

Overview

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1. WHC Requirements for the Live Streaming

The WHCC named the following performance requirements for the live streaming of the session: Shooting in the room from different perspectives, live encoding audio in English, French and in the XX interpretation languages (XX streams at minimum 12kb/s each), live encoding of the video in English and French (2 streams in minimum at 290 KB/s each, 384x288 pixels), production of clips for broadcasting medias.

Basic technical requirements were: Minimum of 3 cameras and live producing capabilities, dedicated Internet connection for the streaming, streaming capacities, CDN (content delivery network), unlimited stream (between 10 000 and 5000 simultaneous views per hour).

For details please see the "39COM Webcast - Statement of Requirements" provided by WHC.

2. Technical Realisation

For the realisation of the live stream, technical components from four interconnecting sections were necessary.

2.1 Technical requirements at the venue

At the venue, the whole audio (original speech and the respective translations (English, French, language of the host country) and video recording and encoding has to be implemented. This might be provided by the venue or by an external technic provider. In case of the 39th session, the venue WCCB cooperated with a trusted partner company and included the following components directly in their offer:

- Spotting System for the Plenary:
 - 1 Monitor 24" 16:10 aspect ratio
 - 1 digital AV mixer, universal power supply
 - 1 operating panel for the Dome cameras
 - 6 HD Dome cameras
- Folsom ImagePro-HD
- 3 multi format signal converter
- Universal inputs for computer video
- Component video (SD or HDTV) S-Video or composite video (loop-through)
- 1 digital video input for SDI/DHSDI
- 6 video outputs
- Personnel

Via these components the video and audio recording and encoding was realised and the encoded signal of the different recordings was uploaded to the server.

2.2. Internet provider

To guarantee a stable transmission of the live stream signal during the whole session, an Internet connection of at least 5 MB was necessary, in addition to the regular Internet connection at the venue. As this condition could not be fulfilled by the venue, the organisers (together with the IT department of the venue) researched different opportunities and providers. German Telekom turned out to be the only provider who was able to offer the installation of the Internet line within a rather short time frame. It was decided to book a 10 MB connection for the duration of a month (minimum duration offered by Telekom).

2.3 CDN (content delivery network) / streaming server

A content delivery network or content distribution network (CDN) is a large distributed system of proxy servers deployed in multiple data centres across the Internet.

For the performance of the live streaming of the 39th Session, the CDN fulfilled the following tasks:

- a. The live transmitting of the recorded and uploaded video signal and the recorded and uploaded audio signals of the original speech and the respective translations (English, French, language of host country):
→ Different packages can be booked, depending on how many viewers are envisaged. The offered packages mostly vary between 5.000 and 20.000 viewers. For the 39th Session, the organisers opted for the 20.000 viewers package.
- b. Real time statistics on numbers, locating etc. of viewers
- c. Provide a web player
- d. Live-Transcoding:
→ Transcodes the incoming data, so that the live stream is not only available in the original quality but also in smaller formats, as needed for viewers with lower Internet speed or poor cellular reception.

Some of the CDN providers also offer all-in-one-solutions (Technical recording on site, providing output signal, etc.). If the venue does not work with a trusted partner technic provider, this might be a considerable option. In case of the 39th session, it turned out to be the less cost intensive alternative to go with the combination of the 3 providers.

2.4 The websites

The live stream in English, French and German was embedded on two websites via the web player: the event website (coordinated by the host country organisational team, programmed and maintained by a programming company) and WHC website (coordinated by WHC). For the event website, the programming provider was inquired to include the embedding of the live stream and the technical support during the session in its offer. The stream was incorporated via "i-frame".

3. Conclusion & lessons learnt

The live streaming was included in the list of requirements that was handed over to venue. As soon as the conference venue was confirmed, the organisers started assessing the possibilities and additional technical needs for the live streaming. From February 2015 onwards (4,5 months before the conference), the organisers went into close consultation with the venue as well as the programming company and contacted the CDN and Internet providers.

It should be mentioned that the coordination of the four different technical parts was challenging in many respects, as each provider would mostly know (and communicate) the requirements on their own part. For example, it was at a rather late stage (February 2015) that it was noticed that the technical provider of the venue could not provide all the necessary components for the live streaming, but only the hardware and the personnel until the point of the upload of the data to the server and from that point an external CDN provider was needed.

Therefore, it proved to be crucial to know the different technical needs for the implementation and to closely communicate/coordinate between the different providers.