



DISGUISE SERVICES

The Ultimate Guide to LED Volumes

Image credit: SCAD

Introduction



Image credit: Cleveland Institute of Art

Only a few years ago, LED volumes were considered experimental; a new tool reserved for big-budget productions willing to take a risk on untested technology. In 2025, they've become a cornerstone of modern production.

The pressure today isn't just to deliver visually compelling content, but to deliver more of it, faster. Streaming platforms, broadcasters, brands, and creators are all operating on tighter timelines and leaner budgets, where months of post-production are often no longer viable.

LED volumes address that challenge by enabling teams to reduce travel by bringing locations to them, capture final-pixel shots in real-time on set, and plan every detail in pre-production instead of fixing it in post. At the same time, advancements in LED panel offerings, colour management, and content workflows have removed many of the early technical and creative barriers.

Today, LED stages are being used to produce a wide variety of content, ranging from commercial productions to music videos, as well as broadcast election coverage and film and episodic productions.

In short, what began as a novelty has now become an incredibly powerful production tool. The question for future-facing facilities has shifted from if they should consider building a volume to how they can design one that meets their specific creative needs.

This guide will walk you through what it takes to build an LED volume today, covering the fundamentals as well as content considerations and how to pick the right volume shape for your productions - so you can step into the future of production with confidence.

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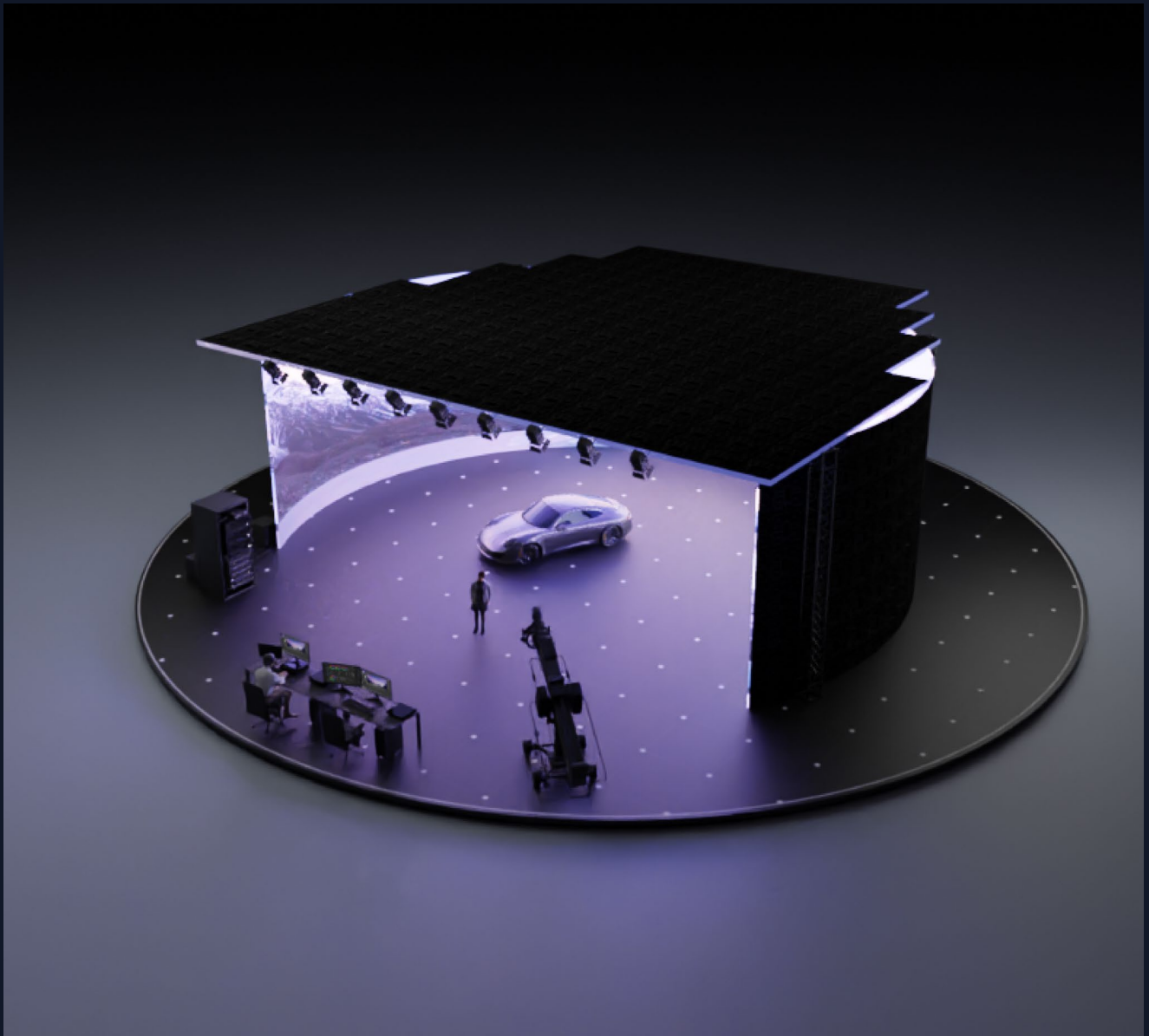
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The fundamentals

In this section, we're breaking down the fundamentals of LED volumes: how the technology, the workflows, and the creative vision all come together in real time. We'll show you what makes a virtual production stage tick and how each piece works together to turn ideas into immersive, fully realised worlds.

Anatomy of an LED volume

Let's zoom in on the individual pieces that make up an LED volume. From the panels that display virtual worlds to the cameras that capture them, here are the key components that form the backbone of a virtual production stage.



The fundamentals

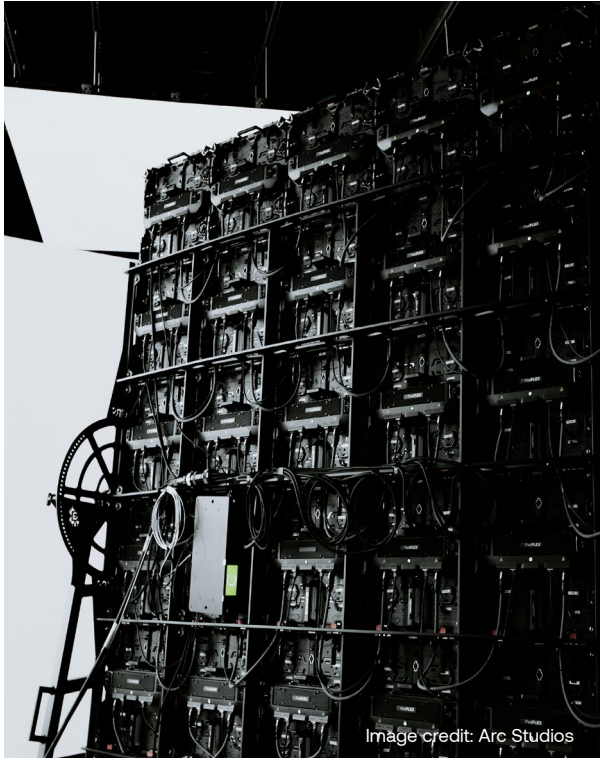
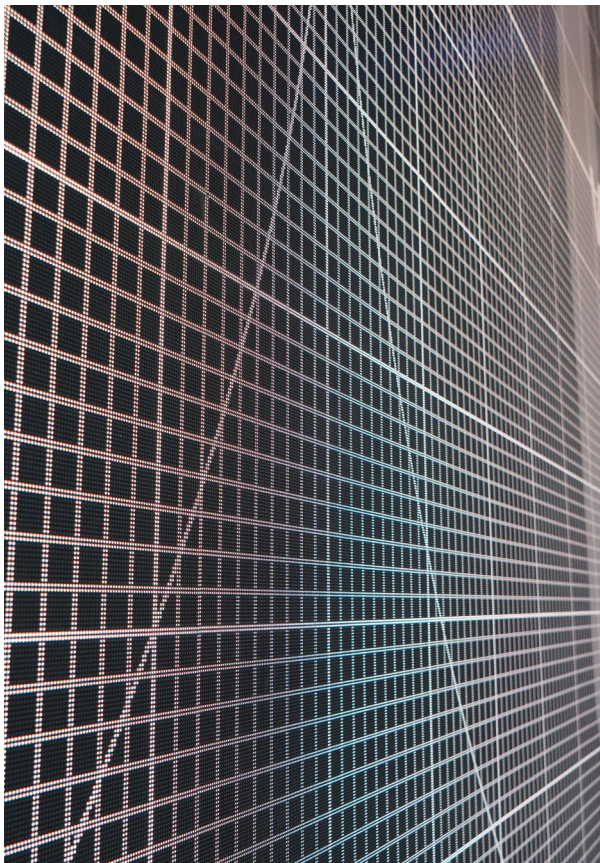


Image credit: Arc Studios



LED Panels

LED panels form the visual foundation of a virtual production stage, displaying the digital environment in real time. When selecting panels, key considerations include:

Pixel pitch

Pixel pitch is the distance between pixels. 2mm or lower delivers sharper, more detailed images for close-ups, with better colour accuracy, contrast, and reduced pixelation, even when viewed from multiple angles. It also minimises moiré patterns on fine textures, making it ideal for high-resolution shots on smaller volumes.

Pixel pitches of 2mm or higher work well for medium-distance shots and larger sets, balancing clarity and realism while being a more cost-effective option for bigger volumes. However, wider pixel spacing can result in slightly more noticeable moiré on intricate patterns and slightly reduced image consistency at steep viewing angles.

Resolution

Resolution determines how crisp your LED volume looks on camera. The LED volume can't display more detail than its panels and pixel pitch allow. The total number of panels sets overall stage clarity: more panels create smoother visuals, while fewer panels or larger pixel pitches can look blocky up close. Lower-resolution volumes or higher pixel pitches can also struggle with gradient content, leading to banding or less smooth colour transitions.

The fundamentals

It's also important to consider the relationship between camera resolution and LED resolution: if the camera captures more detail than the LED can display, fine textures or subtle gradients may not render accurately. Matching LED resolution to the camera's capture capabilities ensures the visuals remain sharp, realistic, and clean.

Colour and colour space

Ensure panels cover the necessary colour space for your content and reproduce colours accurately. Consistent colour across panels, proper gamma, and white balance help prevent post-production fixes and maintain realism. It's important to maintain a constant colour space throughout the workflow, from content creation to LED rendering to camera capture, so what's designed is what's recorded. For example, Rec. 709 is the standard for HD broadcast, while DCI-P3 is commonly used for cinematic workflows. Using the correct target ensures colours display correctly for the final format.

Be aware of potential hue shifts as viewing angles change: choosing panels with wide viewing angles and stable colour performance ensures colours remain accurate even at the edges of the volume.

Brightness

Brightness affects how well your LED volume balances with on-set lighting. Consider maximum nits, dimming range, and panel consistency. Proper brightness ensures accurate exposure and maintains realistic visuals without heavy post-production.

Refresh rates and scan ratios

LED panels refresh many times per second to display motion smoothly. The refresh rate (measured in Hz) determines how quickly the panels update, while the scan ratio describes how the LEDs are energised within each refresh cycle. Both factors directly affect how cameras capture the LED volume—mismatched refresh rates or improper scan ratios can cause flickering, banding, or rolling lines on the camera.

Subframe workflows, which break each frame into smaller time slices, help synchronise the LED refresh with the camera shutter, reducing these artefacts and enabling smooth motion capture. Matching refresh rates and scan strategies to the camera's frame rate and shutter settings is essential for clean, realistic footage.



The fundamentals

Serviceability and spares

Choosing panels designed for easy servicing and standardised spares protects your investment and keeps your LED volume operational long-term.

Front-serviceable LED panels allow for quick access and replacement of individual modules without dismantling the entire wall, minimising downtime during production.

Keeping spare panels, modules, and power supplies on hand ensures that any component failures can be addressed immediately, maintaining consistent image quality.

It's best to source spares from the same production batch as your original panels, which guarantees matching colour, brightness, and performance, avoiding noticeable differences on camera.

Hardware stack

The hardware, typically housed in a rack, is responsible for capturing, processing, and recording everything that happens on stage.

Key components include media servers that drive the panels and manage outputs, GPU or render nodes for any in-engine visuals, and sometimes external recording devices that capture the camera feed with the LED content (Virtual productions don't always use external recorders; instead, the camera often records the LED content directly, preserving full sensor resolution and accurate colour for the final image).

Signal routing, synchronisation units, and network hardware ensure all elements stay in lockstep, while optional backup systems provide reliability during high-stakes shoots.

Infrastructure

LED volumes require stable power distribution, effective cooling systems, and structured cabling for video and data.

Structural considerations include ground-supported or truss-mounted configurations capable of safely bearing the weight of the LED panels. Proper infrastructure ensures the stage operates safely, reliably, and can handle the demands of production.



Image credit: Arc Studios

The fundamentals

Software

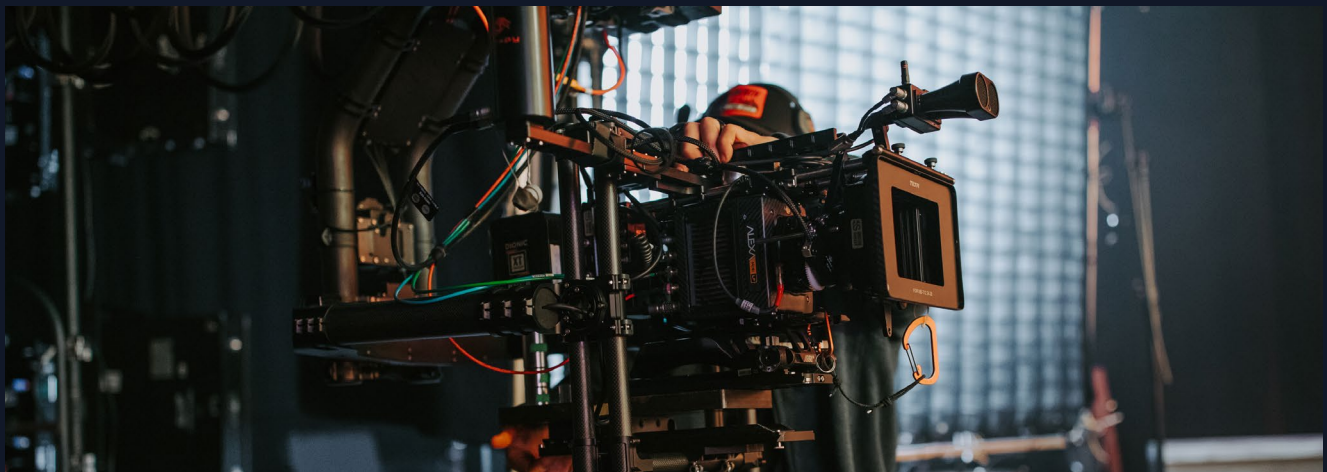
Software drives the LED volume and keeps virtual production running in real time. Media servers like [Disguise Designer](#) handle content playback, mapping visuals across panels and feeding multiple cameras. Real-time engines such as Unreal Engine generate in-engine visuals, while tracking software integrates camera and motion capture data to sync virtual elements with live action. Control interfaces allow operators to make adjustments on the fly, ensuring what's captured on camera matches the creative vision.



Camera

Cameras capture the final image on a virtual production stage, and their specifications directly affect how the LED volume performs. Sensor size and frame rate influence exposure, motion blur, and depth of field, while lens choice, focal length, and aperture impact perspective and integration with LED content. Cameras must also integrate with tracking systems so movement aligns perfectly with the virtual environment.

Shutter type is critical: rolling shutters can introduce distortion with fast-moving objects or camera pans, while global shutters eliminate this but may limit exposure options. When using multiple cameras, shutter angles and timing must be carefully managed to avoid flicker or inconsistencies across feeds. Finally, camera outputs need to sync with media servers and recording systems to maintain consistent colour, resolution, and timing across the stage.



The fundamentals



Lenses

Lenses shape how the camera sees the LED volume, affecting the field of view, perspective, and depth of field. Wide-angle lenses capture more of the virtual environment but can introduce distortion, while telephoto lenses compress space and emphasise detail. Aperture choice controls exposure and background blur, impacting how the LED content integrates with live elements. Selecting the right lenses ensures the virtual and physical elements align naturally on camera.

Camera tracking

Camera tracking syncs physical camera movement with the virtual environment, ensuring perspective and parallax look correct on screen. Optical, marker-based, or hybrid

systems track position and rotation in real time, feeding data to the media server so the LED content responds instantly and stays locked to the camera view.

Lighting

Lighting balances the real and virtual worlds on a virtual production stage. Practical fixtures must complement the light coming off the LED wall to achieve natural integration on camera. Key considerations include matching colour temperature, controlling reflections, and shaping contrast. Using image-based lighting (IBL) allows lights to be driven by HDRI captures or rendered environments, ensuring that the real set and virtual backgrounds blend naturally. This workflow enhances realism, improves colour fidelity, and reduces the need for extensive post-production fixes.

The fundamentals

Audio

LED walls can introduce fan noise and reflections, so proper mic choice, placement, and acoustic treatment are essential. Clean, synchronised audio ensures dialogue and effects match the visuals without relying on fixes in post.

Volume operations

The volume operations, also known as volume control, mission control, control room, command centre, or brain bar, is the control hub of a virtual production stage, housing operators for content, camera tracking, playback, lighting, and system monitoring. From here, specialists oversee real-time performance and troubleshoot on the fly, keeping the stage running smoothly and ensuring the creative intent makes it onto camera.

Teams

Virtual production is highly collaborative, blending technical and creative expertise. While every shoot or project is different, and requirements can vary, a typical minimum crew might include:

Generalist Technician: handles LED panels, networking, and basic troubleshooting

Disguise Operator: manages media servers, playback, and system outputs

Unreal Artist: creates and manages in-engine content for the LED volume

This core crew provides the essential expertise to ensure smooth operations and high-quality results on every shoot. Crew size and composition can vary depending on the production.

Smaller commercial shoots may rely solely on this core team, while broadcast or large-scale projects often require additional specialists to handle complex cameras, tracking, lighting, and live delivery.

Individually, these elements set the stage— together, they unlock the powerful workflows that make virtual production possible.



The fundamentals

How it all connects

A virtual production stage relies on every system working in sync. LED panels display high-resolution visuals, with pixel pitch and resolution determining how sharp the content looks on camera.

Cameras must match panel refresh rates and frame rates to avoid flicker, while colour space alignment across cameras, panels, and software keeps the image consistent and true to the creative intent.

Tracking data locks camera movement to the virtual environment, and media servers coordinate playback and real-time rendering.

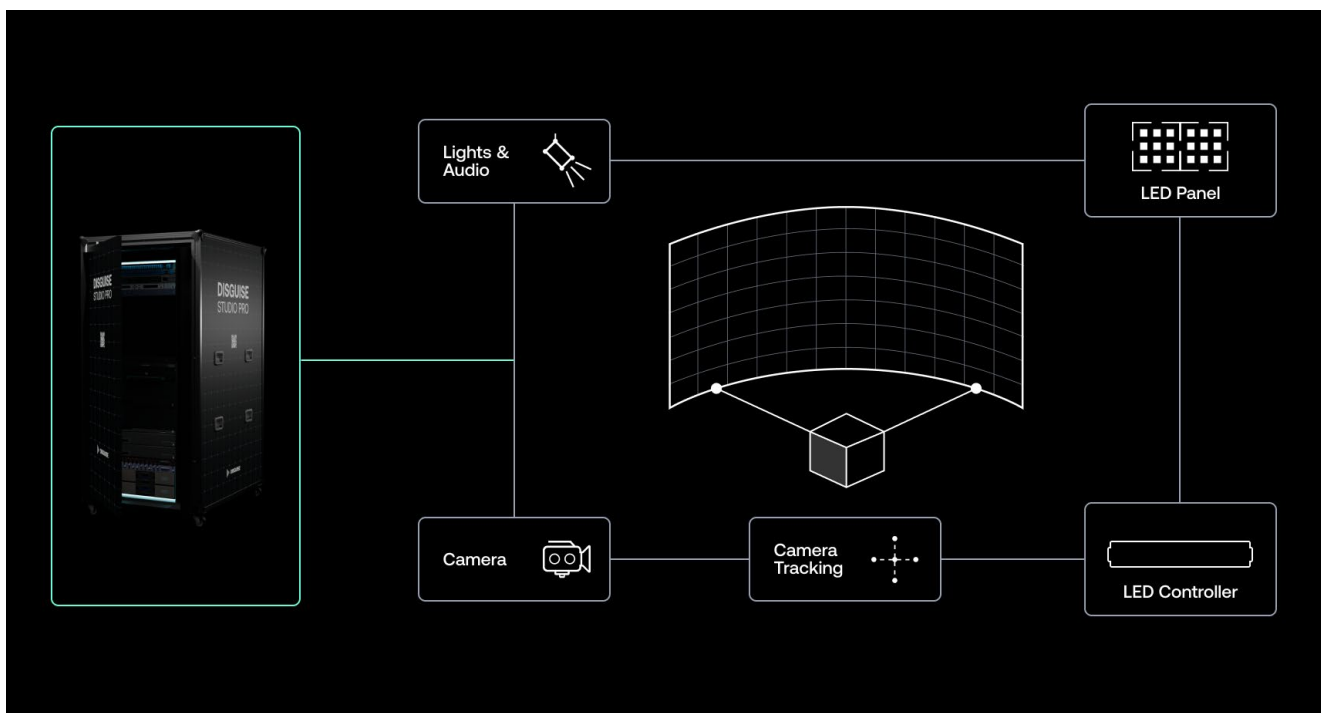
For anyone building a VP studio, it's critical to choose equipment designed to integrate smoothly and to plan for regular testing and calibration.

When these systems align, the result is seamless in-camera VFX; when they don't, issues like moiré, mismatched colours, or rolling bands can quickly break immersion.

Need help?

Our Studio Pro consultation gives you expert guidance on building a virtual production studio where hardware and software align, ensuring your stage performs as intended from day one.

Learn more at www.disguise.one



The fundamentals

Content workflows

An LED volume is only as powerful as the content it displays, and today's content workflows offer a wide range of creative approaches.



Image credit: Seyhan Lee

2D plates

Traditional video or photographic plates can be displayed on the volume for quick, straightforward setups.



Full 3D worlds

Real-time environments in Unreal, Unity, or Notch can update lighting, animation, and interactivity on the fly.

2.5D environments

Layered scenes create parallax effects that give a sense of depth without full 3D modelling.



Extended reality (XR):

Hybrid workflows can combine LED content with augmented layers, extending the virtual set beyond the actual LED stage.

The fundamentals

Supporting tools and workflows

Disguise works with a variety of tools and workflows to make content creation for LED volumes more flexible and efficient:

Traditional content workflows

Standard 3D modelling, texturing, and animation pipelines using tools like Autodesk software, Maya, Blender, or Photoshop. These workflows provide complete creative control, allowing artists to build fully custom assets and environments for the LED volume.

Ai-assisted generation

Tools like [Volinga](#) and [Cuebric](#) use artificial intelligence to create digital environments automatically. This can speed up early-stage design, provide inspiration, or fill in complex backgrounds without having to build every element manually.

Photogrammetry

A process that combines multiple photographs of a real object or location to build an accurate 3D model. This allows real-world elements to be brought into the LED volume with precise detail.

LiDAR Scanning

LiDAR uses laser measurements to capture depth and shape information for a scene or object. It's especially useful for large environments or objects with complex geometry.

Gaussian splatting

A newer scanning technique that converts point cloud data (from LiDAR or photogrammetry) into smooth, detailed 3D surfaces. This helps scanned assets look realistic in a virtual set.

How Disguise supports content flexibility

Disguise centralises playback, layering, and timing, making it easier for teams to manage multiple types of content in a single system. Whether working with scanned real-world assets or fully interactive 3D environments, Disguise gives productions the tools to move quickly while maintaining both realism and creative control.

Planning for an LED volume

LED volumes open new possibilities for production, but getting the most out of them starts with planning.

Understanding the benefits, matching the stage to your goals, and setting up the right workflows ensures your volume works for your current project and scales for future needs.



Image credit: Kramer Productions / One Set Studios

Planning for an LED volume

The case for LED volumes

LED volumes are production tools that let you create, iterate, and capture your vision in real time. Camera angles, lighting, shots - everything can be dialled in exactly before you step foot on set to make your shoot as efficient as possible.

1 Creative collaboration from the start

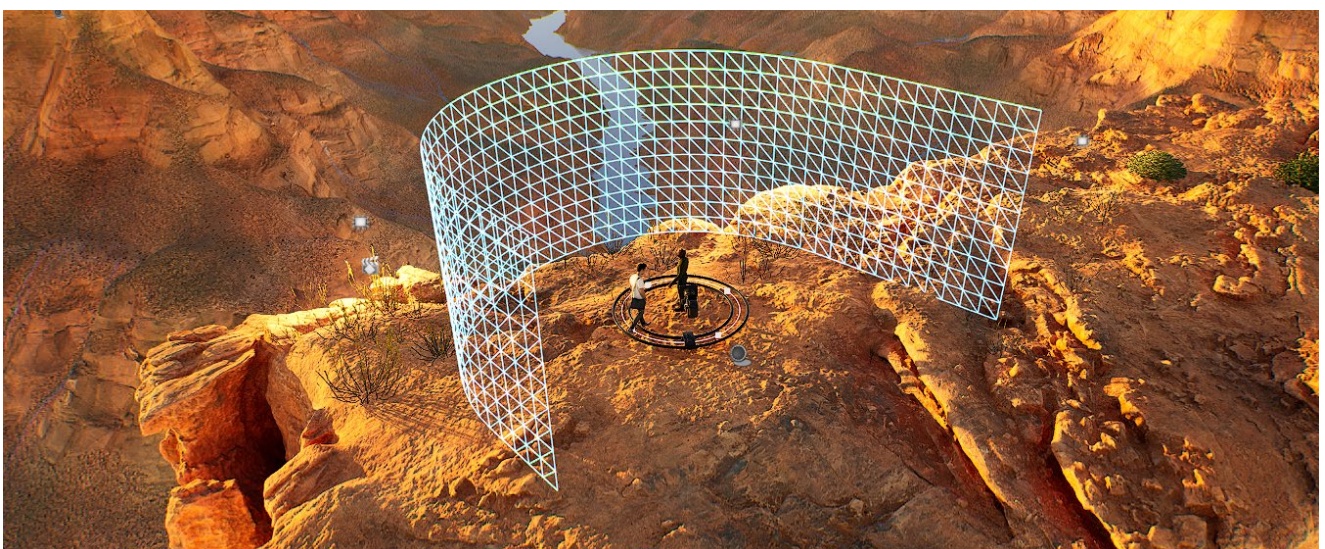
An LED volume brings the production teams together earlier in the process. Directors, cinematographers, and production designers can pre-visualise environments with the help of the virtual art department, experiment with lighting, framing, and camera placements, and make confident decisions before setting foot on set. That shared sandbox means fewer surprises later and a smoother path from concept to camera.

2 On-set flexibility

From a sunrise in Tokyo to a desert storm, an LED volume makes it possible to shift instantly between worlds without moving the crew. Real-time adjustments to environments, lighting, and camera perspective give productions the flexibility to adapt on the fly, whether that's solving continuity challenges or unlocking entirely new creative options mid-shoot.

3 Efficiency

LED volumes streamline production by minimising travel, reducing set builds, and focusing valuable time with talent. With environments ready to go at the touch of a button, multiple locations can be captured in a single day. Because shots are final-pixel in camera, less post-production is required, meaning less downtime and more energy to spend where it counts: getting the perfect shot.



Planning for an LED volume

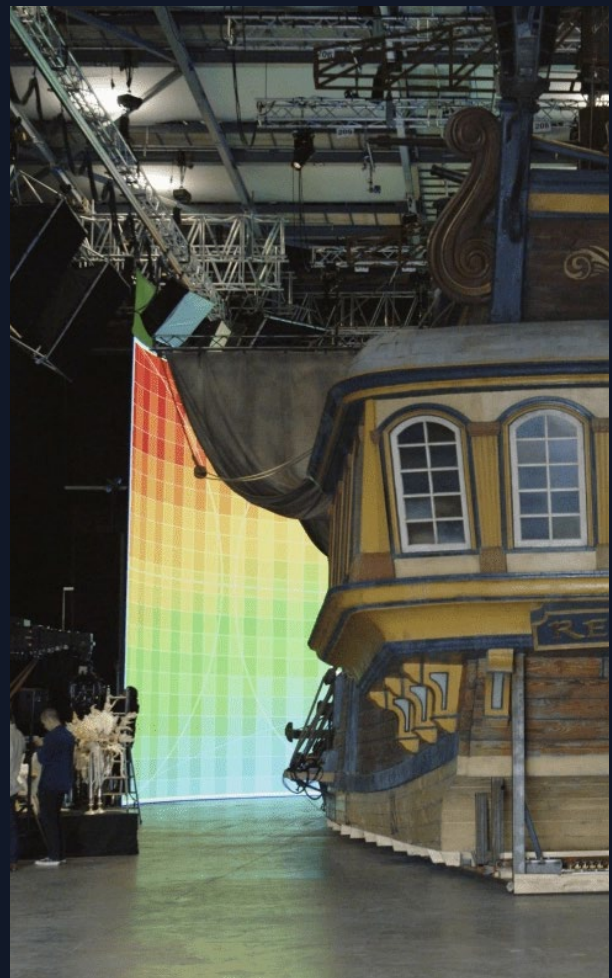


4 Scalability

Every LED volume running on Disguise is built to grow. From small broadcast studios to large-scale film stages, the same core technology scales up or down to match the ambition of the project. With a growing number of integrations across real-time engines and hardware, studios can expand capabilities over time without starting from scratch.

5 Sustainability and long-term ROI

LED volumes minimise travel and set construction costs while cutting carbon impact. By reusing and adapting virtual environments, studios can generate more content in less time, accelerating turnaround and maximising output. The result is a scalable model where efficiency directly drives revenue and ROI grows with every project.



Planning for an LED volume

Operational considerations

Running an LED volume smoothly means having the right expertise, maintenance, and content pipeline. Operators need to know media servers, real-time engines, and LED calibration. Content teams need workflows optimised for LED playback. Keeping hardware and software in top shape and coordinating creative, production, and technical teams ensures the stage performs reliably and efficiently.

Crew

Operating an LED volume requires a coordinated team with both technical and creative expertise. Key roles typically include:

Volume Operators

who manage media servers, real-time engines, and LED panels during shoots

Camera Operators

trained in in-camera VFX and LED-specific lighting considerations

Engineers/Technicians

who maintain and troubleshoot hardware, software, and tracking systems

Content/Art Teams

who prepare assets, lighting, and animations optimised for real-time playback

Production Coordinators

who ensure communication and scheduling between departments is seamless



Planning for an LED volume

Maintenance

Maintaining an LED volume goes beyond the panels themselves. The full system requires regular attention to ensure reliable performance and high-quality visuals:

LED panels and processors

calibration, colour balance, and consistent brightness

Media servers

software updates, file management, and performance monitoring

Tracking systems

camera and object tracking, calibration and testing

Networking and connectivity

ensuring low-latency, stable connections across all devices

Cameras and lenses

alignment, focus, and colour calibration

Power and environmental systems

temperature, cooling, and backup systems

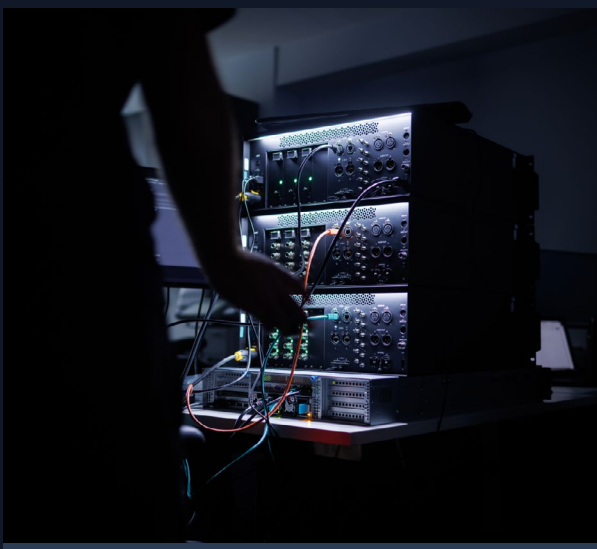


Content pipeline

Your assets, lighting, and animations need to play nice with real-time rendering. A clean, organised pipeline means faster iterations, fewer on-set headaches, and more freedom to experiment. Collaboration is key: VFX artists, Unreal developers, and camera teams all working together ensure your world looks amazing from every angle and performs when it counts.

Disguise supports your volume with 24/7 technical support and an in-house virtual art department that collaborates with your creative team, whether for one-off projects or ongoing retainer work. We provide hands-on training to get your team up and running quickly, ensuring your volume performs at its full potential from day one.

Learn more about our [services](#).



Designing your volume

Choosing the right LED volume goes beyond square footage. It's about finding a configuration, features, and workflow that match your production goals, crew, and content needs. The right stage balances creative flexibility, operational efficiency, and future scalability, while avoiding common pitfalls that can slow production or limit performance.

This chapter breaks down configurations, add-ons, and common pitfalls to avoid to help you design a volume that works for your team and your projects.

Choosing the right Stage

The right volume depends on your production goals, budget, and available space. Smaller stages work well for focused shoots or smaller crews. Larger volumes give you flexibility for including bigger physical objects (e.g., car shoots), multiple cameras and angles, and expansive environments. Consider scalability and the learning curve: more advanced stages can handle a wider range of workflows, from real-time 3D worlds to AI-assisted content and XR setups.

Here are three things to keep in mind when building a stage:

1 Define your use cases

Are you shooting commercials, interviews, broadcast segments, or feature films? Your content goals will determine the size, pixel pitch, and content workflows you need.

2 Balance scale with budget

Bigger isn't always better; opt for a stage that meets today's needs but leaves room to scale as demand grows. Prioritise must-have features: decide early whether you need curved walls, ceilings, or extensions, so the budget goes toward elements that impact your storytelling the most.

3 Plan for workflow integration

Think beyond the wall itself. Ensure your infrastructure, software, and team are equipped to support the creative and technical demands of virtual production.



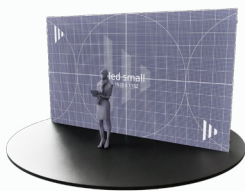
Image credit: PTC

Designing your volume

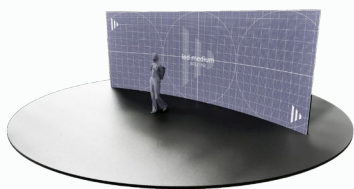
Configuration options

LED volumes come in a variety of shapes to fit different production needs. Choosing the right wall configuration can impact camera coverage, talent interaction, and the overall immersive

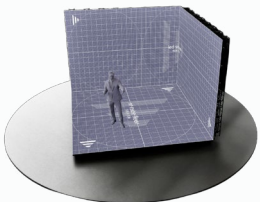
experience. Below is a breakdown of common setups, what they're best suited for, and the key benefits each provides.



Flat wall



Curved wall



Diamond wall

Ideal for	Simple setups	Immersive backgrounds	Multi-camera setups
	Controlled camera angles	Talent-centric scenes,	Interactive or motion-heavy shoots
	Single-camera shoots	Medium camera coverage	Scenes requiring partial immersion
Key benefits	Cost-effective	Wraps around talent for more realistic parallax	Provides coverage on two sides and the floor for dynamic camera moves
	Easy to ground support or wall mount	Enhances in-camera VFX	Allows more creative angles than flat or curved walls alone
	Easy to maintain and calibrate for tracking systems	Provides improved spatial lighting	Ideal for set extension

Add-ons and enhancements

LED add-ons give your volume more flexibility and creative reach. Ceilings, floors, and mobile

panels expand what you can capture, support more dynamic camera angles, and help your team adapt the stage to different productions. Choosing the right enhancements ensures your volume performs efficiently while delivering the visuals your project needs.

Designing your volume

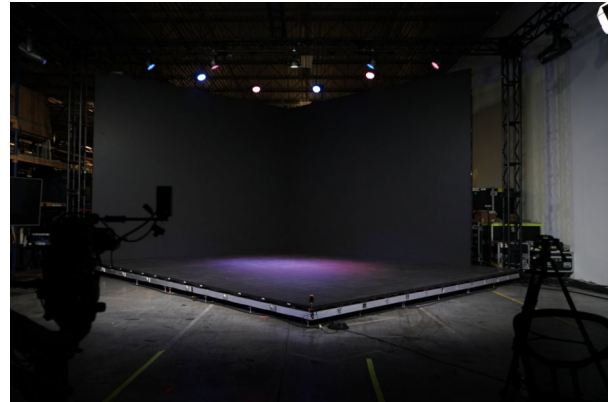
LED ceiling

Purpose and benefits

Adds overhead backgrounds and allows for integrated LED lighting or practical effects. Creates more immersive environments, allows for realistic reflections and extended world continuity, and supports complex camera moves.

Considerations

Adds structural complexity, requires careful planning for rigging and safety, may need extra power and cooling. Typically used for lighting rather than as a background to film against.



Floor

Purpose and benefits

Extends your environment to the ground, enabling full-body shots, wider compositions, XR interactions, and natural talent or object interaction. Adds depth and realism while enhancing in-camera VFX.

Considerations

Shadows, lighting, and reflections need careful management, and content must be optimised for floor perspective to maintain realism.



Auxiliary cart / mobile panels

Purpose and benefits

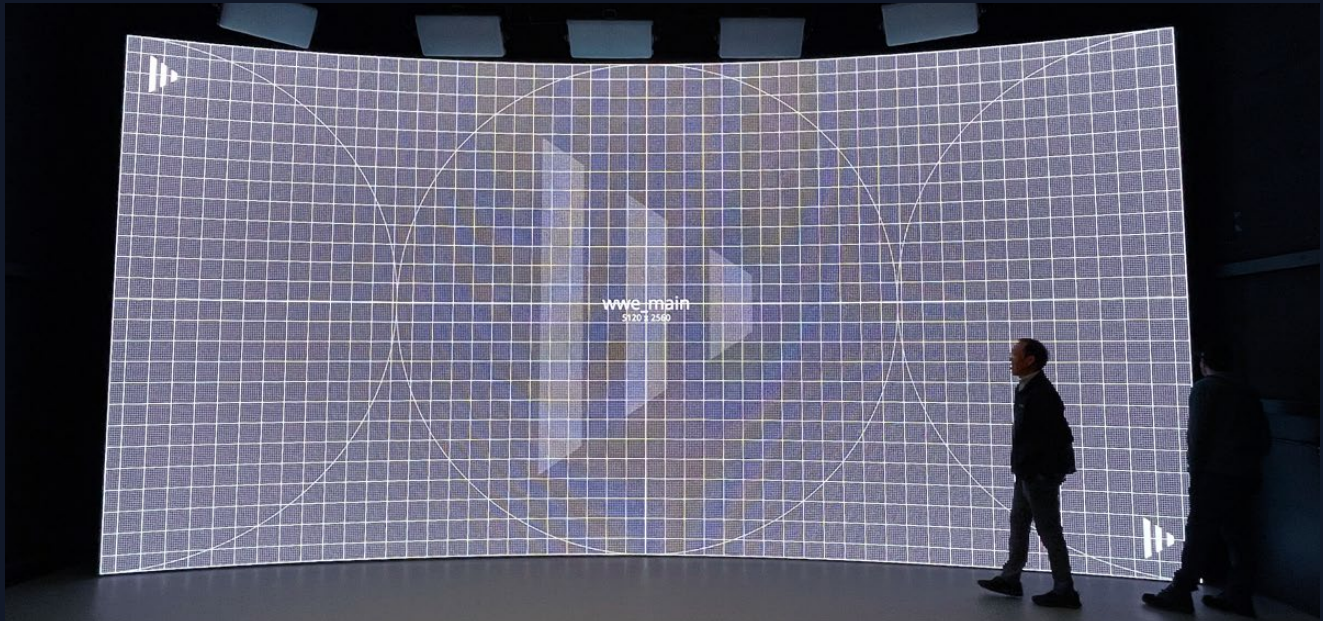
Adds flexibility for temporary expansions, pop-up walls, or moving lighting during shoots. Modular and adaptable, allows creative experimentation,

supports one-off projects without committing to permanent construction.

Considerations

Needs additional crew for setup, careful alignment with main walls, and integration into media server and content pipeline.

Designing your volume



Designing for success

A virtual production stage works best when it's built with intention. Every choice, from layout to power to workflow, affects how your team creates day to day. Getting those details right early on keeps productions efficient, budgets on track, and your stage ready to grow.

When designing a stage, these five key considerations can save time, money, and headaches:

1 Right-size your stage

This has been mentioned a couple of times throughout this guide, but it's important to reiterate that bigger isn't always better. The right stage size depends on your shots, camera moves, and talent. A smaller, well-planned volume can deliver exactly what you need without unnecessary cost or complexity.

2 Plan for flexibility

A fixed design can limit future productions. Consider how your volume might be used for different applications, car shoots, athlete portraits, or multi-camera setups. Think about content as well: as your team gains experience, you may want to explore new creative possibilities or integrate the latest real-time content techniques. Designing with flexibility ensures your volume can grow with your projects and your team's capabilities.

3 Power and cooling are critical

LED volumes demand significant power and generate heat. Failing to plan for adequate electrical capacity and cooling can disrupt shoots and reduce panel lifespan. Proper infrastructure is essential from day one.

Designing your volume

Electrical requirements

LED panels typically operate on 220V AC circuits. For instance, a 6m x 6m LED wall with a power density of 600 W/m² at 60% brightness consumes approximately 12,960 watts. It's crucial to ensure your power supply can handle these loads without overloading circuits.

BTU considerations

The heat generated by an LED wall depends on its power consumption and the environment where it's installed. For example, an LED wall with a BTU rating of 4000 requires a cooling system capable of dissipating at least 4000 BTUs per hour. This is essential to prevent overheating and maintain optimal performance.

Patching and connectivity

Proper patching ensures that all components, such as media servers, tracking systems, and lighting, are correctly connected and configured. This setup minimises latency and prevents signal degradation, ensuring smooth operation during shoots

Power requirements, infrastructure needs, and system specifications are all assessed and calculated by the Disguise Technical Services team as part of our studio consulting process to ensure your setup is fully optimised from day one.

4 Account for crew and maintenance

An LED volume is only as reliable as the team running it. Underestimating operational requirements can slow production and create unnecessary stress on set. If you don't have your own team in-house, Disguise can offer creative support and comprehensive support packages to keep your stage running smoothly and avoid downtime. Investing in training ensures your team understands how to operate the volume effectively, so it becomes a fully functional creative tool rather than an expensive resource that sits idle because no one knows how to use it.

5 Keep LED panels consistent

LED panels from separate batches will have colour differences. Buying all panels at once ensures consistent colour and brightness across your stage, reducing the need for extra calibration and post-adjustments.

Designing the right LED volume is about balancing creativity, technical requirements, and operational efficiency. By selecting the right configuration, leveraging add-ons strategically, and learning from common lessons, you can create a stage that supports ambitious storytelling today and scales with your team's growing capabilities. With a well-designed volume in place, the next step is exploring how these setups are used across different industries, from broadcast and film to events and XR experiences.

Industry applications



Image credit: TF1

Broadcast: TF1 Broadcast studio

As France's leading private broadcaster, TF1 set out to transform the way it brings daily news to millions of viewers. The vision was to create a studio that could immerse audiences through rich, dynamic visuals while giving production teams a more flexible and reliable workflow. TF1 redesigned its studio in two phases. First, the physical environment was modernised with the addition of new curved LED walls and an LED floor. Then, the broadcaster replaced its legacy graphics system with a Disguise-powered workflow.

The new setup centres on three LED zones: a large curved wall with a resolution of 11,264 x 1,280 pixels, a second curved wall at 5,376 x 1,536 pixels, and a 1,920 x 1,080 LED floor.

Four Disguise GX 3 servers manage playback,

with two dedicated to the LED walls, one acting as a stage manager to coordinate the system, and one serving as a backup.

the broadcaster a more flexible, future-facing workflow while reducing the number of engines required to power its LED walls. Most importantly, it enabled the editorial and creative teams to deliver the immersive, high-quality visuals that TF1 had envisioned at the outset of the project.

For TF1, the project represents another milestone in the ongoing evolution of its news studios. By investing in immersive LED environments and a streamlined control system, the broadcaster has reaffirmed its position at the forefront of broadcast innovation.

[Learn more](#)

Industry applications



Film productions: Our Flag Means Death

For the second season of *Our Flag Means Death*, the production team needed to recreate the look and feel of open water without the challenges of filming at sea. With Disguise powering a 420 m² LED volume, directors could place actors against dynamic, real-time ocean backdrops complete with shifting skies and controllable wave states. The result was a safe, efficient, and photorealistic way to shoot complex shipboard scenes that still felt cinematic and immersive.

Beyond seafaring stories, virtual production opens new creative pathways across film and television. Period dramas can instantly transport casts to historic locations without leaving the studio. Sci-fi and fantasy productions can blend digital worlds with practical sets in real time, giving directors final-pixel confidence.

Episodic shows with tight schedules benefit

from shooting multiple locations in one day without the travel, while commercials and short-form content can achieve high production value with smaller crews and faster turnaround. Across genres, LED volumes streamline logistics, expand creative options, and give filmmakers more control over how their worlds come to life.

[Learn more](#)



Industry applications

Commercial productions: TRG Multimedia

TRG Multimedia in Cleveland expanded its capabilities with a Disguise Studio Pro virtual production stage, featuring a 50-foot by 16-foot curved LED wall plus a mobile 10x10 aux panel, along with the hardware and support necessary for high-quality, reliable shoots.

What followed were diverse commercial productions showcasing the flexibility of the volume:

- Still shoots for a major brand
- Stylised 2.5D industrial environments for a safety apparel campaign
- A choreographed dance spot staged in Unreal Engine, set in a “cardboard city”
- A reconstructed kitchen set, integrated into the VP workflow to speed up a campaign for a major coffee brand

TRG even transformed its LED stage into a moody, cinematic campground for an outdoor gear commercial, complete with rain effects, puddles, and lighting shifts from sunrise to starlight, all achieved in days, not weeks, while staying in-studio.

From lifestyle shoots and product spots to large-scale brand campaigns, virtual production stages like TRG’s give commercial teams the flexibility to create any environment, reduce production time, and deliver cinematic results on faster timelines.

[Learn more](#)



Industry applications



Corporate: PTC's XR Studio Transforms Customer Engagement

For its Boston headquarters, PTC reinvigorated its Corporate Experience Centre with a Disguise-powered XR wall, using VX servers, RX II nodes, Designer software, and custom environments built by Disguise Services. A mobile robotic pedestal allows presenters to interact face-to-face with remote audiences, creating a truly bi-directional immersive experience. This setup enables PTC to transport clients into virtually recreated factory floors, offices, or custom environments, creating real-time, engaging product demos or location-based storytelling from anywhere in the world.

Beyond immersive product demos, PTC uses its XR stage for global conferences, hybrid events, and personalised client meetings. The system supports multi-language communications, interactive environments, and even 3D

photogrammetry for scanning client locations to tailor experiences on-the-fly.

This immersive capability strengthens customer relationships and trust, and increases global outreach - unlocking 40% growth in engagement across EMEA and APAC regions while reducing reliance on physical travel.

[Learn more](#)



The future of virtual production

Virtual production is evolving at a rapid pace, with innovation opening new possibilities for storytellers every day. Here are some of the trends to watch:

AI tools

Artificial intelligence is increasingly integrated into virtual production workflows. Already used to create 2.5D content with platforms like Cuebric or to transform 2D images and videos into photorealistic 3D environments using Neural Radiance Fields (NeRFs) with Volinga, AI now also powers real-time collaborative 3D creation and simulation through platforms like NVIDIA Omniverse, enabling teams to visualise, manipulate, and render complex virtual environments.

NVIDIA Omniverse integrates with Disguise RenderStream to stream real-time 3D content directly to LED volumes, enabling synchronised, high-fidelity visuals across virtual production stages.

Emerging AI tools like Designer's workflow assistant plugin, [Ask Aid3n](#), are simplifying virtual production workflows by helping teams automate setup tasks and access real-time system guidance, making it easier to focus on the creative side of production.

Rise of virtual set libraries

In addition to AI, virtual set libraries will make it easier for assets to be repurposed. By creating modular, adaptable environments, productions can save time and reduce costs while maintaining visual consistency. This approach also encourages experimentation, allowing creative teams to remix and adapt assets for multiple projects without starting from scratch. Over time, these libraries will become a shared backbone for cross-platform storytelling, making high-quality virtual production more scalable and accessible.



Disguise Creative Services has a catalogue of different virtual environments that can be adapted to different production purposes.

The future of virtual production

Maximising assets across mediums

Virtual production workflows are increasingly enabling content to move seamlessly across mediums. Assets created for a VP shoot, whether environments, props, or animations, can now be reused in immersive experiences, live events, or even adapted for games and broadcast. This cross-platform flexibility not only maximises the value of each asset but also allows creative teams to deliver cohesive visual experiences across multiple applications without rebuilding content from scratch.

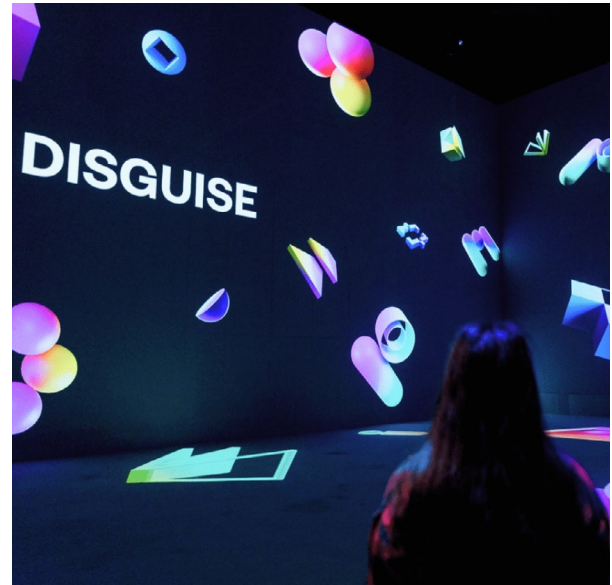


Image credit: Cleveland Institute of Art

The Takeaway

Investing in a virtual production stage is investing in the future of storytelling. Today, audiences are consuming unprecedented amounts of video and social content: globally, people spend on average over **2 hours a day on social media**, while over 20 million videos are uploaded to **YouTube** every single day.

In this environment, speed, flexibility, and creative control are critical while being able to create content that stands out in a flood of content. An LED volume gives creators the tools to stay ahead of this content surge and create content that doesn't just sit in the scroll, but stands out, connects, and moves people to engage.

Ready to get started?

Disguise Studio Pro is your full-service virtual production solution, enabling you to realize high-quality, attention-grabbing creative visions faster.

Studio Pro leverages our deep expertise in virtual production to give your team a studio that works from day one, empowering you to focus on storytelling while we handle the complexity behind the scenes.

Our team offers end-to-end support, including consultation, system design, installation, training, and 24/7 support - plus creative expertise on standby.

Experience the power of Disguise first-hand with a demo at one of our locations or virtually from anywhere in the world.

Studio Pro: Built for the way you create.

[Find out more](#)[Book a demo](#)

Or contact our sales team at sales@disguise.one.

