

Unique Immersive Visual and Sound Experience that Sparks Children's Imagination



Panasonic Pavilion The Land of NOMO at Osaka-Kansai Expo

Installation: April 2025
Location: Kansai Region, Japan

At the Osaka-Kansai Expo, the Panasonic Pavilion "The Land of NOMO" invited children to discover a new world brought to life by cutting-edge visual and audio technologies, delivering unique, immersive experience.

Highlights

- Immersive environment designed to stimulate and free the five senses through light, sound, wind and vibration
- Innovative visual effects including mist walls and vortex rings
- 360-degree surround sound delivered by RAMSA and Technics systems
- Precision-engineered acoustics tailored to children's hearing levels

Overview

Pavilion Ignites Children's Imagination Through Sensory Exploration

At the Osaka-Kansai Expo, Panasonic introduced "The Land of NOMO", a pavilion designed to awaken children's curiosity and creativity through immersive, hands-on experiences. Centered on the theme of understanding human behavior and expression, the pavilion drew on Panasonic's extensive history of facial and behavioral research and analysis to help reveal each child's hidden potential. Divided into four zones and one special area, the space was filled with interactive environments where light, sound, wind and vibration interacted in surprising ways. As children journeyed through this fantastical world, they were encouraged to break free from conventional thinking and unleash their imaginations.

Creation Process

Advanced Visual and Audio Technologies Developed Through Collaborative Innovation

Nearly two years before the expo began, Panasonic's creative and technical teams—experts in immersive space design—came together to shape the concept behind "The Land of NOMO". From this foundation, the technology team began developing systems aimed at delivering a groundbreaking experience. After extensive planning, the team chose Panasonic's newly launched PT-REQ15 4K projector, tailored for museum applications, as the primary visual device for all zones of the pavilion. They also introduced cutting-edge projection techniques incorporating mist and wind. High-performance RAMSA and Technics audio systems were customized for each zone, and sound fields were carefully engineered for optimal effect. Since some of the core technologies were still in development during the planning phase, full-scale demo rooms were set up in Tokyo and Osaka. To ensure stability under fluctuating on-site conditions, the team conducted daily simulations and subjected the systems to stress tests that exceeded the anticipated demands of the actual venue.

About the Panasonic Pavilion "The Land of NOMO"

- Period: April 13 – October 13, 2025
- Location: East Gate Zone, Osaka-Kansai Expo
- Website: <https://the-land-of-nomo.panasonic/en/>



▲ Panasonic Pavilion "The Land of NOMO"



Immersive Experience Solution

Zone 1: Deep within the Mirror Pond

23.4-channel Surround Sound Designed for Children's Hearing Levels

Zone 1 engaged visitors' senses with a dynamic fusion of visuals, sound and vibration. Three PT-REQ15 projectors delivered immersive imagery that appeared to emerge organically from the floor and walls. To streamline operations and minimize the system footprint, a newly developed configuration integrated the ET-SBFMP10 media processor board directly into the projector's SDM slot, enabling seamless playback and image adjustment without the need for a PC. To create an optimal sound environment, 27 Technics speakers were installed throughout the zone.

Nobuhiko Washio, the Panasonic audio engineer who led the acoustic design, explained: "The audio in Zone 1 was produced in high-resolution format, so we selected Technics speakers for their ability to reproduce sound with exceptional clarity, from crisp highs to deep lows. Since the pavilion was designed for children, we carefully tuned the sound field to align with their ear heights, approximately 100 to 120 centimeters from the floor. Instead of using ceiling-mounted speakers, we placed 23 speakers around the perimeter and installed four subwoofers directly into the floor. Even the narrator's voice was designed to sound like a soft whisper close to the ear, rather than a distant announcement. To further enhance the sensory impact, we embedded vibration panels in the flooring that reacted to sound, creating an immersive environment unlike anything the children had ever experienced."

Zone 2: NOMO Forest

Moving Mirror System Brings Visuals to Life Across Space

In Zone 2, visitors interacted with crystal-like structures embedded with RFID-enabled "crystal devices." When touched, these devices triggered unique sound and light responses. The sound design, powered by the RAMSA professional audio system, featured independently tuned fields to distinguish ambient audio from touch-based sound effects, enhancing the layered experience. Eight PT-REQ15 projectors were carefully positioned overhead.

Panasonic projection engineer Tetsuro Mizushima said, "We positioned the projectors to avoid casting light directly onto the structures. Instead, we wanted the illumination to feel as though it was radiating from the objects themselves. The PT-REQ projector provides generous lens shift and precise focusing capabilities, which allowed us to fine-tune the projection blend for seamless results. We also employed a moving mirror system that was still in development at the time. This technology enables the image to shift dynamically, making the light appear to fly and weave through the structures. Even with just one projector, we could move the projected image across multiple surfaces, which was especially effective given the dense layout of equipment on Zone 2's ceiling."

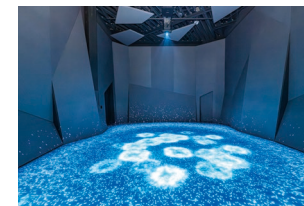
Zone 3: The Valley of Ancient Trees

Dry-to-the-touch Mist Wall Becomes a Magical Projection Surface

In Zone 3, seventeen towering sculptures modeled after ancient trees created an enchanting, forest-like atmosphere. Each tree was fitted with a transparent OLED display and five speakers. When a visitor looked at one of the trees, it reflected their face like a mirror and activated a facial expression analysis system. This information was then used to create a one-of-a-kind butterfly for each person, with a different color and shape, that was projected fluttering beyond a cascading waterfall.

Panasonic projection expert Mizushima elaborated: "To create the waterfall effect, we used a technology called the Mist Wall, which was still in development at the time. It featured a curtain of mist 7 meters wide and 3.5 meters high, onto which visuals were projected using six overhead projectors. Since the mist didn't actually get people wet, we were able to create a 'waterfall' that guests could pass through to reach the next zone. This technology proved to be an ideal match for our immersive storytelling."

ZONE 1



▲ Three PT-REQ15 projectors created immersive visuals emerging from floor and walls

◀ Immersive effects stimulated the senses through visuals, sound and vibration



▲ Equipment rack housing 14 Technics amplifiers

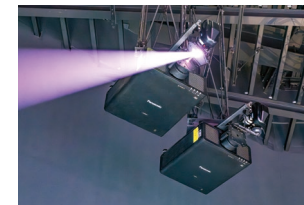


▲ ET-SBFMP10 media processor board integrated into the projector's SDM slot for streamlined operation

ZONE 2



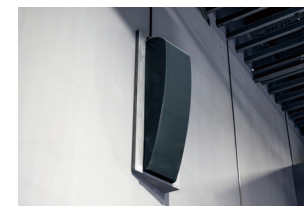
▲ Six cameras worked in tandem with RFID tags to track visitor reactions to crystal-like rocks and trees emitting light and sound



▲ PT-REQ15 projector with a moving mirror for dynamic image movement



▲ Five RAMSA 30 cm 2-way speakers

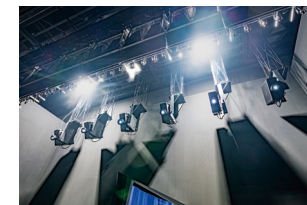


◀ Four RAMSA array speakers

ZONE 3



▲ Visitor passing through the Mist Wall's simulated waterfall enhanced with synchronized sound effects



▲ Six PT-REQ15 projectors installed above the Mist Wall

◀ Guest peering into an ancient tree equipped with an audio system tailored to each person

Zone 4: Into the Wide Open Sky

Interactive 360-degree Immersive Theater Powered by 21 Projectors and 32 Speakers

Serving as the emotional finale of the journey, Zone 4 immersed guests in a circular theater filled with flying butterflies that had been set free in previous zones. The space was fully surrounded by dynamic visuals and rich sound, creating a seamless, 360-degree experience. When a visitor waved a fan over one of the 32 flower-like access points, a unique butterfly generated for that individual appeared on the ground, accompanied by sound.

Panasonic audio engineer Kuniaki Osawa, who led the development of the 3D audio system in Zone 4, noted: "To build a fully immersive sound environment, we installed 28 RAMSA speakers and four subwoofers throughout the theater. Each of the 32 access points triggered a unique butterfly, complete with its own sound and visuals. To support this, we developed custom 3D audio control software (provisionally named SFCI) that tracked all 32 butterflies in real time with a latency of less than 100 milliseconds. The butterflies flew freely in all directions within the circular space, so we positioned speakers at various heights to allow the sound to move naturally while staying aligned with each butterfly's location."

Regarding the visual design, Mizushima added, "In the ceiling, we installed five vortex rings, each with a diameter of 1.3 meters. These devices emitted both light and mist to create captivating visual effects. Each ring projected imagery that gradually widened downward, and the mist was precisely timed to blend seamlessly with the expanding visuals. The content creators wanted the rings to be bold, well-defined and visually impactful, so we conducted extensive pre-installation tests using actual vortex ring units. This preparation allowed us to deliver a dramatic and memorable finale."

Earth

Next-generation Displays Harmonized with Surrounding Space

Unlike the highly interactive zones, the Earth area was a calm, reflective space where visitors could explore environmental and social themes through interactive exhibits. Since the area was well lit, two projectors were stacked to ensure sufficient brightness. To further enhance the environment with digital content, ultra-bright LCD displays and transparent OLED displays were integrated seamlessly into the spatial design.



◀ To welcome guests to the world of "The Land of NOMO", an introductory video was projected onto an ultra-bright LCD display that was easily viewable both day and night.

ZONE4



▲ Immersive visuals filled Zone 4's entire 360° space, enhanced by bursts of light and mist from vortex rings and 32 flower-like access points arranged across the floor



▲ Projectors, speakers and vortex rings installed across the ceiling of Zone 4



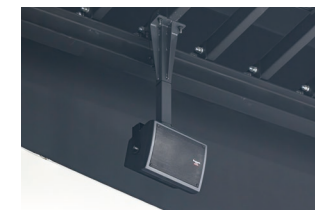
▲ PT-REQ15 projector equipped with a ET-C1U100 ultra-short-throw zoom lens



▲ Vortex rings projected clear imagery onto the floor from a 5-meter-high ceiling



▲ Light-blocking hoods mounted on each lens to isolate projection areas, preventing visual overlap within the circular theater



▲ 26 RAMSA near-field speakers positioned around the perimeter of Zone 4

Earth



▲ Scene from the Earth area, where a large interactive table used dual-stacked projectors to display dynamic visuals that responded when visitors inserted special cards



▲ Projection on the interactive table, activated when a card was inserted



▲ Transparent OLED display seamlessly integrated into the space



▲ Ultra-bright LCD display installed in the Earth area



▲ Epilogue Corner, where guests returned their crystal devices at the end of their journey through the experiential zones

Immersive Experience Solution

From the Team

"Even during on-site fine-tuning, we never wavered in our pursuit of impactful sound. The pavilion was powered by more than 450 speakers, and we made absolutely no compromise in audio quality. I hope this experience left a lasting impression on every child who stepped inside. Above all, I'm grateful to have worked with such a talented and reliable team of engineers to create an immersive environment where light, sound, wind, and vibration came together in perfect harmony. I'd be honored to collaborate with this team again."

Nobuhiko Washio
Manager Digital & AI Technology Center Technology Division
Panasonic Holdings Corporation

Note: Job title at time of interview

"I believe immersive, interactive spatial experiences will be in high demand for years to come. Especially in those with participatory elements, like this project, visitors feel as if they are shaping the experience themselves and can share it with others, making it incredibly impactful. Throughout the expo, we monitored the equipment and projection content daily to ensure smooth operation. Looking ahead, I hope to continue driving innovation in new ways."

Tetsuro Mizushima
Manager Customer Success Department
Panasonic Projector & Display Corporation

Note: Job title at time of interview

"When we first decided to synchronize sound imaging with tracked visuals, the technology was still in its early stages. From that point until the expo opened, we spent months in the lab refining and verifying the system to enable tracking of 64 distinct motion patterns in real time—twice as many as the 32 patterns used during the event. I clearly remember how determined we were to make the system completely reliable, knowing it would run every day, with zero room for error, for the full six-month duration of the expo. Moving forward, we hope to continue evolving our spatial audio systems to deliver even more moving and immersive experiences."

Kuniaki Osawa
Staff Engineer Acoustic designer
Panasonic Projector & Display Corporation

Note: Job title at time of interview



* Some products are available only in Japan.

Installed equipment

ZONE1

- 1-Chip DLP™ Projector (PT-REQ15) x 3
- Media Processor (ET-SBFMP10) x 3
- Technics speakers x 27
- Technics amplifiers x 14

ZONE2

- 1-Chip DLP™ Projector (PT-REQ15) x 8
- Moving Mirrors x 2
- RAMSA near-field speaker (WS-NF015) x 3
- RAMSA 30 cm two-way speaker (WS-AR200) x 5
- RAMSA array speaker for indoor facilities (WS-LA232) x 4
- RAMSA 46 cm subwoofer (WS-HM518L) x 2
- RAMSA digital power amplifier (WP-DM948) x 3

ZONE3

- 1-Chip DLP™ Projector (PT-REQ15) x 6
- Mist Wall
- Transparent OLED displays x 17
- RAMSA near-field speaker (WS-NF015) x 4
- Weather-resistant box speaker (WS-BW120) x 4

ZONE4

- 1-Chip DLP™ Projector (PT-REQ15) x 21
- Vortex rings x 5
- RAMSA near-field speaker (WS-NF055) x 16
- RAMSA near-field speaker (WS-BN010) x 10
- RAMSA 30 cm 2-Way Speaker (WS-AR200) x 2
- RAMSA 46 cm subwoofer (WS-HM518L) x 4
- RAMSA digital power amplifier (WP-DM948) x 1

Epilogue

- 1-Chip DLP™ Projector (PT-REQ15) x 2
- Technics speakers x 2
- Technics amplifier x 1

Earth

- 1-Chip DLP™ Projector (PT-REQ15) x 2
- Transparent OLED display x 1
- Ultra-high brightness LCD display (TH-55WF1HJ) x 5
- Weather-resistant box speaker (WS-BW120) x 4
- RAMSA near-field speaker (WS-AC066) x 3

Others

- Ultra-high brightness LCD display (TH-55WF1HJ) x 1
- Ultra-high brightness LCD display (TH-65WQ1HJ) x 1
- LED display (TL-110AD12AJ) x 1
- Wireless presentation system (TY-WPS1) x 1
- RAMSA near-field speaker (WS-BN025) x 4

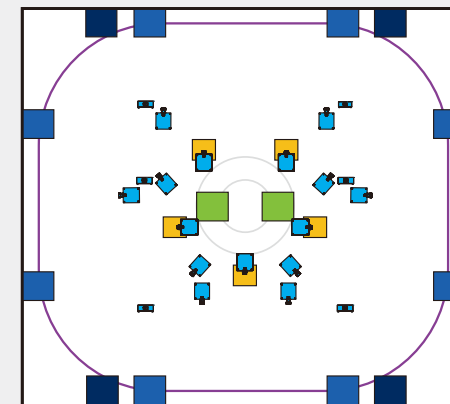
Zone 4 System Layout

Speakers (Available in Japan only)

- WS-NF055
16 units on floor and ceiling
- WS-BN010
10 units on floor and ceiling
- WS-AR200
2 units on ceiling
- WS-HM518L
4 units on floor

Projectors

- PT-REQ15JLB
21 units



Panasonic

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See our website for details on other projects.

<https://panasonic.net/cns/projector/>



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