

ESSAYS II/2023

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PRIVACY SELF MANAGEMENT: CAN I DO IT ALONE?¹

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1. INTRODUCTION

In our increasingly digitalized society, personal information has become a currency of unprecedented value. The concept of privacy self-management has been a long-prevailing ideal, that operates under the assumption that individuals possess both the capacity and the agency to make informed decisions about their personal data and that they have meaningful control over its fate. Yet, as we delve deeper into the intricacies of personal data management in the digital era, it becomes increasingly evident that this ideal harbours fundamentally flawed assumptions. By examining the limitations of individual control over personal data, the essay aims to shed light on the reasons behind the inevitable shift towards a more collective approach to privacy protection in our evolving digital landscape, current attempts, their success and future challenges and considerations.

2. CRITICAL TERMS

First of all, it is necessary to define the terms that will be freely used throughout the paper. Unfortunately, the term *privacy* does not have a universal nor definitive legal definition as its interpretation varies by country. However, various human rights instruments recognize the right to privacy as a fundamental human right, including the Universal Declaration of Human Rights and the International Covenant on Civil and Political Rights.

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Privacy laws are therefore considered within the context of one's privacy rights or within reasonable expectation of privacy. On the other hand, *privacy self-management* is a principle that enables each individual to manage their privacy through notice and choice³ or, in other words, allow them to consider all costs as well as benefits under sharing, providing and allowing for collection and storage of their data.⁴ Finally, the *privacy paradox* is a phenomenon where people claim to value privacy highly but do not act accordingly. Occasionally it is called a myth because some scholars argue that it is created by faulty logic and that people's attitudes about their privacy concerns or how much they value privacy are much more general in nature than the specific behaviours studied in privacy paradox studies.⁵

3. CURRENT ASSUMPTIONS FOR PRIVACY SELF-MANAGEMENT

Establishing an individual as the leading actor in privacy self-management rises and falls on the ability of a given individual to make informed and rational decisions about their personal data as well as having meaningful control over their data granted by law.

Nevertheless, empirical and social science investigations have demonstrated that people's actual capacity to make these informed and logical choices falls far short of the ideal envisioned by privacy self-management.⁶ Among the most common causes of irrational behaviour researchers cite time constraints, lack of knowledge, the nature of human decision making

³ KRÖGER, Jacob Leon, Otto Hans-Martin LUTZ a Stefan ULLRICH. *The Myth of Individual Control: Mapping the Limitations of Privacy Self-management*. [online]. Rochester, NY, 2021. [cit. 15. 11. 2023]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3881776

⁴ SOLOVE, Daniel J. *Privacy Self-Management and the Consent Dilemma* [online]. Rochester, NY, 2012 [cit. 15. 11. 2023]. Available at: <https://papers.ssrn.com/abstract=2171018>

⁵ SOLOVE, Daniel J. *The Myth of the Privacy Paradox*. [online] Rochester, NY, 2021. [cit. 15. 11. 2023]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3536265

⁶ DWIVEDI, Yogesh K. et al. Opinion Paper: "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*. [online]. 2023, vol. 71. [cit. 15. 11. 2023]. Available at: <https://www.sciencedirect.com/science/article/pii/S0268401223000233?via%3Dihub>

and information overload.⁷ To be put differently cognitive demands play a critical role in privacy self-management.⁸ However, these face sequential limitations, while usually, individuals tend to lack adequate information about the choices they make, primarily because they often neglect to peruse privacy policies. Even if they do take the time to read them, they frequently encounter challenges in comprehending the content. Even when comprehension is achieved, they often lack the requisite knowledge to make a genuinely informed decision. Furthermore, even when well-informed, their capacity for decision-making is constrained by the typical complexities inherent in human decision-making.⁹

Similarly, to the failure to demonstrate the presumed rationality in privacy self-management, having meaningful control over an individual's data is often an illusion. Data collectors are still able to manipulate individuals into making unfavourable choices from an individual's point of view while keeping in line with the law. As these external limitations to one's ability to privacy self-management it is possible to note consciously creating obstacles to presenting privacy information and usage of dark patterns, nudging and coercion, financial incentives, uniformity of privacy practises, social norms, dependence on services provided,¹⁰ non-negotiability of usage terms, timing and duration of the consent, scale, data aggregation, downstream uses,¹¹ legal loopholes and complexities of data processing.¹² Additionally, creating technology that focuses primarily on privacy while stay-

⁷ KRÖGER, Jacob Leon, Otto Hans-Martin LUTZ a Stefan ULLRICH. *The Myth of Individual Control: Mapping the Limitations of Privacy Self-management*. [online]. Rochester, NY, 2021. [cit. 15. 11. 2023]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3881776

⁸ LEHTINIEMI, Tuukka a Yki KORTESNIEMI. Can the obstacles to privacy self-management be overcome? Exploring the consent intermediary approach. *Big Data & Society*. [online]. SAGE Publications Ltd, 2017, vol. 4, issue no. 2. [cit. 15. 11. 2023]. Available at: <https://journals.sagepub.com/doi/10.1177/2053951717721935>

⁹ SOLOVE, Daniel J. *Privacy Self-Management and the Consent Dilemma* [online]. Rochester, NY, 2012 [cit. 15. 11. 2023]. Available at: <https://papers.ssrn.com/abstract=2171018>

¹⁰ KRÖGER, Jacob Leon, Otto Hans-Martin LUTZ a Stefan ULLRICH. *The Myth of Individual Control: Mapping the Limitations of Privacy Self-management*. [online]. Rochester, NY, 2021. [cit. 15. 11. 2023]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3881776

ing competitive with non-privacy-focused competitors serves as yet unsolved challenge. Likewise, legal and other regulations for privacy are always “just catching up” to the latest technological advances – the latest generative AI tool serving as an excellent example, since not only national but also corporate regulations have been on the defensive and reactionary state since ChatGPT became widely popular.¹³

Therefore, neither of the initially defined assumptions stand their ground in the face of research and thus raises the question of whether privacy self-management is the correct way to go. In case the privacy of individuals is in the best interest of society and intrinsically of regulators and potential changemakers, then it is not a question of “if” but “when and how”.

4. INEVITABLE SHIFT

A transition away from exclusively relying on individual control is inevitable because privacy self-management requires responsibilities that go beyond the inherent capabilities of most if not all, individuals. At the same time, it fails to provide substantial control over personal data, and it becomes exceedingly challenging for individuals to assess the trade-offs involved in disclosing information or permitting its use and transfer without a comprehensive understanding of the potential downstream consequences. This limitation further hampers the effectiveness of the privacy self-management framework. Moreover, privacy self-management tends to address privacy concerns as a series of isolated transactions driven by specific indi-

¹¹ LEHTINIEMI, Tuukka a Yki KORTESNIEMI. Can the obstacles to privacy self-management be overcome? Exploring the consent intermediary approach. *Big Data & Society*. [online]. SAGE Publications Ltd, 2017, vol. 4, issue no. 2. [cit. 15. 11. 2023]. Available at: <https://journals.sagepub.com/doi/10.1177/2053951717721935>

¹² KRÖGER, Jacob Leon, Otto Hans-Martin LUTZ a Stefan ULLRICH. *The Myth of Individual Control: Mapping the Limitations of Privacy Self-management*. [online]. Rochester, NY, 2021. [cit. 15. 11. 2023]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3881776

¹³ BETTINI, Claudio a Daniele RIBONI. Privacy protection in pervasive systems: State of the art and technical challenges. *Pervasive and Mobile Computing*. [online]. 2015, vol. 17. [cit. 15. 11. 2023]. p. 170. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S1574119214001631?via%3Dihub>

viduals, often overlooking the broader impact of individual privacy choices on both other individuals and society as a whole. Consequently, there is a compelling need to shift toward a more collective approach to safeguarding privacy, one that considers the broader societal implications of personal data processing and the power dynamics involving individuals, corporations, and governments.^{14, 15,16}

Attempts to shift from privacy self-management are already happening, the evidence being the growing adoption of privacy regulations and laws globally. On one hand, initiatives like the European Union's General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA) serve as exemplary illustrations. These measures are designed to safeguard individual's privacy by placing greater accountability on companies and similar collecting entities to protect personal data and giving individuals more control over their data by providing stronger legal ground to individuals and thus empowering the individuals at the expense of companies and possibly the state.¹⁷ On the other hand, China cultivates the social credit system (SCS), which is hailed as its most substantial reform of the economic and social environment to ensure China's continuous development in the digital age, which takes a completely different approach by strengthening the state by monitoring and assessing the trustworthiness of individual, companies and governmental entities.¹⁸

¹⁴ KRÖGER, Jacob Leon, Otto Hans-Martin LUTZ a Stefan ULLRICH. *The Myth of Individual Control: Mapping the Limitations of Privacy Self-management*. [online]. Rochester, NY, 2021. [cit. 15. 11. 2023]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3881776

¹⁵ SOLOVE, Daniel J. *Privacy Self-Management and the Consent Dilemma* [online]. Rochester, NY, 2012 [cit. 15. 11. 2023]. Available at: <https://papers.ssrn.com/abstract=2171018>

¹⁶ BROUWER, Simeon de. Privacy self-management and the issue of privacy externalities: of thwarted expectations, and harmful exploitation. *Internet Policy Review* [online]. 2020, vol. 9, issue no. 4 [cit. 16. 11. 2023]. Available at: <https://policyreview.info/articles/analysis/privacy-self-management-and-issue-privacy-externalities-thwarted-expectations-and>

¹⁷ VOGELS, Janna Anderson, Lee Rainie and Emily A. *Experts Say the 'New Normal' in 2025 Will Be Far More Tech-Driven, Presenting More Big Challenges* [online]. 2021 [cit. 15. 11. 2023]. Available at: <https://www.pewresearch.org/internet/2021/02/18/experts-say-the-new-normal-in-2025-will-be-far-more-tech-driven-presenting-more-big-challenges/>

While all of the aforementioned initiatives account for limitations of privacy self-management and its assumptions, and instead take a collective approach as a step towards better data privacy (at least in the case of GDPR and CCPA), it is worth noting that all of them have their fair share of criticism. For GDPR it is mostly vague and undefined legal terminology, scope limitations,¹⁹ questionable enforcement, compliance challenges and negative impact on services (companies) itself, while still providing only limited impact on privacy. CCPA is likewise criticized for limited application, potential functional uselessness, insufficient protection and unclear enforcement rules.²⁰ Finally, for SCS beyond lack of transparency, accuracy and standardization, the most pressing criticism is actually the limited rights of individuals and privacy concerns, which would go completely against the initial goal of privacy protection.^{21,22}

5. FIXING PRIVACY MANAGEMENT

As a reaction to the aforementioned failures of assumptions for privacy self-management as well as heavy criticism for collective initiatives, it is necessary to explore possible fixes to privacy management. Since we are looking at a complex issue requiring a multifaceted approach, some possibilities include simplification of privacy policies by means such as plainer language

¹⁸ AHO, Brett a Roberta DUFFIELD. Beyond surveillance capitalism: Privacy, regulation and big data in Europe and China. *Economy and Society*. [online]. Routledge, 2020, vol. 49, issue no. 2. [cit. 15. 11. 2023]. p. 188. Available at: <https://www.tandfonline.com/doi/full/10.1080/03085147.2019.1690275>

¹⁹ KRÖGER, Jacob Leon, Otto Hans-Martin LUTZ a Stefan ULLRICH. *The Myth of Individual Control: Mapping the Limitations of Privacy Self-management*. [online]. Rochester, NY, 2021. [cit. 15. 11. 2023]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3881776

²⁰ VILJOEN, Salomé. The Promise and Pitfalls of the California Consumer Privacy Act. In: *DLI Cornell tech* [online]. 11. 4. 2020 [cit. 15. 11. 2023]. Available at: <https://www.dli.tech-cornell.edu/post/the-promise-and-pitfalls-of-the-california-consumer-privacy-act>

²¹ AHO, Brett a Roberta DUFFIELD. Beyond surveillance capitalism: Privacy, regulation and big data in Europe and China. *Economy and Society*. [online]. Routledge, 2020, vol. 49, issue no. 2 [cit. 15. 11. 2023]. p. 205. Available at: <https://www.tandfonline.com/doi/full/10.1080/03085147.2019.1690275>

²² KOBIE, Nicole. The complicated truth about China's social credit system. *Wired UK* [online] [cit. 15. 11. 2023]. ISSN 1357-0978. Available at: <https://www.wired.co.uk/article/china-social-credit-system-explained>

and shortening text, intuitive presentation, explanatory videos, Q&A chatbots,²³ increasing public awareness to nudge individuals towards more rational decisions, further development of various software tools for privacy protection on the one hand and overcoming technology challenges in creating products with privacy at its core. Finally, collaboration between all stakeholders will be elementary, that is including individuals, companies, governments and educators.²⁴

In the end, even if the challenges connected to the possible fixes were overcome, we get to the implications of the privacy paradox and its status as a myth. Given the limitations of privacy self-management laid out before, it would be tempting to label the privacy paradox as a myth, since they would imply that even if individuals cared enough about their privacy, it would not be possible to fully adhere to these values unless living without digital world, its tools and away from urbanized public areas not to be subjected to surveillance capitalism. At the same time, seeing data collection as a business interest (either for marketing and advertisement purposes or for product development), it would be interesting to experiment with the idea of a "direct pricing" system of data provided to the data collector from an individual's point of view. That is assigning monetary value to each package of data provided or collected and thus allowing all individuals to see data of what worth has he provided, building on an idea that there is no such thing as a free lunch and potentially serving as a counterbalance to using current services seemingly for free. However, this would require a centralized, yet simple enough UX, strong and precise legal regulation and collaboration of all parties involved, creating a challenge not only from the technical and legal side of things but from the moral and ethical as well, especially if the system were to be designed as a voluntary trade of personal information from individual to companies, creating a dis-

²³ KRÖGER, Jacob Leon, Otto Hans-Martin LUTZ a Stefan ULLRICH. *The Myth of Individual Control: Mapping the Limitations of Privacy Self-management*. [online]. Rochester, NY, 2021. [cit. 15. 11. 2023]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3881776

²⁴ OFFICE OF EDUCATIONAL TECHNOLOGY. *Barriers & Strategies*. [online] 2021. [cit. 15. 11. 2023]. Available at: <https://tech.ed.gov/advancing-digital-equity-for-all/barriers-and-strategies/>

crepancy between privacy as a fundamental human right and privacy as a commercial estate. Some are already pointing out this idea and its complexity;^{25, 26} however, it seems as a best possible step in order to create a well-functioning privacy management system, fair to both individuals and businesses alike.

6. CONCLUSION

In conclusion, the examination of the fundamentally wrong assumptions underpinning the concept of privacy self-management underscores the critical need for re-evaluation in our approach to safeguarding personal data. As the digital age evolves, we are faced with a growing understanding of the intricate challenges that individuals encounter in managing their own privacy. The evidence of individuals' struggles to make informed decisions, the inability to grasp the complexities of data policies, and the consequences of their choices on a broader societal scale is undeniable. A more collective approach to privacy protection is necessary, one that takes into account the societal implications of personal data processing and the power dynamics between individuals, corporations, and governments. This shift is already happening, as evidenced by the increasing number of privacy regulations and laws being enacted around the world. With their questionable success however, we may sooner or later face a question, whether we shall allow individuals to freely trade their personal information as a commercial estate, creating a mechanism for counter-balancing the data collection benefits for companies, and if so, how to protect them from making irreversible faulty decisions.

²⁵ MALGIERI, Gianclaudio a Bart CUSTERS. Pricing privacy – the right to know the value of your personal data. *Computer Law & Security Review*. [online]. 2018, vol. 34, issue no. 2. [cit. 15. 11. 2023]. p. 299. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0267364917302819?via%3Dihub>

²⁶ PURTOVA, Nadya a Gijs VAN MAANEN. Data as an economic good, data as a commons, and data governance. *Law, Innovation and Technology*. [online]. Routledge, 2023. [cit. 15. 11. 2023]. s. 41. Available at: <https://www.tandfonline.com/doi/full/10.1080/17579961.2023.2265270>

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[11] SOLOVE, Daniel J. *The Myth of the Privacy Paradox*. [online] Rochester, NY, 2021. [cit. 15. 11. 2023]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3536265

[12] VILJOEN, Salomé. The Promise and Pitfalls of the California Consumer Privacy Act. In: *DLI Cornell tech* [online]. 11. 4. 2020 [cit. 15.11.2023]. Available at: <https://www.dli.tech.cornell.edu/post/the-promise-and-pitfalls-of-the-california-consumer-privacy-act>

[13] VOGELS, Janna Anderson, Lee Rainie and Emily A. *Experts Say the 'New Normal' in 2025 Will Be Far More Tech-Driven, Presenting More Big Challenges* [online]. 2021 [cit. 15. 11. 2023]. Available at: <https://www.pewresearch.org/internet/2021/02/18/experts-say-the-new-normal-in-2025-will-be-far-more-tech-driven-presenting-more-big-challenges/>

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PROTECTING FREE SPEECH AGAINST FREE SPEECH²⁷

H. CAN ÖZDEMİR²⁸

1. INTRODUCTION

Undoubtedly, freedom of speech is essential for human rights and democracy. Since the establishment of the internet in the information age, the importance of freedom of speech is highly felt by internet users because now every individual can represent their ideas on social media platforms. The main difference between traditional media and social media is every individual can share their ideas on social media platforms but in traditional media, the percentage of participation in speech is meagre and that leads to some changes in communication.

The accessibility and popularity of the internet have made the reach of free speech cheaper, faster, and easier to access, causing concern among some governments. Governments are pressuring social media platforms to ban ideas that are considered harmful to democracy and society.²⁹ Although certain philosophers have discussed limiting freedom of speech to protect it, the restrictions of content on social media platforms raised questions among people about freedom of speech and whether it is justifiable to limit ideas that may harm society or a country's democratic order. To answer

²⁷ Esey byla zpracována v semestru podzim 2023 v rámci předmětu MVV1368K Privacy and Personal Data Law. / The essay was written in the autumn 2023 semester for the course MVV1368K Privacy and Personal Data.

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²⁹ CHOTINER, Isaac. The Evolving Free-Speech Battle Between Social Media and the Government. *The New Yorker* [online]. 2023. [cit. Cit. 23. 10. 2023]. Available at: <https://www.newyorker.com/news/q-and-a/the-evolving-free-speech-battle-between-social-media-and-the-government>

this question, this essay first examines the three major theories of free speech to determine their justifications for the freedom of speech. Next, it attempts to determine whether it is possible to limit political speech under the reasoning of each theory. This essay is focused on anti-democratic and extremist political speech because it is the type of speech that is considered to be potentially harmful to the democratic organization of a society and, eventually, to free speech.

2. THREE MAJOR THEORIES OF FREE SPEECH

2.1 MARKETPLACE OF IDEAS

The oldest and most known theory for justification of free speech is the acquisition of truth in the marketplace of ideas. The theory was first mentioned by John Milton in the seventeenth century and developed systematically by John Stuart Mill. The main idea of the theory is that in a platform of free debate truth will prevail over falsehood.³⁰

In a platform of free debate, wrong ideas will be freely criticized and eliminated because their falsehood will be pointed out. Truth, on the other hand, can be criticized. But it will not be eliminated because it has no weaknesses, or through debate, people may realize that the idea is wrong. Justice Oliver Wendell Holmes wrote that "the ultimate good desired is better reached by free trade in ideas."³¹

Some may argue against allowing criticism of the truth, but even truth should be criticized. If people stop thinking, talking, or debating about the ideas we hold to be true, then truth will be held as a dead dogma, not a living truth.³²

In my opinion "truth" in this theory should be understood as the most logical outcome for political speech because the issues of politics are all ab-

³⁰ MILTON, John. *Areopagitica: A Defense of Free Speech - Includes Reproduction of the First Page of the Original 1644 Edition*. ARC Manor, 2008. p. 55.

³¹ ABRAMS et al. v. UNITED STATES. In: *LII / Legal Information Institute* [online]. 10. 11. 1919. [cit. 15. 11. 2023]. Available at: <https://www.law.cornell.edu/supreme-court/text/250/616>

³² MILL, John Stuart. *On Liberty and Other Essays*. 1st edition. Oxford: Oxford Paperbacks, 2008. p. 40.

stract; we cannot falsify a political idea by testing it. For example, we cannot do an experiment and decide that country X should be run under a communist regime for 10 years to see if it is a good political regime or not. Because politics are abstract, the most logical outcome from political debates may change from person to person because the interests of individuals differ from their personal experiences and preferences.

The way science works is in line with the theory of the marketplace of ideas. Karl Popper differentiates science from non-science by using the falsification principle, which states that if there is no way to falsify a theory by testing or criticizing it, then the theory is not scientific.³³ Popper's idea focuses on the falsification principle because scientific theories need to be tested to see if the theory is working or not. Also, scientific theories improve through critiques from other scientific theories. In order to get closer to a better theory, scientists focus on eliminating incorrect theories. The marketplace of ideas theory works in a similar way; ideas need to be criticized to test them to determine if they are true or false. Without freedom of speech, the process of criticizing ideas will not happen in a healthy way, because people may fear getting punished for their ideas.

2.2 DEMOCRATIC SELF-GOVERNANCE

This theory understands free speech as a tool for achieving core democratic values.³⁴ Abraham Lincoln said, "Democracy is a rule of the people, for the people and by the people".³⁵ In a democratic form of government, leaders are representatives of the people and democracy is grounded on equal participation of the public in the government of public affairs.³⁶ Freedom of

³³ POPPER, Karl. *The Logic of Scientific Discovery*. [online]. 2nd edition. London: Routledge, 2002. [cit. 23. 10. 2023]. p. 72. Available at: <https://philotextes.info/spip/IMG/pdf/popper-logic-scientific-discovery.pdf>

³⁴ BARENDT, Eric. *Freedom of Speech*. [online]. 2nd edition. Oxford, New York: Oxford University Press, 2007. [cit. 23. 10. 2023]. p. 19. Available at: <https://www.jstor.org/stable/840191>

³⁵ LINCOLN, Abraham. *Gettysburg Address*. [online]. 19. 11. 1863. [cit. 23. 10. 2023]. Available at: <https://voicesofdemocracy.umd.edu/lincoln-gettysburg-address-speech-text/>

³⁶ TESIS, Alexander. Balancing Free Speech. *Faculty Publications & Other Works* [online]. 2016. [cit. 23. 10. 2023]. p. 11. Available at: <https://lawcommons.luc.edu/facpubs/580>

speech is essential to the existence of democracy because, without it, core democratic values such as the rule of the people and the principle of equal participation cannot be achieved.

Without freedom of speech core democratic values cannot be achieved because democracy is more than voting. It is true that elections allow people to choose their representatives, but political debate is essential to shaping voters' ideas before an election.³⁷ If there is no public debate and people don't have any ideas about political issues, what's the point of holding an election? Such an election would not accurately reflect the views of voters, since they may have no opinion on political matters because political debate informs citizens on political matters. Even though voters may have opinions about political issues, public debate may have an influence that leads to changes in their ideas.

Political debate is crucial both for informing and shaping voters' ideas and also for finding solutions to our minor and major problems. At the end of all these discussions, people may have different ideas or different solutions for their problems, and they will vote for the politicians who represent ideas similar to their own. Politicians present themselves at rallies, in interviews, or even in public places like parks to participate in political debate. All those political discussions cannot be held in a healthy way without freedom of speech, and because political debate is essential to the running of a democracy, freedom of speech should be protected.

2.3 SELF-FULFILLMENT

This theory understands freedom of speech as a human right which comes from our dignity and what we say, write, hear and read affects our personality and our growth as intellectual human beings.³⁸

Humans do not have sharp teeth like sharks, sharp claws like bears, and the strength of a gorilla. Instead, we have our superior communication

³⁷ MEIKLEJOHN, Alexander. *Free Speech and its Relation to Self-Government*. Union, N.J: The Lawbook Exchange, Ltd., 2011. pp. 105-107.

³⁸ BARENDT, Eric. *Freedom of Speech*. [online]. 2nd edition. Oxford, New York: Oxford University Press, 2007. [cit. 23. 10. 2023]. ISBN 978-0-19-922581-1. p. 13. Available at: <https://www.jstor.org/stable/840191>

skills to cooperate and survive in the wild. Our ability to communicate was instrumental in our survival during humanity's early ages as every individual inherently adopted the ability to communicate. Every person has the inherent dignity to speak freely, it is intrinsic to our nature.³⁹

Self-fulfilment theory suggests that individuals fulfil themselves by communicating. Engaging in conversation with others allows individuals to test their thoughts, maybe realize that their ideas are wrong, or realize that their ideas need to be improved. They may also learn from others. All these situations help individuals develop themselves. Although this theory does not focus on the consequences of freedom of speech to society, the right to freedom of speech leads to the development of more self-aware and mature individuals, which eventually benefits society.⁴⁰ The development of our intellectual existence through communication is perhaps the most important feature that differentiates humans from animals.

The theory also focuses on the autonomy of individual human beings. It suggests that autonomy and freedom of speech have an intense relationship because individuals develop and fulfil their intellectual existence through speech, which affects their autonomy.⁴¹ According to Thomas Scanlon, “an autonomous person cannot accept without independent consideration the judgement of others as to what he should believe or what he should do.”⁴²

The autonomy of human beings leads both to the ability to act and speak freely and to receive other people's ideas. Being able to act and speak freely because of our autonomy leads to freedom of speech, and being able to receive others' ideas leads to independently criticizing and understand-

³⁹ SHIFFRIN, Seana Valentine. *A thinker-based approach to freedom of speech*. [online]. University of Minnesota Law School, 2011. [cit. 23. 10. 2023], pp. 302-303. Available at: <http://conservancy.umn.edu/handle/11299/163435>

⁴⁰ CAMPBELL, Tom a Wojciech SADURSKI. *Freedom of Communication*. Dartmouth Publishing Company, 1994, pp. 33-34.

⁴¹ TSEIS, Alexander. Balancing Free Speech. *Faculty Publications & Other Works* [online]. 2016. [cit. 23. 10. 2023], p. 15. Available at: <https://lawcommons.luc.edu/facpubs/580>

⁴² SCANLON, Thomas. A Theory of Freedom of Expression. *Philosophy and Public Affairs*. [online]. Wiley-Blackwell, 1972, vol. 1, issue no. 2. [cit. 23. 10. 2023], p. 163. Available at: <https://www.jstor.org/stable/2264971>

ing those ideas, which gives us the autonomy to develop our intellectual existence. Autonomy leads to freedom of speech; freedom of speech leads to autonomy.

3. THE JUSTIFIABILITY OF LIMITING FREEDOM OF SPEECH FOR ITS PROTECTION

It is crucial to understand the concept of limiting freedom of speech in order to secure it. What types of speech can be dangerous to the existence of freedom of speech? Can defamation, libel, disinformation, or blasphemy threaten freedom of speech? Such forms of speech do not necessarily target the existence of free speech; however, they may cause disorder in society, which may be harmful to free speech. Nevertheless, this paper focuses on theoretical issues about restriction on political speech that is considered anti-democratic and extremist.

Speech that directly targets the existence of free expression or indirectly aims to disrupt it may be harmful to the existence of freedom of speech. For example, extremist ideologies, like fascism, ethnonationalism, and totalitarianism, all support restrictions on free speech. In a democratic society, where freedom of speech is highly valued, is it justifiable to restrict the freedom of speech of people who defend or talk about these kinds of extremist ideologies because such ideologies can change the structure of society and distort freedom of speech? To find an answer to this question, let's examine it under three major theories of freedom of speech.

3.1 MARKETPLACE OF IDEAS

Finding the truth for this theory is more important than everything. The theory justifies freedom of speech because it is a tool for humans to get the most logical outcome. Limiting political speech because it may lead to harm to the freedom of speech is not justifiable for this theory because the theory focuses on finding the truth; freedom of speech is just a tool for it.

Theory suggests that the best way to reach truth is to put our thoughts on the marketplace of ideas and debate about them to test if it is the most

logical outcome or not. Even if the idea may be dangerous, we should put it in the marketplace of ideas and debate about it because it may be the most logical outcome.

Some argue that debating issues that contradict the truth is pointless. Mill supposes that even truth should be open to criticism, otherwise, it may turn out to be a dead dogma.⁴³ Dead dogma refers to an unquestionable idea that is accepted by society as a whole. Such an idea is inevitably going to lose its meaning because no one will question it because everyone automatically accepts it. By criticizing the ideas that we take as truth, we may be able to improve that idea because we may find some weaknesses in it, or we may realize that it is actually wrong. Even if neither scenario arises, criticizing and thinking about the truth will make it alive, and people will remember why they've accepted the idea as truth.

3.2 DEMOCRATIC SELF GOVERNANCE

As I mentioned, this theory uses freedom of speech as a tool for achieving core democratic values. Freedom of speech is essential for achieving equal participation in the governance of public affairs and healthy public debate. Both of those things are considered core values of democracy. Even though freedom of speech is essential for democracy, we can interpret that it is just a tool for democracy. If the political speech of certain groups, such as people who defend extremist ideologies, will be harmful to democracy, that group's freedom of speech may be restricted to protect the democratic form of government. Limiting freedom of speech to protect democracy is possible for this theory but the government should be extremely careful about it because it may lead to a totalitarian regime which is also dangerous to the core values of democracy.

3.3 SELF-FULFILLMENT

This theory assumes that freedom of speech is essential for self-fulfilment, intellectual development, and autonomy. I believe for this theory, it is

⁴³ MILL, John Stuart. *On Liberty and Other Essays*. 1st edition. Oxford: Oxford Paperbacks, 2008, p. 100.

unacceptable to allow governments to restrict some political ideas because they may be harmful to society. Theory suggests that the right to free speech is inherent in every individual and that each person has the autonomy to evaluate ideas in his or her own mind. Individuals have the autonomy to evaluate ideas in their own minds, when the government acts in a paternalistic way and restricts the idea, it is disregarding our autonomy. As Dworkin stated:

”[M]orally responsible people insist on making up their own minds about what is good and bad in life or in politics, or what is true and false in matters of justice or faith. Government insults its citizens, and denies their moral responsibility when it decrees that they cannot be trusted to hear opinions that might persuade them to dangerous or offensive convictions. We retain our dignity, as individuals, only by insisting that no one no official and no majority has the right to withhold opinion from us on the ground that we are not fit to hear and consider it.”⁴⁴

4. INSIGHTS ON RESTRICTING POLITICAL SPEECH

In my opinion, it seems clear that freedom of speech should not be restricted to the marketplace of ideas and self-fulfilment theories, but it is controversial for the theory of democratic self-governance. I believe that, for the theory of democratic self-governance, restricting freedom of speech to protect democracy is more harmful to democracy because it does not solve the problem of the existence of dangerous ideas, it may turn democracy into a dead dogma, and it gives a basis of justification for totalitarian regimes to restrict freedom of their opponents.

4.1 IT DOES NOT WORK

Censorship of news that might affect political discourse or political ideas does not make them disappear from society, especially in the age of the internet. Instead, censorship might draw more attention to what is censored,

⁴⁴ DWORKIN, Ronald. The Coming Battles over Free Speech. *The New York Review of Books* [online]. 1992, vol. 39, issue no. 11. [cit. cit. 23. 10. 2023]. Available at: <https://www.nybooks.com/articles/1992/06/11/the-coming-battles-over-free-speech/>

and people might be more curious about something after knowing that it is banned. To give an example, Barbra Streisand sued a photographer and a website because the photographer took a photo of her mansion and published it online, before the lawsuit the photo was downloaded six times, after the lawsuit it was downloaded 420,000 times in just one month.⁴⁵

4.2 DANGER OF TURNING DEMOCRACY INTO A DEAD DOGMA

When we face criticism of an idea we support, defending it has an important benefit: it reminds us why we support that idea. While making a counterargument, we test our idea and remember why we decided to support it. If governments ban speech that is considered anti-democratic and extremist, there will be no opportunity to defend democracy against those ideas. This could result in democracy becoming a dead dogma that everyone supports, but no one remembers why they support it, and eventually loses its meaning in society.

4.3 POTENTIAL FOR ABUSE BY TOTALITARIAN REGIMES

If a democratic government limits the freedom of speech of a group based on their political ideas, it might provide an opportunity for totalitarian governments to limit the freedom of speech of their opponents. For example, if a democratic government bans speech about dangerous politics, which is justifiable under democratic self-government theory, totalitarian governments can restrict the free speech of their opposition, and they can try to justify it by claiming that it is a justifiable act for other democratic countries in the world.

5. CONCLUSION

In conclusion, although there are similarities among theories, the primary justifications for free speech are different, acquisition of the truth, achieving democratic values and self-fulfillment of the individual.

⁴⁵ JANSEN, Sue Curry a Brian MARTIN. The Streisand Effect and Censorship Backfire. *International Journal of Communication*. [online]. 2015, vol. 9. [cit. 23. 11. 2023], p. 656. Available at: https://www.researchgate.net/publication/273947761_The_Streisand_Effect_and_Censorship_Backfire

The question of whether to limit free speech to protect it is a complex one, and for some theories, it is justifiable, for others it is not.

First, if we consider freedom of speech to be a tool for humanity to find the truth, then it cannot be restricted because the idea that wanted to be restricted may be the truth.

Second, if we understand freedom of speech as an inherited right that comes from our dignity and leads to the development of an autonomous individual, then it cannot be limited because it could prevent the self-development of that individual, and every autonomous individual has the right to evaluate ideas in his own mind and act in accordance with his own thoughts.

Finally, if we acknowledge freedom of speech as a tool for achieving core values of democracy then it could be restricted in order to secure democracy because freedom of speech is just a tool that serves democracy.

I believe that freedom of speech should not be restricted to protect itself, even when the speech in question is considered anti-democratic and extremist. Restrictions on political speech can prevent individuals from improving their political opinions and achieving personal fulfilment. Furthermore, it can turn democracy into a dead dogma and prevent the chance of improving our knowledge through discussion.

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CLOUD GAMING: TECHNICAL AND COPYRIGHT ASPECTS OF CLOUD VIDEO GAME STREAMING⁴⁶

JAKUB RAŠE⁴⁷

1. INTRODUCTION

The future of cloud gaming is only limited by our imagination. ⁴⁸

Phil Eisler ⁴⁹

With this sentence, Phil Eisler concluded his answer to the question about the future and direction of cloud gaming. Eisler more than hinted that cloud gaming as such has great potential and that the possibilities for its use in the video game industry are, poetically speaking, endless. In today's fast-paced era, cloud gaming, or the actual playing of video games via PCs, consoles and mobile phones, has become a popular leisure activity not only for Generation Z, and gaming has long since ceased to be essentially a hobby for a closed group of video game enthusiasts. Today, games are simply an essential part of our lives. And Nvidia has a big part to play in that.

This company started in 1993 as a manufacturer of graphics cards for the gaming and multimedia markets. Today, however, its portfolio is far more extensive. Nvidia provides hardware products such as powerful RTX graphics cards and G-Sync gaming monitors. It also provides software services like various application frameworks (for developing artificial intelli-

⁴⁶ Esej byla zpracována v semestru jaro 2023 v rámci předmětu MVV93K Videoherní právo. / The essay was written in the spring 2023 semester for the course MVV93K Videogames Law.

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⁴⁸ VJESTICA. Adam. Nvidia GeForce Now interview: 'the future of cloud gaming is only limited by our imagination'. In: *Tech radar* [online]. 2022. [cit. 10. 3. 2023]. Available at: <https://www.techradar.com/features/nvidia-geforce-now-interview-the-future-of-cloud-gaming-is-only-limited-by-our-imagination>

⁴⁹ Phil Eisler is a General Manager of NVIDIA's GeForce NOW cloud gaming service.

gence for autonomous vehicles and healthcare, or for multimedia content analysis), various applications (for data engineering), AI-based data infrastructure (NVIDIA AI Enterprise, Cloud Native), and last but not least, the cloud gaming service Nvidia GeForce Now (hereafter referred to as "GFN").⁵⁰ This service was first known as Nvidia Grid when it was introduced in 2013 as a limited beta version for Nvidia Shield gaming consoles. Later in 2015, the beta version of Nvidia Shield was officially launched as the full version, allowing gamers to play games supported and offered by Nvidia on those consoles.⁵¹ Subsequently, in March 2017, Nvidia GFN was revealed for Windows and Mac computers, where its functionality was based on the Nvidia Grid model, with the service only being available in beta testing.

Nonetheless, it brought the novelty of being able to link a Steam account and its game library to the service, i.e., the ability to run primarily a game that the player *already owned*.⁵² In 2019, the Nvidia Grid service was discontinued and rebranded to GFN. Finally, on February 4, 2020, the full version of the GFN service was officially launched to the public, supporting a wide range of operating systems such as Windows, macOS, Android, Chromebook, and Nvidia's multimedia device, the Nvidia Shield TV.⁵³ But it has gradually grown again and now supports Android and iOS mobile phones as well.⁵⁴

⁵⁰ More information about Nvidia and its body of work can be found in the official document *Nvidia Story* available at: <https://images.nvidia.com/aemdam/Solutions/homepage/pdf/NVIDIA-Story.pdf>

⁵¹ MAG UHG, Gordon. Nvidia GeForce Now aims to be the 'Netflix of games' for just 8 bucks a month. In: *PC world* [online]. 2015. [cit. 10. 3. 2023]. Available at: <https://www.pc-world.com/article/423733/nvidia-geforce-now-aims-to-be-the-netflix-of-games-for-just-8-bucks.html#:~:text=Nvidia%20GeForce%20Now%20aims%20to%20be%20the%20%E2%80%98Netflix,after%20purchase.%20...%204%204K%20gaming%20too%20>

⁵² CLOVER, Juli. Nvidia's Free GeForce NOW Beta Lets You Play System Intensive PC Games on Your Mac. In: *Macrumors* [online]. 2017. [cit. 10. 3. 2023]. Available at: <https://www.macrumors.com/2017/10/13/nvidia-geforce-now-beta-for-mac/>

⁵³ CRANZ, Alex. Nvidia's Game-Streaming Service Is Finally Live. In: *Gizmodo* [online]. 2020. [cit. 10. 3. 2023]. Available at: <https://gizmodo.com/after-7-years-in-beta-nvidias-game-streaming-service-i-1841449313>

⁵⁴ More detailed information about the GFN video game service system requirements available at: <https://www.nvidia.com/en-us/geforce-now/system-reqs/>

Since that date, video game players have experienced a revolution in gaming. The service joined other cloud-based services already in existence at the time, namely Google Stadia, PsNow and Xcloud (nowadays Microsoft Xbox Game Pass Ultimate), but brought a few innovations over the competition. Firstly, the service allowed players to link their existing game libraries to the GFN service, meaning players didn't have to buy new game titles to be able to run and play a given video game through the service. Secondly, the GFN service also introduced a free-to-play model, whereby players could use the service for free for a limited time each day, in addition to various subscription tiers.

This paper will therefore focus on cloud gaming, namely gaming through the aforementioned cloud gaming service Nvidia GFN, where it will try to answer the question "*How does the transmission of audiovisual content work with Nvidia GFN, and how does the service affect copyright law in terms of publication and reproduction of works?*" In the first part, the paper will focus on the technical functioning of GFN, more specifically on its network and cloud aspects in streaming. In the second part, the paper will focus on copyright in the context of making copyrighted works available to the public and the reproduction of copyrighted works.

2. TECHNICAL ASPECTS OF NVIDIA GFN

This chapter's primary objective is to explore the description of the technical functioning of a given GFN video game service. The first part will try to analyze the network protocol that GFN uses, focusing on audio and video data transmission during streaming. It will also focus on image resolution options and network load for a given stream. The second part of the chapter will break down the cloud tool that GFN uses.

2.1 ANALYSIS OF GFN NETWORK OPERATION WITH FOCUS ON STREAMING DATA TRANSFER

The GFN video game service uses and operates on the basis of the *Real Time Protocol* (hereinafter referred to as the "RTP protocol")⁵⁵, which is built on top of other protocols such as the *UDP Protocol* and the *IP Protocol*. However, this paper will focus mainly on the RTP protocol. This RTP protocol is a network protocol that ensures audio and video transmission over an Internet connection. The given protocol is mainly used widely in communication and entertainment applications, which include streaming music and video media, organizing video conferences, operating television services and using push-to-talk web functions. Applications such as Microsoft Team or Zoom for calls and video conferences can be mentioned, but its use is wide, and it can even be used for cloud gaming. The RTP protocol is often found simultaneously with the RTP Control Protocol (RTCP) where the task of this RTCP protocol is to monitor the quality of transmission services and to transmit information about session participants⁵⁶. However, we do not observe the given presence of the RTCP protocol here in GFN⁵⁷. The RTP protocol was designed for both multicast transmissions (network communication between one device that sends data and several selected receiving devices) and unicast transmissions (communication occurs only between the sending device and the receiving device), both for one-way and two-

⁵⁵ DI DOMENICO, Andrea. PERNA, Gianluca. TREVISAN, Martino. VASSIO, Luca. GIORDANO, Danilo. *A Network Analysis on Cloud Gaming: Stadia, GeForce Now and PSNow. Network* [online]. 2021. [cit. 16. 3. 2023], p. 3. Available at: <https://www.mdpi.com/2673-8732/1/3/15>

⁵⁶ KOISTINEN, Tommi. *Protocol overview: RTP and RTCP. Research Gate*, [online]. 1999. [cit. 24. 3. 2023], p. 2. Available at: https://www.researchgate.net/publication/251203018_Protocol_overview_RTP_and_RTCP

⁵⁷ DI DOMENICO, Andrea. PERNA, Gianluca. TREVISAN, Martino. VASSIO, Luca. GIORDANO, Danilo. *A Network Analysis on Cloud Gaming: Stadia, GeForce Now and PSNow. Network* [online]. 2021. [cit. 16. 3. 2023], p. 8. Available at: <https://www.mdpi.com/2673-8732/1/3/15>

way transmission⁵⁸. GFN uses unicast communication, which occurs between one device and the server.

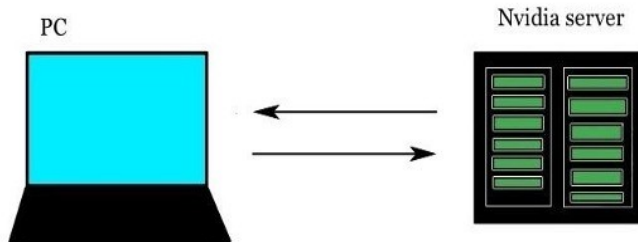


Figure 1 Example of unicast

It is also necessary to mention the characteristics of the RTP protocol during data transmission. Unfortunately, the RTP protocol does not guarantee data delivery as such during transmission. It does not even guarantee the correct order of delivery of individual packets (i.e. blocks of data). So if data are evaporated at the time of transfer, these data will not be transferred and it is the main reason why there is sometimes a loss of data quality when streaming. However, on the other hand, the protocol defines the sequence numbers of these packets, according to which the multimedia receiving applications can subsequently recognize whether an error has occurred and whether a packet is missing.⁵⁹

A given protocol RTP packet in the form in which it is used by the GFN service when moving in the network is used in its most common form, i.e. an RTP packet transmitted based on the IP and UDP protocols and which adheres to the conventions defined by RFC 3551 (RTP Profile for Audio and Video Conferences with Minimal Control). An RTP packet consists of four

⁵⁸ SCHULZRINNE, Hennig at al. *RFC3550: RTP: A Transport Protocol for Real-Time Applications*. [online]. 2003. [cit. 20. 3. 2023]. Available at: <https://dl.acm.org/doi/book/10.17487/RFC3550>

⁵⁹ KOISTINEN, Tommi. *Protocol overview: RTP and RTCP*. In: *Research Gate* [online]. 1999. [cit. 24. 3. 2023], pp. 2-3 Available at: https://www.researchgate.net/publication/251203018_Protocol_overview_RTP_and_RTCP

parts. These are IP and UDP protocol headers and parts identifying the RTP protocol, RTP header and RTP payload.⁶⁰ Each given header thus has a certain function within the RTP packet. The first in order is the IP header, which identifies the source and destination IP addresses where the packet will travel within the network. The second is the UDP header, which is part of the UDP protocol (i.e. the transfer protocol) and which uses the port contained in the header to identify the target device. The third is the RTP header, which, in its essence, was already mentioned above. The RTP protocol creates sequence numbers according to which the missing packet is detected. It is this sequence number of the packet (i.e. sequence number) used to detect possible loss or duplication of packets. For each delivered RTP packet, the sequence number is increased by one, and the receiving device can use it for identification. The last one is the RTP payload, which contains an indication of the primary type of content, i.e. information about the format of the multimedia file that makes up the content of the packet (e.g. JPEG). The format of the RTP protocol packet is very general, so it suits a wide range of applications working in real-time.⁶¹

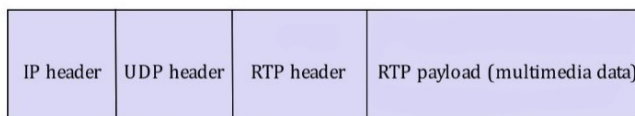


Figure 2 protocol packet

For these real-time data transfers, it is therefore necessary to ensure the uniformity of the flow of RTP packets, which means that the time delay between these individual packets should be constant. Suppose the time intervals between individual received packets change significantly. In that case, the given streaming application working in real-time may have a low-qual-

⁶⁰ PUŽMANOVÁ, Rita. *Streaming media (4): transportní protokoly RTP/RTCP*. [online]. 2004. [cit. 25. 3. 2023]. Available at: <https://www.dsl.cz/clanky/60-streaming-media-4-transportni-protokoly-rtprtcp>

⁶¹ KOISTINEN, Tommi. *Protocol overview: RTP and RTCP*. In: *Research Gate* [online]. 1999. [cit. 24. 3. 2023], pp. 2-3. Available at: https://www.researchgate.net/publication/251203018_Protocol_overview_RTP_and_RTCP

ity image and sound output and may even fail. Maintaining the same time intervals between individual packets is a fundamental requirement for real-time multimedia transmission so that this failure does not occur. On the other hand, a certain tolerance of possible movements is allowed. If there are "reasonable" packet losses during the transmission of the given packets, the interpreted information (i.e. sound and image) will appear to the user as being of lower quality on the receiving side. The said packet loss can be influenced by many external factors, such as an outdated modem and router, damaged network card driver, faulty software and overloaded network equipment.⁶² However, if there is a complete violation of the time sequence of the packets, the mentioned sound and image may completely disappear or "tear", i.e. stop transmitting.⁶³



Figure 3 Example of degradation of image quality when streaming due to packet loss (the left one) on the case of the game Shadow of the Tomb Raider

The theoretical principles of audio and video transmission operation in connection with RTP protocol packets have been explained above. There-

⁶² PARRISH, Kevin. What is packet loss, and how do you fix it? In: *Digital trends* [online]. 2021. [cit. 28. 3. 2023]. Available at: <https://www.digitaltrends.com/computing/what-is-packet-loss-and-how-to-fix/>

⁶³ KOISTINEN, Tommi. *Protocol overview: RTP and RTCP*. In: *Research Gate* [online]. 1999. [cit. 24. 3. 2023], pp. 2-3. Available at: https://www.researchgate.net/publication/251203018_Protocol_overview_RTP_and_RTCP

fore, we will now focus on the technical parameters and aspects of the network load when streaming video with the GFN service. First of all, it should be noted that streaming quality directly depends on the level of subscription that the user has purchased. There is a difference between the given free version and the other priority and ultimate versions. It is true that the service allows several video resolutions, in aspect ratios 16:9, 16:10, but also 4:3. According to the settings of the GFN application, the basic and recommended resolution setting is 16:9 aspect ratio. In this setting, the lowest resolution is 1280x720p, and the highest is 1920x1080p, but GFN also supports 1600x900p. According to system requirements, GFN consumes 15 Mbit/s for image transmission in 1280x720p quality and 25 Mbit/s for 1920x1080p quality transmission. With both of these transfers, GFN guarantees a frame rate of 60 FPS.⁶⁴ When streaming, the data rate can sometimes reach values of more than 30 Mbit/s for 720p and 40 Mbit/s for 1080p. Nevertheless, GFN can, for example, maintain a video stream with a resolution of 1080p even with an available bandwidth of less than 15 Mbit/s without a drop in the frame rate, probably by adjusting the compression parameters using H.264.⁶⁵ H.264 is a video compression standard that is used to effectively reduce video file size and data rate when video is transmitted over a network. Its task is to transmit a higher-quality image at a lower bit rate, whereas H.264 uses a wide range of techniques to reduce video size. These techniques include, for example, motion prediction or entropic coding.⁶⁶

What is more, compared to a higher level of subscription, for example, the requirements are more demanding on the ultimate level. This is the highest level of subscription, where GFN offers a resolution of up to 3840x2160p at a frame rate of at least 120 FPS for streaming. In return,

⁶⁴ More detailed information about the GFN video game service system requirements available at: <https://www.nvidia.com/en-us/geforce-now/system-reqs/>

⁶⁵ DI DOMENICO, Andrea. PERNA, Gianluca. TREVISAN, Martino. VASSIO, Luca. GIORDANO, Danilo. *A Network Analysis on Cloud Gaming: Stadia, GeForce Now and PSNow*. Network [online]. 2021. [cit. 25. 3. 2023], p 12. Available at: <https://www.mdpi.com/2673-8732/1/3/15>

⁶⁶ More information about what is H.264 available here: <https://techterms.com/definition/h264>

however, the service requires a connection speed of at least 45 Mbit/s or at least 35 Mbit/s for streaming up to 3440x1440p, 2560x1440p or 2560x1600p at 120 FPS. For this level, it is also recommended to use a fixed Ethernet connection or a wireless router with a 5 GHz parameter instead of a WiFi connection.

2.2 GFN CLOUD PERFORMANCE ANALYSIS

A Czech proverb says that as you make your bed, so you must lie in it. From today's point of view and the fact that modern technologies surround us at every step, we could, with a bit of exaggeration, harmlessly change this saying to "what cloud tool you use, such a service you get". There are several cloud tools that can be divided according to what computing and technical resources are actually shared or what service is provided.⁶⁷ There are many such tools, for example, SaaS (Software as a service), PaaS (Platform as a service), and AIaaS (AI as a service)⁶⁸, but only one tool is essential for GFN.

The GFN video game service uses the IaaS cloud tool or the so-called Infrastructure as a Service.⁶⁹ IaaS is a type of cloud utility that allows users to rent virtual hardware represented by server, storage and computing capacity. Users then use this virtual hardware as a service instead of actually having to own it physically. The hosting of computing resources and the provided server infrastructure is the most essential feature of an IaaS tool for cloud gaming. In addition to providing server resources, some IaaS providers also offer compatible additional (non-IaaS) services. These can be

⁶⁷ LICHNOVSKÝ, Bohuslav. NONNEMANN, František. Clouds and the law - Part 1: Why to think about them and what to prepare for. In: *Epravo.cz* [online]. 2022. [cit. 10. 4. 2023]. Available at: <https://www.epravo.cz/top/clanky/cloudy-a-pravo-1-dil-proc-o-nich-uvazovat-a-na-co-se-pripravit-115077.html>

⁶⁸ Annex no. 1 in Strategic analysis of cloud services-Č. j.: 7226/2022-NÚKIB E/310 • BRNO. In: *NÚKIB* [online]. 2022. [cit. 11. 4. 2023]. Available at: <https://www.nukib.cz/download/publikace/analyzy/Strategicka%20analyza%20cloudovych%20sluzeb.pdf>

⁶⁹ LONGAN, Mitchell. DIMITA, Geatano. MICHELS, Johan. MILLARD, Christopher. *Cloud Gaming Demystified: An Introduction to the Legal Implications of Cloud-Based Video Games*. In: *SSRN* [online]. 2021. [cit. 12. 4. 2023]. p. 14. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3949611

in the form of game analytics, matchmaking software, game leaderboards and can even provide machine learning technologies.⁷⁰

Regarding the IaaS and GFN tools, one more consideration needs to be added. This is the fact that the arrival and use of these cloud tools in the world of gaming apparently gave rise to its own GaaS (gaming as a service) cloud model. This GaaS cloud model can then be divided according to the combination of cloud tools used during gaming.⁷¹ In connection with the GFN service, the service thus provides a remote computing resource for users to play games without offering specific video game content. We could, therefore, refer to such a fact as the so-called "IaaS consumer model".⁷² In essence, it is that the GFN service provides a remote computing resource, and the player can use this computing resource, even if the GFN does not offer the related video game content. It is then up to the player to purchase the video game content themselves. The GFN then only contains a list of supported game titles.

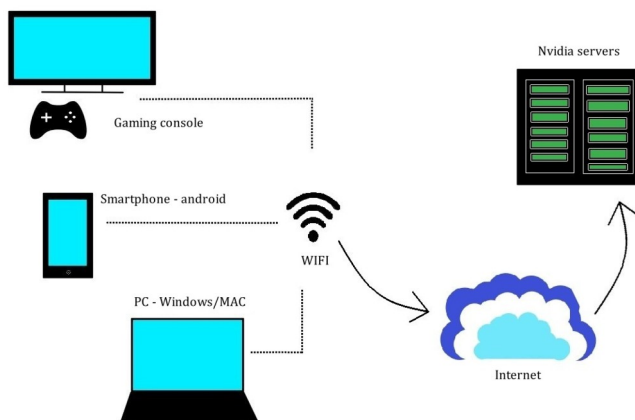


Figure 4 An example of connecting an input device to an Nvidia

⁷⁰ LONGAN, Mitchell. DIMITA, Geatano. MICHELS, Johan. MILLARD, Christopher. *Cloud Gaming Demystified: An Introduction to the Legal Implications of Cloud-Based Video Games*. In: SSRN [online]. 2021. [cit. 12. 4. 2023], p. 14. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3949611

⁷¹ Ibidem, p. 18.

⁷² Ibidem.

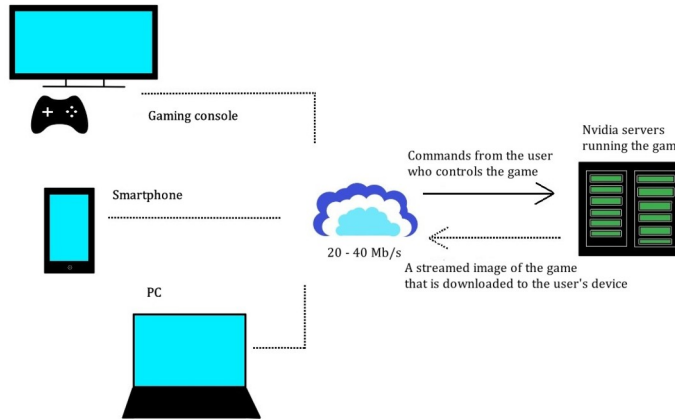


Figure 5 An example of GFN cloud streaming

3. COPYRIGHT ASPECTS OF NVIDIA GFN

The second part of this paper will focus on the legal aspects of cloud streaming, mainly through the prism of copyright. It is important to remember that a computer game is a collective work of authorship and is therefore covered by the copyright regime. By purchasing it, there is no actual acquisition of the ownership right to this game, but in essence, the given player only buys the given license agreement, which determines his possibilities of using the game. These affiliations are due to the very nature of copyright, namely the fact that copyright is non-transferable and only the right to exercise copyright is transferred through contractual licensing arrangements.

In this chapter, the paper will focus on two rights contained in copyright law that are very closely related to video game streaming. This is the right to make the work available to the public and the right to reproduce the work, where the work will try to compare these two rights in the context of the GFN service and the streaming functionality in connection with the licensing conditions of video game studios or video games themselves and shed light on cloud streaming from the perspective of EU copyright law.

3.1 MAKING COPYRIGHT WORK AVAILABLE TO THE PUBLIC AND CLOUD STREAMING

The basic EU regulation in the field of copyright is contained in Directive 2001/29/EC of the European Parliament and of the Council on the harmonization of certain aspects of copyright and related rights in the information society (hereinafter referred to as the "Infosoc Directive"). According to the wording of the text of Article 3 of this Directive, communication to the public is understood as any communication of a work to the public by wire or wireless, including making the works available to the public in such a way that every individual member of the public has access to these works from a place and at a time of their choosing.⁷³ Subsequently, recital 23 of the directive states that this right must be understood in a broad sense, including all communication to the public that is not present at the place where the communication originates. This right should apply to any communication of the work to the public by wire or wireless, including broadcasting.⁷⁴ We can thus say that communication to the public in the wording of Article 3 and Recital 23 of the Directive includes all dissemination of works by means of remote communication, where this right includes all methods of dissemination of works on the Internet, including all methods of streaming, as well as dissemination of works by other means, such as radio and television broadcasting.⁷⁵

The issue of communicating a work to the public, in the form of making it available, was dealt with by two court decisions that are pivotal for this topic. The first decision is that of the United States Supreme Court in the

⁷³ Article 3 Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information society.

⁷⁴ Recital 23 Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information society.

⁷⁵ For instance: Judgment of the CJEU (fourth chambre) from day 13. February 2014 in case C-466/12 Swonson or Judgment of the CJEU (third chambre) from day 15. March 2012 in case C-135/10 Società Consortile Fonografici (SCF) v Marco Del Carso.

case of *American Broadcasting Companies, Inc. v. Aereo, Inc.*⁷⁶ In that lawsuit, ABC claimed that Aereo was infringing copyright by allowing its subscribers to watch television programs over the Internet (or watch them later from a recording) around the same time that the programs were broadcast live on television. At the same time, Aereo did not have a license that would allow it to carry out the given transmission. The court ultimately ruled 6 to 3 that Aereo was making a public disclosure. The main conclusions of the court were that, firstly, the company carries out the transmission of programs. It is not simply a matter of providing the infrastructure to ensure the transmission. Secondly, that the relationship between the recipients and the transmitted work is important in determining whether the recipients represent the public, and thus, communication to the public occurs. The court stated that an entity that broadcasts a work to individuals as owners or licensees is not making a communication to the public, while an entity such as Aereo that broadcasts to a large number of paying subscribers, when they are individuals, but those individuals are not connected to each other and therefore form the public, and at the same time have no prior licensing relationship to the broadcast works, is in its sense making a communication to the public.⁷⁷

The previous decision concerned the question of whether there was any communication to the public at all. The second decision is a decision regarding the question of who makes the communication and thereby makes the work available, the user of the service or the provider? In this matter, the Court of Justice of the European Union ruled in the case of *Youtube vs. Cyando*.⁷⁸ The basis of the dispute was YouTube's claim that some users of

⁷⁶ LONGAN, Mitchell. DIMITA, Geatano. MICHELS, Johan. MILLARD, Christopher. *Cloud Gaming Demystified: An Introduction to the Legal Implications of Cloud-Based Video Games*. In: SSRN [online]. 2021. [cit. 27. 4. 2023], p. 32. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3949611

⁷⁷ ABC, Inc. v. Aereo, Inc. In: *Harvard law review* [online]. 2014. [cit. 25. 4. 2023]. Available at: <https://harvardlawreview.org/print/vol-128/abc-inc-v-aereo-inc/>

⁷⁸ LONGAN, Mitchell. DIMITA, Geatano. MICHELS, Johan. MILLARD, Christopher. *Cloud Gaming Demystified: An Introduction to the Legal Implications of Cloud-Based Video Games*. In: SSRN [online]. 2021. [cit. 26. 4. 2023], p. 30. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3949611

MEGA (cloud storage operated by Cyando AG) store and share pirated content (e.g. movies, music, etc.) and that Cyando AG does nothing to prevent this content from being shared. YouTube believed that Cyando AG was infringing copyright by not adequately monitoring and restricting the distribution of these pirated files. The CJEU answered the question by stating that, under normal circumstances, it is users who perform the act of public communication, but hosting platforms acting as intermediaries for making content available can only perform public communication depending on how they interfere with users' activities.⁷⁹ To determine the role of cloud storage, the Court stated that *"if the very fact that the use of the platform is necessary for the public to actually enjoy the work, or if it only facilitates this use, would automatically lead to the intervention of the operator of this platform being qualified as "communication", any "provision of a physical device to enable or carry out communication" would indeed constitute such communication, which, however, is point 27 of the rationale of the Copyright Directive, which essentially takes the joint statement on Article 8 of the WCT, expressly excludes.*"⁸⁰ The court thus concluded that if the platform serves only as a tool and its use is necessary for the use of the work or facilitates that use, in accordance with Recital 27 of the Infosoc directive, this use of the platform cannot be considered as communication to the public and therefore making the work available.

Compared to both rulings, it cannot be said, that Nvidia and its GFN service are sharing copyrighted works in the form of video games with the public. If we compare GFN with the case of *ABC vs Aereo*, both services allow remote transmission; however, where they differ from each other is the business model of GFN service. This is based on the fact that the player has already purchased the given game (license) and, therefore, only pays for the server infrastructure and computing power. In relation to the user,

⁷⁹ REDA, Felix. SELINGER, Joschka. YouTube/Cyando – an Important Ruling for Platform Liability – Part 1. In: *Kluwer Copyright Blog* [online]. 2021. [cit. 28. 4. 2023]. Available at: <https://copyrightblog.kluweriplaw.com/2021/07/01/youtube-cyando-an-important-ruling-for-platform-liability-part-1/>

⁸⁰ Judgment CJEU (Grand chambre) from 22. June 2021 in joined cases C-682/18 and C-683/18, Youtube and Cyano, point 79.

there is thus a relationship between the user of the service and the work itself. The comparison of the second case of *Youtube vs Cyando* in relation to GFN brings the conclusion that if the GFN service serves and facilitates the use of video games, it is also not the communication of a work to the public within the meaning of Article 3 of the Infosoc Directive. Therefore, if the streaming takes place to the device of only one player who is related to this game based on the purchased license (the game files and the game are already pre-installed on the Nvidia servers, so it is just a matter of linking the player account data) from the selected game library to the game data and the GFN service only serves as an intermediary providing remote computing resources, where it facilitates the use of the video game by the player in the sense that the player does not have to install the games on his device or invest in expensive hardware, thereby saving the player's resources and thus making the games generally more accessible to use, we cannot consider the cloud streaming technology as communication to the public. The author of this work thus agrees with the opinion of Longan, Dimiti, Michels and Millard in their (already quoted) published work *Cloud Gaming Demystified: An Introduction to the Legal Implications of Cloud-Based Video Games*, that streaming via GFN cannot be considered as publishing a work to the public.

Given these facts, that streaming via GFN cannot be considered as publishing a work to the public, Nvidia would probably not need a license to communicate to the public with its GFN service. However, since its full release, Nvidia has been doing so, probably out of caution, as this view is not yet firmly anchored in doctrine, and the question is whether there will ever be a lawsuit in the future that will answer this exact question. Nvidia thus often has secured consent and is allowed to stream from the property rights holder based on extensive partnership agreements. Withal, the permission to stream a game with GFN technology can also be based on the end-user license terms (EULA) of the game publishing studios, the EULA of the games themselves, and last but not least, just a simple measure of consent from the given developer or publisher that Nvidia can place the game in its offer and it can be streamed.

Unfortunately, Nvidia did not take this step at first, and during the beta version, Nvidia placed games in its offer without these consents or consents based on license agreements. After the launch of the full-fledged version, the GFN service decided to start using the opt-in consent mode for the placement of the given video game in its offer. Game publishing companies, due to the first failure to secure consent and then the introduction of the opt-in regime, therefore took different positions on GFN. Some companies such as Activision Blizzard Bethesda, Capcom, Crytek, Konami, Xbox Game Studios, Rockstar, Sega, and Square Enix have left the service or terminated their cooperation with the service. Other companies such as Bandai Namco, Bungie, CCP Games, Electronic Arts, Epic, Riot, Ubisoft, and Valve remained.⁸¹

After some studios left this gaming platform, they spoke out against it (and similar services on the same principle) in their end-user license agreements. For example, Blizzard's current EULA license terms are quite reserved in relation to cloud streaming and the use of cloud computing technologies. The terms and conditions include section C, dealing with license restrictions in relation to users. Blizzard "*hereby*" declares that the Company may suspend or even terminate the user's license to use the Platform or any part, component or feature thereof (*the word Platform Blizzard means (1) the Battle.net computer application software, (2) the Battle.net Game Service, (3) each of the Games, (4) the authorized mobile applications relating to the Battle.net Games and Services, and (5) all features and components of each, whether installed or used on a computer, console or mobile device*), if the User violates the license restrictions below or if the user will assist other users in violating the license terms. According to these license agreements, the user therefore agrees that he will not subsequently, according to point V, which directly stipulates restrictions regarding cloud computing, "*use the platform in connection with any third-party cloud computing service, cloud gaming service or any software or service intended to enable unauthorized streaming or*

⁸¹ STATT, Nick. Nvidia says developers must now opt in to include games on GeForce Now. In: *The Verge* [online]. 2020. [cit. 28. 4. 2023]. Available at: <https://www.theverge.com/2020/5/27/21272558/nvidia-geforce-now-opt-in-agreement-game-developers-publishers-licensing-cloud-gaming>

transmission of game content from a third-party server to any device."⁸² The company thus stipulates in the conditions and is quite specific that it does not want users of its platforms to use cloud services that enable streaming.

However, as for Konami's EULA license terms, they only prohibit using the game as part of a "*remote access arrangement*"⁸³. The ban is drafted more generally than the prohibition in Blizzard's license terms. But although the ban is built on the general wording of the prohibition on the use of the game in the context of a remote access arrangement, the prohibition, unfortunately, stands in relation to cloud gaming services, and Konami's license therefore also does not permit the use of cloud streaming technologies.

In contrast, Electronic Arts' license terms do not prohibit cloud technologies and in fact, do not mention them at all.⁸⁴ However, what Electronic Arts has done is to enter into a partnership with Nvidia and the EA's games are on the service's offer.⁸⁵ It is clear that Nvidia's model is controversial, as its business model does not include game publishers who lose revenue because there is no separate purchase of a game license for cloud access (as with competing cloud gaming services such as PlayStation Now). Nevertheless, Electronic Arts, as well as other companies that support GFN, understand that this is a unique opportunity to get, for example, some of their most popular game series into the hands of a rapidly growing global gaming audience as GFN extends the reach of the gaming experience to millions of gamers who do not have sufficiently powerful devices.

In relation to the mentioned company, Activision Blizzard, a new fact appeared that changed its direction and decision-making possibilities. In 2022, the largest video game deal in history took place in the form of Mi-

⁸² Part C, Section V of the Blizzard End User License Terms. [online]. Last revised 9/19/2022. [cit. 15. 4. 2023]. Available at: <https://www.blizzard.com/en-us/legal/08b946df-660a-40e4-a072-1fbde65173b1/blizzard-end-user-license-agreement>

⁸³ Section 6 of the Konami End User License Terms. [online]. [cit. 16. 4. 2023]. Available at: <http://simpleeulas.weebly.com/konami-eula.html>

⁸⁴ Electronic Arts End User License Terms. [online]. [cit. 16. 4. 2023]. Available at: <https://www.ea.com/cs-cz/legal/user-agreement>

⁸⁵ HAGEDOORN, Hilbert. Nvidia Partners With Electronic Arts to Bring Hit Games to GeForce NOW. In: *Guru 3D* [online]. 2021. [cit. 29. 4. 2023]. Available at: <https://www.guru3d.com/story/nvidia-partners-with-electronic-arts-to-bring-hit-games-to-geforce-now/>

crosoft's purchase of Activision Blizzard. In addition to this, Microsoft and Activision Blizzard took a 180-degree turn when Microsoft announced on February 21, 2023, a newly formed ten-year partnership with Nvidia and its GFN service. Microsoft thus apparently realized the huge potential of cloud gaming and the potential of the GFN business model in terms of the possibility of reaching the masses of gamers.⁸⁶ So far, however, GFN does not include Microsoft's game offerings. Therefore, we can probably expect their addition to the menu in the near future, as well as a change in the license terms, when streaming or transferring game content from Nvidia servers to any device for games under the Microsoft roof, will be allowed in the licenses. Nvidia and its GFN service will probably not be granted license exclusivity as the only cloud gaming platform, given that Microsoft itself operates the cloud gaming platform Xbox Game Pass Ultimate, yet we cannot say with certainty what development awaits us in the future, after all, in the words of Phil Eisler as mentioned in introduction, the future of cloud gaming is limited only by our imagination.

3.2 COPYRIGHT REPRODUCTION AND CLOUD STREAMING

If we start again from the Infosoc directive, the reproduction of the author's work according to the second article of the directive is understood as "*direct or indirect, temporary or permanent reproduction by any means and in any form, in whole or in parts*"⁸⁷, while permission or prohibition to reproduce the work is available to the author of the work according to the same article. It is thus within the author's sphere of influence to decide the fate of the work. EU law (as well as the Czech Copyright Act, into which the Union regulation was transposed) distinguishes several types of reproductions of the author's work related precisely to the method of reproduction of the work. At first, these are direct, indirect, permanent, and temporary repro-

⁸⁶ Microsoft News Center. Microsoft and Nvidia announce expansive new gaming deal. In: *Microsoft news* [online]. 2023. [cit. 30. 4. 2023]. Available at: <https://news.microsoft.com/2023/02/21/microsoft-and-nvidia-announce-expansive-new-gaming-deal/>

⁸⁷ Article 2 Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information society.

ductions. However, it is also necessary to mention that from the point of view of copyright and the reproduction of an author's work, there are other types of reproductions. For example, it is possible to mention intentional and accidental reproductions, identical and non-identical reproductions, with or without economic significance. However, these do not make relevant sense for the work as the first four mentioned above.

As for direct reproduction, according to Telec and Tůma, this reproduction consists of the reproduction of the work by directly reproducing its original expression.⁸⁸ Simply put, it is a copy of the original work. Indirect reproductions, on the other hand, consist of the expression of the work in a way other than its immediate reproduction and are often related in particular to a change in the form of the reproduction compared to its model or the natural nature of the work. For example, we could consider its musical notation to be an indirect reproduction of a performed musical work, or its construction to be an indirect reproduction of an architectural work expressed in construction documentation, and its photograph to be an indirect reproduction of a visual work. An indirect reproduction of a work must be distinguished from a mere description of the work or instructions for its production, which is not a reproduction of the work (e.g. the production of a confectionery product according to a recipe that meets the characteristics of a literary work is not a reproduction of this recipe).⁸⁹ Permanent reproduction or, better said, the property of its permanence is related to the existential permanence of the material on which it is captured.⁹⁰ For example, if a reproduction is captured on paper and on an external HDD again in image form, both reproductions are permanent, but the external HDD is a more permanent reproduction than the reproduction on paper. However, existentially, all reproductions, although permanent, are also temporary, as they cease to exist by their destruction. This brings us to the temporal reproduction, where temporality must be judged from the point of view of

⁸⁸ TELEČ, Ivo, TŮMA, Pavel. § 13 [Reproduction]. In: TELEČ, I., TŮMA, P. *Copyright Act*. 2nd. edition. Praha: C. H. Beck, 2019, p. 179.

⁸⁹ *Ibidem* pp. 179 – 180.

⁹⁰ *Ibidem*, p. 179.

their independence from the mentioned durability of their carrier and from the point of view of their purpose. These are therefore reproductions whose duration, by the very nature of the capture of the work, is not unconditionally linked to the existence of the carrier or whose existence is predetermined and limited only by the duration of the specified purpose for which they were made.⁹¹

In the first part of the work, the technical functioning of cloud streaming was explained. It is a process of transferring data packets, in which the packets are arranged in a consecutive sequence while travelling through the network (although the delivery of the packets as such or in the correct order is not guaranteed) and this sequence is subsequently downloaded from the server in the form of a data file and made available to the stream user on his end device in the form of an audiovisual file. At the same time, the fundamental question here is who reproduces the given content, whether the user of the service or the provider of the cloud service?

Earlier in the past, the reproduction of a game would mean simply making a copy of the original game itself, when players made copies of the games on their own computers and thus reproduced these games among themselves, but unfortunately with the advent of cloud technologies and especially the GFN service, the situation regarding the reproduction of copyrighted works is a little more complicated, and the reproduction does not have to occur only by making a copy of the game software on one device, but also by cloud streaming itself.

As mentioned again in the first part of the thesis, GFN uses the IaaS cloud tool, a tool generally built on the fact that it provides the user with a remote computing and server infrastructure that the user can use at his discretion. In the context of GFN, it is subsequently an IaaS consumer model, where the user uses remote access to computing and server (cloud) infrastructure for playing video games, with the specifics that the user may only use supported software based on BYOL (bring your own license), i.e.

⁹¹ TELEC, Ivo, TŮMA, Pavel. § 13 [Reproduction]. In: TELEC, I., TŮMA, P. *Copyright Act*. 2nd edition. Praha: C. H. Beck, 2019, p. 179.

that the user uses a game for which he has already acquired a license.⁹² The user of the service also does not install the game software on his device, but the installation of the software takes place on a remote server belonging to the cloud infrastructure, where the whole process is functionally the same as if it were an installation on "his" physical device.⁹³ It is therefore necessary to ask the already mentioned fundamental question, namely, who creates the reproduction, the user or the provider? With the aforementioned GFN specifications and the fact that the overall initiative is developed by the user, it is the user of the service who is probably involved in the game reproduction process, since it is the user who installs the reproductions on the given server in connection with his specific previously purchased game license. This would be a direct temporary reproduction. The given directness consists in the direct derivation from the original of the given game work and the temporality in the fact that the reproduction of the game (copy) is placed on the server for the purpose of playing the given video game via cloud servers by the user.

But what about the service provider? Longa, Dimiti, Michels and Millard state that in this respect a quite logical argument is offered, related to the conclusion made in the previous chapter dedicated to making the work available to the public, that the cloud service provider again only passively provides its services to ensure streaming functionality using its server infrastructure and does not participate in the process of reproduction of the game work, however, they also add that this issue is unclear.⁹⁴ However, there is an argument to support the opposite view, that there is duplication of work by the service provider because cloud service providers often add a clause to their terms of use (TOU) that provides compensation for the cloud service operator in the event that a lawsuit is filed and there is a lawsuit by the third person affected by the violation of intellectual property

⁹² LONGAN, Mitchell. DIMITA, Geatano. MICHELS, Johan. MILLARD, Christopher. *Cloud Gaming Demystified: An Introduction to the Legal Implications of Cloud-Based Video Games*. In: SSRN [online]. 2021. [cit. 2. 6. 2023], p. 59. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3949611

⁹³ Ibidem.

⁹⁴ Ibidem.

rights related to the service user's content.⁹⁵ These indemnification clauses indicate that cloud service providers are aware that they can reproduce works⁹⁶ and therefore try to minimize the risk of harm caused by the user's actions. However, with respect to the GFN service and its TOU, there is no such indemnification clause in the terms⁹⁷. According to this knowledge and again based on the facts mentioned above, we could say that there is no reproduction of the work.

In addition, if we consider that cloud gaming works in the same way as a classic live stream, in the sense that the streamed content is temporarily stored in the buffer of the user's end device and the streamed data is overwritten during listening or viewing by the user, and after the end of the stream the data is no longer stored in the end device and is no longer available⁹⁸, then according to the judgment of the CJEU in the case of *Public Relations Consultants Association Ltd v Newspaper Licensing Agency Ltd and others*, this streamed data meets the conditions and falls under the exception to the rights to reproduction according to Article 5, paragraph 1 of the Infosoc directive and it is not a reproduction of the work as such.⁹⁹ Namely, these conditions are met if, firstly, they are temporary copies of data or data packets necessary for the purpose for which the content is available in streaming mode, in the sense that their duration is limited to the time dur-

⁹⁵ For example, in the terms of use of AMAZON WEB SERVICES and its cloud computing service, there is a provision that represents this given indemnification clause. In section number 53.9.1. contains a provision that states "...[...] You will defend and indemnify AWS against all damages, liabilities, fines, penalties, costs and expenses (including reasonable attorneys' fees) arising out of or in any way related to your direct or indirect failure to comply with the requirements of this Section...[...]"

⁹⁶ LONGAN, Mitchell. DIMITA, Geatano. MICHELS, Johan. MILLARD, Christopher. *Cloud Gaming Demystified: An Introduction to the Legal Implications of Cloud-Based Video Games*. In: SSRN [online]. 2021. [cit. 2. 6. 2023], p. 61. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3949611

⁹⁷ See the GeForce Now Terms of Use, available at: <https://www.nvidia.com/en-us/geforce-now/terms-of-use/>

⁹⁸ STROWEL, Alain. *'Private Copying Levies do not Apply in the Case of Streaming'*. [online]. 2020. [cit. 6. 7. 2023], p. 13. Available at: https://cdn.digitaleurope.org/uploads/2021/04/Expert-Opinion_Streaming-and-Private-Copying-Levies_Strowel.pdf

⁹⁹ Judgment CJEU (fourth chambre) from 5. June 2014 in joined case C-360/13, *Public Relations Consultants Association Ltd v Newspaper Licensing Agency Ltd and others*, point 65.

ing which the content is available in streaming mode, secondly, that these data are necessary for the proper completion of the entire technological process of streaming, and thirdly, that the deletion of this data comes automatically at the end of the process and takes place without human intervention.¹⁰⁰ All these conditions in relation to downloaded data packets within the ongoing cloud stream via the GFN service should probably be met, therefore these data packets should also fall under the exception to reproduction rights according to Article 5(1) of the Infosoc Directive.

All in all, the answer to the question is that in the context of cloud streaming via GFN, the user of the service, rather than its provider, is responsible for the reproduction of the work.

4. CONCLUSION

The aim of this paper was to disentangle both the technical and copyright implications of cloud streaming. The paper tried to answer the question of *how the transmission of audiovisual content works with Nvidia GFN and how the service affects copyright law in terms of the publication and reproduction of works*. As far as the technical conclusions are concerned, GFN works based on the RTP protocol, when the transmission of audiovisual content takes place in real time with the help of and in a sequence of data packets. Moreover, the GFN service is a service using the IaaS cloud tool, providing remote computing and technical infrastructure to the user. In relation to conclusions about copyright law and cloud streaming, it is not a matter of making the work available in the sense of communicating to the public, since there is already a previous contractual relationship between the user of the service and the work itself, as well as the fact that GFN serves as a tool to use the work. However, the answer to whether this is a reproduction of the work comes with a split in the form of two possible answers. First, the user of the service is responsible for the reproduction, since it is he who initiates the whole process and the installation takes place on the

¹⁰⁰ STROWEL, Alain. 'Private Copying Levies do not Apply in the Case of Streaming'. [online]. 2020. [cit. 6. 7. 2023], p. 14. Available at: https://cdn.digitaleurope.org/uploads/2021/04/Expert-Opinion_Streaming-and-Private-Copying-Levies_Strowel.pdf

remote virtual device in relation to his "brought" license. Secondly, the provider should not be responsible, as it passively ensures the functionality of the cloud stream, as well as the fact that the data created during the stream is only a technical part of the entire process.

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