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**Animalpedia: NextGen sensors enable the Animalpedia to track guests movements as they travel across the giant screen, interacting with animal shapes and learning about them through pop up graphics.**

# inside ORBI

ETI's NextGen Technology enables SEGA and BBC Earth to reinterpret the natural world

by Joe Kleiman, all photos courtesy of SEGA

Orbi, a unique, new indoor theme park that arose from the collaboration between SEGA and BBC Worldwide and the BBC Earth brand, opened August 2013 in Yokohama, Japan. Octogenarian Yuichiro Miura, on record as the oldest person to scale Mount Everest, said at the opening that he had been to the top of the world, but that now, through Orbi, he could explore the rest.

A 51,000 square foot facility, located in a shopping complex, Orbi takes guests through a series of immersive, entertaining and educational experiences, creating a new perspective about the natural world. It takes about two hours to pass through its various zones, highlighted by the spectacular main show on one of the world's largest projection screens.

Orbi reported a very successful first month of operations, welcoming some 100,000 guests, and

SEGA is looking to take the property global, with locations in markets such as Asia, the Middle East, and the Americas under consideration.

At its essence, Orbi is the synergistic result of a gaming and entertainment company applying its 50+ years of experience to creating new and innovative ways to interpret one of the world's largest nature film libraries.

SEGA, a company best known for video gaming and coin-op machines, perceived a need to develop new products for a family market, and to raise the bar for out-of-home attractions. Joseph Schmelzeis, SEGA's Corporate Director overseeing the Entertainment Park Division, reminds us that "Customers seek a powerful experience they cannot get anywhere else." He further points out that "The traditional game center model has been moving away from its roots... Among other things,

the proliferation of smart phones has led to a shift to redemption games and eateries in the United States, among other markets."

Demographics are also a factor. Says Schmelzeis, "Here in Japan we have an aging population and that means that traditional arcade activities are not a growth market. We began to look to something that would appeal across three generations – where grandparents, parents, and children could all enjoy the experience together." He reports that the vision has succeeded. "We've found that at Orbi all generations are enjoying themselves. It's about a sensory experience as well as knowledge."

On the technical innovation side, Edwards Technologies, Inc. (ETI) was in the role of technology specialist, including all AV, interactives, show control, and the photo capture system, all using its proprietary Videro cloud-based infrastructure. For

## THE ORBI EXPERIENCE

Tickets to Orbi are timed and can be purchased on site or online. Ticketed guests receive an RFID wristband, which can be used for a number of photos. Some photos utilize green screen while others are automatically taken in the midst of an environmental experience.

Guests enter Orbi through a small tunnel into the Exhibition Zone, for a series of interactive short presentations, each about 5 minutes long. Projected next to each entrance is the name of the experience and a description. Each show is designated by a number corresponding to something significant about the animal or environment portrayed.

Schmelzeis describes the emotional arc designed for guests to experience as they pass from one area to another. "We first planned a main attraction, the Main Show, and then planned various types of experiences leading and connecting to that show. The natural world has many scenes, and people's preferences are varied as well. In the Exhibition Zone, we have many and diverse natural settings to enable individuals to experience surprise, stimulation, refreshment, smile/laughter, fear, and comfort/healing, etc. In the AfterShow and Service [retail and cafe], we let customers bask in the afterglow of what they have just experienced. As such, the individual experiences have been designed as part of a single experience of Nature. It is the first facility of this sort of composition."

### EXHIBITION ZONE

#### Animalpedia

Once through the entrance tunnel, the iconic Animalpedia stands before guests. Its giant screen, 21 feet high and 34 feet wide, features animal shapes moving across its surface. Six stations are positioned in front of the screen, with directional sound targeting each. A scanner tracks the movement of the guest at each station. As he or she reaches out to an on-screen animal, the animal responds with an appropriate gesture and explanatory text pops up next to it.

#### 40,000

Named for the 40,000 km circumference of the Earth, this theater showcases the best of the BBC's flyover footage. There is a curved screen on each side of the narrow room and each is capable of running its own program. Guests feel the wind in their faces as they experience the majesty of flight over the natural world.

#### 1,300,000

This elongated theater lets guests see, hear and feel what it's like to be in the midst of a wildebeest migration, some 1,300,000 strong. It is comprised of a concave, wide screen on each side and a smaller, trapezoidal screen on each end, creating a near-360 degree environment.

#### 60

The komodo dragon has 60 teeth, and he is the star of this 4D show, in which 3D projection is enhanced by special effects seats that utilize air, water, ticklers, transducers and scent effects. Scott Shepard, ETI's Audio Systems Engineer on Orbi, created an enveloping soundscape system. Shepard notes that the speaker configuration "allowed us to localize the komodo as he walks around the theater."

#### -89.2

The coldest temperature ever recorded was -89.2° Celsius at the Soviet Vostok Station in Antarctica, on July 20, 1983. This multi-part experience takes guests into frigid Polar environments. After an introduction, they enter the first theater where they experience a simulation of ice cracking beneath

their feet. The second room delivers the sensations of Antarctic cold and wind. In this environment, a real-time, thermal image of guests as they react to the Polar weather is displayed on a monitor, and a photo is snapped by a camera linked to their RFID wristbands for purchase later in their journey.

#### 10,994

The Marianas Trench, 10,994 m deep, is on record as the deepest part of the world's oceans, located in the western Pacific. To bring guests into the undersea world, this theater about the undersea world uses three projectors on a curved screen, but at certain times during the show, a rear projection of an animal appears on a mist screen in front of the center of the main screen. The soundtrack is tranquil and calming. The overall feeling within the theater is that of being immersed inside an aquarium.

#### 75

75% of all documented animals in the world are insects. Guest proceed along a snaking corridor in which effects create the sense of being surrounded by flying insects. "It's like a funhouse," explains Sam Hatcher, ETI's Project Manager on Orbi.

#### ∞

The Infinity theater is a circular theater with a near-360 degree visual experience. Guests place an item of clothing onto a table in the middle of the room. A camera reads the color of the item and scenes from nature in that color fill the walls with 8-ft tall imagery. Sound effects encircle the room as new items of clothing are scanned and the colors change.

#### Camp Explore

The highlight of Camp Explore is a projection mapping wall, which uses irregular surfaces, and an accompanying soft sculpture. The sculpture changes form to represent four different animals, including a chameleon and a whale, which interact when touched. When natural elements such as waterfalls and lava appear on the wall, the soft sculpture changes in sync with that imagery, becoming those natural elements as well. Other activities in Camp Explore include a high speed camera where guests can simulate racing against the fastest creatures on land and two greenscreen photo opportunities that place guests in different natural environments with wild animals.

### 23.4 - THE MAIN THEATER

The main theater is named for the number of degrees the Earth is tilted on its axis as it orbits the Sun. At 139 feet wide, it is one of the world's largest screens (17 feet wider than the world's largest IMAX screen, the LG IMAX in Sydney). It has an irregular shape, resembling an elongated letter "U." Two smaller, rear projection screens are located on each side of the rear of the auditorium. Guests are given audio cues to look over their shoulder, see an animal appear on the smaller screen, and then follow it onto the main screen.

Within the theater, effects such as fog, fans, scents, and LED lighting, change to match the experience on screen. The theater's first film deals with the polar regions, and a highlight is the experience of ice breaking off a glacier, during which a shaking effect begins in one part of the theater and then moves its way across the auditorium.

This theater will continue to add programming to take full advantage of its design. Already, a second custom show has been completed by the BBC and talks are in progress between BBC and SEGA on a third and fourth.

Projection wall in Camp Explore: other highlights in the area include an interactive soft sculpture that takes on the guise of four animals and unique photo opportunities tied in with guests' RFID wristbands.



-89.2: As guests view a thermal image of themselves in chilling temperatures, a real life image of their experience is snapped by a camera and linked to their RFID wristband for purchase later.



Main Theater: The first production for this multimedia theater, Ice Worlds, takes guests to the polar regions. The BBC has completed production on a second film for this experience, which features one of the world's widest screens.



## A SHOWCASE FOR VIDERO

All of the Orbi shows, interactives, and digital displays are run via ETI's Videro Platform, which is a professionally hosted network that lives on the Cloud and powers the behind-the-scenes infrastructure, data and business applications for digital displays. Unlike Cloud systems that are utilized for just storage and streaming, Videro uses Apple Mac minis on site that house data and control audiovisual operations. By doing this, energy consumption and show control support facilities are greatly reduced from a traditional audiovisual intensive operation. If a mini goes down, another Mac mini onsite can pull data from the Cloud and become the new computer for that presentation.

An Internet interface allows Videro customers to globally upload any video, photo, or sound file for immediate inclusion on their displays. In addition, 24-hour monitoring centers at ETI's California headquarters and in Germany keep an eye on all aspects of operation from real-time images on digital displays to projector bulb life. At Orbi, plugins allow Videro to interface with RFID chips, and to control effects and motion sensors, among other capabilities.

ETI, Orbi was a golden opportunity for the award winning company to apply the Videro platform in new and unique ways to support SEGA's vision. ETI founder Brian Edwards commented, "It has been a great honor working with the SEGA team to create an outstanding guest experience that could showcase our team's talent and our use of leading-edge technology in a highly immersive environment."

## SEGA & BBC come together

SEGA has long been the largest manufacturer of coin-op gaming machines in the world. Over the years, it has entered other revenue markets, including home consoles in 1983. In 1996, SEGA entered the location-based entertainment (LBE) market with Gameworks, a joint venture with DreamWorks and Universal Studios, as well as their own SegaWorld.

As an example of how digital technology is being applied by SEGA and others in new and creative ways to location based entertainment, Schmelzeis drew our attention to the Japanese phenomenon of Hatsune Miku, a virtual anime singer or "vocaloid" that is rear projected onto a Plexiglas screen and is often accompanied by a live band. The virtual performer's shows have sold out throughout Japan and she has often appeared at SEGA's Tokyo Joypolis LBE center.

Although SEGA no longer has a stake in Gameworks and the SegaWorld parks, a second renaissance in the company's LBE operations began in 2009 with the opening of SEGA Republic in Dubai and a renovated Joypolis in 2012. Five years ago, the company decided they wanted to pursue an LBE concept that would appeal to the three-generation audience. At the same time, the BBC was looking for additional outlets besides television and theater to showcase their extraordinary collection of wildlife footage. The two companies met, and their 2011 agreement led to the opening of Orbi this year.

## ETI joins the team

To make such an audiovisual endeavor possible, SEGA hired Edwards Technologies, Inc (ETI) of El Segundo, CA, now in its 29th year of operation, as technology specialists. This would be just the latest in a long line of SEGA projects that ETI has been involved with, going back to the very first Gameworks location in Seattle.

ETI has been responsible for designing and installing AV systems at leading theme parks, attractions, retail, hospitality, museum, and even military training locations worldwide.

In 2011, Edwards partnered with Neal Lassila, a former executive of Disney Retail, to create a sister company, Fresh Juice Global. The new company offers experience design and consulting, utilizing ETI's technical know-how to create new, interactive branding experiences.

Orbi proved a unique challenge, as each of its custom spaces had its own very specific requirements. Their expertise allowed ETI to create visual imagery and soundscapes designed to make these spaces feel much larger than they actually are, completely immersing the guest. "ETI was selected due to their experience in supporting the implementation of theme parks, attractions, shows, and museums - in particular, their design of facility management systems and effective use of technology for the creation of special effects," says Schmelzeis. We also have envisioned the expansion of Orbi worldwide and that was another reason for the selection of ETI."

### Designed for the Future

According to Schmelzeis, an important design consideration for Orbi was the ability to change content throughout the attraction and to implement new technologies, especially in light



**Infinity theater: as items of clothing are placed on the table in the center of the space, the entire theater comes alive with images of nature in the same color as the clothing.**

of BBC Earth's transition to filming in 4K resolution. "Because the BBC archive is large and ever-growing, we have many scenes we wish to share with our customers and will be renewing the Orbi visual content with this material from time to time."

Amanda Hill, Chief Brands Officer for BBC Worldwide sums up the unique partnership thus: "When we set out to create Orbi we challenged

ourselves to bring people a nature experience beyond what would be possible in the real world, inspiring visitors to forge a deeper connection with the natural world. Orbi is a thrilling culmination of BBC Earth's partnership with SEGA, it really is nature supercharged." ...



Life Size Gesture Recognition  
Interactive at SEGA's  
New Orbi Theme Park in  
Yokohama Japan



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