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**NEW CHALLENGES CONCERNING THE PROTECTION OF PERSONAL DATA
WITH A SPECIAL FOCUS ON DIGITALIZATION AND THE REGULATION OF
ARTIFICIAL INTELLIGENCE**

Doctoral thesis

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1. Introduction

Digitalization and artificial intelligence (AI) have changed our everyday lives considerably, by making a number of activities easier to undertake and by making accessible vast amounts of information. Today, it is further beyond doubt that information also serves as a fuel for new technologies, especially for AI. Such information may especially include personal data, the mass processing of which has significant scientific and economic value, but such processing may also involve risks and dangers for data subjects affected.

Based on the above, it seems clear that AI and other new technologies need to be regulated. The question arises, however, whether the regulation of AI and new digital technologies and data processing conducted by such technologies would not necessarily lead to the significant slowdown of technological progress or impede social or economic development.

Countries and regions around the world – with respect to their own traditions, culture, social and economic development and circumstances – have opted to follow different regulatory approaches. Legislators in the European Union (EU) decided to introduce comprehensive regulation in respect of data protection, online services and AI-systems. In contrast, the United States (US) tends to put more focus on certain critical areas, while court practice is also shaping the perception and framework of data processing by AI and other new technologies.

Although the above regulatory approaches all focus on promoting research and development of new technologies and, in many aspects, follow a risk-based approach, there are still quite a number of cases where current regulation may result in excessive regulatory intervention or create uncertainty. It is important, however, that rules concerning AI and other new technologies are applied with respect to the given AI-system and technology and the specific circumstances of the case and to set realistic and transparent obligations for service providers besides taking into account the interests of the data subjects.

Naturally, it may be the case that the issues raised in the thesis may not be fully resolved today. In the context of technology regulation, we have already seen that the law often tries to “catch up” with the ever-accelerating pace of technological development, often falling behind. Laws regulating technology may further set out complex requirements which entities covered may misinterpret or misapply. Nevertheless, we attempt to explore the effects of the regulation of data processing by AI and other new technologies on technological development and to propose answers and raise relevant new questions.

2. Research objectives

Digitalization and AI have had a significant impact on technology. Although the pace of technological progress has been accelerating for centuries, there have seldom been times in history when people experienced such rapid changes in everyday life, including mass digitalization, as well as the growing social and economic role of AI. Large Language Models and generative AI have also raised the extent of social interactions with AI, as well as the awareness around the technology. Law had to react to such technological changes, which resulted in a regulatory frenzy worldwide, also including the EU and the US, and further lead to the creation and enactment of a number of key pieces of legislation. Today, however, we still do not know what impact these rules may have on technological development on the long term, and what regulatory approaches would prevail in an increasingly technological environment. Other issues include the potential interplay between AI and data protection regulation in the EU, as well as banned systems or categorizations.

Based on the above, the goal of the thesis is to assess the effects of the regulation of data processing by AI and new technologies on technological progress, to review different approaches of EU and US regulation in these fields, as well as to identify key regulatory issues in the protection of personal data, and to make recommendations in this respect with a particular emphasis on supporting research and development of new technologies and to adequately defend the interests of both service providers and data subjects concerning the provision and use of AI-systems and other new technologies.

3. Thesis structure, research methods and sources

The structure of the thesis follows the main issues raised in it. The first, introductory chapter is followed by a chapter defining digitalization and AI and describing their role in modern society. This chapter also introduces some of the solutions and phenomena related to digitalization and summarizes the history of AI and the related main ethical concerns. This chapter further addresses the first question of the thesis, namely whether data processing by AI and other new technologies can be regulated without holding back technological progress. The chapter also focuses on threats and opportunities, main regulatory approaches, principles and solutions to be followed by international organizations, communities, as well as the technology industry. This is highly important, since, similarly to other branches or fields of law, data protection also has principles guiding the application of law.¹ Similar principles have been developed in the field of AI regulation, which need to be taken into account by both regulators and providers of AI-systems.

¹ Révész Balázs, Az adatkezelés alapelvei. In: Péterfalvi Attila, Révész Balázs, Buzás Péter, Magyarázat a GDPR-ról, Wolters Kluwer Hungary Kft., Budapest, 2021. 103-121. 103.

The third (hybrid) chapter of the thesis summarizes the relevant laws concerning AI and digitalization in the EU and the US and briefly touches upon legislation in some other third countries. A significant part of the chapter is further devoted to the analysis of the Draft AI Act and discusses its main aspects and the challenges of the regulation. The chapter also includes suggestions to create an interplay between AI and data protection regulations, as well as the analysis of critical aspects of data protection in technological environment.

The fourth chapter of the thesis discusses the regulation and practice of data processing by AI in the EU. The chapter follows the structure of the GDPR and takes into account the main aspects of the regulation, as well as practical challenges and possible solutions. In addition, this chapter also focuses on sectoral data protection matters in key areas, including the use of AI in healthcare and at the workplace, as well as on online platforms.

The fifth chapter focuses on data processing by AI in the US and summarizes relevant laws and court cases. The chapter further examines whether European legislation can serve as a model for US legislation, and whether US regulation could offer approaches and solutions, which could benefit EU regulation.

This is followed, in chapter six, by the new challenges of digitalization and data protection, including the data protection aspects of deepfake technology, the data protection issues arising from the use of virtual reality and augmented reality solutions, as well as the metaverse and the use of facial recognition systems, since such technologies would pose challenges and many times question the way we think about the protection of personal data.

Finally, the seventh chapter also answers one of the main questions of the thesis: whether we need to reconsider the protection of personal data in the context of AI and digitalization. In this respect, particular emphasis is given to issues raised and proposals put forward in previous chapters. The thesis ends with closing remarks, which also summarize the main thoughts and ideas appearing in the thesis.

The thesis follows a dogmatical and analytical approach and reflects on the issues raised by technological progress and the regulation of new technologies and analyzes the applicability of relevant laws and discusses related issues. The methods applied regarding the thesis further adapt to the relevant chapters. Following the introduction in the first chapter, the second chapter provides an overview and summarizes AI and digitalization, related phenomena, history, the main regulatory approaches and challenges, whereas the second chapter discusses the main EU and US legislation related to digitalization and AI. This chapter is further concluded by our thoughts on the relationship between digitalization and the protection of personal data and on related challenges.

This chapter is followed by the fifth and sixth chapters, which describe the EU and US regulations and related main challenges. This chapter further provides an overview of the relevant court and data protection authority practice, as well as the relevant literature. In these chapters, especially in the sixth one, legal comparison also plays a key role, allowing for a comparison between EU and US data protection and AI regulation. The seventh chapter, building on the previous ones, summarizes and makes suggestions concerning the reconsideration of the protection of personal data, taking into account the impact of technological progress and the applicability of data protection requirements. Finally, the thesis ends with our closing remarks.

As regards its sources, the thesis reflects on the relevant literature concerning AI, digitalization and data processing by new technologies and takes into account the theories concerning AI and new technologies, their legal aspects, as well as their ethical, societal and economic aspects. The thesis further puts emphasis on the relevant laws, as well as court and data protection authority practice and assesses their effects. It is highlighted in this respect that the relevant viewpoints, theories and decisions are introduced and assessed within the chapters of the thesis and in respect of the regulation of new technologies and the respective data protection requirements.

4. Thesis statements and related discussions, aspects of implementation

The purpose of the research has been defined with regard to the following thesis statements:

1. Is technological progress being held back by the regulation of data processing by AI and new technologies?
2. What are the main approaches to AI and digitalization in the European and US legislation?
3. Do we need to reconsider the protection of personal data in the context of AI and digitalization?

We have witnessed remarkable developments in the regulation of AI and digital solutions and technologies, including in particular the draft EU Artificial Intelligence Act (“**Draft AI Act**”),² which – interpreted jointly with the EU General Data Protection Regulation (“**GDPR**”)³ – sets out comprehensive rules for processing personal data by AI-systems, as well as the rules for developing,

² Proposal for a regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts, Brussels, 21.4.2021, COM/2021/206 final, 2021/0106(COD), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0206> [2023.09.18.]

³ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (Text with EEA relevance), OJ L 119, 4.5.2016, p. 1–88 (BG, ES, CS, DA, DE, ET, EL, EN, FR, GA, HR, IT, LV, LT, HU, MT, NL, PL, PT, RO, SK, SL, FI, SV), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016R0679&qid=1694995706118> [2023.09.18.]

providing and using such systems. In the US, we have witnessed a number of regulatory initiatives on both federal and state level that set out requirements for processing personal data online or by certain new solutions. It is further underpinned in case of both EU and US regulation, however, that – similarly to the regulation of the internet – the regulation must not solely focus on limiting usage of new technologies, but it also needs to focus on such systems and solutions, which (including the related infrastructure, licenses and know-how) are owned by private entities, therefore binding legal provisions need to be introduced to set requirements concerning their provision and use.⁴

The above referred laws and draft legislation are regarded as essential concerning the development and use of new technologies and therefore, they cannot be regarded as a barrier to technological progress. Appropriate regulation is of key importance, however, especially in case of novel technologies. Bearing the above in mind, it is especially important to create such a regulatory environment which supports research and development and allows the widest possible exploitation of positive effects of such technologies, in particular in areas benefitting the whole society (for example in the field of healthcare). However, as underpinned by András Pümkösty, it is worth mentioning that for creating good and ethical regulation, we must understand the effects of new technologies on humans and society.⁵ In the absence of such understanding, we cannot assess the dangers and benefits to be addressed by future regulation.

In many cases, however, EU and US regulations follow different approaches. The EU regulatory approach is more comprehensive and general, whereas US regulation – largely due to its different traditions, history and regulatory environment – is more focused on key areas or critical industries (e.g. processing of health and consumer data, algorithmic discrimination). Despite such differences, the US regulation largely builds on concepts and requirements developed or “further polished” by EU regulation (including transparency requirements, data protection rights and data protection impact assessment). We believe, however, that US regulation can also serve as a model for EU regulation in certain aspects, for example, in case of regulating activities and services provided to vulnerable groups, applying anti-discrimination measures and reducing regulatory burden on small- and middle-sized enterprises.

Bearing in mind that the protection of personal data may play out differently in an environment dominated by AI-systems and new technologies, we may also call for reforming the current data protection regime. It is underpinned in this respect that current laws – especially in the EU – also broadly require introducing measures that protect the rights and interests of data subjects, however, the “fine-

⁴ See: Koltay András, *Az új média és a szólásszabadság. A nyilvánosság alkotmányos alapjainak újragondolása*, Wolters Kluwer Hungary, Budapest, 2019. 104.

⁵ Pümkösty András, *Egy új digitális etika megalapozásának egyes szempontjai – big data, algoritmusos döntéshozatal és a személy az adatalapú társadalomban*. In: Török Bernát, Zódi Zsolt (szerk.), *A mesterséges intelligencia szabályozási kihívásai. Tanulmányok a mesterséges intelligencia és a jog határterületéről*, Ludovika Egyetemi Kiadó, Budapest, 2021. 43-65. 44.

tuning” concerning certain rules, including, for example, the need for a “proportionate” level of transparency and better support of data subjects’ rights in digital environment could be appropriate.

Research findings, closing remarks and suggestions in light of the thesis statements

The thesis focuses on presenting and examining the impact of the regulation of data processing related to digitalization and new technologies, to analyze the relevant European and American regulatory approaches, as well as to consider the possible need for revising data protection requirements in such context.

In addition to identifying and discussing the effects of AI and digitalization and the relevant laws and theories, the thesis also aimed to provide constructive insights and proposals that could help the regulation of these technologies and their application, taking into account the interests of service providers, data subjects and society. In this context, the achievements of European and American regulation were presented and compared. The aim of the thesis, in this respect, was to shed light on the differences between the main regulatory aspects, rather than to make a detailed legal comparison, and to examine the regulation of data processing by AI. The thesis further examined the possible introduction of certain US approaches to European regulatory practice in this respect.

In addition to the above, and – especially with respect to the requirements of the EU AI Act and the GDPR – those cases were further highlighted concerning which regulation does not appear to be sufficiently weighed or defined (for example in case of regulating deepfake solutions), or where regulation may present a barrier to the development or application of new technologies, including the requirements concerning data transfer and processing of special categories of personal data online or in respect of certain new technologies.

It is further underpinned that in addition to the analysis of relevant EU and US laws and making relevant suggestions, the thesis further reflects on legal theories and literature concerning the AI and technology law, including transparency requirements regarding the use of AI and new technologies, as well as supporting the exercise of data protection rights concerning which appropriate regulatory practice is considered essential.

5. List of publications related to the thesis

List of publications falling in the topic of the thesis:

A mesterséges intelligencia felhasználásával történő adatkezelések egyes sajátos szempontjai, *Acta Humana*, 2023/1. 95-123.

A közszereplők személyes adatainak védelme, különös tekintettel annak újabb fejleményeire, valamint a deepfake technológiára. In: Bándi Gyula, Pogácsás Anett (szerk.): 'A tudomány kertjéből': Válogatott doktorandusz tanulmányok, Pázmány Press, Budapest, 2022. 361-380.

A mesterséges intelligencia belügyi és biztonsági célú alkalmazása, Scientia et Securitas, 2020/1. 49-53.

A mesterséges intelligencia adatvédelmi szempontjai, különös tekintettel a belügyi szervek adatkezelési gyakorlatára, Rendvédelem, 2020/1. 135-165.

Az egyházak általi adatkezelés. In: Kiss Gábor (szerk.): Fiatal Kutatók és Doktoranduszok X. Nemzetközi Jubileumi Teológus-konferenciájának tanulmánykötete, Doktoranduszok Országos Szövetsége, Budapest, 2020. 415-425.

Az újságírói adatkezelés negyedévszázada és eljövendő kihívásai. In: Bándi Gyula (szerk.): A sokoldalúság okán – Doktorandusz tanulmányok a Pázmány jogászképzésének 25. tanévében, Pázmány Press, Budapest, 2020. 117-134.

Applikációalapú munkavégzés a gyakorlatban, Munkajog, 2018/3. 39-43.

A pilóta nélküli légitársaságok kereskedelmi és magáncélú felhasználásának adatvédelmi kérdései, Magyar Jog, 2017/12. 777-781.

A szabadság szárnyai, avagy a pilóta nélküli légitársaságok kereskedelmi és magáncélú felhasználásának szabályozása Magyarországon, Infokommunikáció és Jog, 2017/68. 11-15.

Publications accepted by the time of finishing the thesis:

"Rules over words - the regulation of chatbots in the legal market and ethical considerations", Acta Juridica Hungarica – Hungarian Journal of Legal Studies (planned publication: „Legal Technologies in the Service of Access to Justice” special edition, 2023)

Data segregation and its privacy aspects, Iustum Aequum Salutare (planned publication: second half of 2023)

List of additional publications related to the topic of the thesis:

Daniel Necz: Image Rights in Times of Crisis. In: Bándi Gyula, Pogácsás Anett (szerk.): 'Law in Times of Crisis'. Selected doctoral studies./'Jog válság idején'. Válogatott doktorandusz tanulmányok. Budapest, Pázmány Press, 2023. 168-174.

A mesterséges intelligencia hatása a szerzői jogra, Iparjogvédelmi és Szerzői Jogi Szemle, 2018/6. 51-76.