

disguise partners on first-of-its-kind Illuminarium in Atlanta

In July 2021, the first Illuminarium opened in downtown Atlanta with the debut projection-mapped spectacle “WILD: A Safari Experience”. It showcased Africa’s most exotic animals captured by 240° native field-of-view custom camera arrays that transport visitors to a safari in Africa.

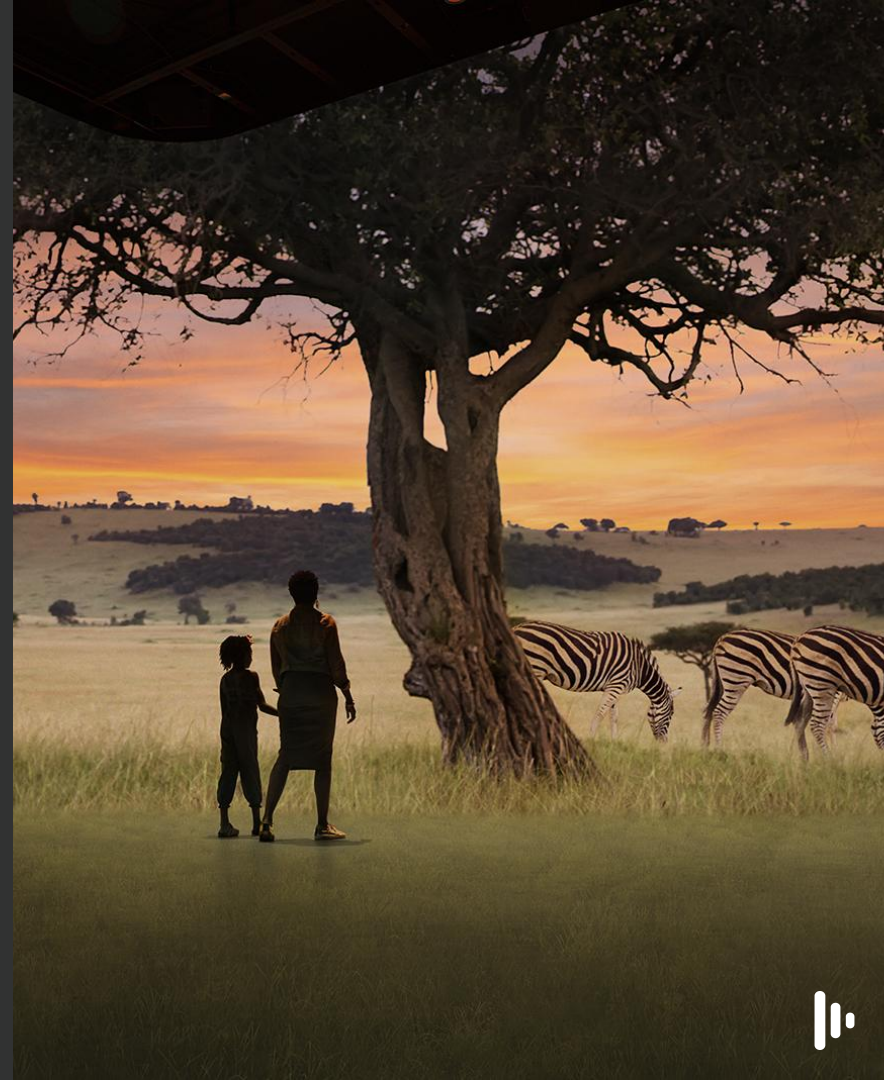
In this case study you will see how disguise forms part of an impressive fleet of technologies that help drive Illuminarium’s massive, ultra-high-resolution displays, taking guests on an amazing multi-sensory journey.



At a glance

Illuminarium Experiences is a digitally-delivered, global experiential entertainment brand which creates, produces, markets and manages immersive entertainment spectacles. It combines traditional motion picture production techniques with Virtual Reality to enable visitors to view real-world, filmed content in a 360° environment without wearable hardware of any kind.

The first of many planned Illuminarium venues opened July 1, 2021 in Atlanta, hosting the show, "WILD: A Safari Experience." It features two projection spaces. The first, comprising about 2,000 square feet, hosts a pre-show experience from which audience members are pulled into the second, 8,000 square foot space. The larger room features more than 18,000 square feet of projection that is achieved with 46 Panasonic 4K laser projectors, 18 disguise vx 4 media servers and 45 disguise rx rendering nodes. The scale of the show is more than 16 times the resolution of 4K content.



The challenge

Massive pixel power

To fuel the unique Illuminarium experience required media servers powering 46 4K outputs – pushing 174 million pixels of content that are regularly updated. The larger room has an overall 37243 x 2100 pixel canvas, so producing a single rendered piece of content at that resolution, while also targeting 60 fps content and HDR workflows, meant rendering a huge amount of pixels. A technical workflow had to be established that would work for the creatives and scale repeatedly for the reels of content that have continued since the opening.

A further requirement was to not compromise content quality during the capture and display processes. Any signal degradation in that chain was unacceptable when creating a truly immersive experience that would transport the audience.

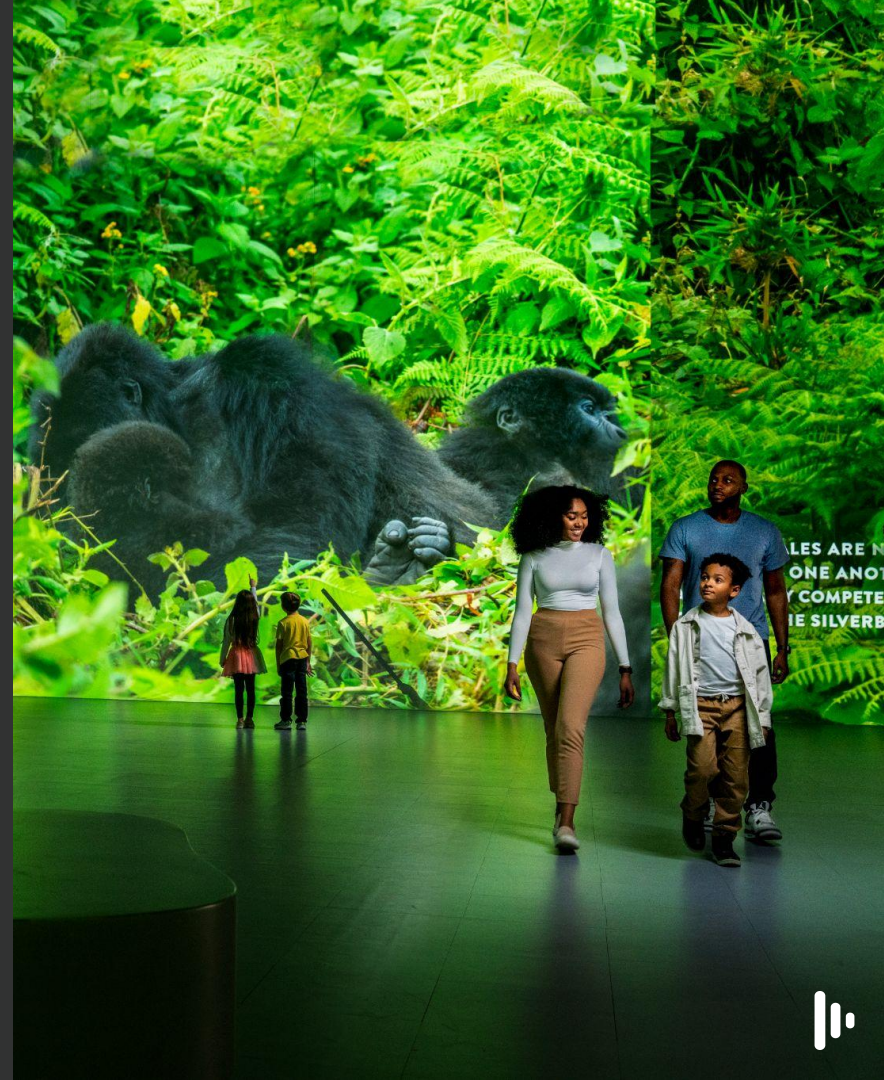


The solution

disguise worked closely with the Illuminarium team and [Electrosonic](#), the system integrators, to overcome these challenges.

The key to meeting Illuminarium's needs was to break up the massive content into smaller and more manageable chunks. Once the content was diced into pieces, workflows within disguise would synchronise the content and pull it all together again to play out in one coherent space that was fully synchronised.

To previsualise the show and understand how to use the space and its massive pixel power for maximum creative success, the Illuminarium team built a 1:1 scale mock-up of the room in one of the content offices to see what the experience might feel like. Shrinking the size of the space allowed the team to lay out the end experience in 3D and design for a horizon line that would feel correct. They even placed miniature figures in the space to give a sense of the room being populated by 50-200 people.



The solution

Calibrating 46 projectors

The mock-up also enabled disguise to put its OmniCal system for projector alignment to the test at small scale to see how things would work when scaled up for the full-size experience. The incredibly fast and efficient OmniCal feature is vital to the day-to-day operation of Illuminarium's 46 projectors and any recalibrating that might need to be done from time to time by the maintenance crew.

Driving 60 TB of storage

Currently on site, 18 disguise vx 4 media servers drive the space; all with upgraded storage drives for a total of 60 terabytes of storage in the director and understudy machines. The increased storage capacity is not only required to accommodate the show but also enables the local servers to hold enough content to rotate the reels of content as desired.



The solution

The system is capable of capturing inputs from real-time systems and importing them via the video inputs on the media servers. In addition, 12 disguise rx render nodes (at the time of opening) with RenderStream take content from a real-time engine, such as Unreal or Notch, that responds to LIDAR data captured in the space. This means content can be generated in real-time for the constant shows throughout the experience and for Illuminarium After Dark, a cocktail and curated eats experience in seven lush, digital settings offered Thursday through Saturday evenings. There are plans for future content reels that run completely in real-time as well.



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“The sheer scale of this project and the technology required to make it happen was not attempted by many before us. Getting Illuminarium from idea to execution took us about two years – gathering the right technology partners, such as disguise, and designing a system that could deliver on this ambitious concept.”

Brian Allen, Executive Vice President of Technology and Content Integration, Illuminarium Experiences



The results

disguise vx 4 media servers enabled Illuminarium to project 174 million pixels at 60 fps onto its walls and floors. Real-time elements, powered by disguise rx render nodes and RenderStream, enhanced the show – producing picture footprints in the sand that respond to steps (with the help of lidar motion sensors from Ouster) as audience members traverse the space.

Since its opening, Illuminarium has already upgraded its fleet of rx render nodes to a total of 45 to gain the ability to generate content in real-time on all 18,000 square feet of its large venue.

Illuminarium is believed to be unique in using cluster rendering for a projection-mapped experience. This technology breaks boundaries that were previously difficult to overcome - broadening horizons and expanding the scale of what's immersive and interactive in the venue. In the future, Illuminarium experiences will only have higher resolution, better fidelity, more rendering capabilities and more ambitious content.



Success

18,000
square feet of
projection

46
4K outputs

174 million
pixels pushed

60 TB
of storage

Through a convergence of cutting-edge technologies from the most impressive brands in the industry, Illuminarium has essentially created a new media infrastructure that will bring realistic experiences into its huge venue.

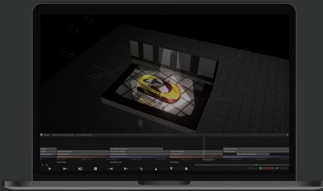
disguise systems offered an effective workflow for pushing a massive amount of pixels at Illuminarium in Atlanta. The systems further provide an upgrade path that Illuminarium is already taking advantage of.

Illuminarium is expanding its RenderStream capacity with disguise to allow two upcoming content reels to be completely run off RenderStream. disguise is also working collaboratively with Epic Games and all of Illuminarium's technology partners to explore the limits of what can be done in real-time with game engines.



disguise equipment used

Designer software



Designer is the ultimate software to visualise, design, and sequence projects from concept all the way through to showtime.

[Find out more.](#)

vx 4



Optimised for playing up to four times uncompressed 4K60 and lossless 10-bit video, the vx 4 powers content of the highest quality at any scale.

[Find out more.](#)

rx



rx is our dedicated system for hosting content render engines, enabling new possibilities for scale out rendering.

[Find out more.](#)

OmniCal



Our camera-based projector calibration system, OmniCal quickly captures a point cloud of your projection surface and accurately calibrates projectors.

[Find out more.](#)



In partnership with:

System integration: Electrosonic

Projectors: Panasonic

Lidar sensors: Ouster

Video transfer system: Lightware

In-floor haptics: Powersoft

Sound system: Holoplot

Orion wall coating and embedded speaker panels: Strong/MDI

Scenting system: Prolitec

Image credits: Illuminarium Experiences, LLC.



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