UHD (8K) Television Coverage of Large Sports Events in Brazil

Introduction to a beautiful collaboration

Michael Stanton

RNP (Brazil's NREN)
The RNP viewpoint

- RNP has greatly improved the quality and capacity of its national and access networks, and its international links to the rest of the world in recent years.
- This has permitted the participation of Brazilian institutions in large-scale international collaborations involving exchange of digital content, especially scientific data and high-resolution media.
- RNP first had contact with the Japanese 8K media initiative at the Internet2 Spring Members Meeting in Arlington in April, 2012, where 8K video was demonstrated and plans were discussed for its use for coverage of the 2012 Summer Olympic Games in London, to be edited locally and transmitted to Japan using international research network connections.
- It occurred to us then that natural candidates for successor 8K media projects might well include the 2014 FIFA World Cup and other similarly large-scale international sporting events in Brazil.
Brazil: half a world away from Japan (c. 19000 km)

Antipodes map from
The cable route between Brazil and Japan is much longer than the geodesic distance, rather more than 23000 km (Rio – Miami – NYC – Seattle – Tokyo).
Main milestones

- Oct/2012  1st contact RNP – NTT (I2 Fall MM)
- Feb/2013  NHK 8K video of Rio Carnival (with TV Globo)
- Mar/2013  Visit to RNP by NTT for technical evaluation
- Apr/2013  Agreement RNP – NHK – NTT for 2014 FIFA World Cup project (I2 Spring MM)
- Aug/2013  8K streaming demo Japan-Brazil
- Mar/2014  8K streaming demo Brazil-Japan
- JunJul/2014 Live streaming of 2014 FIFA World Cup for PV (Public Viewing) in Rio and Japan
Media flows during live transmissions

FIFA/Telebras network
• A/V capture at stadium; compressed and transmitted to IBC in Rio

RNP metro network in Rio
• Retransmission to PoP-Rio @CBPF; Streaming to 2 PV sites in Rio (CBPF & Hotel)

RNP national and global R&E links
• Streaming to 4 PV sites in Japan

Figure by Leandro Ciuffo, RNP
Main contributions

• Demonstration of SHV (Super Hi Vision) (8K) media for live coverage of large sports events
• Effective compression techniques for 8K media (100:1)
• Effective (very) long distance transmission in lossy shared IP networks
• Good collaboration between all partners
The partners

- NHK – Japanese public TV and developer of 8K TV technology
- NTT – Japanese telecommunications company
- TV Globo – Brazil’s largest TV company, based in Rio
- RNP, also based in Rio.
- CBPF (Brazilian Center for Physics Research), which provided the major PV (public viewing) site in Rio.
The network partners
This session’s speakers

• Shinichi Sakaida (NHK)
  *8K Super Hi-Vision (SHV) and its production in sports events*

• Ana Eliza Faria e Silva (TV Globo) [remote]
  *8K Demonstration*

• Hisao Uose (NTT)
  *Reliable Data Transmission of 8K Video over Multi-Domain networks*

• Hiroyuki Kimiyama (NTT)
  *Reliable International Media Transmission by using Redundant Transmission and FEC*
UHD (8K) Television Coverage of Large Sports Events in Brazil

Introduction to a beautiful collaboration

Michael Stanton

RNP (Brazil’s NREN)