

A satellite with two long solar panel arrays is shown in space, orbiting Earth. The Earth's horizon is visible on the left side of the frame, and the background is a dark field of stars.

# SPORTS COVERAGE IN ULTRA HD

WBU –ISOG FORUM – 18-19 NOVEMBER 2014  
HOSTED BY EBU - GENEVA

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# ULTRA HD ECOSYSTEM

- ✓ **Ultra HD (4k TV) is becoming a reality**
  - More and more Ultra HD TV sets are proposed at affordable prices
  - More and more productions in Ultra HD (4k TV), or 4k in cinema
- ✓ **HEVC encoding and decoding are now possible**
  - Live encoders (4:2:0 – 8 or 10 bits color depth : 16.7 M and 1 B colors)
  - Off-line encoding software becomes affordable
  - Chipsets for 50 / 60 fps are becoming available
- ✓ **Several demonstration channels via satellite already operational**
- ✓ **Several live retransmissions with HEVC have been done**

# EUTELSAT DEMONSTRATION CHANNELS

## 1<sup>st</sup> channel launched on 8 January 2013: Quad HD MPEG-4

- Transmitted via Eutelsat 10A (10° East)
- Technical solution set up with ATEME
  - 4 Full HD streams (1920 x 1080p 50 fps) + 1 Audio (stereo now)
  - MPEG-4 encoding : 4 video streams of 10.28 Mbit/s (50 fps)
- Modulation: DVB-S2 8PSK

## 2<sup>nd</sup> channel launched for IBC 2013: HEVC at 30 fps

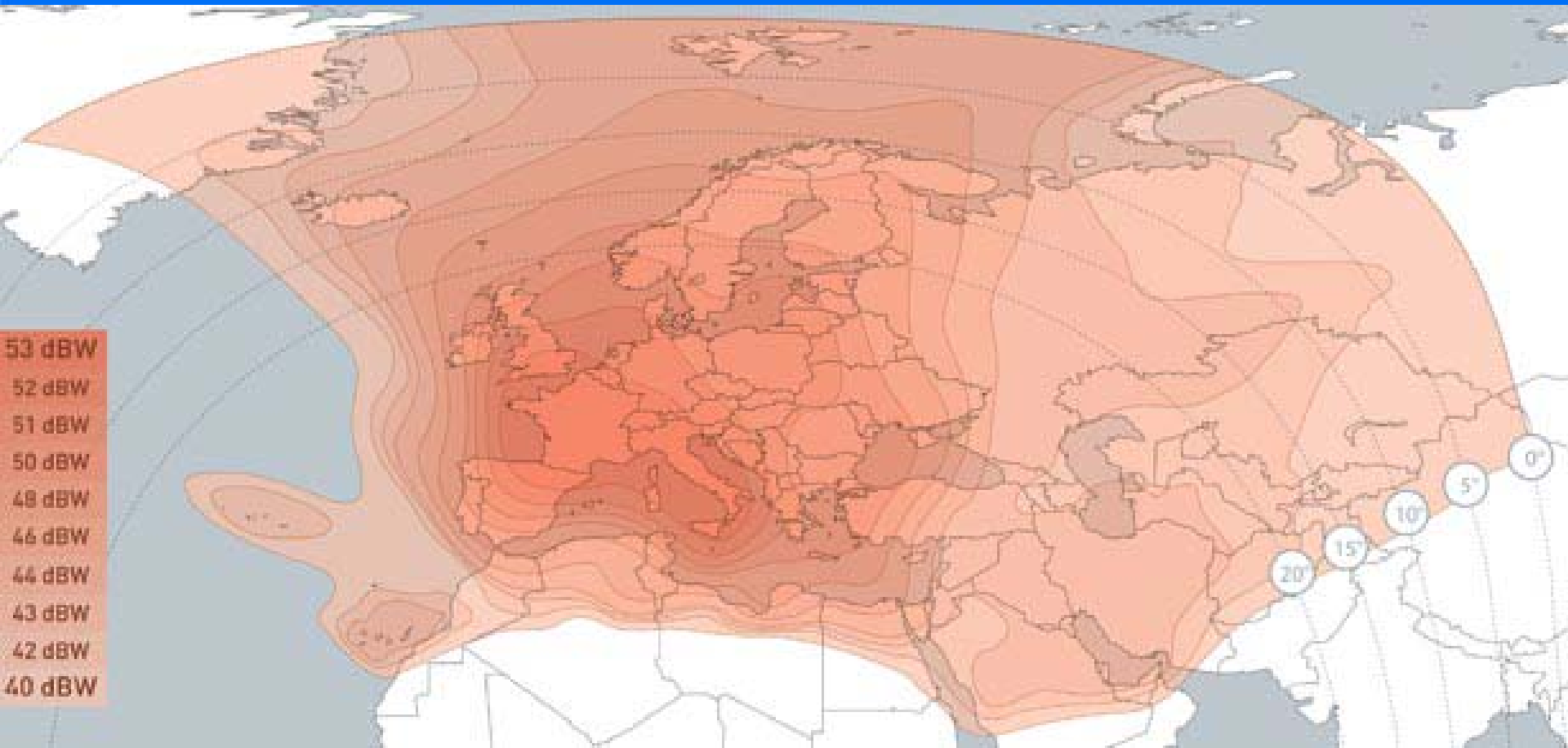
## Channel in cooperation with Samsung launched for IFA 2013 (10° East) – (Quad HD MPEG-4)

## HEVC 50 fps demo channel launched on 26th May 2014

- HEVC encoding
- 50 fps
- 10-bit colour depth (1 billion colours)
- On HOT BIRD: premium DTH position over Extended Europe



# EUTELSAT HOT BIRD AT 13° EAST



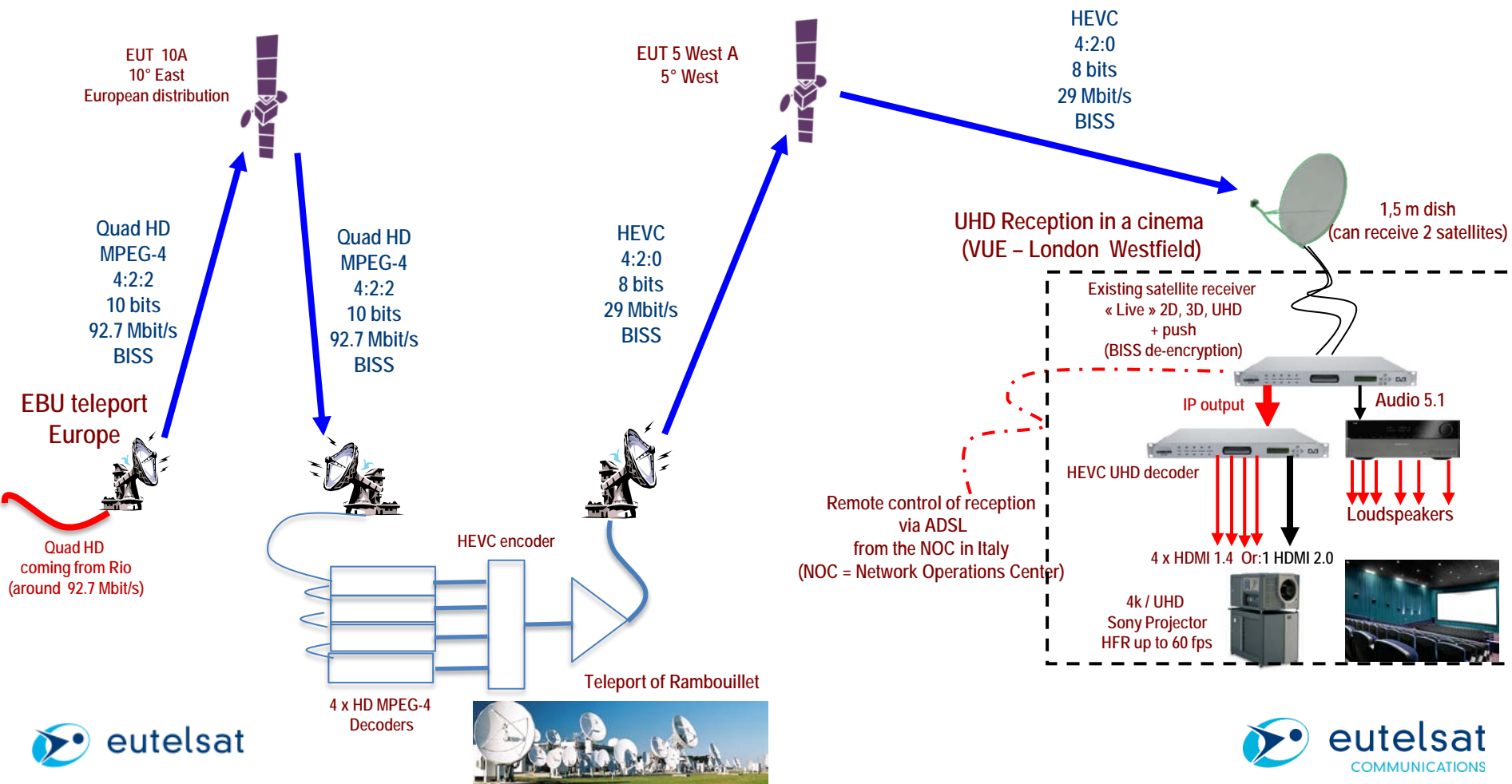
# LIVE BROADCASTING (SOME EXAMPLES)



- EUTELSAT 5 West A at 5° West:
  - Live retransmission of Roland Garros in HEVC, 50 fps, with the French Tennis Federation and France TV Sport
  - Live retransmission of 2 matches (+ tests on 28 June) of the 2014 FIFA World Cup Brazil to a big cinema in London (VUE Westfield), with FIFA, HBS, Sony, IDC, Dolby, DSAT, dcinex, ATEME, ...  
Decoding of Quad HD MPEG-4 in a Eutelsat Teleport and live re-encoding in HEVC 60 fps with an ATEME Titan encoder

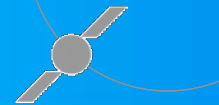
# LIVE UHD RETRANSMISSIONS DURING THE WORLD CUP

World Cup : Live Ultra HD retransmissions directly to cinemas with HEVC re-encoding  
(Frame rate : 60 fps)

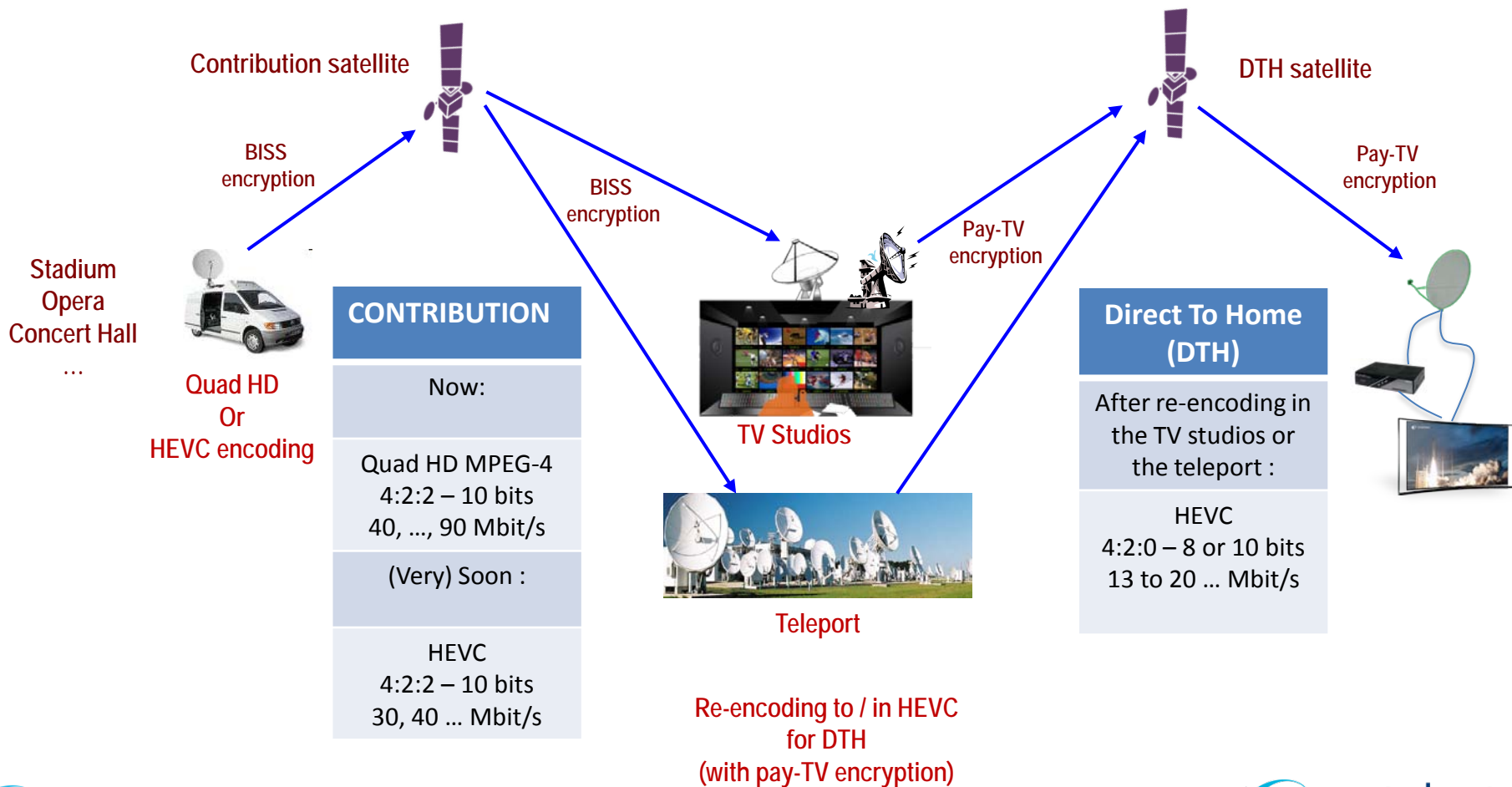




# LIVE DTH RETRANSMISSIONS WITH RE-ENCODING

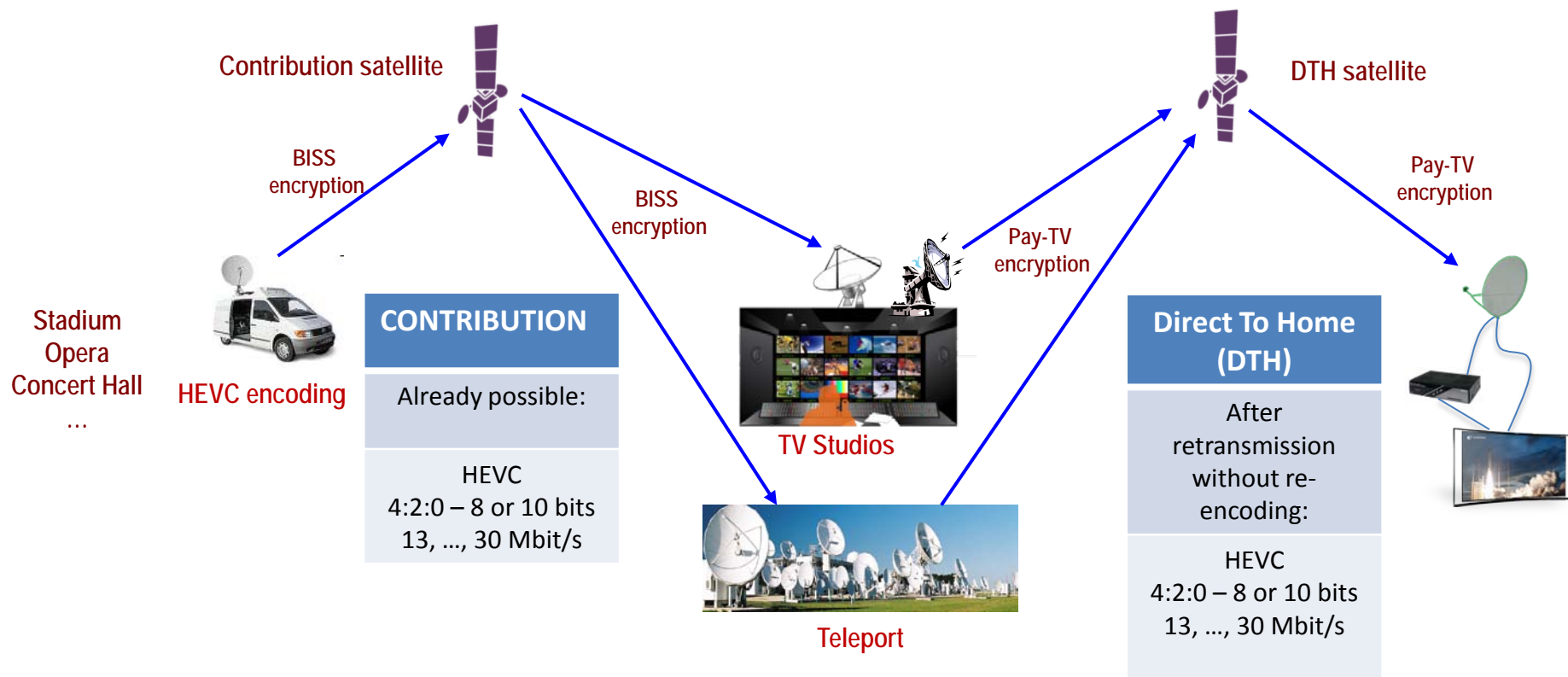


Live Ultra HD retransmissions in DTH with HEVC re-encoding  
(Recommended frame rate : 50/ 60 fps)



# LIVE DTH RETRANSMISSIONS WITHOUT RE-ENCODING

Live Ultra HD retransmission in DTH without HEVC re-encoding  
(Recommended frame rate : 50/ 60 fps)



Retransmission without HEVC  
Re-encoding  
(but with pay-TV encryption)



# LIVE RETRANSMISSIONS DIRECTLY TO CINEMAS



Live Ultra HD retransmissions directly to cinemas with HEVC encoding  
(Frame rate: 50 / 60 fps)

