

# Technology In Film Production (Virtual Production in the Mandalorian)

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Date: 10/24/25

CSIT 100\_04 FA 25

Filmmaking has always used technology from still picture movies to silent films, then to motion pictures and now virtual film production. In virtual film production huge LED screens are capable of displaying environments that are very realistic and are computer generated and all of this is happening in real-time. This technological advancement is slowly ending the use of locations and physical sets. The performance by the actors occurs in these digital worlds that are interactive. In a virtual reality film, the different technologies must be integrated so that the final collaborated product, the film, has an entertaining effect on the audience. There are many components of Virtual production, the areas of Virtual production that I will be focusing on are Hyperreality, Using LED Volume Technology, the advantages of using LED Screen versus Green Screen technology. I will be basing my case study on the production of “The Mandalorian” and its impact on traditional filmmaking. “The Mandalorian”, a TV series which has run three seasons, created by John Favreau. This TV series began streaming in 2019. It is under the action, adventure and science fiction genre. This series is an extension of “The Star Wars” saga. “The Mandalorian” was developed through the evolution of technology that has been developing for more than 50 years. This technological advancement will revolutionize filmmaking as it will be more economical, efficient, will have more experienced collaboration and will produce a much better product that the audience will enjoy more than any conventional film.

In virtual film making “Hyperreality”, is a strong component needed for maximum film efficiency. Hyperreality defined, “Is any state in which a human consciousness can no longer differentiate the real from a simulation of the real.” [WRAPBOOK] In other words, hyperreality is the “unreal real” Hyperreality is another strong component needed for maximum film efficiency. The valley of “Is” a “made up” or Uncanny valley created in the production of The Mandalorian. “Is” is not on any map, but it is an unreal world made up in The Mandalorian that features characters as humans, robots and alley cats that are digitally created to look real but who are, in fact, not real. This is where the real and the unreal come together to create a world that the filmmakers want the audience to see. The creators want the audience to believe in the illusion that is the world of “The Mandalorian”. The digital representation in the Mandalorian makes the human brain wonder what is real and what is unreal. [WRAPBOOK]

The second component is LED Volume Technology. It is a layout of massive LED Walls which are also screens. They are referred to as “The Volume” a backdrop if you will. The way this works is the image of the backdrop is projected on to the LED screen. This goes hand in hand with what the actor or actors are doing in the scene which makes the audience believe that the actor or actors are actually “on site”. In a scene in the Mandalorian, we see the Mandalorian is standing on a heap of sand looking out for his next bounty. In actuality the Mandalorian is standing in a LED room. The scene that the audience sees is digitally inserted, making the audience believe that he is actually in a dessert. There was a shootout scene in “The Mandalorian”, where the Mandalorian saves Grogu, from people who want his powers. In this scene we also see some of the cool digital-human characters with a dimly lit, blue sky backdrop of the town, where the Mandalorian gets his bounty assignments from. These are examples of the real and the unreal production experience that LED Volume technology can create for the audience. [The WRAPBOOK Videos]

The Volume technology invented, is used to give a full panoramic view, using a wraparound array of screens. When using The Volume, in the long run, budgets will likely show the benefits of virtual production and LED Volume Technology. The expenses for sound stages and platforms will be less expensive than how films used to be produced. As time goes on, and as our understanding of this technology grows, it will be more cost-effective and virtual production practices will naturally increase, leading to a more cost-effective, efficient and a better product. However, for now, these technologies will not make immediate money (or even sense) during every production that its being used for. [UNIT] Between quick and easy lighting changes and rapid transitions with the set, it's easy to see that the volume's circle of LED walls has the potential to save time and money as different systems are working simultaneously in real time. They were able to leverage the volumes ease of use to film scenes quicker than formerly possible and its depth to create a level of attention grasping, immersion so that it would not take the “Star Wars” name in vain.

Some companies that worked on the Mandalorian used a tool called “Unreal Engine”, this was and still is a gaming software engineering site and the tool used for not only gaming animation, but film animation as well and just all things 3D creation animation. In “The

Mandalorian”, the animation teams come together to design all the characters and animatronics used throughout the duration of each episode. In The Mandalorian, Unreal Engine also helps them to visualize spaces and products. Since, the production has no physical location needs to be chosen, it helps speed up the production times. This also helps the teams create advanced interfaces which in turn, helps to push production ahead of the initial release schedule. [Unreal Engine] and [WRAPBOOK]

In the “Virtual Production with Unreal Engine, Felix Jorge” and “Bad Decisions Podcast”, the podcast hosts, Farhad and Faraz interview Felix Jorge and talk about the LED technology used on the Mandalorian. [Bad Decisions Podcast] Felix has worked with John Favreau and his team on the production of “The Lion King” in addition to the Mandalorian. Felix explains that he was a part of the production team where he brought his expertise, from working on gaming engines to make the visual aspect of the show more real or life-like. According to Felix, the collaboration between the Virtual Reality Gaming industry and the Film industry had been very uncommon he was one of the first people to cross over to the Film industry from the gaming industry. He was also the first to merge the two industries. [Bad Decisions Podcast]

The differences between LED Screens and Green Screens and the benefits of both are significant. One component is scenery. The background is created by projecting the scene on the LED wall’s screens which is also referred to as The Volume. While with the Green Screen, the construction of the many physical sets is required at the shooting site or sites. This cost money and time which are not seen in Volume Technology using LED screens. Now the lighting is another aspect. LED walls create more realistic colors and reflections. While with the Green Screen Technology the green is removed then a new background is created which sometimes results in unnatural lighting. This shows the quality of the final product produced by Volume Technology is better and more realistic than Green Screen Technology. Performance is another aspect. With the LED wall, the actors can see their performance in context of the setting and make changes as needed. The actors must use their imagination with the Green Screen to make it look like they are where they’re supposed to be in the scene they’re filming, just while using the screen and nothing else, like other set pieces or props. This could lead to more scene takes and is inefficient. Last, but not least, there is the cost. Implementing the use of the LED wall eliminates

the need for set construction and reduces the post-production process. The Green Screens require more set building, more time which slows down production and adds more expense to the filming. This shows that the Volume Technology is not only efficient process, but also saves money, then other film technologies. [Bad Decisions Podcast] and [UNIT].

The overall cost of implementing LED Wall technology in studios exceeds \$100 million. This cost is incurred for screens, camera equipment, rendering engines, virtual backgrounds and motion capture, equipment to name a few. [UNIT] Although it may be expensive to set up studios with LED Walls and equipment, they are reusable for other productions, saving money in the long run. This is not possible with Green Screen Technology because each production with new and sometimes multiple sets are used increasing costs on materials. Another cost saving aspect is props that are used in films. With LED Volume props can be digitally inserted in a scene but in Green Screen sets props must be purchased and then used, increasing costs of the production. [UNIT].

Although there is no consensus about the “perfect volume team” collaboration is a crucial part of virtual film production [WRAPBOOK] and [Bad Decisions Podcast]. John Favreau said in a video featured on Wrap Box, that his film company has collaborated with Disney, Epic Games, Lucas Films and many others, when working on the Mandalorian. In the podcast video, Felix says that before working on the Mandalorian, as he was starting out in the industry, he was also able to learn and expand on his knowledge and experience from working on gaming design. He also recalls the time when he and four of his friends were talking about quitting their current jobs to enter the virtual film industry, while only two of them actually quit. He came to the realization, that people entering the industry need to be not only skilled, but reliable and committed. Lastly, as this technology evolves there will be a need for personnel with new skills to offer and to meet the needs of the technological advancements to come.

In conclusion, Virtual Film Production is the integration of film industry technology and gaming engines. With virtual production film maker are creating experiences which cause viewers to question the “real” versus the “unreal”. The film that the audience sees makes them question whether its real or unreal. The films produced with LED Technology is very well made

that it is difficult to single what is digitally inserted and what is really...real. LED volume technology is the key component of virtual production and has improved film production efficiency. Films that in the past took years to make are now made in a fraction of that time. Time that was used looking at sets and selecting them is eliminated with this new technology. In the past, production teams who needed to meet to discuss the project would have to go through the trouble of scheduling meeting and often long-distance travel. Now, with Virtual Technology, such meetings and discussions between different teams can occur quicker and without waiting for the teams to gather to get to the same location. Another big advantage of Virtual Technology is that the directions from the director can be implemented in real time by the people in the studio without the director having to be on site with the use of Virtual Reality glasses. This is a game changer with respect to the efficiency in the making of a film. [Bad Decisions Podcast]. The ability to utilize this technology for multiple productions will reduce the costs over time to make a film.

Virtual Production can be summed up in a famous quote from William Gibson, “The future is already here. It’s just not evenly distributed yet.” [WRAPBOOK]. As this technology evolves and new systems are introduced different career opportunities will emerge; diverse skills will be needed. Collaboration between people of different skill sets will allow them to share new ideas and develop unbelievable and courageous films.

## Works Cited

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