Immersive Galaxy Live
The Future of Content as Envisioned by Immersive Media

Outline

Immersive content surrounds you with powerful images and sounds. This exhibit presents an experience-based concept of immersive media, showing how the world of content will expand with large-screen displays, AR glasses, and VR goggles.

Immersive content experience

Features

- 8K quality images and binaural 22.2 channel stereoscopic sound.

- Volumetric capture technology is used to capture an artist's performance from all angles.

- Viewers are free to choose from three different modes, each with different camera work and acoustics.
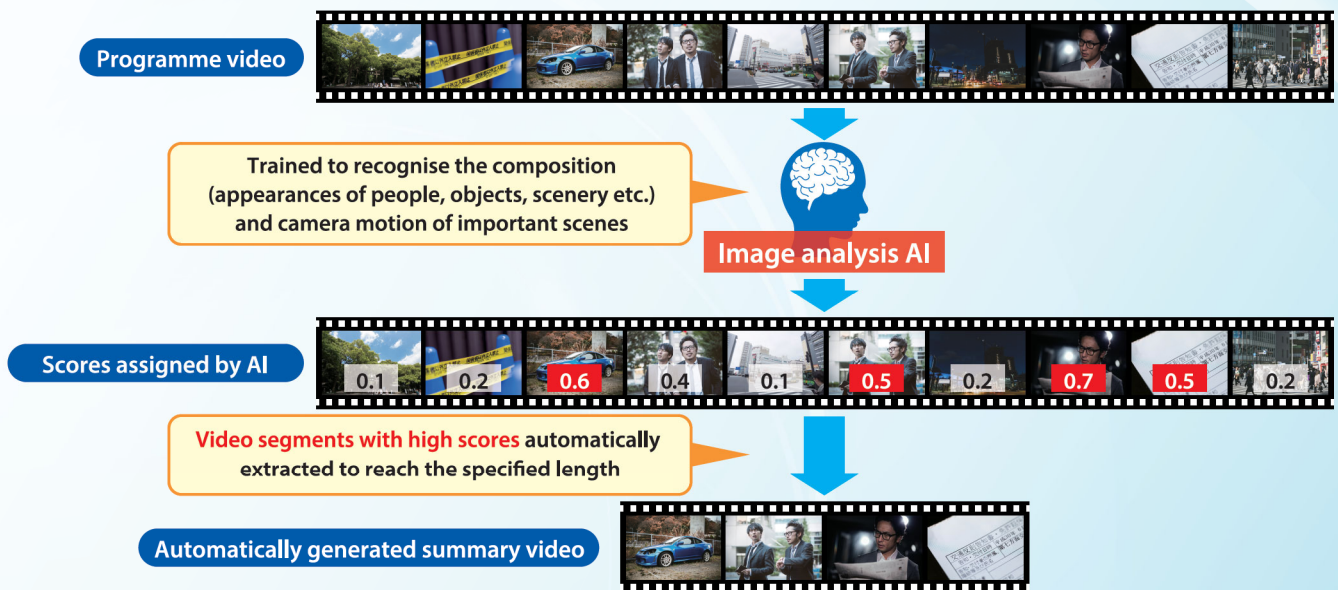
Future plans

We will continue to promote research and development on technologies necessary for the realisation of immersive media.

Automatic Programme Video Summarisation System
Creating Short Videos for Quick and Easy Viewing

Outline

Broadcasters are boosting short videos for online distribution in order to showcase TV programmes. We have developed an AI-based video summarisation system that can support making short video footage from the programme video.

Programme video

Trained to recognise the composition (appearances of people, objects, scenery etc.) and camera motion of important scenes

Image analysis AI

Scores assigned by AI

0.1 0.2 0.6 0.4 0.1 0.5 0.2 0.7 0.5 0.2

Video segments with high scores automatically extracted to reach the specified length

Automatically generated summary video

Outline of automatic programme video summarisation process

Features

- Image analysis trained by AI is used to recognise the composition and camera motion of important scenes.

- Users can easily modify the automatically generated summary video.

- An automatic summarisation system for news programmes can be put into practical use with this technology.
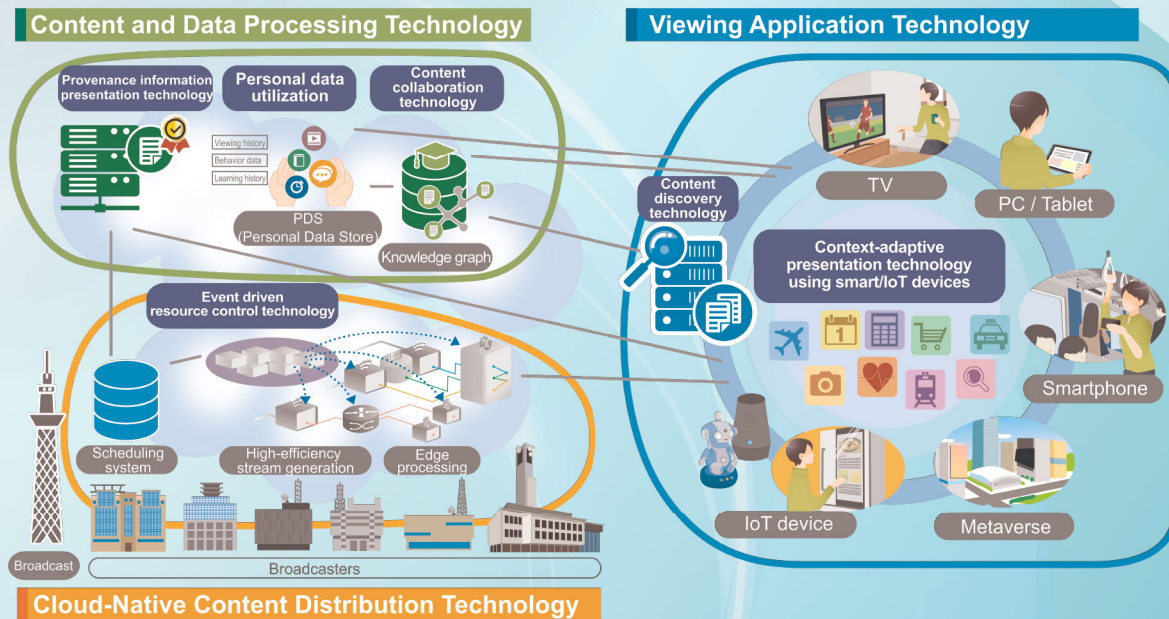
Future plans

We will expand the number of broadcast stations using this system. We will also improve the AI by introducing new technology and learning more training data.

NHK Japan Broadcasting Corporation

Web-Based Broadcast Media
Toward Realisation of "Human-Centred Media"

"Web-Based Broadcasting Media" is a technology platform that integrates broadcasting with a Web platform to convey information to everyone, regardless of individual differences and environment.

We developed "viewing application technology," one of the key components of the framework.

Content and Data Processing Technology

- Provenance information presentation technology
- Personal data utilization
- Content collaboration technology
- Viewing history
- Behavior data
- Learning history
- PDS (Personal Data Store)
- Knowledge graph
- Event driven resource control technology
- Scheduling system
- High-efficiency stream generation
- Edge processing
- Broadcast
- Broadcasters

Cloud-Native Content Distribution Technology

Viewing Application Technology

- Content discovery technology
- Context-adaptive presentation technology using smart/IoT devices
- TV
- PC / Tablet
- Smartphone
- Metaverse
- IoT device

Technologies forming Web-Based Broadcast Media

Features

Viewing application technology includes

- "Content discovery" using content delivery information to automatically determine the appropriate delivery path for obtaining the desired content suited to the device and receiving environment.

- "Context-adaptive presentation" collecting IoT sensor data into a personal data store (PDS), estimating the user context, sharing the context with smart/IoT devices, and providing content according to the context.

Future plans

Web-Based Broadcast Media is a wide-ranging concept, from the current environment to a future with advanced technologies. We will work with broadcasters and manufacturers on early verification.
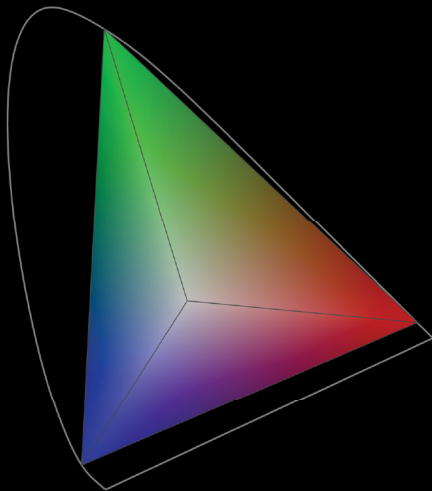
Gamut Rings
## Standard for Visualising Colour Gamut

Outline

A colour gamut has traditionally been represented by the area of a triangle, the vertices of which represent the chromaticity coordinates of the display RGB primaries. However, this areal metric does not agree with the CIE definition of a colour gamut because it lacks the critical third dimension of colour: lightness. Hence, the area is referred to as a *chromaticity gamut.*

To visualise the 3D colour gamut more intuitively, a new method, called *Gamut Rings*, was developed for expressing true colour capability by presenting lightness, chroma, and hue in a 2D diagram.
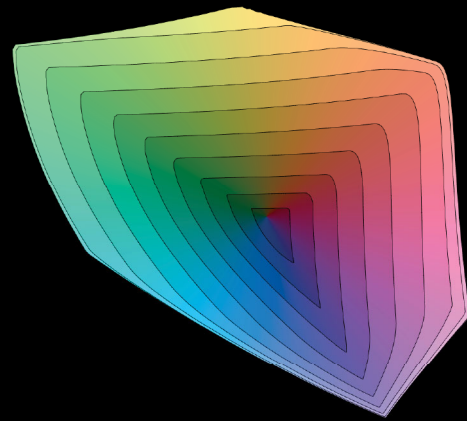
Chromaticity gamut   Gamut Rings

Features

Gamut Rings were adopted as industry and international standards:

- SID/ICDM, Information Display Measurements Standard v1.2, 2023

- IEC 62977-3-5:2023, Evaluation of Optical Performance – Colour Capabilities

- IEC 62977-2-1:2021, Electronic Displays – Part 2-1: Measurements of Optical Characteristics – Fundamental Measurements

- CIE 246:2021, Colour Gamuts for Output Media

Personalised Broadcasting Experiences
Content Layering and NGA Technologies

Outline

Content layering and Next-Generation Audio (NGA) technologies enable personalised services through customisation based on individual preferences, including switching from video content and audio objects to alternative ones at the same time.
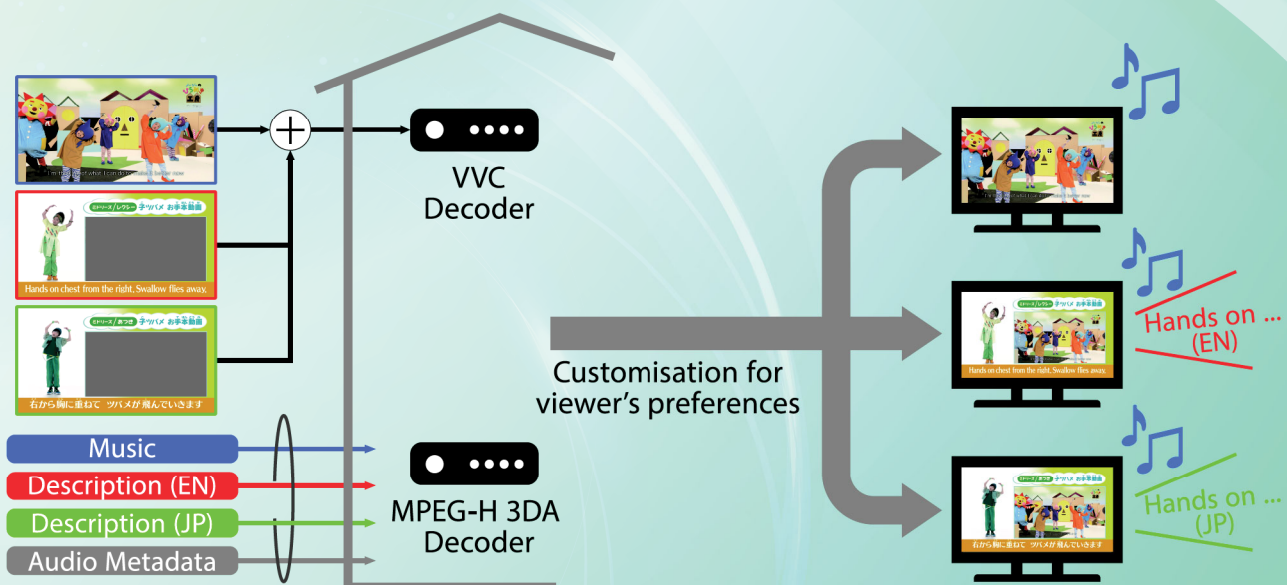
Example of personalised experiences (music content)

Features

● VVC multilayer coding technology enables content layering that efficiently compresses main content and sub-content. It is possible for viewers to select their preferable content on the receiving side.

● The NGA system, in compliance with MPEG-H 3D Audio Baseline profile level 4, enables the transmission of multiple audio objects that consist of up to 56 audio channels. Viewers can select a set of audio objects that consist of up to 28 audio channels.
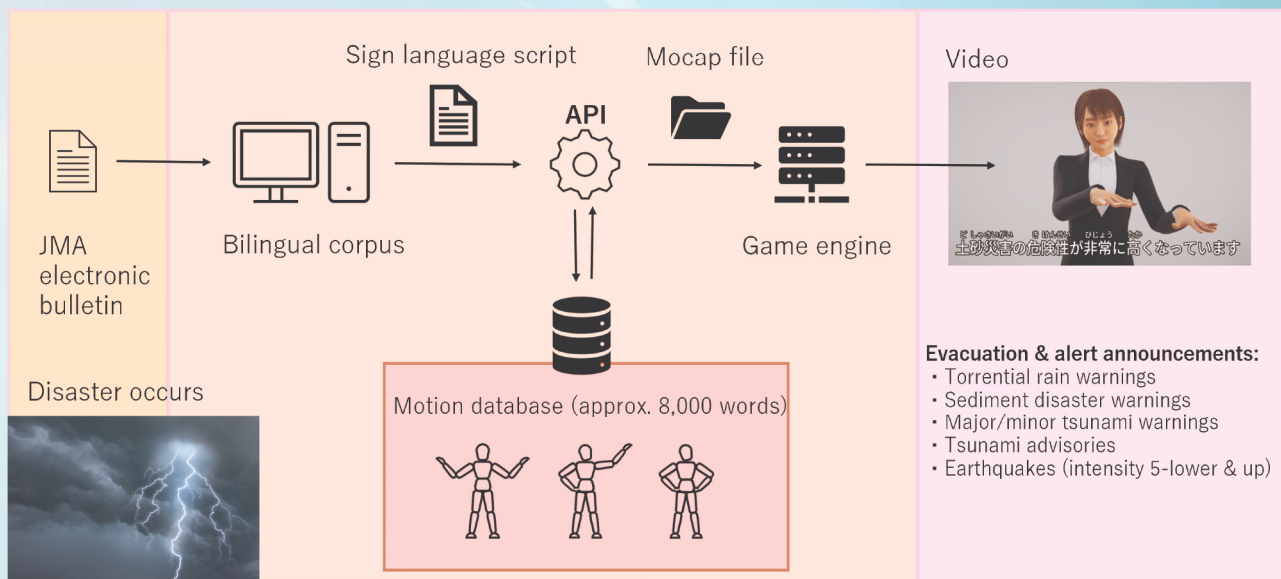
Future plans

Focusing on benefits to viewers as the top priority, we will work on new applications for personalised experiences by using content layering and NGA technologies.

NHK Japan Broadcasting Corporation

Automated CG Sign-Language Generation System for Weather & Disaster Information

In practical use

Outline

A bilingual corpus is used to convert electronic bulletins from JMA, the Japan Meteorological Agency, into the unique grammar of sign language. On the basis of the translated data, Sign-Language vocabulary is then loaded from a motion-capture database that stores approximately 8,000 basic expressions.

JMA electronic bulletin → Bilingual corpus → Sign language script → API → Mocap file → Game engine → Video

Disaster occurs

Motion database (approx. 8,000 words)

土砂災害の危険性が非常に高くなっています

Evacuation & alert announcements:
・Torrential rain warnings
・Sediment disaster warnings
・Major/minor tsunami warnings
・Tsunami advisories
・Earthquakes (intensity 5-lower & up)

Features

● Disaster info can be transmitted without delay to all persons, including those with hearing impairments.

● We created CG Sign-Language animations under the supervision of deaf linguists.

● Sign-Language interpreters may not be available when necessary; this system is available 24/7.

Scan me!

Future plans

Through AI translation technology, we aim to develop a new service to support breaking news and many more in multiple languages. For the 2025 Deaflympics games in Tokyo, we hope to expand to international sign languages.

NHK Japan Broadcasting Corporation