

World's First Live Relay Experiment of Super Hi-Vision

On November 2, the NHK Science & Technical Research Laboratories and the NHK Broadcast Engineering Department conducted the world's first live relay experiment of the Super Hi-Vision program. The success of this live relay from a remote location has expanded possibilities for the Super Hi-Vision system.

Super Hi-Vision is an audio-visual system conveying a heightened sensation of reality to the viewer. It consists of an ultrahigh-definition video system with sixteen times the number of pixels in the current HDTV system and a 22.2 channel three-dimensional audio system. Previously, the lack of a transmission method for the massive amount of data in these signals meant that the Super Hi-Vision video production methods were limited to recording data onto a large-capacity server and then transporting the server back to a broadcasting station for editing. We recently succeeded in transmitting uncompressed Super Hi-Vision signals (approx. 24 Gbps) over 260-km distance by an optical fiber network in real-time, so that video production could be done at distant locations in a relay. Such large-capacity data transmission was made feasible through DWDM (Dense Wavelength Division Multiplexing)¹, which converts Super Hi-Vision signals into 16 HD-SDI (Serial Digital Interface)² signals and transmits 16 multiplexed optical signals with differing wavelengths.

This live relay experiment used a fiber optic cable to connect Kamogawa Sea World in Chiba prefecture with the NHK STRL complex in Setagaya ward, Tokyo. It also included a first attempt at performing the kinds of program direction, such as enabling announcers at the shooting location in Kamogawa and the production site at STRL to interact and enabling switching between the only two Super Hi-Vision cameras in existence.

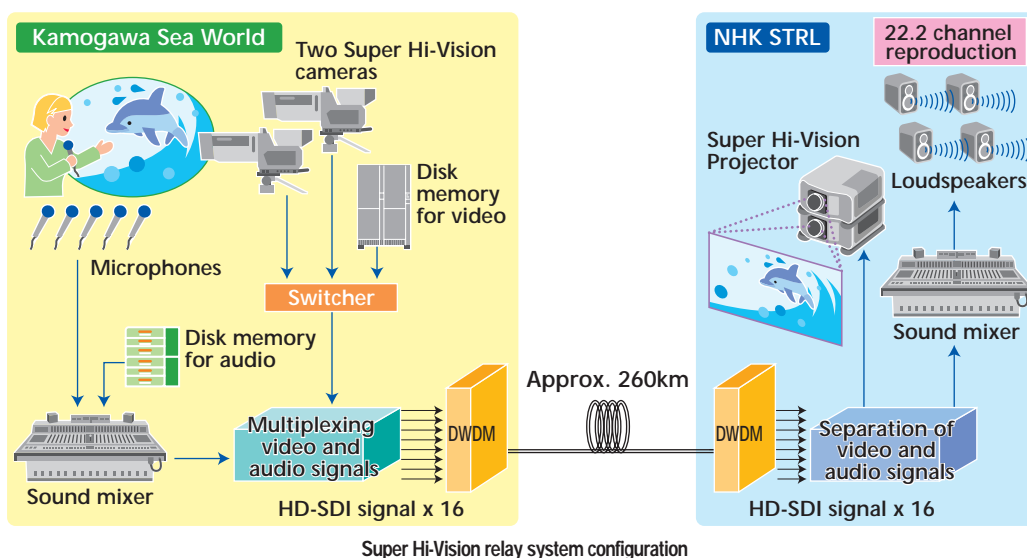
The live relay experiment coincided with the STRL 75th anniversary symposium held on November 2, and the recorded audio-video program was also presented to visitors at the 75th anniversary event on November 3. The video scenes from the site were of a sea animal show, and viewers were treated to the smile of a sea lion, killer whales skillfully leaping into the air, and dolphins demonstrating their intelligence. Cheers and applause rose up from the crowd in the theater during the presentation; there was no doubt that the visitors enjoyed seeing the realistic world of Super Hi-Vision relay program.



Relay broadcast location in Kamogawa

¹ DWDM: a multiplexing interval of 0.8 nm.

² HD-SDI signal: a transmission bit rate of approximately 1.5 Gbps. A Hi-Vision program is delivered to homes by compressing the signal down to approximately 1/100th its original size.



Super Hi-Vision Becomes a Permanent Exhibit at the "Kyushu National Museum"

The Kyushu National Museum is the fourth national museum established in Japan. The museum was designed based on the concept of embodying Japanese cultural history from the viewpoint of Asian studies. It opened on October 16, 2005.

This museum uses a Super Hi-Vision video presentation to introduce visitors to its various precious artifacts. The Super Hi-Vision program production of the artifacts has great significance for organizations involved with "archiving" of priceless cultural property for future generations. The Science & Technical Research Labs (STRL) cooperated in the installation of a Super Hi-Vision Theater (Theater 4000) at the museum and performed picture quality management during program production to ensure the artifacts had been faithfully recorded.



Kyushu National Museum

Theater 4000 has a 350-inch screen, 5.1 channel surround sound audio, and a seating capacity of 38. It is used to screen two breathtaking video programs, which are mainly in still picture form*. In addition to the art objects owned by the museum, the program content includes commentary on the archaeological site of Okinoshima, and the archaeological finds from there that are displayed at the Munakata Taisha Shinpo-kan hall, including an impressive depiction of exquisite work from the Momoyama period, specifically gold-relief lacquerware for religious rituals.

While Hi-Vision, which has been installed in many museums to view artwork, has a picture quality equivalent to 35-mm motion film, Super Hi-Vision, which has 16 times the number of pixels of Hi-Vision, is capable of more faithfully archiving the fine details of artwork and 4×5 inch-size slide film. Museum artifacts and photographs are subject to fading and deterioration over time. Recording such objects in Super Hi-Vision will make it feasible to pass down their true beauty to future generations.

The exhibition at the Kyushu National Museum celebrates the first practical implementation of the Super Hi-Vision system. We overcame many problems to "reproduce faithfully" artifacts for archiving with respect to their colors in program production. This gave us important experience for the advancement of Super Hi-Vision to the ultimate future broadcasting system.



Inside the Super Hi-Vision Theatre

*The program production was conducted jointly with NHK Enterprises, Inc., NHK Engineering Services, Inc., and NHK Art, Inc.



Super Hi-Vision image of "alter with icon"

Kyushu National Museum

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 (Cultural exchange exhibition) on the 4th floor.