Hybridcast

Hybridcast integrates broadcast and broadband technologies in order to provide a range of attractive new services. Service examples of broadcasting based applications were demonstrated. Services proposed by commercial broadcasters and pay TV broadcasting providers were also exhibited.

Advanced Hybridcast

We are conducting research and development that will make Hybridcast services even more appealing. We demonstrated technologies that will be part of future expansions of the system, such as advanced functions that will make programs even more enjoyable and convenient.

Hybridcast Application Production and Distribution System

In preparation for the full-scale popularization of Hybridcast services, advances are being made on the technologies for production of applications and distribution management. This exhibition included a system that produces applications efficiently and a distribution system that provides safe/secure transmissions.
Super Hi-Vision (SHV)

120 fps Full-specification Super Hi-Vision Image Sensor
We are developing a full-specification SHV (8K) image sensor with a frame rate of 120 fps based on the international standard for UHDTV systems. This exhibition included a prototype 3-CMOS color camera and a display system that operates at 120 fps and has an 8K resolution. We also constructed a compact 8K Cube camera head using the same image sensor.

Super Hi-Vision Production Devices for Mobile
We are conducting research and development on practical SHV program production devices. We presented a new single-chip compact SHV camera system and an easy-to-use video interface that will give SHV program productions the level of mobility enjoyed by HDTV program productions.

Compact Video Recorder for Super Hi-Vision Camera
We are conducting research into a compact video recorder for a SHV camera to enable highly mobile program production. We presented a compact video recorder that compresses a SHV camera signal and records it in parallel to solid-state memory.

12-GHz-band Satellite Broadcasting System for Super Hi-Vision
Progress is being made on the development of satellite transmission technology that will be used for test broadcasting of SHV in 2016. We developed large-capacity transmission technology for the 12-GHz band, which is currently used for satellite broadcasting.

Optical interface for video transmission

120 fps Full-specification Super Hi-Vision Image Sensor

Super Hi-Vision HEVC Real-time Encoder
We are advancing with our research on video coding for efficient compression/transmission of SHV video. We exhibited the world’s first SHV real-time encoder based on the new MPEG-H HEVC/H.265 video coding scheme.

Large-capacity Transmission Technologies for Next Generation Terrestrial Broadcasting
We are conducting research on terrestrial broadcasting of SHV. This exhibit featured a large-capacity transmission technology for transmitting a SHV program over a single channel (6 MHz bandwidth) and a technology that improves the transmission characteristics of a single frequency network (SFN) by applying space time coding (STC) between the transmission signals from adjacent transmitter sites.

12-GHz-band Satellite Broadcasting System for Super Hi-Vision

Large-capacity Transmission Technologies for Next Generation Terrestrial Broadcasting

Compact Video Recorder for Super Hi-Vision Camera

8K Cube camera head

Super Hi-Vision Production Devices for Mobile
Real-time Video Coding with Super-resolution Techniques

One of our research projects focuses on a reconstructive video coding system based on super-resolution technology. The goal is to attain an extremely high efficiency coding for SHV video. Our exhibition demonstrated a real-time 4K video coding system with a super-resolution processor incorporated on a PC card.

120-GHz-band FPU for Uncompressed SHV Signal Transmission

In the area of program production for SHV, we are studying a wireless transmission device (FPU) for transmitting materials without the need to install physical cables. This exhibit described wireless transmission of uncompressed SHV signals in the 120-GHz band.

Long Haul Optical Transmission for Super Hi-Vision

We are developing a long haul transmission system using an optical fiber for transmitting SHV program material from a relay site to a broadcast station. We presented a system that can transmit a 72-Gbps uncompressed SHV signal 300 km without a relay through a single optical fiber.

145 inch Super Hi-Vision Display Integrated with Loudspeaker Array

We are conducting research and development on home SHV display systems. We presented a SHV with integrated highly immersive audio in a compact package consisting of a flat-panel display and loudspeaker array with a small video conversion device.

Media Transport Technologies for Next Generation Broadcasting Systems

We are involved in international standardization activities related to a new media transport technology called MMT, which has diverse service deployment potential through the cross-sectional usage of broadcasting and broadband networks. This exhibit showed how experimental devices based on MMT can be applied to SHV broadcasting.

Wide-color-gamut Super Hi-Vision System

SHV uses wide-gamut system colorimetry, which can accurately reproduce vivid colors, to deliver an immersive sensation with higher levels of visual realness and presence. We presented a SHV camera and a SHV projector that are compliant with this wide-gamut system colorimetry.

Super Hi-Vision Theater

The entire country of Japan had London Olympics fever last year, and event highlights were presented featuring the achievements of Team Japan. Also screened was SHV video from the Rio Carnival, which featured four days of non-stop parades with ingenious floats and several thousand dancers in glittering costumes. The intense ground-shaking samba rhythms could not help but sway the bodies of the audience. Visitors enjoyed the excitement of the Olympics, along with the gorgeous costumes and dynamic samba rhythms through the highly realistic combination of a 33 megapixel high-resolution video and 22.2 multichannel sound.
Mobile Video Transmission Technologies on Wireless LAN IP
We are conducting research on mobile relay technologies based on wireless IP links. This exhibit demonstrated a new mobile video transmission technique that improves the robustness against video interruption by adjusting the video rate to the available bandwidth of a wireless link, along with a compact wireless IP video transmitter that implements this technique.

Transmission Technologies of Next Generation Digital Terrestrial Broadcasting for Mobile Reception
To ensure the stable transmission of high-definition video signals in next-generation digital terrestrial broadcasting for mobile reception, we are progressing with our research on highly robust large-capacity transmission technologies. This exhibit demonstrated the technology for transmitting three Hi-Vision programs on a single TV channel.

Multi-Viewpoint Robotic Cameras
We are researching multi-viewpoint video techniques for the production of three-dimensional video. We recently constructed a multi-viewpoint robotic camera system that uses cooperative control to point nine robotic cameras at the same subject, in order to capture multiple viewpoints of a moving subject or multiple shots of subjects within a wide area.

Integral 3D Television
With the aim of presenting future 3D television broadcasts, we are conducting research on integral 3D television systems. In relation to the imaging technology to create natural, easy-to-view stereoscopic images, our exhibition featured envisioned applications for a small 3D camera and museum exhibits.

Twitter Analysis Technology for Opinion Mining
Advances are being made on automatic analysis techniques for TV-program-related tweets on Twitter. We introduced technologies for analyzing tweets posted casually in various communities.

Low Delay and High Quality Digital Wireless Microphone System
Japan’s frequency restructuring action plan includes a review of the frequencies used for specified radio microphones. We have developed a transmission system for a low-delay digital radio microphone that can be utilized on the new frequency bands. This exhibition presented a prototype radio microphone and in-ear monitor.

Program Production/Support Technologies

3D/Multi-viewpoint Technology

Compact 3D camera

Arrayed 3D cameras

Multi-Viewpoint Robotic Cameras

3D/Multi-viewpoint Technology

Compact 3D camera

Arrayed 3D cameras

Multi-Viewpoint Robotic Cameras
Human-Friendly Broadcasting

P2P Live Streaming Technology
We have developed live streaming technology based on a P2P model to provide low-cost, large-scale live content delivery, and we verified the practicality of this technology through test broadcasts, including live streaming of the Olympic Games. The exhibition included a demonstration of a streaming technology that adapts to different viewing terminals (e.g., smartphones or tablet devices) under different connection conditions (e.g., wired or wireless).

Integrated Downloadable CAS for Broadcasting and Communications
Studies continue on an advanced conditional access system (CAS) that can protect content rights and enhance user convenience. We demonstrated a CAS system capable of performing integrated management of broadcasting and communication services, as well as enabling secure and simple usage of diverse services.

SNS Style CG Content Creation System with Content Re-creation
We are developing a system that will allow users to enjoy creating and sharing their own CG (computer graphics) content. This exhibit presented a service with which users can create secondary content based on the content originally posted by somebody else and have fun sharing their creations.

Multi Device Link Service with Mobile Camera
Research advances on a broadcasting-communications linkage service that provides a new TV viewing experience by capturing images with a mobile camera and watching them on a TV screen. Our new technique displayed synchronized high-resolution computer graphics (CG) content that is linked with the program appearing on a TV screen captured by a mobile camera.

Wide-Band Transmission Technologies for 12-/21-GHz-band Satellite Broadcasting
With the aim of realizing future large-capacity broadcasting such as multi-channel SHV programming, we are conducting research and development of an advanced wideband satellite transmission technology. This year’s exhibition included a prototype 12-GHz-band wideband modulator and demodulator that can handle up to twice the bandwidth of the current system and a 21-GHz-band wideband modulator and demodulator with a 300-MHz bandwidth.

Video Asset Processing and Management System “Video Bank”
This exhibit demonstrated the concept of a “Video Bank”, which facilitates the search for and utilization of video material for production. The Video Bank combines a mechanism that collects useful metadata during the shooting of video material with another that automatically generates additional metadata by analyzing the stored footage.

Sign Animation Synthesis System for Japanese Weather News
With the goal of expanding our sign language services, research continues on a sign language synthesis technology that translates Japanese text into sign-language computer graphics (CGs) animations. The exhibited prototype system automatically translates weather news into signing CGs and displays the generated animations synchronized with the news video and captions.

Tactile and Haptic Presentation Technology for 2- & 3D Information
We are studying a technology that allows 2D information (e.g., maps) and 3D information (e.g., works of art) to be conveyed to visually impaired people through tactile and haptic means. This exhibit demonstrated a tactile display that allows people to perceive the relevant features in a figure by touch alone, as well as a haptic presentation device that allows users to touch a virtual object and perceive a sensation similar to that of a real object.

Adjustment System for Sound Levels in TV Programs for Elderly Listeners
As people age, they tend to perceive the background sounds in TV programs as distracting and find it harder to listen to the speech of announcers and actors. We presented a technology that reduces background sounds and makes the target speech clearer and easier to listen to through the use of a simple adapter attachment for a receiver.
Flexible Organic Light-Emitting Diode Display
We are conducting research on thin, lightweight flexible displays that are easy to transport. We demonstrated an 8-inch flexible display based on highly efficient and long-lifetime organic light-emitting diodes (OLEDs), as well as some of the key technologies that will be part of ultra-thin sheet-type televisions in the future.

High-speed Data Readout in Holographic Memory
With the goal of developing a means of archive storage for SHV programs, research is progressing on an ultra-high capacity holographic memory capable of extremely high-speed recording and readout of video signals. This year’s exhibition presented experimental equipment that can reproduce 2D data pages at 500 Mbps, which is four times faster than the previous year’s model device.

Elemental Technologies for Advanced Imaging Devices
We are developing new imaging devices to improve camera performance. We featured elemental technologies for an organic imaging device that will enable us to build a compact, high-image-quality single-chip camera and a 3D integrated imaging device that is designed to achieve both ultrahigh definition and a high frame frequency.

Practical Implementation of R&D Results
Utilization and Development of NHK’s Technology
NHK Engineering System, Inc. promotes NHK’s patents and technology know-how stemming from its R&D activities. It also supports R&D on practical implementations with the goal of contributing to society. Among NHK’s patented technologies and their derived systems currently being developed for practical application, we exhibited some of the technologies that will have a wide range of applications in the future.

Technologies in the Broadcasting Station
At NHK, we are promoting technological improvements and novel developments to ensure that users will receive broadcasting that is more convenient, easier to understand, safer, and more secure. This exhibit introduced various technologies that are being developed or have recently been developed at our broadcasting stations.
Consultation Booth for Digital Broadcasting Reception

This booth introduced the services that are being brought about through broadcasting and communications working together and the operation methods and convenient functions of digital television. We also answered a wide range of questions related to the reception of digital broadcasting, including digital reception systems and an overview of the TOKYO SKYTREE.

NHK Museum of Broadcasting

TV broadcasting started over 60 years ago on February 1, 1953. This section reviewed the NHK STRL efforts to develop TV and looked back at the time when TV broadcasting began. Visitors could view footage recorded back at the start of regular TV broadcasting services and inspect other materials from those days.

Interactive Exhibition

Experiencing the News in “Easy Japanese”
Visitors were asked to read a difficult news article in simplified “Easy Japanese,” and then answer some questions related to news that might occur in the future.

Hide and Seek Over a Lattice
Human vision is full of wonders. This “hide-and-seek” game allowed visitors to experience one of these wonders. Visitors were asked to find the hidden characters.

Easier Visual Recognition of Moving Objects
A moving picture on a television screen is created using a large number of images displayed in sequence. If the number of images per second increases, even an object moving at high speed will become clearer. We asked visitors to answer the questions in a quiz after looking at such video images.

Poster Exhibition

- A Parallel Distributed Processing System for Broadcasting Contents
- Spherical Microphone for Super Hi-Vision 22.2 Multichannel Sound
- Accommodation Responses in Viewing Integral 3D TV
- Improvement on Speech Recognition for Live Captioning of Emergency Disaster Broadcasts
- TV Program Recommendations Based on a Personal Preference Model
- Carrier Multiplication at Low Voltage Photoconductor
- Low Current Driving of Multiple Magnetic Domains in Magnetic Nanowires
- High-density Recording Technologies on Thin Optical Disk
- Spin Spatial Light Modulator Using Tunnel Magnetoresistive Effect
- Flexible Sound Generator Based on Thermoacoustic Effect
- Display Driving Technology Using Optical Wavelength Multiplexing
- Technologies for Fabrication of Self-aligned Oxide Semiconductor Thin-film Transistors
- Far-field Pattern Control of Light-emitting Devices Through Sub-micron Dielectric Structures