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DIGITAL SCOUTING FOR VIRTUAL PRODUCTION – NEW PRACTICES IN THE ART OF FILM LOCATION[1]

Abstract

This article discusses how a digital film scouting for Virtual Production (VP) affects the process of creating diverse audiovisual works, what criteria should be taken into account when choosing a location, what techniques can be used to make the best use of its potential, and how film locations fit into the broader context of the film. For this purpose, various examples and case studies will be presented to better illustrate the impact of location on the process of creating and producing an audiovisual work.

Keywords: film location, digital scouting, film production, Virtual Production, management, film market

JEL: O32, O33

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Introduction

Virtual Production has gained great popularity in the film and media industry, as it allows filmmakers to create complex, visually stunning environments without the constraints of physical sets or locations (*The future of content creation...*, 2020; Pires, Silva, Raposo, 2022). Digital scouting plays a crucial role in the pre-production and planning stages of VP. It involves creating a realistic digital environment using computer graphics (Ekmekcioglu, Hitchen, Ozcinar, 2022; Gerber, Huber, Iseli, Schaerer, Loertscher, 2022). This process can save time and money by allowing filmmakers to identify potential issues before filming begins and make changes accordingly. As emphasized by Directive 2010/13/EU of the European Parliament and of the Council (Directive 2010/13/EU), the selection of appropriate locations has a significant impact on the final atmosphere of the work, as well as its message and aesthetics of the film.

The aim of this paper is to provide an overview of the changing role of film location scouting and its consequences in the field of VP, as well as to look at new competences of digital scouts working in the field of film production. This is a new area of study and an under-researched topic that has not been tackled so far (Li, Lo, Smith, Yu, 2022; Bodini, Colecchia, Garaj, Harrison, Manohar, 2023). Therefore, the article investigates the emerging phenomenon of digital scouting for virtual production. Research included desk research, didactic and practice-based research conducted in the Łódź Film School and Film University Babelsberg (FBKW) and two individual interviews with digital film location scouts (Drew Diamond and Sebastian Espositio). It helped to formulate narrative case studies to present the decision-making process behind digital scouting for virtual production. The data was enriched by the case study of the impact of Virtual Production on the workflow in visual effects (VFX) for the Netflix series *1899*.

1. The traditional role of a scout manager in film location and film scouting

Traditionally, the definition of filming location refers to a selected place where shooting is performed within the scope defined by the feature film's script (Irving, Rea, 2015). A filming location can be a real place such as a street, building, or outdoor landscape, or it can be created in a film studio. The description of the filming location included in the script may be more or less detailed, depending on the intentions of the scriptwriter and the artistic vision. In practice, it describes not only the characteristics of the location but also how it affects the plot and mood of the film. It is worth noting that the description of the location in the script can be enriched with various types of visualizations, such as photos, drawings, photographs,

or diagrams, which are intended to illustrate the vision of the director and screenwriter (Dowling, 2015).

The purpose of these activities is to characterize:

- landscape and architecture as well as the possible decoration of the place, e.g., a destroyed and abandoned house, a small French village, a royal castle from the 16th century, and a cosy café;
- climate of the film, e.g., mysterious, dark, joyful;
- weather conditions such as time of day, weather, drizzle, sunlight, fog, dew in the morning, grass, etc.;
- sounds and noises such as street noise, whispers, birds, chirping, etc.;
- additional factors such as characters and groups of people present in the scene, hidden passages, traps, statues, water tanks, bridges, etc.

The filming location plays an important role in the filmmaking process, as it influences the overall atmosphere and aesthetics of the film, directly affecting the performance, but also enriching, authenticating, and highlighting the plot of the film. When selecting a film location, apart from the specificity of the script and artistic vision, the director is also obliged to take into account the film's budget, location availability, and other technical requirements, including those related to occupational health and safety. In this regard, directors usually use the help of film production specialists, the so-called Scout Managers, who help them find a suitable location and negotiate the terms of its use in the film with its owner (Edgar, 2009; Hudson, Wing Sun Tung, 2010).

The Scout Manager in traditional film production is responsible for the search and selection of film locations in accordance with the requirements of the script, as well as the artistic vision of the film and in accordance with the established budget and film production schedule. Usually, he works closely with the director and camera operator, verifying on an ongoing basis whether the proposed shooting objects meet the visual expectations of the film (Rizzo, 2014).

The key responsibilities of the Scout Manager include site inspection, negotiating contracts with location owners (real estate and outdoors), organizing site inspections and facility documentation. It is important that the Scout Manager has knowledge about the principles of film production and does his best to prepare the shooting location as much as possible for the time of the shooting, but also the adaptation and dismantling of the shooting facility. Many people working in this profession develop skills such as creativity, the ability to work in a team in a dynamic production environment, interpersonal skills, negotiations, and also knowledge of technology and film equipment through practice in the profession, initially as an assistant Scout Manager. The Scout Manager can use databases containing information about various film locations that are available for rent. The database may include photos, descriptions, prices, and other important information that will help you to choose the right location. It is also helpful to know the local regulations and the geography of the area where you want to shoot. A Scout Manager can

start his search by researching the Internet to find potential movie locations via Street View, Google Earth, and Maps, and search for properties for rent and contact their owners via classified websites. An important aspect is also cooperation with local film funds, which often have a database of local filming locations (f.e. *Location Guide. Poland*), as well as knowledge of the local rental rates, regulations and rules. It should also be emphasized that an experienced Scout Manager usually has his own database of contacts with local residents who can help in finding suitable places. The ability to think spatially is also important to be able to imagine how selected locations will look on the screen and anticipate the possibilities and limitations in the context of film production. Furthermore, worth emphasizing is the ability to adapt to the changing needs of the director and producer, as well as working under time pressure. Therefore, it is crucial to discuss the scenario needs regarding the type of shooting locations, atmosphere, and aesthetics of individual film scenes, and thus to determine the specific requirements for film equipment, including colors and type of light. Then, as a result of the conducted research and research, the scout manager can provide the director with various types of visual materials, such as photos, videos and drawings, which will help the director to see alternative locations where the shooting of the film may occur. Common local visions, regardless of the director's decision, can be an important inspiration for further searches for the expected shooting locations. Robert Foulkes (Kusiak, 2023), the Location Manager of *La La Land* directed by Damien Chazelle, searched Los Angeles for a mystical city where the film would be set. Foulkes found a site where a 1983 Tom Suriya mural "You are the Star", depicting the images of famous Hollywood personalities seated as the audience, was located. This place is featured in the film when the aspiring actress Mia returns home. The only description in the script says that Mia crosses "roads" and "lot" on her way, but by choosing this location, the film scene takes on a new dimension, projecting the heroine's dreams and eventually becoming one of the key scenes of the film. The hero then enters the club; however, he actually enters a fictional small office. The new scene begins at the Smoke House restaurant, which is still in the same shooting location but is actually a place located in a different part of Burbank, about 6 km from the entrance to the small office. The described example perfectly illustrates the duality of perspectives that a Scout Manager must take into account: conveying the artistic vision of the film and taking into account the budget, schedule, and production capacity related to the shooting at a given location.

If a given facility is approved by the director, the Scout Manager deals with the rental of selected places, negotiates contractual terms and obtains all necessary permits and permissions for shooting, and, importantly, is responsible for coordinating activities on the set. Cooperation with the director does not end in the preparation period for shooting but continues during the shooting period and is based on supervising and coordinating activities related to the adaptation and use of specific

objects. The Scout Manager can help organize transport and maintenance and coordinate all activities related to the rented places.

2. Virtual Production and generative environments

Generative environments are not a new topic. They have been developed for years in the field of computer games (*Wolfenstein 3D*, 1992) or art installations (Shaw, 1996). After years of developing VFX techniques in postproduction studios, a new generation of generative technologies has entered the film industry. Among the causes of this phenomenon, the following should be mentioned: cinematic quality of generated environments (photogrammetry etc.), real time image generation, efficient and accessible display technologies (LED walls), VR technologies (head mounted display). This situation has led to the development of specific areas in the film industry: computer-generated VR and Virtual Production. Both technologies are based on creating a virtual world using computer techniques (currently mainly using Unreal Engine or Unity 3D). Creating a virtual world means developing typical artifacts (ground, buildings, elements of nature, objects, etc.), lighting, animation of elements of the world (e.g., movement of trees, changes in lighting) or effects (e.g., fog). Computer-generated VR creates opportunities to experience the immersion effect and interact with the elements of the created 3D world using headsets and other controllers. Virtual Production could be potentially defined as a hypernym to cover all computer-aided production and visualization filmmaking methods combining VR and AR with computer graphic and game engine techniques (Li et al., 2022), however – in practice – it is related to a very specific and limited set of film and television techniques. In the film industry Virtual Production refers to the technique of combining real and virtual worlds mostly in real time. The last criterion differentiates Virtual Production from traditional VFX where virtual (simulated) elements had already been widely used in postproduction (e.g., compositing). Real time seems thus to be the criterion used by the market to describe the newcoming technology – Virtual Production. The mixing of realities can be realized here within greenscreen technology or a LED wall display, in both cases in real time. The first technology is used mostly in television whereas the second is used in the demanding film industry (feature films, advertising). Virtual Production on LED wall – technically complex and expensive – poses a number of challenges (e.g., camera tracking, wall maintenance, new skills and job roles required, funding) as well as opportunities (e.g., new means of artistic expression, savings). However, Virtual Production undoubtedly introduces a significant change in the production workflow (Pudło et al., 2022). No longer the post-production, but now the pre-production phase, becomes crucial in this case.

3. Digital film scouting for Virtual Production – case studies

To gather information about the emerging role of Digital Location Scout the authors conducted interviews with two selected specialists working in this field: Drew Diamond (*Midway*) and Sebastian Espositio (*The Tower*). In interviews, the respondents were asked questions about their role, experiences, and the decision-making process involved in the projects. The authors were particularly interested in understanding how the team determined the most efficient approach to creating the visual, virtual environment for the film. They would inquire about the decision to purchase suitable 3D models rather than creating them from scratch. By obtaining detailed insights, the authors incorporate this first-hand knowledge, providing a comprehensive understanding of the projects and the choices made during their development. In addition, the interview with Christian Kaestner, Freddy Salazar, and Connor Ling (*1899*) (Failes, 2023) plays a complementary role to show contextual factors of the scouting process.

3.1. Definitions: Digital Film Location Scouting, Virtual Film Location Scouting, Digital Scouting for Virtual Production

In analogy to traditional Film Location Scout, a Digital Film Locations Scout also needs to gain permission (copyrights) to accrued (virtual) environments and assets (Location scout, www). Digital Scouting is used across industries (sport, real estate, etc.) to explore and evaluate resources or locations using digital tools like online databases, mapping tools, satellite imagery, 3D modeling, and virtual environments. Digital Film Location Scouting is a narrower term that includes various digital methods and tools for finding, evaluating, and documenting film locations. In the film industry, it helps in finding and assessing potential shooting locations for film or TV productions. Virtual Film Location Scouting involves exploring potential shooting locations in virtual environments using advanced software and technologies, like visiting and evaluating virtual environments using VR headsets. "Because real-time graphic engines are at the core of the VP (Virtual Production process, it is possible for the Director and his collaborators to see on the set, in real time, how the VFX they plan to integrate will most likely look once post-produced. (…) This subprocess of VP is called 'Virtual Location Scouting'" (Bodini et al., 2023). The use of unpolished VFX enables quicker adjustments and decision-making in film production, allowing for efficient exploration and iteration of creative ideas. Additionally, this process helps in scouting fictional locations to serve as a canvas for storytelling in imaginary worlds.

Digital Scouting for Virtual Production refers to the use of digital tools and technologies to explore, evaluate, and plan virtual sets and environments for film or television productions that rely heavily on visual effects, computer-generated imagery (CGI), and real-time rendering techniques, but this process doesn't have to

involve using VR or VR headsets. Crucial for this type of production is that "Virtual production is where the physical and digital worlds meet", because actors will play in physical set which is enlarged by virtual one (Kadner, 2019). Digital scouting plays a crucial role in the pre-production and planning stages of VP.

3.2. Drew Diamond in Midway

In an interview with the post-production manager Drew Diamond, we delved into the fascinating world of digital location scouting for the film *Midway*. Drew Diamond, an LA-based film and immersive content producer from South Texas, holds an MFA in film production from USC School of Cinematic Arts and has a Student Academy Award for non-fiction. With a passion for storytelling across various mediums, he has produced content for traditional and emerging platforms. His notable works include producing the feature film *Senior Love Triangle*, the episodic series pilots *Pineapple* and *The Suitcase*, and the VR experience *Wonder Buffalo*. As a consultant for Entertainment Technology Center@USC, Drew produces R&D projects for major studios focusing on creative technology. Currently, Drew Diamond primarily focuses on his role as a Virtual Production Lead, pushing the boundaries of innovative storytelling and cutting-edge technology in the film industry. Released in 2021, *Midway* is a historical epic set during World War II, centered on the pivotal marine Battle of Midway. Directed by the acclaimed filmmaker Roland Emmerich, known for his work on blockbuster movies strong on Visual Effects such as *Independence Day* and *The Day After Tomorrow*, the film showcases his talent for creating visually stunning and full of emotion cinematic experiences. With the help of skilled professionals like Drew Diamond, Roland Emmerich and his team were able to create a visually striking and historically accurate representation of the Battle of Midway. Drew Diamond played a crucial role in the pre-production process, preparing assets for Virtual Production and Visual Effects. In addition to his role in acquiring 3D models, Drew Diamond also served as a digital film scout for the project, further showcasing his expertise in the realm of virtual production and his invaluable contributions to the making of *Midway*. Instead of creating 3D models of WWII warships from scratch, which would have been a costly and time-consuming endeavor for the film's production team, Diamond cleverly acquired these models from history reconstruction groups. By utilizing these historically accurate assets, the team was able to significantly reduce the production costs associated with VFX, while also ensuring an authentic representation of the warships that played a significant role in the events depicted in *Midway*. The film is an example of how advances in virtual production and visual effects have enabled filmmakers to tell stories that are both engaging and true to history.

3.3. Sebastian Espositio in *The Tower*

Film University Babelsberg's first full-size Virtual Production with interactive LED-wall technology, *The Tower*, was shot in 2022 at the world-renowned Halostage VP studio. The film originated as a diploma project by Production Design student Branford Meentzen and was transformed into a Virtual Production after collaboration with Prof. Björn Stockleben. The film was shot using LED screens and real-time computer graphics, which allowed for seamless merging of real and digital worlds. During this production Sebastian Esposito was a Production Design and Visual Effects student at the Film University Babelsberg. Previously, he has worked on VR experiences like *Me & My Brain* and *Mind the Brain!*, which involve neuro-reactive 3D visualizations that respond to brainwaves. In addition to his interest in real-time XR/VR applications, Sebastian also collaborates with art and VFX departments on integrating workflow techniques like XR Previsualization, VR Location Scouting, and In-Camera Visual Effects for traditional linear productions.

The film was shot in a virtual set, a studio made entirely of LED screens that was enriched with real elements from the set construction, so that the real and digital worlds merge seamlessly. The scenery is already placed on these oversized screens during the shoot – but not as a pre-shot film clip, as with classic rear projection: a technique originally developed for computer games projects high-quality computer graphics that are calculated in real time during the shoot. The images on the LED wall react directly to the movements of the camera and immediately adjust the required perspective. In contrast to the green screen, the actors can interact directly with a visible environment and, for example, be recorded in a realistic or desired light setting. This technique reveals a wide range of possibilities in terms of both narrative and budget. Cleverly planned virtual productions can also make a valuable contribution to questions of sustainability and the carbon footprint of film productions.

A crucial decision for the efficiency of the production of *The Tower* came when the team had to determine in pre-production how to create the virtual environment, specifically the big city view required for the film. They initially considered creating all the buildings, 3D objects themselves, with a team of other digital artists, what would allow them to maintain aesthetic and artistic cohesion. However, they realized that it would be much more efficient to simply purchase suitable 3D models of buildings as assets. Despite opting for the more efficient route of purchasing premade assets, the team recognized the importance of the titular tower to the story. Therefore, they decided to create the tower themselves, ensuring that it aligned with the film's aesthetic and narrative requirements. This included the integration of visual effects, such as rays of light projected by the tower. By making this strategic decision, the team was able to balance efficiency with the artistic vision necessary for the success of the production.

3.4. Christian Kaestner, Freddy Salazar, and Connor Ling in 1899

In an interview for the website beforesandafters.com (Failes, 2023), Christian Kaestner (Visual Effects Supervisor), Freddy Salazar (Head of Virtual Art Department), and Connor Ling (Virtual Production Lead) from Framestore company discuss the impact of Virtual Production on the workflow in VFX for the Netflix series *1899*. They explain that virtual production brings VFX teams into the creative process more than ever before, including involvement in costume and production design. The team highlighted the importance of setting goals for virtual environments and optimizing assets for real-time performance. Framestore's fARsight toolset was crucial for virtual camera scouting and ensuring everyone on set understood the limitations and possibilities of the virtual environment. They also shared their experiences with on-set rain effects in a virtual environment, emphasizing the need for safety and control. The interview demonstrates how virtual production is revolutionizing VFX workflows and enabling innovative storytelling.

The artistic and virtual production decision to create a wooden top deck for the ship as the main location in *1899* involved numerous challenges and considerations. One of the critical aspects was creating realistic reflections of the sky, clouds, and icebergs in the wet wooden boards of the deck, as well as in puddles and raindrops. To achieve this level of realism, the team had to meticulously design the virtual environment and carefully manage lighting, textures, and shaders. The virtual production technology used, such as the LED walls and Unreal Engine, allowed the team to control these elements in real-time, ensuring that the reflections appeared authentic and visually stunning. One of the significant challenges faced during this process was incorporating rain effects into the virtual environment. Since the LED panels were not waterproof, the team had to devise a solution that could bring rain into the scene without damaging the equipment. A special effects supervisor designed a modular rain rig that was suspended through the skylights, allowing for precise control and avoiding any water coming into contact with the LED wall. These artistic and virtual production decisions not only contributed to the visual impact of the series but also enhanced the actors' immersion and performances, as they could see and react to their surroundings in real-time. The combination of practical effects, such as rain, with virtual production technology resulted in a more convincing and immersive experience for both actors and viewers.

3.5. Digital Scouting for Virtual Production – a way of action

Based upon undertaken studies, actual didactic and practice-based research conducted in the Łódź Film School and Film University Babelsberg (FBKW), along with the analysis of the above-mentioned film productions, Digital Scouting for Virtual Production can be described by the course of action including:

1) Concept development and reference gathering: Filmmakers and artists collect reference images and materials to inform the design of the virtual environment. This could include photographs, concept art, or even 3D scans of real-world locations.

For the Netflix series *1899*, creative development and technology choices were closely connected. Since the story is set aboard a transatlantic passenger ship on its route through the North Atlantic, authors realise how challenging this location could be in real life, in terms of finances and safety. Taking this into account, Virtual Production technology was the best option. Artistically, especially visually, this choice proved to be right because in reality, but also in the mood, in this location weather is rainy, cloudy, even with icebergs floating around the ship. All these beautiful nature phenomena reflect in wet bords of ship's deck, which will not be possible if not the giant LED walls of Virtual Production studio.

2) Digital asset creation: Using 3D modeling and animation software, artists build the digital assets required for the virtual environment, such as buildings, landscapes, props, and characters.

In *Midway* and *The Tower* using extensive 3D models was crucial for project's realization because there were scenes of huge WW II warships' marine battle. During pre-production the team learned about WW II historical reconstruction groups, as well as researchers working in digital media, who already had digital 3D models of the required ships. In this case, the production decision was to acquire the already historically correct and detailed models for *Midway*.

3) Previsualization (previz): Filmmakers use digital tools to create rough animations and sequences that visualize the key elements of the scene, such as camera movement, character blocking, and set layout. This helps the team plan and refine the virtual environment before moving into full production.

In film *The Tower* design and light effects were crucial – beams of lights projected from giant tower standing in city landscape. Those rays of light directly influence main (and only) character actions, so previsualization was very important for storytelling and acting.

4) Virtual scouting: Using virtual reality (VR) headsets, tablets, or desktop computers, filmmakers can explore and evaluate the virtual environment, assessing elements like lighting, composition, and scale. This immersive experience allows for more informed decision-making and adjustments to the digital assets as needed.

The Lion King (2019): The live-action adaptation of the Disney classic used virtual production to create the film's iconic African savanna environment and bring its characters to life. The virtual production allowed for real-time adjustments to lighting, camera angles, and other creative elements during filming. The director

and artistic team visited VR sets in VR headsets to plan scenes, and later shot them using virtual cameras.

5) Real-time rendering and virtual production: With the virtual environment refined, the production team uses real-time rendering engines, such as Unreal Engine or Unity, to create the final visuals for the film or TV show. This often involves combining live-action footage with the virtual environment, using techniques like LED screens or green screen compositing.

4. Advantages of Digital Film Locations for Virtual Production

The new approach to scouting for Virtual Production film locations involves scouting and creating digital environments instead of physical locations. Digital Scouting for Virtual Production is an essential component of modern filmmaking that leverages digital tools to create immersive, visually compelling environments for film and television productions and offer several advantages. Digital film locations allow filmmakers to create environments that may not be possible or practical to build physically, including impossible-to-reach or dangerous ones, giving them greater creative freedom and flexibility. Virtual Production film location scouting allows for greater flexibility in terms of location. Breakthrough productions are for example: *Avatar*, *Lion King* and the series *Mandalorian*.

Virtual Production film location scouting gives filmmakers greater control and flexibility over their environment, as they can adjust lighting, camera angles, and other elements in real-time to achieve the desired look and feel. Digital scouting makes it easy to make changes and adjustments to the virtual environment, enabling filmmakers to fine-tune their vision before committing to the final visuals. Digital locations' scouting enables the creation of a consistent, repeatable environment, while film locations' scouting may involve significant changes to the environment based on weather, time of day, and other factors. A good example is the already described series *1899*.

Virtual Production film location scouting is often faster than traditional location scouting, as filmmakers can quickly and easily create, view, and adjust virtual environments to meet their needs, it's also safer because in opposite to the standard film locations' scouting which may involve safety concerns such as traveling to remote locations or hazardous environments, digital locations' scouting eliminates these risks.

Virtual Production film location scouting is often more cost-effective than traditional location scouting, as it eliminates the need for travel, permits, and other expenses associated with scouting physical locations. By planning and refining virtual environments digitally, filmmakers can save time and resources that would be spent on physical set construction or location scouting. Virtual production also has

the potential to reduce carbon footprint in film production by 25%, according to a report by Filmakademie Baden-Württemberg GmbH Animationsinstitut. The report *Green Screens, Green Pixels, and Green Shooting* (Helzle, Spielmann, Trottnow, 2022) outlines how virtual production techniques such as virtual sets, real-time rendering, and on-set visualization can decrease the need for physical sets and travel, thereby reducing the carbon emissions associated with traditional film production. The authors also discuss the benefits of virtual production for creating more sustainable film productions.

Virtual production can provide a more inclusive environment for actors with disabilities, children, minorities, or advanced in age. In traditional film production, actors may face physical barriers to participating in a shoot, such as the need to travel to a location or perform physically demanding scenes. In virtual production, however, actors can perform in a controlled and safe environment and also use motion capture and other techniques. This eliminates the need for physically demanding stunts and can allow actors with disabilities to participate more easily. Additionally, virtual production provides greater flexibility for scheduling and can accommodate actors who have other commitments or limitations. By reducing physical barriers and increasing accessibility, virtual production has the potential to create a more inclusive environment for actors from a wider range of backgrounds.

These benefits and potential of Virtual Production for scouting and creating digital film locations demonstrate the new approach to film location scouting in the era of digitization and technological advancements in media production. Digital scouting facilitates communication and collaboration among production team members, streamlining the decision-making process in all stages of production.

Table 1. Film Locations Scouting vs. Film Locations Digital Scouting

Specific	Film Locations Scouting	Film Locations Digital Scouting
Realism	focuses on finding real-world locations that match the desired setting	involves creating a realistic digital environment using computer graphics
Cost	travel expenses and location fees	potential to be cost-effective as it eliminates the need for physical travel and location fees
Flexibility	may have limitations such as weather, availability, and accessibility	greater flexibility as the digital environment can be easily changed
Safety	safety concerns such as remote locations or hazardous environments	digital locations' scouting eliminates these risks
Control	may not be possible in a real-world location	provides more control over the environment, allowing for specific lighting conditions, camera angles, and other creative elements to be controlled

Repeatability	may involve significant changes to the environment based on weather, time of day, and other factors	enables the creation of a consistent, repeatable environment
Climate impact	transport, scenography, travel/catering	energy

Source: own research.

As shown in the table above, the Scout Manager in the traditional sense and the Digital Scout Manager in the digital sense perform different functions due to the different specifics of the production of various audiovisual works.

The traditional Scout Manager, in cooperation with the director, is responsible for finding and obtaining the appropriate locations necessary for film production. His main tasks include mainly performing the documentation on locations, negotiating with their owners, and obtaining the necessary permissions for photos. In turn, Digital Scout Manager uses advanced technologies to search for locations using space design programmes, as well as maps and navigation applications. In addition, Digital Scout Manager also takes care of creating virtual scenes that can help the director plan and organizing shooting.

Both types of Scout Managers play an important role in audiovisual production, but the methods they use are different. The traditional scouting manager works more often in the field, establishes contacts with people, and makes decisions based on his own observations, while the digital scouting manager relies on advanced tools and technologies that help quickly and accurately search for appropriate locations and create virtual scenes.

Conclusions

Film locations' scouting focuses on finding real-world locations that match the desired setting, while digital locations' scouting involves creating a realistic digital environment using computer graphics. The use of Virtual Production has also raised concerns about the authenticity of film locations and the representation of real-world locations and ecosystems. For example, a city like Cracow can be portrayed as Prague, or Glasgow as Gotham, which can impact the perception of these cities and create confusion for audiences.

Using digital assets, 3D models, and game engines to create virtual production environments has the potential to be false, fake, or not true to real ecosystems if not done properly. For example, if the wrong species of plants or animals are used, it could create an environment that is not representative of the real ecosystem. To mitigate this, it's important to ensure the virtual environment is based on

an accurate research and is as close as possible to the real ecosystem it is meant to represent. This can be achieved through the use of high-quality reference materials, expert consultation, and thorough testing to ensure the virtual environment is accurate and believable. Additionally, virtual production teams should work closely with experts in the relevant fields, such as botanists or zoologists, to ensure the virtual environment is as accurate and true to life as possible.

These challenges underline the importance of maintaining the authenticity of virtual film locations and ensuring that they are accurately represented. By doing so, they can help maintain the integrity of film and media content, while also preserving the cultural identity of real-world locations. The use of Virtual Production film locations can have an impact on the authenticity of the narration in a film or series. Digital environments and assets created through Virtual Production can provide a high degree of control over the setting and allow filmmakers to create highly immersive and believable virtual locations. However, they may also introduce the potential for unintended inconsistencies or inaccuracies in the narration.

For example, a virtual environment may not accurately represent the historical context or cultural norms of a particular time period, leading to inaccuracies in the story. This can undermine the authenticity of the film and negatively impact its credibility with audiences. To address these challenges, it is important for filmmakers to carefully consider the accuracy of the virtual environments and assets used in Virtual Production and ensure that they accurately reflect the context and cultural norms of the story. By doing so, they can enhance the authenticity of the narration and improve the overall credibility of the film or series.

Directions for further research may focus on several directions related to the use of advanced technologies (Virtual and Augmented Reality). This research may lead to the creation of new tools that will help speed up and streamline the digital scouting process and reduce production costs. The development of more precise tools and algorithms for the analysis of data and digital materials of potential film locations, as well as the use of geospatial data, such as topographical, meteorological or geological data will help in choosing the best film location also in terms of camera settings, type of lighting, or sound. Development of platforms and databases that enable better cooperation between digital scout managers around the world. Such platforms can help to share information about potential filming locations as well as enable film producers to gain access to interesting new locations in different parts of the world.

The arising research path concerns also world-building as a design approach (McDowell, www) that combines interdisciplinary inquiries with computational media, blurring the boundaries between physical and virtual environments. It involves creating a cohesive ”world” allowing for detailed text descriptions and visualizations of locations for location scouting or virtual production. This approach transforms design culture and secures efficient creation of environments and assets for stage production.

Other research directions include new demands and competencies for digital location scouts in virtual production include technical proficiency in digital tools, knowledge of digital environments, creative vision, collaboration with technical teams, and adaptability to evolving technology and techniques. These competencies enable scouts to effectively scout and create virtual locations that support the storytelling and visual goals of a production while ensuring their authenticity and realism.

Another key direction of research is the analysis of the impact of NFT (Non-Fungible Token) and other blockchain technologies on film production and the use of these technologies in securing copyright and ensuring the authenticity of film locations and sets.

An important element is also the study of the impact of film production on the natural environment and the search for ways to minimize the impact on natural ecosystems. A digital scout manager can play an important role in creating a film production strategy that takes environmental issues into account.

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