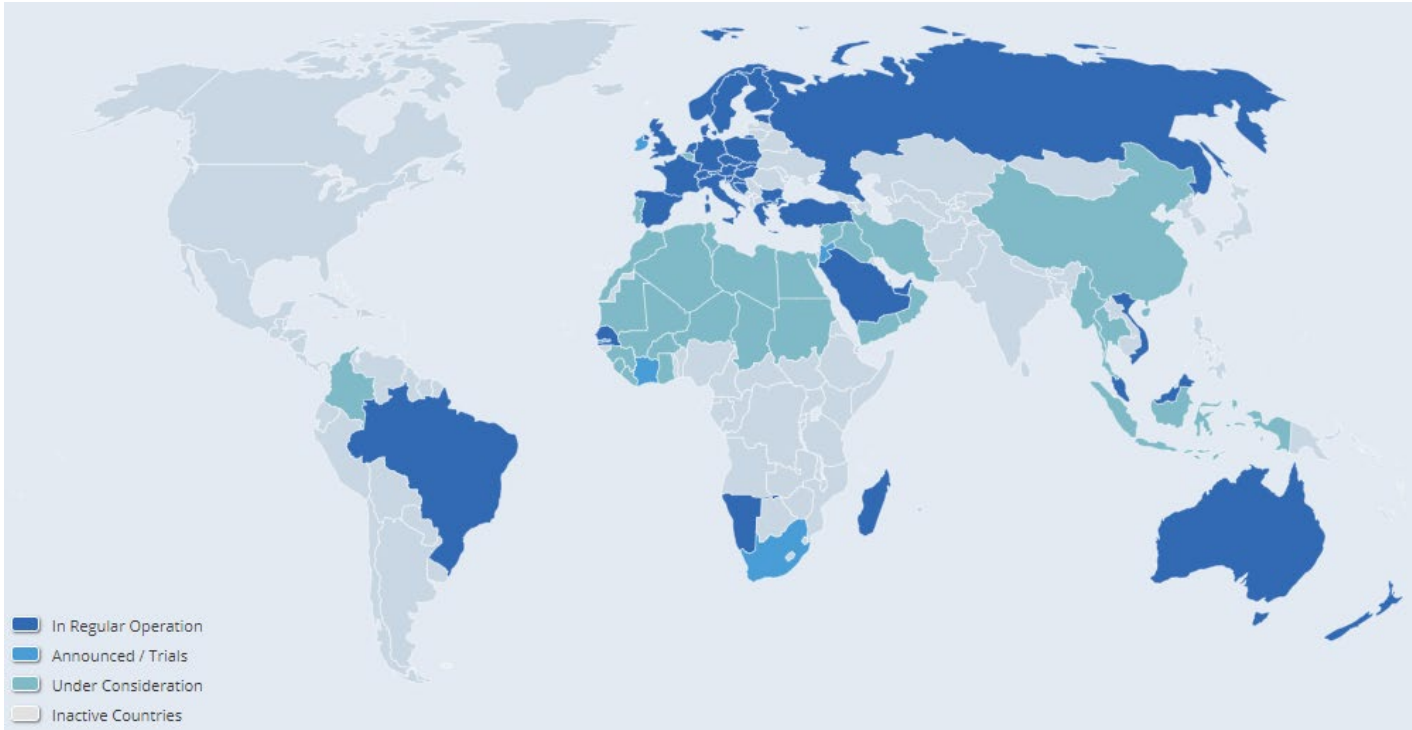
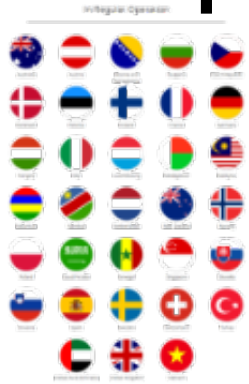
- Broadcaster distribution strategy must be hybrid!
- Linear TV alone won't captivate consumers
- Seamless Linear TV + OTT is the mid-term future

# HbbTV





# HBBTV Today - Deployments



33  
Countries

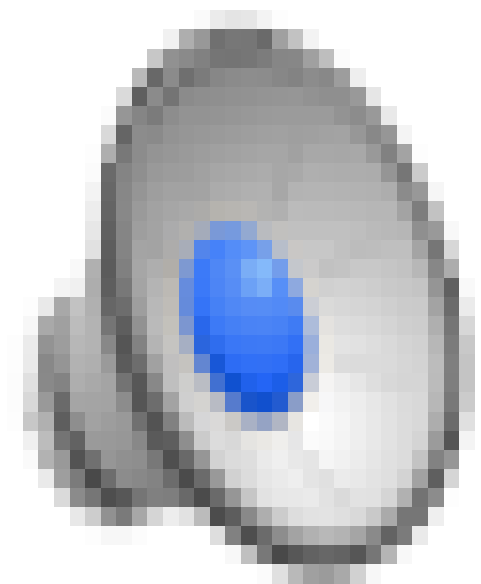
33  
Countries

300  
Apps deployed

300  
Countries

43M  
Powered devices

43M  
Powered devices



# DVB-I

*Ensure broadcasters prominence on broadband networks*

- Delivery of DVB services over the Internet (OTT), with similar user experience to DVB terrestrial, cable, satellite and IPTV systems.
- The services will be discovered and consumed by devices with basic Internet connectivity, principally a non-managed broadband connection and HTTP access.

# DVB-I conceptual architecture

How does it work?

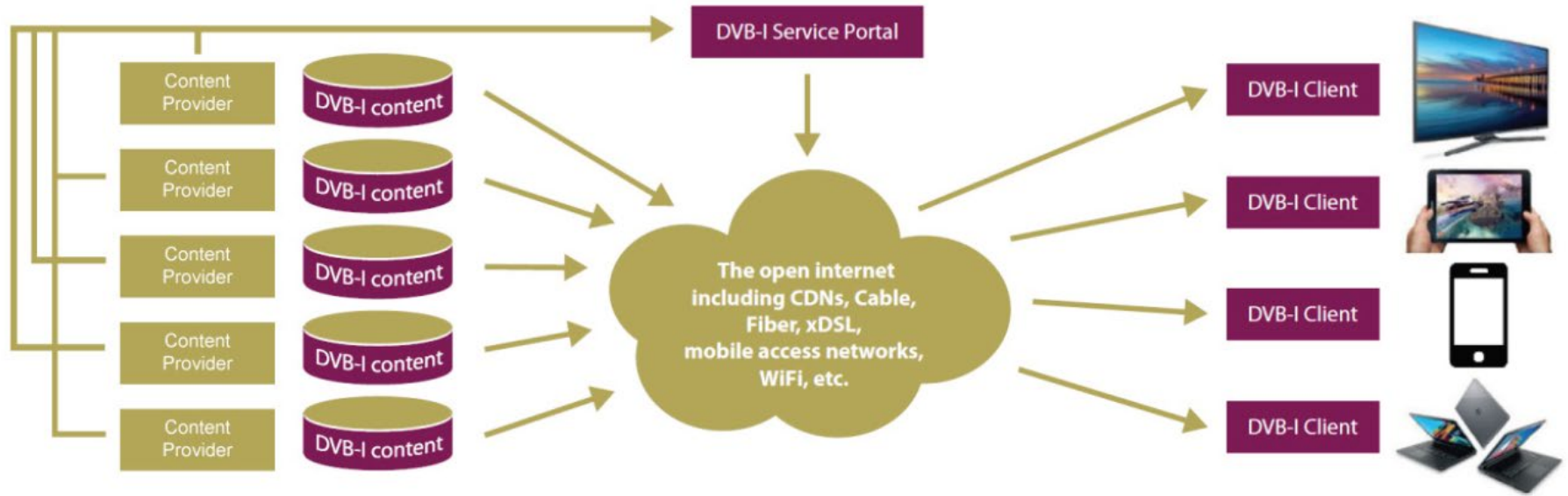


Figure 1. An early conceptual architecture for DVB-I services

# 4G/5G Broadcast

*Ensure broadcasters reach to Mobile and personal devices*

Large inter-site  
distances

Dedicated  
eMBMS carrier

Shared eMBMS  
network

Stand-alone  
eMBMS network

Free-to-air  
services

Receive-only  
devices

Transport-only  
mode

Support to  
standard TV  
formats

Standardised  
xMB interface

New  
MBMS-API

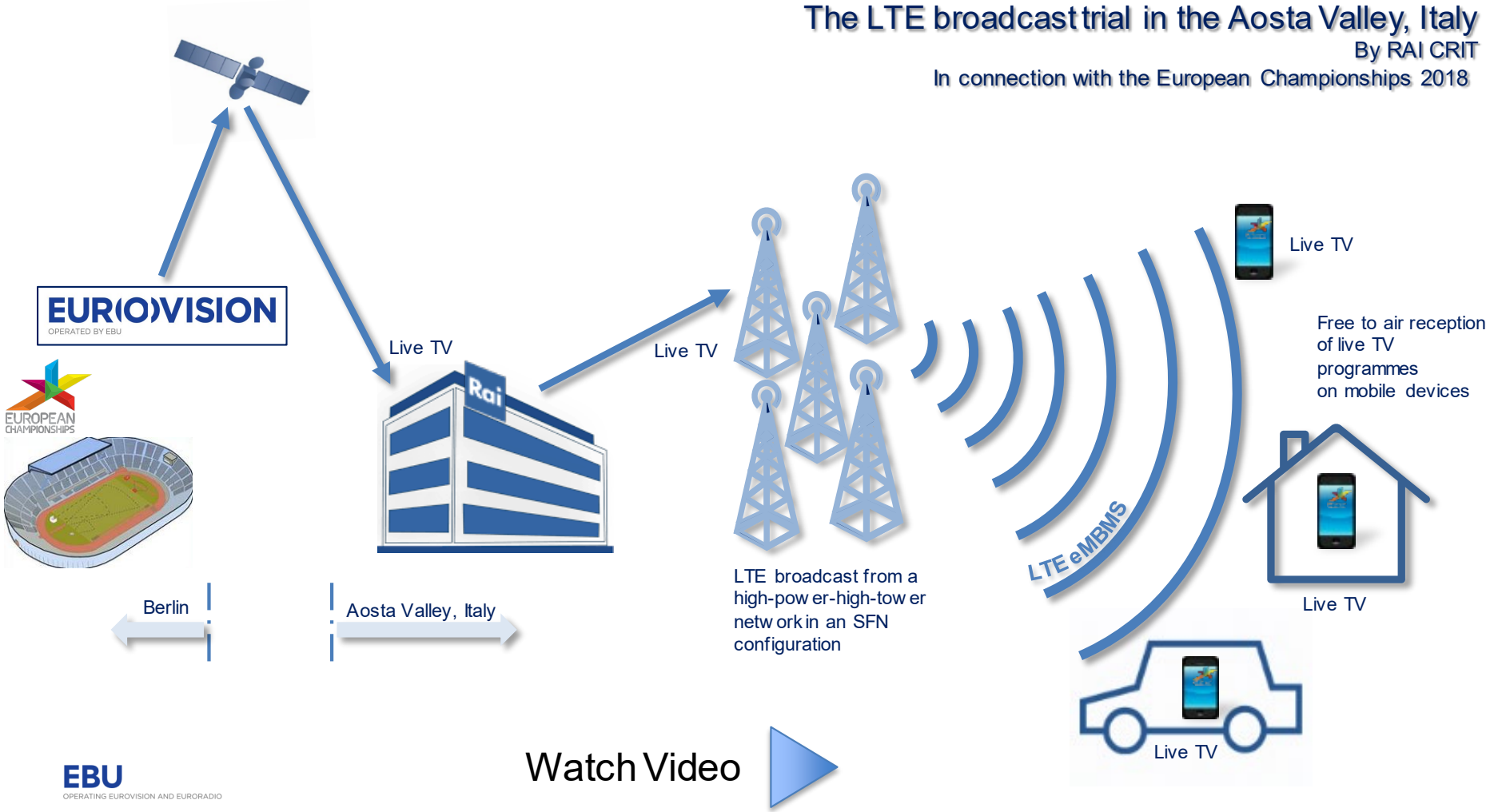
...

*the work  
continues*

# The LTE broadcast trial in the Aosta Valley, Italy

By RAI CRIT

In connection with the European Championships 2018



**EUROVISION**  
OPERATED BY EBU



Live TV

Live TV

Live TV

Free to air reception of live TV programmes on mobile devices

Live TV

Live TV

LTE eMBMS

LTE broadcast from a high-power-high tower network in an SFN configuration

Berlin

Aosta Valley, Italy

# UHD / HDR / HFR

*Enhance the user experience*

- Higher Resolution (SD, HD, UHD4K, UHD8K)
- Higher Dynamic Range (Increased contrast, increased luminance range and richer colors)
- Higher Frame Rate (movement closer to real life)

# How UHDTV will shine – D. Wood (EBU)





# High Frame Rates explained – D. Wood (EBU)



# Next Generation Audio

*Enhance the user experience*

- Personalization of content representation (e.g. speech level customization or multi-lingual features)
- Immersive experience for any kind of content
- The delivery of audio content in a format- and system-agnostic manner

# Thank you

for your attention!

.. and thanks to contributions from  
Peter Mac Avock (EBU)  
Peter Siebert (DVB)  
Darko Ratkaj (EBU)  
David Wood (EBU)  
Paola Sunna (EBU)

*Walid Sami* [sami@ebu.ch](mailto:sami@ebu.ch)

*EBU Technology and Innovation:* [tech.ebu.ch](http://tech.ebu.ch)

# Links to Videos

- The Future of Digital TV: Interview with Dr. David Wood :  
<https://www.youtube.com/watch?v=rN8-3FOopT8>
- How UHD TV will shine: <https://www.youtube.com/watch?v=47BoQH6j1c>
- High Frame Rate explained: <https://youtu.be/wAlm1uazfQY>
- The LTE broadcast trial in the Aosta Valley, Italy - By RAI CRIT :  
<http://www.crit.rai.it/CritPortal/progetti/wp-content/uploads/sites/2/2018/09/5g-aosta720p.mp4>
- How to use the Toggle Red Button service:  
<https://www.youtube.com/watch?v=ElpESlyBpBw>