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THE ROLE OF THE LATEST TECHNOLOGIES IN THE MEDIA PRODUCTION DEVELOPMENT

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Abstract

The purpose of the research is to analyze the components of modern content production methods and identify the dominant areas and technologies in modern production. Show the importance of learning new things and working with a rapidly evolving industry. ***The research methodology*** consists in using such methods as theoretical analysis of information sources, generalization of the influence of the latest production methods on the quality and speed of content production, and determination of the reasons for such trends. ***Scientific novelty.*** For the first time, the latest technology trends in content development are analyzed, a detailed analysis of the impact of the latest production methods on the quality and speed of content generation is carried out, and an assessment of the further development of the technologies under consideration and their future impact is made. ***Conclusions.*** In the course of the article, the technologies that are currently used in the development of content in technical terms have been analyzed. Analysis of information sources shows the influence of new approaches in content development on the quality and, above all, on the speed of content production. The factors influencing the development of the considered technologies and their subsequent impact on the content production industry have been overviewed.

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Problem statement

In the last few years, the media industry has begun to expand significantly, which means areas that were quite elitist for a while (cinema, theatre) have begun to intersect with audiovisual specialists from many narrow areas.

There is a need to dive deeper into the media industry to see how innovations currently are changing the media business landscape. From digitalization to the emergence of many freelance resources – the media industry is impacted from almost all directions. The main trends are changing the direction of the media, so soon, we can expect additional shocks.

To truly understand the industry's path nowadays, we need to evaluate the major technological trends that are currently affecting it and which may have the potential to do so in the future.

Recent research and publications analysis

M. Kavis (2014) noticed the problem of the growing speeds of media production.

E. Haines and N. Hoffman (2018) investigated new methods of processing audiovisual content.

O. Shaw (2015) considered the specifics of content consumption in social networks.

The purpose of the research is to analyze the components of modern content production methods. Identify the dominant areas and technologies in modern production. Show the importance of learning new things and working with a rapidly evolving industry.

Main research material

To understand what producers will be like and the content they will produce in the coming decades, it is necessary to highlight the prominent trends that modern media are beginning to follow.

The first trend mentioned in the article Four Digital Trends Reshaping the Media Industry (2016) is mass digitization. The digital representation will replace printing – it is inevitable. The cost of technology continues to fall, and devices used for media consumption are becoming more sophisticated and convenient. The historical barriers to this transition (generational preferences, convenience, ease of use) are slowly being broken down. As soon as they are destroyed, everything old will disappear, and new technologies will replace them. Nowadays, companies need to make digital production their primary goal and printing operations one-time.

The second trend, which was mentioned in the above article, can be called freelance mania. With resources such as outsource.com, upwork.com, contently.com, and others, finding freelance writers, photographers, editors, designers, and audiovisual producers is now very easy and fast. Companies that manage the entire recruitment of their employees are finding it increasingly complex and challenging to compete with companies that strategically use the talents of freelancers. Media companies that can take advantage of this can lower costs and increase profits (Four Digital Trends Reshaping the Media Industry, 2016).

The third trend mentioned in the same article is excessive content production. Even the average consumer nowadays notices a dramatic increase in content production on the Internet. With the number of new articles, videos, shows, publications, and movies – it becomes increasingly difficult to review and comprehend it all. In addition, barriers for new

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media companies are shallow, as there are many means of distribution available to new entrants. Soon, these new players will provide the same high-quality content as existing media giants. Even companies like Red Bull have started producing their media content. Seven years ago, there were no such trends among companies (Four Digital Trends Reshaping the Media Industry, 2016).

The fourth trend is that ways of watching video and audio are developing very fast. Content consumers are now looking for quick and easy ways to consume information, which has led to increased video upload requirements. Combining this with the rapid advancement of HD, 4K, 8K, and VR, there is now a huge opportunity to create fascinating audiovisual content.

The last trend is to change generations. Many articles examine the many changes that have taken place with millennials gaining the status of major economic powers, while previously, they were considered a generation of boomers. Michael Kavis commented on one of them in his book *Architecting the Cloud: Design Decisions for Cloud Computing Service Models* (2014) on designing new production environments. He, in particular, noted that this transition would be much more challenging for the media. Millennials treat information and content significantly differently than other generations before them. They get more information than they can ever need, and it is all within instant reach. This overload has made them especially wary of anything created by screen art professionals.

They are also rarely affected by advertising that has a financial impact on media companies that rely on traditional advertising-based sales. The good news is that millennials value authenticity and process and perceive content faster than other generations. Media companies that are open, honest, and transparent and produce content powerful enough to share are successful with the new generation.

The last and most significant trend is the Internet. It is backward if a company does not create a successful business model around delivering content over the Internet. The line between traditional and digital media has disappeared. Now they are the only ones, and companies need to figure out how it all works together to deliver the right content to the right audience at the right time.

Several minor trends affect media companies' business – the spread of mobile devices, the maturity of content marketing, the merger of radio and Internet media, etc. However, all of the above is not new – all these trends have long been on the radar. The latest long-term strategy should be based on key trends and take into account minor trends for short-term strategies.

Note that with the volume of technological activities affecting the media industry, the costs of the IT industry in media companies have increased. To stay competitive, companies need to invest wisely. The main goal is not to exceed the competition. It means spending more technology dollars on strategic initiatives and less on infrastructure. Instead of constantly expanding production or scaling up some processes, it is better to focus on new ideas at some point.

Projects that help build scale, reduce costs, and improve customer engagement need to get the most out of the IT budget. According to Sonny Livingston in *Handbook of New Media: Student Edition*, key performance indicators that point in the right direction include revenue per employee, cost of technology per

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employee, and the total percentage of revenue spent on technology. Costs and income per employee should increase over time, while the total percentage of income spent on technology should decrease. Moreover, while small business IT spending is estimated to range from 1.5 percent of annual revenue to more than 10 percent, such media companies can be expected to reach high levels eventually (Livingston, 2006). The industry is hyper-competitive, barriers to entry are constantly shrinking, and technology significantly impacts the modern landscape. Cloud rendering can become one such technology over time.

Rendering is the process of creating a photo-realistic or non-photo-realistic two-dimensional or three-dimensional image from a model using applications. CPUs and GPUs are usually required for this calculation.

The basis of cloud rendering is the parallel computing power of remote GPUs on so-called cloud rendering servers. Content producers do not need to buy and keep many devices themselves. Everything happens somewhere else. Video production specialists do their work faster and cheaper due to higher productivity with fewer resources.

According to Linkedin Learning, cloud server users can build their files, upload them to the cloud rendering server through the user interface, take full advantage of computer hardware on the web, and render complex 3D scenes with a large number of computer processing to generate a preview image or a final animated image to adjust the visual effect or its synthesis after production (2017). Better specifications help reduce the time spent on finishing. These are all points where cloud rendering has advantages over traditional.

Consider a situation where a specialist made an interior composition. If the rendering is performed on an output of 3600X2500, the calculation on a regular computer will take at least 3-6 hours. However, if a person uses the cloud service for this process, the only need is to upload the file to the user interface, and the processing time can be less than 1 hour. Cloud rendering is also several times faster than a home rendering farm, a pre-planned and dedicated space for many devices connected to one network and performing one specific task. Furthermore, during the process itself, the hardware resources of the content producer are not used at all. Also, the user does not always need to be in front of the computer because they can view the process results remotely anytime and anywhere.

Using a cloud rendering farm, if appropriately used, can have a complex effect on digital audiovisual content creation workflows. This can help in many cases: when the project deadlines expire, save a considerable investment in equipment and maintain the farm rendering. Moreover, they can also provide calculations for massive projects if the screen art specialist is far from the primary workplace.

Thus, cloud rendering is a very workable option in different situations, and the size of the project is not the main factor. We might disagree with the statement of Eric Gaines and Nate Hoffman, who in their book *Real-Time Rendering* called cloud rendering more popular and commonplace than traditional. However, we can agree with the highlighted most significant advantages of processing final video files (Haines and Hoffman, 2018).

At first, according to the thoughts of mentioned authors, cloud rendering prevails when it is needed only for a short pe-

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riod – a company that sells broadcasts or post-production with huge projects can fully manage all different rendering processes in the cloud, without the demand to build redundant studios or buy, configure and maintain a significant quantity of additional computing resources.

Secondly, as the same specialists say – it is helpful when production delays and deadlines are missed. If an expert undervalued the requirements of the project or the scale of the product has exceeded the internal capabilities of the hardware resources, then cloud rendering can be pretty helpful.

Finally, as the authors of the previously mentioned book summarize, these are cases when their infrastructure is used to the maximum; if the manufacturer already uses all its allocated resources for rendering, all workstations. When it is not possible to rent more machines to add to the studio, it is time to pay attention to solutions in cloud technology.

Like a television studio, an independent artist can use cloud servers for computing under any of the above conditions, just as a small, medium, or large visual effects studio, architectural firm, or advertising agency can. The benefits of cloud rendering are determined primarily by the situation, not the size of the project.

Cloud technologies are beginning to be implemented in many areas. We agree with Michael Kavis's statement in his book *Architecting the Cloud: Design Decisions for Cloud Computing Service Models* (2014) that the basic idea remains the same – to take away the user's need to process information from their resources and carry it to the owner of a cloud technology farm. The main question for video production specialists is how quickly they will get the result they need. This may also depend on factors beyond the control of the above technologies, such as the remoteness of the central servers from users. However, there are many offers and opportunities. Most audiovisual professionals are trying to please the customer, so it is time for content producers to find new opportunities that are much more convenient and cheaper than existing ones.

Summing up the impact of the "speed race", we see that at the end of the 20th century, manufacturers fought for the customer by developing and gradually increasing the capabilities of the manufactured hardware. Audiovisual market leaders have provided a wealth of statistics and data showing how their product works better, more reliably, and faster. However, over time, productivity has begun to reach its peak, as technological advances are now moving extremely fast, and nowadays, even phones process and display relatively high-quality images. Therefore, in the 20s of the 21st century, a stage came when producers are already competing for speed. This mainly affects specialists in audiovisual arts and production in general.

Conclusions

Many professions have tried to automate in the last few years, saving a lot of time and money. Some of the specialties that this automation will not come to anytime soon are creative, especially audiovisual and related areas. However, in addition to the global automation of all specialist activities, there is also a partial modification of work processes, which facilitates and simplifies human work, which helps focus on more important things.

New film and video formats increase the processing and bandwidth requirements of devices every couple of years, and me-

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dia corporations have no choice but to keep them updated so that they can monetize their content for as long as possible. Currently, this means that studios must periodically destroy and replace their expensive hardware systems. Thanks to the software-defined infrastructure, studios can keep up with the ever-increasing demands on NVM's servers, network and storage technologies (non-volatile memory) without having to dispose of old equipment and start overhastily.

Videos taken on new smartphones, especially iPhones, need special attention. They can look professional and beautiful. Despite some limitations, the skills and creativity of users can force these phones to create videos that are almost close to the quality of DLSR and sometimes even superior to the quality of old DLSR. All thanks to the latest methods of processing and storing video files, which are mainly already embedded and do not require in-depth knowledge.

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РОЛЬ НОВІТНІХ ТЕХНОЛОГІЙ У РОЗВИТКУ МЕДІАВИРОБНИЦТВА

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Анотація

Мета дослідження – визначити панівні сфери та технології у сучасному продакшні. Досягнення поставленої мети передбачає розв'язання таких завдань: проаналізувати складові сучасних способів вироблення контенту; показати важливість навчання новому та розуміння основних процесів роботи в індустрії, яка швидко розвивається; виділити та узагальнити основні вектори розвитку галузі медіавиробництва. ***Методологія дослідження*** полягає у застосуванні таких методів: теоретичного – для аналізу інформаційних джерел, узагальнення впливу новітніх способів виробництва на якість та швидкість вироблення контенту, визначення причин окреслених тенденцій; системно-аналітичного – для визначення панівних сфер у сучасному медіавиробництві та доцільності використання певних технологій у продакшні. ***Наукова новизна:*** вперше проаналізовано новітні технічні тенденції у виробленні контенту, проведено детальний аналіз впливу новітніх способів виробництва на якість та швидкість вироблення контенту, а також окреслено перспективи застосування розглянутих технологій. ***Висновки.*** У статті проаналізовано технології, які нині використовуються у медіавиробництві. За допомогою аналізу інформаційних джерел встановлено вплив нових підходів на якість та насамперед швидкість виготовлення контенту. Узагальнено чинники, які зумовлюють розвиток технологій та впливають на індустрію вироблення контенту. Виділено основні тенденції, що визначають напрям розвитку сфери медіавиробництва.

Ключові слова: аудіовізуальний продакшн; скрипт; рендер; сервер; дизайн; автоматизація; апаратні можливості

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