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Beijing International Cloud Broadcasting Technology Co.,Ltd

Bullet-time /FreeView Application scenarios Powered by 5G

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Abstract:

Offering the “Bullet-time and FreeView” live production service to Rights Holding Broadcaster(RHB) at two venues of Aerial and Halfpipe in 2022 Beijing Winter Olympics. With latest Multi-cam production system, It brings the total new watching experience to audiences and uplift rating. ICBT is the first China local Company providing such kind of production service to worldwide broadcasters.

Key words:

Bullet-time/Time-Slice, FreeView, Dynamic Interactive Video, 360 degrees viewpoint, Rating, commoditize, 5G+MEC Network

1. Introduction

In order to enhance the customers experience, Beijing Winter Olympics adopted new technology and applications to power live broadcasting. “Bullet-time and FreeView application” is one of them.

Such kind of production service was dominated by international company in the past. Via the opening bid, International Cloud Broadcasting Technology Co.,Ltd (ICBT, China company)become the service provider for these two competition: The Aerial and Halfpipe. Such kind of service was provided to RHB:

- a. Conducting at RHB’s premises on broadcast equipment(owned by ICBT) that are used by RHB at the Games;
- b. Unpacking, testing, installation, rigging, and operation Equipment by our team at the Venues;
- c. Integration of different pieces of equipment including provided by RHB;

- d. Maintenance of the Equipment, in order to achieve the highest quality of professional standards for the production and broadcasting of the ITVR for the Games.
- e. De-installation and de-rigging of the Equipment and the respective repacking.
- f. ICBT proactively keep RHB abreast of the technological developments in the field of specialized camera systems with the intent that RHB uses any such technologies/ products at the Games constituting a milestone worldwide in broadcasting and that such use would serve to enhance the world audience appreciation of the latest cutting-edge technologies in the field of specialized broadcasting systems.

2. Application scenarios

2.1 Architecture Solution and key differentiators

Two kind of application scenarios can be achieved via the same hardware system.

Scenarios 1: Bullet-time broadcasting video output.

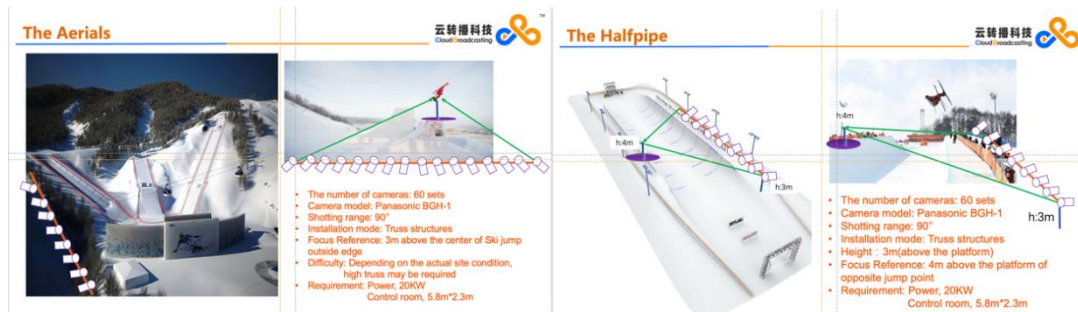
Scenarios 2: FreeView-Dynamic interactive video service. Customers can interactively choose the viewpoint via our 360-degree contents which were captured by Multi-cam.

2.1.1 System Architecture

The system diagram and key equipment's specification were list as follows:



The two Venues deployment scenarios:



2.1.2 Key technical differentiators

- 4K video stability algorithm and low latency live output
- Multi-Cam simultaneously Coding Technology
- Smart calibration of multiple center points
- Multi Virtual view point generated by AI algorithm
- Multi-channel video slice management
- Replay within 3 seconds and 24-hour live broadcasting capacity
- 4K 12G SDI signal output and suitable for additional process
- Powered by 5G and MEC
- On-prem or Hybrid-cloud deployment

2.3 Successful story in Beijing Olympics

The Bullet-time and FreeView application is based on the simultaneous acquisition and encoding of multi-broadcast-grade 4K cam output. The live broadcaster uses multi-camera or surround cameras to provide users with multi-angle video. Users can dynamic interactively rotate and switch way of viewing angles freely. The user can multi-view switch, zoom in/out , pause at any time, freeze-frame rotation, slow-motion at anywhere.

During the Olympics official competition, the free-view/bullet-time shooting service for all 13 games of these two venues were successfully conducted. The RHB broadcasted a total of 1,122 seconds on public signals.

The below pictures are captured via CCTV5 channel.



3. Conclusions

The application of 5G Bullet-time/FreeView in the Beijing Winter Olympics has greatly improved the audience's viewing experience. This technology can be widely used in sports broadcasting, commercial performances, live events, remote learning and other scenarios which need to provide live, on-demand and exciting moments playback. It can provide an extremely difference interactive watching experience for all terminals, uplift the rating and commoditized the contents.

Leveraged latest technology (AI, Low latency high efficiency encoding, 5G and MEC) and our Olympics experience, ICBT can offer the cutting-edge video solutions selling or on site delivery service to worldwide customers with a reasonable cost.