

BEYOND IMAGINATION — THE FUTURE OF CREATIVE TECHNOLOGY

technicolor  
CREATIVE STUDIOS

M P C PRESENT BEYOND FILMMAKING

EVERYTHING YOU NEED  
TO KNOW ABOUT  
**VIRTUAL  
PRODUCTION**





Image courtesy of The Walt Disney Studios

# WHAT IS VIRTUAL PRODUCTION?

Virtual production is a filmmaking method that removes the barriers between live action and visual effects so they can occur simultaneously. It facilitates the visualization of virtual characters and environments and enables filmmakers to physically shoot and direct them in real-time (hence the term real-time production).

“Virtual production utilizes technology to enable filmmakers to interact with the virtual world, as if they were in a live action set,” says VP of Virtual Production, Mariana Acuna. “The predictions that we had in the industry at the beginning of 2020 was that it was going to take at least four to five years before virtual production was adopted by the majority. But then the pandemic really accelerated this, and we are already in that place. It gave way for a lot of filmmakers to play around and try out this newer technology because they were working from home, and they had no other choice.”



# WHAT DOES IT MEAN FOR FILMMAKERS?



For creators, one of the most exciting aspects of virtual production is the way it offers infinite creative possibilities. Filmmakers can use virtual production to help elevate their creative process and make decisions faster and earlier on in the process, instead of waiting on postproduction to do so. "It's a much more collaborative, agile and rich process," Mariana highlights.

During the development of *The Lion King* (2019), MPC worked closely with director Jon Favreau and his team to pre-visualize the film in a virtual environment. Using VR headsets and a combination of virtual production and game technologies, the team were able to visit a digital approximation of the Serengeti to start making core decisions such as where the digital characters would be placed, what lighting to use and where the camera should be in any given shot.

Virtual cameras enable directors to experiment with different angles and shots in a virtual environment, they can start doing camera blocking right away. A physical camera is hooked up with sensors which translate into the virtual world. So, when the camera moves and tilts, it directly affects the render of game-engine rendered environments 1:1 - allowing you to see results immediately.



"The usefulness doesn't stop at pre-production," Adam adds. "When a show has a lot of digital world-building, or digital characters, it's a given that during post we'll continue hammering on scenes. Editing is another pass at story, and these same tools and techniques can expedite creative rounds with our directors, editors and studio folk."

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— ADAM VALDEZ, VFX SUPERVISOR, MPC

VFX supervisor Adam Valdez comments: "VFX has traditionally been tricky to drive because it takes a long time to see the work materialize. Virtual production, on the other hand, is all about using new devices and fast graphics for interactivity, especially during the discovery and design phase of filmmaking. We get hands-on with that work, changing it as we go until it works for the narrative. Previz animation, mocked up sets, lighting design - we work it with the storytellers until we think it pops. Then we can take it on-set as our guide-rails."

"The goal is making confident creative decisions that make the project better. How can storytellers do that if they can't bring their normal live-action skills to the task? These techniques are the answer. Of course it's still quite complex to do, but over time it's feeling more and more familiar to new filmmakers who try it."



## WHAT DOES IT MEAN FOR CLIENTS?

A great benefit of a virtual production workflow is the way it can foster collaboration between multiple creatives, often in different companies and locations. This can transform the way in which we work with our clients.

It all comes down to the ability to make things in real-time and the flexibility that gives creatives to experiment, incorporate live feedback, and not be distracted by arduous, time-consuming processes.

Mariana notes that “back in the day the games wouldn’t talk to animation, and animation wouldn’t talk to the film crew, and the VFX artists wouldn’t talk to the pre-production folks, and so on. Now, all these verticals are really converging in an interesting agile way.”

With a virtual production workflow, clients can come into the creative process earlier and stay longer. They can look at an object, direct it live and play with camera angles. They can be physically standing in the room or beamed in remotely. It helps deliver what the client wants quicker and eliminates feedback and surprises.

## WHAT TECHNOLOGY POWERS VIRTUAL PRODUCTION?

“Gaming plays a big part in virtual production with peripherals such as Xbox/PlayStation controllers and technology such as Unreal Engine, who also provided a lot of training during the pandemic,” says Mariana. “We’re now adopting what the gaming industry has been doing for years. And we’re adopting it at a faster rate into VFX, episodic, advertising and film production because the way in which we consume content will continue to change and involve a lot more interactivity – such as ‘choose your own adventure’ narratives.”

Game engine technology can render imagery ‘live’, responding to the movements of the game player. This has become increasingly popular for filmmakers as it can bring the power of a logic-based software and add real-time visualizations to the production process.

“The biggest challenge right now is the misconception that virtual production is an absolutely new technology. When people

hear ‘virtual production’, they automatically think of The Mandalorian or big productions like The Jungle Book (2016),” Mariana states. “They think big technology, big equipment, big budgets, big everything. And that is not what virtual production is. It’s a component of it, yes but you have to use the right tool for the right job and not use technology for the sake of technology.”

“Virtual production is also for independent content creators. They can use budget friendly products to turn their living rooms or their home offices into a small volume using products such as HTC’s Vive trackers, which are now lighter and easier to use, to connect real objects with the virtual environments and an inertial smart suit such as Rokoko’s to do mocap. By adding Unreal Engine to the mix along with all the free assets that they have available on the marketplace, they can literally start creating content right away. This technology is really available for everyone.”



# WHAT IS TECHNICOLOR CREATIVE STUDIOS DOING IN THE VIRTUAL PRODUCTION SPACE?



On *The Jungle Book* (2016), Technicolor took an entire pass of the film in storyboards, built a computer model of every set needed, and did a massive mocap shoot within that world to design the movie down to the shot.



“It was a similar process on *The Lion King* (2019), and a filmmaker like Jon Favreau constantly seeks tech evolution, so we added VR team scouting to that process, and built a network of game-engine machines during our shoot for a real-time collaborative lighting and shooting process,” Adam reveals.



“Of course, Technicolor is well known for its big productions such as *The Lion King* and *The Jungle Book*,” says Mariana, “but we are also involved in a myriad of different types of projects, that may be for advertising, animation or immersive experiences using real-time technologies for visualization, virtual location scouting, performance capture, AR shoots, virtual sets, and more.”

Adam highlights, “During the pandemic, I shot two seasons of episodic previz from my home office! The animators, game-engine team and I were all in our homes, meeting virtually each day. I would scout the scenes in VR, then use an iPad as a camera capture device, and away I went. It shows that the techniques can scale well depending on the project and budget.”

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– ADAM VALDEZ, VFX SUPERVISOR, MPC

“Our goal is to give these advantages to more and more shows over time, and since we are such a large team, as we innovate and advance, we all win. We can’t make visual effects trivial to do, but we can make it more natural to engage with.”

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