[VENTUZ]

A Show to be Remembered

Opening Ceremony of the Youth Olympics 2014 in Nanjing features virtual graphics created with Ventuz.

China knows how to celebrate. The sheer size of the country, the vast number of citizens, tremendous cities, long rivers, and the single most impressive wall of the world – the Chinese are aware that size does matter. True to this motto, the opening ceremony for the 2014 Youth Olympic Games, which took place in August in the city of Nanjing, assumed enormous proportions and left the audience in the stadium and in front of the TV screens breathless.

Although it is usually said that the experience is much more intense at the venue than as a viewer at home, this event might have been an exception. Keeping the millions of citizens in mind who were not able to be present at the ceremony at Nanjing, the Chinese Olympic Committee got together with the national broadcaster CCTV to develop a unique feature geared directly at the TV audience.

The Chinese agency Multipixs, long-time users of the Ventuz software suite, were commissioned to put the plans into action.

"The idea was to use virtual graphics to enhance the TV experience at home", explained Matthias Strohmeier, CEO of Multipixs. "Using the Ventuz real-time graphics technology, we had the opportunity to add another layer of content to the camera signal and thus show animations and effects that could only be seen on the TV screen."

Virtual graphics is the technology of laying digitally produced graphics over the camera live signal and thus creating a combination of virtual and real content. Although virtual graphic is a standard technology at most broadcast networks, it is mostly used in small and confined areas, such as news and weather studios, where the environment can be easily controlled. Producers generally shy away from deploying this technology in larger venues, and the staff at Multipixs was very aware of the gravity of the task at hand: "We had realized a number of virtual and augmented reality projects with Ventuz for CCTV in the past, using much the same setup as at Nanjing, only of course on a smaller scale. For the Olympic Games, we needed to bring our skills to a new level."

Multipixs brought the camera tracking experts of Trackmen on board, veterans in the industry. Together, they equipped three cameras with the Trackmen system, each positioned at a different location in the stadium. The initial task was to measure the exact position of the cameras in the stadium – and make sure they were not moved afterwards. The tracking system additionally picks up internal information from the camera, such as tilt and pan angles, zoom and focus factors and sends these values to graphics machine.

Simultaneously, the content was created. Multipixs received creative help from the German agency 2RISE, who are renowned for their futuristic designs. Together they utilized the power of the Ventuz real-time render engine to design and animate a multitude of graphics: a universe which was placed into the opening of the stadium's roof to simulate a sky, light beams shooting up from the stadium's floor into the air, an observatory opening its dome, shooting stars, a man running across the sky, and, naturally, the Nanjing logo.

"The new Ventuz machine cluster functionalities made it extremely easy for us to handle this sophisticated project from a single laptop."

Matthias Strohmeier, Multipixs

Then, the two pieces could be brought together. The team created a virtual replica of the stadium inside of Ventuz and positioned the virtual cameras directly were the real cameras could be found in the physical stadium. Then they connected the data coming from the tracking systems to the virtual cameras and thus made it possible for the digital content to seamlessly react to any camera movement. Consequently, the virtual sky always matched up perfectly with the actual stadiums structure in the final output stream.

Each camera communicated with one Ventuz server. "The new Ventuz machine cluster functionalities came in extremely handy for this project", said Matthias, "since we could easily make changes by only touching the content on one machine and then simply uploading it to the others, instead of having to go into each scene on every computer."

Finally, the day of the opening of the Youth Olympic Games 2014 arrived. Over 4,000 people took part in the ceremony and performed in absolute synchronicity.

"The show was perfectly choreographed", explained Matthias. "The entire staff used the music as a timeline, knowing their cues by heart." 2RISE had designed a control interface in Ventuz which was used to trigger the individual animations.

In order to make sure that the brilliant effect of the virtual graphics was not lost in the stadium, the live TV signal was displayed on two large LED walls. The president of the People's Republic of China, Xi Jinping, even had a television in his booth. With such an elaborate audience, pressure was high for Multipixs, 2RISE and CCTV, but the system operated flawlessly throughout the entire evening.

"The show was so convincing", said Matthias, "that we actually received requests from people asking us to do a similar 'sky projection' for their next event. Obviously, they didn't realize that this was just a virtual illusion and believed that we are able to project into thin air. I felt bad explaining it to them – like telling a child that there is no Santa Clause."

Instead of 'sky projections', Multipixs is currently planning the next virtual sets for CCTV, mostly in the live entertainment and talent show sector.

Watch a video of the Opening Ceremony of the 2014 Youth Olympics here!